

# UL/CSA

Kabel och komponenter för export



# Innehåll

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Online Shop

## Sid Produkt/Benämning

|    |                                                     |
|----|-----------------------------------------------------|
| 5  | <b>UL-märkning och användning</b>                   |
| 6  | <b>Summering "Typ" enligt UL-listed</b>             |
| 7  | <b>Summering "Style" enligt AWM (UL-recognized)</b> |
|    | <b>Kraft- och styrkabel, PVC</b>                    |
| 8  | ÖLFLEX® 150                                         |
| 9  | ÖLFLEX® 150 CY                                      |
| 10 | ÖLFLEX® 191                                         |
| 11 | ÖLFLEX® 195 CY                                      |
| 12 | ÖLFLEX® 191 CY                                      |
| 13 | ÖLFLEX® CONTROL TM                                  |
| 14 | ÖLFLEX® CONTROL TM CY                               |
| 15 | ÖLFLEX® TRAY II                                     |
| 16 | ÖLFLEX® TRAY II CY                                  |
| 17 | ÖLFLEX® POWER MULTI                                 |
|    | <b>Kraft- och styrkabel, halogenfri</b>             |
| 19 | ÖLFLEX® CLASSIC 110 H                               |
| 20 | ÖLFLEX® CLASSIC 115 CH                              |
| 21 | ÖLFLEX® CLASSIC 110 CH                              |
| 22 | ÖLFLEX® CLASSIC 130 H                               |
| 23 | ÖLFLEX® CLASSIC 135 CH                              |
| 25 | ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV                   |
| 26 | ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV                  |
|    | <b>Kraft- och styrkabel, PUR</b>                    |
| 27 | ÖLFLEX® 409 P                                       |
| 28 | ÖLFLEX® 409 CP                                      |
|    | <b>Servokabel, PVC</b>                              |
| 29 | ÖLFLEX® SERVO 2XSLCY-JB                             |
| 30 | ÖLFLEX® SERVO 719                                   |
| 31 | ÖLFLEX® SERVO 719 CY                                |
| 32 | ÖLFLEX® SERVO 728 CY                                |
| 33 | ÖLFLEX® SERVO 7DSL                                  |
|    | <b>Servokabel, TPE</b>                              |
| 34 | ÖLFLEX® SERVO 7TCE                                  |
| 35 | ÖLFLEX® VFD 2XL                                     |
| 36 | ÖLFLEX® VFD 2XL with Signal                         |
|    | <b>Servokabel, släpkedja PVC</b>                    |
| 37 | ÖLFLEX® SERVO FD 781 CY                             |

## Sid Produkt/Benämning

|    |                                                  |
|----|--------------------------------------------------|
|    | <b>Servokabel, släpkedja TPE, PUR</b>            |
| 38 | ÖLFLEX® SERVO FD 7TCE                            |
| 39 | ÖLFLEX® SERVO FD zeroCM                          |
| 40 | ÖLFLEX® SERVO FD 796 P                           |
| 41 | ÖLFLEX® SERVO FD 796 CP                          |
| 43 | ÖLFLEX® SERVO FD 798 CP                          |
| 44 | ÖLFLEX® SERVO FD 7DSL                            |
| 45 | ÖLFLEX® SERVO FD 7OCS                            |
|    | <b>Servokabel, robot/torsion TPE, PUR</b>        |
| 46 | ÖLFLEX® SERVO 3D 7DSL                            |
|    | <b>Kraft- och styrkabel, släpkedja PVC</b>       |
| 47 | ÖLFLEX® CHAIN 809 SC                             |
| 48 | ÖLFLEX® CHAIN 809 SC CY                          |
| 49 | ÖLFLEX® FD 90                                    |
| 50 | ÖLFLEX® FD 90 CY                                 |
| 51 | ÖLFLEX® CHAIN 809                                |
| 52 | ÖLFLEX® CHAIN 809 CY                             |
| 53 | ÖLFLEX® CHAIN PN                                 |
| 54 | ÖLFLEX® FD 891                                   |
| 55 | ÖLFLEX® FD 891 CY                                |
| 56 | ÖLFLEX® CHAIN TM                                 |
| 57 | ÖLFLEX® CHAIN TM CY                              |
|    | <b>Kraft- och styrkabel, släpkedja PUR</b>       |
| 58 | ÖLFLEX® CHAIN 90 P                               |
| 59 | ÖLFLEX® CHAIN 90 CP                              |
| 60 | ÖLFLEX® CHAIN 819 P                              |
| 61 | ÖLFLEX® CHAIN 819 CP                             |
| 62 | ÖLFLEX® FD 891 P                                 |
| 63 | ÖLFLEX® FD 855 P                                 |
| 64 | ÖLFLEX® FD 855 CP                                |
| 65 | ÖLFLEX® CHAIN 896 P                              |
|    | <b>Kraft- och styrkabel, robot/torsion PUR</b>   |
| 66 | ÖLFLEX® ROBOT F1                                 |
| 67 | ÖLFLEX® ROBOT F1 (C)                             |
|    | <b>Kraft- och styrkabel, temperaturbeständig</b> |
| 68 | ÖLFLEX® HEAT 180 MS                              |
| 69 | ÖLFLEX® HEAT 180 C MS                            |
| 70 | ÖLFLEX® HEAT 180 SiF A                           |
|    | <b>Enkelledare, PVC</b>                          |
| 71 | ÖLFLEX® WIRE MS 1 300 V                          |
| 72 | ÖLFLEX® WIRE MS 2.1 600 V                        |
| 75 | ÖLFLEX® WIRE MS 2.2 1000 V                       |

## Sid Produkt/Benämning

|                                                 |                                      |
|-------------------------------------------------|--------------------------------------|
| <b>Datakabel, PVC</b>                           |                                      |
| 77                                              | UNITRONIC® LIYY A                    |
| 78                                              | UNITRONIC® LIYCY A                   |
| 79                                              | UNITRONIC® LIYCY (TP) A              |
| 80                                              | UNITRONIC® 300 / UNITRONIC® 300 S    |
| 81                                              | UNITRONIC® 300 STP                   |
| <b>Datakabel, släpkedja PUR</b>                 |                                      |
| 82                                              | UNITRONIC® FD P plus A               |
| 83                                              | UNITRONIC® FD CP plus A              |
| 84                                              | UNITRONIC® FD CP (TP) plus A         |
| <b>Modbus, SUCOnet P, Modulink P, VariNet-P</b> |                                      |
| 85                                              | UNITRONIC® BUS LD                    |
| 86                                              | UNITRONIC® BUS LD FD P               |
| <b>AS-INTERFACE</b>                             |                                      |
| 87                                              | UNITRONIC® BUS ASI                   |
| 88                                              | UNITRONIC® BUS ASI FD                |
| <b>PROFIBUS</b>                                 |                                      |
| 89                                              | UNITRONIC® BUS PB TRAY               |
| 90                                              | UNITRONIC® BUS PB                    |
| 91                                              | UNITRONIC® BUS PB FRNC FC            |
| <b>PROFIBUS, släpkedja</b>                      |                                      |
| 92                                              | UNITRONIC® BUS PB FD P A             |
| 93                                              | UNITRONIC® BUS PB FD P FC            |
| 94                                              | UNITRONIC® BUS PB FD FRNC FC         |
| <b>PROFIBUS, robot</b>                          |                                      |
| 95                                              | UNITRONIC® BUS PB TORSION            |
| <b>PROFIBUS, hängkabelsystem</b>                |                                      |
| 96                                              | UNITRONIC® BUS PB FESTOON            |
| <b>DeviceNet</b>                                |                                      |
| 97                                              | UNITRONIC® DeviceNet THICK + THIN    |
| <b>DeviceNet, släpkedja</b>                     |                                      |
| 98                                              | UNITRONIC® DeviceNet FD THICK + THIN |
| <b>CAN-open</b>                                 |                                      |
| 99                                              | UNITRONIC® BUS CAN                   |
| 100                                             | UNITRONIC® BUS CAN TRAY              |
| <b>FOUNDATION Fieldbus</b>                      |                                      |
| 101                                             | UNITRONIC® BUS FF                    |
| <b>CC-Link</b>                                  |                                      |
| 102                                             | UNITRONIC® BUS CC                    |
| <b>CC-Link, släpkedja</b>                       |                                      |
| 103                                             | UNITRONIC® BUS CC FD P FRNC          |

## Sid Produkt/Benämning

|                                        |                                  |
|----------------------------------------|----------------------------------|
| <b>INTERBUS</b>                        |                                  |
| 104                                    | UNITRONIC® BUS IBS               |
| <b>Sensorkabel (I/O)</b>               |                                  |
| 105                                    | UNITRONIC® SENSOR master cable   |
| 106                                    | UNITRONIC® SENSOR                |
| <b>Sensorkabel (I/O), släpkedja</b>    |                                  |
| 107                                    | UNITRONIC® SENSOR FD             |
| <b>Ethernet</b>                        |                                  |
| 108                                    | ETHERLINE® EC FLEX Cat.5e        |
| 109                                    | ETHERLINE® Cat.5 FRNC HYBRID     |
| 110                                    | ETHERLINE® EC FD Cat.5e          |
| 111                                    | ETHERLINE® Cat.5e FD             |
| 112                                    | ETHERLINE® FD bioP Cat.5e        |
| 113                                    | ETHERLINE® Cat.5 FD BK           |
| 114                                    | ETHERLINE® CAT.6 FD              |
| 115                                    | ETHERLINE® Cat.6A FLEX FC        |
| 116                                    | ETHERLINE® Cat.6A FD FC          |
| 117                                    | ETHERLINE® FD CAT.6A             |
| 118                                    | ETHERLINE® TORSION Cat.6A        |
| 119                                    | ETHERLINE® Cat.7 FLEX            |
| 120                                    | ETHERLINE® TORSION Cat.7         |
| <b>PROFINET</b>                        |                                  |
| 121                                    | ETHERLINE® PN Cat.5              |
| 122                                    | ETHERLINE® PN Cat.5 FLEX         |
| 123                                    | ETHERLINE® MARINE FRNC FC Cat.5  |
| 124                                    | ETHERLINE® PN Cat.5e FD          |
| 125                                    | ETHERLINE® TORSION Cat.5e        |
| 126                                    | ETHERLINE® ROBOT PN Cat.5e       |
| 127                                    | ETHERLINE® FESTOON PN Cat.5e     |
| 128                                    | ETHERLINE® PN Cat.6A FC          |
| 129                                    | ETHERLINE® PN Cat.6A FLEX FC     |
| 130                                    | ETHERLINE® PN Cat.6A FLEX        |
| 131                                    | ETHERLINE® PN Cat.6A FD FC       |
| 132                                    | ETHERLINE® PN Cat.7              |
| 133                                    | ETHERLINE® PN Cat.7 FLEX         |
| 134                                    | ETHERLINE® PN Cat.7 FD           |
| <b>Ethernet single pair</b>            |                                  |
| 135                                    | ETHERLINE® T1 FLEX               |
| <b>Ethernet single pair, släpkedja</b> |                                  |
| 136                                    | ETHERLINE® T1 FD                 |
| <b>Ethernet APL single pair</b>        |                                  |
| 137                                    | ETHERLINE® T1L FLEX              |
| <b>Ethernet Patchcords</b>             |                                  |
| 138                                    | ETHERLINE® LAN Cat.6A Patchcords |

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##### Metriskå förskruvningar, plast

|     |                                   |
|-----|-----------------------------------|
| 140 | SKINTOP® ST-M / SKINTOP® STR-M    |
| 142 | SKINTOP® CLICK / SKINTOP® CLICK-R |
| 143 | SKINTOP® BS-M                     |

##### Metriskå förskruvningar, förnicklad mässing

|     |                                              |
|-----|----------------------------------------------|
| 144 | SKINTOP® MS-M / SKINTOP® MSR-M               |
| 145 | SKINTOP® MS-SC-M                             |
| 146 | SKINTOP® MS-M BRUSH / SKINTOP® MS-M BRUSH XL |
| 147 | SKINTOP® COLD / SKINTOP® COLD-R              |

#### Sid Produkt/Benämning

##### Metriskå förskruvningar, rostfritt stål

|     |                                         |
|-----|-----------------------------------------|
| 148 | SKINTOP® INOX / SKINTOP® INOX-R         |
| 149 | SKINTOP® INOX SC                        |
| 150 | SKINTOP® HYGIENIC / SKINTOP® HYGIENIC-R |
| 151 | SKINTOP® HYGIENIC SC                    |

##### NPT-förskruvningar, plast och metall

|     |                          |
|-----|--------------------------|
| 152 | SKINTOP® ST NPT / BS NPT |
| 153 | SKINTOP® MS NPT          |
| 154 | SKINTOP® MS-SC NPT       |
| 155 | SKINTOP® COLD NPT        |
| 156 | SKINTOP® MS-NPT BRUSH    |



Lär dig mer om UL, UR/AWM och CSA här!

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Rektangulära och cirkulära maskinkontaktödon



Givarkablar och kontakter  
Industriella switchar



Korrugerade plastslangar  
Vätsketåta metallskyddsslangar  
Slangförskruvningar



Ethernet patchkablar  
och kontakter



Kabeltillbehör

## Table 29-1: UL mark on cable and wire and its significance with regard to intended usage

### “UL” listing being a method of type certification for cable and wire

The intended use of cable and wire with a listing as per the UL or CSA standard mainly comprises wiring inside, or on buildings, as well as for special applications. Such cable or wire shall be used in line with valid installation standards. In order for stakeholders to identify listings by UL, the abbreviation “UL” is put in brackets on the surface of cable and wire: “(UL)”. With respect to package labels, “UL” can appear in brackets or within a closed circle. That being said, cable and wire can have multiple listings, or may also be AWM-certified, too.

### “RU” recognition mark by UL for AWM-certified cable and wire

UL-recognized Appliance Wiring Material component (AWM) is a certification for cable and wire for all-encompassing factory wiring in AWM applications. AWM is subdivided into Styles. The Style of the outmost design layer is crucial to the scope of intended AWM use types if cable or wire is installed as AWM. However, so-called multi-rated Styles specify multiple ratings of certain properties, simultaneously. The manufacturer’s data sheet for the cable or wire with multi-rated Style details the actual AWM rating. Depending on the Style, cable and wire is operated as AWM inside chain tracks within closed control panels or on or inside industrial machinery. Often times, though it’s not guaranteed, local on-site inspectors (AHJ/ CEO/ Special Police) allow to choose pure AWM for the interior of an access-limited zone on the load end of branch circuits (IP/ Industrial Platform) in the USA, on the basis of Section 12.9.2 of the NFPA 79, where the overall system approval method is “Field Labeling” or “Field Inspection”. Upfront however, some NRTL’s use to offer additional, (OEM...) factory-based Field Labeling pre-evaluations, before the actual Field Labeling. UL’s certification mark for AWM is “RU” with “R” being mirror-inverted. Regardless, marking the given AWM certification on the component hardware is not mandatory as per UL 758. AWM cable or wire may have more than just one Style for the outmost design layer, and be permitted to be listed by an NRTL (Nationally Recognised Testing Laboratory) per UL or CSA type standard in parallel.

### Example U.S. standards on installation, panels, devices, machinery, appliances, etc.

- National Electrical Code (NEC) of the USA = NFPA 70 on building (structure) etc., regularly requires certain listings, instead of AWM, for instance cable or wire listings as per NEC Article 392, such as TC-ER 600 V, PLTC-ER (etc.) for unprotected laying on open trays as well as between trays and other units up to 6 ft or 1.8 m in exposed runs (-ER) for each exposed installation section where access is granted to qualified personnel only (Art. 336). The NEC is a very complex code which covers a large number of different installation scenarios inside or even outside of buildings, for example Electric Mobility, Cranes/ Hoists, Elevators, Flexible laying in Heavy Industry, Building Infrastructure incl. Floor Level Chngement or Plenum-internal laying, Hazardous Zone installation (Classes, Divisions, Zones), Sprinkler, Marinas, Service Entrance, Grounding/ Bonding, Underfloor wiring, and the list goes on. But it avoids the particular stipulation of recognized cable/ wire type AWM.
- NFPA 79: Industrial machinery decoupled from the building structure, industrial chain track, or occasionally for industrial platform (IP) internal parts decoupled from the building structure upon on-site AHJ’s/CEO’s (Authority Having Jurisdiction/Code Enforcement Officer), or upstream NRTL’s (partly offering field inspection pre-evaluation on the factory end) sole decision in the context of field labeling assessment. One out of the three provisions of section 12.9.2 must be met to get permission for the use of pure AWM cable within the site-individual, technical scope of validity of NFPA 79, and most times the second provision no. (2) on complete documentation of the AWM in the machine (...) documentation is made use of by machine OEM’s. Further important definitions, for

instance regarding: Universal marking of short-circuit current ratings, conductor sizing for motor connection as per Chapter 12, core identification as per Chapter 13, kill switches, separators, etc.

- UL 508A: Industrial control panels
- UL 6141/UL 6142: Wind turbines
- Additional U.S. standards: UL 73 on motor-operated appliances, UL 2011 on factory automation equipment, UL 2200 on stationary engine generator assemblies, ANSI Z 535.4 on product safety signs and labels, UL 508C on safety power conversion equipment, UL 489 on molded case circuit breakers and enclosures, UL 1004 on electric motors, UL 248 on fuses, UL 775 on graphics arts equipment, NFPA 130 on trains, UL 1740 on industrial robots, UL 1077 on supplementary protectors in electrical equipment, UL RP 5770 on repeated flexing applications.

Fundamentally, the operation site may be subject to supplementary, local standardisation or rules. Not only in such cases, but rather also in general, the overall approval process for an industry project or prior to new appliance market launch may profit from the OEM-initiated, early involvement of a certifier/NRTL for the purpose of selecting the appropriate components and associated installation methods, time-wise and in terms of total costs for engineering, installation and transport & tariffs. In North America, the selected chosen cable, cord, and wire shall meet the requirements according to national and local standards for installations, devices, appliances, etc. More often than not, a certain component type certification by a third party is indispensable.

### Canada

Canada has its own standards, such as the CEC (Canadian Electrical Code). Various NRTL’s other than UL and CSA are notified for the UL and/ or CSA standardised component type certification of companies under the NRTL’s own certification and testing mark, and that to individual degree, when it comes down to the NRTL individual number or scope of approvable component types covered by the notification. If CSA issues certification according to the UL standard for use in the U.S., the CSA mark will be seamlessly followed by the lower-case suffix “us”. Vice versa, the lower-case prefix “c” is seamlessly added ahead of UL’s mark in cases where UL issues certifications according to the CSA standard for use in Canada. Furthermore, a cable or wire might be simultaneously certified by more than just one NRTL, or might bring additional certification to European standards by an accordingly notified certifier to the table.

### Ampacity and conductor sizing

North American standards and codes on installation, panels, devices, machinery, appliances, etc. deal with the AWG/kcmil scale of nominal conductor cross-sections. As far as cable and wire products in Europe are concerned though, these mostly incorporate metric IEC conductors, as explained on proper technical data sheets. Except for a few possible cases, the next-higher nominal, metric IEC conductor cross-sections (VDE 0812, IEC 60228/VDE 0295, etc.) directly exceeding the sized AWG/ kcmil cross-sections calculated on the basis of North-American installation standards will have to be chosen regularly if cable, cord, and wire with a metric IEC conductor and with required type approval per UL/CSA type standard is supposed to be operated according to a North American standard or code on installation, appliance, panel etc., and on the basis of an application-specific, North American component type certification. This is how the AWG/kcmil sized conductor ampacity must be ensured, from a technical standpoint, despite the contained IEC conductor. As a consequence, cable and wire certified to the UL or CSA standard, but incorporating a metric IEC conductor, normatively and technically only fulfils the next-smaller, nominal AWG/kcmil conductor cross-section, regularly, apart from a few possible exceptions. For further information on transcoding between conductor scales, please have a look at technical appendix T16.

**Table 29-2: overview of corresponding products in this catalogue – type “Listed”**

| LAPP cable type with UL listing            | Listed type                          | Voltage in V    | Temperature in °C | Compound            | Compliant with NFPA 79, Edition 2018 |
|--------------------------------------------|--------------------------------------|-----------------|-------------------|---------------------|--------------------------------------|
| ÖLFLEX WIRE MS 2.1                         | MTW                                  | 600             | 90                | PVC                 | ✓                                    |
| ÖLFLEX WIRE MS 2.2                         | MTW                                  | 600             | 90                | PVC                 | ✓                                    |
| ÖLFLEX® CONTROL TM, TM CY                  | MTW, TC-ER, WTTTC, SUNRES, Subm.Pump | 600, 1000       | 90                | Thermopl. Polymer   | ✓                                    |
| ÖLFLEX® TRAY II, TRAY II CY                | MTW, TC-ER, WTTTC, SUNRES, Subm.Pump | 600, 1000       | 90                | Thermopl. Polymer   | ✓                                    |
| ÖLFLEX® POWER MULTI                        | TC-ER, STOOW, SUNRES                 | 600             | 90, 105           | Thermopl. Polymer   | ✓                                    |
| ÖLFLEX® SERVO 7TCE, FD 7TCE                | TC-ER, Flexible Motor Supply         | 600, 1000       | 90                | Thermopl. Elastomer | ✓                                    |
| ÖLFLEX® VFD 2XL, 2XL with Signal           | TC-ER, Flexible Motor Supply         | 600, 1000, 2000 | 90                | Thermopl. Elastomer | ✓                                    |
| ÖLFLEX® CHAIN TM, TM CY                    | MTW, TC-ER, WTTTC                    | 600, 1000       | 90                | Special compound    | ✓                                    |
| UNITRONIC® 300, 300 S, 300 STP             | CMG, PLTC, Open Wiring, Oil Res 1    | 300             | 105               | PVC                 | ✓                                    |
| UNITRONIC® BUS IBS A                       | CMX                                  | 250             | 70                | PVC                 | ✓                                    |
| UNITRONIC® BUS IBS P COMBI                 | CMX                                  | 250             | 75                | PUR                 | ✓                                    |
| UNITRONIC® BUS IBS FD P                    | CMX                                  | 250             | 70                | PUR                 | ✓                                    |
| UNITRONIC® BUS IBS FD P COMBI              | CMX                                  | 450             | 70                | PUR                 | ✓                                    |
| UNITRONIC® BUS IBS Yv                      | CMX                                  | 250             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS IBS Yv COMBI                | CMX                                  | 250             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS LD                          | CMX                                  | 250             | 70                | PVC                 | ✓                                    |
| UNITRONIC® BUS LD FD P                     | CMX                                  | 250             | 75                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB A                        | CMX                                  | 250             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PB FC                       | CMG                                  | 100             | 60                | PVC                 | ✓                                    |
| UNITRONIC® BUS PB 7-W FC                   | CMX                                  | 250             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PB H FC                     | CMX                                  | 100             | 75                | FRNC                | ✓                                    |
| UNITRONIC® BUS PB P FC                     | CMX                                  | 100             | 75                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB FD P A                   | CMX                                  | 250             | 70                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB TORSION                  | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB FESTOON                  | CMG                                  | 600             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PB FRNC FC                  | CM                                   | 250             | 60                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB FD FRNC FC               | CM                                   | 250             | 60                | PUR                 | ✓                                    |
| UNITRONIC® BUS PB TRAY                     | CMG/PLTC-ER                          | 600             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PA (BU)                     | CMX                                  | 100             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PA (BK)                     | CMX                                  | 100             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS PA FC                       | CMG                                  | 100             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS FF 3 (YE)                   | CMG/PLTC                             | 300             | 105               | PVC                 | ✓                                    |
| UNITRONIC® BUS FF 3 ARM                    | CMG/PLTC                             | 300             | 105               | PVC                 | ✓                                    |
| UNITRONIC® BUS FF 2                        | CMG                                  | 300             | 105               | PVC                 | ✓                                    |
| UNITRONIC® BUS CC                          | CM/PLTC                              | 300             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS CAN                         | CMX                                  | 250             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS CAN FD P                    | CMX                                  | 250             | 70                | PUR                 | ✓                                    |
| UNITRONIC® BUS CAN TRAY                    | CMG/PLTC-ER                          | 600             | 75                | PVC                 | ✓                                    |
| UNITRONIC® BUS ASI (PVC)                   | CMG                                  | 300             | 80                | PVC                 | ✓                                    |
| UNITRONIC® BUS SAFETY                      | CMX                                  | 250             | 75                | Compound            | ✓                                    |
| UNITRONIC® BUS DN THICK FRNC               | CMG                                  | 300             | 80                | FPE FRNC            | ✓                                    |
| UNITRONIC® BUS DN THIN FRNC                | CMG                                  | 300             | 80                | FPE FRNC            | ✓                                    |
| UNITRONIC® BUS DN THICK Y                  | CMG                                  | 300             | 80                | PVC                 | ✓                                    |
| UNITRONIC® BUS DN THIN Y                   | CMG                                  | 300             | 80                | PVC                 | ✓                                    |
| UNITRONIC® BUS DN THICK FD P               | CMX                                  | 300             | 80                | PUR                 | ✓                                    |
| UNITRONIC® BUS DN THIN FD Y                | CMG                                  | 300             | 80                | PVC                 | ✓                                    |
| UNITRONIC® BUS DN THICK FD Y               | CMG                                  | 300             | 80                | PVC                 | ✓                                    |
| UNITRONIC® BUS DN THIN FD P                | CMX                                  | 300             | 80                | PUR                 | ✓                                    |
| ETHERLINE® PN Cat.5e Y                     | CMX                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® Y FC Cat.5                      | CMG/PLTC                             | 600             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.5e YY                    | CMG                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.5 Y Flex FC              | CMG/PLTC                             | 600             | 75                | PVC                 | ✓                                    |
| ETHERLINE® FD P FC Cat.5e                  | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® PN Cat.5e FRNC FLEX FC          | CMG/PLTC                             | 300             | 75                | FRNC                | ✓                                    |
| ETHERLINE® Y FLEX Cat.5e                   | CMG                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® Y EC FLEX Cat.5e                | CMX                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® P EC FLEX Cat.5e                | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® P EC FD Cat.5e                  | CMG                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® FESTOON PN Cat.5e               | CMG                                  | 600             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> Y FLEX    | CM                                   | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> FRNC FLEX | CM                                   | 300             | 75                | FRNC                | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> FD Y      | CM                                   | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> FD P      | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> TORSION Y | CM                                   | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.6 <sub>A</sub> TORSION P | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® PN Cat.7 Y A                    | CMG                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.7 Y FLEX A               | CMG                                  | 300             | 75                | PVC                 | ✓                                    |
| ETHERLINE® PN Cat.7 FRNC FLEX A            | CM                                   | 300             | 75                | FRNC                | ✓                                    |
| ETHERLINE® FD P Cat.6                      | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| ETHERLINE® TRAY ER PN Y FC                 | CMG/PLTC-ER                          | 600             | 75                | PVC                 | ✓                                    |
| ETHERLINE® MARINE FRNC FC                  | CMG/PLTC                             | 600             | 75                | FRNC                | ✓                                    |
| ETHERLINE® TORSION Cat.7                   | CMX                                  | 300             | 75                | PUR                 | ✓                                    |
| HITRONIC® PCF Duplex PN B PVC-PVC A        | OFNG                                 |                 | 75                | PVC                 | ✓                                    |

The table shows the available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products.

Table 29-3: overview of corresponding products in this catalogue – type AWM

| LAPP cable type with AWM style                  | Style number                                                      | Voltage in V                                      | Temperature in °C | Compound                       | Compliant with NFPA 79, Edition 2018 |
|-------------------------------------------------|-------------------------------------------------------------------|---------------------------------------------------|-------------------|--------------------------------|--------------------------------------|
| ÖLFLEX WIRE MS 2.1                              | 1015                                                              | 600                                               | 105               | PVC                            | ✓                                    |
| ÖLFLEX WIRE MS 2.2                              | 10269                                                             | 1000                                              | 105               | PVC                            | ✓                                    |
| ÖLFLEX WIRE MS 1                                | 1007, 1569                                                        | 300                                               | 105               | PVC                            | ✓                                    |
| ÖLFLEX® CLASSIC 110 H                           | 21089                                                             | 600                                               | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® CLASSIC 110 CH                          | 21089                                                             | 600                                               | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® CLASSIC 130 H                           | 21217                                                             | 600                                               | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® CLASSIC 135 CH                          | 21217                                                             | 600                                               | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® CLASSIC 130 H BK                        | 21156                                                             | 1000                                              | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® CLASSIC 135 CH BK                       | 21156                                                             | 1000                                              | 75                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® 150                                     | 21098                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® 150 CY                                  | 21098                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® 191                                     | 21098                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® 191 CY                                  | 21098                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® CONTROL TM, TM CY                       | 20886                                                             | 1000                                              | 105               | Thermopl. Polymer              | ✓                                    |
| ÖLFLEX® TRAY II, TRAY II CY                     | 20886                                                             | 1000                                              | 105               | Thermopl. Polymer              | ✓                                    |
| ÖLFLEX® 409 P/409 CP                            | 20234                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® CHAIN TM, TM CY                         | 20886                                                             | 1000                                              | 105               | Special compound               | ✓                                    |
| ÖLFLEX® CHAIN 809                               | 20886                                                             | 1000                                              | 80                | PVC                            | ✓                                    |
| ÖLFLEX® CHAIN 809 CY                            | 20886                                                             | 1000                                              | 80                | PVC                            | ✓                                    |
| ÖLFLEX® CHAIN PN                                | 20886                                                             | 1000                                              | 90                | PVC                            | ✓                                    |
| ÖLFLEX® FD 891                                  | 2587, 21098                                                       | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® FD 891 CY                               | 2587, 21098                                                       | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® CHAIN 819 P, CP                         | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® FD 855 P, CP                            | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® FD 891 P                                | 20234                                                             | 600                                               | 80                | PUR                            | ✓                                    |
| ÖLFLEX® CHAIN 896 P                             | 20234                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® CHAIN 809 SC, SC CY                     | 10107                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® FD 90                                   | 10107                                                             | 600                                               | 90                | PVC                            | ✓                                    |
| ÖLFLEX® FD 90 CY                                | 10107                                                             | 600                                               | 90                | PVC, DESINA-compliant          | ✓                                    |
| ÖLFLEX® CHAIN 90 P, CP                          | 11624                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® TORSION FRNC                            | 21288                                                             | 1000                                              | 80                | Special compound, halogen-free | ✓                                    |
| ÖLFLEX® HEAT 180 MS                             | 4476, 3529                                                        | 600                                               | 150               | Silicone compound              | ✓                                    |
| ÖLFLEX® HEAT 180 C MS                           | 4476, 3529                                                        | 600                                               | 150               | Silicone compound              | ✓                                    |
| ÖLFLEX® HEAT 180 SIF A                          | 3644                                                              | 1000                                              | 150               | Silicone                       | ✓                                    |
| ÖLFLEX® PETRO C HFFR                            | 10587, 20234                                                      | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® ROBOT 998 P/998 DP                      | 20724                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| ÖLFLEX® ROBOT 991 P/991 DP                      | 20940                                                             | 600                                               | 80                | PUR                            | ✓                                    |
| ÖLFLEX® ROBOT F1                                | 20940                                                             | Up to 1.5 mm²:<br>From 2.5 mm²: 1000              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO 719                               | 2570                                                              | 1000                                              | 80                | PVC                            | ✓                                    |
| ÖLFLEX® SERVO 719 CY                            | 2570                                                              | 1000                                              | 80                | PVC                            | ✓                                    |
| ÖLFLEX® SERVO 728 CY                            | 2464                                                              | 300                                               | 80                | PVC                            | ✓                                    |
| ÖLFLEX® SERVO 9VSLCY-JB                         | 2570, 20886                                                       | 1000                                              | 80                | PVC                            | ✓                                    |
| ÖLFLEX® SERVO 7DSL                              | 2570                                                              | 1000/300                                          | 80                | PVC                            | ✓                                    |
| ÖLFLEX® SERVO FD 796 P                          | 20234                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO FD 796 CP                         | 20234                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO FD 798 CP                         | 20236                                                             | 30                                                | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO FD 7DSL                           | 21223                                                             | 1000/300                                          | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO FD 7OCS                           | 21223, 20233                                                      | 1000/300                                          | 80                | PUR                            | ✓                                    |
| ÖLFLEX® SERVO 3D 7DSL                           | 21223                                                             | 600                                               | 80                | PUR                            | ✓                                    |
| SERVO cables acc. to INDRAMAT® standard INK     | 20234<br>Signalling cables: 20236                                 | Power cables: 600/1000<br>Signalling cables: 300  | 80                | PUR                            | ✓                                    |
| SERVO cables acc. to LENZE® standard            | Resolver + encoder cable: 2464, 21165<br>Motor cable: 2570, 20940 | Resolver + encoder cable: 300<br>Motor cable: 600 | 80                | PUR                            | ✓                                    |
| SERVO cables acc. to SIEMENS® standard FX 8PLUS | Power cables: 21223<br>Signalling cables: 20236                   | Power cables: 1000<br>Signalling cables: 30       | 80                | PUR                            | ✓                                    |
| UNITRONIC® 300, 300 S, 300 STP                  | 2464                                                              | 300                                               | 80                | PVC                            | ✓                                    |
| UNITRONIC® LiYCY A                              | 2464                                                              | 300                                               | 80                | Special PVC                    | ✓                                    |
| UNITRONIC® LiYCY(TP) A                          | 2464                                                              | 300                                               | 80                | Special PVC                    | ✓                                    |
| UNITRONIC® LiYY A                               | 2464                                                              | 300                                               | 80                | Special PVC                    | ✓                                    |
| UNITRONIC® FD Li2YCY (TP) A BE/BA               | 2570                                                              | 1000                                              | 80                | PVC                            | ✓                                    |
| UNITRONIC® FD P plus                            | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| UNITRONIC® FD CP plus                           | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| UNITRONIC® FD CP (TP) plus                      | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| UNITRONIC® BUS CC FD P FRNC                     | 20233                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| UNITRONIC® BUS ASI (TPE)                        | 2103                                                              | 300                                               | 105               | TPE                            | ✓                                    |
| UNITRONIC® BUS ASI FD FRNC                      | 20549                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| UNITRONIC® SENSOR FD                            | 20549                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| UNITRONIC® SENSOR master cable                  | 21198                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| ETHERLINE® Cat.5 FRNC HYBRID                    | 21282                                                             | 150                                               | 80                | FRNC                           | ✓                                    |
| ETHERLINE® FESTOON PN Cat.5e                    | 21694                                                             | 600                                               | 60                | PVC                            | ✓                                    |
| ETHERLINE® PN Cat.5 Y FLEX FC                   | 21694                                                             | 600                                               | 60                | PVC                            | ✓                                    |
| ETHERLINE® TORSION Cat.5                        | 21161                                                             | 300                                               | 80                | PUR                            | ✓                                    |
| ETHERLINE® FD P Cat.5e                          | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® P Cat.5e                             | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® P Cat.5e Flex                        | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® FD BK Cat.5                          | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® FD P Cat.6 <sub>A</sub>              | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® TORSION P Cat.6 <sub>A</sub>         | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® TORSION P Cat.7                      | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® TRAY ER PN Y                         | 20201                                                             | 600                                               | 60                | PVC                            | ✓                                    |
| ETHERLINE® Y FC Cat.5                           | 21694                                                             | 600                                               | 60                | PVC                            | ✓                                    |
| ETHERLINE® Cat.7 FLEX                           | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® PN Cat.7 Y A                         | 21695                                                             | 600                                               | 80                | PVC                            | ✓                                    |
| ETHERLINE® PN Cat.7 FRNC A                      | 21286                                                             | 300                                               | 80                | Special compound, halogen-free | ✓                                    |
| ETHERLINE® PN Cat.7 P A                         | 21576                                                             | 1000                                              | 80                | PUR                            | ✓                                    |
| ETHERLINE® PN Cat.7 Y FLEX A                    | 21695                                                             | 600                                               | 80                | PVC                            | ✓                                    |

The table shows the available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products. The use is mentioned in the UL Style pages.

# Power and control cables

Various applications • PVC sheath, certified



## ÖLFLEX® 150

Oil resistant multi-standard cable with H05VV5-F and AWM approval



### Info

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VV5-F and UL recognized

### Benefits

- Wide application range due to multiple certifications

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 § 1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5

### Norm references / Approvals

- H05VV5-F (EN 50525-2-51)
- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T 16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC outer sheath, high oil-resistance, grey (similar to RAL 7001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing:  
12.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

HAR U0/U: 300/500 V  
UL/CSA: 600 V



#### Test voltage

3000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing:  
HAR: -5°C to +70°C  
UL/CSA: +90°C  
Fixed installation:  
HAR: -40°C to +70°C  
UL/CSA: +90°C

| Article number     | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 150</b> |                                                   |                     |                      |                |
| 0015002            | 2 X 0.5                                           | 5.9                 | 9.6                  | 47             |
| 0015003            | 3 G 0.5                                           | 6.2                 | 14.4                 | 62.4           |
| 0015004            | 4 G 0.5                                           | 6.8                 | 19.2                 | 68.2           |
| 0015005            | 5 G 0.5                                           | 7.4                 | 24                   | 87.1           |
| 0015007            | 7 G 0.5                                           | 9.0                 | 33.6                 | 118.7          |
| 0015012            | 12 G 0.5                                          | 11.1                | 58                   | 198            |
| 0015018            | 18 G 0.5                                          | 13.2                | 86.4                 | 328            |
| 0015025            | 25 G 0.5                                          | 15.7                | 120                  | 380.4          |
| 0015034            | 34 G 0.5                                          | 18.1                | 164                  | 509            |
| 0015041            | 41 G 0.5                                          | 19.7                | 197                  | 595            |
| 0015102            | 2 X 0.75                                          | 6.3                 | 14.4                 | 61             |
| 0015103            | 3 G 0.75                                          | 6.7                 | 21.6                 | 75.6           |
| 0015104            | 4 G 0.75                                          | 7.2                 | 28.8                 | 83.9           |
| 0015105            | 5 G 0.75                                          | 8.1                 | 36                   | 113.3          |
| 0015107            | 7 G 0.75                                          | 9.9                 | 50                   | 145            |
| 0015112            | 12 G 0.75                                         | 12.0                | 86                   | 244.9          |
| 0015118            | 18 G 0.75                                         | 14.4                | 130                  | 327.7          |
| 0015125            | 25 G 0.75                                         | 17.1                | 180                  | 466.4          |
| 0015134            | 34 G 0.75                                         | 19.7                | 245                  | 626.5          |
| 0015141            | 41 G 0.75                                         | 21.6                | 296                  | 748            |
| 0015202            | 2 X 1.0                                           | 6.6                 | 19.2                 | 80             |
| 0015203            | 3 G 1.0                                           | 7.0                 | 28.8                 | 79             |
| 0015204            | 4 G 1.0                                           | 7.8                 | 38.4                 | 98.6           |
| 0015205            | 5 G 1.0                                           | 8.6                 | 48                   | 132.1          |
| 0015206            | 6 G 1.0                                           | 9.5                 | 57.6                 | 150            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0015207        | 7 G 1.0                                           | 10.4                | 67                   | 169.3          |
| 0015212        | 12 G 1.0                                          | 12.8                | 115                  | 285.9          |
| 0015218        | 18 G 1.0                                          | 15.1                | 173                  | 405.2          |
| 0015225        | 25 G 1.0                                          | 18.0                | 240                  | 569.5          |
| 0015234        | 34 G 1.0                                          | 20.9                | 326                  | 741.7          |
| 0015241        | 41 G 1.0                                          | 22.8                | 394                  | 886            |
| 0015250        | 50 G 1.0                                          | 25.0                | 480                  | 1072.2         |
| 0015302        | 2 X 1.5                                           | 7.6                 | 28.8                 | 95             |
| 0015303        | 3 G 1.5                                           | 8.3                 | 43                   | 109.8          |
| 0015304        | 4 G 1.5                                           | 9.0                 | 58                   | 145            |
| 0015305        | 5 G 1.5                                           | 10.1                | 72                   | 168            |
| 0015307        | 7 G 1.5                                           | 12.5                | 101                  | 224.2          |
| 0015312        | 12 G 1.5                                          | 15.1                | 173                  | 361.7          |
| 0015318        | 18 G 1.5                                          | 18.0                | 259                  | 518.3          |
| 0015325        | 25 G 1.5                                          | 21.4                | 360                  | 729.9          |
| 0015334        | 34 G 1.5                                          | 25.0                | 490                  | 946.6          |
| 0015341        | 41 G 1.5                                          | 27.2                | 591                  | 1136           |
| 0015402        | 2 X 2.5                                           | 9.2                 | 48                   | 159            |
| 0015403        | 3 G 2.5                                           | 9.9                 | 72                   | 170            |
| 0015404        | 4 G 2.5                                           | 10.8                | 96                   | 210            |
| 0015405        | 5 G 2.5                                           | 12.1                | 120                  | 257            |
| 0015407        | 7 G 2.5                                           | 14.7                | 168                  | 340            |
| 0015412        | 12 G 2.5                                          | 17.9                | 288                  | 580            |
| 0015418        | 18 G 2.5                                          | 21.6                | 432                  | 850            |
| 0015425        | 25 G 2.5                                          | 25.6                | 600                  | 1166           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

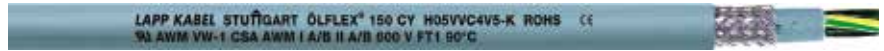


Screened and oil-resistant multi-standard cable with H05VVC4V5-K and AWM approval



#### Info

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VVC4V5-K and UL recognized
- EMC-compliant



#### Benefits

- Wide application range due to multiple certifications

#### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- In EMC-sensitive environments (electromagnetic compatibility)
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

#### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

#### Norm references / Approvals

- H05VVC4V5-K (EN 50525-2-51)
- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

#### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (similar to RAL 7001)

#### Technical data

|  |                                                                                                                                                       |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable                                 |
|  | <b>Core identification code</b><br>Black with white numbers acc. to VDE 0293-334                                                                      |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295, class 5/IEC 60228 class 5                                                              |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 20 x outer diameter<br>Fixed installation: 6 x outer diameter                                    |
|  | <b>Nominal voltage</b><br>HAR U0/U: 300/500 V<br>UL/CSA: 600 V                                                                                        |
|  | <b>Test voltage</b><br>3000 V                                                                                                                         |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                                                |
|  | <b>Temperature range</b><br>Occasional flexing:<br>HAR: -5°C to +70°C<br>UL/CSA: +90°C<br>Fixed installation:<br>HAR: -40°C to +70°C<br>UL/CSA: +90°C |

| Article number        | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 150 CY</b> |                                                   |                     |                      |                |
| 0015602               | 2 X 0.75                                          | 8.5                 | 40                   | 109            |
| 0015603               | 3 G 0.75                                          | 8.9                 | 51                   | 125            |
| 0015604               | 4 G 0.75                                          | 9.6                 | 70                   | 157            |
| 0015605               | 5 G 0.75                                          | 10.3                | 77                   | 180            |
| 0015607               | 7 G 0.75                                          | 12.3                | 93                   | 226            |
| 0015612               | 12 G 0.75                                         | 14.8                | 155                  | 325            |
| 0015702               | 2 X 1.0                                           | 8.8                 | 46.4                 | 121            |
| 0015703               | 3 G 1.0                                           | 9.4                 | 76                   | 145            |
| 0015704               | 4 G 1.0                                           | 10.0                | 80                   | 180            |
| 0015705               | 5 G 1.0                                           | 11.0                | 95                   | 203            |
| 0015707               | 7 G 1.0                                           | 13.0                | 118                  | 273            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0015712        | 12 G 1.0                                          | 15.6                | 195                  | 425            |
| 0015802        | 2 X 1.5                                           | 10.0                | 59.2                 | 151            |
| 0015803        | 3 G 1.5                                           | 10.5                | 84                   | 159            |
| 0015804        | 4 G 1.5                                           | 11.4                | 94.8                 | 211            |
| 0015805        | 5 G 1.5                                           | 12.7                | 122                  | 241            |
| 0015807        | 7 G 1.5                                           | 15.1                | 143                  | 306            |
| 0015812        | 12 G 1.5                                          | 17.8                | 254                  | 480            |
| 0015903        | 3 G 2.5                                           | 11.9                | 120                  | 245            |
| 0015904        | 4 G 2.5                                           | 13.2                | 170                  | 295            |
| 0015905        | 5 G 2.5                                           | 14.7                | 205                  | 365            |
| 0015907        | 7 G 2.5                                           | 17.5                | 241                  | 480            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® 191

Oil-resistant multi-standard cable with AWM approval



### Info

- Conductor cross-section up to 120 mm<sup>2</sup>
- Further items with 0,5 and 0,75 mm<sup>2</sup>: see ÖLFLEX® 150
- Oil-resistant according to EN 50363-4-1: TM5

### Benefits

- High electrical performance due to 4 kV test voltage
- For various applications

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5

### Norm references / Approvals

- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC outer sheath, high oil-resistance, grey (similar to RAL 7001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

HAR U0/U: 300/500 V  
UL/CSA: 600 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation: -40°C to +70°C  
UL/CSA: +90°C

| Article number     | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 191</b> |                                                   |                     |                      |                |
| 0011222            | 7 G 0.75                                          | 8.3                 | 50.4                 | 116            |
| 0011223            | 9 G 0.75                                          | 10.5                | 64.8                 | 152            |
| 0011224            | 12 G 0.75                                         | 11.2                | 86.4                 | 194            |
| 0011113            | 3 G 1.0                                           | 6.7                 | 28.8                 | 66             |
| 0011114            | 4 G 1.0                                           | 7.2                 | 38.4                 | 81             |
| 0011115            | 5 G 1.0                                           | 8.1                 | 48                   | 95             |
| 0011116            | 7 G 1.0                                           | 8.9                 | 67.2                 | 125            |
| 0011117            | 12 G 1.0                                          | 12.0                | 115.2                | 211            |
| 0011118            | 18 G 1.0                                          | 14.4                | 172.8                | 309            |
| 0011119            | 25 G 1.0                                          | 17.3                | 240                  | 413            |
| 0011136            | 2 X 1.5                                           | 6.9                 | 28.8                 | 74             |
| 0011137            | 3 G 1.5                                           | 7.3                 | 44                   | 91             |
| 0011138            | 4 G 1.5                                           | 8.2                 | 58                   | 112            |
| 0011139            | 5 G 1.5                                           | 9.0                 | 72                   | 136            |
| 0011140            | 7 G 1.5                                           | 10.0                | 101                  | 179            |
| 0011125            | 9 G 1.5                                           | 12.6                | 129.6                | 230            |
| 0011142            | 12 G 1.5                                          | 13.4                | 173                  | 313            |
| 0011143            | 18 G 1.5                                          | 16.1                | 260                  | 444            |
| 0011144            | 25 G 1.5                                          | 19.5                | 360                  | 620            |
| 0011150            | 3 G 2.5                                           | 8.4                 | 72                   | 138            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0011151        | 4 G 2.5                                           | 9.1                 | 96                   | 182            |
| 0011152        | 5 G 2.5                                           | 10.2                | 120                  | 216            |
| 0011153        | 7 G 2.5                                           | 11.3                | 168                  | 286            |
| 0011160        | 3 G 4.0                                           | 9.9                 | 115.2                | 202            |
| 0011161        | 4 G 4.0                                           | 10.8                | 154                  | 245            |
| 0011162        | 5 G 4.0                                           | 12.1                | 192                  | 310            |
| 0011167        | 7 G 4.0                                           | 13.4                | 268.8                | 470            |
| 0011165        | 4 G 6.0                                           | 13.0                | 231                  | 398            |
| 0011166        | 5 G 6.0                                           | 14.5                | 288                  | 479            |
| 0011169        | 4 G 10.0                                          | 16.5                | 384                  | 559            |
| 0011170        | 5 G 10.0                                          | 18.4                | 480                  | 782            |
| 0011172        | 4 G 16.0                                          | 22.1                | 615                  | 904            |
| 0011173        | 5 G 16.0                                          | 24.3                | 768                  | 1171           |
| 0011175        | 4 G 25.0                                          | 25.2                | 960                  | 1299           |
| 0011176        | 5 G 25.0                                          | 28.0                | 1200                 | 1640           |
| 0011178        | 4 G 35.0                                          | 28.1                | 1344                 | 2119           |
| 0011179        | 5 G 35.0                                          | 31.5                | 1680                 | 2606           |
| 0011205        | 4 G 50.0                                          | 35.7                | 1920                 | 2898           |
| 0011206        | 4 G 70.0                                          | 43.0                | 2688                 | 4052           |
| 0011207        | 4 G 95.0                                          | 47.2                | 3648                 | 5430           |
| 0011208        | 4 G 120.0                                         | 51.0                | 4608                 | 6290           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



**Info**

- Conductor cross-section up to 120 mm<sup>2</sup>
- Further items with 0,75 mm<sup>2</sup>: see ÖLFLEX® 150 CY
- Oil-resistant according to EN 50363-4-1: TM5

**Benefits**

- High electrical performance due to 4 kV test voltage
- Multifunctional application possibilities

**Application range**

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- In EMC-sensitive environments (electromagnetic compatibility)
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (similar to RAL 7001)

**Technical data**

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-334
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
HAR U0/U: 300/500 V  
UL/CSA: 600 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation: -40°C to +70°C  
UL/CSA: +90°C

| Article number        | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 195 CY</b> |                                                   |                     |                      |                |
| 1146100               | 7 G 0.75                                          | 9                   | 72.55                | 131            |
| 1146101               | 2 X 1.0                                           | 6.9                 | 34.06                | 64             |
| 1146102               | 3 G 1.0                                           | 7.3                 | 44.97                | 79             |
| 1146103               | 4 G 1.0                                           | 7.9                 | 56.81                | 96             |
| 1146104               | 5 G 1.0                                           | 8.6                 | 68.81                | 113            |
| 1146105               | 7 G 1.0                                           | 9.5                 | 90.59                | 147            |
| 1146106               | 12 G 1.0                                          | 12.5                | 155.6                | 249            |
| 1146107               | 18 G 1.0                                          | 14.9                | 215.33               | 343            |
| 1146108               | 25 G 1.0                                          | 17.2                | 293.26               | 462            |
| 1146113               | 2 X 1.5                                           | 7.5                 | 46.51                | 80             |
| 1146114               | 3 G 1.5                                           | 7.9                 | 62.58                | 100            |
| 1146115               | 4 G 1.5                                           | 8.6                 | 79.37                | 124            |
| 1146116               | 5 G 1.5                                           | 9.4                 | 96.51                | 147            |
| 1146117               | 7 G 1.5                                           | 10.4                | 127.97               | 191            |
| 1146118               | 9 G 1.5                                           | 13.1                | 169.7                | 259            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1146119        | 12 G 1.5                                          | 14                  | 214.14               | 318            |
| 1146120        | 14 G 1.5                                          | 14.6                | 245.57               | 361            |
| 1146121        | 18 G 1.5                                          | 16.5                | 309.6                | 462            |
| 1146122        | 25 G 1.5                                          | 19.4                | 420.89               | 618            |
| 1146127        | 3 G 2.5                                           | 8.8                 | 95.06                | 136            |
| 1146128        | 4 G 2.5                                           | 9.5                 | 128.05               | 177            |
| 1146129        | 5 G 2.5                                           | 10.5                | 155.99               | 211            |
| 1146130        | 7 G 2.5                                           | 11.6                | 208.62               | 275            |
| 1146131        | 12 G 2.5                                          | 16                  | 338.24               | 465            |
| 1146132        | 18 G 2.5                                          | 18.7                | 492.69               | 653            |
| 1146137        | 4 G 4                                             | 11.1                | 192.56               | 249            |
| 1146138        | 5 G 4                                             | 12.2                | 235.05               | 296            |
| 1146139        | 7 G 4                                             | 13.7                | 312.21               | 380            |
| 1146144        | 4 G 6                                             | 13.1                | 271.43               | 333            |
| 1146145        | 5 G 6                                             | 15.3                | 333.14               | 436            |
| 1146146        | 7 G 6                                             | 16.6                | 454.22               | 561            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® 191 CY

Screened and oil-resistant multi-standard cable with AWM approval



### Info

- Conductor cross-section up to 120 mm<sup>2</sup>
- Further items with 0,75 mm<sup>2</sup>: see ÖLFLEX® 150 CY
- Oil-resistant according to EN 50363-4-1: TM5

### Benefits

- High electrical performance due to 4 kV test voltage
- Multifunctional application possibilities

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- In EMC-sensitive environments (electromagnetic compatibility)
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 § 1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1:TM5
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

### Norm references / Approvals

- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- Aluminum-coated foil
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (similar to RAL 7001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

HAR U0/U: 300/500 V  
UL/CSA: 600 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation: -40°C to +70°C  
UL/CSA: +90°C

| Article number        | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 191 CY</b> |                                                   |                     |                      |                |
| 0011234               | 7 G 0.75                                          | 10.5                | 85.9                 | 187            |
| 0011202               | 2 X 1.0                                           | 8.4                 | 48                   | 126            |
| 0011180               | 3 G 1.0                                           | 8.8                 | 55.8                 | 122            |
| 0011181               | 4 G 1.0                                           | 9.6                 | 80.8                 | 157            |
| 0011182               | 5 G 1.0                                           | 10.3                | 89.4                 | 183            |
| 0011183               | 7 G 1.0                                           | 11.2                | 99.9                 | 207            |
| 0011184               | 12 G 1.0                                          | 14.6                | 175.7                | 342            |
| 0011185               | 18 G 1.0                                          | 17.0                | 241.7                | 472            |
| 0011186               | 25 G 1.0                                          | 20.1                | 341.7                | 648            |
| 0011302               | 2 X 1.5                                           | 9.0                 | 64.7                 | 156            |
| 0011187               | 3 G 1.5                                           | 9.6                 | 89.1                 | 166            |
| 0011188               | 4 G 1.5                                           | 10.3                | 96.6                 | 191            |
| 0011189               | 5 G 1.5                                           | 11.3                | 111.2                | 222            |
| 0011190               | 7 G 1.5                                           | 12.1                | 145.2                | 270            |
| 0011287               | 9 G 1.5                                           | 15.4                | 224                  | 415            |
| 0011191               | 12 G 1.5                                          | 16.1                | 257                  | 464            |
| 0011288               | 14 G 1.5                                          | 16.7                | 326                  | 620            |
| 0011192               | 18 G 1.5                                          | 18.7                | 382.8                | 679            |
| 0011193               | 25 G 1.5                                          | 23.0                | 546.2                | 952            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0011194        | 3 G 2.5                                           | 10.8                | 111.1                | 221            |
| 0011195        | 4 G 2.5                                           | 11.4                | 140.6                | 269            |
| 0011196        | 5 G 2.5                                           | 12.9                | 167.3                | 325            |
| 0011197        | 7 G 2.5                                           | 14.1                | 240                  | 421            |
| 30010542       | 12 G 2.5                                          | 17.9                | 414.9                | 769            |
| 30010543       | 18 G 2.5                                          | 22.0                | 626.1                | 1102           |
| 30010544       | 4 G 4.0                                           | 13.6                | 236.7                | 462            |
| 30010545       | 5 G 4.0                                           | 14.9                | 277.8                | 535            |
| 30010546       | 7 G 4.0                                           | 16.2                | 393.4                | 735            |
| 30010548       | 4 G 6.0                                           | 15.8                | 317.1                | 574            |
| 3023130        | 5 G 6.0                                           | 17.3                | 413.7                | 737            |
| 30010547       | 7 G 6.0                                           | 18.8                | 563.8                | 950            |
| 3023131        | 4 G 10.0                                          | 19.5                | 550.4                | 946            |
| 30010639       | 4 G 16.0                                          | 24.7                | 819.1                | 1189           |
| 3023132        | 4 G 25.0                                          | 28.7                | 1165                 | 1692           |
| 30010928       | 4 G 35.0                                          | 32.0                | 1683                 | 2700           |
| 3026535        | 4 G 50.0                                          | 39.7                | 2342                 | 3362           |
| 3025946        | 4 G 70.0                                          | 44.8                | 3229                 | 4490           |
| 3025947        | 4 G 95.0                                          | 50.0                | 4010                 | 5540           |
| 3026536        | 4 G 120.0                                         | 55.4                | 5012                 | 6960           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CONTROL TM

ÖLFLEX® Control Cable PVC 0.6/1kV UL TC-ER WTTTC AWM1000V WET OIL RES I+II CSA AWM



### Info

- Torsion resistant for drip loops
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- (UL) SUN. RES. + 75C WET

### Benefits

- Many certifications/ use types
- Cost-saving, fast installation omitting protection systems
- 75°C WET Rating + Sunlight Resistant Rating: Outdoor use in the USA

### Application range

- Industrial machinery, plant engineering in the USA
- Compliant with Tool machines: (UL) MTW
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- USA Wind Turbine Tray Cable (WTTTC) for Wind Turbine Generators
- Outdoor use and Direct Burial in the USA, per UL 1277

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Technically resistant to sunlight and ozone

### Norm references / Approvals

- USA: (UL) TC [E171371], -ER > 2 conductors, (UL) MTW [E155920], (UL) WTTTC [E323700], (UL) THHN/THWN (> 1.5 mm<sup>2</sup>/16 AWG) [E172162], UL AWM Style 20886 [E100338]
- Sunlight Resistant (Sun. Res.), Direct Burial (Dir. Bur.), Submersible Pump Cable (> 1.5 mm<sup>2</sup>/16 AWG, and < 8 conductors), (UL) PLTC (< 6 mm<sup>2</sup>/10 AWG) [E216027], (UL) ITC (< 6 mm<sup>2</sup>/10 AWG) [E196134], (UL) DP-1 [E233406]
- UL OIL RES I/ II, 75°C WET, 90°C DRY, NEC/NFPA 70, NFPA 79
- CAN: c(UL) CIC/TC-ER 600V FT4 [E171371], CSA AWM I/II A/B FT 1

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC with nylon sheath (PA skin)
- Outer jacket: Specially formulated thermoplastic polymer
- Color of the outer jacket: Gray

### Technical data

|  |                                                                                                                                                    |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable                              |
|  | <b>Core identification code</b><br>Black with white numbers                                                                                        |
|  | <b>Conductor stranding</b><br>Fine-wire, bare copper strand                                                                                        |
|  | <b>Torsion movement in WTG</b><br>TW-0 & TW-2, refer to Appendix TO                                                                                |
|  | <b>Minimum bending radius</b><br>Static/Occ. moved: 5/15xOD*                                                                                       |
|  | <b>Nominal voltage</b><br>UL/CSA: 600 V (TC, MTW, CIC),<br>WTTTC 1000 V<br>UL AWM: 600 V<br>CSA AWM: 1000 V<br>IEC: U <sub>0</sub> /U = 600/1000 V |
|  | <b>Test voltage</b><br>2000 V                                                                                                                      |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                                             |
|  | <b>Temperature range</b><br>-40°C (static) / -25°C (occ. moved) to<br>+90°C (AWM: +105°C)                                                          |

| Article number            | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|---------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CONTROL TM</b> |                                                   |                     |                      |                |
| 281803                    | 3 G 1.0                                           | 7.4                 | 28.8                 | 82             |
| 281804                    | 4 G 1.0                                           | 8.0                 | 38.4                 | 95             |
| 281805                    | 5 G 1.0                                           | 8.6                 | 48                   | 112            |
| 281807                    | 7 G 1.0                                           | 9.3                 | 67                   | 144            |
| 281812                    | 12 G 1.0                                          | 12.0                | 115                  | 247            |
| 281818                    | 18 G 1.0                                          | 14.7                | 173                  | 365            |
| 281825                    | 25 G 1.0                                          | 16.7                | 240                  | 464            |
| 281602                    | 2 X 1.5                                           | 7.3                 | 28.8                 | 74             |
| 281603                    | 3 G 1.5                                           | 8.1                 | 43                   | 100            |
| 281604                    | 4 G 1.5                                           | 8.8                 | 58                   | 119            |
| 281605                    | 5 G 1.5                                           | 9.5                 | 72                   | 141            |
| 281607                    | 7 G 1.5                                           | 10.3                | 101                  | 183            |
| 281609                    | 9 G 1.5                                           | 11.9                | 129.6                | 247            |
| 281612                    | 12 G 1.5                                          | 14.1                | 172.8                | 328            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 281618         | 18 G 1.5                                          | 16.4                | 259                  | 403            |
| 281625         | 25 G 1.5                                          | 18.6                | 360                  | 596            |
| 281403         | 3 G 2.5                                           | 8.9                 | 72                   | 125            |
| 281404         | 4 G 2.5                                           | 9.8                 | 96                   | 175            |
| 281405         | 5 G 2.5                                           | 10.7                | 120                  | 185            |
| 281407         | 7 G 2.5                                           | 11.6                | 168                  | 244            |
| 281203         | 3 G 4.0                                           | 10.6                | 115                  | 165            |
| 281204         | 4 G 4.0                                           | 11.5                | 154                  | 220            |
| 281205         | 5 G 4.0                                           | 12.6                | 192                  | 269            |
| 281207         | 7 G 4.0                                           | 14.6                | 269                  | 482            |
| 281004         | 4 G 6.0                                           | 14.5                | 231                  | 382            |
| 281005         | 5 G 6.0                                           | 15.8                | 288                  | 457            |
| 280804         | 4 G 10.0                                          | 17.7                | 384                  | 615            |
| 280805         | 5 G 10.0                                          | 19.4                | 480                  | 771            |
| 280604         | 4 G 16.0                                          | 22.5                | 615                  | 864            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CONTROL TM CY

ÖLFLEX® Control Cable PVC Screened 0.6/1kV UL TC-ER WTTTC AWM600V OIL RES CSA AWM

**Info**

- Torsion resistant for drip loops
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- EMC/Screened



### Benefits

- Many certifications/ use types
- Cost-saving, fast installation omitting protection systems
- Electromagnetic field screening
- 75°C WET Rating + Sunlight Resistant Rating: Outdoor use in the USA

### Application range

- Industrial machinery, plant engineering in the USA
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- Compliant with Tool machines: (UL) MTW
- USA Wind Turbine Tray Cable (WTTTC) for Wind Turbine Generators
- Outdoor use and Direct Burial in the USA, per UL 1277

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Technically resistant to sunlight and ozone
- High degree of screening low transfer impedance (max. 250 Ω/km at 30 MHz)
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- USA: (UL) TC [E171371], -ER > 2 conductors, (UL) MTW [E155920], (UL) WTTTC [E323700], (UL) THHN/THWN (> 1.5 mm²/ 16 AWG) [E172162], UL AWM Style 20886 [E100338]
- Sunlight Resistant (Sun. Res.), Direct Burial (Dir. Bur.), Submersible Pump Cable (> 1.5 mm²/ 16 AWG, and < 8 conductors), (UL) PLTC (< 6 mm²/ 10 AWG) [E216027], (UL) ITC (< 6 mm²/ 10 AWG) [E196134], (UL) DP-1 [E233406]
- UL OIL RES I/ II, 75°C WET, 90°C DRY, NEC/NFPA 70, NFPA 79
- CAN: c(UL) CIC/TC-ER 600V FT4 [E171371], CSA AWM I/II A/B FT1

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC with nylon sheath (PA skin)
- Aluminum-coated foil
- Tinned-copper braiding
- Outer jacket: Specially formulated thermoplastic polymer
- Color of the outer jacket: Gray

### Technical data

**Classification ETIM 5/6**  
 ETIM 5.0/6.0 Class-ID: EC000104  
 ETIM 5.0/6.0 Class-Description:  
 Control cable

**Core identification code**  
 Black with white numbers

**Conductor stranding**  
 Fine-wire, bare copper strand

**Torsion movement in WTG**  
 TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
 Static/Occ. moved: 5/20 x OD\*

**Nominal voltage**  
 UL/CSA: 600 V (TC, MTW, CIC), WTTTC 1000 V  
 UL AWM: 600 V  
 CSA AWM: 1000 V  
 IEC: U<sub>0</sub>/U = 600/1000 V

**Test voltage**  
 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 -40°C (static)/ -25°C (occ. moved) to +90°C (AWM: +105°C)

| Article number               | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CONTROL TM CY</b> |                                       |                     |                      |                |
| 281803CY                     | 3 G 1.0                               | 8.1                 | 49.5                 | 119            |
| 281804CY                     | 4 G 1.0                               | 8.6                 | 60.2                 | 137            |
| 281805CY                     | 5 G 1.0                               | 9.3                 | 81.4                 | 149            |
| 281807CY                     | 7 G 1.0                               | 10.0                | 101.1                | 193            |
| 281812CY                     | 12 G 1.0                              | 12.8                | 161.4                | 281            |
| 281818CY                     | 18 G 1.0                              | 15.5                | 228.2                | 438            |
| 281825CY                     | 25 G 1.0                              | 17.5                | 326.4                | 574            |
| 281603CY                     | 3 G 1.5                               | 8.8                 | 65                   | 144            |
| 281604CY                     | 4 G 1.5                               | 9.4                 | 81.9                 | 173            |
| 281605CY                     | 5 G 1.5                               | 10.2                | 99.1                 | 189            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 281607CY       | 7 G 1.5                               | 11.1                | 140.4                | 246            |
| 281612CY       | 12 G 1.5                              | 15.0                | 225.2                | 426            |
| 281618CY       | 18 G 1.5                              | 17.2                | 321.7                | 552            |
| 281403CY       | 3 G 2.5                               | 9.7                 | 105.7                | 180            |
| 281404CY       | 4 G 2.5                               | 10.4                | 135.6                | 223            |
| 281405CY       | 5 G 2.5                               | 11.5                | 160.3                | 268            |
| 281407CY       | 7 G 2.5                               | 12.4                | 213                  | 327            |
| 281204CY       | 4 G 4.0                               | 12.3                | 198.5                | 315            |
| 281205CY       | 5 G 4.0                               | 14.2                | 242.7                | 388            |
| 281004CY       | 4 G 6.0                               | 15.3                | 284.2                | 552            |
| 280804CY       | 4 G 10.0                              | 18.5                | 458.4                | 857            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).  
 Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
 \*OD = Outer diameter



## ÖLFLEX® TRAY II

ÖLFLEX® Control Cable 0.6/1 kV, UL TC-ER 600V MTW AWM WET OIL/ SUN RES CSA TRAY



### Info

- Torsion resistant for drip loops
- Broad application range (NFPA 70/NEC), NFPA 79 compliance
- Outdoor use in USA

### Technical data

|  |                                                                                                                                       |
|--|---------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable                 |
|  | <b>Core identification code</b><br>Black with white numbers                                                                           |
|  | <b>Conductor stranding</b><br>Fine copper wire strands                                                                                |
|  | <b>Torsion movement in WTG</b><br>TW-0 & TW-2, refer to Appendix T0                                                                   |
|  | <b>Minimum bending radius</b><br>Static/Occ. moved: 5/15 x OD*                                                                        |
|  | <b>Nominal voltage</b><br>UL/CSA: 600 V (TC, MTW, CIC),<br>WTTT 1000 V<br>UL/CSA: 1000 V (AWM)<br>IEC: U <sub>0</sub> /U = 600/1000 V |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                                |
|  | <b>Temperature range</b><br>-40°C (static)/ -25°C (occ. moved) to<br>+90°C (AWM: +105°C)                                              |

### Benefits

- Cost-saving, fast installation omitting protection systems
- Many certifications/ use types
- 75°C WET Rating + Sunlight Resistant Rating: Outdoor use in the USA

### Application range

- Industrial machinery, plant engineering in the USA
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- Compliant with Tool machines: (UL) MTW
- Outdoor use and Direct Burial in the USA, per UL 1277
- USA Wind Turbine Tray Cable (WTTT) for Wind Turbine Generators

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II

- Water-resistant, UL 75°C WET rating
- UV resistant (SUN RES), Ozone resistant
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- USA: (UL) TC-ER [E171371], (UL) MTW [E155920], (UL) WTTT [E323700], Submersible Pump (14 - 2 AWG), (UL) PLTC-ER (18 - 12 AWG) [E216027], (UL) ITC-ER (18 - 12 AWG) [E196134], (UL) DP-1 [E233406], UL AWM (18 - 2 AWG) [E100338]
- UL OIL RES I/ II, 75°C WET, 90°C DRY, SUN RES, DIR BUR, NEC/NFPA 70, NFPA 79
- CAN: c(UL) CIC/TC-ER 600V FT4 (< 250 kcmil) [E171371], CSA AWM I/II A/B FT1

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC+nylon sheath (PA skin)
- Outer jacket: Specially formulated thermoplastic polymer
- Color of the outer jacket: Black

| Article number         | Number of cores and mm <sup>2</sup> per conductor | AWG per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------|---------------------------------------------------|-------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® Tray II</b> |                                                   |                   |                     |                      |                |
| 221803                 | 3 G 1.0                                           |                   | 7.5                 | 28.8                 | 85             |
| 221804                 | 4 G 1.0                                           |                   | 8.1                 | 38.4                 | 98             |
| 221805                 | 5 G 1.0                                           |                   | 8.8                 | 48                   | 115            |
| 221807                 | 7 G 1.0                                           |                   | 9.5                 | 67                   | 149            |
| 221812                 | 12 G 1.0                                          |                   | 12.1                | 115                  | 255            |
| 221818                 | 18 G 1.0                                          |                   | 14.9                | 173                  | 365            |
| 221825                 | 25 G 1.0                                          |                   | 16.9                | 240                  | 479            |
| 221603                 | 3 G 1.5                                           |                   | 8.3                 | 43                   | 103            |
| 221604                 | 4 G 1.5                                           |                   | 8.9                 | 58                   | 124            |
| 221605                 | 5 G 1.5                                           |                   | 9.7                 | 72                   | 146            |
| 221607                 | 7 G 1.5                                           |                   | 10.5                | 101                  | 189            |
| 221609                 | 9 G 1.5                                           |                   | 12.1                | 130                  | 255            |
| 221612                 | 12 G 1.5                                          |                   | 14.4                | 173                  | 328            |
| 221618                 | 18 G 1.5                                          |                   | 16.6                | 259                  | 431            |
| 221625                 | 25 G 1.5                                          |                   | 18.8                | 360                  | 592            |
| 221641                 | 41 G 1.5                                          |                   | 25.0                | 591                  | 931            |
| 221403                 | 3 G 2.5                                           |                   | 9.2                 | 72                   | 130            |
| 221404                 | 4 G 2.5                                           |                   | 10.0                | 96                   | 159            |
| 221405                 | 5 G 2.5                                           |                   | 10.8                | 120                  | 224            |
| 221407                 | 7 G 2.5                                           |                   | 11.8                | 168                  | 252            |
| 221412                 | 12 G 2.5                                          |                   | 16.2                | 288                  | 459            |
| 221418                 | 18 G 2.5                                          |                   | 18.7                | 432                  | 654            |
| 221425                 | 25 G 2.5                                          |                   | 22.5                | 600                  | 874            |
| 221204                 | 4 G 4.0                                           |                   | 11.7                | 153                  | 226            |
| 221205                 | 5 G 4.0                                           |                   | 12.8                | 192                  | 279            |
| 221004                 | 4 G 6.0                                           |                   | 14.7                | 231                  | 394            |
| 221005                 | 5 G 6.0                                           |                   | 16.0                | 288                  | 472            |
| 221007                 | 7 G 6.0                                           |                   | 17.4                | 405                  | 661            |
| 220804                 | 4 G 10.0                                          |                   | 17.9                | 384                  | 615            |
| 220805                 | 5 G 10.0                                          |                   | 19.6                | 480.6                | 771            |
| 220604                 | 4 G 16.0                                          |                   | 22.8                | 615                  | 864            |
| 220605                 | 5 G 16.0                                          |                   | 24.9                | 768                  | 1080           |
| 220404                 | 4 G                                               | 4                 | 27.8                | 960                  | 1418           |
| 220204                 | 4 G                                               | 2                 | 32.3                | 1344                 | 2077           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products. / \*OD = Outer diameter



## ÖLFLEX® TRAY II CY

ÖLFLEX® Control Cable 0.6/1 kV, UL TC-ER 600V AWM WET OIL/ SUN RES TRAY Screened



## Info

- Outdoor use in USA
- Broad application range (NFPA 70/NEC), NFPA 79 compliance
- EMC/Screened

## Benefits

- Many certifications/ use types
- Cost-saving, fast installation omitting protection systems
- 75°C WET Rating + Sunlight Resistant Rating: Outdoor use in the USA
- Electromagnetic field screening

## Application range

- Industrial machinery, plant engineering in the USA
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- Compliant with Tool machines: (UL) MTW
- Outdoor use and Direct Burial in the USA, per UL 1277
- USA Wind Turbine Tray Cable (WTTC) for Wind Turbine Generators

## Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Water-resistant, UL 75°C WET rating

LAPP KABEL STUTTGART ÖLFLEX® TRAY II CY (B) (UL) TC-ER 16 AWG/SC 90 °C DRY 75 °C WET 600 V  
SUN RES DIR BUR or MTW E 171371--c(UL) CIC FT4--CSA AWM II A/B 90C 600V FT4 LL74246

- UV resistant (SUN RES), Ozone resistant
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

## Norm references / Approvals

- USA: (UL) TC-ER [E171371], (UL) MTW [E155920], (UL) WTTC [E323700], Submersible Pump (14 - 2 AWG), (UL) PLTC-ER (18 - 12 AWG) [E216027], (UL) ITC-ER (18 - 12 AWG) [E196134], (UL) DP-1 [E233406], UL AWM (18 - 2 AWG) [E100338]
- UL OIL RES I/ II, 75°C WET, 90°C DRY, SUN RES, DIR BUR, NEC/NFPA 70, NFPA 79
- CAN: c(UL) CIC/TC-ER 600V FT4 (< 250 kcmil) [E171371], CSA AWM I/II A/B FT1

## Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC+nylon sheath (PA skin)
- Aluminum-coated foil
- Tinned-copper braiding
- Outer jacket: Specially formulated thermoplastic polymer
- Color of the outer jacket: Black

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



## Core identification code

Black with white numbers



## Conductor stranding

Fine copper wire strands



## Torsion movement in WTG

TW-0 & TW-2, refer to Appendix T0



## Minimum bending radius

Static/Occ. moved: 5/20 x OD\*



## Nominal voltage

UL/CSA: 600 V (TC, MTW, CIC),  
WTTC 1000 V

UL/CSA: 1000 V (AWM)

IEC: U<sub>0</sub>/U = 600/1000 V



## Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



## Temperature range

-40°C (static)/ -25°C (occ. moved) to  
+90°C (AWM: +105°C)

| Article number     | Number of cores and mm <sup>2</sup> per conductor | AWG per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------|---------------------------------------------------|-------------------|---------------------|----------------------|----------------|
| ÖLFLEX® Tray II CY |                                                   |                   |                     |                      |                |
| 2218030            | 3 G 1.0                                           |                   | 8.2                 | 35.1                 | 119            |
| 2218040            | 4 G 1.0                                           |                   | 8.8                 | 55.2                 | 137            |
| 2218050            | 5 G 1.0                                           |                   | 9.4                 | 65.8                 | 149            |
| 2218070            | 7 G 1.0                                           |                   | 10.1                | 86.9                 | 193            |
| 2218120            | 12 G 1.0                                          |                   | 12.9                | 149.3                | 330            |
| 2218180            | 18 G 1.0                                          |                   | 15.7                | 214.2                | 438            |
| 2218250            | 25 G 1.0                                          |                   | 17.7                | 354.2                | 574            |
| 2216030            | 3 G 1.5                                           |                   | 8.9                 | 59.8                 | 144            |
| 2216040            | 4 G 1.5                                           |                   | 9.6                 | 74.5                 | 173            |
| 2216050            | 5 G 1.5                                           |                   | 10.3                | 93.5                 | 189            |
| 2216070            | 7 G 1.5                                           |                   | 11.3                | 130.5                | 246            |
| 2216120            | 12 G 1.5                                          |                   | 15.1                | 213.8                | 426            |
| 2216180            | 18 G 1.5                                          |                   | 17.3                | 312.4                | 515            |
| 2216250            | 25 G 1.5                                          |                   | 19.6                | 415.6                | 708            |
| 2214030            | 3 G 2.5                                           |                   | 9.8                 | 91.2                 | 180            |
| 2214040            | 4 G 2.5                                           |                   | 10.7                | 125.7                | 223            |
| 2214050            | 5 G 2.5                                           |                   | 11.6                | 150.1                | 268            |
| 2214070            | 7 G 2.5                                           |                   | 12.5                | 201.2                | 327            |
| 2214120            | 12 G 2.5                                          |                   | 16.9                | 333.6                | 595            |
| 2214180            | 18 G 2.5                                          |                   | 19.5                | 487.6                | 784            |
| 2214250            | 25 G 2.5                                          |                   | 23.3                | 685.1                | 1048           |
| 2212040            | 4 G 4.0                                           |                   | 12.5                | 186.4                | 315            |
| 2212070            | 7 G 4.0                                           |                   | 15.5                | 310.2                | 499            |
| 2210040            | 4 G 6.0                                           |                   | 15.5                | 271.7                | 552            |
| 2208040            | 4 G 10.0                                          |                   | 18.7                | 438.6                | 857            |
| 2206040            | 4 G 16.0                                          |                   | 23.3                | 699                  | 1208           |
| 2204040            | 4 G                                               | 4                 | 28.6                | 1296.8               | 1982           |
| 2202040            | 4 G                                               | 2                 | 33.2                | 1899.5               | 2903           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables



Various applications • PVC sheath, certified



## ÖLFLEX® POWER MULTI

Flexible, oil resistant Power Cord: (UL) listed for Tray + Extra-hard usage per NEC; NFPA 79



### Info

- Flexible Cord STOOW for NEC Extra-hard usage in the USA
- Broad application range (NFPA 70/NEC), NFPA 79 compliance
- FT4 + OIL RES I/II

### Benefits

- Suitability for different operation types and locations in the USA as per NFPA/ NEC under one LAPP part number, thanks to UL listings (UL) STOOW and (UL) TC, resp. TC-ER, as well as thanks to design and characteristics associated with these listings
- Apart from unprotected laying on tray in the USA thanks to TC(-ER) listing: ...further, normatively specified, unprotected wiring methods in the USA per application related NEC Articles, thanks to (UL) listing STOOW/ Extra-hard usage Flexible Cord

### Application range

- Industrial machinery, plant engineering in the USA
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- As per Article 400 of NEC/ NFPA 70: General Uses Permitted in the USA and General Uses Not Permitted to the overall group of Flexible Cords and Flexible Cables acc. to UL 62; Operating bids and limitations for Flexible Cords in special applications acc. to further NEC Articles, such as 501 (Class I Locations), 422 (Appliances), or 520 (specific locations for play and production of entertainment), etc.
- Further, typical locations in the USA, as specified by respective US installation standardization (e.g., NEC/ NFPA 70): Power cord for equipment, paint booths, appliances, factory installations (branch circuit), any power hook-up in the plant, for harnessed power connecting or extension cord set assemblies
- In hazardous locations in the USA, as per Chapter 5 of NEC/ NFPA 70: Classes I thru III, Divisions 1 and 2 each, plus intrinsically safe circuits, taking account of:
  - Provisions on cable design, cable type, installation, application in NEC Chapter 5 (esp.: Articles 500 thru 504);
  - This cable's design, approvals, component identification

### Product features

- Highly flame retardant FT4
- Highly oil resistant OIL RES I/II
- Tested sunlight resistant per UL 1277, UL 62, UL 2556 in terms of UV resistance
- Tested for unprotected, direct burial in the USA per UL 1277

### Norm references / Approvals

- Certified by UL per UL 1277 for TC 600V use in the USA, subject to individual third-party inspection: Generally UL Type TC (Tray Cable), and for at least 3 or more conductors TC-ER (Tray Cable for Exposed Run) in addition [UL CCN: QPOR; UL File No.: E171371]
- Certified by UL per UL 62 for STOOW use in the USA, subject to individual third-party inspection: UL Type STOOW (Extra-hard usage Flexible Cord) [UL CCN: ZJCZ; UL File No.: E146118]
- Certified by UL per CSA C22.2 No. 239, and CSA C22.2 No. 230 for possible CIC/ TC use in Canada, subject to individual third-party inspection: c(UL) CIC/TC-ER FT4 [UL CCN: QPOR7; UL File No.: E171371]
- Certified by UL per CSA C22.2 No. 49 for STOOW use in Canada, subject to individual third-party inspection: c(UL) STOOW [UL CCN: ZJCZ7; UL File No.: E146118]
- Certified by CSA per CSA C22.2 No. 210 for AWM use in Canada, subject to individual third-party inspection: CSA AWM II A/B FT4

### Product Make-up

- Fine-wire strand made of bare copper wires
- Specially formulated PVC insulation
- Durable, black sheath made of specially formulated thermoplastic polymer for improved service life

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC001578  
ETIM 5.0/6.0 Class-Description: Flexible cable



#### Core identification code

- Coloured conductors with numbers, plus ground in green/yellow (30 % stripe width);
- For 2-conductor cable only: No green/ yellow ground
- Example 3 conductors: BLACK conductor: "1 - ONE" WHITE conductor: "2 - TWO" GREEN/YELLOW conductor: No Numbers
- Colour code: 2C: Black, White 3C: Black, White, Green-Yellow 4C: Black, White, Red, Green-Yellow 5C: Black, White, Red, Brown, Green-Yellow 6C or more: Black with white numbers, except for the included Green-Yellow ground



#### Conductor stranding

Fine wire according to DIN EN 60228 (VDE 0295), class 5 / IEC 60228 class 5



#### Minimum bending radius

Installation: 4 x outer diameter



#### Nominal voltage

UL/CSA TC/STOOW: 600 V  
IEC U0/U: 300/500 V



#### Test voltage

2000 V



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

UL/CSA TC: -25°C to +90°C;  
Occasional flexing/ North America: -25°C to +105°C;  
Fixed installation/ North America: -40°C to 105°C

| Article number             | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® POWER MULTI</b> |                                                   |                     |                      |                |
| 611803                     | 3 G 1.0                                           | 9.4                 | 29.763               | 92             |
| 611804                     | 4 G 1.0                                           | 10.1                | 38.692               | 106            |
| 611805                     | 5 G 1.0                                           | 12.0                | 49.109               | 122            |
| 611603                     | 3 G 1.5                                           | 10.1                | 43.157               | 110            |
| 611604                     | 4 G 1.5                                           | 10.9                | 58.038               | 128            |
| 611605                     | 5 G 1.5                                           | 12.9                | 72.027               | 153            |
| 611612                     | 12 G 1.5                                          | 18.3                | 172.775              | 330            |
| 611618                     | 18 G 1.5                                          | 20.9                | 259.237              | 440            |
| 611625                     | 25 G 1.5                                          | 24.5                | 360.134              | 598            |
| 611403                     | 3 G 2.5                                           | 13.8                | 72.027               | 137            |
| 611404                     | 4 G 2.5                                           | 14.8                | 96.73                | 167            |
| 611405                     | 5 G 2.5                                           | 16.8                | 120.541              | 198            |
| 611203                     | 3 G 4.0                                           | 16.0                | 115.183              | 188            |
| 611205                     | 5 G 4.0                                           | 18.8                | 191.972              | 286            |
| 611003                     | 3 G 6.0                                           | 17.2                | 172.775              | 342            |
| 611004                     | 4 G 6.0                                           | 18.6                | 230.664              | 402            |
| 610803                     | 3 G 10.0                                          | 21.3                | 288.702              | 641            |
| 610804                     | 4 G 10.0                                          | 24.0                | 383.944              | 844            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

\*OD = Outer diameter



## ÖLFLEX® CLASSIC 110 H

Halogen-free control cable, oil resistant and very flexible

### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- High flexibility and oil-resistance
- VDE-certified

### Benefits

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features
- Certified for maritime applications

### Application range

- Public buildings like airports or railway stations
- Plant engineering, Industrial machinery Heating and air-conditioning systems Stage applications
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Intended for use under the European Construction Product Regulation (CPR), refer to catalogue appendix T 14
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- UL Cable Flame Test
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5) and UL OIL RES I and UL OIL RES II
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 119-14 HH

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Outer sheath: Special halogen-free compound, grey (similar to RAL 7001)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-334
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U0/U: 300/500 V  
UL: 600 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -30°C to +70°C (UL: +75°C)  
Fixed installation: -40°C to +80°C (UL: +75°C)

| Article number                               | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 110 H U0/U: 300/500 V</b> |                                                   |                     |                      |                |
| 10019900                                     | 2 X 0.5                                           | 5.1                 | 9.6                  | 41             |
| 10019901                                     | 3 G 0.5                                           | 5.4                 | 14.4                 | 49             |
| 10019902                                     | 3 X 0.5                                           | 5.4                 | 14.4                 | 49             |
| 10019903                                     | 4 G 0.5                                           | 5.8                 | 19.2                 | 58             |
| 10019904                                     | 4 X 0.5                                           | 5.8                 | 19.2                 | 58             |
| 10019905                                     | 5 G 0.5                                           | 6.3                 | 24                   | 69             |
| 10019906                                     | 7 G 0.5                                           | 6.9                 | 33.6                 | 87             |
| 10019907                                     | 12 G 0.5                                          | 9.1                 | 57.6                 | 141            |
| 10019910                                     | 2 X 0.75                                          | 5.5                 | 14.4                 | 51             |
| 10019911                                     | 3 G 0.75                                          | 5.8                 | 21.6                 | 61             |
| 10019912                                     | 3 X 0.75                                          | 5.8                 | 21.6                 | 61             |
| 10019913                                     | 4 G 0.75                                          | 6.3                 | 28.8                 | 73             |
| 10019914                                     | 4 X 0.75                                          | 6.3                 | 28.8                 | 73             |
| 10019915                                     | 5 G 0.75                                          | 6.9                 | 36                   | 87             |
| 10019916                                     | 5 X 0.75                                          | 6.9                 | 36                   | 87             |
| 10019917                                     | 7 G 0.75                                          | 7.5                 | 50.4                 | 111            |
| 10019918                                     | 7 X 0.75                                          | 7.5                 | 50.4                 | 111            |
| 10019919                                     | 9 G 0.75                                          | 9.6                 | 64.8                 | 150            |
| 10019920                                     | 12 G 0.75                                         | 10.1                | 86.4                 | 186            |
| 10019921                                     | 18 G 0.75                                         | 12.0                | 129.6                | 265            |
| 10019922                                     | 25 G 0.75                                         | 14.1                | 180                  | 365            |
| 10019960                                     | 2 X 1.0                                           | 5.8                 | 19.2                 | 59             |
| 10019961                                     | 3 G 1.0                                           | 6.1                 | 28.8                 | 72             |
| 10019962                                     | 3 X 1.0                                           | 6.1                 | 28.8                 | 72             |
| 10019963                                     | 4 G 1.0                                           | 6.6                 | 38.4                 | 87             |
| 10019964                                     | 4 X 1.0                                           | 6.6                 | 38.4                 | 87             |
| 10019965                                     | 5 G 1.0                                           | 7.3                 | 48                   | 104            |
| 10019967                                     | 7 G 1.0                                           | 8.1                 | 67.2                 | 138            |
| 10019968                                     | 8 G 1.0                                           | 9.7                 | 76.8                 | 164            |
| 10019969                                     | 12 G 1.0                                          | 10.7                | 115.2                | 225            |
| 10019970                                     | 14 G 1.0                                          | 11.4                | 134.4                | 261            |
| 10019971                                     | 18 G 1.0                                          | 12.9                | 172.8                | 328            |
| 10019972                                     | 25 G 1.0                                          | 15.0                | 240                  | 445            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 10019973       | 41 G 1.0                                          | 19.2                | 393.6                | 719            |
| 10019930       | 2 X 1.5                                           | 6.4                 | 28.8                 | 76             |
| 10019931       | 3 G 1.5                                           | 6.8                 | 43.2                 | 94             |
| 10019980       | 3 X 1.5                                           | 6.8                 | 43.2                 | 94             |
| 10019932       | 4 G 1.5                                           | 7.4                 | 57.6                 | 115            |
| 10019933       | 5 G 1.5                                           | 8.3                 | 72                   | 142            |
| 10019934       | 7 G 1.5                                           | 9.0                 | 100.8                | 184            |
| 10019981       | 8 G 1.5                                           | 10.8                | 115.2                | 218            |
| 10019982       | 9 G 1.5                                           | 11.6                | 129.6                | 245            |
| 10019935       | 12 G 1.5                                          | 12.2                | 172.8                | 308            |
| 10019936       | 14 G 1.5                                          | 13.0                | 201.6                | 357            |
| 10019937       | 18 G 1.5                                          | 14.6                | 259.2                | 449            |
| 10019938       | 25 G 1.5                                          | 17.2                | 360                  | 617            |
| 10019927       | 34 G 1.5                                          | 19.8                | 489.6                | 821            |
| 10019944       | 2 X 2.5                                           | 7.6                 | 48                   | 113            |
| 10019945       | 3 G 2.5                                           | 8.3                 | 72                   | 146            |
| 10019946       | 4 G 2.5                                           | 9.0                 | 96                   | 180            |
| 10019947       | 5 G 2.5                                           | 10.1                | 120                  | 221            |
| 10019948       | 7 G 2.5                                           | 11.2                | 168                  | 295            |
| 10019949       | 12 G 2.5                                          | 15.1                | 288                  | 491            |
| 10019950       | 4 G 4.0                                           | 10.8                | 153.6                | 268            |
| 10019951       | 5 G 4.0                                           | 12.1                | 192                  | 328            |
| 10019952       | 7 G 4.0                                           | 13.4                | 268.8                | 438            |
| 10019953       | 4 G 6.0                                           | 13.0                | 230.4                | 391            |
| 10019954       | 5 G 6.0                                           | 14.5                | 288                  | 478            |
| 10019975       | 7 G 6.0                                           | 16.0                | 403.2                | 638            |
| 10019851       | 4 G 10.0                                          | 16.2                | 384                  | 635            |
| 10019852       | 5 G 10.0                                          | 18.1                | 480                  | 775            |
| 10019849       | 4 G 16.0                                          | 18.8                | 614.4                | 930            |
| 10019853       | 5 G 16.0                                          | 21.2                | 768                  | 1147           |
| 10019854       | 4 G 25.0                                          | 23.5                | 960                  | 1442           |
| 10019855       | 5 G 25.0                                          | 26.4                | 1200                 | 1773           |
| 10019856       | 4 G 35.0                                          | 26.6                | 1344                 | 1917           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables

Various applications • Halogen-free ÖLFLEX®



## ÖLFLEX® CLASSIC 115 CH

Screened halogen-free control cable, oil resistant



### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- High flexibility and oil-resistance
- Items with higher cross-sections on request

### Benefits

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features

### Application range

- Public buildings like airports or railway stations
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Intended for use under the European Construction Product Regulation (CPR), refer to catalogue appendix T14
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- UL Cable Flame Test
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5)  
and UL OIL RES I and UL OIL RES II
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Wrapping: Halogen-free plastic foil
- Tinned-copper braiding
- Outer sheath: Special halogen-free compound, grey (similar to RAL 7001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

U0/U: 300/500 V  
UL: 600 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -30°C to +70°C  
(UL: +75°C)  
Fixed installation: -40°C to +80°C  
(UL: +75°C)

| Article number                | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 115 CH</b> |                                       |                     |                      |                |
| 10036001                      | 2 X 0.5                               | 5.9                 | 36                   | 56             |
| 10036002                      | 3 G 0.5                               | 6.2                 | 43                   | 67             |
| 10036003                      | 3 X 0.5                               | 6.2                 | 43                   | 67             |
| 10036004                      | 4 G 0.5                               | 6.6                 | 49                   | 78             |
| 10036005                      | 4 X 0.5                               | 6.6                 | 49                   | 78             |
| 10036006                      | 5 G 0.5                               | 7.1                 | 57                   | 91             |
| 10036007                      | 7 G 0.5                               | 7.7                 | 69                   | 110            |
| 10036008                      | 12 G 0.5                              | 10.1                | 104                  | 177            |
| 10036009                      | 2 X 0.75                              | 6.3                 | 43                   | 65             |
| 10036010                      | 3 G 0.75                              | 6.6                 | 52                   | 77             |
| 10036011                      | 3 X 0.75                              | 6.6                 | 52                   | 77             |
| 10036012                      | 4 G 0.75                              | 7.1                 | 61                   | 92             |
| 10036013                      | 4 X 0.75                              | 7.1                 | 61                   | 92             |
| 10036014                      | 5 G 0.75                              | 7.9                 | 72                   | 111            |
| 10036015                      | 5 X 0.75                              | 7.9                 | 72                   | 111            |
| 10036016                      | 7 G 0.75                              | 8.5                 | 89                   | 138            |
| 10036017                      | 7 X 0.75                              | 8.5                 | 89                   | 138            |
| 10036018                      | 12 G 0.75                             | 11.1                | 138                  | 220            |
| 10036019                      | 18 G 0.75                             | 13.0                | 211                  | 312            |
| 10036020                      | 25 G 0.75                             | 15.1                | 280                  | 417            |
| 10036021                      | 2 X 1.0                               | 6.6                 | 51                   | 73             |
| 10036022                      | 3 G 1.0                               | 6.9                 | 62                   | 89             |
| 10036023                      | 3 X 1.0                               | 6.9                 | 62                   | 89             |
| 10036024                      | 4 G 1.0                               | 7.4                 | 74                   | 107            |
| 10036025                      | 4 X 1.0                               | 7.4                 | 74                   | 107            |
| 10036026                      | 5 G 1.0                               | 8.3                 | 88                   | 131            |
| 10036027                      | 7 G 1.0                               | 8.9                 | 112                  | 159            |
| 10036028                      | 12 G 1.0                              | 11.7                | 185                  | 263            |
| 10036029                      | 18 G 1.0                              | 14.1                | 268                  | 378            |
| 10036030                      | 25 G 1.0                              | 16.2                | 354                  | 508            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 10036031       | 41 G 1.0                              | 16.2                | 547                  | 834            |
| 10036032       | 2 X 1.5                               | 20.6                | 65                   | 87             |
| 10036033       | 3 G 1.5                               | 7.2                 | 82                   | 108            |
| 10036034       | 3 X 1.5                               | 7.6                 | 82                   | 108            |
| 10036035       | 4 G 1.5                               | 7.6                 | 100                  | 136            |
| 10036036       | 5 G 1.5                               | 9.1                 | 119                  | 162            |
| 10036037       | 7 G 1.5                               | 10.0                | 154                  | 204            |
| 10036038       | 12 G 1.5                              | 13.4                | 268                  | 340            |
| 10036039       | 18 G 1.5                              | 15.8                | 373                  | 492            |
| 10036040       | 25 G 1.5                              | 18.2                | 530                  | 654            |
| 10036041       | 3 G 2.5                               | 9.1                 | 118                  | 157            |
| 10036042       | 4 G 2.5                               | 10.0                | 147                  | 198            |
| 10036043       | 5 G 2.5                               | 11.1                | 176                  | 245            |
| 10036044       | 7 G 2.5                               | 12.0                | 253                  | 307            |
| 10036045       | 12 G 2.5                              | 16.3                | 385                  | 524            |
| 10036046       | 4 G 4.0                               | 11.8                | 248                  | 284            |
| 10036047       | 5 G 4.0                               | 13.3                | 269                  | 368            |
| 10036048       | 7 G 4.0                               | 14.6                | 371                  | 448            |
| 10036049       | 4 G 6.0                               | 14.2                | 343                  | 406            |
| 10036050       | 5 G 6.0                               | 15.5                | 441                  | 522            |
| 10036051       | 7 G 6.0                               | 17.0                | 510                  | 637            |
| 10036052       | 4 G 10.0                              | 17.2                | 495                  | 656            |
| 10036053       | 5 G 10.0                              | 19.5                | 592                  | 865            |
| 10036054       | 4 G 16.0                              | 20.2                | 736                  | 972            |
| 10036055       | 5 G 16.0                              | 22.6                | 895                  | 1249           |
| 10036056       | 4 G 25.0                              | 25.1                | 1129                 | 1482           |
| 10036057       | 5 G 25.0                              | 28.0                | 1400                 | 1906           |
| 10036058       | 4 G 35.0                              | 28.2                | 1546                 | 1971           |
| 10036059       | 5 G 35.0                              | 31.4                | 1912                 | 2529           |
| 10036060       | 4 G 50.0                              | 34.0                | 2186                 | 2713           |
| 10036061       | 4 G 70.0                              | 39.0                | 3011                 | 3709           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- High flexibility and oil-resistance
- Items with higher cross-sections on request

## Benefits

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features
- Certified for maritime applications

## Application range

- Public buildings like airports or railway stations
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Intended for use under the European Construction Product Regulation (CPR), refer to catalogue appendix T14
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

## Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- UL Cable Flame Test

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5) and UL OIL RES I and UL OIL RES II
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

## Norm references / Approvals

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 119-14 HH

## Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Halogen-free inner sheath, grey
- Tinned-copper braiding
- Outer sheath: Special halogen-free compound, grey (similar to RAL 7001)



## ÖLFLEX® CLASSIC 110 CH

Screened halogen-free control cable, oil resistant and very flexible



## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



## Core identification code

Black with white numbers acc. to VDE 0293-334



## Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



## Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



## Nominal voltage

U0/U: 300/500 V  
UL: 600 V



## Test voltage

4000 V



## Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



## Temperature range

Occasional flexing: -30°C to +70°C (UL: +75°C)  
Fixed installation: -40°C to +80°C (UL: +75°C)

| Article number                         | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| ÖLFLEX® CLASSIC 110 CH U0/U: 300/500 V |                                       |                     |                      |                |
| 10035030                               | 2 X 0.5                               | 7.1                 | 29.1                 | 85             |
| 10035031                               | 3 G 0.5                               | 7.4                 | 35.1                 | 95             |
| 10035032                               | 3 X 0.5                               | 7.4                 | 35.1                 | 95             |
| 10035033                               | 4 G 0.5                               | 8.0                 | 41.4                 | 111            |
| 10035034                               | 4 X 0.5                               | 8.0                 | 41.4                 | 111            |
| 10035035                               | 5 G 0.5                               | 8.6                 | 48                   | 126            |
| 10035036                               | 7 G 0.5                               | 9.1                 | 59.9                 | 148            |
| 10035037                               | 12 G 0.5                              | 11.5                | 91.4                 | 226            |
| 10035040                               | 2 X 0.75                              | 7.7                 | 35.4                 | 101            |
| 10035041                               | 3 G 0.75                              | 8.0                 | 43.8                 | 114            |
| 10035042                               | 3 X 0.75                              | 8.0                 | 43.8                 | 114            |
| 10035043                               | 4 G 0.75                              | 8.5                 | 52.8                 | 130            |
| 10035044                               | 4 X 0.75                              | 8.5                 | 52.8                 | 130            |
| 10035045                               | 5 G 0.75                              | 9.3                 | 62.3                 | 153            |
| 10035046                               | 5 X 0.75                              | 9.3                 | 62.3                 | 153            |
| 10035047                               | 7 G 0.75                              | 9.9                 | 79.5                 | 183            |
| 10035048                               | 7 X 0.75                              | 9.9                 | 79.5                 | 183            |
| 10035050                               | 12 G 0.75                             | 12.5                | 123.2                | 280            |
| 10035051                               | 18 G 0.75                             | 14.8                | 188.6                | 399            |
| 10035052                               | 25 G 0.75                             | 16.9                | 247.5                | 522            |
| 10035055                               | 2 X 1.0                               | 8.0                 | 41.4                 | 112            |
| 10035056                               | 3 G 1.0                               | 8.4                 | 52.1                 | 127            |
| 10035057                               | 3 X 1.0                               | 8.4                 | 52.1                 | 127            |
| 10035058                               | 4 G 1.0                               | 8.9                 | 73.5                 | 157            |
| 10035059                               | 4 X 1.0                               | 8.9                 | 73.5                 | 157            |
| 10035060                               | 5 G 1.0                               | 9.7                 | 83.2                 | 171            |
| 10035061                               | 7 G 1.0                               | 10.3                | 97.2                 | 210            |
| 10035062                               | 12 G 1.0                              | 13.6                | 168.7                | 347            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 10035063       | 18 G 1.0                              | 15.7                | 235.4                | 474            |
| 10035064       | 25 G 1.0                              | 17.8                | 312                  | 611            |
| 10035065       | 41 G 1.0                              | 22.4                | 508                  | 969            |
| 10035067       | 2 X 1.5                               | 8.6                 | 53.2                 | 134            |
| 10035068       | 3 G 1.5                               | 9.0                 | 69.1                 | 155            |
| 10035069       | 3 X 1.5                               | 9.0                 | 69.1                 | 155            |
| 10035070       | 4 G 1.5                               | 9.8                 | 85.8                 | 186            |
| 10035071       | 5 G 1.5                               | 10.5                | 102.8                | 215            |
| 10035072       | 7 G 1.5                               | 11.4                | 134.2                | 269            |
| 10035073       | 12 G 1.5                              | 15.0                | 232.8                | 445            |
| 10035074       | 18 G 1.5                              | 17.4                | 327.8                | 610            |
| 10035075       | 25 G 1.5                              | 20.4                | 463.2                | 843            |
| 10035089       | 3 G 2.5                               | 10.5                | 102.8                | 220            |
| 10035090       | 4 G 2.5                               | 11.4                | 129.4                | 265            |
| 10035091       | 5 G 2.5                               | 12.7                | 157.5                | 322            |
| 10035092       | 7 G 2.5                               | 14.0                | 223                  | 422            |
| 10035093       | 12 G 2.5                              | 17.9                | 360.5                | 659            |
| 10035094       | 4 G 4.0                               | 13.6                | 207.6                | 390            |
| 10035095       | 5 G 4.0                               | 14.9                | 251.5                | 463            |
| 10035096       | 7 G 4.0                               | 16.2                | 333.9                | 588            |
| 10035097       | 4 G 6.0                               | 15.8                | 294.8                | 516            |
| 10035098       | 5 G 6.0                               | 17.3                | 356.1                | 616            |
| 10035099       | 7 G 6.0                               | 18.8                | 479.3                | 792            |
| 10035380       | 4 G 10.0                              | 19.1                | 461.1                | 789            |
| 10035381       | 5 G 10.0                              | 21.4                | 586.6                | 998            |
| 10035382       | 4 G 16.0                              | 22.3                | 727.6                | 1154           |
| 10035383       | 5 G 16.0                              | 24.5                | 888.7                | 1389           |
| 10035384       | 4 G 25.0                              | 27.0                | 1123.9               | 1807           |
| 10035386       | 4 G 35.0                              | 30.4                | 1529.2               | 2321           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils). / Single lengths for sizes: ≥ 4G50 max. 500 m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ÖLFLEX® CLASSIC 130 H**

Halogen-free control cable with improved fire characteristics

**Info**

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- For use within public buildings and industrial plants

**Benefits**

- Easy installation due to flexible design
- Certified for maritime applications

**Application range**

- Public buildings like airports or railway stations
- Plant engineering, Industrial machinery Heating and air-conditioning systems Stage applications
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

**Norm references / Approvals**

- UL AWM style 21217
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. TAE00002RJ

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Outer sheath: Special halogen-free compound, grey (similar to RAL 7001)

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable

**Core identification code**

Black with white numbers acc. to VDE 0293-334

**Conductor stranding**

Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**

U0/U: 300/500 V  
UL: 600 V

**Test voltage**

4000 V

**Protective conductor**

G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**

Occasional flexing: -25°C to +70°C  
(UL: +75°C)  
Fixed installation: -40°C to +80°C  
(UL: +75°C)

| Article number               | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 130 H</b> |                                       |                     |                      |                |
| 1123000                      | 2 X 0.5                               | 5.1                 | 9.6                  | 36             |
| 1123001                      | 3 G 0.5                               | 5.4                 | 14.4                 | 42             |
| 1123002                      | 3 X 0.5                               | 5.4                 | 14.4                 | 42             |
| 1123003                      | 4 G 0.5                               | 5.8                 | 19.2                 | 55             |
| 1123004                      | 4 X 0.5                               | 5.8                 | 19.2                 | 55             |
| 1123005                      | 5 G 0.5                               | 6.3                 | 24                   | 65             |
| 1123006                      | 5 X 0.5                               | 6.3                 | 24                   | 65             |
| 1123008                      | 7 G 0.5                               | 6.9                 | 33.6                 | 80             |
| 1123009                      | 7 X 0.5                               | 6.9                 | 33.6                 | 80             |
| 1123010                      | 8 G 0.5                               | 8.2                 | 38.4                 | 103            |
| 1123012                      | 10 G 0.5                              | 8.8                 | 48                   | 112            |
| 1123013                      | 12 G 0.5                              | 9.1                 | 57.6                 | 128            |
| 1123017                      | 18 G 0.5                              | 10.8                | 86.4                 | 189            |
| 1123020                      | 25 G 0.5                              | 12.7                | 120                  | 260            |
| 1123021                      | 30 G 0.5                              | 13.6                | 144                  | 294            |
| 1123032                      | 2 X 0.75                              | 5.5                 | 14.4                 | 47             |
| 1123033                      | 3 G 0.75                              | 5.8                 | 21.6                 | 56             |
| 1123034                      | 3 X 0.75                              | 5.8                 | 21.6                 | 56             |
| 1123035                      | 4 G 0.75                              | 6.3                 | 28.8                 | 69             |
| 1123036                      | 4 X 0.75                              | 6.3                 | 28.8                 | 69             |
| 1123037                      | 5 G 0.75                              | 6.9                 | 36                   | 83             |
| 1123038                      | 5 X 0.75                              | 6.9                 | 36                   | 83             |
| 1123041                      | 7 G 0.75                              | 7.5                 | 50.4                 | 104            |
| 1123042                      | 7 X 0.75                              | 7.5                 | 50.4                 | 104            |
| 1123046                      | 10 G 0.75                             | 9.8                 | 72                   | 149            |
| 1123047                      | 12 G 0.75                             | 10.1                | 86.4                 | 172            |
| 1123048                      | 12 X 0.75                             | 10.1                | 86.4                 | 172            |
| 1123051                      | 18 G 0.75                             | 12.0                | 129.6                | 252            |
| 1123054                      | 25 G 0.75                             | 14.1                | 180                  | 352            |
| 1123056                      | 34 G 0.75                             | 16.3                | 244.8                | 466            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1123066        | 2 X 1.0                               | 5.8                 | 19.2                 | 55             |
| 1123067        | 3 G 1.0                               | 6.1                 | 28.8                 | 67             |
| 1123068        | 3 X 1.0                               | 6.1                 | 28.8                 | 67             |
| 1123069        | 4 G 1.0                               | 6.6                 | 38.4                 | 83             |
| 1123070        | 4 X 1.0                               | 6.6                 | 38.4                 | 83             |
| 1123071        | 5 G 1.0                               | 7.3                 | 48                   | 100            |
| 1123072        | 5 X 1.0                               | 7.3                 | 48                   | 100            |
| 1123074        | 7 G 1.0                               | 8.1                 | 67.2                 | 130            |
| 1123075        | 7 X 1.0                               | 8.1                 | 67.2                 | 130            |
| 1123076        | 8 G 1.0                               | 9.7                 | 76.8                 | 164            |
| 1123078        | 10 G 1.0                              | 10.4                | 96                   | 183            |
| 1123080        | 12 G 1.0                              | 10.7                | 115.2                | 212            |
| 1123081        | 12 X 1.0                              | 10.7                | 115.2                | 212            |
| 1123083        | 16 G 1.0                              | 12.1                | 153.6                | 275            |
| 1123084        | 18 G 1.0                              | 12.9                | 172.8                | 314            |
| 1123090        | 25 G 1.0                              | 15.0                | 240                  | 429            |
| 1123094        | 34 G 1.0                              | 17.5                | 326.4                | 570            |
| 1123106        | 2 X 1.5                               | 6.4                 | 28.8                 | 72             |
| 1123107        | 3 G 1.5                               | 6.8                 | 43.2                 | 88             |
| 1123108        | 3 X 1.5                               | 6.8                 | 43.2                 | 88             |
| 1123109        | 4 G 1.5                               | 7.4                 | 57.6                 | 110            |
| 1123110        | 4 X 1.5                               | 7.4                 | 57.6                 | 110            |
| 1123111        | 5 G 1.5                               | 8.3                 | 72                   | 135            |
| 1123112        | 5 X 1.5                               | 8.3                 | 72                   | 135            |
| 1123114        | 7 G 1.5                               | 9.0                 | 100.8                | 174            |
| 1123115        | 7 X 1.5                               | 9.0                 | 100.8                | 174            |
| 1123116        | 8 G 1.5                               | 10.8                | 115.2                | 223            |
| 1123118        | 10 G 1.5                              | 11.8                | 144                  | 250            |
| 1123120        | 12 G 1.5                              | 12.2                | 172.8                | 289            |
| 1123124        | 18 G 1.5                              | 14.6                | 259.2                | 433            |
| 1123128        | 25 G 1.5                              | 17.2                | 360                  | 596            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1123130        | 34 G 1.5                                          | 19.8                | 489.6                | 786            |
| 1123139        | 2 X 2.5                                           | 7.6                 | 48                   | 110            |
| 1123140        | 3 G 2.5                                           | 8.3                 | 72                   | 137            |
| 1123142        | 4 G 2.5                                           | 9.0                 | 96                   | 174            |
| 1123144        | 5 G 2.5                                           | 10.1                | 120                  | 217            |
| 1123146        | 7 G 2.5                                           | 11.2                | 168                  | 283            |
| 1123149        | 12 G 2.5                                          | 15.1                | 288                  | 467            |
| 1123151        | 18 G 2.5                                          | 18.0                | 432                  | 696            |
| 1123153        | 25 G 2.5                                          | 21.1                | 600                  | 969            |
| 1123159        | 3 G 4.0                                           | 9.8                 | 115.2                | 213            |
| 1123160        | 4 G 4.0                                           | 10.8                | 153.6                | 267            |
| 1123161        | 5 G 4.0                                           | 12.1                | 192                  | 331            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1123162        | 7 G 4.0                                           | 13.4                | 268.8                | 432            |
| 1123166        | 3 G 6.0                                           | 11.7                | 172.8                | 303            |
| 1123167        | 4 G 6.0                                           | 13.0                | 230.4                | 388            |
| 1123168        | 5 G 6.0                                           | 14.5                | 288                  | 480            |
| 1123169        | 7 G 6.0                                           | 16.0                | 403.2                | 626            |
| 1123172        | 4 G 10.0                                          | 16.2                | 384                  | 601            |
| 1123173        | 5 G 10.0                                          | 18.1                | 480                  | 735            |
| 1123177        | 4 G 16.0                                          | 18.8                | 614.4                | 917            |
| 1123178        | 5 G 16.0                                          | 21.2                | 768                  | 1148           |
| 1123181        | 4 G 25.0                                          | 23.5                | 960                  | 1418           |
| 1123182        | 5 G 25.0                                          | 26.4                | 1200                 | 1769           |
| 1123185        | 4 G 35.0                                          | 26.6                | 1344                 | 1905           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CLASSIC 135 CH

Screened halogen-free control cable with improved fire characteristics



### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- For use within public buildings and industrial plants

### Benefits

- Easy installation due to flexible design
- Space-saving installation due to small cable diameters
- Certified for maritime applications

### Application range

- Public buildings like airports or railway stations
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- In EMC-sensitive environments (electromagnetic compatibility)
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- UL AWM style 21217
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. TAE00002RK

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Halogen-free plastic foil wrapping
- Tinned-copper braiding
- Outer sheath: Special halogen-free compound, grey (similar to RAL 7001)

### Technical data

|  |                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable        |
|  | <b>Core identification code</b><br>Black with white numbers acc. to VDE 0293-334                                             |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295, class 5/IEC 60228 class 5                                     |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 20 x outer diameter<br>Fixed installation: 6 x outer diameter           |
|  | <b>Nominal voltage</b><br>U0/U: 300/500 V<br>UL: 600 V                                                                       |
|  | <b>Test voltage</b><br>Core/core: 4000 V<br>Core/screen: 2000 V                                                              |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                       |
|  | <b>Temperature range</b><br>Occasional flexing: -25°C to +70°C (UL: +75°C)<br>Fixed installation: -40°C to +80°C (UL: +75°C) |

| Article number                | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 135 CH</b> |                                       |                     |                      |                |
| 1123200                       | 2 X 0.5                               | 5.9                 | 36                   | 51             |
| 1123201                       | 3 G 0.5                               | 6.2                 | 43                   | 61             |
| 1123202                       | 3 X 0.5                               | 6.2                 | 43                   | 61             |
| 1123203                       | 4 G 0.5                               | 6.6                 | 49                   | 72             |
| 1123204                       | 4 X 0.5                               | 6.6                 | 49                   | 72             |
| 1123205                       | 5 G 0.5                               | 7.1                 | 57                   | 85             |
| 1123206                       | 5 X 0.5                               | 7.1                 | 57                   | 85             |
| 1123208                       | 7 G 0.5                               | 7.7                 | 69                   | 103            |
| 1123209                       | 7 X 0.5                               | 7.7                 | 69                   | 103            |
| 1123213                       | 12 G 0.5                              | 10.1                | 104                  | 165            |
| 1123217                       | 18 G 0.5                              | 11.8                | 141                  | 236            |
| 1123220                       | 25 G 0.5                              | 13.7                | 224                  | 324            |
| 1123232                       | 2 X 0.75                              | 6.3                 | 43                   | 60             |
| 1123233                       | 3 G 0.75                              | 6.6                 | 52                   | 77             |
| 1123234                       | 3 X 0.75                              | 6.6                 | 52                   | 77             |
| 1123235                       | 4 G 0.75                              | 7.1                 | 61                   | 87             |
| 1123236                       | 4 X 0.75                              | 7.1                 | 61                   | 87             |
| 1123237                       | 5 G 0.75                              | 7.9                 | 72                   | 106            |
| 1123238                       | 5 X 0.75                              | 7.9                 | 72                   | 106            |
| 1123241                       | 7 G 0.75                              | 8.5                 | 89                   | 129            |
| 1123242                       | 7 X 0.75                              | 8.5                 | 89                   | 129            |
| 1123247                       | 12 G 0.75                             | 11.1                | 138                  | 211            |
| 1123248                       | 12 X 0.75                             | 11.1                | 138                  | 211            |
| 1123251                       | 18 G 0.75                             | 13.0                | 211                  | 307            |
| 1123254                       | 25 G 0.75                             | 15.1                | 280                  | 413            |
| 1123266                       | 2 X 1.0                               | 6.6                 | 51                   | 79             |
| 1123267                       | 3 G 1.0                               | 6.9                 | 62                   | 88             |
| 1123268                       | 3 X 1.0                               | 6.9                 | 62                   | 88             |
| 1123269                       | 4 G 1.0                               | 7.4                 | 74                   | 106            |
| 1123270                       | 4 X 1.0                               | 7.4                 | 74                   | 106            |
| 1123271                       | 5 G 1.0                               | 8.3                 | 88                   | 124            |
| 1123272                       | 5 X 1.0                               | 8.3                 | 88                   | 124            |
| 1123274                       | 7 G 1.0                               | 8.9                 | 112                  | 155            |
| 1123275                       | 7 X 1.0                               | 8.9                 | 112                  | 155            |
| 1123280                       | 12 G 1.0                              | 11.7                | 185                  | 250            |
| 1123281                       | 12 X 1.0                              | 11.7                | 185                  | 250            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1123284        | 18 G 1.0                              | 14.1                | 268                  | 368            |
| 1123290        | 25 G 1.0                              | 16.2                | 354                  | 493            |
| 1123291        | 25 X 1.0                              | 16.2                | 354                  | 493            |
| 1123306        | 2 X 1.5                               | 7.2                 | 65                   | 91             |
| 1123307        | 3 G 1.5                               | 7.6                 | 82                   | 112            |
| 1123308        | 3 X 1.5                               | 7.6                 | 82                   | 112            |
| 1123309        | 4 G 1.5                               | 8.4                 | 100                  | 141            |
| 1123310        | 4 X 1.5                               | 8.4                 | 100                  | 141            |
| 1123311        | 5 G 1.5                               | 9.1                 | 119                  | 161            |
| 1123312        | 5 X 1.5                               | 9.1                 | 119                  | 161            |
| 1123314        | 7 G 1.5                               | 10.0                | 154                  | 206            |
| 1123315        | 7 X 1.5                               | 10.0                | 154                  | 206            |
| 1123320        | 12 G 1.5                              | 13.4                | 268                  | 355            |
| 1123324        | 18 G 1.5                              | 15.8                | 373                  | 517            |
| 1123328        | 25 G 1.5                              | 18.2                | 530                  | 705            |
| 1123339        | 2 X 2.5                               | 8.6                 | 96                   | 128            |
| 1123340        | 3 G 2.5                               | 9.1                 | 118                  | 157            |
| 1123342        | 4 G 2.5                               | 10.0                | 147                  | 201            |
| 1123344        | 5 G 2.5                               | 11.1                | 176                  | 248            |
| 1123346        | 7 G 2.5                               | 12.0                | 253                  | 313            |
| 1123349        | 12 G 2.5                              | 16.3                | 385                  | 524            |
| 1123359        | 3 G 4.0                               | 10.6                | 178                  | 231            |
| 1123360        | 4 G 4.0                               | 11.8                | 248                  | 291            |
| 1123361        | 5 G 4.0                               | 13.3                | 269                  | 361            |
| 1123362        | 7 G 4.0                               | 14.6                | 371                  | 468            |
| 1123366        | 3 G 6.0                               | 12.7                | 240                  | 318            |
| 1123367        | 4 G 6.0                               | 14.2                | 343                  | 437            |
| 1123368        | 5 G 6.0                               | 15.5                | 441                  | 510            |
| 1123369        | 7 G 6.0                               | 17.0                | 510                  | 662            |
| 1123372        | 4 G 10.0                              | 17.2                | 495                  | 685            |
| 1123373        | 5 G 10.0                              | 19.5                | 592                  | 824            |
| 1123374        | 7 G 10.0                              | 21.4                | 820                  | 1067           |
| 1123377        | 4 G 16.0                              | 20.2                | 736                  | 1036           |
| 1123378        | 5 G 16.0                              | 22.6                | 895                  | 1285           |
| 1123381        | 4 G 25.0                              | 25.1                | 1129                 | 1663           |
| 1123382        | 5 G 25.0                              | 28.0                | 1400                 | 1976           |
| 1123385        | 4 G 35.0                              | 28.2                | 1546                 | 2052           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV

0.6/1kVAC, Halogen-free, Flexible, IEC 60332-3, IEC 61034-2, UV/ ozone resistance, UL AWM 1000V



### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- Public buildings
- UL AWM recognized

### Benefits

- Easy installation due to flexible design

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- For outdoor applications
- According to NFPA 79, subchapter 12.9.2: Use for industrial machinery operated in the USA on the basis of UL AWM (recognized) certification
- Each dimension with nominal/ minimum average wall thickness of the outer sheath of at least 1.8 mm: For applications where a strengthened outer sheath may turn out to be advantageous

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- Based on EN 50525-3-11
- UL AWM approval: refer to data sheet

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Outer sheath made of special halogen-free compound, black

### Technical data

|  |                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000057<br>ETIM 5.0/6.0 Class-Description: Low voltage power cable                             |
|  | <b>Core identification code</b><br>Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9<br>From 6 cores: black with white numbers |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295, class 5/IEC 60228 class 5                                                                 |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 15 x outer diameter<br>Fixed installation: 4 x outer diameter                                       |
|  | <b>Nominal voltage</b><br>U0/U: 600/1000 V<br>UL: 1000 V                                                                                                 |
|  | <b>Test voltage</b><br>4000 V                                                                                                                            |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                                                   |
|  | <b>Temperature range</b><br>Occasional flexing: -25°C to +70°C<br>Fixed installation: -40°C to +80°C<br>UL: -25°C to +75°C                               |

| Article number                           | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV</b> |                                       |                     |                      |                |
| 1123410                                  | 2 X 1.0                               | 8.6                 | 19.2                 | 107            |
| 1123411                                  | 3 G 1.0                               | 9.0                 | 28.8                 | 123            |
| 1123412                                  | 4 G 1.0                               | 9.6                 | 38.4                 | 144            |
| 1123413                                  | 5 G 1.0                               | 10.4                | 48                   | 167            |
| 1123414                                  | 7 G 1.0                               | 11.1                | 67.2                 | 206            |
| 1123415                                  | 12 G 1.0                              | 14.0                | 115.2                | 314            |
| 1123418                                  | 2 X 1.5                               | 9.6                 | 28.8                 | 137            |
| 1123419                                  | 3 G 1.5                               | 10.1                | 43.2                 | 161            |
| 1123420                                  | 4 G 1.5                               | 10.8                | 57.6                 | 190            |
| 1123421                                  | 5 G 1.5                               | 11.7                | 72                   | 221            |
| 1123422                                  | 7 G 1.5                               | 12.6                | 100.8                | 276            |
| 1123423                                  | 12 G 1.5                              | 16.1                | 172.8                | 427            |
| 1123424                                  | 18 G 1.5                              | 18.8                | 259.2                | 596            |
| 1123425                                  | 25 G 1.5                              | 21.7                | 360                  | 799            |
| 1123427                                  | 3 G 2.5                               | 11.3                | 72                   | 219            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1123428        | 4 G 2.5                               | 12.2                | 96                   | 262            |
| 1123429        | 5 G 2.5                               | 13.3                | 120                  | 307            |
| 1123430        | 7 G 2.5                               | 14.4                | 168                  | 390            |
| 1123431        | 12 G 2.5                              | 18.7                | 288                  | 624            |
| 1123432        | 18 G 2.5                              | 22.0                | 432                  | 879            |
| 1123433        | 25 G 2.5                              | 25.8                | 600                  | 1212           |
| 1123434        | 3 G 4.0                               | 12.6                | 115.2                | 290            |
| 1123435        | 4 G 4.0                               | 13.7                | 153.6                | 351            |
| 1123436        | 5 G 4.0                               | 14.9                | 192                  | 416            |
| 1123438        | 4 G 6.0                               | 15.1                | 230.4                | 463            |
| 1123439        | 5 G 6.0                               | 16.8                | 288                  | 559            |
| 1123440        | 4 G 10.0                              | 18.7                | 384                  | 662            |
| 1123441        | 5 G 10.0                              | 20.7                | 480                  | 915            |
| 1123443        | 5 G 16.0                              | 23.6                | 768                  | 1296           |
| 1123444        | 4 G 25.0                              | 26.2                | 960                  | 1631           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV

0.6/1kVAC, Halogen-free, Flexible, IEC 60332-3, IEC 61034-2, UV/ ozone resistance, UL AWM 1000V



### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- Public buildings
- EMC/Screened



### Benefits

- Easy installation due to flexible design
- Space-saving installation due to small cable diameters

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- For outdoor applications
- According to NFPA 79, subchapter 12.9.2: Use for industrial machinery operated in the USA on the basis of UL AWM (recognized) certification
- Each dimension with nominal/ minimum average wall thickness of the outer sheath of at least 1.8 mm: For applications where a strengthened outer sheath may turn out to be advantageous

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- Based on EN 50525-3-11
- UL AWM approval: refer to data sheet

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Halogen-free plastic foil wrapping
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound, black

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
U0/U: 600/1000 V  
UL: 1000 V
- Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -25°C to +70°C  
Fixed installation: -40°C to +80°C  
UL: -25°C to +75°C

| Article number                            | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV</b> |                                       |                     |                      |                |
| 1123460                                   | 2 X 1.0                               | 9.4                 | 39.5                 | 120            |
| 1123461                                   | 3 G 1.0                               | 9.8                 | 51                   | 140            |
| 1123462                                   | 4 G 1.0                               | 10.4                | 62.8                 | 165            |
| 1123463                                   | 5 G 1.0                               | 11.2                | 76                   | 191            |
| 1123464                                   | 7 G 1.0                               | 11.9                | 97.2                 | 231            |
| 1123465                                   | 12 G 1.0                              | 15.0                | 169.1                | 360            |
| 1123466                                   | 18 G 1.0                              | 17.3                | 238.2                | 494            |
| 1123467                                   | 25 G 1.0                              | 19.8                | 315.5                | 643            |
| 1123468                                   | 2 X 1.5                               | 10.4                | 53.2                 | 149            |
| 1123469                                   | 3 G 1.5                               | 10.9                | 69.5                 | 177            |
| 1123470                                   | 4 G 1.5                               | 11.6                | 86.5                 | 209            |
| 1123471                                   | 5 G 1.5                               | 12.5                | 104.3                | 243            |
| 1123472                                   | 7 G 1.5                               | 13.4                | 136.5                | 300            |
| 1123473                                   | 12 G 1.5                              | 17.3                | 238.3                | 486            |
| 1123474                                   | 18 G 1.5                              | 20.2                | 355.4                | 691            |
| 1123475                                   | 25 G 1.5                              | 23.1                | 475.1                | 914            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1123476        | 2 X 2.5                               | 11.6                | 79.4                 | 197            |
| 1123477        | 3 G 2.5                               | 12.1                | 106.1                | 243            |
| 1123478        | 4 G 2.5                               | 13.0                | 134.3                | 293            |
| 1123479        | 5 G 2.5                               | 14.1                | 158.3                | 342            |
| 1123480        | 7 G 2.5                               | 15.4                | 225                  | 462            |
| 1123481        | 12 G 2.5                              | 20.1                | 383.6                | 718            |
| 1123482        | 18 G 2.5                              | 23.4                | 548.9                | 1011           |
| 1123483        | 25 G 2.5                              | 27.4                | 761.7                | 1370           |
| 1123485        | 4 G 4.0                               | 14.7                | 211.9                | 399            |
| 1123486        | 5 G 4.0                               | 15.9                | 250.3                | 471            |
| 1123487        | 3 G 6.0                               | 14.9                | 232.1                | 414            |
| 1123488        | 4 G 6.0                               | 16.1                | 298.5                | 519            |
| 1123489        | 5 G 6.0                               | 17.8                | 356.1                | 607            |
| 1123490        | 4 G 10.0                              | 20.1                | 490.6                | 837            |
| 1123492        | 4 G 16.0                              | 22.5                | 735.1                | 1157           |
| 1123493        | 5 G 16.0                              | 25.0                | 888.7                | 1407           |
| 1123494        | 4 G 25.0                              | 27.8                | 1126.6               | 1683           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® 409 P

Abrasion- and oil-resistant PUR control cable for increased application requirements - certified for North America



### Info

- Oil resistant and abrasion-proof
- UL/cUL certified for North America
- Easy jacket stripping thanks to interstice-filling functional layer



### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Interstice-filling functional layer ensures more safety and efficiency during industrial and manual jacket stripping
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Good combination of quality and price

### Application range

- Appliance and apparatus construction
- Industrial machinery and machine tools
- Measurement, control and electrical applications
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
- Under consideration of the temperature range also suitable for outdoor use

### Product features

- High oil-resistance
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Abrasion and notch-resistant
- UV-resistant according to ISO 4892-2
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- UL File No. E63634
- UL AWM Style 20234
- CUL AWM I/II A/B FT1

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: special PVC
- Cores twisted in layers
- Special outer sheath of polyurethane with interstice-filling functional layer
- Sheath colour: black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Flexible use: 12.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U0/U: 300/500 V  
UL/CSA: 1000 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5°C to +70°C  
(UL: +80°C)  
Fixed installation: -40°C to +80°C

| Article number       | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 409 P</b> |                                       |                     |                      |                |
| 1311852              | 2 X 0.75                              | 6.9                 | 14.4                 | 61             |
| 1311103              | 3 G 0.75                              | 7.2                 | 21.6                 | 71             |
| 1311104              | 4 G 0.75                              | 7.7                 | 28.8                 | 84             |
| 1311105              | 5 G 0.75                              | 8.3                 | 36                   | 100            |
| 1311107              | 7 G 0.75                              | 8.9                 | 50.4                 | 122            |
| 1311110              | 10 G 0.75                             | 10.8                | 72                   | 180            |
| 1311112              | 12 G 0.75                             | 11.1                | 86.4                 | 198            |
| 1311118              | 18 G 0.75                             | 12.8                | 129.6                | 275            |
| 1311125              | 25 G 0.75                             | 14.5                | 180                  | 364            |
| 1311902              | 2 X 1.0                               | 7.2                 | 19.2                 | 69             |
| 1311203              | 3 G 1.0                               | 7.5                 | 28.8                 | 81             |
| 1311204              | 4 G 1.0                               | 8.0                 | 38.4                 | 97             |
| 1311205              | 5 G 1.0                               | 8.7                 | 48                   | 117            |
| 1311207              | 7 G 1.0                               | 9.3                 | 67.2                 | 142            |
| 1311210              | 10 G 1.0                              | 11.4                | 96                   | 212            |
| 1311212              | 12 G 1.0                              | 11.7                | 115.2                | 234            |
| 1311218              | 18 G 1.0                              | 13.5                | 172.8                | 327            |
| 1311225              | 25 G 1.0                              | 15.4                | 240                  | 437            |
| 1311952              | 2 X 1.5                               | 7.8                 | 28.8                 | 87             |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1311303        | 3 G 1.5                               | 8.2                 | 43.2                 | 104            |
| 1311304        | 4 G 1.5                               | 8.8                 | 57.6                 | 126            |
| 1311305        | 5 G 1.5                               | 9.5                 | 72                   | 151            |
| 1311307        | 7 G 1.5                               | 10.2                | 100.8                | 188            |
| 1311312        | 12 G 1.5                              | 13.0                | 172.8                | 314            |
| 1311318        | 18 G 1.5                              | 15.0                | 259.2                | 441            |
| 1311325        | 25 G 1.5                              | 17.2                | 360                  | 596            |
| 1311403        | 3 G 2.5                               | 9.5                 | 72                   | 151            |
| 1311404        | 4 G 2.5                               | 10.2                | 96                   | 184            |
| 1311405        | 5 G 2.5                               | 11.1                | 120                  | 224            |
| 1311407        | 7 G 2.5                               | 12.0                | 168                  | 282            |
| 1311412        | 12 G 2.5                              | 15.5                | 288                  | 480            |
| 1311504        | 4 G 4.0                               | 11.8                | 153.6                | 266            |
| 1311505        | 5 G 4.0                               | 12.9                | 192                  | 325            |
| 1311604        | 4 G 6.0                               | 13.1                | 230.4                | 359            |
| 1311605        | 5 G 6.0                               | 14.3                | 288                  | 438            |
| 1311704        | 4 G 10.0                              | 16.5                | 384                  | 585            |
| 1311705        | 5 G 10.0                              | 18.2                | 480                  | 722            |
| 1311804        | 4 G 16.0                              | 19.1                | 614.4                | 861            |
| 1311805        | 5 G 16.0                              | 22.1                | 768                  | 1107           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables

Harsh conditions • High mechanical and chemical resistance



## ÖLFLEX® 409 CP

Screened, abrasion- and oil-resistant PUR control cable for increased application requirements - certified



### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Appliance and apparatus construction
- Industrial machinery and machine tools
- Measurement, control and electrical applications
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
- Under consideration of the temperature range also suitable for outdoor use

### Product features

- High oil-resistance
- Flame-retardant
- Abrasion and notch-resistant
- UV-resistant according to ISO 4892-2
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- UL AWM Style 20234
- CUL AWM I/II A/B
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: special PVC
- Cores twisted in layers
- Plastic foil wrapping
- Tinned-copper braiding
- Special polyurethane outer sheath (PUR)
- Sheath colour: black (similar RAL 9005)

| Article number        | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® 409 CP</b> |                                       |                     |                      |                |
| 1321852               | 2 X 0.75                              | 7.0                 | 29                   | 75             |
| 1321103               | 3 G 0.75                              | 7.3                 | 37                   | 89             |
| 1321104               | 4 G 0.75                              | 7.8                 | 44                   | 104            |
| 1321105               | 5 G 0.75                              | 8.4                 | 53                   | 120            |
| 1321107               | 7 G 0.75                              | 9.0                 | 67                   | 146            |
| 1321110               | 10 G 0.75                             | 10.9                | 94                   | 196            |
| 1321112               | 12 G 0.75                             | 11.2                | 107                  | 219            |
| 1321118               | 18 G 0.75                             | 12.9                | 152                  | 298            |
| 1321125               | 25 G 0.75                             | 14.8                | 200                  | 387            |
| 1321902               | 2 X 1.0                               | 7.3                 | 34                   | 84             |
| 1321203               | 3 G 1.0                               | 7.6                 | 43                   | 99             |
| 1321204               | 4 G 1.0                               | 8.1                 | 53                   | 116            |
| 1321205               | 5 G 1.0                               | 8.8                 | 64                   | 137            |
| 1321207               | 7 G 1.0                               | 9.4                 | 83                   | 167            |
| 1321210               | 10 G 1.0                              | 11.5                | 116                  | 228            |
| 1321212               | 12 G 1.0                              | 11.8                | 133                  | 255            |
| 1321218               | 18 G 1.0                              | 13.8                | 191                  | 355            |
| 1321225               | 25 G 1.0                              | 15.7                | 272                  | 474            |
| 1321952               | 2 X 1.5                               | 7.9                 | 43                   | 99             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



### Info

- Oil resistant and abrasion-proof
- UL/cUL certified for North America
- EMC compliant copper screening

### Technical data

|  |                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable |
|  | <b>Core identification code</b><br>Black with white numbers acc. to VDE 0293-334                                      |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295, class 5/IEC 60228 class 5                              |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 15 x outer diameter<br>Fixed installation: 4 x outer diameter    |
|  | <b>Nominal voltage</b><br>U0/U: 300/500 V<br>UL/CSA: 1000 V                                                           |
|  | <b>Test voltage</b><br>4000 V                                                                                         |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                |
|  | <b>Temperature range</b><br>Occasional flexing: -5°C to +70°C<br>(UL: +80°C)<br>Fixed installation: -40°C to +80°C    |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1321303        | 3 G 1.5                               | 8.3                 | 57                   | 119            |
| 1321304        | 4 G 1.5                               | 8.9                 | 71                   | 143            |
| 1321305        | 5 G 1.5                               | 9.6                 | 85                   | 167            |
| 1321307        | 7 G 1.5                               | 10.3                | 112                  | 207            |
| 1321312        | 12 G 1.5                              | 13.3                | 182                  | 326            |
| 1321318        | 18 G 1.5                              | 15.3                | 277                  | 464            |
| 1321325        | 25 G 1.5                              | 17.5                | 375                  | 609            |
| 1321403        | 3 G 2.5                               | 9.6                 | 86                   | 166            |
| 1321404        | 4 G 2.5                               | 10.3                | 110                  | 203            |
| 1321405        | 5 G 2.5                               | 11.2                | 134                  | 243            |
| 1321407        | 7 G 2.5                               | 12.1                | 178                  | 305            |
| 1321412        | 12 G 2.5                              | 15.8                | 311                  | 503            |
| 1321504        | 4 G 4.0                               | 11.9                | 163                  | 276            |
| 1321505        | 5 G 4.0                               | 13.2                | 199                  | 340            |
| 1321604        | 4 G 6.0                               | 13.4                | 232                  | 368            |
| 1321605        | 5 G 6.0                               | 14.7                | 284                  | 450            |
| 1321704        | 4 G 10.0                              | 16.8                | 397                  | 644            |
| 1321705        | 5 G 10.0                              | 18.7                | 486                  | 785            |
| 1321804        | 4 G 16.0                              | 19.6                | 639                  | 931            |
| 1321805        | 5 G 16.0                              | 22.4                | 786                  | 1142           |

**ÖLFLEX® SERVO 2XSLEY-JB**

EMC-optimised motor cable, low-capacitance, double-screened, certified

**Info**

- EMC-optimised design
- 3+3 symmetry reduces common-mode interference effects and bearing currents

**Benefits**

- Power supply for large drives possible.
- Ideal protection against electromagnetic interference thanks to double shielding made of aluminium-laminated foil and copper braiding with a high degree of coverage
- Low-capacitance XLPE core insulation with outstanding electrical properties enables long transmission paths
- Classified fire behaviour according to EU Directive 305/2011 (BauPVO/CPR) with article number selection on LAPP website
- UL/CSA certification according to technical data enables the product to be used on the North American market
- Product with multiple certifications enables universal use and reduces the variety of parts, thus guaranteeing logistics savings
- Operating voltage of 1000 V according to UL, permitted for North America
- Available as a 4-core version and 3+3 balanced version
- Versions with symmetrical cable design and splitted protective conductor largely prevent the generation of damaging bearing currents inside the motor. A reduction in motor bearing damage contributes to the durability of motors

- Improved core insulation allows conductor temperatures of up to +90°C and therefore a wide range of applications

**Application range**

- For connecting frequency converters and motors
- For fixed installation and occasional flexing
- Can be used in dry, damp or wet environments
- Suitable for medium mechanical stress
- The PVC outer sheath is resistant to acids and alkalis, and to oil to a limited degree
- Suitable for outdoor use

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation: XLPE
- Cores twisted concentrically (symmetrically splitted protective conductor of 3+3 version is gusset-filling divided between the power cores)
- Screening: wrapping of laminated aluminium foil in combination with tinned copper braiding
- Outer sheath: PVC special compound, colour black (RAL 9005)

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable

**Core identification code**

Colours according to HD 308 S2  
VDE 0293-308

**Conductor stranding**

Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**

IEC U0/U: 600/1000 V  
UL & CSA: 1000 V

**Test voltage**

4000 V

**Protective conductor**

Protective conductor of 3+3 version is gusset-filling divided between power cores

**Temperature range**

Flexing:  
-15°C to + 90°C (UL/CSA + 80°C)  
Fixed installation:  
-40°C to + 90°C (UL/CSA + 80°C)

| Article number                 | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 2XSLEY-JB</b> |                                                   |                     |                      |                |
| 1133600                        | 4 G 1.5                                           | 10.9                | 95                   | 160            |
| 1133601                        | 4 G 2.5                                           | 12.1                | 150                  | 221            |
| 1133602                        | 4 G 4                                             | 14.1                | 235                  | 315            |
| 1133603                        | 4 G 6                                             | 15.6                | 320                  | 418            |
| 1133604                        | 4 G 10                                            | 18                  | 533                  | 1000           |
| 1133605                        | 4 G 16                                            | 20.9                | 789                  | 1290           |
| 1133606                        | 4 G 25                                            | 26                  | 1.236                | 1860           |
| 1133607                        | 4 G 35                                            | 29.6                | 1.662                | 2610           |
| 1133608                        | 4 G 50                                            | 32.8                | 2.345                | 2950           |
| 1133609                        | 4 G 70                                            | 38                  | 3.196                | 3950           |
| 1133610                        | 4 G 95                                            | 42.5                | 4.316                | 5300           |
| 1133611                        | 4 G 120                                           | 47                  | 5.435                | 6600           |
| 1133612                        | 4 G 150                                           | 52.9                | 6.394                | 7590           |
| 1133613                        | 4 G 185                                           | 57.6                | 7.639                | 9420           |
| 1133614                        | 4 G 240                                           | 65.6                | 10.013               | 12150          |
| 1133615                        | 3 X 1.5 + 3 G 0.25                                | 10.9                | 88                   | 177            |
| 1133616                        | 3 X 2.5 + 3 G 0.5                                 | 12                  | 144                  | 230            |
| 1133617                        | 3 X 4 + 3 G 0.75                                  | 13.5                | 224                  | 323            |
| 1133618                        | 3 X 6 + 3 G 1                                     | 14.7                | 276                  | 420            |
| 1133619                        | 3 X 10 + 3 G 1.5                                  | 16.7                | 491                  | 635            |
| 1133620                        | 3 X 16 + 3 G 2.5                                  | 20.2                | 723                  | 930            |
| 1133621                        | 3 X 25 + 3 G 4                                    | 23.4                | 1.136                | 1350           |
| 1133622                        | 3 X 35 + 3 G 6                                    | 26.7                | 1.535                | 1780           |
| 1133623                        | 3 X 50 + 3 G 10                                   | 30.9                | 2.156                | 2530           |
| 1133624                        | 3 X 70 + 3 G 10                                   | 34.4                | 2.871                | 3225           |
| 1133625                        | 3 X 95 + 3 G 16                                   | 38.3                | 3.953                | 4511           |
| 1133626                        | 3 X 120 + 3 G 16                                  | 42.3                | 4.836                | 5663           |
| 1133627                        | 3 X 150 + 3 G 25                                  | 47.5                | 5.412                | 6720           |
| 1133628                        | 3 X 185 + 3 G 35                                  | 51.9                | 7.041                | 7855           |
| 1133629                        | 3 X 240 + 3 G 50                                  | 59                  | 8.986                | 12850          |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO 719

Low capacitance servo cable with PVC outer sheath for static use - certified for North America



### Info

- Low-capacitance design
- Without overall screening

### Benefits

- One common cable for multiple circuits
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Multi-standard certification reduces part varieties and saves costs
- Space and weight-saving installations due to small cable diameters

### Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Plant engineering
- Industrial machinery and machine tools
- Printing machines

### Product features

- Low capacitance
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant

### Norm references / Approvals

- USA: UL AWM Style 2570  
Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- PVC outer sheath, black (RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Power cores: black with marking U/  
L1/C/L+; V/L2; W/L3/D/L-; GN/YE  
protective conductor  
Single-paired versions: black; white  
Double-paired versions: black with  
white numbers 5; 6; 7; 8  
0,34mm<sup>2</sup> pairs: WH/BN/GN/YE



#### Conductor stranding

Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

Power cores and control cores:  
IEC U0/U: 600/1000 V  
UL & CSA: 1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 4 kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Occasional flexing:  
-5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +80°C

| Article number           | Number of cores and mm <sup>2</sup> per conductor | Outer diameter (mm) approx. | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|---------------------------------------------------|-----------------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 719</b> |                                                   |                             |                      |                |
| 1020060                  | 4 G 1,5 + (2 x 0,75)                              | 9.7                         | 83.3                 | 177            |
| 1020065                  | 4 G 1,5 + (2 x 1,5)                               | 10.8                        | 108.3                | 214            |
| 1020061                  | 5 G 1,5 + (2 x 0,75)                              | 10.6                        | 97.7                 | 203            |
| 1020062                  | 7 G 1,5 + (2 x 0,75)                              | 11.5                        | 126.5                | 241            |
| 1020063                  | 4 G 2,5 + (2 x 0,75)                              | 11.1                        | 121.7                | 238            |
| 1020066                  | 4 G 2,5 + (2 x 1,5)                               | 12.2                        | 146.7                | 276            |
| 1020064                  | 7 G 2,5 + (2 x 0,75)                              | 12.7                        | 193.7                | 325            |
| 1020067                  | 4 G 4 + (2 x 1,5)                                 | 13.9                        | 204.3                | 360            |
| 1020068                  | 4 G 6 + (2 x 1,5)                                 | 16.1                        | 281.1                | 478            |
| 1020069                  | 4 G 10 + (2 x 1,5)                                | 18.2                        | 434.7                | 654            |
| 1020071                  | 4 G 0,75 + 2 x (2 x 0,34)                         | 9.0                         | 62.1                 | 121            |
| 1020072                  | 4 G 1,5 + 2 x (2 x 0,75)                          | 11.6                        | 111.6                | 203            |
| 1020073                  | 4 G 2,5 + 2 x (2 x 1,0)                           | 13.6                        | 159.7                | 286            |
| 1020074                  | 4 G 4 + 2 x (2 x 1,0)                             | 15.3                        | 217.3                | 377            |
| 1020075                  | 4 G 4 + (2 x 1,0) + (2 x 1,5)                     | 15.5                        | 237.6                | 396            |
| 1020076                  | 4 G 6 + (2 x 1,0) + (2 x 1,5)                     | 17.4                        | 314.4                | 512            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO 719 CY

Screened, low capacitive servo cable with PVC outer sheath for static use - certified for North America



### Info

- Low-capacitance design
- Product range extension

LAPP KABEL STUTTGART ÖLFLEX® SERVO 719 CY DESINA, CE



### Benefits

- Suitable for use with servomotor product lines from leading drive manufacturers
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Multi-standard certification reduces part varieties and saves costs
- Space and weight-saving installations due to small cable diameters
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Plant engineering
- Industrial machinery and machine tools
- Printing machines

### Product features

- Low capacitance
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant
- EMC-compliant

### Norm references / Approvals

- USA: UL AWM Style 2570  
Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: polypropylene (PP)
- Individual design depending on the item:  
Power cores without or with one or two individually shielded control core pairs twisted together in short lay lengths;  
Power cores with control core triplet twisted together in short lay lengths
- Tinned copper screen braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable
- Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D/L-; GN/YE protective conductor  
Single-paired versions: individual design depending on the item black; white or brown; white  
Double-paired versions: black with white numbers 5; 6; 7; 8  
0.34 mm² pairs: WH/BN/GN/YE  
Triplet: black with white numbers 1; 2; 3
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
Power cores and control cores:  
IEC U0/U: 600/1000 V  
UL & CSA: 1000 V
- Test voltage**  
Core/Core: 4 kV  
Core/Screen: 4 kV
- Protective conductor**  
G = with GN-YE protective conductor
- Temperature range**  
Occasional flexing:  
-5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +80°C

| Article number              | Number of cores and mm² per conductor | Outer diameter (mm) approx. | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------|---------------------------------------|-----------------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 719 CY</b> |                                       |                             |                      |                |
| 1020010                     | 4G1,5                                 | 8.4                         | 83                   | 130            |
| 1020011                     | 4G2,5                                 | 9.9                         | 125                  | 190            |
| 1020012                     | 4G4                                   | 11.7                        | 191                  | 273            |
| 1020013                     | 4G6                                   | 13.7                        | 290                  | 394            |
| 1020014                     | 4G10                                  | 16.7                        | 452                  | 581            |
| 1020015                     | 4G16                                  | 20.1                        | 721                  | 884            |
| 1020016                     | 4G25                                  | 24.3                        | 1,100                | 1348           |
| 1020017                     | 4G35                                  | 27.7                        | 1,548                | 1840           |
| 1020018                     | 4G50                                  | 33.7                        | 2,151                | 2645           |
| 1020019                     | 4G1,5+(2x1,5)                         | 11.5                        | 146                  | 242            |
| 1020020                     | 4G2,5+(2x1,5)                         | 12.9                        | 189                  | 306            |
| 1020021                     | 4G4+(2x1,5)                           | 15                          | 271                  | 420            |
| 1020022                     | 4G6+(2x1,5)                           | 17                          | 351                  | 529            |
| 1020023                     | 4G10+(2x1,5)                          | 19.5                        | 540                  | 752            |
| 1020024                     | 4G0,75+2x(2x0,34)                     | 9.7                         | 99                   | 163            |
| 1020025                     | 4G1,5+2x(2x0,75)                      | 12.3                        | 150                  | 245            |
| 1020026                     | 4G2,5+2x(2x1)                         | 14.7                        | 223                  | 357            |
| 1020027                     | 4G4+2x(2x1)                           | 16.4                        | 288                  | 452            |
| 1020028                     | 4G4+(2x1)+(2x1,5)                     | 16.6                        | 307                  | 469            |
| 1020029                     | 4G6+(2x1)+(2x1,5)                     | 18.5                        | 421                  | 617            |
| 1020030                     | 4G10+(2x1)+(2x1,5)                    | 22.1                        | 588                  | 852            |
| 1020031                     | 4G16+2x(2x1,5)                        | 25                          | 876                  | 1162           |
| 1020032                     | 4G25+2x(2x1,5)                        | 28.7                        | 1,227                | 1590           |

| Article number | Number of cores and mm² per conductor | Outer diameter (mm) approx. | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|-----------------------------|----------------------|----------------|
| 1020033        | 4G35+2x(2x1,5)                        | 30.6                        | 1,652                | 2023           |
| 1020034        | 4G50+2x(2x2,5)                        | 37                          | 2,264                | 2876           |
| 1020035        | 4G1+2x(2x0,75)                        | 11.6                        | 126.4                | 207            |
| 1020040        | 4G0,75+(2x0,5)                        | 8.9                         | 78                   | 159            |
| 1020041        | 4G1+(2x0,5)                           | 9.3                         | 88                   | 147            |
| 1020042        | 4G1,5+(2x0,5)                         | 10.3                        | 111                  | 180            |
| 1020043        | 4G2,5+(2x0,5)                         | 11.7                        | 158                  | 247            |
| 1020044        | 4G1+(2x1,0)                           | 10.2                        | 107                  | 204            |
| 1020045        | 4G1,5+(2x1,0)                         | 10.8                        | 130                  | 230            |
| 1020046        | 4G2,5+(2x1,0)                         | 12.1                        | 173                  | 293            |
| 1020047        | 4G4+(2x1,0)                           | 14.3                        | 250                  | 373            |
| 1020048        | 4G6+(2x1,0)                           | 16                          | 334                  | 485            |
| 1020049        | 4G10+(2x1,0)                          | 18.8                        | 526                  | 712            |
| 1020050        | 4G16+(2x1,0)                          | 22.3                        | 772                  | 991            |
| 1020051        | 4G16+(2x1,5)                          | 22.5                        | 785.2                | 999            |
| 1020052        | 4G25+(2x1,5)                          | 26.1                        | 1,184.9              | 1459           |
| 1020053        | 4G1,5+(3x1,0)                         | 11.5                        | 145                  | 225            |
| 1020054        | 4G2,5+(3x1,0)                         | 12.9                        | 188                  | 290            |
| 1020055        | 4G4+(3x1,0)                           | 14.8                        | 270                  | 402            |
| 1020056        | 4G6+(3x1,5)                           | 17                          | 370                  | 537            |
| 1020057        | 4G10+(3x1,5)                          | 19.5                        | 559                  | 758            |
| 1020058        | 4G16+(3x1,5)                          | 23                          | 805                  | 1151           |
| 1020059        | 4G35+(2x1,5)                          | 30.4                        | 1,598.1              | 1971           |
| 1020085        | 4G50+(2x1,5)                          | 34                          | 2,205.2              | 2713           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables

Servo applications • PVC sheath, certified



## ÖLFLEX® SERVO 728 CY

Screened encoder cable with PVC outer sheath for static use - certified



### Info

- Fits to various encoder systems
- Low-capacitance design

### Benefits

- Suitable for use with encoders & resolvers from leading manufacturers
- Thin, optimised for weight and volume
- Multi-standard certification reduces part varieties and saves costs
- Easy to install

### Application range

- Analogue and incremental encoders in servo drives
- For static and occasionally flexible use
- Measurement, control and electrical applications
- Industrial machinery and plant engineering
- Only for outdoor use within the indicated operating temperature range, with UV-protection

### Product features

- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Low attenuation ensures a longer transmission distance
- Oil-resistant

### Norm references / Approvals

- UL AWM Style 2464
- CUL AWM I/II A/B FT1
- UL File No. E63634

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: polypropylene (PP)
- Cores (or core pairs) twisted in layers or bundles
- Refer to data sheet for more details
- Non-woven wrapping
- PVC jacket, green (RAL 6018)

### Technical data



#### Core identification code

Details see datasheet  
ÖLFLEX® SERVO 728 CY



#### Conductor stranding

Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

IEC: 30 V  
UL & CSA: 300 V



#### Test voltage

C/C: 2000 V  
C/S: 1000 V



#### Temperature range

Occasional flexing:  
-5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +80°C

| Article number              | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 728 CY</b> |                                                   |                     |                      |                |
| 1020100                     | (10x0,14+2x0,5)                                   | 7                   | 41                   | 84             |
| 1020101                     | (10x0,14+4x0,5)                                   | 7.6                 | 53                   | 101            |
| 1020102                     | (15x0,14+4x0,5)                                   | 7.6                 | 68                   | 115            |
| 1020110                     | (4x2x0,34+4x0,5)                                  | 8.3                 | 79                   | 129            |
| 1020111                     | (3x(2x0,14)+4x0,14+2x0,5)                         | 8.2                 | 68                   | 120            |
| 1020120                     | (4x2x0,25+2x0,5)                                  | 7.9                 | 59                   | 103            |
| 1020121                     | (4x2x0,25+2x1,0)                                  | 7.6                 | 63                   | 112            |
| 1020122                     | (4x2x0,14+4x1+(4x0,14))                           | 9                   | 110                  | 155            |
| 1020130                     | (3x(2x0,14)+2x(0,5))                              | 9                   | 87                   | 140            |
| 1020131                     | 3x(2x0,14)+(3x0,14)                               | 9.2                 | 41                   | 115            |
| 1020132                     | 4x(2x0,14)+(2x1,0)                                | 10.4                | 84                   | 145            |
| 1020133                     | (4x2x0,14+4x0,5)                                  | 7.9                 | 58                   | 97             |
| 1020134                     | (7x2x0,14+2x0,5)                                  | 8.5                 | 60                   | 115            |
| 1020135                     | (3x(2x0,14)+4x0,14+2x0,5+4x0,22))                 | 9.7                 | 80                   | 160            |
| 1020136                     | (3x2x0,14)+(2x0,5)                                | 9.3                 | 87                   | 140            |
| 1020140                     | (5x2x0,25)                                        | 7.4                 | 50                   | 96             |
| 1020141                     | (6x2x0,25)                                        | 8                   | 60                   | 114            |
| 1020142                     | (5x2x22AWG)                                       | 7.9                 | 71                   | 115            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO 7DSL

Low capacitive hybrid servo cable with PVC outer sheath for static use - certified for North America



### Info

- One cable solution for servo drives
- Suitable for Hiperface DSL® and SCS open link interfaces
- EMC-compliant



### Benefits

- Only one connection line between drive and motor-feedback system. Instead of the encoder cable a specific integrated data pair takes over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Multi-standard certification reduces part varieties and saves costs
- Easy to install

### Application range

- For fixed installation or applications with occasional movements
- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

### Product features

- Maximum DSL transmission length: 100m
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant
- Low-capacitance design
- EMC-optimised design

### Norm references / Approvals

- USA: UL AWM Style 2570  
Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor (power cores and control pair) and 7-wire, tinned copper conductor (signal pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL data pair twisted together
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Power cores: black with marking U/  
L1/C/L+; V/L2; W/L3/D /L-; GN/YE  
protective conductor  
Signal pair: white, blue  
Control pair (optional): black with white  
numbers 5 + 6



#### Conductor stranding

Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5  
DSL pair: 7-wired



#### Minimum bending radius

For flexible use:  
15 x outer diameter  
Fixed installation: 5 x outer diameter



#### Nominal voltage

Power and control:  
IEC: U0/U: 600/1000 V  
UL: 1000 V  
Signal pair: 300 V



#### Test voltage

Power and control: 4 kV  
Data pair: 1kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +70°C  
(UL: +80°C)

| Article number                              | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>Hybrid cables for fixed installation</b> |                                       |                     |                      |                |
| 1023290                                     | 4 G 1,5 + (2 x 22AWG)                 | 11.2                | 110                  | 194            |
| 1023291                                     | 4 G 2,5 + (2 x 22AWG)                 | 12.6                | 148                  | 253            |
| 1023292                                     | 4 G 4 + (2 x 22AWG)                   | 14.0                | 208                  | 332            |
| 1023293                                     | 4 G 1,5 + (2 x 1,0) + (2 x 22AWG)     | 13.2                | 140                  | 250            |
| 1023294                                     | 4 G 2,5 + (2 x 1,0) + (2 x 22AWG)     | 14.0                | 185                  | 285            |
| 1023295                                     | 4 G 4 + (2 x 1,0) + (2 x 22AWG)       | 15.8                | 248                  | 390            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO 7TCE

Multi-listed, flexible servo cable with optional pairs for brake and temperature sensor



### Info

- Servo motor and drive connections
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- EMC-compliant

LAPP KABEL STUTTGART ÖLFLEX® SERVO 7TCE

### Benefits

- One common cable for multiple circuits
- Multi-standard certification reduces part varieties and saves costs
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
- Low capacitance design enables longer cable connection between frequency converter and motor
- UL TC-ER and c(UL) CIC/TC approved

### Application range

- Connecting cable between servo controller and motor
- For fixed installation or applications with occasional movements
- Class 1 Division 2 per NEC Articles 336, 501
- Plant engineering
- Industrial machinery and machine tools

### Product features

- Oil-resistant according to UL OIL RES I & II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- -40°C Cold Bend; -25°C Cold Impact; 90°C Wet or Dry
- Sunlight Resistant; Direct Burial

### Norm references / Approvals

- UL TC-ER (exposed run) per UL 1277
- Class 1 Division 2 per NEC Articles 336, 501
- Flexible Motor Supply Cable per UL 2277
- C(UL) CIC FT4 (18AWG - 14AWG); cRU AWM I/II A/B FT4

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: XLPE
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- Tinned-copper braiding
- Outer sheath: Specially formulated thermoplastic elastomer (TPE), orange

### Technical data



#### Classification ETIM 5/6

ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable



#### Core identification code

Power cores: black with marking U/ L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Optional designs with one pair of control cores: black; white  
Two pairs of control cores: black with white numbers: 5, 6, 7, 8



#### Certifications

USA: UL TC-ER, Flexible Motor SupplyCanada: c(UL) CIC/TC FT4, cRU AWM I/II A/B FT4



#### Conductor stranding

Fine wire



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

UL TC: 600V  
UL Flexible Motor Supply: 1000V  
c(UL) CIC/TC: 600V  
cRU AWM: 1000V  
IEC U0/U: 600/1000 V



#### Test voltage

2000 V



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Occasional flexing: -25°C to +90°C  
Fixed installation: -40°C to +90°C

| Article number            | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|---------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 7TCE</b> |                                                   |                     |                      |                |
| 700730                    | 4 G 1,5                                           | 9.8                 | 88                   | 143            |
| 700731                    | 4 G 2,5                                           | 11.0                | 132                  | 199            |
| 700732                    | 4 G 4                                             | 12.8                | 199                  | 286            |
| 700733                    | 4 G 6                                             | 14.1                | 281                  | 373            |
| 700734                    | 4 G 1,5 + (2 x 1,5)                               | 12.6                | 147                  | 240            |
| 700735                    | 4 G 2,5 + (2 x 1,5)                               | 13.3                | 191                  | 301            |
| 700736                    | 4 G 4 + (2 x 1,5)                                 | 15.8                | 259                  | 432            |
| 700737                    | 4 G 6 + (2 x 1,5)                                 | 17.0                | 354                  | 496            |
| 700738                    | 4 G 1,0 + 2 x (2 x 1,0)                           | 13.2                | 167                  | 277            |
| 700739                    | 4 G 1,5 + 2 x (2 x 1,0)                           | 13.9                | 188                  | 314            |
| 700740                    | 4 G 2,5 + 2 x (2 x 1,0)                           | 15.5                | 229                  | 387            |
| 700741                    | 4 G 4 + (2 x 1,0) + (2 x 1,5)                     | 17.0                | 326                  | 487            |
| 700742                    | 4 G 6 + (2 x 1,0) + (2 x 1,5)                     | 18.1                | 409                  | 574            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ÖLFLEX® VFD 2XL**

Multi-listed, flexible VFD cable

**Info**

- VFD drive and motor connections
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- EMC-compliant

**Benefits**

- Reduced insulation wall thickness, thus space-saving installation
- Multi-standard certification reduces part varieties and saves costs
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
- Low capacitance design enables longer cable connection between frequency converter and motor
- UL TC-ER and c(UL) CIC/TC approved

**Application range**

- Connecting cable between Frequency converter and motor
- For fixed installation or applications with occasional movements
- Class 1 Division 2 per NEC Articles 336, 501
- Plant engineering
- Industrial machinery and machine tools

**Product features**

- Oil-resistant according to UL OIL RES I & II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- 90°C Wet or Dry; -40°C Cold Bend; -25°C Cold Impact
- Sunlight Resistant; Direct Burial

**Norm references / Approvals**

- UL TC-ER (exposed run) per UL 1277
- Class 1 Division 2 per NEC Articles 336, 501
- Flexible Motor Supply Cable per UL 2277
- C(UL) CIC/TC-ER FT4; cRU AWM I/II A/B FT4
- CE (50V - 1kV)

**Product Make-up**

- Fine-wire, tinned-copper conductor
- Core insulation: XLPE
- Aluminum-coated foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: Specially formulated thermoplastic elastomer (TPE), black

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable

**Core identification code**

Black with white numbers

**Certifications**

USA: UL TC-ER, WTTC, Flexible Motor Supply  
Canada: c(UL) CIC/TC FT4, cRU AWM I/II A/B FT4

**Conductor stranding**

Fine wire

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 7.5 x outer diameter

**Nominal voltage**

UL TC: 600V/2000V  
UL Flexible Motor Supply: 1000V  
c(UL) CIC/TC: 600V  
cRU AWM: 1000V  
IEC U0/U: 600/1000 V

**Test voltage**

6000 V

**Protective conductor**

G = with GN-YE protective conductor

**Temperature range**

Occasional flexing: -25°C to +90°C  
Fixed installation: -40°C to +90°C

| Article number         | Number of cores and mm <sup>2</sup> /AWG sizes per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------|--------------------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® VFD 2XL</b> |                                                              |                     |                      |                |
| 700700                 | 4 G 1,5                                                      | 12.9                | 104.2                | 238            |
| 700701                 | 4 G 2,5                                                      | 14.8                | 148.8                | 292            |
| 700702                 | 4 G 4                                                        | 16.7                | 214.3                | 384            |
| 700703                 | 4 G 6                                                        | 18.0                | 296.1                | 476            |
| 700704                 | 4 G 10                                                       | 22.5                | 443.4                | 856            |
| 700705                 | 4 G 16                                                       | 25.9                | 770.8                | 1317           |
| 700706                 | 4 G 4AWG                                                     | 29.4                | 955.3                | 1570           |
| 700707                 | 4 G 2AWG                                                     | 33.8                | 1458.2               | 2173           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® VFD 2XL with Signal

Multi-listed, flexible VFD cable with a pair for brake or temperature sensor



### Info

- VFD drive and motor connections
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- EMC-compliant



### Benefits

- One common cable for multiple circuits
- Multi-standard certification reduces part varieties and saves costs
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
- Low capacitance design enables longer cable connection between frequency converter and motor
- UL TC-ER and c(UL) CIC/TC approved

### Application range

- Connecting cable between Frequency converter and motor
- For fixed installation or applications with occasional movements
- Class 1 Division 2 per NEC Articles 336, 501
- Plant engineering
- Industrial machinery and machine tools

### Product features

- Oil-resistant according to UL OIL RES I & II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- 90°C Wet or Dry; -40°C Cold Bend; -25°C Cold Impact
- Sunlight Resistant; Direct Burial

### Norm references / Approvals

- UL TC-ER (exposed run) per UL 1277
- Class 1 Division 2 per NEC Articles 336, 501
- Flexible Motor Supply Cable per UL 2277
- C(UL) CIC/TC FT4; cRU AWM I/II A/B FT4
- CE (50V - 1kV)

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: XLPE
- Control pair with laminated aluminium film and tin-plated drain wire
- Barrier tape
- Aluminum-coated foil
- Tinned-copper braiding with drain wire
- Outer sheath: Specially formulated thermoplastic elastomer (TPE), black

### Technical data

|  |                                                                                                                                                |
|--|------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000057<br>ETIM 5.0/6.0 Class-Description: Low voltage power cable                   |
|  | <b>Core identification code</b><br>Black with white numbers                                                                                    |
|  | <b>Certifications</b><br>USA: UL TC-ER, WTTC, Flexible Motor Supply<br>Canada: c(UL) CIC/TC FT4, cRU AWM I/II A/B FT4                          |
|  | <b>Conductor stranding</b><br>Fine wire                                                                                                        |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 15 x outer diameter<br>Fixed installation: 7.5 x outer diameter                           |
|  | <b>Nominal voltage</b><br>UL TC: 600V/2000V<br>UL Flexible Motor Supply: 1000V<br>c(UL) CIC/TC: 600V<br>cRU AWM: 1000V<br>IEC U0/U: 600/1000 V |
|  | <b>Test voltage</b><br>6000 V                                                                                                                  |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor                                                                             |
|  | <b>Temperature range</b><br>Occasional flexing: -25°C to +90°C<br>Fixed installation: -40°C to +90°C                                           |

| Article number                     | Number of cores and mm <sup>2</sup> /AWG sizes per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------|--------------------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® VFD 2XL with Signal</b> |                                                              |                     |                      |                |
| 700710                             | 4 G 1,5 + (2 x 1,0)                                          | 16.6                | 135.4                | 298            |
| 700711                             | 4 G 2,5 + (2 x 1,0)                                          | 17.4                | 196.4                | 375            |
| 700712                             | 4 G 4 + (2 x 1,0)                                            | 19.1                | 238.1                | 438            |
| 700713                             | 4 G 6 + (2 x 1,0)                                            | 20.3                | 319.9                | 527            |
| 700714                             | 4 G 10 + (2 x 2,5)                                           | 25.0                | 497                  | 1027           |
| 700715                             | 4 G 16 + (2 x 2,5)                                           | 28.2                | 750                  | 1347           |
| 700716                             | 4 G 4AWG + (2 x 2,5)                                         | 32.0                | 992.5                | 1674           |
| 700717                             | 4 G 2AWG + (2 x 2,5)                                         | 35.6                | 1528.2               | 2351           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO FD 781 CY

Screened, low capacitive servo cable with PVC outer sheath for flexible cable chain application



### Info

- Core Line Performance – Medium to increased travel lengths or acceleration
- EMC-compliant

### Benefits

- Well-proven and reliable
- Low capacitance design enables longer cable connection between frequency converter and motor
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- Connecting cable between Frequency converter and motor
- In cable chains or moving machine parts
- For power circuits in machine cabling
- In dry, damp or wet interiors with normal mechanical stress conditions
- Only for outdoor use within the indicated operating temperature range, with UV-protection

### Product features

- Oil-resistant
- Flame retardant acc. to IEC 60332-1-2
- Low-adhesive surface

### Norm references / Approvals

- Based on VDE 0250 / 0285
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Cores twisted in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U0/U: 600/1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 4 kV



#### Protective conductor

G = with gn-ye protective conductor



#### Temperature range

Flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

| Article number                 | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 781 CY</b> |                                                   |                     |                      |                |
| 0036320                        | 4 G 1.5                                           | 9.8                 | 89                   | 157            |
| 0036321                        | 4 G 2.5                                           | 11.9                | 133.8                | 233            |
| 0036322                        | 4 G 4.0                                           | 13.5                | 210.9                | 335            |
| 0036324                        | 4 G 10.0                                          | 19.7                | 488.2                | 747            |
| 0036325                        | 4 G 16.0                                          | 23.9                | 744.8                | 1109           |
| 0036327                        | 4 G 35.0                                          | 33.3                | 1565.4               | 2264           |
| 0036328                        | 4 G 50.0                                          | 38.3                | 2174.9               | 3090           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO FD 7TCE

Highly flexible, low capacitive servo motor cable with TC-ER (UL) or c(UL)-Listing for North America



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- Low-capacitance design

### Benefits

- Multi-standard certification offers universal application range, reduces part varieties and saves costs
- TC-ER and Flexible Motor Supply Cable listings enable open wiring on cable trays as well as the static or highly flexible usage for industrial machines with the same cable
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
- Low capacitance design enables longer cable connection between frequency converter and motor
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Ideal for export-oriented machinery and equipment manufacturers thanks to high normative acceptance by the North American NEC (National Electrical Code)

### Application range

- Connecting cable between servo controller and motor
- In cable chains or moving machine parts
- Static open wiring on and between cable tray an industrial machine acc. NEC
- Industrial machinery and machine tools
- Linear robots, automated handling equipment
- Assembly lines, production lines, in all kinds of machines

### Product features

- Oil-resistant according to UL OIL RES I & II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- -40°C Cold Bend; -25°C Cold Impact; 90°C Wet or Dry
- Sunlight Resistant
- Direct Burial (according US standard)
- Low capacitance

### Norm references / Approvals

- UL TC-ER (exposed run) per UL 1277
- Flexible Motor Supply Cable per UL 2277
- Class 1 Division 2 per NEC Article 501
- C(UL) CIC FT4 (18AWG - 14AWG); cRU AWM I/II A/B FT4
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper
- Core insulation: EPR compound
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath: Specially formulated thermoplastic elastomer (TPE), orange

### Technical data



#### Classification ETIM 5/6

ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable



#### Core identification code

Power cores: black with marking U/ L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Optional designs with one pair of control cores: black; white  
Two pairs of control cores: black with white numbers: 5, 6, 7, 8



#### Certifications

USA: UL TC-ER, Flexible Motor Supply/Canada: c(UL) CIC/TC FT4, cRU AWM I/II A/B FT4



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 5 x outer diameter



#### Nominal voltage

UL TC: 600V  
UL Flexible Motor Supply: 1000V  
c(UL) CIC/TC: 600V  
cRU AWM: 1000V  
IEC U0/U: 600/1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 2 kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing: -5°C to +90°C  
Fixed installation: -40°C to +90°C

| Article number               | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 7TCE</b> |                                                   |                     |                      |                |
| 700750                       | 4 G 1.5                                           | 10.2                | 91                   | 174            |
| 700751                       | 4 G 2.5                                           | 11.4                | 141                  | 230            |
| 700752                       | 4 G 4.0                                           | 13.1                | 201                  | 319            |
| 700753                       | 4 G 6.0                                           | 15.0                | 283                  | 431            |
| 700754                       | 4 G 1.5 + (2 x 1,5)                               | 12.7                | 144                  | 259            |
| 700755                       | 4 G 2,5 + (2 x 1,5)                               | 13.8                | 199                  | 356            |
| 700756                       | 4 G 4 + (2 x 1,5)                                 | 16.1                | 274                  | 447            |
| 700757                       | 4 G 6 + (2 x 1,5)                                 | 17.1                | 345                  | 537            |
| 700758                       | 4 G 1 + 2 x (2 x 1,0)                             | 13.3                | 152                  | 280            |
| 700759                       | 4 G 1,5 + 2 x (2 x 1,0)                           | 14.8                | 190                  | 355            |
| 700760                       | 4 G 2,5 + 2 x (2 x 1,0)                           | 15.9                | 278                  | 410            |
| 700761                       | 4 G 4 + (2 x 1,0) + (2 x 1,5)                     | 17.9                | 318                  | 525            |
| 700762                       | 4 G 6 + (2 x 1,0) + (2 x 1,5)                     | 18.8                | 390                  | 613            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO FD zeroCM

Motor connection cable; PUR jacketed; Shielded; UL recognised; Cable chain



### Info

- Extended Line Performance - Long distance
- New design reduces common-mode interference effects and bearing currents

### Benefits

- Low-capacitance bundle design with counterrotating protective conductor (zeroCM® technology) enables completely electrically symmetrical cable construction and improves electromagnetic compatibility
- zeroCM® technology has been proven to reduce leakage currents in protective earth or equipotential bonding cables, thus reducing harmful currents at the motor bearing, electromagnetic interference on data transmission and corrosion on building structures
- zeroCM® technology reduces transfer currents in frequency converter applications and thus enables almost double cable lengths
- zeroCM® technology prevents potential voltages at earth connections on the consumer side
- Long-life cable chain use for medium travel distances or increased accelerations (LAPP performance class "Core Line")
- Extremely weather-resistant with the possibility of use in a wide temperature range
- Particularly resistant to oil and drilling fluids, making it ideal for harsh environments
- UL/CSA certification according to technical data allows use of the product in the North American market
- Halogen-free and flame-retardant materials reduce the potential hazards in case of fire

- Faster and error-free connection with just one instead of three protective conductors

### Application range

- For connecting frequency inverter and motor
- Especially for environments where electromagnetic compatibility (EMC) is required
- Cable design allows highly flexible, continuously moving use in moving machine parts and in the cable chain
- Can be used in dry, damp and especially in rough and oily environments
- PUR outer jacket withstands high mechanical loads
- The PUR outer sheath is resistant to mineral oil-based lubricants and highly resistant to chemicals
- Suitable for outdoor use
- Flexible use possible at up to -40 °C

### Technical data



#### Classification ETIM 5/6

ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable



#### Core identification code

Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D-/L-; GN/YE protective conductor



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 10 x outer diameter  
Fixed installation: 5 x outer diameter



#### Nominal voltage

IEC U0/U: 600/1000 V  
UL & CSA: 1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 4 kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing: -40°C to +90°C  
(UL/CSA: +80°C)  
Fixed installation: -50°C to +90°C  
(UL/CSA: +80°C)

| Article number                 | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD zeroCM</b> |                                                   |                     |                      |                |
| 1023470                        | 3 X 1.5 + 1 G 1                                   | 13                  | 93.4                 | 190            |
| 1023471                        | 3 X 2.5 + 1 G 1.5                                 | 14.8                | 149.2                | 266            |
| 1023472                        | 3 X 4 + 1 G 2.5                                   | 18                  | 220                  | 405            |
| 1023473                        | 3 X 6 + 1 G 4                                     | 20.5                | 322.2                | 543            |
| 1023474                        | 3 X 10 + 1 G 6                                    | 23.7                | 469.9                | 787            |
| 1023475                        | 3 X 16 + 1 G 10                                   | 28.2                | 735.6                | 1188           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO FD 796 P

Servo cable with PUR outer sheath for highly dynamic cable chain application - certified for North America



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- AWM certification for USA and Canada
- VDE-tested characteristics



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Low capacitance design enables longer cable connection between frequency converter and motor
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Multi-standard certification reduces part varieties and saves costs

### Application range

- Connecting cable between servo controller and motor
- In cable chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

### Product features

- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Halogen-free materials
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- VDE - reg - no. 8591 (≥ 4G1,5)  
UL AWM Style 20234  
cULus AWM I/II A/B, 1000V 80° FT1  
CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- According to P/N individual design: Power cores with one or with two control pair(s), twisted together in short lay length
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Power cores: black with marking U/  
L1/C/L+; V/L2; W/L3/D /L-; GN/YE  
protective conductor  
Single-paired versions: black; white  
Double-paired versions: black with  
white numbers 5; 6; 7; 8  
0,34mm² pairs: WH/BN/GN/YE



#### Conductor stranding

Extra-fine wire according to VDE 0295,  
class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC U0/U: 600/1000 V  
UL & CSA: 1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 2 kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing: -40°C to +90°C  
(UL/CSA: +80°C)  
Fixed installation: -50°C to +90°C  
(UL/CSA: +80°C)

| Article number                | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 796 P</b> |                                       |                     |                      |                |
| 0025319                       | 4 G 1,5 + (2 x 1,5)                   | 11.7                | 99                   | 217            |
| 0025320                       | 4 G 2,5 + (2 x 1,5)                   | 13.1                | 134                  | 270            |
| 0025321                       | 4 G 4 + (2 x 1,5)                     | 14.2                | 195                  | 333            |
| 0025322                       | 4 G 6 + (2 x 1,5)                     | 16.0                | 272                  | 403            |
| 0025323                       | 4 G 10 + (2 x 1,5)                    | 18.4                | 425                  | 581            |
| 0025324                       | 4 G 16 + (2 x 1,5)                    | 22.1                | 656                  | 887            |
| 0025326                       | 4 G 0,75 + 2 x (2 x 0,34)             | 10.9                | 54                   | 143            |
| 0025327                       | 4 G 1,5 + 2 x (2 x 0,75)              | 12.3                | 103                  | 209            |
| 0025328                       | 4 G 2,5 + 2 x (2 x 1,0)               | 14.3                | 152                  | 306            |
| 0025312                       | 4 G 4 + 2 x (2 x 1,0)                 | 15.4                | 218                  | 381            |
| 0025329                       | 4 G 4 + (2 x 1,0) + (2 x 1,5)         | 15.6                | 231                  | 388            |
| 0025330                       | 4 G 6 + (2 x 1,0) + (2 x 1,5)         | 17.1                | 308                  | 460            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO FD 796 CP

Screened servo cable with PUR outer sheath for highly dynamic cable chain application - certified



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- Product range extension

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with servomotor product lines from leading drive manufacturers
- Low capacitance design enables longer cable connection between frequency converter and motor
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Connecting cable between servo controller and motor
- In cable chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product features

- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- VDE - Reg. - No. 8591 (0027925,...926,...927,...930 pending) UL AWM Style 20234 cULus AWM I/II A/B, 1000V 80° FT1 CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: Power cores without or with one or two individually shielded control core pairs twisted together in short lay lengths; Power cores with control core triplet twisted together in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable



#### Core identification code

Power cores: black with marking U/ L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Single-paired versions: individual design depending on the item black; white or brown; white  
Double-paired versions: black with white numbers 5; 6; 7; 8  
0.34 mm² pairs: WH/BN/GN/YE  
Triplet: black with white numbers 1; 2; 3



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing:  
up from 7.5 x outer diameter (up to 16mm²)  
up from 10 x outer diameter (from 25mm²)  
Fixed installation: 4 x outer diameter



#### Nominal voltage

Power cores and control cores:  
IEC U0/U: 600/1000 V  
UL & CSA: 1000 V



#### Test voltage

Core/Core: 4 kV  
Core/Screen: 2 kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing: -40°C to +90°C  
(UL/CSA: +80°C)  
Fixed installation: -50°C to +90°C  
(UL/CSA: +80°C)

| Article number                 | Number of cores and mm² per conductor | Outer diameter (mm) approx. | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------------------------|-----------------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 796 CP</b> |                                       |                             |                      |                |
| 0027925                        | 4G1 + (2 x 0,5)                       | 11.5                        | 97.4                 | 164            |
| 0027926                        | 4G1,5 + (2 x 0,5)                     | 12                          | 117.2                | 187            |
| 0027927                        | 4G2,5 + (2 x 0,5)                     | 12.6                        | 161.2                | 243            |
| 0027930                        | 4G0,75 + (2 x 0,5)                    | 11                          | 85.5                 | 155            |
| 0027931                        | 4G1 + (2 x 1,0)                       | 11.7                        | 106.7                | 174            |
| 0027932                        | 4G1,5 + (3 x 1,0)                     | 12                          | 143.8                | 220            |
| 0027933                        | 4G2,5 + (3 x 1,0)                     | 13.5                        | 204.3                | 294            |
| 0027934                        | 4G4 + (3 x 1,0)                       | 14.7                        | 250                  | 361            |
| 0027935                        | 4G6 + (3 x 1,5)                       | 16.5                        | 381.4                | 505            |
| 0027936                        | 4G10 + (3 x 1,5)                      | 19.7                        | 568.9                | 722            |
| 0027937                        | 4G16 + (3 x 1,5)                      | 23.3                        | 824.6                | 1030           |
| 0027948                        | 4G1,5 + (2 x 1,0)                     | 12.2                        | 129.9                | 202            |
| 0027950                        | 4G1,5                                 | 9.1                         | 79                   | 139            |
| 0027951                        | 4G2,5                                 | 10.6                        | 129                  | 197            |
| 0027952                        | 4G4                                   | 11.9                        | 186                  | 268            |
| 0027953                        | 4G6                                   | 14.5                        | 296                  | 396            |
| 0027954                        | 4G10                                  | 17.5                        | 449                  | 589            |
| 0027955                        | 4G16                                  | 21.6                        | 716                  | 948            |
| 0027956                        | 4G25                                  | 25.2                        | 1,073                | 1337           |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter (mm) approx. | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|-----------------------------|----------------------|----------------|
| 0027957        | 4G35                                              | 28.6                        | 1.480                | 1769           |
| 0027958        | 4G50                                              | 33.4                        | 2.115                | 2468           |
| 0027959        | 4G1,5 + (2 x 1,5)                                 | 11.6                        | 135                  | 261            |
| 0027960        | 4G2,5 + (2 x 1,5)                                 | 13.4                        | 188                  | 322            |
| 0027961        | 4G4 + (2 x 1,5)                                   | 14.8                        | 235                  | 385            |
| 0027962        | 4G6 + (2 x 1,5)                                   | 16.8                        | 329                  | 486            |
| 0027963        | 4G10 + (2 x 1,5)                                  | 19.4                        | 515                  | 721            |
| 0027964        | 4G16 + (2 x 1,5)                                  | 23.1                        | 757                  | 1048           |
| 0027965        | 4G25 + (2 x 1,5)                                  | 26.6                        | 1.147                | 1532           |
| 0027966        | 4G35 + (2 x 1,5)                                  | 30.9                        | 1.538                | 2097           |
| 0027967        | 4G50 + (2 x 1,5)                                  | 34                          | 2.181                | 2721           |
| 0027968        | 4G1 + 2 x (2 x 0,75)                              | 11.6                        | 138.4                | 208            |
| 0027969        | 4G1,5 + 2 x (2 x 0,75)                            | 12.2                        | 159                  | 313            |
| 0027970        | 4G2,5 + 2 x (2 x 1)                               | 14.6                        | 207                  | 362            |
| 0027971        | 4G4 + (2 x 1) + (2 x 1,5)                         | 16.3                        | 344                  | 485            |
| 0027972        | 4G6 + (2 x 1) + (2 x 1,5)                         | 18.1                        | 436                  | 588            |
| 0027973        | 4G10 + (2 x 1) + (2 x 1,5)                        | 21.8                        | 610                  | 819            |
| 0027974        | 4G16 + 2 x (2 x 1,5)                              | 25.5                        | 801                  | 1135           |
| 0027975        | 4G25 + 2 x (2 x 1,5)                              | 28.8                        | 1.187                | 1559           |
| 0027976        | 4G35 + 2 x (2 x 1,5)                              | 30.9                        | 1.588                | 2093           |
| 0027977        | 4G50 + 2 x (2 x 2,5)                              | 36.3                        | 2.557                | 2920           |
| 0027978        | 4G2,5 + (2 x 1,0)                                 | 13.5                        | 169.2                | 253            |
| 0027980        | 4G4 + 2 x (2 x 1,0)                               | 16.1                        | 274                  | 466            |
| 0027981        | 4G4 + (2 x 1,0)                                   | 14.8                        | 238.9                | 359            |
| 0027982        | 4G6 + (2 x 1,0)                                   | 16.8                        | 339.5                | 469            |
| 0027983        | 4G10 + (2 x 1,0)                                  | 18.8                        | 530.1                | 689            |
| 0027984        | 4G16 + (2 x 1,0)                                  | 22.8                        | 786.7                | 985            |
| 0027985        | 4G1,5 + (3 x 1) + (2 x 0,75)                      | 12.9                        | 178.6                | 262            |
| 0027986        | 4G2,5 + (3 x 1) + (2 x 0,75)                      | 14.7                        | 242.8                | 340            |
| 0027987        | 4G4 + (3 x 1,5) + (2 x 0,75)                      | 16.3                        | 334.7                | 462            |
| 0027988        | 4G6 + (3 x 1,5) + (2 x 0,75)                      | 18.2                        | 441.2                | 561            |
| 0027989        | 4G10 + (3 x 1,5) + (2 x 0,75)                     | 21.9                        | 612.4                | 824            |
| 0027990        | 4G1,5 + (4 x 0,5)                                 | 12.2                        | 132                  | 217            |
| 0027991        | 4G2,5 + (4 x 0,5)                                 | 13.5                        | 192.2                | 278            |
| 0027992        | 4G4 + (4 x 0,5)                                   | 14.9                        | 238.2                | 345            |
| 0027993        | 4G6 + (4 x 0,5)                                   | 16.9                        | 344.9                | 460            |
| 0027994        | 4G10 + (4 x 0,5)                                  | 18.9                        | 528.5                | 687            |
| 0027995        | 4G16 + (4 x 0,5)                                  | 22.9                        | 786.3                | 1008           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

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## ÖLFLEX® SERVO FD 798 CP

Screened encoder cable with PUR outer sheath for highly dynamic cable chain application - certified



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- Fits to various encoder systems
- AWM certification for USA and Canada

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with encoders & resolvers from leading manufacturers
- Thin, optimised for weight and volume
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and speed generators
- In cable chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product features

- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- Bending cycles and usage parameters: please refer to the A2-1 selection table
- UL AWM Style 20236
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire or extra-fine wire, tinned-copper conductor
- Core insulation: polypropylene (PP)
- Cores (or core pairs) twisted in layers or bundles
- Refer to data sheet for more details
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Details see datasheet ÖLFLEX® SERVO FD 798 CP



#### Conductor stranding

Fine wire or extra-fine wire



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC: 30 V  
UL & CSA: 30 V



#### Test voltage

Core/core: 1500 V rms  
Core/screen: 750 V rms



#### Temperature range

Flexing: -40°C to +90°C  
(UL/CSA: +80°C)  
Fixed installation: -50°C to +90°C  
(UL/CSA: +80°C)

| Article number                 | Number of cores and mm <sup>2</sup> per conductor      | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|--------------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 798 CP</b> |                                                        |                     |                      |                |
| 0036910                        | (4 x 2 x 0,34 + 4 x 0,5)                               | 8.9                 | 79                   | 125            |
| 0036911                        | (3 x (2 x 0,14) + 2 x (0,5))                           | 9.6                 | 70                   | 120            |
| 0036912                        | (3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5)                  | 8.8                 | 68                   | 110            |
| 0036913                        | (3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,22)       | 9.4                 | 80                   | 130            |
| 0036914                        | (9 x 0,5)                                              | 8.8                 | 71                   | 110            |
| 0036915                        | (4 x 2 x 0,25 + 2 x 1)                                 | 8.8                 | 63                   | 109            |
| 0036916                        | (6 x 2 x 0,25 + 2 x 0,5)                               | 10.3                | 67                   | 121            |
| 0036917                        | (10 x 0,14 + 2 x 0,5)                                  | 7.7                 | 41                   | 80             |
| 0036918                        | (10 x 0,14 + 4 x 0,5)                                  | 8.1                 | 54                   | 98             |
| 0036920                        | (4 x 2 x 0,14 + 4 x 0,5)                               | 8.2                 | 51                   | 95             |
| 0036921                        | (4 x 2 x 0,25)                                         | 7.6                 | 38                   | 75             |
| 0036923                        | (8 x 2 x 0,18)                                         | 7.8                 | 51                   | 85             |
| 0036924                        | (4 x 2 x 0,18)                                         | 6.4                 | 30                   | 57             |
| 0036926                        | (12 x 0,22)                                            | 6.9                 | 44                   | 73             |
| 0036927                        | (4 x 2 x 0,25 + 2 x 0,5)                               | 8.5                 | 62                   | 98             |
| 0036928                        | (2 x 2 x 0,14 + 2 x (2 x 0,14) + 4 x 0,5 + (4 x 0,14)) | 9.1                 | 79                   | 135            |
| 0036929                        | (2 x (2 x 0,25) + 2 x 0,5)                             | 8.7                 | 46                   | 98             |
| 0036930                        | (2 x 2 x 0,25 + 2 x 0,5)                               | 7.3                 | 38                   | 72             |
| 0036931                        | (3 x (2 x 0,14) + 2 x (1))                             | 9.1                 | 74                   | 137            |
| 0036932                        | (4 x 2 x 0,14 + 4 x 0,5 + (4 x 0,14))                  | 8.3                 | 88                   | 134            |
| 0036933                        | (3 x 2 x 0,25 + 2 x 0,5)                               | 8.4                 | 50                   | 86             |
| 0036934                        | (5 x 2 x 0,25 + 2 x 0,5)                               | 9.5                 | 69                   | 113            |
| 0036935                        | (3 x 2 x 24AWG)                                        | 6.5                 | 36                   | 70             |
| 0036936                        | (5 x 2 x 0,14 + 2 x 0,5)                               | 7.8                 | 51                   | 101            |
| 0036937                        | (2 x 2 x 0,18 + 5 x 0,5)                               | 7.6                 | 62                   | 110            |
| 0036938                        | (5 x 2 x 0,18 + 6 x 0,5)                               | 8.7                 | 79.2                 | 113            |
| 0036939                        | (10 x 2 x 28AWG)                                       | 6.2                 | 41                   | 70             |
| 0036940                        | (6 x 2 x 0,25)                                         | 9.3                 | 71                   | 143            |
| 0036941                        | 3 x (2 x 0,14) + (3 x 0,14)                            | 9.2                 | 57                   | 125            |
| 0036942                        | (2 x 2 x 0,18)                                         | 5                   | 24                   | 47             |
| 0036943                        | (4 x 1 + 4 x 2 x 0,14 + (4 x 0,14))                    | 9.7                 | 103                  | 175            |
| 0036944                        | (3 x (2 x 0,25) + 3 x 0,25 + 2 x 1)                    | 9.3                 | 96                   | 162            |
| 0036945                        | 4 x (2 x 0,14) + 2 x (1)                               | 11.4                | 92                   | 115            |
| 0036946                        | 3 x (2 x 0,14) + (2 x 0,5)                             | 10                  | 68                   | 142            |
| 0036947                        | (5 x 2 x 0,25)                                         | 9                   | 50                   | 126            |
| 0036948                        | (5 x 2 x 22AWG)                                        | 8.7                 | 75                   | 109            |
| 0036949                        | (3 x (2 x 0,14) + 2 x (0,5))                           | 9.6                 | 70                   | 120            |

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Low capacitive hybrid servo cable with PUR outer sheath for highly dynamic cable chain application - certified



**Info**

- One cable solution for servo drives
- Suitable for HiPerface DSL® and SCS open link interfaces
- Extended Line Performance - Long travel lengths or high acceleration



**Benefits**

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable a specific integrated data pair takes over the signalling
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

**Application range**

- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In cable chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

**Product features**

- Maximum DSL transmission length: 100m
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Oil-resistant

**Norm references / Approvals**

- UL AWM Style 21223 cRU AWM I/II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine-wire, bare copper conductor (power cores and control pair) and 19-wire, tinned copper conductor (data pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL data pair twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

**Technical data**

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable
- Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Signal pair: white, blue  
Control pair (optional): black with white numbers 5 + 6
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6  
DSL data pair: 19-wired
- Minimum bending radius**  
Flexing: up from 7.5 x outer diameter  
Fixed installation: 5 x outer diameter
- Nominal voltage**  
Power and control: IEC: U0/U: 600/1000 V  
UL: 1000 V  
Signal pair: 300 V
- Test voltage**  
Power and control: 4 kV  
Data pair: 1kV
- Protective conductor**  
G = with GN-YE protective conductor
- Temperature range**  
Flexing: -40°C to +90°C  
(UL: +80°C)  
Fixed installation: -50°C to +90°C  
(UL: +80°C)

| Article number                                    | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>Hybrid cables for cable chain applications</b> |                                                   |                     |                      |                |
| 1023273                                           | 4G0,75+(2x0,34)+(2x26AWG)                         | 10.6                | 97                   | 170            |
| 1023274                                           | 4G1+(2x0,75)+(2x22AWG)                            | 11.8                | 133                  | 202            |
| 1023275                                           | 4G1,5+(2x22AWG)                                   | 11.2                | 115                  | 198            |
| 1023276                                           | 4G2,5+(2x22AWG)                                   | 12.6                | 160                  | 269            |
| 1023277                                           | 4G4+(2x22AWG)                                     | 14                  | 218                  | 343            |
| 1023278                                           | 4G1,5+(2x1)+(2x22AWG)                             | 13.2                | 152                  | 256            |
| 1023279                                           | 4G2,5+(2x1)+(2x22AWG)                             | 14                  | 195                  | 313            |
| 1023280                                           | 4G4+(2x1)+(2x22AWG)                               | 15.8                | 268                  | 407            |
| 1023281                                           | 4G6+(2x1)+(2x22AWG)                               | 17.8                | 334                  | 485            |
| 1023282                                           | 4G0,5+(2x0,34)+(2x26AWG)                          | 9.6                 | 73                   | 132            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

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Low capacitive hybrid servo cables with PUR outer sheath for highly dynamic cable chain application - certified



#### Info

- One cable solutions for servo drives
- Suitable for various OEM transmission protocols
- Extended Line Performance - High cable chain requirements

#### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable integrated data pairs, quads or signal cores take over the signalling
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

#### Application range

- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In cable chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

#### Product features

- OCS - One Cable Solution
- High oil-resistance
- Abrasion and notch-resistant
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Halogen-free materials
- Flexible at low temperatures

#### Norm references / Approvals

- UL AWM Style 21223 or 20233  
cRU AWM I/II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

#### Product Make-up

- Extra-fine or fine wired conductor made of bare or tinned copper
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores with screened control pair or bundle and specific data pairs, quads or signal cores twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

#### Technical data



##### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



##### Core identification code

Details see datasheet



##### Conductor stranding

Power cores and brake pairs or triplets:  
Extra-fine wire according to VDE 0295,  
class 6/IEC 60228 class 6  
Signal cores, data pairs or star quads:  
Fine-wired



##### Minimum bending radius

Flexing: 7.5 x outer diameter  
Fixed installation: 5 x outer diameter



##### Nominal voltage

Power and control cores:  
Version 1,3 & 4: IEC U<sub>0</sub>/U 600/1000 V  
Version 2: IEC 300 V  
UL all versions: see data sheet  
Individual data pairs and quads:  
see data sheet



##### Test voltage

Details see datasheet



##### Protective conductor

G = with GN-YE protective conductor



##### Temperature range

Flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

| Article number               | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO FD 70CS</b> |                                                   |                     |                      |                |
| 1023373                      | 4G1,5 + (2 x 0,75) + (2 x 0,30 + 2 x 2 x 0,15)    | 12.8                | 165                  | 250            |
| 1023374                      | 4G2,5 + (2 x 1) + (2 x 0,30 + 2 x 2 x 0,15)       | 14.2                | 213                  | 316            |
| 1023375                      | 4G1,5 + (2 x 0,75) + (4 x 24AWG)                  | 13.3                | 154                  | 252            |
| 1023376                      | 4G4 + (2 x 1) + (2 x 0,30 + 2 x 2 x 0,15)         | 15.8                | 275                  | 395            |
| 1023380                      | 4G1,5 + (2 x 1,5) + (4 x 0,20)                    | 12.7                | 170                  | 257            |
| 1023381                      | 4G2,5 + (2 x 1,5) + (4 x 0,20)                    | 13.7                | 210                  | 303            |
| 1023385                      | 4G22AWG + (2 x 22AWG) + (4 x 0,20)                | 9.8                 | 75                   | 128            |
| 1023386                      | 4G19AWG + (2 x 21AWG) + (4 x 0,20)                | 10.6                | 100                  | 159            |
| 1023387                      | 4G1,5 + (1 x Z50) + 2 x (2 x 1)                   | 15.7                | 196                  | 332            |
| 1023388                      | 4G2,5 + (1 x Z50) + 2 x (2 x 1)                   | 16.7                | 242                  | 390            |
| 1023389                      | 4G4 + (1 x Z50) + 2 x (2 x 1)                     | 17.4                | 300                  | 458            |
| 1023394                      | 4G0,75 + (2 x 0,5) + (4 x 24AWG)                  | 11.7                | 115                  | 187            |
| 1023395                      | 4G0,75 + (2 x 0,5) + ((4 x 24AWG))                | 11.7                | 130                  | 204            |
| 1023396                      | 4G1,5 + (2 x 0,75) + ((4 x 24AWG))                | 13.3                | 172                  | 264            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO 3D 7DSL

Low capacitive hybrid servo cable with PUR outer sheath for three-dimensional robotic application - certified



### Info

- One cable solution for servo drives
- Suitable for Hiperface DSL® and SCS open link interfaces
- 3D - Simultaneous bending and torsion

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable a specific integrated data pair takes over the signalling
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- Connecting cable between servo controller and motor
- In industrial robots, moving machine parts or cable chain
- Automated handling equipment
- Particularly in wet areas of machine tools and transfer lines
- Inside of dresspacks of buckling arm robots and for use for gantry robots
- For indoor and outdoor use

### Product features

- High oil-resistance
- Abrasion and notch-resistant
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Flexible at low temperatures
- Low-capacitance design

### Norm references / Approvals

- UL AWM Style 21223  
cRU AWM I/II A/B FT1
- UL File No. E63634
- Designed for up to 5 million torsion cycles
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine-wire, bare copper conductor (power cores and control pair) and 19-wire, tinned copper conductor (data pair)
- Core insulation: Polypropylene (PP) respectively fluorinated ethylene propylene (FEP)
- Power cores with screened control pair and data pair twisted together
- Special tape wrapping
- Spiral shield made of tinned copper wires
- Wrapping of PTFE tape
- PUR outer sheath, black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104

ETIM 5.0/6.0 Class-Description:

Control cable



#### Core identification code

Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D/L-; GN/YE protective conductor  
Data pair: white, blue  
Control pair: black, white



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6  
DSL data pair: 19-wired



#### Torsion

Torsion load max.  $\pm 180^\circ/\text{m}$



#### Minimum bending radius

Moved: 10 x outer diameter  
Fixed installation: 5 x outer diameter



#### Nominal voltage

Power and control cores:  
IEC: U0/U: 600/1000 V  
UL: 600 V  
Data pair UL: 600 V



#### Test voltage

Power and control: 4 kV  
Data pair: 1kV



#### Protective conductor

G = with GN-YE protective conductor



#### Temperature range

Flexing:  $-40^\circ\text{C}$  to  $+80^\circ\text{C}$   
Fixed installation:  $-50^\circ\text{C}$  to  $+80^\circ\text{C}$

| Article number               | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® SERVO 3D 7DSL</b> |                                                   |                     |                      |                |
| 1023351                      | 4 G 0,5 + (2 x 0,25) + (2 x 26AWG)                | 9.4                 | 70                   | 130            |
| 1023352                      | 4 G 1,5 + (2 x 1,0) + (2 x 22AWG)                 | 13.3                | 152                  | 276            |
| 1023353                      | 4 G 2,5 + (2 x 1,0) + (2 x 22AWG)                 | 14.4                | 195                  | 326            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

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## ÖLFLEX® CHAIN 809 SC

Highly flexible, single core cable with PVC insulation and PVC sheath - certified for North America



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- Rated voltage 0,6/1 kV
- AWM certification for USA and Canada

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Multifunctional application possibilities
- Under consideration of the temperature range also suitable for flexible outdoor use
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute multi-core power cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

### Product features

- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Low-adhesive surface

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107 cRU AWM II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- PVC outer sheath, black (similar RAL 9005)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code**  
Black or green-yellow, other colours available on request
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC:  $U_0/U$  600/1000 V  
UL & CSA: 600 V
- Test voltage**  
4000 V
- Temperature range**  
Flexing: 0°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

| Article number              | Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Core colour  | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------|--------------------------------------------|---------------------|--------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 809 SC</b> |                                            |                     |              |                      |                |
| 1062900                     | 6                                          | 7.4                 | green-yellow | 57.6                 | 101            |
| 1062901                     | 6                                          | 7.4                 | black        | 57.6                 | 101            |
| 1062902                     | 10                                         | 9                   | green-yellow | 96                   | 158            |
| 1062903                     | 10                                         | 9                   | black        | 96                   | 158            |
| 1062904                     | 16                                         | 9.9                 | green-yellow | 153.6                | 217            |
| 1062905                     | 16                                         | 9.9                 | black        | 153.6                | 217            |
| 1062906                     | 25                                         | 11.3                | green-yellow | 240                  | 307            |
| 1062907                     | 25                                         | 11.3                | black        | 240                  | 307            |
| 1062908                     | 35                                         | 13.1                | green-yellow | 336                  | 427            |
| 1062909                     | 35                                         | 13.1                | black        | 336                  | 427            |
| 1062910                     | 50                                         | 15.9                | green-yellow | 480                  | 611            |
| 1062911                     | 50                                         | 15.9                | black        | 480                  | 611            |
| 1062912                     | 70                                         | 17.6                | green-yellow | 672                  | 778            |
| 1062913                     | 70                                         | 17.6                | black        | 672                  | 778            |
| 1062914                     | 95                                         | 19.8                | green-yellow | 912                  | 1015           |
| 1062915                     | 95                                         | 19.8                | black        | 912                  | 1015           |
| 1062916                     | 120                                        | 23                  | green-yellow | 1152                 | 1296           |
| 1062917                     | 120                                        | 23                  | black        | 1152                 | 1296           |
| 1062918                     | 150                                        | 24.8                | green-yellow | 1440                 | 1597           |
| 1062919                     | 150                                        | 24.8                | black        | 1440                 | 1597           |
| 1062920                     | 185                                        | 27.1                | green-yellow | 1776                 | 1971           |
| 1062921                     | 185                                        | 27.1                | black        | 1776                 | 1971           |
| 1062922                     | 240                                        | 30.6                | green-yellow | 2304                 | 2419           |
| 1062923                     | 240                                        | 30.6                | black        | 2304                 | 2419           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 809 SC CY

Highly flexible, screened single core cable with PVC insulation and PVC sheath - certified for North America



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- AWM certification for USA and Canada
- EMC compliant copper screening



### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Multifunctional application possibilities
- Under consideration of the temperature range also suitable for flexible outdoor use
- Copper braiding screens the cable against electromagnetic interference
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute screened multi-core motor cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

### Product features

- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant according to  
DIN EN 50290-2-22 (TM54)
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107  
cRU AWM II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Non-woven wrapping
- Tinned-copper braiding
- Non-woven wrapping
- PVC outer sheath, black (similar RAL 9005)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code**  
Black, other colours are available upon request
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: U<sub>0</sub>/U 600/1000 V  
UL & CSA: 600 V
- Test voltage**  
4000 V
- Temperature range**  
Flexing: 0°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

| Article number                 | Conductor cross-section (mm²) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|-------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 809 SC CY</b> |                               |                     |                      |                |
| 1062940                        | 6                             | 8.1                 | 76                   | 126            |
| 1062941                        | 10                            | 9.7                 | 122                  | 190            |
| 1062942                        | 16                            | 10.6                | 180                  | 250            |
| 1062943                        | 25                            | 12                  | 268                  | 351            |
| 1062944                        | 35                            | 14.8                | 392                  | 519            |
| 1062945                        | 50                            | 16.8                | 544                  | 686            |
| 1062946                        | 70                            | 18.5                | 766                  | 885            |
| 1062947                        | 95                            | 20.9                | 1020                 | 1135           |
| 1062948                        | 120                           | 24.1                | 1272                 | 1443           |
| 1062949                        | 150                           | 26.1                | 1593                 | 1788           |
| 1062950                        | 185                           | 28.4                | 1941                 | 2177           |
| 1062951                        | 240                           | 31.9                | 2518                 | 2671           |
| 1062952                        | 300                           | 33.5                | 3116                 | 3299           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 90

Highly flexible, single core cable with PVC insulation and PVC sheath - certified for North America



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- Well-proven and reliable
- AWM certification for USA and Canada

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Multifunctional application possibilities
- Under consideration of the temperature range also suitable for flexible outdoor use
- Also suitable for fixed installation where space is limited
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute multi-core power cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- High oil-resistance
- Low-adhesive surface

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107, cRU AWM II A/B FT 1  $\geq 150\text{mm}^2$
- CSA AWM IA/B IIA/B FT 1  $\leq 120\text{mm}^2$
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Non-woven wrapping
- Core insulation: PVC
- PVC outer sheath, black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable



#### Core identification code

Black or green-yellow, other colours available on request



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 3 x outer diameter



#### Nominal voltage

IEC:  $U_n/U$  600/1000 V  
UL & CSA: 600 V



#### Test voltage

4000 V



#### Temperature range

Flexing:  $-5^\circ\text{C}$  to  $+70^\circ\text{C}$  (UL:  $+90^\circ\text{C}$ )  
Fixed installation:  $-40^\circ\text{C}$  to  $+70^\circ\text{C}$  (UL:  $+90^\circ\text{C}$ )

| Article number       | Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Core colour  | Copper index (kg/km) | Weight (kg/km) |
|----------------------|--------------------------------------------|---------------------|--------------|----------------------|----------------|
| <b>ÖLFLEX® FD 90</b> |                                            |                     |              |                      |                |
| 0026600              | 10                                         | 9                   | green-yellow | 96                   | 176            |
| 0026601              | 10                                         | 9                   | black        | 96                   | 176            |
| 0026603              | 16                                         | 10.5                | green-yellow | 153.6                | 240            |
| 0026604              | 16                                         | 10.5                | black        | 153.6                | 240            |
| 0026607              | 25                                         | 11.8                | green-yellow | 240                  | 361            |
| 0026608              | 25                                         | 11.8                | black        | 240                  | 361            |
| 0026610              | 35                                         | 14.2                | green-yellow | 336                  | 482            |
| 0026611              | 35                                         | 14.2                | black        | 336                  | 482            |
| 0026613              | 50                                         | 16.2                | green-yellow | 480                  | 660            |
| 0026614              | 50                                         | 16.2                | black        | 480                  | 660            |
| 0026616              | 70                                         | 18.3                | green-yellow | 672                  | 898            |
| 0026617              | 70                                         | 18.3                | black        | 672                  | 898            |
| 0026619              | 95                                         | 19.8                | green-yellow | 912                  | 1179           |
| 0026620              | 95                                         | 19.8                | black        | 912                  | 1179           |
| 0026622              | 120                                        | 23.4                | green-yellow | 1152                 | 1521           |
| 0026623              | 120                                        | 23.4                | black        | 1152                 | 1521           |
| 0026625              | 150                                        | 25.1                | green-yellow | 1440                 | 1739           |
| 0026626              | 150                                        | 25.1                | black        | 1440                 | 1739           |
| 0026628              | 185                                        | 28.1                | green-yellow | 1776                 | 2305           |
| 0026629              | 185                                        | 28.1                | black        | 1776                 | 2305           |
| 0026634              | 240                                        | 31.6                | green-yellow | 2304                 | 2944           |
| 0026635              | 240                                        | 31.6                | black        | 2304                 | 2944           |
| 0026640              | 300                                        | 33.5                | green-yellow | 2880                 | 3545           |
| 0026641              | 300                                        | 33.5                | black        | 2880                 | 3545           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30\text{ kg}$  or  $\leq 250\text{ m}$ , otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



Highly flexible, screened single core cable with PVC insulation and PVC sheath - certified for North America



#### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- AWM certification for USA and Canada
- EMC compliant copper screening



#### Benefits

- Multi-standard certification reduces part varieties and saves costs
- For various applications
- Also suitable for fixed installation where space is limited
- Copper screening complies with EMC requirements and protects against electromagnetic interference
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

#### Application range

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute screened multi-core motor cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

#### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- High oil-resistance
- Low-adhesive surface
- EMC-compliant

#### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107, cRU AWM II A/B FT1  $\geq 150\text{mm}^2$
- CSA AWM IA/B IIA/B FT 1  $\leq 120\text{mm}^2$
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

#### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Non-woven wrapping
- Core insulation: PVC
- Tinned-copper braiding
- PVC outer sheath, orange (similar RAL 2003)

#### Technical data



##### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000057  
ETIM 5.0/6.0 Class-Description: Low voltage power cable



##### Core identification code

Black, other colours are available upon request



##### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



##### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 3 x outer diameter



##### Nominal voltage

IEC:  $U_0/U$  600/1000 V  
UL & CSA: 600 V



##### Test voltage

4000 V



##### Temperature range

Flexing:  $-5^\circ\text{C}$  to  $+70^\circ\text{C}$  (UL:  $+90^\circ\text{C}$ )  
Fixed installation:  $-40^\circ\text{C}$  to  $+70^\circ\text{C}$  (UL:  $+90^\circ\text{C}$ )

| Article number          | Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|--------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 90 CY</b> |                                            |                     |                      |                |
| 0026651                 | 10                                         | 9.7                 | 127.6                | 227            |
| 0026653                 | 16                                         | 11.2                | 186.2                | 297            |
| 0026655                 | 25                                         | 12.5                | 257.8                | 410            |
| 0026657                 | 35                                         | 15.1                | 400.7                | 607            |
| 0026659                 | 50                                         | 17.1                | 554.8                | 808            |
| 0026661                 | 70                                         | 19.4                | 775.6                | 1081           |
| 0026663                 | 95                                         | 20.9                | 1028.1               | 1382           |
| 0026665                 | 120                                        | 24.5                | 1282.4               | 1752           |
| 0026667                 | 150                                        | 26.2                | 1578                 | 1924           |
| 0026669                 | 185                                        | 29.2                | 1935                 | 2611           |
| 0026671                 | 240                                        | 32.9                | 2526                 | 3372           |
| 0026673                 | 300                                        | 34.8                | 3128.8               | 4105           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30\text{ kg}$  or  $\leq 250\text{ m}$ , otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA - Decentralized and standardized installation technology for machine tools and manufacturing systems

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 809

Highly flexible control cable with PVC core insulation and PVC sheath - certified for North America



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- AWM certification for USA and Canada

### Benefits

- Good combination of quality and price
- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Wiring of machines, tools, devices, appliances and control cabinets
- Assembly lines, production lines, in all kinds of machines

### Product features

- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20886
- CUL AWM II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper strand
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- PVC outer sheath, grey (similar RAL 7001)

### Technical data

**Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-334

**Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5

**Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
VDE: U0/U: 300/500 V  
UL & CSA: 1000 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexing: 0°C to +70°C  
(UL/CSA: +80°C)  
Fixed installation: -40°C to +70°C  
(UL/CSA +80°C)

| Article number           | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 809</b> |                                       |                     |                      |                |
| 1026700                  | 2 X 0.5                               | 5.2                 | 10                   | 40             |
| 1026701                  | 3 G 0.5                               | 5.5                 | 15                   | 48             |
| 1026702                  | 4 G 0.5                               | 6                   | 20                   | 58             |
| 1026703                  | 5 G 0.5                               | 6.5                 | 24                   | 67             |
| 1026704                  | 7 G 0.5                               | 7.7                 | 34                   | 88             |
| 1026705                  | 12 G 0.5                              | 9.2                 | 58                   | 136            |
| 1026706                  | 18 G 0.5                              | 11                  | 87                   | 195            |
| 1026707                  | 25 G 0.5                              | 13.3                | 120                  | 274            |
| 1026708                  | 2 X 0.75                              | 5.6                 | 15                   | 49             |
| 1026709                  | 3 G 0.75                              | 6                   | 22                   | 60             |
| 1026710                  | 4 G 0.75                              | 6.5                 | 29                   | 73             |
| 1026711                  | 5 G 0.75                              | 7.1                 | 37                   | 86             |
| 1026712                  | 7 G 0.75                              | 8.5                 | 51                   | 117            |
| 1026713                  | 12 G 0.75                             | 10.3                | 87                   | 181            |
| 1026714                  | 18 G 0.75                             | 12.2                | 130                  | 259            |
| 1026715                  | 25 G 0.75                             | 14.8                | 181                  | 363            |
| 1026716                  | 2 X 1.0                               | 5.9                 | 19                   | 58             |
| 1026717                  | 3 G 1.0                               | 6.3                 | 29                   | 72             |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1026718        | 4 G 1.0                               | 6.9                 | 39                   | 88             |
| 1026719        | 5 G 1.0                               | 7.5                 | 48                   | 104            |
| 1026720        | 7 G 1.0                               | 9                   | 67                   | 142            |
| 1026721        | 12 G 1.0                              | 10.9                | 115                  | 221            |
| 1026722        | 18 G 1.0                              | 13.2                | 173                  | 324            |
| 1026723        | 25 G 1.0                              | 15.7                | 240                  | 445            |
| 1026724        | 2 X 1.5                               | 6.5                 | 29                   | 74             |
| 1026725        | 3 G 1.5                               | 6.9                 | 43.2                 | 93             |
| 1026726        | 4 G 1.5                               | 7.6                 | 58                   | 114            |
| 1026727        | 5 G 1.5                               | 8.5                 | 72                   | 139            |
| 1026728        | 7 G 1.5                               | 10.3                | 101                  | 189            |
| 1026729        | 12 G 1.5                              | 12.3                | 173                  | 295            |
| 1026730        | 18 G 1.5                              | 14.9                | 259                  | 429            |
| 1026731        | 25 G 1.5                              | 17.9                | 360                  | 597            |
| 1026732        | 3 G 2.5                               | 8.4                 | 72                   | 145            |
| 1026733        | 4 G 2.5                               | 9.3                 | 96                   | 179            |
| 1026734        | 7 G 2.5                               | 12.7                | 168                  | 218            |
| 1026737        | 4 G 4.0                               | 11.1                | 160                  | 266            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 100 m; Drum (500; 1000) m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 809 CY

Highly flexible, screened control cable with PVC core insulation and PVC sheath - certified for North America



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- AWM certification for USA and Canada
- EMC compliant copper screening



### Benefits

- Good combination of quality and price
- Thin and light, without inner sheath
- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In cable chains or moving machine parts
- In EMC-sensitive environments
- Suitable for use in measuring, control and regulating circuits
- Wiring of machines, tools, devices, appliances and control cabinets
- Assembly and production lines

### Product features

- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- EMC-compliant
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20886
- CUL AWM II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper strand
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, grey (similar RAL 7001)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-334
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
VDE: U0/U: 300/500 V  
UL & CSA: 1000 V
- Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: 0°C to +70°C  
(UL/CSA: +80°C)  
Fixed installation: -40°C to +70°C  
(UL/CSA +80°C)

| Article number              | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 809 CY</b> |                                       |                     |                      |                |
| 1026751                     | 2 X 0.5                               | 5.8                 | 36                   | 45             |
| 1026752                     | 3 G 0.5                               | 6.1                 | 43                   | 59             |
| 1026753                     | 4 G 0.5                               | 6.6                 | 49                   | 83             |
| 1026754                     | 5 G 0.5                               | 7.1                 | 57                   | 96             |
| 1026755                     | 7 G 0.5                               | 8.5                 | 69                   | 136            |
| 1026756                     | 12 G 0.5                              | 10                  | 104                  | 200            |
| 1026757                     | 18 G 0.5                              | 11.8                | 141                  | 275            |
| 1026758                     | 25 G 0.5                              | 14.1                | 211                  | 350            |
| 1026759                     | 2 X 0.75                              | 6.2                 | 43                   | 56             |
| 1026760                     | 3 G 0.75                              | 6.6                 | 52                   | 70             |
| 1026761                     | 4 G 0.75                              | 7.1                 | 61                   | 95             |
| 1026762                     | 5 G 0.75                              | 7.7                 | 72                   | 130            |
| 1026763                     | 7 G 0.75                              | 9.1                 | 89                   | 168            |
| 1026764                     | 12 G 0.75                             | 10.9                | 138                  | 232            |
| 1026765                     | 18 G 0.75                             | 13                  | 211                  | 315            |
| 1026766                     | 25 G 0.75                             | 15.6                | 280                  | 435            |
| 1026767                     | 2 X 1.0                               | 6.5                 | 51                   | 84             |
| 1026768                     | 3 G 1.0                               | 6.9                 | 62                   | 110            |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1026769        | 4 G 1.0                               | 7.5                 | 74                   | 130            |
| 1026770        | 5 G 1.0                               | 8.3                 | 88                   | 156            |
| 1026771        | 7 G 1.0                               | 9.8                 | 112                  | 192            |
| 1026772        | 12 G 1.0                              | 11.7                | 185                  | 285            |
| 1026773        | 18 G 1.0                              | 14                  | 268                  | 395            |
| 1026774        | 25 G 1.0                              | 16.7                | 354                  | 486            |
| 1026775        | 2 X 1.5                               | 7.1                 | 65                   | 97             |
| 1026776        | 3 G 1.5                               | 7.5                 | 82                   | 125            |
| 1026777        | 4 G 1.5                               | 8.4                 | 100                  | 165            |
| 1026778        | 5 G 1.5                               | 9.1                 | 119                  | 193            |
| 1026779        | 7 G 1.5                               | 10.9                | 154                  | 245            |
| 1026780        | 12 G 1.5                              | 13.3                | 268                  | 365            |
| 1026781        | 18 G 1.5                              | 15.7                | 373                  | 553            |
| 1026782        | 25 G 1.5                              | 18.7                | 530                  | 734            |
| 1026783        | 3 G 2.5                               | 9                   | 118                  | 188            |
| 1026784        | 4 G 2.5                               | 10.1                | 147                  | 236            |
| 1026785        | 7 G 2.5                               | 13.5                | 253                  | 340            |
| 1026788        | 4 G 4.0                               | 11.9                | 248                  | 305            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN PN

Power cable: PVC jacketed PN Colours; UL recognised



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- AWM certification for USA and Canada
- PROFINET-compliant design

### Benefits

- Durable cable chain use with moderate travel distances or acceleration (LAPP performance class "Basic Line")
- Proven cable successfully tested for over 2 million bending cycles in cable chains
- UL/CSA certification according to technical data enables the product to be used in the North American market
- Operating voltage of 1000 V according to UL, permitted for North America
- Product with multiple certifications enables universal use and reduces the variety of parts, thus guaranteeing logistics savings

### Application range

- For flexible use in the PROFINET network
- The cable design enables flexible, moderate continuously flexing use in moving machine parts and cable chains, with horizontal travel distances of up to 10 m
- Also suitable for torsion applications in wind turbines
- Can be used in dry, damp or wet interiors
- Suitable for light to medium mechanical stress
- The heat-resistant PVC outer sheath is highly resistant to acids and alkaline solutions

### Technical data

|  |                                                                                                                              |
|--|------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description: Control cable           |
|  | <b>Core identification code</b><br>Brown (L1), Blue (N1), Black (L2), White (N2)<br>5 cores: additionally pink (FE)          |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5                                    |
|  | <b>Minimum bending radius</b><br>Flexing: up from 10 x outer diameter<br>Fixed installation: 4 x outer diameter              |
|  | <b>Nominal voltage</b><br>VDE: U0/U: 300/500 V<br>UL & CSA: 1000 V                                                           |
|  | <b>Test voltage</b><br>4000 V                                                                                                |
|  | <b>Protective conductor</b><br>G = with functional earthing (FE) pink<br>X = without functional earthing (FE)                |
|  | <b>Temperature range</b><br>Flexing: 0°C to +90°C<br>(UL/CSA: +90°C)<br>Fixed installation: -40°C to +90°C<br>(UL/CSA +90°C) |

| Article number          | Number of cores and mm <sup>2</sup> per conductor | Including functional earth conductor | Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------------------------------|--------------------------------------|--------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN PN</b> |                                                   |                                      |                                            |                     |                      |                |
| 1026791                 | 4                                                 | X                                    | 0.75                                       | 6.5                 | 29                   | 73             |
| 1026792                 | 5                                                 | G                                    | 0.75                                       | 7.1                 | 37                   | 86             |
| 1026793                 | 4                                                 | X                                    | 1.5                                        | 7.6                 | 58                   | 114            |
| 1026794                 | 5                                                 | G                                    | 1.5                                        | 8.5                 | 72                   | 139            |
| 1026795                 | 4                                                 | X                                    | 2.5                                        | 9.3                 | 96                   | 179            |
| 1026797                 | 5                                                 | G                                    | 2.5                                        | 10.4                | 120                  | 214            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 100 m; Drum (500; 1000) m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 891

Highly flexible control cable with PVC core insulation and PVC sheath - certified for North America



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- AWM certification for USA and Canada



### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Under consideration of the temperature range also suitable for flexible outdoor use

### Application range

- In cable chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- Machine tools
- Plant engineering

### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT 1
- Oil-resistant
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 21098
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- PVC outer sheath, black (similar RAL 9005)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-334
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: U<sub>0</sub>/U 300/500 V  
UL/CSA: 600 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: -5°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

| Article number        | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 891</b> |                                                   |                     |                      |                |
| 1026012               | 12 G 0.5                                          | 10.8                | 57.6                 | 162            |
| 1026103               | 3 G 0.75                                          | 6.6                 | 21.6                 | 63             |
| 1026104               | 4 G 0.75                                          | 7.3                 | 28.8                 | 75             |
| 1026105               | 5 G 0.75                                          | 8                   | 36                   | 90             |
| 1026107               | 7 G 0.75                                          | 9.6                 | 50.4                 | 132            |
| 1026112               | 12 G 0.75                                         | 11.6                | 86.5                 | 201            |
| 1026118               | 18 G 0.75                                         | 13.9                | 129.6                | 300            |
| 1026125               | 25 G 0.75                                         | 16.6                | 180                  | 415            |
| 1026127               | 3 G 1.0                                           | 7.1                 | 28.8                 | 65             |
| 1026129               | 4 G 1.0                                           | 7.8                 | 39                   | 82             |
| 1026130               | 5 G 1.0                                           | 8.8                 | 48                   | 105            |
| 1026128               | 7 G 1.0                                           | 10.5                | 67.2                 | 149            |
| 1026131               | 12 G 1.0                                          | 12.5                | 116                  | 225            |
| 1026132               | 18 G 1.0                                          | 15                  | 173                  | 331            |
| 1026133               | 25 G 1.0                                          | 17.9                | 240                  | 484            |
| 1026303               | 3 G 1.5                                           | 7.7                 | 43.2                 | 93             |
| 1026304               | 4 G 1.5                                           | 8.8                 | 57.6                 | 122            |
| 1026305               | 5 G 1.5                                           | 9.6                 | 72                   | 147            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1026307        | 7 G 1.5                                           | 11.6                | 100.8                | 219            |
| 1026312        | 12 G 1.5                                          | 13.9                | 172.8                | 322            |
| 1026318        | 18 G 1.5                                          | 16.9                | 259.2                | 478            |
| 1026325        | 25 G 1.5                                          | 20.1                | 360                  | 670            |
| 1026334        | 34 G 1.5                                          | 23.6                | 489.6                | 897            |
| 1026403        | 3 G 2.5                                           | 8.8                 | 72                   | 129            |
| 1026404        | 4 G 2.5                                           | 9.8                 | 96                   | 167            |
| 1026405        | 5 G 2.5                                           | 11                  | 120                  | 212            |
| 1026407        | 7 G 2.5                                           | 13.4                | 168                  | 304            |
| 1026412        | 12 G 2.5                                          | 15.8                | 288                  | 452            |
| 1026504        | 4 G 4.0                                           | 11.8                | 153.6                | 263            |
| 1026505        | 5 G 4.0                                           | 13.2                | 192                  | 325            |
| 1026507        | 7 G 4.0                                           | 16.1                | 268.8                | 469            |
| 1026604        | 4 G 6.0                                           | 13.7                | 230.4                | 368            |
| 1026614        | 4 G 10.0                                          | 17.9                | 384                  | 588            |
| 1026624        | 4 G 16.0                                          | 24.1                | 614.4                | 1031           |
| 1026634        | 4 G 25.0                                          | 27.9                | 960                  | 1530           |
| 1026644        | 4 G 35.0                                          | 31.1                | 1344                 | 1959           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA - Decentralized and standardized installation technology for machine tools and manufacturing systems

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 891 CY

Highly flexible, screened control cable with PVC insulation and PVC inner and outer sheath - certified



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- AWM certification for USA and Canada
- EMC compliant copper screening

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Under consideration of the temperature range also suitable for flexible outdoor use
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In cable chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- Machine tools
- Plant engineering

### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- Oil-resistant
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- UL AWM Style 21098
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104

ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC: U<sub>0</sub>/U 300/500 V  
UL/CSA: 600 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Flexing: -5°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

| Article number           | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 891 CY</b> |                                                   |                     |                      |                |
| 1027003                  | 3 G 0.5                                           | 7.9                 | 38.9                 | 89             |
| 1027004                  | 4 G 0.5                                           | 8.5                 | 47.3                 | 102            |
| 1027005                  | 5 G 0.5                                           | 9.2                 | 55.3                 | 127            |
| 1027007                  | 7 G 0.5                                           | 10.9                | 81.1                 | 177            |
| 1027012                  | 12 G 0.5                                          | 12.6                | 99.9                 | 234            |
| 1027018                  | 18 G 0.5                                          | 15.5                | 160.1                | 381            |
| 1027025                  | 25 G 0.5                                          | 17.7                | 203.9                | 472            |
| 1027103                  | 3 G 0.75                                          | 8.2                 | 49.2                 | 105            |
| 1027104                  | 4 G 0.75                                          | 8.9                 | 59.9                 | 123            |
| 1027105                  | 5 G 0.75                                          | 10                  | 68.6                 | 155            |
| 1027107                  | 7 G 0.75                                          | 11.6                | 91.7                 | 206            |
| 1027112                  | 12 G 0.75                                         | 13.8                | 152.1                | 304            |
| 1027118                  | 18 G 0.75                                         | 16.3                | 204.4                | 425            |
| 1027292                  | 3 G 1.0                                           | 8.7                 | 56                   | 124            |
| 1027301                  | 4 G 1.0                                           | 9.8                 | 70.2                 | 155            |
| 1027293                  | 5 G 1.0                                           | 10.6                | 84                   | 182            |
| 1027294                  | 7 G 1.0                                           | 12.3                | 108                  | 237            |
| 1027295                  | 12 G 1.0                                          | 14.7                | 178                  | 352            |
| 1027302                  | 18 G 1.0                                          | 17.3                | 255                  | 497            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1027296        | 25 G 1.0                                          | 20.5                | 352                  | 702            |
| 1027303        | 3 G 1.5                                           | 9.7                 | 74.8                 | 152            |
| 1027304        | 4 G 1.5                                           | 10.6                | 94.2                 | 187            |
| 1027305        | 5 G 1.5                                           | 11.4                | 101.1                | 187            |
| 1027307        | 7 G 1.5                                           | 13.8                | 165.6                | 320            |
| 1027312        | 12 G 1.5                                          | 16.3                | 246.5                | 460            |
| 1027318        | 18 G 1.5                                          | 19.5                | 374.7                | 677            |
| 1027325        | 25 G 1.5                                          | 23.6                | 489.4                | 926            |
| 1027403        | 3 G 2.5                                           | 10.6                | 103.9                | 194            |
| 1027404        | 4 G 2.5                                           | 11.8                | 161.8                | 235            |
| 1027405        | 5 G 2.5                                           | 13                  | 184.6                | 306            |
| 1027407        | 7 G 2.5                                           | 15.8                | 242.1                | 428            |
| 1027412        | 12 G 2.5                                          | 18.2                | 403.5                | 590            |
| 1027503        | 3 G 4.0                                           | 12.4                | 157.5                | 275            |
| 1027504        | 4 G 4.0                                           | 14                  | 218.1                | 365            |
| 1027507        | 7 G 4.0                                           | 18.3                | 373.2                | 629            |
| 1027604        | 4 G 6.0                                           | 16.1                | 304.7                | 500            |
| 1027624        | 4 G 16.0                                          | 27.1                | 803.6                | 1357           |
| 1027634        | 4 G 25.0                                          | 31.3                | 1180.4               | 1879           |
| 1027644        | 4 G 35.0                                          | 34.3                | 1593.7               | 2360           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA - Decentralized and standardized installation technology for machine tools and manufacturing systems

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN TM

Highly flexible control cable with TC-ER, MTW, WTTC or CIC/TC listing acc. (UL) or c(UL) for North America



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- The normative multi-talent according NEC and NFPA 79
- Problem-free use in cable trays, industrial machines or wind turbines



### Benefits

- Multi-standard certification offers universal application range, reduces part varieties and saves costs
- TC-ER and MTW listings enable open wiring on cable trays as well as the usage for industrial machines with only one cable
- Resistant to contact with many mineral oil-based lubricants and other chemical media
- Ideal for export-oriented machinery and equipment manufacturers thanks to high normative acceptance by the North American NEC (National Electrical Code)
- Under consideration of the temperature range also suitable for flexible outdoor use

### Application range

- In cable chains or moving machine parts
- Static open wiring on and between cable tray an industrial machine acc. NEC
- Industrial machinery and machine tools
- Wind turbine engineering
- Linear robots, automated handling equipment

### Product features

- High oil-resistance, according to UL OIL RES I and UL OIL RES II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Sunlight Resistant; Direct Burial
- Water-resistant, UL 75°C WET rating

### Norm references / Approvals

- Certifications USA (UL) & UL AWM: TC-ER Tray Cable-Exposed Run MTW Machine Tool Wire „Constant Flexing“ WTTC Wind Turbine Tray Cable PLTC-ER Power Limited Tray Cable ITC Instrumentation Tray Cable DP-1 Data Processing Cable AWM Style 20886
- Certifications Canada c(UL) & CSA AWM: CIC/TC-ER Control Instrumentation Cable/Tray Cable FT4, AWM I/II A/B FT4
- Class 1 Division 2 per NEC Article 501
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper
- Core insulation: PVC with nylon skin
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- Outer jacket: Specially formulated thermoplastic polymer
- Sheath colour: black (similar RAL 9005)

### Technical data

- Core identification code**  
Black with white numbers
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0
- Minimum bending radius**  
Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
UL/CSA: 600 V (TC, MTW, CIC),  
1000 V (WTTC, AWM)  
IEC: U<sub>0</sub>/U 300/500 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor
- Temperature range**  
Fixed installation:  
-40°C (-25°C UL TC) to +90°C  
(UL TC, MTW, according AWM +105°C)  
Flexing:  
-25°C to +90°C (according UL MTW)

| Article number          | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN TM</b> |                                       |                     |                      |                |
| 8718030                 | 3 G 1.0                               | 7.8                 | 29.8                 | 66             |
| 8718040                 | 4 G 1.0                               | 8.6                 | 38.7                 | 82             |
| 8718050                 | 5 G 1.0                               | 9.3                 | 49.1                 | 95             |
| 8718070                 | 7 G 1.0                               | 10.7                | 68.5                 | 125            |
| 8718120                 | 12 G 1.0                              | 12.3                | 117.6                | 210            |
| 8718180                 | 18 G 1.0                              | 15.4                | 175.6                | 308            |
| 8718250                 | 25 G 1.0                              | 17.8                | 244.0                | 414            |
| 8716030                 | 3 G 1.5                               | 8.6                 | 43.2                 | 92             |
| 8716040                 | 4 G 1.5                               | 9.5                 | 58.0                 | 112            |
| 8716050                 | 5 G 1.5                               | 10.3                | 72.9                 | 134            |
| 8716070                 | 7 G 1.5                               | 12                  | 101.2                | 180            |
| 8716120                 | 12 G 1.5                              | 14.7                | 166.7                | 311            |
| 8716180                 | 18 G 1.5                              | 17.2                | 260.4                | 443            |
| 8716250                 | 25 G 1.5                              | 20                  | 360.1                | 621            |
| 8714040                 | 4 G 2.5                               | 10.6                | 96.7                 | 180            |
| 8714070                 | 7 G 2.5                               | 14.5                | 168.2                | 286            |
| 8712040                 | 4 G 4.0                               | 12.4                | 154.8                | 295            |
| 8710040                 | 4 G 6.0                               | 15.2                | 230.7                | 397            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN TM CY

Highly flexible, screened control cable with TC-ER, MTW, WTTC or CIC/TC listing acc. (UL) or c(UL) for North America

### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- The normative multi-talent according NEC and NFPA 79
- Problem-free use in cable trays, industrial machines or wind turbines



### Benefits

- Multi-standard certification offers universal application range, reduces part varieties and saves costs
- TC-ER and MTW listings enable open wiring on cable trays as well as the usage for industrial machines with only one cable
- Resistant to contact with many mineral oil-based lubricants and other chemical media
- Ideal for export-oriented machinery and equipment manufacturers thanks to high normative acceptance by the North American NEC (National Electrical Code)
- Under consideration of the temperature range also suitable for flexible outdoor use

### Application range

- In cable chains or moving machine parts
- Static open wiring on and between cable tray an industrial machine acc. NEC
- Industrial machinery and machine tools
- Wind turbine engineering
- Linear robots, automated handling equipment

### Product features

- High oil-resistance, according to UL OIL RES I and UL OIL RES II
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Sunlight Resistant; Direct Burial
- Water-resistant, UL 75°C WET rating
- EMC-compliant

### Norm references / Approvals

- Certifications USA (UL) & UL AWM: TC-ER Tray Cable-Exposed Run MTW Machine Tool Wire „Constant Flexing“ WTTC Wind Turbine Tray Cable PLTC-ER Power Limited Tray Cable ITC Instrumentation Tray Cable DP-1 Data Processing Cable AWM Style 20886
- Certifications Canada c(UL) & CSA AWM: CIC/TC-ER Control Instrumentation Cable/Tray Cable FT4, AWM I/II A/B FT4
- Class 1 Division 2 per NEC Articles 336, 501
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper
- Core insulation: PVC with nylon skin
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- Outer jacket: Specially formulated thermoplastic polymer
- Sheath colour: black (similar RAL 9005)

### Technical data

- Core identification code**  
Black with white numbers
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0
- Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
UL/CSA: 600 V (TC, MTW, CIC), WTTC 1000 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor
- Temperature range**  
Fixed installation:  
-40°C (-25°C UL TC) to +90°C (UL TC, MTW, according AWM +105°C)  
Flexing:  
-25°C to +90°C (according UL MTW)

| Article number             | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN TM CY</b> |                                                   |                     |                      |                |
| 8718030S                   | 3 G 1.0                                           | 8.4                 | 59.5                 | 122            |
| 8718040S                   | 4 G 1.0                                           | 9.1                 | 71.4                 | 158            |
| 8718050S                   | 5 G 1.0                                           | 10                  | 84.8                 | 183            |
| 8718070S                   | 7 G 1.0                                           | 11.4                | 139.9                | 207            |
| 8718120S                   | 12 G 1.0                                          | 13.9                | 227.7                | 341            |
| 8718180S                   | 18 G 1.0                                          | 16.1                | 321.4                | 472            |
| 8718250S                   | 25 G 1.0                                          | 18.6                | 336.3                | 649            |
| 8716030S                   | 3 G 1.5                                           | 9.2                 | 77.4                 | 170            |
| 8716040S                   | 4 G 1.5                                           | 10.2                | 98.2                 | 190            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 8716050S       | 5 G 1.5                                           | 11                  | 113.1                | 223            |
| 8716070S       | 7 G 1.5                                           | 12.7                | 145.8                | 269            |
| 8716120S       | 12 G 1.5                                          | 15.4                | 248.5                | 463            |
| 8716180S       | 18 G 1.5                                          | 18.1                | 349.7                | 679            |
| 8716250S       | 25 G 1.5                                          | 22.1                | 465.8                | 951            |
| 8714040S       | 4 G 2.5                                           | 11.4                | 138.4                | 269            |
| 8714070S       | 7 G 2.5                                           | 15.2                | 218.8                | 420            |
| 8712040S       | 4 G 4.0                                           | 13.1                | 229.1                | 463            |
| 8710040S       | 4 G 6.0                                           | 16.1                | 309.5                | 574            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ÖLFLEX® CHAIN 90 P**

Highly flexible single core power cable with abrasion and oil resistant PUR sheath - certified for North America

**Info**

- Extended Line Performance - Long travel lengths or high acceleration
- Allrounder for indoor and outdoor use
- Improved characteristics in the event of a fire

**Benefits**

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Longer cable installation lengths thanks to low mutual capacitance cable design

**Application range**

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute multi-core power cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems
- For indoor and outdoor use

**Product features**

- Flammability:
  - Halogen-free acc. to VDE 0472-815
  - Flame retardant acc. to IEC 60332-1-2 or UL/cUL VW-1, FT1
  - No flame propagation acc. to IEC 60332-3-24 Cat. C or /-25 Cat. D
- Good weather, UV and oil resistance
- Abrasion and notch-resistant
- Flexible at low temperatures
- Low-capacitance design

**Norm references / Approvals**

- USA: UL AWM Style 11624, VW-1
- Canada: cUL AWM I/II A, FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE compound
- PUR outer sheath, black (similar RAL 9005)

**Technical data**

- Classification ETIM 5/6**  
 ETIM 5.0/6.0 Class-ID: EC000057  
 ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code**  
 Black or green-yellow, other colours available on request
- Conductor stranding**  
 Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Torsion movement in WTG**  
 TW-0 & TW-2, refer to Appendix T0
- Minimum bending radius**  
 Flexing: up from 7.5 x outer diameter  
 Fixed installation: 3 x outer diameter
- Nominal voltage**  
 IEC: U<sub>n</sub>/U 600/1000 V  
 UL & CSA: 1000 V
- Test voltage**  
 4000 V
- Temperature range**  
 Flexing: -35°C to +80°C  
 Fixed installation: -50°C to +80°C

| Article number            | Conductor cross-section (mm²) | Outer diameter [mm] | Core colour  | Copper index (kg/km) | Weight (kg/km) |
|---------------------------|-------------------------------|---------------------|--------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 90 P</b> |                               |                     |              |                      |                |
| 1026513                   | 1.5                           | 6.3                 | green-yellow | 14.4                 | 48             |
| 1026514                   | 1.5                           | 6.3                 | black        | 14.4                 | 48             |
| 1026515                   | 2.5                           | 6.9                 | green-yellow | 24                   | 63             |
| 1026516                   | 2.5                           | 6.9                 | black        | 24                   | 63             |
| 1026517                   | 4                             | 7.2                 | green-yellow | 38.4                 | 77             |
| 1026518                   | 4                             | 7.2                 | black        | 38.4                 | 77             |
| 1026519                   | 6                             | 7.7                 | green-yellow | 57.6                 | 95             |
| 1026520                   | 6                             | 7.7                 | black        | 57.6                 | 95             |
| 1026521                   | 10                            | 9.1                 | green-yellow | 96                   | 145            |
| 1026522                   | 10                            | 9.1                 | black        | 96                   | 145            |
| 1026523                   | 16                            | 10.6                | green-yellow | 153.6                | 205            |
| 1026524                   | 16                            | 10.6                | black        | 153.6                | 205            |
| 1026525                   | 25                            | 12.3                | green-yellow | 240                  | 290            |
| 1026526                   | 25                            | 12.3                | black        | 240                  | 290            |
| 1026527                   | 35                            | 13.3                | green-yellow | 336                  | 413            |
| 1026528                   | 35                            | 13.3                | black        | 336                  | 413            |

| Article number | Conductor cross-section (mm²) | Outer diameter [mm] | Core colour  | Copper index (kg/km) | Weight (kg/km) |
|----------------|-------------------------------|---------------------|--------------|----------------------|----------------|
| 1026529        | 50                            | 15.9                | green-yellow | 480                  | 535            |
| 1026530        | 50                            | 15.9                | black        | 480                  | 535            |
| 1026531        | 70                            | 18                  | green-yellow | 672                  | 776            |
| 1026532        | 70                            | 18                  | black        | 672                  | 776            |
| 1026533        | 95                            | 19.9                | green-yellow | 912                  | 998            |
| 1026534        | 95                            | 19.9                | black        | 912                  | 998            |
| 1026535        | 120                           | 22.5                | green-yellow | 1152                 | 1249           |
| 1026536        | 120                           | 22.5                | black        | 1152                 | 1249           |
| 1026537        | 150                           | 24.6                | green-yellow | 1440                 | 1486           |
| 1026538        | 150                           | 24.6                | black        | 1440                 | 1486           |
| 1026539        | 185                           | 27.2                | green-yellow | 1776                 | 1788           |
| 1026540        | 185                           | 27.2                | black        | 1776                 | 1788           |
| 1026541        | 240                           | 32.1                | green-yellow | 2304                 | 2381           |
| 1026542        | 240                           | 32.1                | black        | 2304                 | 2381           |
| 1026543        | 300                           | 34                  | green-yellow | 2880                 | 2964           |
| 1026544        | 300                           | 34                  | black        | 2880                 | 2964           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 90 CP

Highly flexible, screened single core power cable with abrasion and oil resistant PUR sheath - certified for North America



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- Allrounder for indoor and outdoor use
- Improved characteristics in the event of a fire



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In cable chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute screened multi-core motor cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems
- For indoor and outdoor use

### Product features

- Flammability:
  - Halogen-free acc. to VDE 0472-815
  - Flame retardant acc. to IEC 60332-1-2 or UL/cUL VW-1, FT1
  - No flame propagation acc. to IEC 60332-3-24 Cat. C or /-25 Cat. D
- Good weather, UV and oil resistance
- Flexible at low temperatures
- Low-capacitance design
- EMC-compliant

### Norm references / Approvals

- USA: UL AWM Style 11624, VW-1
- Canada: cUL AWM I/II A, FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE compound
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, black (similar RAL 9005)

### Technical data

- Classification ETIM 5/6**  
 ETIM 5.0/6.0 Class-ID: EC000057  
 ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code**  
 Black, other colours are available upon request
- Conductor stranding**  
 Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
 Flexing: up from 7.5 x outer diameter  
 Fixed installation: 3 x outer diameter
- Nominal voltage**  
 IEC: U<sub>0</sub>/U 600/1000 V  
 UL & CSA: 1000 V
- Test voltage**  
 4000 V
- Temperature range**  
 Flexing: -35°C to +80°C  
 Fixed installation: -50°C to +80°C

| Article number             | Conductor cross-section (mm²) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|-------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 90 CP</b> |                               |                     |                      |                |
| 1026547                    | 1.5                           | 7                   | 23.8                 | 60             |
| 1026548                    | 2.5                           | 7.6                 | 41                   | 90             |
| 1026549                    | 4                             | 7.9                 | 58.8                 | 100            |
| 1026550                    | 6                             | 8.4                 | 81.3                 | 120            |
| 1026551                    | 10                            | 9.8                 | 123                  | 180            |
| 1026553                    | 16                            | 11.3                | 187.7                | 240            |
| 1026555                    | 25                            | 13                  | 280.6                | 340            |
| 1026557                    | 35                            | 14.2                | 398.9                | 480            |

| Article number | Conductor cross-section (mm²) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|-------------------------------|---------------------|----------------------|----------------|
| 1026559        | 50                            | 16.8                | 551.7                | 610            |
| 1026561        | 70                            | 19.1                | 773.2                | 880            |
| 1026563        | 95                            | 21.6                | 1036.6               | 1160           |
| 1026565        | 120                           | 23.6                | 1277.7               | 1380           |
| 1026567        | 150                           | 25.9                | 1618                 | 1670           |
| 1026569        | 185                           | 28.5                | 1957.3               | 1980           |
| 1026571        | 240                           | 33.4                | 2511.7               | 2600           |
| 1026573        | 300                           | 35.3                | 3117                 | 3210           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 819 P

Highly flexible control cable with PVC core insulation and robust, oil resistant outer sheath - certified



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- Good oil resistance
- UL/cUL certified for North America

### Benefits

- Good combination of quality and price
- Durable thanks to robust sheath material
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- Very suitable for oily wet areas within machinery and production lines
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- Indoor applications or dry rooms

### Product features

- High oil-resistance
- Flammability:  
IEC/EN: 60332-1-2  
UL/CSA: Horizontal Flame, FT2
- Mechanically robust
- Low-adhesive surface

### Norm references / Approvals

- USA: UL AWM Style 21576  
Canada: cUL AWM Style I/II A FT2
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- Outer sheath of Lapp-PU-Special Blend, black (similar RAL 9005)

### Technical data



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5



TW-0 & TW-1, refer to Appendix T0



#### Minimum bending radius

Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC U0/U: 300/500 V  
UL: 1000 V



#### Test voltage

Core/core: 4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Flexing: -5 °C to +70 °C (UL: +80 °C)  
Fixed installation: -40 °C to +70 °C (UL: +80 °C)

| Article number             | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 819 P</b> |                                       |                     |                      |                |
| 1027800                    | 2 X 0.5                               | 5.2                 | 9.6                  | 30.7           |
| 1027801                    | 3 G 0.5                               | 5.5                 | 14.4                 | 39.2           |
| 1027802                    | 4 G 0.5                               | 6                   | 19.2                 | 48.5           |
| 1027803                    | 5 G 0.5                               | 6.5                 | 24                   | 58             |
| 1027804                    | 7 G 0.5                               | 7.7                 | 33.6                 | 79             |
| 1027805                    | 12 G 0.5                              | 9.2                 | 57.6                 | 121.1          |
| 1027806                    | 18 G 0.5                              | 11                  | 86.4                 | 177.9          |
| 1027807                    | 25 G 0.5                              | 13.3                | 120                  | 250            |
| 1027810                    | 2 X 0.75                              | 5.6                 | 14.4                 | 37.9           |
| 1027811                    | 3 G 0.75                              | 6                   | 21.6                 | 49.4           |
| 1027812                    | 4 G 0.75                              | 6.5                 | 28.8                 | 61.5           |
| 1027813                    | 5 G 0.75                              | 7.1                 | 36                   | 74.5           |
| 1027814                    | 7 G 0.75                              | 8.5                 | 50.4                 | 105.6          |
| 1027815                    | 12 G 0.75                             | 10.3                | 86.4                 | 163.3          |
| 1027816                    | 18 G 0.75                             | 12.2                | 129.6                | 239            |
| 1027817                    | 25 G 0.75                             | 14.8                | 180                  | 334.8          |
| 1027820                    | 2 X 1.0                               | 5.9                 | 19.2                 | 43.1           |
| 1027821                    | 3 G 1.0                               | 6.3                 | 28.8                 | 56.5           |
| 1027822                    | 4 G 1.0                               | 6.9                 | 39                   | 71.3           |
| 1027823                    | 5 G 1.0                               | 7.5                 | 48                   | 86.2           |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1027824        | 7 G 1.0                               | 9                   | 67                   | 122.3          |
| 1027825        | 12 G 1.0                              | 10.9                | 115.2                | 190.3          |
| 1027826        | 18 G 1.0                              | 13.2                | 172.8                | 285.4          |
| 1027827        | 25 G 1.0                              | 15.7                | 240                  | 391.2          |
| 1027830        | 2 X 1.5                               | 6.5                 | 28.8                 | 55.6           |
| 1027831        | 3 G 1.5                               | 6.9                 | 43.2                 | 74.5           |
| 1027832        | 4 G 1.5                               | 7.6                 | 58                   | 94.7           |
| 1027833        | 5 G 1.5                               | 8.5                 | 72                   | 119.3          |
| 1027834        | 7 G 1.5                               | 10.3                | 100.8                | 169.5          |
| 1027835        | 12 G 1.5                              | 12.3                | 172.8                | 263.9          |
| 1027836        | 18 G 1.5                              | 14.9                | 259.2                | 395.1          |
| 1027837        | 25 G 1.5                              | 17.9                | 360                  | 549.4          |
| 1027840        | 3 G 2.5                               | 8.4                 | 72                   | 115.6          |
| 1027841        | 4 G 2.5                               | 9.3                 | 96                   | 148.2          |
| 1027844        | 5 G 2.5                               | 10.4                | 120                  | 186            |
| 1027842        | 7 G 2.5                               | 12.7                | 168                  | 268.9          |
| 1027843        | 12 G 2.5                              | 15.2                | 288                  | 420.2          |
| 1027850        | 4 G 4.0                               | 11.1                | 153.6                | 222.1          |
| 1027852        | 4 G 10.0                              | 17.2                | 384                  | 541            |
| 1027855        | 4 G 16.0                              | 20.1                | 614.4                | 804.6          |
| 1027857        | 4 G 25.0                              | 24.9                | 960                  | 1259.5         |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 819 CP

Highly flexible, screened control cable with PVC core insulation and robust, oil resistant outer sheath - certified



### Info

- Basic Line Performance - Moderate travel lengths or acceleration
- Good oil resistance
- UL/cUL certified for North America



### Benefits

- Good combination of quality and price
- Durable thanks to robust sheath material
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Multi-standard certification reduces part varieties and saves costs
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Copper braiding screens the cable against electromagnetic interference

### Application range

- In cable chains or moving machine parts
- In EMC-sensitive environments
- Very suitable for oily wet areas within machinery and production lines
- Assembly lines, production lines, in all kinds of machines
- Suitable for use in measuring, control and regulating circuits
- Indoor applications or dry rooms

### Product features

- High oil-resistance
- Flammability:  
IEC/EN: 60332-1-2  
UL/CSA: Horizontal Flame, FT2
- Mechanically robust
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- USA: UL AWM Style 21576  
Canada: cUL AWM Style I/II A FT2
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath of Lapp-PU-Special Blend, black (similar RAL 9005)

### Technical data

- Core identification code**  
Black with white numbers acc. to VDE 0293-334
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Flexing: up from 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC U0/U: 300/500 V  
UL: 1000 V
- Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +70°C (UL: +80°C)

| Article number              | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 819 CP</b> |                                       |                     |                      |                |
| 1027900                     | 2 X 0.5                               | 5.8                 | 22.5                 | 42.9           |
| 1027901                     | 3 G 0.5                               | 6.1                 | 27.1                 | 50.6           |
| 1027902                     | 4 G 0.5                               | 6.6                 | 35.1                 | 62.6           |
| 1027903                     | 5 G 0.5                               | 7.1                 | 43.1                 | 74.7           |
| 1027904                     | 7 G 0.5                               | 8.5                 | 55.8                 | 101            |
| 1027905                     | 12 G 0.5                              | 10                  | 83.1                 | 144.5          |
| 1027906                     | 18 G 0.5                              | 11.8                | 120                  | 207.1          |
| 1027907                     | 25 G 0.5                              | 14.1                | 171                  | 288.6          |
| 1027910                     | 2 X 0.75                              | 6.2                 | 30.4                 | 52.7           |
| 1027911                     | 3 G 0.75                              | 6.6                 | 37.5                 | 63.4           |
| 1027912                     | 4 G 0.75                              | 7.1                 | 47.9                 | 78             |
| 1027913                     | 5 G 0.75                              | 7.7                 | 55.2                 | 90.4           |
| 1027914                     | 7 G 0.75                              | 9.1                 | 75.9                 | 126.1          |
| 1027915                     | 12 G 0.75                             | 10.9                | 115.3                | 183.6          |
| 1027916                     | 18 G 0.75                             | 13                  | 168                  | 269.8          |
| 1027917                     | 25 G 0.75                             | 15.6                | 239.6                | 377            |
| 1027920                     | 2 X 1.0                               | 6.5                 | 35.3                 | 58.5           |
| 1027921                     | 3 G 1.0                               | 6.9                 | 44.7                 | 71.6           |
| 1027922                     | 4 G 1.0                               | 7.5                 | 57.7                 | 89.4           |
| 1027923                     | 5 G 1.0                               | 8.3                 | 70.3                 | 110.2          |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 1027924        | 7 G 1.0                               | 9.8                 | 92.7                 | 149.2          |
| 1027925        | 12 G 1.0                              | 11.7                | 148.7                | 224.4          |
| 1027926        | 18 G 1.0                              | 14                  | 224.1                | 331.3          |
| 1027927        | 25 G 1.0                              | 16.7                | 299.5                | 449.2          |
| 1027930        | 2 X 1.5                               | 7.1                 | 47.9                 | 73.8           |
| 1027931        | 3 G 1.5                               | 7.5                 | 62.5                 | 92.6           |
| 1027932        | 4 G 1.5                               | 8.4                 | 80                   | 118.9          |
| 1027933        | 5 G 1.5                               | 9.1                 | 97.5                 | 142.7          |
| 1027934        | 7 G 1.5                               | 10.9                | 129.7                | 194.9          |
| 1027935        | 12 G 1.5                              | 13.3                | 211                  | 301.9          |
| 1027936        | 18 G 1.5                              | 15.7                | 319                  | 447.8          |
| 1027937        | 25 G 1.5                              | 18.7                | 428.1                | 606.5          |
| 1027940        | 3 G 2.5                               | 9                   | 97.4                 | 138.9          |
| 1027941        | 4 G 2.5                               | 10.1                | 124.8                | 178.2          |
| 1027944        | 5 G 2.5                               | 11.2                | 148.7                | 215.4          |
| 1027942        | 7 G 2.5                               | 13.5                | 206.5                | 301.6          |
| 1027943        | 12 G 2.5                              | 16.2                | 347.5                | 478.5          |
| 1027950        | 4 G 4.0                               | 11.9                | 187                  | 256.1          |
| 1027952        | 4 G 10.0                              | 18.2                | 452.1                | 606.5          |
| 1027955        | 4 G 16.0                              | 21.3                | 699.5                | 884.2          |
| 1027957        | 4 G 25.0                              | 26.3                | 1062.1               | 1349.7         |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 891 P

Highly flexible control cable with PVC core insulation and abrasion and oil resistant PUR sheath - certified



### Info

- Core Line Performance - Medium to increased travel lengths or acceleration
- High oil resistance
- AWM certification for USA and Canada

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- In cable chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Suitable for use in measuring, control and regulating circuits
- Plant engineering
- In dry, damp or wet interiors with normal mechanical stress conditions

### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT 1
- High oil-resistance
- Abrasion and notch-resistant
- Low-adhesive surface

### Norm references / Approvals

- UL rec. AWM Style 20234
- CRU AWM II A/B FT 1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- PUR outer sheath, black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC:  $U_0/U$  300/500 V  
UL/CSA: 600 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +70°C  
(UL: +80°C)

| Article number          | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 891 P</b> |                                                   |                     |                      |                |
| 1028752                 | 2 X 0.5                                           | 6.5                 | 9.6                  | 46             |
| 1028007                 | 7 G 0.5                                           | 9.6                 | 33.6                 | 118            |
| 1028103                 | 3 G 0.75                                          | 7.3                 | 21.6                 | 66             |
| 1028104                 | 4 G 0.75                                          | 8                   | 28.8                 | 82             |
| 1028105                 | 5 G 0.75                                          | 8.7                 | 36                   | 101            |
| 1028107                 | 7 G 0.75                                          | 10.7                | 50.4                 | 142            |
| 1028112                 | 12 G 0.75                                         | 11.7                | 86.4                 | 196            |
| 1028118                 | 18 G 0.75                                         | 13.9                | 129.6                | 282            |
| 1028125                 | 25 G 0.75                                         | 16.6                | 180                  | 404            |
| 1028134                 | 34 G 0.75                                         | 18.9                | 244.8                | 541            |
| 1028150                 | 50 G 0.75                                         | 22.5                | 360                  | 738            |
| 1028303                 | 3 G 1.5                                           | 8.4                 | 43.2                 | 98             |
| 1028304                 | 4 G 1.5                                           | 9.3                 | 57.6                 | 125            |
| 1028305                 | 5 G 1.5                                           | 10.1                | 72                   | 155            |
| 1028307                 | 7 G 1.5                                           | 11.9                | 100.8                | 221            |
| 1028312                 | 12 G 1.5                                          | 13.9                | 172.8                | 318            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 1028318        | 18 G 1.5                                          | 16.9                | 259.2                | 484            |
| 1028325        | 25 G 1.5                                          | 20.1                | 360                  | 671            |
| 1028334        | 34 G 1.5                                          | 23.1                | 489.6                | 910            |
| 1028952        | 2 X 2.5                                           | 8.9                 | 48                   | 102            |
| 1028403        | 3 G 2.5                                           | 9.3                 | 72                   | 134            |
| 1028404        | 4 G 2.5                                           | 10.3                | 96                   | 173            |
| 1028405        | 5 G 2.5                                           | 11.3                | 120                  | 217            |
| 1028407        | 7 G 2.5                                           | 13.4                | 168                  | 312            |
| 1028412        | 12 G 2.5                                          | 15.8                | 288                  | 460            |
| 1028503        | 3 G 4.0                                           | 10.9                | 115.2                | 197            |
| 1028504        | 4 G 4.0                                           | 12.1                | 153.6                | 257            |
| 1028507        | 7 G 4.0                                           | 16.1                | 268.8                | 471            |
| 1028604        | 4 G 6.0                                           | 13.7                | 230.4                | 363            |
| 1028614        | 4 G 10.0                                          | 17.9                | 384                  | 605            |
| 1028624        | 4 G 16.0                                          | 23.4                | 614.4                | 973            |
| 1028634        | 4 G 25.0                                          | 27.6                | 960                  | 1437           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 855 P

Halogen-free, highly flexible control cable with abrasion and oil resistant PUR sheath - certified



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- All-rounder with small bending radii
- UL/cUL certified for North America



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Low particle emission at moved chain application
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- In cable chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For use in assembling & pick-and-place machinery
- For highly dynamic applications
- For indoor and outdoor use

### Product features

- Halogen-free and flame-retardant (IEC 60332-1-2)
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Flexible down to -40°C
- Abrasion and notch-resistant
- Low-adhesive surface

### Norm references / Approvals

- Based on VDE 0250 / 0285
- USA: UL AWM Style 21576
- Canada: cUL AWM Style I/II A FT2
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- PUR outer sheath, grey (similar RAL 7001)

### Technical data

|  |                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description:<br>Control cable |
|  | <b>Core identification code</b><br>Black with white numbers acc. to VDE 0293-334                                      |
|  | <b>Conductor stranding</b><br>Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6                        |
|  | <b>Minimum bending radius</b><br>Flexing: up from 5 x outer diameter<br>Fixed installation: 3 x outer diameter        |
|  | <b>Nominal voltage</b><br>IEC U0/U: 300/500 V<br>UL: 1000 V                                                           |
|  | <b>Test voltage</b><br>3000 V                                                                                         |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                |
|  | <b>Temperature range</b><br>Flexing: -40°C to +80°C<br>Fixed installation: -50°C to +80°C                             |

| Article number          | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 855 P</b> |                                       |                     |                      |                |
| 0027530                 | 2 X 0.5                               | 5.1                 | 10                   | 34             |
| 0027531                 | 3 G 0.5                               | 5.5                 | 14                   | 40             |
| 0027532                 | 5 G 0.5                               | 6.6                 | 24                   | 55             |
| 0027533                 | 6 G 0.5                               | 7.1                 | 29                   | 63             |
| 0027534                 | 7 G 0.5                               | 7.7                 | 34                   | 76             |
| 0027535                 | 12 G 0.5                              | 9.1                 | 58                   | 114            |
| 0027536                 | 18 G 0.5                              | 10.9                | 86                   | 165            |
| 0027537                 | 20 G 0.5                              | 11.5                | 96                   | 180            |
| 0027538                 | 25 G 0.5                              | 13.4                | 120                  | 219            |
| 0027540                 | 30 G 0.5                              | 13.6                | 144                  | 251            |
| 0027541                 | 36 G 0.5                              | 14.7                | 173                  | 290            |
| 0027545                 | 2 X 0.75                              | 5.6                 | 14                   | 42             |
| 0027546                 | 3 G 0.75                              | 6                   | 22                   | 50             |
| 0027547                 | 4 G 0.75                              | 6.7                 | 29                   | 60             |
| 0027548                 | 5 G 0.75                              | 7.3                 | 36                   | 71             |
| 0027549                 | 7 G 0.75                              | 8.8                 | 50                   | 99             |
| 0027550                 | 12 G 0.75                             | 10.3                | 86                   | 158            |
| 0027551                 | 18 G 0.75                             | 12.4                | 130                  | 219            |
| 0027552                 | 20 G 0.75                             | 13.3                | 144                  | 240            |
| 0027553                 | 25 G 0.75                             | 15.5                | 180                  | 309            |
| 0027555                 | 36 G 0.75                             | 16.9                | 259                  | 411            |
| 0027560                 | 2 X 1.0                               | 6                   | 19                   | 50             |
| 0027561                 | 3 G 1.0                               | 6.5                 | 29                   | 61             |
| 0027562                 | 4 G 1.0                               | 7.2                 | 38                   | 70             |
| 0027563                 | 5 G 1.0                               | 7.8                 | 48                   | 93             |

| Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 0027564        | 7 G 1.0                               | 9.5                 | 67                   | 122            |
| 0027565        | 12 G 1.0                              | 11.2                | 115                  | 196            |
| 0027566        | 18 G 1.0                              | 13.7                | 173                  | 274            |
| 0027567        | 20 G 1.0                              | 14.4                | 192                  | 300            |
| 0027568        | 25 G 1.0                              | 16.8                | 240                  | 385            |
| 0027570        | 30 G 1.0                              | 17                  | 288                  | 444            |
| 0027571        | 36 G 1.0                              | 18.6                | 346                  | 516            |
| 0027575        | 2 X 1.5                               | 6.7                 | 29                   | 68             |
| 0027576        | 3 G 1.5                               | 7.3                 | 43                   | 83             |
| 0027586        | 4 G 1.5                               | 8                   | 58                   | 100            |
| 0027577        | 5 G 1.5                               | 9                   | 72                   | 128            |
| 0027578        | 7 G 1.5                               | 10.7                | 101                  | 177            |
| 0027579        | 12 G 1.5                              | 12.7                | 173                  | 275            |
| 0027580        | 18 G 1.5                              | 15.2                | 259                  | 405            |
| 0027582        | 25 G 1.5                              | 18.8                | 360                  | 565            |
| 0027584        | 30 G 1.5                              | 18.8                | 432                  | 652            |
| 0027585        | 36 G 1.5                              | 20.6                | 518                  | 759            |
| 0027587        | 41 G 1.5                              | 22.4                | 614                  | 978            |
| 0027370        | 3 G 2.5                               | 8.9                 | 72                   | 121            |
| 0027371        | 4 G 2.5                               | 9.9                 | 96                   | 163            |
| 0027372        | 5 G 2.5                               | 11                  | 120                  | 196            |
| 0027373        | 7 G 2.5                               | 13.4                | 168                  | 266            |
| 0027374        | 12 G 2.5                              | 15.8                | 288                  | 446            |
| 0027375        | 18 G 2.5                              | 18.9                | 432                  | 665            |
| 0027376        | 25 G 2.5                              | 23.5                | 600                  | 929            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables

Cable chain applications • Harsh conditions, certified



## ÖLFLEX® FD 855 CP

Halogen-free, highly flexible and screened control cable with abrasion and oil resistant PUR sheath - certified



**Info**

- Extended Line Performance - Long travel lengths or high acceleration
- EMC compliant copper screening
- UL/cUL certified for North America

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Multi-standard certification reduces part varieties and saves costs
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In cable chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- For use in assembling & pick-and-place machinery
- Assembly lines, production lines, in all kinds of machines
- In EMC-sensitive environments
- For indoor and outdoor use

### Product features

- Good mechanical, abrasion and notch-resistance
- Halogen-free and flame-retardant (IEC 60332-1-2)
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Flexible down to -40°C
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- Based on VDE 0250 / 0285
- USA: UL AWM Style 21576 with add. VW-1
- Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- Inner sheath made of TPE
- Tinned-copper braiding
- PUR outer sheath, grey (similar RAL 7001)

### Technical data

**Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-334

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

**Minimum bending radius**  
Flexing: up from 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC U0/U: 300/500 V  
UL: 1000 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

| Article number           | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® FD 855 CP</b> |                                                   |                     |                      |                |
| 0027605                  | 2 X 0.5                                           | 6.7                 | 32                   | 67             |
| 0027606                  | 3 G 0.5                                           | 7.1                 | 40                   | 79             |
| 0027607                  | 5 G 0.5                                           | 8.2                 | 53                   | 107            |
| 0027608                  | 6 G 0.5                                           | 8.7                 | 59                   | 121            |
| 0027609                  | 7 G 0.5                                           | 9.5                 | 67                   | 132            |
| 0027610                  | 12 G 0.5                                          | 10.9                | 97                   | 190            |
| 0027611                  | 18 G 0.5                                          | 12.9                | 131                  | 245            |
| 0027612                  | 20 G 0.5                                          | 13.5                | 156                  | 281            |
| 0027613                  | 25 G 0.5                                          | 15.6                | 190                  | 367            |
| 0027615                  | 30 G 0.5                                          | 15.8                | 222                  | 408            |
| 0027616                  | 36 G 0.5                                          | 16.9                | 251                  | 459            |
| 0027620                  | 2 X 0.75                                          | 7.2                 | 40                   | 79             |
| 0027621                  | 3 G 0.75                                          | 7.6                 | 47                   | 96             |
| 0027622                  | 4 G 0.75                                          | 8.3                 | 58                   | 112            |
| 0027623                  | 5 G 0.75                                          | 8.9                 | 65                   | 126            |
| 0027624                  | 7 G 0.75                                          | 10.6                | 85                   | 165            |
| 0027625                  | 12 G 0.75                                         | 12.1                | 127                  | 231            |
| 0027626                  | 18 G 0.75                                         | 14.6                | 198                  | 330            |
| 0027628                  | 25 G 0.75                                         | 17.7                | 259                  | 459            |
| 0027630                  | 36 G 0.75                                         | 19.5                | 348                  | 605            |
| 0027635                  | 2 X 1.0                                           | 7.6                 | 45                   | 93             |
| 0027636                  | 3 G 1.0                                           | 8.1                 | 55                   | 109            |
| 0027637                  | 4 G 1.0                                           | 8.8                 | 68                   | 126            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0027638        | 5 G 1.0                                           | 9.6                 | 81                   | 147            |
| 0027639        | 7 G 1.0                                           | 11.3                | 106                  | 196            |
| 0027640        | 12 G 1.0                                          | 13.2                | 175                  | 292            |
| 0027641        | 18 G 1.0                                          | 15.9                | 242                  | 418            |
| 0027643        | 25 G 1.0                                          | 19.5                | 329                  | 575            |
| 0027645        | 30 G 1.0                                          | 19.6                | 377                  | 635            |
| 0027646        | 36 G 1.0                                          | 21.2                | 467                  | 758            |
| 0027649        | 2 X 1.5                                           | 8.3                 | 58                   | 115            |
| 0027650        | 3 G 1.5                                           | 8.9                 | 76                   | 139            |
| 0027661        | 4 G 1.5                                           | 9.8                 | 91                   | 156            |
| 0027651        | 5 G 1.5                                           | 10.8                | 111                  | 198            |
| 0027652        | 7 G 1.5                                           | 12.5                | 145                  | 254            |
| 0027653        | 12 G 1.5                                          | 14.9                | 242                  | 416            |
| 0027654        | 18 G 1.5                                          | 17.4                | 346                  | 564            |
| 0027656        | 25 G 1.5                                          | 21.4                | 486                  | 811            |
| 0027659        | 36 G 1.5                                          | 23.4                | 655                  | 1066           |
| 0027380        | 3 G 2.5                                           | 10.7                | 110                  | 194            |
| 0027381        | 4 G 2.5                                           | 11.7                | 136                  | 234            |
| 0027382        | 5 G 2.5                                           | 12.8                | 180                  | 293            |
| 0027383        | 7 G 2.5                                           | 15.6                | 246                  | 418            |
| 0027384        | 12 G 2.5                                          | 18                  | 377                  | 629            |
| 0027385        | 18 G 2.5                                          | 21.5                | 569                  | 912            |
| 0027386        | 25 G 2.5                                          | 26.5                | 765                  | 1266           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CHAIN 896 P

Highly flexible, halogen-free power cable with low capacitive insulation and oil resistant PUR sheath - certified



### Info

- Extended Line Performance - Long travel lengths or high acceleration
- High oil resistance
- Rated voltage 0,6/1 kV

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Wide temperature range for applications in harsh climatic environments

### Application range

- In cable chains or moving machine parts
- Applications in automation engineering
- Power circuits in industrial machines
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

### Product features

- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Halogen-free materials
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Low-capacitance design
- Flexible down to -40°C

### Norm references / Approvals

- VDE - reg - no. 8661  
UL AWM Style 20234  
cULus AWM I/II A/B, 1000V 80° FT1  
CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in cable chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Non-woven wrapping
- PUR outer sheath, black (similar RAL 9005)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-334



#### Conductor stranding

Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



#### Minimum bending radius

Flexing:  
up from 7.5 x outer diameter (up to 16mm<sup>2</sup>)  
up from 10 x outer diameter (from 25mm<sup>2</sup>)  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC U0/U: 600/1000 V  
UL & CSA: 1000 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Flexing: -40°C to +90°C  
(UL/CSA: +80°C)  
Fixed installation: -50°C to +90°C  
(UL/CSA: +80°C)

| Article number             | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® CHAIN 896 P</b> |                                                   |                     |                      |                |
| 1023229                    | 4 G 1.5                                           | 9.6                 | 58                   | 120            |
| 1023230                    | 5 G 1.5                                           | 10                  | 72                   | 143            |
| 1023238                    | 4 G 2.5                                           | 11                  | 96                   | 174            |
| 1023239                    | 5 G 2.5                                           | 12                  | 120                  | 210            |
| 1023245                    | 4 G 4.0                                           | 12.5                | 154                  | 242            |
| 1023246                    | 5 G 4.0                                           | 13.7                | 192                  | 316            |
| 1023248                    | 4 G 6.0                                           | 14.3                | 231                  | 335            |
| 1023249                    | 5 G 6.0                                           | 15.7                | 288                  | 439            |
| 1023250                    | 4 G 10.0                                          | 17                  | 384                  | 503            |
| 1023251                    | 5 G 10.0                                          | 18.9                | 480                  | 663            |
| 1023252                    | 4 G 16.0                                          | 21.2                | 615                  | 810            |
| 1023253                    | 5 G 16.0                                          | 23.8                | 768                  | 1065           |
| 1023254                    | 4 G 25.0                                          | 25.9                | 960                  | 1254           |
| 1023255                    | 5 G 25.0                                          | 29                  | 1200                 | 1582           |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® ROBOT F1

Abrasion- and oil resistant PUR robot cable for high dynamic bending and torsion motions, UL/cUL AWM certified



### Info

- Simultaneous bending and torsion
- Torsion angle up to  $\pm 360^\circ/\text{m}$
- AWM certification for USA and Canada

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- Industrial machinery and machine tools
- Automated handling equipment
- Automotive industry
- In cable chains or moving machine parts
- Inside of dresspacks of buckling arm robots and for use for gantry robots

### Product features

- Abrasion and notch-resistant
- Flame-retardant
- High oil-resistance
- Flexible at low temperatures
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20940
- cUL AWM I/II A/B
- UL File No. E213974
- Designed for up to 10 million torsion cycles
- For use in cable chains: Please comply with assembly guideline Appendix T3
- For travel distances up to 10 m

### Product Make-up

- Extra-fine strands, 0.14 mm<sup>2</sup> - 0.5 mm<sup>2</sup> made of tinned copper wires, bare above
- Core insulation: TPE
- Cores (or core pairs) twisted in layers or bundles
- Wrapping of PTFE tape
- Wrapping made of tinned copper wires for versions with individually screened pairs
- PUR outer sheath, colour anthracite

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

Up to 0.34 mm<sup>2</sup>: DIN 47100 cores  
From 0.5 mm<sup>2</sup>: white cores with black numbers, cores of screened pair (2 x 1.0) are marked with no. 1 + 2



#### Conductor stranding

Extra-fine wire



#### Torsion

Torsion load max.  $\pm 360^\circ/\text{m}$



#### Minimum bending radius

Flexible use: 10 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

IEC: up to 0.34 mm<sup>2</sup> 250 Vss.  
0.5 - 2.5 mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
UL/CSA: up to 1.5 mm<sup>2</sup> 600 V,  
from 2.5 mm<sup>2</sup> 1000 V



#### Test voltage

Up to 0.34 mm<sup>2</sup>: 1500 V  
From 0.5 mm<sup>2</sup> - 1.5 mm<sup>2</sup>: 2000 V  
From 2.5 mm<sup>2</sup>: 3000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

| Article number                             | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® ROBOT F1</b>                    |                                                   |                     |                      |                |
| <b>Core colours according to DIN 47100</b> |                                                   |                     |                      |                |
| 0029590                                    | 7 X 0.25                                          | 6.7                 | 16.8                 | 62             |
| 0029591                                    | 12 X 0.25                                         | 9.0                 | 30                   | 122            |
| 0029592                                    | 18 X 0.25                                         | 10.6                | 45                   | 156            |
| 0029593                                    | 25 X 0.25                                         | 12.5                | 60                   | 205            |
| 0029594                                    | 2 X 0.34                                          | 4.6                 | 7                    | 38             |
| 0029595                                    | 3 X 0.34                                          | 4.8                 | 10                   | 40             |
| 0029596                                    | 4 X 0.34                                          | 5.2                 | 15                   | 48             |
| 0029599                                    | 12 X 0.34                                         | 9.4                 | 40                   | 130            |
| 0029600                                    | 18 X 0.34                                         | 11.2                | 60                   | 170            |
| 0029601                                    | 25 X 0.34                                         | 13.1                | 83                   | 220            |
| <b>Numbered Cores</b>                      |                                                   |                     |                      |                |
| 0029608                                    | 18 G 0.5                                          | 12.3                | 84                   | 202            |
| 0029609                                    | 25 G 0.5                                          | 15.2                | 120                  | 284            |
| 0029610                                    | 2 X 1.0                                           | 6.3                 | 19                   | 60             |
| 0029611                                    | 3 G 1.0                                           | 6.6                 | 28                   | 71             |
| 0029612                                    | 4 G 1.0                                           | 7.2                 | 38                   | 87             |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0029614        | 7 G 1.0                                           | 9.2                 | 65                   | 141            |
| 0029615        | 12 G 1.0                                          | 12.4                | 110                  | 237            |
| 0029616        | 14 G 1.0                                          | 13.2                | 128                  | 257            |
| 0029617        | 16 G 1,0 + (2 x 1,0)                              | 15.4                | 190                  | 346            |
| 0029618        | 18 G 1.0                                          | 16.1                | 170                  | 349            |
| 0029619        | 23 G 1 + (2 x 1,0)                                | 18.0                | 250                  | 461            |
| 0029620        | 25 G 1.0                                          | 18.3                | 240                  | 407            |
| 0029621        | 34 G 1.0                                          | 21.1                | 320                  | 600            |
| 0029622        | 41 G 1.0                                          | 23.6                | 390                  | 753            |
| 0029624        | 4 G 1.5                                           | 8.2                 | 57                   | 114            |
| 0029625        | 5 G 1.5                                           | 9.1                 | 72                   | 141            |
| 0029627        | 7 G 1.5                                           | 10.5                | 101                  | 187            |
| 0029629        | 12 G 1.5                                          | 14.3                | 170                  | 294            |
| 0029630        | 18 G 1.5                                          | 17.5                | 259                  | 450            |
| 0029631        | 25 G 1.5                                          | 22.2                | 360                  | 661            |
| 0029632        | 3 G 2.5                                           | 9.1                 | 72                   | 136            |
| 0029641        | 4 G 6.0                                           | 13.3                | 220                  | 330            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30$  kg or  $\leq 250$  m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® ROBOT F1 ( C )

Shielded, abrasion- and oil-resistant PUR robot cable for high dynamic bending and torsion motions, UL/cUL AWM certified



### Info

- Simultaneous bending and torsion
- Torsion angle up to  $\pm 180^\circ/\text{m}$
- AWM certification for USA and Canada



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers

### Application range

- Industrial machinery and machine tools
- Automated handling equipment
- Automotive industry
- In cable chains or moving machine parts
- Inside of dresspacks of buckling arm robots and for use for gantry robots

### Product features

- Abrasion and notch-resistant
- Flame-retardant
- High oil-resistance
- Flexible at low temperatures
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20940
- cUL AWM I/II A/B
- UL File No. E213974
- Designed for up to 10 million torsion cycles
- For use in cable chains: Please comply with assembly guideline Appendix T3
- For travel distances up to 10 m

### Product Make-up

- Extra-fine strands,  $0.14 \text{ mm}^2 - 0.5 \text{ mm}^2$  made of tinned copper wires, bare above
- Core insulation: TPE
- Cores (or core pairs) twisted in layers or bundles
- Wrapping made of tinned copper wires for versions with individually screened pairs
- Wrapping of PTFE tape
- Spiral shield of tinned copper wires, version 12 G 1,5 and 18 G 1,5 with screen braiding
- PUR outer sheath, colour anthracite

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description: Control cable
- Core identification code**  
Up to  $0.34 \text{ mm}^2$ : DIN 47100 cores  
From  $0.5 \text{ mm}^2$ : white cores with black numbers, cores of screened pair (2 x 1.0) are marked with no. 5 + 6
- Conductor stranding**  
Extra-fine wire
- Torsion**  
Torsion load max.  $\pm 180^\circ/\text{m}$
- Minimum bending radius**  
Flexible use: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: up to  $0.34 \text{ mm}^2$  250 Vss.  
 $0.5 - 2.5 \text{ mm}^2$   $U_0/U$  300/500 V  
UL/CSA: up to  $1.5 \text{ mm}^2$  600 V, from  $2.5 \text{ mm}^2$  1000 V
- Test voltage**  
Up to  $0.34 \text{ mm}^2$ : 1500 V  
From  $0.5 \text{ mm}^2 - 1.5 \text{ mm}^2$ : 2000 V  
From  $2.5 \text{ mm}^2$ : 3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing:  $-40^\circ\text{C}$  to  $+80^\circ\text{C}$   
Fixed installation:  $-50^\circ\text{C}$  to  $+80^\circ\text{C}$

| Article number                             | Number of cores and $\text{mm}^2$ per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------------------|-------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® ROBOT F1 (C)</b>                |                                                 |                     |                      |                |
| <b>Core colours according to DIN 47100</b> |                                                 |                     |                      |                |
| 0029653                                    | 3 x 2 x 0,25                                    | 8.0                 | 38                   | 100            |
| 0029654                                    | 25 x 0,25                                       | 13.8                | 115                  | 280            |
| 0029655                                    | 2 x 0,34                                        | 5.2                 | 18                   | 54             |
| 0029656                                    | 3 x 0,34                                        | 5.4                 | 20                   | 56             |
| 0029657                                    | 4 x 0,34                                        | 6.6                 | 28                   | 72             |
| 0029658                                    | 5 x 2 x 0,34                                    | 10.2                | 69                   | 158            |
| <b>Numbered Cores</b>                      |                                                 |                     |                      |                |
| 0029689                                    | 12 G 1,5                                        | 15.4                | 230                  | 380            |
| 0029690                                    | 18 G 1,5                                        | 18.5                | 340                  | 590            |
| 0029664                                    | 4 G 1,5                                         | 8.8                 | 75.1                 | 150            |
| 0029665                                    | 4 G 2,5                                         | 10.3                | 116                  | 196            |
| 0029691                                    | 4 G 1,5 + (2 x 1,0)                             | 11.0                | 116                  | 213            |
| 0029692                                    | 4 G 2,5 + (2 x 1,0)                             | 12.0                | 150                  | 270            |

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30 \text{ kg}$  or  $\leq 250 \text{ m}$ , otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® HEAT 180 MS

Certified silicone cables for North America (AWM recognized)



### Info

- MS = Multi-Standard  
For use in the USA and Canada
- UL AWM Style 4476 (150 °C/600 V)
- CPR: Article number choice under  
[www.lapp.com](http://www.lapp.com)

### Benefits

- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Thicker cable design meets the requirements of the FT-1 flame test and also approved for the external interconnection of apparatuses and appliances
- Flexibility simplifies installation where space is limited
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where insulating and sheath materials of conventional cables will embrittle after a short while
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2)
- Flame-retardant acc. to IEC 60332-1-2, Cable Flame Test, CSA FT 1
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100 °C in the absence of air

### Norm references / Approvals

- UL AWM 4476 and cUL AWM II A/B Construction B, External wiring
- UL File No. E63634

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted together
- Silicone-based outer sheath, colour black

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC001578  
ETIM 5.0/6.0 Class-Description:  
Flexible cable



#### Core identification code

Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5  
(Refer to Appendix T16 for the matching US conductor sizes in AWG standard)



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V  
Working voltage UL: 600 V



#### Test voltage

2000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

According to VDE: -60 °C to +180 °C  
UL/cUL: up to +150 °C  
(adequate ventilation required)

| Article number             | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® HEAT 180 MS</b> |                                                   |                     |                      |                |
| 0046600                    | 2 X 0.5                                           | 7.4                 | 9.8                  | 72             |
| 0046601                    | 3 G 0.5                                           | 7.8                 | 14.7                 | 83             |
| 00466023                   | 4 G 0.5                                           | 8.5                 | 19.6                 | 99             |
| 00466033                   | 5 G 0.5                                           | 9.2                 | 24.5                 | 119            |
| 0046604                    | 7 G 0.5                                           | 9.9                 | 34.3                 | 142            |
| 0046612                    | 2 X 1.0                                           | 8.2                 | 19.2                 | 93             |
| 0046613                    | 3 G 1.0                                           | 8.7                 | 28.8                 | 110            |
| 00466143                   | 4 G 1.0                                           | 9.4                 | 38.4                 | 133            |
| 00466153                   | 5 G 1.0                                           | 10.3                | 48                   | 160            |
| 0046616                    | 7 G 1.0                                           | 11.1                | 67.2                 | 195            |
| 0046617                    | 12 G 1.0                                          | 14.9                | 115.2                | 345            |
| 0046618                    | 2 X 1.5                                           | 8.8                 | 28.8                 | 113            |
| 0046619                    | 3 G 1.5                                           | 9.3                 | 43.2                 | 135            |
| 00466203                   | 4 G 1.5                                           | 10.1                | 57.6                 | 165            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 00466213       | 5 G 1.5                                           | 11.1                | 72                   | 200            |
| 0046622        | 7 G 1.5                                           | 12.0                | 100.8                | 246            |
| 0046623        | 12 G 1.5                                          | 16.1                | 172.8                | 437            |
| 0046625        | 18 G 1.5                                          | 18.8                | 259.2                | 613            |
| 0046626        | 25 G 1.5                                          | 22.9                | 360                  | 904            |
| 0046628        | 2 X 2.5                                           | 9.6                 | 48                   | 146            |
| 0046629        | 3 G 2.5                                           | 10.2                | 72                   | 178            |
| 00466303       | 4 G 2.5                                           | 11.1                | 96                   | 220            |
| 00466313       | 5 G 2.5                                           | 12.2                | 120                  | 269            |
| 0046633        | 3 G 4.0                                           | 11.5                | 115.2                | 246            |
| 00466343       | 4 G 4.0                                           | 12.6                | 153.6                | 307            |
| 00466353       | 5 G 4.0                                           | 14.2                | 192                  | 389            |
| 0046636        | 3 G 6.0                                           | 14.9                | 172.8                | 396            |
| 00466373       | 4 G 6.0                                           | 16.4                | 230.4                | 495            |
| 00466383       | 5 G 6.0                                           | 18.0                | 288                  | 608            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



Screened and approved silicone cables for North America (AWM recognized)



#### Info

- MS = Multi-Standard  
For use in the USA and Canada
- UL AWM Style 4476 (150 °C/600 V)
- CPR: Article number choice under  
[www.lapp.com](http://www.lapp.com)

#### Benefits

- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Thicker cable design meets the requirements of the FT-1 flame test and also approved for the external interconnection of apparatuses and appliances
- Flexibility simplifies installation where space is limited
- Copper braiding screens the cable against electromagnetic interference

#### Application range

- Areas with high ambient temperatures where insulating and sheath materials of conventional cables will embrittle after a short while
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

#### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2)
- Flame-retardant acc. to IEC 60332-1-2, Cable Flame Test, CSA FT 1
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100 °C in the absence of air

#### Norm references / Approvals

- UL AWM 4476 and cUL AWM II A/B Construction B, External wiring
- UL File No. E63634

#### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted together
- Tinned-copper screen braiding, interleaved plastic foil wrapping
- Silicone-based outer sheath, colour black

#### Technical data

|  |                                                                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC001578<br>ETIM 5.0/6.0 Class-Description:<br>Flexible cable                                                  |
|  | <b>Core identification code</b><br>Colours according to VDE 0293-308, refer to Appendix T9<br>From 6 cores: black with white numbers                                    |
|  | <b>Conductor stranding</b><br>Fine wire according to VDE 0295, class 5/IEC 60228 class 5<br>(Refer to Appendix T16 for the matching US conductor sizes in AWG standard) |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 20 x outer diameter<br>Fixed installation: 6 x outer diameter                                                      |
|  | <b>Nominal voltage</b><br>U0/U: 300/500 V<br>Working voltage UL: 600 V                                                                                                  |
|  | <b>Test voltage</b><br>2000 V                                                                                                                                           |
|  | <b>Protective conductor</b><br>G = with GN-YE protective conductor<br>X = without protective conductor                                                                  |
|  | <b>Temperature range</b><br>According to VDE: -60 °C to +180 °C<br>UL/cUL: up to +150 °C<br>(adequate ventilation required)                                             |

| Article number               | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>ÖLFLEX® HEAT 180 C MS</b> |                                                   |                     |                      |                |
| 0046701                      | 3 G 0.5                                           | 8.6                 | 43.4                 | 100            |
| 0046702                      | 4 G 0.5                                           | 9.3                 | 55.4                 | 122            |
| 0046703                      | 5 G 0.5                                           | 10.0                | 60.2                 | 137            |
| 0046708                      | 2 X 1.0                                           | 9.0                 | 48.2                 | 104            |
| 0046709                      | 3 G 1.0                                           | 9.5                 | 65                   | 131            |
| 0046710                      | 4 G 1.0                                           | 10.2                | 74.6                 | 152            |
| 0046711                      | 5 G 1.0                                           | 11.0                | 91.5                 | 181            |
| 0046712                      | 7 G 1.0                                           | 11.9                | 117.9                | 228            |
| 0046716                      | 2 X 1.5                                           | 9.6                 | 65                   | 126            |
| 0046717                      | 3 G 1.5                                           | 10.1                | 79.4                 | 152            |
| 0046718                      | 4 G 1.5                                           | 10.9                | 101.1                | 186            |
| 0046719                      | 5 G 1.5                                           | 11.8                | 122.7                | 222            |

| Article number | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 0046720        | 7 G 1.5                                           | 12.8                | 158.7                | 281            |
| 0046721        | 12 G 1.5                                          | 16.9                | 245.2                | 431            |
| 0046723        | 18 G 1.5                                          | 19.6                | 346.1                | 600            |
| 0046724        | 25 G 1.5                                          | 23.9                | 495.7                | 833            |
| 0046728        | 3 G 2.5                                           | 11.0                | 115.5                | 197            |
| 0046729        | 4 G 2.5                                           | 11.9                | 146.7                | 244            |
| 0046730        | 5 G 2.5                                           | 12.9                | 177.9                | 291            |
| 0046734        | 3 G 4.0                                           | 12.3                | 165.9                | 261            |
| 0046735        | 4 G 4.0                                           | 13.4                | 211.5                | 325            |
| 0046736        | 5 G 4.0                                           | 14.9                | 257.2                | 389            |
| 0046740        | 4 G 6.0                                           | 17.2                | 302.8                | 482            |
| 0046741        | 5 G 6.0                                           | 18.7                | 367.6                | 580            |
| 0046742        | 4 G 10.0                                          | 22.8                | 508.4                | 802            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

# Power and control cables

Expanded ambient temperatures • Silicone single cores



## ÖLFLEX® HEAT 180 SiF A

UL-AWM certified Silicone single core cable with extended temperature range



### Info

- A for Advanced here: certification for USA and Canada
- UL AWM Style 3644 (150°C/1000 V)
- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)

### Benefits

- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where conventional core insulation materials will embrittle after a short while
- Typical fields of application
  - Control cabinet manufacturing
  - Appliances and apparatus engineering
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Furnace construction
  - Polymer processing
  - Generator and transformer manufacturing

### Product features

- Fire behaviour:
  - Flame-retardant (IEC 60332-1-2)
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Low toxicity (EN 50305)
- Flame retardance rating (UL): FT2 (Horizontal flame test)
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances

### Norm references / Approvals

- UL AWM Style 3644
- UL File No. E63634
- UL certification acc. CSA AWM standard CSA C22.2 No. 210-05: cUL AWM I A/B

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based insulation

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000993  
ETIM 5.0/6.0 Class-Description: Single core cable



#### Conductor stranding

Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>



#### Minimum bending radius

Fixed installation: 6 x core diameter  
One bend at end of core: 3 x cable diameter



#### Nominal voltage

UL: 1000 V  
IEC: U<sub>0</sub>/U 600/1000 V



#### Test voltage

3000 V



#### Temperature range

IEC: -50°C up to +180°C  
UL (AWM): up to +150°C (adequate ventilation required)

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) | grey    | white   | yellow  | orange  | red     | violet  | blue    |
|--------------------------------------------|---------------------|----------------------|----------------|---------|---------|---------|---------|---------|---------|---------|
| <b>ÖLFLEX® HEAT 180 SiF A</b>              |                     |                      |                |         |         |         |         |         |         |         |
| 0.25                                       | 2.2                 | 2.4                  | 6.8            | 1249620 | 1249600 | 1249700 | 1249680 | 1249580 | 1249640 | 1249540 |
| 0.5                                        | 2.4                 | 4.8                  | 10.9           | 1249622 | 1249602 | 1249702 | 1249682 | 1249582 | 1249642 | 1249542 |
| 0.75                                       | 2.7                 | 7.2                  | 14             | 1249623 | 1249603 | 1249703 | 1249683 | 1249583 | 1249643 | 1249543 |
| 1.0                                        | 2.8                 | 9.6                  | 17.2           | 1249624 | 1249604 | 1249704 | 1249684 | 1249584 | 1249644 | 1249544 |
| 1.5                                        | 3.1                 | 14.4                 | 22.2           | 1249625 | 1249605 | 1249705 | 1249685 | 1249585 | 1249645 | 1249545 |
| 2.5                                        | 3.5                 | 24                   | 33.1           | 1249626 | 1249606 | 1249706 | 1249686 | 1249586 | 1249646 | 1249546 |
| 4.0                                        | 4.1                 | 38                   | 49.5           | 1249627 | 1249607 |         |         | 1249587 |         | 1249547 |
| 6.0                                        | 5.5                 | 58                   | 78.3           | 1249628 | 1249608 |         |         | 1249588 |         | 1249548 |
| 10.0                                       | 7.6                 | 96                   | 132.7          |         | 1249609 |         |         | 1249589 |         | 1249549 |
| 16.0                                       | 8.4                 | 154                  | 192            |         | 1249610 |         |         | 1249590 |         | 1249550 |
| 25.0                                       | 9.8                 | 240                  | 288.9          |         | 1249611 |         |         | 1249591 |         | 1249551 |
| 35.0                                       | 10.9                | 336                  | 386            |         |         |         |         | 1249592 |         |         |
| 50.0                                       | 13.5                | 480                  | 557.6          |         |         |         |         | 1249593 |         |         |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) | green   | brown   | black   | green/yellow | dark blue |
|--------------------------------------------|---------------------|----------------------|----------------|---------|---------|---------|--------------|-----------|
| <b>ÖLFLEX® HEAT 180 SiF A</b>              |                     |                      |                |         |         |         |              |           |
| 0.25                                       | 2.2                 | 2.4                  | 6.8            | 1249720 | 1249560 | 1249520 | 1249500      | 1249660   |
| 0.5                                        | 2.4                 | 4.8                  | 10.9           | 1249722 | 1249562 | 1249522 | 1249502      | 1249662   |
| 0.75                                       | 2.7                 | 7.2                  | 14             | 1249723 | 1249563 | 1249523 | 1249503      | 1249663   |
| 1.0                                        | 2.8                 | 9.6                  | 17.2           | 1249724 | 1249564 | 1249524 | 1249504      | 1249664   |
| 1.5                                        | 3.1                 | 14.4                 | 22.2           | 1249725 | 1249565 | 1249525 | 1249505      | 1249665   |
| 2.5                                        | 3.5                 | 24                   | 33.1           | 1249726 | 1249566 | 1249526 | 1249506      | 1249666   |
| 4.0                                        | 4.1                 | 38                   | 49.5           |         | 1249567 | 1249527 | 1249507      |           |
| 6.0                                        | 5.5                 | 58                   | 78.3           |         | 1249568 | 1249528 | 1249508      |           |
| 10.0                                       | 7.6                 | 96                   | 132.7          |         | 1249569 | 1249529 | 1249509      |           |
| 16.0                                       | 8.4                 | 154                  | 192            |         | 1249570 | 1249530 | 1249510      |           |
| 25.0                                       | 9.8                 | 240                  | 288.9          |         |         | 1249531 | 1249511      |           |
| 35.0                                       | 10.9                | 336                  | 386            |         |         | 1249532 |              |           |
| 50.0                                       | 13.5                | 480                  | 557.6          |         |         | 1249533 |              |           |
| 70.0                                       | 15.5                | 672.2                | 775.2          |         |         | 1249534 |              |           |
| 95.0                                       | 17.5                | 912                  | 1004.4         |         |         | 1249535 |              |           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products. / Cross-section 0.25 - 4 mm<sup>2</sup> only available as 100 m box

Other colours are available upon request



## ÖLFLEX® WIRE MS 1

UL-recognised (AWM) + CSA AWM I A/B + <HAR> H05V-K, tinned-copper strands



### Info

- Formerly: Multi-Standard single core UL-CSA-HAR 1007 / 1569
- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)

### Benefits

- For use in the most important global markets
- Reduction in technical documentation
- Easy storage
- Increases the cost-effectiveness of the production process

### Application range

- Factory wiring
- Internal wiring of devices
- Control cabinet wiring

### Product features

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1 / CSA FT1
- Oil-resistant

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H05V-K acc. EN 50525-2-31, UL AWM styles 1007 & 1569 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), CSA AWM I A/B (by CSA acc. CSA standard CSA C22.2 No. 210-05, CSA class 5851-01)

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000993  
ETIM 5.0/6.0 Class-Description: Single core cable



#### Conductor stranding

Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5



#### Minimum bending radius

4 x outer diameter (OD) for normal use;  
2 x OD for cautions bending



#### Nominal voltage

HAR / IEC: U<sub>0</sub>/U: 300/500 V;  
UL (AWM): U: 300 V;  
CSA (AWM I A/B): U: 300 V



#### Test voltage

2000 V



#### Temperature range

Fixed installation:  
HAR/IEC: -40°C to +70°C;  
UL (AWM): up to +105°C;  
CSA (AWM I A/B): up to +105°C

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | Copper index (kg/km) | Weight (kg/km) | grey    | white   | orange  |
|--------------------------------------------|---------------------|--------|----------------------|----------------|---------|---------|---------|
| 0.5                                        | 2.5                 | 100    | 4.8                  | 9              | 4180406 | 4180405 | 4180409 |
| 0.75                                       | 2.6                 | 100    | 7.2                  | 12             | 4180506 | 4180505 |         |
| 1                                          | 2.8                 | 100    | 9.6                  | 15             | 4180606 | 4180605 | 4180609 |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | Copper index (kg/km) | Weight (kg/km) | red     | violet  | blue    |
|--------------------------------------------|---------------------|--------|----------------------|----------------|---------|---------|---------|
| 0.5                                        | 2.5                 | 100    | 4.8                  | 9              | 4180404 | 4180407 | 4180402 |
| 0.75                                       | 2.6                 | 100    | 7.2                  | 12             | 4180504 | 4180507 | 4180502 |
| 1                                          | 2.8                 | 100    | 9.6                  | 15             | 4180604 | 4180607 | 4180602 |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | brown   | black   | green/yellow |
|--------------------------------------------|---------------------|--------|-------|----------------------|----------------|---------|---------|--------------|
| 0.5                                        | 2.5                 | 100    |       | 4.8                  | 9              | 4180403 | 4180401 | 4180400      |
| 0.75                                       | 2.6                 | 100    |       | 7.2                  | 12             | 4180503 | 4180501 | 4180500      |
| 1                                          | 2.8                 | 100    |       | 9.6                  | 15             | 4180603 | 4180601 | 4180600      |
| 1                                          | 2.8                 |        | 2000  | 9.6                  | 15             |         |         | 4180600K     |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | dark blue |
|--------------------------------------------|---------------------|--------|-------|----------------------|----------------|-----------|
| 0.5                                        | 2.5                 | 100    |       | 4.8                  | 9              | 4180414   |
| 0.5                                        | 2.5                 |        | 3000  | 4.8                  | 9              | 4180414K  |
| 0.75                                       | 2.6                 | 100    |       | 7.2                  | 12             | 4180514   |
| 0.75                                       | 2.6                 |        | 2500  | 7.2                  | 12             | 4180514K  |
| 1                                          | 2.8                 | 100    |       | 9.6                  | 15             | 4180614   |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
The outer diameters stated in the part number table are maximum values.



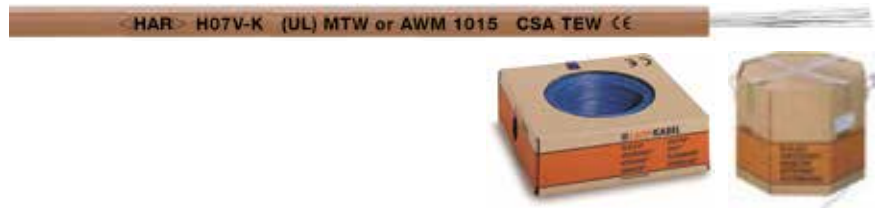
## ÖLFLEX® WIRE MS 2.1

USA: UL-listed (MTW), Canada: CSA (TEW), Europe: <HAR> H07V-K (depending on cross s.), tin-coated strands



### Info

- The all-rounder for many markets
- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)



### Benefits

- For use in the most important global markets
- Reduction in technical documentation
- Easier storage; increases the cost-effectiveness of the production process
- Works with "Conductor end sleeves XL, insulated"

### Application range

- Factory wiring
- Field wiring
- Internal wiring of devices
- Control cabinet wiring

### Product features

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1/CSA FT1
- Oil-resistant

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H07V-K acc. EN 50525-2-31, UL AWM style 1015 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), (UL) MTW (by UL acc. UL standard UL 1063, U.I. Lapp GmbH's (UL) MTW file number: E198296), CSA TEW (by CSA acc. CSA standard CSA C22.2 No. 127, CSA class 5835-01)

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

### Technical data

- Classification ETIM 5/6**  
 ETIM 5.0/6.0 Class-ID: EC000993  
 ETIM 5.0/6.0 Class-Description: Single core cable
- Conductor stranding**  
 Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
 OD ≤ 8 mm: 4 x OD\* / 2 x OD\*\*;  
 8 < OD ≤ 12 mm: 5 x OD\* / 3 x OD\*\*;  
 OD > 12 mm: 6 x OD\* / 4 x OD\*\*
- Nominal voltage**  
 HAR / IEC: U0/U: 450/750 V;  
 UL (AWM): U: 600 V;  
 UL (MTW): U: 600 V;  
 CSA (TEW): U: 600 V
- Temperature range**  
 Fixed installation:  
 HAR/IEC: -40°C to +70°C;  
 UL (AWM): up to +105°C;  
 UL (MTW): up to +90°C;  
 CSA (TEW): up to +105°C

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | grey     | white    |
|--------------------------------------------|---------------------|--------|-------|----------------------|----------------|----------|----------|
| 0.5                                        | 2.5                 | 100    |       | 4.8                  | 11             | 4160106  | 4160105  |
| 0.5                                        | 2.5                 |        | 3000  | 4.8                  | 11             | 4160106K | 4160105K |
| 0.75                                       | 2.7                 | 100    |       | 7.2                  | 14             | 4160206  | 4160205  |
| 0.75                                       | 2.7                 |        | 2500  | 7.2                  | 14             | 4160206K | 4160205K |
| 1                                          | 2.9                 | 100    |       | 9.6                  | 16             | 4160306  | 4160305  |
| 1                                          | 2.9                 |        | 2000  | 9.6                  | 16             | 4160306K | 4160305K |
| 1.5                                        | 3.1                 | 100    |       | 14.4                 | 22             | 4160406  | 4160405  |
| 1.5                                        | 3.1                 |        | 1500  | 14.4                 | 22             | 4160406K | 4160405K |
| 2.5                                        | 3.7                 | 100    |       | 24                   | 37             | 4160506  | 4160505  |
| 2.5                                        | 3.7                 |        | 900   | 24                   | 37             | 4160506K | 4160505K |
| 4                                          | 4.3                 | 100    |       | 38.4                 | 49             | 4160606  | 4160605  |
| 6                                          | 4.8                 | 100    |       | 57.6                 | 67             | 4160706  | 4160705  |
| 6                                          | 4.8                 |        | 400   | 57.6                 | 67             | 4160706K |          |
| 10                                         | 6.5                 | 100    |       | 96                   | 120            | 4160806  | 4160805  |
| 16                                         | 8.6                 | 100    |       | 153.6                | 185            | 4160906  | 4160905  |
| 25                                         | 9.8                 | 100    |       | 240                  | 260            | 4161006  |          |
| 35                                         | 11.3                |        |       | 336                  | 360            | 4161106  |          |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | yellow   | orange   |
|--------------------------------------------|---------------------|--------|-------|----------------------|----------------|----------|----------|
| 0.5                                        | 2.5                 | 100    |       | 4.8                  | 11             | 4160110  | 4160109  |
| 0.5                                        | 2.5                 |        | 3000  | 4.8                  | 11             |          | 4160109K |
| 0.75                                       | 2.7                 | 100    |       | 7.2                  | 14             | 4160210  | 4160209  |
| 0.75                                       | 2.7                 |        | 2500  | 7.2                  | 14             |          | 4160209K |
| 1                                          | 2.9                 | 100    |       | 9.6                  | 16             | 4160310  | 4160309  |
| 1                                          | 2.9                 |        | 2000  | 9.6                  | 16             | 4160310K | 4160309K |
| 1.5                                        | 3.1                 | 100    |       | 14.4                 | 22             | 4160410  | 4160409  |
| 1.5                                        | 3.1                 |        | 1500  | 14.4                 | 22             | 4160410K | 4160409K |
| 2.5                                        | 3.7                 | 100    |       | 24                   | 37             | 4160510  | 4160509  |
| 2.5                                        | 3.7                 |        | 900   | 24                   | 37             | 4160510K | 4160509K |
| 4                                          | 4.3                 | 100    |       | 38.4                 | 49             | 4160610  | 4160609  |
| 4                                          | 4.3                 |        | 600   | 38.4                 | 49             | 4160610K | 4160609K |
| 6                                          | 4.8                 | 100    |       | 57.6                 | 67             | 4160710  | 4160709  |
| 6                                          | 4.8                 |        | 400   | 57.6                 | 67             |          | 4160709K |
| 10                                         | 6.5                 | 100    |       | 96                   | 120            | 4160810  | 4160809  |
| 16                                         | 8.6                 | 100    |       | 153.6                | 185            | 4160910  | 4160909  |
| 25                                         | 9.8                 | 100    |       | 240                  | 260            | 4161010  | 4161009  |

# Power and control cables



Control Cabinet Single Cores • Harmonised and certified

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | red      | violet   |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|----------|----------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160104  | 4160107  |
| 0.5                           | 2.5                 |        | 3000  | 4.8                  | 11             | 4160104K | 4160107K |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160204  | 4160207  |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160204K | 4160207K |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160304  | 4160307  |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160304K |          |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160404  | 4160407  |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160404K |          |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160504  | 4160507  |
| 2.5                           | 3.7                 |        | 900   | 24                   | 37             | 4160504K |          |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160604  | 4160607  |
| 4                             | 4.3                 |        | 600   | 38.4                 | 49             | 4160604K |          |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160704  | 4160707  |
| 6                             | 4.8                 |        | 400   | 57.6                 | 67             | 4160704K |          |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160804  |          |
| 16                            | 8.6                 | 100    |       | 153.6                | 185            | 4160904  |          |
| 25                            | 9.8                 | 100    |       | 240                  | 260            | 4161004  |          |
| 35                            | 11.3                |        |       | 336                  | 360            | 4161104  |          |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | blue     | green   |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|----------|---------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160102  | 4160111 |
| 0.5                           | 2.5                 |        | 3000  | 4.8                  | 11             | 4160102K |         |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160202  | 4160211 |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160202K |         |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160302  | 4160311 |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160302K |         |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160402  | 4160411 |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160402K |         |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160502  | 4160511 |
| 2.5                           | 3.7                 |        | 900   | 24                   | 37             | 4160502K |         |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160602  | 4160611 |
| 4                             | 4.3                 |        | 600   | 38.4                 | 49             | 4160602K |         |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160702  | 4160711 |
| 6                             | 4.8                 |        | 400   | 57.6                 | 67             | 4160702K |         |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160802  | 4160811 |
| 16                            | 8.6                 | 100    |       | 153.6                | 185            | 4160902  | 4160911 |
| 25                            | 9.8                 | 100    |       | 240                  | 260            | 4161002  | 4161011 |
| 35                            | 11.3                |        |       | 336                  | 360            | 4161102  | 4161111 |
| 50                            | 13.5                |        |       | 480                  | 535            | 4161202  | 4161211 |
| 95                            | 17.8                |        |       | 912                  | 930            | 4161402  |         |
| 120                           | 19.4                |        |       | 1152                 | 1160           | 4161502  |         |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | brown    | black    |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|----------|----------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160103  | 4160101  |
| 0.5                           | 2.5                 |        | 3000  | 4.8                  | 11             | 4160103K | 4160101K |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160203  | 4160201  |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160203K | 4160201K |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160303  | 4160301  |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160303K | 4160301K |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160403  | 4160401  |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160403K | 4160401K |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160503  | 4160501  |
| 2.5                           | 3.7                 |        | 900   | 24                   | 37             | 4160503K | 4160501K |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160603  | 4160601  |
| 4                             | 4.3                 |        | 600   | 38.4                 | 49             | 4160603K | 4160601K |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160703  | 4160701  |
| 6                             | 4.8                 |        | 400   | 57.6                 | 67             |          | 4160701K |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160803  | 4160801  |
| 16                            | 8.6                 | 100    |       | 153.6                | 185            | 4160903  | 4160901  |
| 25                            | 9.8                 | 100    |       | 240                  | 260            | 4161003  | 4161001  |
| 35                            | 11.3                |        |       | 336                  | 360            |          | 4161101  |
| 50                            | 13.5                |        |       | 480                  | 535            |          | 4161201  |
| 70                            | 15.6                |        |       | 672                  | 735            |          | 4161301  |
| 95                            | 17.8                |        |       | 912                  | 930            |          | 4161401  |
| 120                           | 19.4                |        |       | 1152                 | 1160           |          | 4161501  |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | green/yellow | dark blue |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|--------------|-----------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160100      | 4160114   |
| 0.5                           | 2.5                 |        | 3000  | 4.8                  | 11             |              | 4160114K  |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160200      | 4160214   |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160200K     | 4160214K  |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160300      | 4160314   |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160300K     | 4160314K  |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160400      | 4160414   |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160400K     | 4160414K  |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160500      | 4160514   |
| 2.5                           | 3.7                 |        | 900   | 24                   | 37             | 4160500K     | 4160514K  |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160600      | 4160614   |
| 4                             | 4.3                 |        | 600   | 38.4                 | 49             | 4160600K     |           |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160700      | 4160714   |
| 6                             | 4.8                 |        | 400   | 57.6                 | 67             | 4160700K     | 4160714K  |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160800      | 4160814   |
| 16                            | 8.6                 | 100    |       | 153.6                | 185            | 4160900      | 4160914   |
| 25                            | 9.8                 | 100    |       | 240                  | 260            | 4161000      |           |
| 35                            | 11.3                |        |       | 336                  | 360            | 4161100      |           |
| 50                            | 13.5                |        |       | 480                  | 535            | 4161200      |           |
| 70                            | 15.6                |        |       | 672                  | 735            | 4161300      |           |
| 95                            | 17.8                |        |       | 912                  | 930            | 4161400      |           |
| 120                           | 19.4                |        |       | 1152                 | 1160           | 4161500      |           |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | blue/white | pink    |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|------------|---------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160126    | 4160108 |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160226    | 4160208 |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160226K   |         |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160326    | 4160308 |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160326K   |         |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160426    | 4160408 |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160426K   |         |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160526    |         |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160626    |         |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160726    |         |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160826    |         |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | white/blue | white/orange |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|------------|--------------|
| 0.5                           | 2.5                 | 100    |       | 4.8                  | 11             | 4160144    |              |
| 0.5                           | 2.5                 |        | 3000  | 4.8                  | 11             | 4160144K   |              |
| 0.75                          | 2.7                 | 100    |       | 7.2                  | 14             | 4160244    |              |
| 0.75                          | 2.7                 |        | 2500  | 7.2                  | 14             | 4160244K   |              |
| 1                             | 2.9                 | 100    |       | 9.6                  | 16             | 4160344    | 4160385      |
| 1                             | 2.9                 |        | 2000  | 9.6                  | 16             | 4160344K   |              |
| 1.5                           | 3.1                 | 100    |       | 14.4                 | 22             | 4160444    | 4160485      |
| 1.5                           | 3.1                 |        | 1500  | 14.4                 | 22             | 4160444K   |              |
| 2.5                           | 3.7                 | 100    |       | 24                   | 37             | 4160544    | 4160585      |
| 2.5                           | 3.7                 |        | 900   | 24                   | 37             | 4160544K   |              |
| 4                             | 4.3                 | 100    |       | 38.4                 | 49             | 4160644    | 4160685      |
| 6                             | 4.8                 | 100    |       | 57.6                 | 67             | 4160744    | 4160785      |
| 10                            | 6.5                 | 100    |       | 96                   | 120            | 4160844    | 4160885      |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Non-harmonised, nominal cross-sections: 0.5 mm², 0.75 mm², 1 mm², 16 mm²

\*for conventional use, \*\*for careful bending; "OD" = outer diameter

The outer diameters stated in the part number table are maximum values.

**ÖLFLEX® WIRE MS 2.2**

UL-listed (MTW), CSA (TEW), &lt;HAR&gt; H07V2-K: max. +90°C, UL (AWM): Umax = 1 kV, tinned-copper strands

**Info**

- Higher maximum conductor temperature - H07V2-K: +90 °C according to EN 50525-2-31
- Higher voltage range according to UL
- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)

**Benefits**

- For use in the most important global markets
- Reduction in technical documentation
- Easier storage; increases the cost-effectiveness of the production process
- Works with „Conductor end sleeves XL, insulated“

**Application range**

- Factory wiring
- Field wiring
- Frequency converter power supply
- Internal wiring of devices and in control cabinets
- Protected installation in and on lighting equipments

**Product features**

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1/CSA FT1
- Oil-resistant

**Norm references / Approvals**

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H07V2-K acc. EN 50525-2-31, UL AWM style 10269 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), (UL) MTW (by UL acc. UL standard UL 1063, U.I. Lapp GmbH's (UL) MTW file number: E198296), CSA TEW (by CSA acc. CSA standard CSA C22.2 No. 127, CSA class 5835-01)

**Product Make-up**

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000993  
ETIM 5.0/6.0 Class-Description: Single core cable

**Conductor stranding**

Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5

**Minimum bending radius**

OD ≤ 8 mm: 4 x OD\* / 2 x OD\*\*;  
8 < OD ≤ 12 mm: 5 x OD\* / 3 x OD\*\*;  
OD > 12 mm: 6 x OD\* / 4 x OD\*\*

**Nominal voltage**

HAR / IEC: U0/U: 450/750 V;  
UL (AWM): U: 1000 V;  
UL (MTW): U: 600 V;  
CSA (TEW): U: 600 V

**Temperature range**

Fixed installation:  
HAR/IEC: -40°C to +90°C;  
UL (AWM): up to +105°C;  
UL (MTW): up to +90°C;  
CSA (TEW): up to +105°C

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | Copper index (kg/km) | Weight (kg/km) | grey    | white   | yellow  |
|--------------------------------------------|---------------------|--------|----------------------|----------------|---------|---------|---------|
| 0.5                                        | 2.7                 | 100    | 4.8                  | 10             |         | 4150105 |         |
| 0.75                                       | 2.9                 | 100    | 7.2                  | 13             | 4150206 | 4150205 |         |
| 1                                          | 3.1                 | 100    | 9.6                  | 16             |         | 4150305 |         |
| 1.5                                        | 3.4                 | 100    | 14.4                 | 22             | 4150406 | 4150405 | 4150410 |
| 2.5                                        | 4                   | 100    | 24                   | 37             | 4150506 | 4150505 |         |
| 4                                          | 4.6                 | 100    | 38.4                 | 49             | 4150606 | 4150605 | 4150610 |
| 6                                          | 5.1                 | 100    | 57.6                 | 71             | 4150706 | 4150705 |         |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | Copper index (kg/km) | Weight (kg/km) | orange  | red     | blue    |
|--------------------------------------------|---------------------|--------|----------------------|----------------|---------|---------|---------|
| 0.5                                        | 2.7                 | 100    | 4.8                  | 10             |         | 4150104 | 4150102 |
| 0.75                                       | 2.9                 | 100    | 7.2                  | 13             |         | 4150204 | 4150202 |
| 1                                          | 3.1                 | 100    | 9.6                  | 16             | 4150309 | 4150304 | 4150302 |
| 1.5                                        | 3.4                 | 100    | 14.4                 | 22             | 4150409 | 4150404 | 4150402 |
| 2.5                                        | 4                   | 100    | 24                   | 37             | 4150509 | 4150504 | 4150502 |
| 4                                          | 4.6                 | 100    | 38.4                 | 49             |         | 4150604 | 4150602 |
| 6                                          | 5.1                 | 100    | 57.6                 | 71             |         | 4150704 | 4150702 |
| 10                                         | 6.8                 | 100    | 96                   | 120            |         | 4150804 | 4150802 |
| 16                                         | 9                   | 100    | 153.6                | 185            |         | 4150904 | 4150902 |

| Conductor cross-section (mm <sup>2</sup> ) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | brown    | black    | green/yellow |
|--------------------------------------------|---------------------|--------|-------|----------------------|----------------|----------|----------|--------------|
| 0.5                                        | 2.7                 | 100    |       | 4.8                  | 10             | 4150103  | 4150101  |              |
| 0.75                                       | 2.9                 | 100    |       | 7.2                  | 13             | 4150203  | 4150201  |              |
| 1                                          | 3.1                 | 100    |       | 9.6                  | 16             | 4150303  | 4150301  | 4150300      |
| 1                                          | 3.1                 |        | 2000  | 9.6                  | 16             |          | 4150301K |              |
| 1.5                                        | 3.4                 | 100    |       | 14.4                 | 22             | 4150403  | 4150401  | 4150400      |
| 1.5                                        | 3.4                 |        | 1500  | 14.4                 | 22             |          | 4150401K |              |
| 2.5                                        | 4                   | 100    |       | 24                   | 37             | 4150503  | 4150501  | 4150500      |
| 2.5                                        | 4                   |        | 900   | 24                   | 37             |          | 4150501K |              |
| 4                                          | 4.6                 | 100    |       | 38.4                 | 49             | 4150603  | 4150601  | 4150600      |
| 4                                          | 4.6                 |        | 600   | 38.4                 | 49             | 4150603K | 4150601K |              |
| 6                                          | 5.1                 | 100    |       | 57.6                 | 71             |          | 4150701  | 4150700      |
| 10                                         | 6.8                 | 100    |       | 96                   | 120            |          | 4150801  | 4150800      |
| 16                                         | 9                   | 100    |       | 153.6                | 185            |          | 4150901  | 4150900      |
| 25                                         | 10.2                | 100    |       | 240                  | 260            |          | 4151001  | 4151000      |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | brown | black   | green/yellow |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|-------|---------|--------------|
| 35                            | 11.7                |        |       | 336                  | 360            |       | 4151101 | 4151100      |
| 50                            | 13.9                |        |       | 480                  | 535            |       | 4151201 |              |
| 70                            | 16                  |        |       | 672                  | 735            |       | 4151301 |              |
| 95                            | 18.2                |        |       | 912                  | 930            |       | 4151401 |              |

| Conductor cross-section (mm²) | Outer diameter [mm] | m/ring | m/box | Copper index (kg/km) | Weight (kg/km) | dark blue |
|-------------------------------|---------------------|--------|-------|----------------------|----------------|-----------|
| 0.5                           | 2.7                 | 100    |       | 4.8                  | 10             | 4150114   |
| 0.75                          | 2.9                 | 100    |       | 7.2                  | 13             | 4150214   |
| 0.75                          | 2.9                 |        | 2500  | 7.2                  | 13             | 4150214K  |
| 1.5                           | 3.4                 | 100    |       | 14.4                 | 22             | 4150414   |
| 2.5                           | 4                   | 100    |       | 24                   | 37             | 4150514   |
| 4                             | 4.6                 | 100    |       | 38.4                 | 49             | 4150614   |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Non-harmonised, nominal cross-sections: 0.5 mm², 0.75 mm², 1 mm², 16 mm², 50 mm², 70 mm², 95 mm², 120 mm²

\*for conventional use, \*\*for careful bending; „OD“ = outer diameter

The outer diameters stated in the part number table are maximum values.

**UNITRONIC® LiYY A**

Data transmission cable with colour code acc. to DIN 47100 - UL/CSA recognized

**Info**

- A for Advanced here: UL and CSA certifications
- Further dimensions/colours on request

**Benefits**

- For various applications

**Application range**

- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.
- For the North American market

**Product features**

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

**Norm references / Approvals**

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

**Product Make-up**

- Multi-wire strand made of tinned copper wires
- Core insulation made of PVC
- Outer sheath made of special PVC compound
- Outer sheath colour: Dark grey

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable

**Core identification code**

DIN 47100 without colour repetition,  
refer to Appendix T9

**Conductor stranding**

AWG conductor sizes, 7 or 19 wires

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x Outer diameter

**Nominal voltage**

UL/CSA: 300 V

**Test voltage**

1500 V

**Temperature range**

Occasional flexing: -5°C up to +70°C  
(UL: +80 °C)  
Fixed installation (IEC): -40°C to +80°C  
UL: max. +80°C

| Article number           | Number of cores and AWG per conductor | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® LiYY A</b> |                                       |                     |                      |                |
| 0022403                  | 3 x AWG26/7                           | 3.8                 | 4.2                  | 18             |
| 0022404                  | 4 x AWG26/7                           | 4                   | 5.6                  | 23             |
| 0022405                  | 5 x AWG26/7                           | 4.3                 | 7                    | 25             |
| 0022408                  | 8 x AWG26/7                           | 5.1                 | 11.2                 | 34             |
| 0022412                  | 12 x AWG26/7                          | 5.8                 | 16.8                 | 47             |
| 0022416                  | 16 x AWG26/7                          | 6.3                 | 22.4                 | 58             |
| 0022421                  | 21 x AWG26/7                          | 7                   | 29.4                 | 63             |
| 0022502                  | 2 x AWG24/7                           | 4                   | 4.6                  | 20             |
| 0022505                  | 5 x AWG24/7                           | 4.8                 | 11.5                 | 32             |
| 0022508                  | 8 x AWG24/7                           | 5.7                 | 18.4                 | 46             |
| 0022512                  | 12 x AWG24/7                          | 6.6                 | 27.6                 | 64             |
| 0022602                  | 2 x AWG22/7                           | 4.8                 | 6.8                  | 32.8           |
| 0022603                  | 3 x AWG22/7                           | 5                   | 10.2                 | 35             |
| 0022604                  | 4 x AWG22/7                           | 5.4                 | 13.6                 | 45.9           |
| 0022605                  | 5 x AWG22/7                           | 5.9                 | 17                   | 55.8           |
| 0022607                  | 7 x AWG22/7                           | 6.4                 | 23.3                 | 68.9           |
| 0022608                  | 8 x AWG22/7                           | 6.9                 | 27.2                 | 75.5           |
| 0022612                  | 12 x AWG22/7                          | 8.2                 | 40.8                 | 103            |
| 0022616                  | 16 x AWG22/7                          | 9.1                 | 54.4                 | 131.2          |
| 0022624                  | 24 x AWG22/7                          | 11.6                | 81.6                 | 190            |
| 0022632                  | 2 x AWG20/7                           | 5.3                 | 11.2                 | 40             |
| 0022642                  | 2 x AWG19/19                          | 5.6                 | 15                   | 48             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 152 m; Drum 305 m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® LiYCY A

Screened data transmission cable with colour code acc. to DIN 47100 UL/CSA recognized



### Info

- A for Advanced here: UL and CSA certifications
- Further dimensions/colours on request

### Benefits

- Overall braid minimises electrical interference

### Application range

- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.
- For the North American market

### Product features

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

### Norm references / Approvals

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

### Product Make-up

- Multi-wire strand made of tinned copper wires
- Core insulation made of PVC
- Tinned-copper braiding
- Outer sheath made of special PVC compound
- Outer sheath colour: Dark grey

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

DIN 47100 without colour repetition, refer to Appendix T9



#### Conductor stranding

AWG conductor sizes, 7 or 19 wires



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

UL/CSA: 300 V



#### Test voltage

1500 V



#### Temperature range

Occasional flexing: -5 °C up to +70 °C  
(UL: +80 °C)  
Fixed installation (IEC): -40 °C to +80 °C  
UL: max. +80 °C

| Article number            | Number of cores and AWG per conductor | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|---------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® LiYCY A</b> |                                       |                     |                      |                |
| 0044602                   | 2 x AWG26/7                           | 4.3                 | 15.6                 | 25             |
| 0044604                   | 4 x AWG26/7                           | 4.7                 | 18                   | 30             |
| 0044652                   | 2 x AWG24/7                           | 4.7                 | 17.6                 | 29             |
| 0044655                   | 5 x AWG24/7                           | 5.5                 | 28.5                 | 44             |
| 0044658                   | 8 x AWG24/7                           | 6.4                 | 31.1                 | 61             |
| 0044662                   | 12 x AWG24/7                          | 7.3                 | 51.8                 | 96             |
| 0044702                   | 2 x AWG22/7                           | 5.5                 | 17.6                 | 44             |
| 0044703                   | 3 x AWG22/7                           | 5.7                 | 21.2                 | 49             |
| 0044704                   | 4 x AWG22/7                           | 6.1                 | 27.3                 | 59             |
| 0044705                   | 5 x AWG22/7                           | 6.6                 | 30.8                 | 63             |
| 0044707                   | 7 x AWG22/7                           | 7.1                 | 46.4                 | 87             |
| 0044712                   | 12 x AWG22/7                          | 8.9                 | 66.8                 | 120            |
| 0044716                   | 16 x AWG22/7                          | 9.8                 | 83.9                 | 145            |
| 0044721                   | 21 x AWG22/7                          | 11.3                | 109.4                | 204            |
| 0044732                   | 2 x AWG20/7                           | 6                   | 24.4                 | 41             |
| 0044733                   | 3 x AWG20/7                           | 6.3                 | 29.9                 | 47             |
| 0044735                   | 5 x AWG20/7                           | 7.3                 | 49.2                 | 91             |
| 0044738                   | 8 x AWG20/7                           | 9.1                 | 70.8                 | 102            |
| 0044746                   | 2 x AWG19/19                          | 6.3                 | 27.9                 | 66             |
| 0044850                   | 7 x AWG18/19                          | 8.9                 | 93.2                 | 160.8          |
| 0044851                   | 10 x AWG18/19                         | 11.5                | 130.9                | 200            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 152 m; Drum 305 m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**UNITRONIC® LiYCY (TP) A**

Screened data transmission cable with colour code acc. to DIN 47100 and twisted pairs - UL/CSA recognized

**Info**

- A for Advanced here: UL and CSA certifications
- Further dimensions/colours on request

**Benefits**

- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

**Application range**

- For the North American market
- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.

**Product features**

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

**Norm references / Approvals**

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

**Product Make-up**

- Multi-wire strand made of tinned copper wires
- Core insulation made of PVC
- TP structure
- Tinned-copper braiding
- Outer sheath made of special PVC compound
- Outer sheath colour: Dark grey

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable

**Core identification code**

DIN 47100 without colour repetition,  
refer to Appendix T9

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**

UL/CSA: 300 V

**Test voltage**

1500 V

**Temperature range**

Occasional flexing: -5°C up to +70°C  
(UL: +80 °C)  
Fixed installation (IEC): -40°C to +80°C  
UL: max. +80°C

| Article number                 | Number of cores and AWG per conductor | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|--------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® LiYCY (TP) A</b> |                                       |                     |                      |                |
| 0066202                        | 2 x 2 x AWG26/7                       | 5.5                 | 18                   | 38             |
| 0066204                        | 4 x 2 x AWG26/7                       | 6.4                 | 24                   | 58             |
| 0066205                        | 5 x 2 x AWG26/7                       | 6.6                 | 30                   | 58             |
| 0066208                        | 8 x 2 x AWG26/7                       | 7.9                 | 53                   | 85             |
| 0066210                        | 10 x 2 x AWG26/7                      | 8.7                 | 55                   | 106            |
| 0066212                        | 12 x 2 x AWG26/7                      | 8.9                 | 64                   | 113            |
| 0066216                        | 16 x 2 x AWG26/7                      | 10.2                | 87                   | 149            |
| 0066232                        | 2 x 2 x AWG24/7                       | 6.1                 | 24.5                 | 50             |
| 0066233                        | 3 x 2 x AWG24/7                       | 6.7                 | 28.9                 | 62             |
| 0066234                        | 4 x 2 x AWG24/7                       | 7.2                 | 33.5                 | 70             |
| 0066235                        | 5 x 2 x AWG24/7                       | 7.5                 | 46.3                 | 91             |
| 0066238                        | 2 x 2 x AWG22/7                       | 7.4                 | 38                   | 71             |
| 0066239                        | 3 x 2 x AWG22/7                       | 8.1                 | 45.1                 | 95             |
| 0066240                        | 4 x 2 x AWG22/7                       | 8.8                 | 54.6                 | 102            |
| 0066242                        | 2 x 2 x AWG20/7                       | 8.2                 | 49.7                 | 93             |
| 0066243                        | 3 x 2 x AWG20/7                       | 9.1                 | 60.1                 | 102            |
| 0066244                        | 4 x 2 x AWG20/7                       | 10.2                | 78.7                 | 120            |
| 0066219                        | 5 x 2 x AWG20/7                       | 10.7                | 88.9                 | 156            |
| 0066220                        | 6 x 2 x AWG20/7                       | 11.6                | 100.6                | 184            |
| 0066262                        | 2 x 2 x AWG19/19                      | 8.7                 | 65.2                 | 140            |
| 0066221                        | 3 x 2 x AWG19/19                      | 10                  | 69.2                 | 145            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 152 m; Drum 305 m

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® 300 / UNITRONIC® 300 S

Control and signal cables with small cross sections - UL/CSA listed



### Info

- Designation of shielded version: Formerly "UNITRONIC® 300 CY", now "UNITRONIC® 300 S"
- Other sizes on request
- Especially for 20 AWG and 18 AWG: With standard core color code, up to 60 conductors producible / With non-standard color code, e.g., green-yellow grounding conductor, up to 100 cores

### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Control and signal cables for internal and external wiring
- For the North American market
- On the basis of CMG, PLTC or ITC direct laying on cable tray in the USA, in conjunction with -ER (Exposed Run) for unprotected transition sections with a length of not more than 6 ft. each
- Thanks to the DIRECT BURIAL approval, direct burial of versions with the nominal conductor cross sections 18 AWG and 16 AWG is normatively permitted in the USA
- Torsion resistant up to  $\pm 150^\circ/\text{m}$  for the drip loop of wind turbine generators

### Product features

- Oil-resistant according to UL OIL RES I
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- USA: (UL) CMG [E130334], (UL) PLTC-ER (18 AWG + 16 AWG) [E216027], (UL) PLTC (>24 AWG) [E216027], (UL) ITC-ER (18 AWG + 16 AWG) [E196134], UL AWM Style 2464 [E100338], DIR BUR (18 AWG + 16 AWG)
- CAN: c(UL) CMG FT4 [E130334], CSA AWM I/II A/B FT1

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation made of PVC compound
- UNITRONIC® 300 S: with overall foil tape wrapping, drain wire, tin-plated copper braiding (75 % coverage)
- Outer jacket: Specially Formulated PVC
- Color of the outer jacket: Dark gray (similar to RAL 7005)

### Technical data

|  |                                                                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                |
|  | <b>Core identification code</b><br>refer to Appendix T9                                                                                                                        |
|  | <b>Conductor stranding</b><br>Fine wire                                                                                                                                        |
|  | <b>Torsion movement in WTG</b><br>TW-0 & TW-2, refer to Appendix T0                                                                                                            |
|  | <b>Minimum bending radius</b><br>During installation: 4 x cable diameter<br>Screened: 6 x outer diameter                                                                       |
|  | <b>Nominal voltage</b><br>according to UL: 300 V<br>IEC: not for power transmission                                                                                            |
|  | <b>Test voltage</b><br>1500 V                                                                                                                                                  |
|  | <b>Temperature range</b><br>Occasional flexing/ North America: -25°C to +105°C (AWM for USA: +80°C)<br>Fixed installation/ North America: -40°C to +105°C (AWM for USA: +80°C) |

| Article number          | Article designation | Number of cores and AWG size | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------|------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® 300</b>   |                     |                              |                     |                      |                |
| 301602                  | UNITRONIC® 300      | 2 x AWG16                    | 6.7                 | 25                   | 83             |
| 301802                  | UNITRONIC® 300      | 2 x AWG18                    | 6.1                 | 18.3                 | 61             |
| 302006                  | UNITRONIC® 300      | 6 x AWG20                    | 7.5                 | 29.5                 | 97             |
| 302015                  | UNITRONIC® 300      | 15 x AWG20                   | 11.5                | 73.7                 | 178            |
| 302020                  | UNITRONIC® 300      | 20 x AWG20                   | 12.6                | 98.1                 | 259            |
| 302025                  | UNITRONIC® 300      | 25 x AWG20                   | 14.1                | 122.6                | 354            |
| 302204                  | UNITRONIC® 300      | 4 x AWG22                    | 5                   | 13.7                 | 33             |
| 302210                  | UNITRONIC® 300      | 10 x AWG22                   | 7                   | 34.9                 | 67             |
| 302215                  | UNITRONIC® 300      | 15 x AWG22                   | 7.9                 | 51.3                 | 91             |
| 302220                  | UNITRONIC® 300      | 20 x AWG22                   | 9                   | 68.5                 | 116            |
| 302225                  | UNITRONIC® 300      | 25 x AWG22                   | 10.5                | 85.6                 | 180            |
| 302410                  | UNITRONIC® 300      | 10 x AWG24                   | 6.4                 | 21.4                 | 51             |
| <b>UNITRONIC® 300 S</b> |                     |                              |                     |                      |                |
| 301602S                 | UNITRONIC® 300 S    | 2 x AWG16                    | 7.6                 | 50.6                 | 101            |
| 301606S                 | UNITRONIC® 300 S    | 6 x AWG16                    | 9.9                 | 105.7                | 210            |
| 301802S                 | UNITRONIC® 300 S    | 2 x AWG18                    | 6.8                 | 37.2                 | 75             |
| 301803S                 | UNITRONIC® 300 S    | 3 x AWG18                    | 7.3                 | 49.1                 | 85             |
| 301804S                 | UNITRONIC® 300 S    | 4 x AWG18                    | 7.9                 | 59.6                 | 104            |
| 301825S                 | UNITRONIC® 300 S    | 25 x AWG18                   | 16.8                | 278.4                | 448            |
| 302002S                 | UNITRONIC® 300 S    | 2 x AWG20                    | 6.3                 | 28.3                 | 60             |
| 302004S                 | UNITRONIC® 300 S    | 4 x AWG20                    | 7.3                 | 40.2                 | 88             |
| 302006S                 | UNITRONIC® 300 S    | 6 x AWG20                    | 8.4                 | 55.1                 | 119            |
| 302206S                 | UNITRONIC® 300 S    | 6 x AWG22                    | 6.4                 | 35.7                 | 68             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: Coil 152 m; Drum 305 m  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® 300 STP

Screened control and signal cables with small cross sections and twisted pairs - UL/CSA listed



### Info

- Other sizes on request
- Especially for 20 AWG and 18 AWG: With standard core color code, up to 37 pairs producible/ With non-standard color code, e.g., with green-yellow grounding conductor, up to 50 pairs



### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Control and signal cables for internal and external wiring
- For the North American market
- On the basis of CMG, PLTC or ITC direct laying on cable tray in the USA, in conjunction with -ER (Exposed Run) for unprotected transition sections with a length of not more than 6 ft. each
- Thanks to the DIRECT BURIAL approval, direct burial of versions with the nominal conductor cross-section 18 AWG in the USA
- Torsion resistant up to  $\pm 150^\circ/\text{m}$  for the drip loop of wind turbine generators

### Product features

- Oil-resistant according to UL OIL RES I

### Norm references / Approvals

- USA: (UL) CMG [E130334], (UL) PLTC-ER (18 AWG) [E216027], (UL) PLTC (>24 AWG) [E216027], (UL) ITC-ER (18 AWG) [E196134], UL AWM Style 2464 [E100338], DIR BUR (18 AWG)
- CAN: c(UL) CMG FT4 [E130334], CSA AWM I/II A/B FT1

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation made of PVC
- TP structure
- Overall foil tape wrapping, drain wire, tin-plated copper braiding (75 % coverage)
- Outer jacket: Specially Formulated PVC, dark gray (similar to RAL 7005)

### Technical data

|  |                                                                                                                                                                                                                                   |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                                                                   |
|  | <b>Core identification code</b><br>Pair 1: black, red<br>Pair 2: black, white<br>Pair 3: black, green<br>Pair 4: black, blue<br>Pair 5: black, yellow<br>Pair 6: black, brown<br>Exception single-paired, 24-22 AWG: black, white |
|  | <b>Torsion movement in WTG</b><br>TW-0 & TW-2, refer to Appendix T0                                                                                                                                                               |
|  | <b>Minimum bending radius</b><br>Occasional flexing: 15 x outer diameter<br>Fixed installation: 6 x outer diameter                                                                                                                |
|  | <b>Nominal voltage</b><br>according to UL: 300 V<br>IEC: not for power transmission                                                                                                                                               |
|  | <b>Test voltage</b><br>1500 V                                                                                                                                                                                                     |
|  | <b>Temperature range</b><br>Occasional flexing/ North America: -25°C to +105°C (AWM for USA: +80°C)<br>Fixed installation/ North America: -40°C to +105°C (AWM for USA: +80°C)                                                    |

| Article number            | Number of pairs and AWG size | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|---------------------------|------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® 300 STP</b> |                              |                     |                      |                |
| 302402STP                 | 2 x 2 x 24 AWG               | 6.5                 | 25.5                 | 59             |
| 302403STP                 | 3 x 2 x 24 AWG               | 6.8                 | 31.1                 | 65             |
| 302406STP                 | 6 x 2 x 24 AWG               | 8.7                 | 49.7                 | 106            |
| 302201STP                 | 1 x 2 x 22 AWG               | 5.1                 | 19.1                 | 39             |
| 302203STP                 | 3 x 2 x 22 AWG               | 7.7                 | 38.2                 | 71             |
| 302206STP                 | 6 x 2 x 22 AWG               | 9.6                 | 70                   | 125            |
| 302002STP                 | 2 x 2 x 20 AWG               | 9.4                 | 47.7                 | 128            |
| 302003STP                 | 3 x 2 x 20 AWG               | 10.5                | 68.2                 | 161            |
| 302006STP                 | 6 x 2 x 20 AWG               | 13.3                | 106.5                | 321            |
| 301801STP                 | 1 x 2 x 18 AWG               | 6.8                 | 37.8                 | 106            |
| 301802STP                 | 2 x 2 x 18 AWG               | 10.7                | 66.2                 | 122            |
| 301806STP                 | 6 x 2 x 18 AWG               | 14.6                | 153.1                | 324            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: Coil 152 m; Drum 305 m  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® FD P plus A

Highly flexible data cable with PUR jacket and AWM certification for US & Canadian use



### Info

- Flexible at low temperatures
- Low capacitance
- Halogen-free

### Benefits

- Well-proven and reliable
- Wide temperature range for applications in harsh climatic environments
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, Section 12.9.2 (condition 3 under 12.9.2: Thru 1 mm² and <16 AWG)

### Application range

- Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions
- Suitable for use in measuring, control and regulating circuits
- Cable chain use - in case of horizontal installation travel distances up to 100 m
- For use in chain/carrier: Please respect the assembly guidelines listed in Appendix T3

### Product features

- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in cable chains
- Flame retardance ratings: IEC 60332-1-2, FT2 (Horizontal flame test)
- Halogen-free, has low capacitance and is flexible down to -40°C
- Oil-resistant
- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant

### Norm references / Approvals

- Based on VDE 0812
- CRUus AWM certified by UL (UL: E63634): UL AWM Style 21576 and AWM A/B I/II

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin
- Non-woven wrapping
- Outer sheath made of special PUR compound
- Outer sheath colour: grey (RAL 7001)

### Technical data

|  |                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable    |
|  | <b>Core identification code</b><br>DIN 47100, refer to Appendix T9                                                 |
|  | <b>Mutual capacitance</b><br>C/C approx. 60 nF/km                                                                  |
|  | <b>Inductivity</b><br>approx. 0.65 mH/km                                                                           |
|  | <b>Conductor stranding</b><br>Stranded, extra-fine wire                                                            |
|  | <b>Minimum bending radius</b><br>Flexing: 5 x outer diameter<br>Fixed installation: 3 x outer diameter             |
|  | <b>Test voltage</b><br>1500 V                                                                                      |
|  | <b>Temperature range</b><br>Flexing: -40°C to +80°C<br>Fixed installation: -40°C to +80°C<br>cRUus AWM: max. +80°C |

| Article number                | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® FD P plus A</b> |                                       |                     |                      |                |
| 0028647                       | 2 x 0.14                              | 3.7                 | 2.8                  | 20             |
| 0028650                       | 3 x 0.14                              | 3.9                 | 4.1                  | 25             |
| 0028651                       | 4 x 0.14                              | 4.2                 | 5.6                  | 30             |
| 0028652                       | 5 x 0.14                              | 4.5                 | 7                    | 34             |
| 0028677                       | 6 x 0.14                              | 4.8                 | 8.4                  | 42             |
| 0028653                       | 7 x 0.14                              | 5.1                 | 9.8                  | 48             |
| 0028654                       | 10 x 0.14                             | 6.1                 | 14                   | 60             |
| 0028678                       | 12 x 0.14                             | 5.9                 | 16.8                 | 67             |
| 0028656                       | 18 x 0.14                             | 6.8                 | 25.2                 | 87             |
| 0028657                       | 25 x 0.14                             | 8.3                 | 35                   | 120            |
| 0028658                       | 2 x 0.25                              | 4.1                 | 5                    | 27             |
| 0028659                       | 3 x 0.25                              | 4.3                 | 7.5                  | 32             |
| 0028660                       | 4 x 0.25                              | 4.7                 | 10                   | 35             |
| 0028661                       | 5 x 0.25                              | 5                   | 12.5                 | 49             |
| 0028679                       | 6 x 0.25                              | 5.4                 | 15                   | 55             |
| 0028662                       | 7 x 0.25                              | 5.8                 | 17.5                 | 43             |
| 0028663                       | 10 x 0.25                             | 7                   | 25                   | 72             |
| 0028680                       | 12 x 0.25                             | 6.7                 | 30                   | 87             |
| 0028664                       | 14 x 0.25                             | 7.1                 | 35                   | 73             |
| 0028665                       | 18 x 0.25                             | 8                   | 45                   | 104            |
| 0028666                       | 25 x 0.25                             | 9.8                 | 62.5                 | 133            |
| 0028667                       | 2 x 0.34                              | 4.5                 | 6.8                  | 33             |
| 0028668                       | 3 x 0.34                              | 4.8                 | 10.2                 | 39             |
| 0028669                       | 4 x 0.34                              | 5.2                 | 13.6                 | 41             |
| 0028670                       | 5 x 0.34                              | 5.6                 | 17                   | 44             |
| 0028671                       | 7 x 0.34                              | 6.5                 | 23.8                 | 55             |
| 0028672                       | 10 x 0.34                             | 8                   | 34                   | 85             |
| 0028673                       | 14 x 0.34                             | 8.2                 | 47.6                 | 94             |
| 0028674                       | 18 x 0.34                             | 9                   | 61.2                 | 131            |
| 0028675                       | 25 x 0.34                             | 11                  | 85                   | 200            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® FD CP plus A

Screened highly flexible data transmission cable with PUR outer sheath - UL/CSA-approved



### Info

- Flexible at low temperatures
- Low capacitance
- Halogen-free

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000104  
ETIM 5.0/6.0 Class-Description:  
Control cable



#### Core identification code

DIN 47100, refer to Appendix T9



#### Mutual capacitance

C/C approx. 60 nF/km



#### Inductivity

approx. 0.65 mH/km



#### Conductor stranding

Stranded, extra-fine wire



#### Torsion movement in WTG

TW-0 & TW-2, refer to Appendix T0



#### Minimum bending radius

Flexing: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter



#### Test voltage

Core/core: 1500 V rms  
Core/screen: 500 V



#### Temperature range

Flexing: -40°C to +80°C  
Fixed installation: -40°C to +80°C

### Benefits

- Wide temperature range for applications in harsh climatic environments
- Overall braid minimises electrical interference
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, Section 12.9.2 (condition 3 under 12.9.2: Thru 1 mm<sup>2</sup> and <16 AWG)

- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant
- Flame retardance: IEC 60332-1-2, VW-1, FT2
- Designed for 5 up to 10 million bending/unbending cycles (constant flex) in cable chain

### Norm references / Approvals

- CRUus AWM certified by UL (UL: E63634): UL AWM Style 21576 and AWM A/B I/II

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath made of special PUR compound  
Outer sheath colour: grey (RAL 7001)

### Application range

- Suitable for use in measuring, control and regulating circuits
- For use in chain/carrier: Please respect the assembly guidelines listed in Appendix T3
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free, has low capacitance and is flexible down to -40°C
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in cable chains

| Article number                 | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® FD CP plus A</b> |                                                   |                     |                      |                |
| 11139600                       | 3 X 0.14                                          | 4.5                 | 14.1                 | 36             |
| 11139601                       | 4 X 0.14                                          | 4.8                 | 15.5                 | 40             |
| 11139602                       | 5 X 0.14                                          | 5.1                 | 18.3                 | 45             |
| 11139603                       | 7 X 0.14                                          | 5.7                 | 27.8                 | 67             |
| 11139604                       | 10 X 0.14                                         | 6.7                 | 39.3                 | 87             |
| 11139605                       | 14 X 0.14                                         | 6.8                 | 45.3                 | 62             |
| 11139606                       | 18 X 0.14                                         | 7.4                 | 54.1                 | 74             |
| 11139607                       | 25 X 0.14                                         | 8.9                 | 68.4                 | 157            |
| 11139608                       | 2 X 0.25                                          | 4.7                 | 14.9                 | 38             |
| 11139609                       | 3 X 0.25                                          | 4.9                 | 18.8                 | 45             |
| 11139610                       | 4 X 0.25                                          | 5.3                 | 21.3                 | 52             |
| 11139611                       | 5 X 0.25                                          | 5.6                 | 31                   | 69             |
| 11139612                       | 7 X 0.25                                          | 6.4                 | 39.6                 | 76             |
| 11139613                       | 10 X 0.25                                         | 7.6                 | 53.9                 | 98             |
| 11139614                       | 14 X 0.25                                         | 7.9                 | 64.2                 | 120            |
| 11139615                       | 18 X 0.25                                         | 8.6                 | 78.4                 | 142            |
| 11139616                       | 25 X 0.25                                         | 10.4                | 101                  | 213            |
| 11139617                       | 2 X 0.34                                          | 5.1                 | 18.1                 | 40             |
| 11139618                       | 3 X 0.34                                          | 5.4                 | 28.7                 | 61             |
| 11139619                       | 4 X 0.34                                          | 5.8                 | 35.7                 | 60             |
| 11139620                       | 5 X 0.34                                          | 6.2                 | 39.1                 | 70             |
| 11139621                       | 7 X 0.34                                          | 7.1                 | 52.7                 | 103            |
| 11139622                       | 10 X 0.34                                         | 8.6                 | 67.4                 | 148            |
| 11139623                       | 14 X 0.34                                         | 8.8                 | 85.8                 | 166            |
| 11139624                       | 18 X 0.34                                         | 9.8                 | 99.7                 | 190            |
| 11139625                       | 25 X 0.34                                         | 11.8                | 155                  | 260            |
| 11139626                       | 2 X 0.14                                          | 4.3                 | 11.2                 | 33             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® FD CP (TP) plus A

Screened highly flexible data transmission cable with PUR outer sheath and twisted pairs - UL/CSA-approved



### Info

- Flexible at low temperatures
- Low capacitance
- Halogen-free



### Benefits

- Wide temperature range for applications in harsh climatic environments
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, Section 12.9.2 (condition 3 under 12.9.2: Thru 1 mm² and <16 AWG)

### Application range

- Suitable for use in measuring, control and regulating circuits
- Linear robots, automated handling equipment
- For use in chain/carrier: Please respect the assembly guidelines listed in Appendix T3
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free, has low capacitance and is flexible down to -40°C
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in cable chains

- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant
- Flame retardance: IEC 60332-1-2, VW-1, FT2
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter

### Norm references / Approvals

- CRUus AWM certified by UL (UL: E63634): UL AWM Style 21576 and AWM A/B I/II

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin TP structure
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath made of special PUR compound
- Outer sheath colour: grey (RAL 7001)

### Technical data

|  |                                                                                                                         |
|--|-------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000104<br>ETIM 5.0/6.0 Class-Description: Control cable      |
|  | <b>Core identification code</b><br>DIN 47100, refer to Appendix T9                                                      |
|  | <b>Mutual capacitance</b><br>Up to 0.5 mm²: 60 nF/km<br>Up to 1.0 mm²: 70 nF/km                                         |
|  | <b>Inductivity</b><br>approx. 0.65 mH/km                                                                                |
|  | <b>Conductor stranding</b><br>Stranded, extra-fine wire<br>From 0.5 mm²: extra-fine wire according to IEC 60228 class 6 |
|  | <b>Torsion movement in WTG</b><br>TW-0 & TW-2, refer to Appendix T0                                                     |
|  | <b>Minimum bending radius</b><br>Flexing: 7.5 x outer diameter<br>Fixed installation: 4 x outer diameter                |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms<br>Core/screen: 500 V                                                      |
|  | <b>Temperature range</b><br>Flexing: -40°C to +80°C<br>Fixed installation: -40°C to +80°C                               |

| Article number                      | Number of pairs and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® FD CP (TP) plus A</b> |                                       |                     |                      |                |
| 11139499                            | 8 x 2 x 0.34                          | 11.8 mm             | 107.300 kg/km        | 221            |
| 11139501                            | 2 x 2 x 0.14                          | 5.9 mm              | 19.400 kg/km         | 42             |
| 11139502                            | 3 x 2 x 0.14                          | 6.2 mm              | 23.400 kg/km         | 47             |
| 11139503                            | 4 x 2 x 0.14                          | 6.7 mm              | 27.100 kg/km         | 57             |
| 11139504                            | 5 x 2 x 0.14                          | 7.3 mm              | 37.400 kg/km         | 68             |
| 11139505                            | 6 x 2 x 0.14                          | 7.5 mm              | 49.400 kg/km         | 86             |
| 11139506                            | 8 x 2 x 0.14                          | 8.8 mm              | 54.800 kg/km         | 109            |
| 11139507                            | 10 x 2 x 0.14                         | 10.1 mm             | 60.100 kg/km         | 120            |
| 11139508                            | 2 x 2 x 0.25                          | 6.6 mm              | 32.000 kg/km         | 57             |
| 11139509                            | 3 x 2 x 0.25                          | 7 mm                | 38.400 kg/km         | 72             |
| 11139510                            | 4 x 2 x 0.25                          | 7.6 mm              | 43.200 kg/km         | 85             |
| 11139511                            | 5 x 2 x 0.25                          | 8.5 mm              | 51.500 kg/km         | 92             |
| 11139512                            | 6 x 2 x 0.25                          | 8.8 mm              | 71.800 kg/km         | 91             |
| 11139513                            | 8 x 2 x 0.25                          | 10.3 mm             | 74.400 kg/km         | 145            |
| 11139514                            | 10 x 2 x 0.25                         | 11.8 mm             | 90.000 kg/km         | 182            |
| 11139515                            | 14 x 2 x 0.25                         | 12 mm               | 111.200 kg/km        | 213            |
| 11139516                            | 2 x 2 x 0.34                          | 7.3 mm              | 41.000 kg/km         | 69             |
| 11139517                            | 3 x 2 x 0.34                          | 8 mm                | 52.000 kg/km         | 93             |
| 11139518                            | 4 x 2 x 0.34                          | 8.7 mm              | 59.000 kg/km         | 106            |
| 11139519                            | 6 x 2 x 0.34                          | 10 mm               | 86.200 kg/km         | 165            |
| 11139520                            | 10 x 2 x 0.34                         | 13.7 mm             | 131.100 kg/km        | 274            |
| 11139521                            | 2 x 2 x 0.5                           | 8.3 mm              | 50.000 kg/km         | 99             |

| Article number | Number of pairs and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| 11139522       | 3 x 2 x 0.5                           | 8.8 mm              | 71.800 kg/km         | 120            |
| 11139523       | 4 x 2 x 0.5                           | 9.8 mm              | 74.400 kg/km         | 148            |
| 11139524       | 5 x 2 x 0.5                           | 10.7 mm             | 84.500 kg/km         | 168            |
| 11139525       | 6 x 2 x 0.5                           | 11.3 mm             | 99.600 kg/km         | 182            |
| 11139526       | 8 x 2 x 0.5                           | 13.2 mm             | 144.300 kg/km        | 278            |
| 11139527       | 10 x 2 x 0.5                          | 15.2 mm             | 176.000 kg/km        | 325            |
| 11139528       | 14 x 2 x 0.5                          | 15.5 mm             | 215.400 kg/km        | 401            |
| 11139529       | 2 x 2 x 0.75                          | 9 mm                | 60.000 kg/km         | 104            |
| 11139530       | 3 x 2 x 0.75                          | 9.8 mm              | 85.700 kg/km         | 148            |
| 11139531       | 4 x 2 x 0.75                          | 10.7 mm             | 93.600 kg/km         | 167            |
| 11139532       | 6 x 2 x 0.75                          | 12.3 mm             | 130.400 kg/km        | 233            |
| 11139533       | 8 x 2 x 0.75                          | 14.7 mm             | 192.200 kg/km        | 330            |
| 11139534       | 10 x 2 x 0.75                         | 16.7 mm             | 258.000 kg/km        | 390            |
| 11139535       | 14 x 2 x 0.75                         | 17 mm               | 316.600 kg/km        | 515            |
| 11139536       | 1 x 2 x 1                             | 6.3 mm              | 42.000 kg/km         | 71             |
| 11139537       | 2 x 2 x 1                             | 9.9 mm              | 73.000 kg/km         | 126            |
| 11139538       | 3 x 2 x 1                             | 10.5 mm             | 93.600 kg/km         | 167            |
| 11139539       | 4 x 2 x 1                             | 11.8 mm             | 117.800 kg/km        | 213            |
| 11139540       | 5 x 2 x 1                             | 13.1 mm             | 139.000 kg/km        | 247            |
| 11139541       | 1 x 2 x 0.34                          | 5.1 mm              | 20.000 kg/km         | 36             |
| 11139542       | 1 x 2 x 0.5                           | 5.5 mm              | 22.000 kg/km         | 47             |
| 11139543       | 1 x 2 x 0.75                          | 5.9 mm              | 34.000 kg/km         | 61             |
| 11139544       | 1 x 2 x 0.25                          | 4.7 mm              | 14.000 kg/km         | 32             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

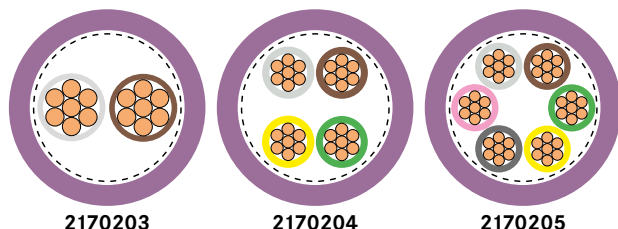
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS LD

Flexible buscable with PVC outer sheath, for use in different bussystems



### Info

- LD is a LAPP abbreviation for long distance

### Benefits

- Suitable for multiple Bus systems based on RS485 / RS422

### Application range

- For fixed installation  
Maximum electromagnetic screening
- Bus cables for bus systems such as  
e.g. Modbus, SUCOnet P, Modulink P, VariNet-P)
- Dry or damp rooms

### Product features

- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
  - 9.6-93.75 kbit/s = 1200m
  - 187.5 kbit/s = max. 1,000 m
  - 500 kbit/s = max. 400 m

### Norm references / Approvals

- UNITRONIC® BUS LD A:  
UL versions with certification:  
UL/CSA type CMX acc. to UL 444  
and CSA C22.2 no. 214-02
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- Stranded conductor, bare, 7-wire
- Core insulation: PE
- Colour code DIN 47100
- Overall screening of braided tinned-copper strands
- Outer sheath: PVC, violet (RAL 4001)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Mutual capacitance</b><br>Flexible use: 10 x outer diameter                                                  |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                             |
|  | <b>Conductor resistance</b><br>(loop): max. 186 ohm/km                                                          |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter                                         |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms                                                                    |
|  | <b>Characteristic impedance</b><br>100 - 120 Ohm                                                                |
|  | <b>Temperature range</b><br>Fixed installation: -40°C to +80°C<br>Flexing: -5°C to +70°C                        |

| Article number                                           | Article designation | Number of pairs and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------------------------|---------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| <b>for fixed installation</b>                            |                     |                                                   |                     |                      |                |
| 2170203                                                  | UNITRONIC® BUS LD   | 1 x 2 x 0,22                                      | 5.7                 | 18                   | 37             |
| 2170204                                                  | UNITRONIC® BUS LD   | 2 x 2 x 0,22                                      | 7.1                 | 28                   | 45             |
| 2170205                                                  | UNITRONIC® BUS LD   | 3 x 2 x 0,22                                      | 7.2                 | 37                   | 72             |
| <b>For fixed installation - UL/CSA CMX certification</b> |                     |                                                   |                     |                      |                |
| 2170803                                                  | UNITRONIC® BUS LD A | 1 x 2 x 0,22                                      | 5.7                 | 18                   | 39             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Modbus is owned by the Modbus-IDA Organisation. SUCOnet P is a registered trademark of the Moeller Group. Modulink P is a registered trademark of Weidmüller GmbH & Co. VariNet is a registered trademark of Pepperl+Fuchs GmbH.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



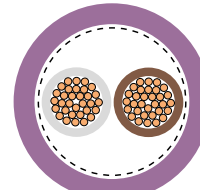
## UNITRONIC® BUS LD FD P

Highly flexible buscable with PUR outer sheath, for use in different bussystems

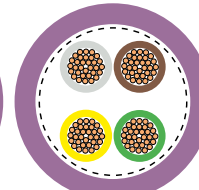
### Info

- LD is a LAPP abbreviation for long distance

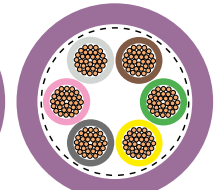
LAPP KABEL STUÏGART UNITRONIC® BUS LD FD P



2170213



2170214



2170215

### Benefits

- Suitable for multiple Bus systems based on RS485 / RS422
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in cable chains
- Under consideration of the temperature range also suitable for outdoor use

### Application range

- For highly flexible applications (cable chains, moving machine parts)
- Bus cables for bus systems such as e.g. Modbus, SUCOnet P, Modulink P, VariNet-P)

### Product features

- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
- 9.6-93.75 kbit/s = 1200m
- 187.5 kbit/s = max. 1,000 m
- 500 kbit/s = max. 400 m
- UV-resistant (but colour may change after some time)

### Norm references / Approvals

- UNITRONIC® BUS LD FD P A:  
UL versions with certification:  
UL/CSA type CMX acc. to UL 444  
and CSA C22.2 no. 214-02
- Flame-retardant according IEC 60332-1-2

### Product Make-up

- Extra-fine wire strand made of bare copper
- Colour code DIN 47100
- Core insulation: PE
- Overall screening of braided tinned-copper strands
- Outer sheath: PUR, violet (RAL 4001)

### Technical data

|  |                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                          |
|  | <b>Mutual capacitance</b><br>(800 Hz) max. 60 nF/km                                                                                                      |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                                                                      |
|  | <b>Conductor resistance</b><br>(loop): max. 159.8 ohm/km                                                                                                 |
|  | <b>Minimum bending radius</b><br>Fixed installation: 6 x core diameter<br>One bend at end of core:<br>3 x cable diameter<br>Flexing: 15 x outer diameter |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms                                                                                                             |
|  | <b>Characteristic impedance</b><br>100 - 120 Ohm                                                                                                         |
|  | <b>Temperature range</b><br>Fixed installation: -40°C to +80°C<br>Flexing: -30°C to +70°C                                                                |

| Article number                                                          | Article designation      | Number of pairs and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------------------------------------------------|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>For highly flexible applications</b>                                 |                          |                                       |                     |                      |                |
| 2170213                                                                 | UNITRONIC® BUS LD FD P   | 1 x 2 x 0,25                          | 6                   | 18                   | 39             |
| 2170214                                                                 | UNITRONIC® BUS LD FD P   | 2 x 2 x 0,25                          | 7.9                 | 33                   | 65             |
| 2170215                                                                 | UNITRONIC® BUS LD FD P   | 3 x 2 x 0,25                          | 8                   | 39                   | 77             |
| <b>For highly flexible applications - with UL/CSA CMX certification</b> |                          |                                       |                     |                      |                |
| 2170813                                                                 | UNITRONIC® BUS LD FD P A | 1 x 2 x 0,25                          | 6.2                 | 18                   | 39             |
| 2170814                                                                 | UNITRONIC® BUS LD FD P A | 2 x 2 x 0,25                          | 8.3                 | 33                   | 65             |
| 2170815                                                                 | UNITRONIC® BUS LD FD P A | 3 x 2 x 0,25                          | 8.4                 | 39                   | 77             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Modbus is owned by the Modbus-IDA Organisation. SUCOnet P is a registered trademark of the Moeller Group. Modulink P is a registered trademark of Weidmüller GmbH & Co. VariNet is a registered trademark of Pepperl+Fuchs GmbH.

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## UNITRONIC® BUS ASI

AS-INTERFACE cables for networking systems in the field

LAPP KABEL STUTTGART UNITRONIC® BUS ASI

LAPP KABEL STUTTGART UNITRONIC® BUS ASI

LAPP KABEL STUTTGART UNITRONIC® BUS ASI



### Info

- "LD" = Long Distance

### Benefits

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- The rubber versions are halogen-free

### Application range

- Communication at sensor/actuator level
- Sensor-/actuator wiring
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- The TPE version has an oil-resistant outer sheath. It is suitable for wet areas, in particular in conjunction with water-soluble cooling lubricants

### Product features

- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal)
- The conductor is contacted by "piercing technology" within the ASI modules
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables)

### Norm references / Approvals

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- PVC A version with UL/CSA (CMX) certification
- UL/CSA version: CMG c(UL)us or (UL)CL2 or AWM 300V FT4 certified

### Product Make-up

- Conductor: fine-wire tinned-copper strands
- Core insulation: blue and brown
- Outer sheath: rubber (G), halogenfree thermoplastic elastomers (TPE) PVC
- Outer sheath: yellow (RAL 1023), black (RAL 9005), red (RAL 3000)

### Technical data

**Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Peak operating voltage

Yellow: 300 V (not for power applications)  
Black: 300 V (not for power applications)  
Red: 300 V



#### Conductor resistance

1.5 mm<sup>2</sup>: max. 13.7 Ohm/km  
2.5 mm<sup>2</sup>: max. 8.21 Ohm/km



#### Minimum bending radius

Fixed installation: 12 mm  
Flexible use 24 mm



#### Test voltage

Core/core: 2000 V



#### Temperature range

Dependent on outer sheath material:  
PVC: -30 °C to +90 °C  
Other materials: -40 °C to +85 °C  
During installation:  
PVC -20 °C to +90 °C  
Other materials:  
-30 °C to +85 °C

| Article number     | Article designation        | Outer sheath colour | Application                              | Number of cores and mm <sup>2</sup> per conductor | Copper index (kg/km) | Weight (kg/km) |
|--------------------|----------------------------|---------------------|------------------------------------------|---------------------------------------------------|----------------------|----------------|
| <b>Rubber/EPDM</b> |                            |                     |                                          |                                                   |                      |                |
| 2170228            | UNITRONIC® BUS ASI (G)     | yellow              | Data and power transmission              | 2 x 1,5                                           | 29                   | 85             |
| 2170229            | UNITRONIC® BUS ASI (G)     | black               | Transmission of 30 V DC auxiliary power  | 2 x 1,5                                           | 29                   | 85             |
| 21700230           | UNITRONIC® BUS ASI (G)     | grey                | Transmission of 48 V DC auxiliary power  | 2 x 1,5                                           | 29                   | 67             |
| 2170371            | UNITRONIC® BUS ASI LD (G)  | yellow              | Data and power transmission              | 2 x 2,5                                           | 48                   | 85             |
| 2170372            | UNITRONIC® BUS ASI LD (G)  | black               | Transmission of 30 V DC auxiliary power  | 2 x 2,5                                           | 48                   | 85             |
| 21700373           | UNITRONIC® BUS ASI LD (G)  | grey                | Transmission of 48 V DC auxiliary power  | 2 x 2,5                                           | 48                   | 85             |
| <b>TPE</b>         |                            |                     |                                          |                                                   |                      |                |
| 2170230            | UNITRONIC® BUS ASI (TPE)   | yellow              | Data and power transmission              | 2 x 1,5                                           | 29                   | 64             |
| 2170231            | UNITRONIC® BUS ASI (TPE)   | black               | Transmission of 30 V DC auxiliary power  | 2 x 1,5                                           | 29                   | 64             |
| 2170232            | UNITRONIC® BUS ASI (TPE)   | red                 | Transmission of 230 V AC auxiliary power | 2 x 1,5                                           | 29                   | 64             |
| <b>PVC UL/CSA</b>  |                            |                     |                                          |                                                   |                      |                |
| 2170842            | UNITRONIC® BUS ASI (PVC) A | yellow              | Data and power transmission              | 2 x 1,5                                           | 29                   | 70             |
| 2170843            | UNITRONIC® BUS ASI (PVC) A | black               | Transmission of 30 V DC auxiliary power  | 2 x 1,5                                           | 29                   | 70             |
| 2170844            | UNITRONIC® BUS ASI (PVC) A | red                 | Transmission of 230 V AC auxiliary power | 2 x 1,5                                           | 29                   | 70             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

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## UNITRONIC® BUS ASI FD

High flexible AS-INTERFACE cables for networking systems in the field



### Info

- "FD" = suitable for cable chains
- "LD" = Long Distance

### Benefits

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- For highly flexible applications (cable chains, moving machine parts)
- High oil-resistance

### Application range

- Communication at sensor/actuator level
- Sensor-/actuator wiring

### Product features

- PUR versions are halogen-free according to IEC 60754-1
- Flame-retardant according to IEC 60332-1-2, UL FT-2 flame test
- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal)
- The conductor is contacted by "piercing technology" within the ASI modules
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables)

### Norm references / Approvals

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- TPE variant: UL AWM Style 2103 CSA AWM II A/B
- PUR versions: UL AWM Style 20549 and 10586

### Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: halogen-free compound
- Outer sheath: TPE PUR
- Outer sheath: yellow (RAL 1023), black (RAL 9005)

### Technical data

|  |                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                             |
|  | <b>Peak operating voltage</b><br>300 V (not for power applications)                                                                         |
|  | <b>Conductor resistance</b><br>1.5 mm <sup>2</sup> : max. 13.7 Ohm/km<br>2.5 mm <sup>2</sup> : max. 8.21 Ohm/km                             |
|  | <b>Minimum bending radius</b><br>Fixed installation: 12 mm<br>Flexing without fixing: 24 mm<br>Flexing with fixing: 60 mm (15 x D)          |
|  | <b>Test voltage</b><br>Core/core: 2000 V                                                                                                    |
|  | <b>Temperature range</b><br>Fixed installation:<br>-40°C to +80°C (TPE +105°C)<br>Flexing without fixing:<br>-30 °C to +70 °C (TPE +105 °C) |

| Article number                                                               | Article designation           | Outer sheath colour | Application                             | Number of cores and mm <sup>2</sup> per conductor | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------------------------------------------|-------------------------------|---------------------|-----------------------------------------|---------------------------------------------------|----------------------|----------------|
| <b>For highly flexible applications (cable chains, moving machine parts)</b> |                               |                     |                                         |                                                   |                      |                |
| 2170357                                                                      | UNITRONIC® BUS ASI FD P FRNC  | yellow              | Data and power transmission             | 2 x 1,5                                           | 29                   | 64             |
| 2170358                                                                      | UNITRONIC® BUS ASI FD P FRNC  | black               | Transmission of 30 V DC auxiliary power | 2 x 1,5                                           | 29                   | 64             |
| 21700359                                                                     | UNITRONIC® BUS ASI FD P FRNC  | grey                | Transmission of 48 V DC auxiliary power | 2 x 1,5                                           | 29                   | 64             |
| 2170317                                                                      | UNITRONIC® BUS ASI LD FD P    | yellow              | Data and power transmission             | 2 x 2,5                                           | 48                   | 74             |
| 2170318                                                                      | UNITRONIC® BUS ASI LD FD P    | black               | Transmission of 30 V DC auxiliary power | 2 x 2,5                                           | 48                   | 74             |
| 21700319                                                                     | UNITRONIC® BUS ASI LD FD P GY | grey                | Transmission of 48 V DC auxiliary power | 2 x 2,5                                           | 48                   | 74             |
| <b>For high flexible application - TPE UL/CSA (AWM)</b>                      |                               |                     |                                         |                                                   |                      |                |
| 2170830                                                                      | UNITRONIC® BUS ASI FD (TPE) A | yellow              | Data and power transmission             | 2 x 1,5                                           | 29                   | 64             |
| 2170831                                                                      | UNITRONIC® BUS ASI FD (TPE) A | black               | Transmission of 30 V DC auxiliary power | 2 x 1,5                                           | 29                   | 64             |
| 21700832                                                                     | UNITRONIC® BUS ASI FD (TPE) A | grey                | Transmission of 48 V DC auxiliary power | 2 x 1,5                                           | 29                   | 64             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

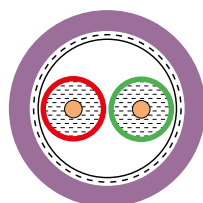
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## UNITRONIC® BUS PB TRAY

PROFIBUS cable with PLTC-ER approval for unprotected use on cable trays



2170856

### Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

### Application range

- For fixed installation or applications with occasional movements
- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m
- UV-resistant UL SUN RES
- Flame retardant acc. UL 1685 - FT4 (vertical tray)

### Norm references / Approvals

- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

### Product Make-up

- Bare copper wire, 0,64 mm diameter
- Core colours: red, green
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC inner sheath and outer sheath
- Colour: violet (RAL 4001)

### Info

- PLTC-ER (power limited tray cable - exposed run)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Mutual capacitance</b><br>(1 kHz): max. 30 nF/km                                                             |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                             |
|  | <b>Impedance</b><br>150 +/- 15 Ohm                                                                              |
|  | <b>Conductor resistance</b><br>(loop): max. 110 ohm/km                                                          |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter                                         |
|  | <b>Test voltage</b><br>Core/core: 2000 V                                                                        |
|  | <b>Characteristic impedance</b><br>150 ± 15 Ohm                                                                 |
|  | <b>Temperature range</b><br>Flexing: -10°C to +70°C<br>Fixed installation: -40°C to +80°C                       |

| Article number | Article designation    | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|------------------------|---------------------------------------------|---------------------|----------------------|----------------|
| 2170856        | UNITRONIC® BUS PB TRAY | 1x2x0,64                                    | 8,4                 | 26                   | 82             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



**Info**

- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)
- A for Advanced here: UL and CSA certifications
- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)



**Application range**

- For fixed installation
- Maximum electromagnetic screening
- Dry or damp rooms
- Item nos. 2170233, 2170333, 2170820, 2170824, 2170826 are all UV-resistant

**Product features**

- These bus cables can be used for PROFIBUS-DP as well as for PROFIBUS-FMS and FIP
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):

|                |        |
|----------------|--------|
| 93.75 kbit/s = | 1200 m |
| 187.5 kbit/s = | 1000 m |
| 500 kbit/s =   | 400 m  |
| 1.5 Mbit/s =   | 200 m  |
| 12.0 Mbit/s =  | 100 m  |

**Norm references / Approvals**

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)
- See below for UL certification type

**Product Make-up**

- FC: Fast Connect cable design
- P: Polyurethane
- H: Halogen-free
- PE: polyethylene outer sheath, black
- 7-W: 7-wire, e.g. for applications where vibrations occur
- COMBI: Data transmission and power supply in one cable

**Technical data**

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable
- Mutual capacitance**  
(800 Hz): max. 30 nF/km
- Peak operating voltage**  
(not for power applications) 250 V
- Conductor resistance**  
(loop): max. 186 Ohm/km.  
see also datasheet
- Minimum bending radius**  
Fixed installation: see data sheet
- Test voltage**  
Core/core: 1500 V rms
- Characteristic impedance**  
150 ± 15 Ohm

| Article number                                              | Article designation         | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------------------------------------|-----------------------------|---------------------------------------------|---------------------|----------------------|----------------|
| <b>Conventional cable makeup</b>                            |                             |                                             |                     |                      |                |
| 2170220                                                     | UNITRONIC® BUS PB           | 1 x 2 x 0.64                                | 8                   | 30.1                 | 74             |
| 2170233                                                     | UNITRONIC® PB PE            | 1 x 2 x 0.64                                | 8                   | 30.1                 | 57             |
| 2170226                                                     | UNITRONIC® BUS PB H 7-W     | 1 x 2 x 0.64                                | 8                   | 30.1                 | 55             |
| 2170225                                                     | UNITRONIC® BUS PB COMBI 7-W | 1 x 2 x 0,64 Ø + 3 x 1,0 mm <sup>2</sup>    | 9.8                 | 59                   | 92             |
| <b>Conventional cable makeup - UL/CSA CMX certification</b> |                             |                                             |                     |                      |                |
| 2170219                                                     | UNITRONIC® BUS PB A         | 1 x 2 x 0.64                                | 8                   | 30.1                 | 57             |
| <b>Conventional cable makeup - UL/CSA CMG certification</b> |                             |                                             |                     |                      |                |
| 2170824                                                     | UNITRONIC® BUS PB 7-W A     | 1 x 2 x 0.64                                | 8                   | 30.1                 | 55             |
| <b>Fast Connect</b>                                         |                             |                                             |                     |                      |                |
| 2170333                                                     | UNITRONIC® BUS PB PE FC     | 1 x 2 x 0.64                                | 8                   | 26                   | 67             |
| <b>Fast Connect - UL/CSA CMX certification</b>              |                             |                                             |                     |                      |                |
| 2170330                                                     | UNITRONIC® BUS PB P FC      | 1 x 2 x 0.64                                | 8                   | 26                   | 71             |
| <b>Fast Connect cable makeup - UL/CSA CMG certification</b> |                             |                                             |                     |                      |                |
| 2170820                                                     | UNITRONIC® BUS PB FC        | 1 x 2 x 0.64                                | 8                   | 26                   | 84             |
| 2170826                                                     | UNITRONIC® BUS PB 7-W FC    | 1 x 2 x 0.64                                | 8                   | 26                   | 67             |
| 2170326                                                     | UNITRONIC® BUS PB-H FC      | 1 x 2 x 0.64                                | 8                   | 26                   | 72             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
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 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
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## UNITRONIC® BUS PB FRNC FC

FRNC PROFIBUS cable UL/CSA certified



### Info

- FRNC = Flame Retardant Non Corrosive
  - Reduction of flame-propagation and density and toxicity of smoke gases in the event of fire
  - Minimisation of damage to buildings and production facilities
  - Safety for staff and in areas with high density of people

### Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Fast Connect (FC) cable design

### Application range

- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

### Product features

- Halogen-free
- Vertical Tray Flame Test according to UL 1685
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
  - 93.75 kbit/s = 1200 m
  - 187.5 kbit/s = 1000 m
  - 500 kbit/s = 400 m
  - 1.5 Mbit/s = 200 m
  - 12.0 Mbit/s = 100 m

### Norm references / Approvals

- UL/CSA-certified

### Product Make-up

- Solid and bare copper conductor
- Core insulation: PE
- Inner sheath, screening foil and braiding
- Outer sheath: PUR, violet (RAL 4001)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Certifications</b><br>UL/CSA (CM)                                                                            |
|  | <b>Mutual capacitance</b><br>Approx. 28.5 nF/km                                                                 |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                             |
|  | <b>Minimum bending radius</b><br>80 mm                                                                          |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms<br>Core/screen: 1500 V                                             |
|  | <b>Characteristic impedance</b><br>(3 - 20 MHz): 150 ± 15 Ohm                                                   |
|  | <b>Temperature range</b><br>-30°C to +80°C                                                                      |

| Article number | Article designation       | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------|---------------------------------------------|---------------------|----------------------|----------------|
| 2170996        | UNITRONIC® BUS PB FRNC FC | 1 x 2 x 0.64                                | 8                   | 30.1                 | 74             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

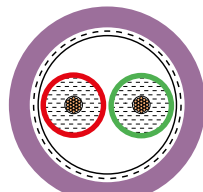
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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**UNITRONIC® BUS PB FD P A**

Halogenfree, highly flexible PROFIBUS cable - UL/CSA certified



2170822

**Info**

- A for Advanced here: UL and CSA certifications

**Benefits**

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

**Application range**

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- For highly flexible applications (cable chains, moving machine parts)
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

**Product features**

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

**Norm references / Approvals**

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

**Product Make-up**

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PUR, violet (RAL 4001)

**Technical data**

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Mutual capacitance</b><br>(800 Hz): max. 30 nF/km                                                            |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                             |
|  | <b>Torsion movement in WTG (wind turbine generator)</b><br>TW-0 & TW-2, refer to Appendix T0                    |
|  | <b>Minimum bending radius</b><br>65 mm                                                                          |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms                                                                    |
|  | <b>Characteristic impedance</b><br>150 ± 15 Ohm                                                                 |
|  | <b>Temperature range</b><br>Flexing: -30°C to +70°C<br>Fixed installation: -40°C to +80°C                       |

| Article number | Article designation      | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|--------------------------|---------------------------------------------|---------------------|----------------------|----------------|
| 2170822        | UNITRONIC® BUS PB FD P A | 1 x 2 x 0.64                                | 8                   | 30.1                 | 58             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP

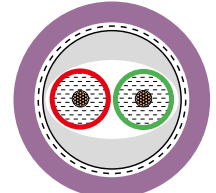
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## UNITRONIC® BUS PB FD P FC

Halogenfree, highly flexible PROFIBUS cable - with fast connect cable make up, UL/CSA certified



2170322

### Benefits

- Fast Connect (FC) cable design
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- For highly flexible applications (cable chains, moving machine parts)

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

### Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

### Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Fast connect inner sheath: PVC, nature
- Outer sheath: PUR, violet (RAL 4001)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Mutual capacitance</b><br>(800 Hz): max. 30 nF/km                                                            |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                             |
|  | <b>Minimum bending radius</b><br>Flexing: 15 x outer diameter                                                   |
|  | <b>Test voltage</b><br>3600 V DC (3 sec.)                                                                       |
|  | <b>Characteristic impedance</b><br>150 ± 15 Ohm                                                                 |
|  | <b>Temperature range</b><br>Flexing: -30°C to +70°C<br>Fixed installation: -40°C to +80°C                       |

| Article number | Article designation       | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------|---------------------------------------------|---------------------|----------------------|----------------|
| 2170322        | UNITRONIC® BUS PB FD P FC | 1 x 2 x 0.64                                | 8                   | 26                   | 79             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB FD FRNC FC

Flame retardant, highly flexible PROFIBUS cable - with fast connect cable make up, UL/CSA certified

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD FRNC FC

### Benefits

- Fast Connect (FC) system
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- For highly flexible use in energy supply chains or permanently moving machines and linear robots
- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

### Product features

- Halogen-free
- Oil-resistant
- Vertical Tray Flame Test according to UL 1685
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

### Norm references / Approvals

- The cable is UL/CSA-certified (CM)

### Product Make-up

- Stranded bare copper wire
- Core insulation: foam skin, (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Fast connect inner sheath: PVC, nature
- Outer sheath: PUR, violet (RAL 4001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Mutual capacitance

nom. 28 nF/km



#### Peak operating voltage

(not for power applications) 250 V



#### Minimum bending radius

Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter



#### Test voltage

Core/core: 1500 V rms



#### Characteristic impedance

(3 - 20 MHz): 150 ± 15 Ohm



#### Temperature range

Flexing: -30°C to +70°C  
Fixed installation: -40°C to +80°C

| Article number                      | Article designation          | Number of pairs and conductor diameter (mm) | Outer diameter [mm] | Copper index (kg/km) |
|-------------------------------------|------------------------------|---------------------------------------------|---------------------|----------------------|
| <b>UNITRONIC® BUS PB FD FRNC FC</b> |                              |                                             |                     |                      |
| 2170997                             | UNITRONIC® BUS PB FD FRNC FC | 1x2x0,64                                    | 8                   | 26                   |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

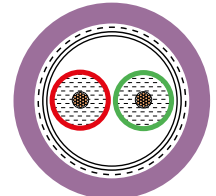
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB TORSION

Flame retardant, highly flexible PROFIBUS cable for torsion load



2170332

### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- TORSION: for torsional stress, e.g. robot application;  $\pm 180^\circ$  per 1 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 $93.75 \text{ kbit/s} = 1200 \text{ m}$   
 $187.5 \text{ kbit/s} = 1000 \text{ m}$   
 $500 \text{ kbit/s} = 400 \text{ m}$   
 $1.5 \text{ Mbit/s} = 200 \text{ m}$   
 $12.0 \text{ Mbit/s} = 100 \text{ m}$

### Norm references / Approvals

- Certification: UL type CMX in accordance with UL 444

### Product Make-up

- Stranded bare copper wire
- Core insulation: PE
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PUR, violet (RAL 4001)

### Technical data

|  |                                                                                                                                                          |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                          |
|  | <b>Mutual capacitance</b><br>(800 Hz): max. 30 nF/km                                                                                                     |
|  | <b>Peak operating voltage</b><br>(not for power applications)<br>300 V                                                                                   |
|  | <b>Torsion movement in WTG (wind turbine generator)</b><br>Max. torsion load<br>$\pm 180^\circ/\text{m}$                                                 |
|  | <b>Minimum bending radius</b><br>Fixed installation: 4 x outer diameter<br>Flexing: 7.5 x outer diameter                                                 |
|  | <b>Test voltage</b><br>3600 V DC (3 sec.)                                                                                                                |
|  | <b>Characteristic impedance</b><br>$150 \pm 15 \text{ Ohm}$                                                                                              |
|  | <b>Temperature range</b><br>Operating temperature: $-25^\circ\text{C}$ to $75^\circ\text{C}$<br>Storage temp.: $-40^\circ\text{C}$ to $80^\circ\text{C}$ |

| Article number | Article designation       | Number of cores and mm <sup>2</sup> per conductor | Dimension and cross section in mm <sup>2</sup> | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|----------------|---------------------------|---------------------------------------------------|------------------------------------------------|---------------------|----------------------|----------------|
| 2170332        | UNITRONIC® BUS PB TORSION | 1 x 2 x 0.38                                      | 1 x 2 x 0.38                                   | 8                   | 31                   | 66             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30 \text{ kg}$  or  $\leq 250 \text{ m}$ , otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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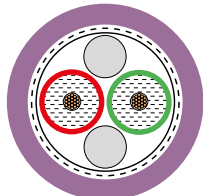


## UNITRONIC® BUS PB FESTOON

PROFIBUS cable for cable trolley applications



LAPP KABEL STUTTGART UNITRONIC® BUS PB FESTOON



2170331

### Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- CL3 for installation on trays

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- FESTOON: for cable trolley (festoon)
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Norm references / Approvals

- With UL/CSA certification (CL3, SUN RES, Oil Res I)
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

### Product Make-up

- Outer sheath: special PVC compound

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Mutual capacitance</b><br>(800 Hz): max. 30 nF/km                                                            |
|  | <b>Peak operating voltage</b><br>600 V (not for power applications)                                             |
|  | <b>Minimum bending radius</b><br>Flexing: 70 mm<br>Fixed installation: 30 mm once                               |
|  | <b>Test voltage</b><br>Core/core: 2000 V                                                                        |
|  | <b>Characteristic impedance</b><br>150 ± 15 Ohm                                                                 |
|  | <b>Temperature range</b><br>Flexing: -5°C to +70°C<br>Fixed installation: -40°C to +80°C                        |

| Article number | Article designation       | Number of cores and mm² per conductor | Dimension and cross section in mm² | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|----------------|---------------------------|---------------------------------------|------------------------------------|---------------------|----------------------|----------------|
| 2170331        | UNITRONIC® BUS PB Festoon | 1 x 2 x 0.64                          | 1 x 2 x 0.64                       | 8                   | 26                   | 64             |

#### Highly flexible application

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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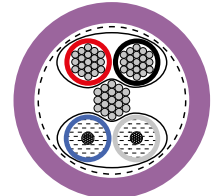
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## UNITRONIC® DeviceNet THICK + THIN

DeviceNet Buscable based on the CAN technology



2170340/2170341/2170342/2170343

### Application range

- Fixed Installation
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

### Product features

- Resistant to oils
- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- FRNC Version: Halogene free and flame retardant
- Refer to data sheet for more details

### Norm references / Approvals

- CMG UL/CSA certification 75°C or PLTC, Sun Res
- FRNC variant additionally with Germanischer Lloyd certification

### Product Make-up

- Tinned copper wire
- Core insulation: foam skin
- Tinned-copper braiding with drain wire
- Outer sheath: FRNC or PVC

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Core identification code</b><br>Data pair: light blue + white<br>Power supply: red + black                   |
|  | <b>Mutual capacitance</b><br>(800 Hz): max. 39.8 nF/km                                                          |
|  | <b>Peak operating voltage</b><br>300 V (not for power applications)                                             |
|  | <b>Conductor resistance</b><br>Thick (loop): max. 45 ohm/km<br>Thin (loop): max. 180 ohm/km                     |
|  | <b>Minimum bending radius</b><br>Fixed installation: 15 x outer diameter                                        |
|  | <b>Test voltage</b><br>Core/core: 2000 V                                                                        |
|  | <b>Characteristic impedance</b><br>120 ohm                                                                      |
|  | <b>Temperature range</b><br>Fixed installation: -25°C to +80°C                                                  |

| Article number      | Article designation          | Number of pairs and AWG size | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|---------------------|------------------------------|------------------------------|---------------------|----------------------|----------------|
| <b>Halogen-free</b> |                              |                              |                     |                      |                |
| 2170340             | UNITRONIC® BUS DN THICK FRNC | 1x2xAWG18 + 1x2xAWG15        | 12.2                | 82.8                 | 195            |
| 2170341             | UNITRONIC® BUS DN THIN FRNC  | 1x2xAWG24 + 1x2xAWG22        | 6.9                 | 33.4                 | 69.5           |
| <b>PVC</b>          |                              |                              |                     |                      |                |
| 2170342             | UNITRONIC® BUS DN THICK Y    | 1x2xAWG18 + 1x2xAWG15        | 12.2                | 88.4                 | 192            |
| 2170343             | UNITRONIC® BUS DN THIN Y     | 1x2xAWG24 + 1x2xAWG22        | 6.9                 | 33.4                 | 66.9           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

FRNC means Flame-Retardant, Non-Corrosive; and DeviceNet is a registered trademark of ODVA.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

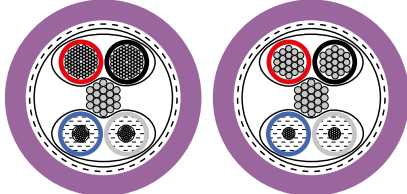
ECO is the cost-efficient version of article no. 2170342 and 2170343, with a slight modification to the outer sheath and UL/CSA-approved (CMG).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® DeviceNet FD THICK+THIN

High flexible DeviceNet Buscable based on the CAN technology



2170344/2170346 2170345/2170347

### Application range

- For highly flexible applications
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

### Product features

- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Refer to data sheet for more details
- PUR (P) Version: Halogene free
- PVC (Y) Version: Flame retardant (UL FT4)
- UV-resistant (but colour may change after some time)

### Norm references / Approvals

- PUR: UL/CSA-certified (CMX)
- PVC: UL/CSA CMG 75°C FT4 Sun Res Oil Res, at 2170346 also PLTC

### Product Make-up

- Core insulation: PE
- Outer sheath of Polyurethan (PUR) or Polyvinylchlorid (PVC)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Core identification code

Data pair: light blue + white  
Power supply: red + black



#### Mutual capacitance

(800 Hz): max. 39.8 nF/km



#### Peak operating voltage

300 V (not for power applications)



#### Conductor resistance

Thick (loop): max. 45 ohm/km  
Thin (loop): max. 180 ohm/km



#### Minimum bending radius

Fixed installation: 7.5 x outer diameter  
Flexing: 15 x outer diameter



#### Test voltage

Core/core: 2000 V



#### Characteristic impedance

120 ohm



#### Temperature range

PUR: -40°C to +80°C  
PVC: -10°C to +80°C

| Article number | Article designation          | Number of pairs and AWG size | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|----------------|------------------------------|------------------------------|---------------------|----------------------|----------------|
| <b>PUR</b>     |                              |                              |                     |                      |                |
| 2170344        | UNITRONIC® BUS DN THICK FD P | 1x2xAWG18 + 1x2xAWG15        | 12.2                | 94                   | 184            |
| 2170345        | UNITRONIC® BUS DN THIN FD P  | 1x2xAWG24 + 1x2xAWG22        | 6.9                 | 33.4                 | 67.7           |
| <b>PVC</b>     |                              |                              |                     |                      |                |
| 2170346        | UNITRONIC® BUS DN THICK FD Y | 1x2xAWG18 + 1x2xAWG15        | 12.2                | 94                   | 195            |
| 2170347        | UNITRONIC® BUS DN THIN FD Y  | 1x2xAWG24 + 1x 2xAWG22       | 6.9                 | 33.4                 | 69.8           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

DeviceNet is a registered trademark of ODVA

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**UNITRONIC® BUS CAN**

CAN Buscables for fixed installation - UL/SCA certified

**Info**

- CAN = Controller Area Network

LAPP KABEL STUTTGART UNITRONIC® BUS CAN

**UNITRONIC® BUS CAN FD P**

CAN Buscables for high flexible application - UL/SCA certified

LAPP KABEL STUTTGART UNITRONIC® BUS CAN FD P

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable

**Mutual capacitance**

(800 Hz) max. 40 nF/km

**Peak operating voltage**

**UNITRONIC® BUS CAN**  
(not for power applications) 250 V  
**UNITRONIC® BUS CAN FD P**  
250 V (not for power transmission)

**Conductor resistance**

**UNITRONIC® BUS CAN**  
(loop): max. 186 ohm/km  
**UNITRONIC® BUS CAN FD P**  
(loop): max. 159.8 ohm/km

**Minimum bending radius**

**UNITRONIC® BUS CAN**  
Fixed installation: 8 x outer diameter  
**UNITRONIC® BUS CAN FD P**  
Flexing: 15 x outer diameter

**Test voltage**

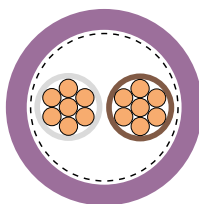
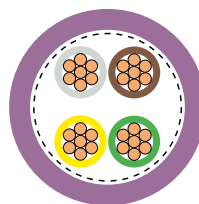
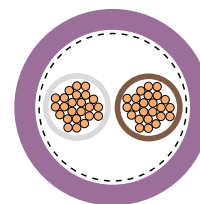
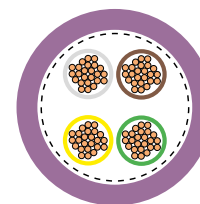
Core/core: 1500 V rms

**Characteristic impedance**

120 ohm

**Temperature range**

**UNITRONIC® BUS CAN**  
Fixed installation: -30°C to +80°C  
Flexing: -5°C to +70°C  
**UNITRONIC® BUS CAN FD P**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +70°C

2170260/2170263/  
21702662170261/2170264/  
21702672170269/2170272/  
21702752170270/2170273/  
2170276**Application range**

- UNITRONIC® BUS CAN**
  - Fixed Installation
- UNITRONIC® BUS CAN FD P**
  - For highly flexible applications

**Product features**

- UNITRONIC® BUS CAN**
  - Maximum bit rate: 1 Mbit/s for 40 m segment length
  - Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
  - ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
  - Flame-retardant according IEC 60332-1-2
- UNITRONIC® BUS CAN FD P**
  - Halogen-free
  - Maximum bit rate: 1 Mbit/s for 40 m segment length
  - Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
  - ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
  - Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Standardised internationally in ISO 11898
- UL/CSA type CMX (UL 444)

**Product Make-up**

- UNITRONIC® BUS CAN**
  - 0.22 + 0.34 + 0.5: bare stranded conductor, 7-wire
  - 0.75: bare stranded conductor, fine-wire
  - Core insulation: foam skin
  - Colour-coded in accordance with DIN 47100
  - Copper braid
  - Outer sheath: PVC, violet (RAL 4001)
- UNITRONIC® BUS CAN FD P**
  - Stranded bare conductor
  - Core insulation: foam skin
  - Copper braid
  - Outer sheath: PUR, violet (RAL 4001)
  - UV-resistant (but colour may change after some time)

| Article number                                                               | Article designation     | Number of pairs/conductor cross section (mm <sup>2</sup> ) | Outer diameter [mm] | Conductor resistance | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------|---------------------|----------------------|----------------------|----------------|
| <b>for fixed installation</b>                                                |                         |                                                            |                     |                      |                      |                |
| 2170260                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,22                                               | 5.7                 | 186                  | 16.7                 | 42             |
| 2170261                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,22                                               | 7.6                 | 186                  | 34.8                 | 68             |
| 2170263                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,34                                               | 6.8                 | 115                  | 25                   | 55             |
| 2170264                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,34                                               | 8.5                 | 115                  | 46.4                 | 88             |
| 2170266                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,5                                                | 7.5                 | 78                   | 41.6                 | 90             |
| 2170267                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,5                                                | 9.6                 | 78                   | 59.4                 | 106            |
| 2170269                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,75                                               | 8.7                 | 52                   | 52.7                 | 108            |
| 2170270                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,75                                               | 11.5                | 52                   | 80.6                 | 142            |
| <b>For highly flexible applications (cable chains, moving machine parts)</b> |                         |                                                            |                     |                      |                      |                |
| 2170272                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,25                                               | 6.4                 | 159.8                | 24                   | 40             |
| 2170273                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,25                                               | 8.4                 | 159.8                | 33                   | 65             |
| 2170275                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,34                                               | 6.8                 | 122                  | 32.8                 | 60             |
| 2170276                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,34                                               | 9.6                 | 122                  | 52.4                 | 88             |
| 2170278                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,5                                                | 8                   | 72.8                 | 41.9                 | 74             |
| 2170279                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,5                                                | 10.1                | 72.8                 | 59.4                 | 100            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com) / Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS CAN TRAY

CAN Bus cable with PLTC-ER approval - for open wiring between cable trays and industrial machines

LAPP KABEL STUTTGART UNITRONIC® BUS CAN TRAY



### Info

- CAN = Controller Area Network

### Benefits

- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

### Application range

- Fixed Installation

### Product features

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

### Norm references / Approvals

- Standardised internationally in ISO 11898
- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

### Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation: foam skin
- Inner sheath: PVC
- Copper braid
- Outer sheath: PVC, violet (RAL 4001)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Mutual capacitance

(800 Hz) max. 40 nF/km



#### Peak operating voltage

(not for power applications) 250 V  
Rated voltage: 600 V (UL)



#### Conductor resistance

(loop): max. 110,8 ohm/km



#### Minimum bending radius

Fixed installation: 8 x outer diameter  
Flexing: 15 x outer diameter



#### Test voltage

Core/core: 2000 V



#### Characteristic impedance

120 ohm



#### Temperature range

Fixed installation: -40°C to +80°C  
Flexing: -10°C to +70°C

| Article number | Article designation     | Number of cores and mm <sup>2</sup> per conductor | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km] |
|----------------|-------------------------|---------------------------------------------------|---------------------|----------------------|----------------|
| 2170857        | UNITRONIC® BUS CAN TRAY | 2 x 2 x 0,34                                      | 7.5                 | 35                   | 81             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS FF

FOUNDATION Fieldbus cable for use in Process Automation - UL-verified



### Benefits

- Cables meet the requirements of ISA/SP50 and the FOUNDATION™ field bus for the cable type A.

### Application range

- FOUNDATION™ Fieldbus is used in intrinsically safe areas, especially in the field of Process Automation
- Fixed Installation

### Product features

- UV-resistant
- Extended temperature range

### Norm references / Approvals

- With UL/CSA certification (CMG/PLTC)

### Product Make-up

- 2-core, not armoured, with device ground
- 3-core, unarmoured, with device ground
- 3-core, armoured (longitudinally welded, spiral corrugated copper sheath) with device ground
- Outer sheath: PVC, yellow  
Armoured Version: PVC, yellow and blue

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>300 V                                                                          |
|  | <b>Conductor resistance</b><br>≤ 24 Ohm/km                                                                      |
|  | <b>Minimum bending radius</b><br>15 x outer diameter                                                            |
|  | <b>Test voltage</b><br>1500 V                                                                                   |
|  | <b>Characteristic impedance</b><br>100 ± 20 Ohm at 31.25 kHz                                                    |
|  | <b>Temperature range</b><br>-40 °C or -25 °C to +105 °C, see data sheet                                         |

| Article number           | Article designation          | Number of pairs and cable diameter | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|------------------------------|------------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® BUS FF</b> |                              |                                    |                     |                      |                |
| 2170350                  | UNITRONIC® BUS FF 3          | 1x2x1.1 + 1x1.1 Ø                  | 7.9                 | 48.3                 | 93             |
| <b>PVC - Armoured</b>    |                              |                                    |                     |                      |                |
| 2170351                  | UNITRONIC® BUS FF 3 ARM (YE) | 1x2x1.1 + 1x1.1 Ø                  | 12.3                | 125                  | 182            |
| 2170353                  | UNITRONIC® BUS FF 3 ARM (BU) | 1x2x1.1 + 1x1.1 Ø                  | 12.3                | 125                  | 182            |
| <b>PVC</b>               |                              |                                    |                     |                      |                |
| 2170352                  | UNITRONIC® BUS FF 2          | 1 x 2 x 1.1                        | 7.9                 | 39.7                 | 82             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Foundation™ is a trademark of the Fieldbus Foundation  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS CC

CC-Link bus cable for fixed installation - UL-verified

LAPP KABEL STUTTGART UNITRONIC® BUS CC



### Info

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

### Benefits

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.
- This CC-Link® bus cable has successfully passed the CC-Link® Conformance Test in Japan.

### Application range

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- Fixed installation of the CC-Link® network

### Product features

- Transmission rate in relation to the distance
- 156 kbit/s 1.200 m  
625 kbit/s 600 m  
2,5 Mbit/s 200 m  
5,0 Mbit/s 110-150 m  
10 Mbit/s 50-100 m
- Flame-retardant according to CSA FT4  
UL Vertical-Tray Flame Test
- SUN RES acc. to UL 1581

### Norm references / Approvals

- CM UL/CSA certification 75°C or PLTC Sun Res

### Product Make-up

- Bare stranded copper wires
- Core insulation: PE
- Overall screening of braided tinned-copper strands
- Outer sheath: PVC, red (RAL 3000)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>300 V                                                                          |
|  | <b>Conductor resistance</b><br>11 ohm/1,000 ft. (305 m) at 20°C                                                 |
|  | <b>Minimum bending radius</b><br>Fixed installation: 5 x outer diameter<br>Flexing: 8 x outer diameter          |
|  | <b>Test voltage</b><br>2000 V                                                                                   |
|  | <b>Characteristic impedance</b><br>110 ohm at 1 MHz                                                             |
|  | <b>Temperature range</b><br>-40°C to +70°C                                                                      |

| Article number           | Article designation | Number of cores and AWG size | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|---------------------|------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® BUS CC</b> |                     |                              |                     |                      |                |
| 2170360                  | UNITRONIC® BUS CC   | 3 x 1 x AWG20                | 7.7                 | 38.8                 | 76.6           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA)  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**UNITRONIC® BUS CC FD P FRNC**

CC-Link bus cable for high flexible applications - UL-verified

**Info**

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

**Benefits**

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.

**Application range**

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- For highly flexible applications (cable chains, moving machine parts)

**Product features**

- Transmission rate in relation to the distance
- 156 kbit/s 1.200 m
- 625 kbit/s 600 m
- 2,5 Mbit/s 200 m
- 5,0 Mbit/s 110-150 m
- 10 Mbit/s 50-100 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- AWM 20233 80 °C 300V

**Product Make-up**

- Bare stranded copper wires
- Core insulation: PE
- Inner sheath: FRNC
- Overall screening of braided tinned-copper strands
- Outer sheath: PUR, red (RAL 3000)

**Technical data**

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Certifications</b><br>UL AWM Style 20233                                                                     |
|  | <b>Peak operating voltage</b><br>300 V                                                                          |
|  | <b>Conductor resistance</b><br>11 ohm/1,000 ft. (305 m) at 20 °C                                                |
|  | <b>Minimum bending radius</b><br>Fixed installation: 4 x outer diameter<br>Moved: 10 x outer diameter           |
|  | <b>Test voltage</b><br>2000 V                                                                                   |
|  | <b>Characteristic impedance</b><br>110 ohm at 1 MHz                                                             |
|  | <b>Temperature range</b><br>-40 °C to +80 °C                                                                    |

| Article number                     | Article designation         | Number of cores and AWG size | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------|-----------------------------|------------------------------|---------------------|----------------------|----------------|
| <b>UNITRONIC® BUS CC FD P FRNC</b> |                             |                              |                     |                      |                |
| 2170370                            | UNITRONIC® BUS CC FD P FRNC | 3 x 1 x AWG20                | 8.5                 | 39.9                 | 84             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS IBS

INTERBUS cables for different applications



### Benefits

- Applications:  
fixed installation,  
high flexible use,  
outdoor use/direct burial

### Application range

- Remote bus/ installation remote bus cable

### Product features

- **UNITRONIC® BUS IBS**  
fixed installation  
**UNITRONIC® BUS IBS Combi**  
with power supply  
**UNITRONIC® BUS IBS A**  
UL-verified
- **UNITRONIC® BUS Yv**  
outdoor use/ direct burial  
**UNITRONIC® BUS Yv Combi**  
with power supply
- **UNITRONIC® BUS IBS FD P**  
fixed installation  
**UNITRONIC® BUS IBS FD P Combi**  
with power supply  
**UNITRONIC® BUS IBS FD P Combi A**  
UL-verified

### Norm references / Approvals

- Refer to data sheet for more details
- According to DIN EN 61158

### Product Make-up

- See data sheet

### Technical data

|  |                                                                                                                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                                                                                                                         |
|  | <b>Peak operating voltage</b><br>(not for power applications) 250 V                                                                                                                                                                                                                     |
|  | <b>Conductor resistance</b><br>see data sheet                                                                                                                                                                                                                                           |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter<br>Flexing: 15 x outer diameter                                                                                                                                                                                 |
|  | <b>Test voltage</b><br>Core/core: 1500 V rms                                                                                                                                                                                                                                            |
|  | <b>Characteristic impedance</b><br>100 Ohm                                                                                                                                                                                                                                              |
|  | <b>Temperature range</b><br><b>UNITRONIC® BUS IBS</b><br>fixed installation: -30°C to +80°C<br>flexing: -5°C to +70°C<br><b>UNITRONIC® BUS IBS FD P</b><br>fixed installation: -40°C to +80°C<br>flexing: -5°C to +70°C<br><b>UNITRONIC® BUS IBS Yv</b><br>Fest verlegt: -40°C to +70°C |

| Article number                                                         | Article designation             | Number of pairs and mm² per conductor | Outer diameter [mm] | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------------------------------------|---------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>Fixed Installation</b>                                              |                                 |                                       |                     |                      |                |
| 2170206                                                                | UNITRONIC® BUS IBS              | 3 x 2 x 0.22                          | 7.2                 | 37                   | 72             |
| 2170208                                                                | UNITRONIC® BUS IBS P COMBI      | 3 x 2 x 0.22 + 3 x 1.0                | 7.9                 | 60                   | 85             |
| <b>Fixed installation - suitable for outdoor use and direct burial</b> |                                 |                                       |                     |                      |                |
| 2170207                                                                | UNITRONIC® BUS IBS Yv COMBI     | 3 x 2 x 0.22                          | 9.3                 | 37                   | 94             |
| 2170217                                                                | UNITRONIC® BUS IBS Yv COMBI     | 3 x 2 x 0.22 + 3 x 1.0                | 9.4                 | 60                   | 128            |
| <b>For fixed installation - UL CMX certification</b>                   |                                 |                                       |                     |                      |                |
| 2170209                                                                | UNITRONIC® BUS IBS A            | 3 x 2 x 0.22                          | 7.2                 | 37                   | 72             |
| <b>For highly flexible applications</b>                                |                                 |                                       |                     |                      |                |
| 2170216                                                                | UNITRONIC® BUS IBS FD P         | 3 x 2 x 0.25                          | 7.9                 | 39                   | 64             |
| <b>Highly flexible applications - with UL (CMX) certification</b>      |                                 |                                       |                     |                      |                |
| 2170818                                                                | UNITRONIC® BUS IBS FD P COMBI A | 3 x 2 x 0.25 + 3 x 1.0                | 7.9                 | 62                   | 92             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
INTERBUS is a registered trademark of Phoenix Contact GmbH & Co.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



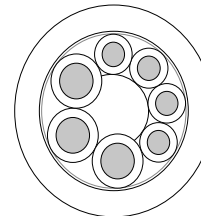
## UNITRONIC® SENSOR master cable



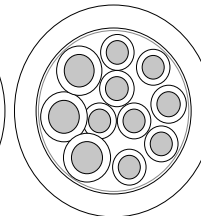
### Info

- Customised construction can be supported

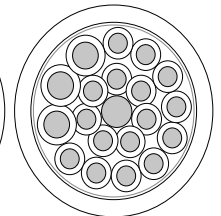
LAPP KABEL STUTTGART UNITRONIC® SENSOR Li9Y11Y



7038880



7038881



7038882

### Benefits

- Cost efficient and rational wiring for S/A boxes with detachable master cable connection
- Can be used universally for S/A installations

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- Cores for Power Supply:  
3 x 0.75 mm<sup>2</sup> and 3 x 1.0 mm<sup>2</sup>
- Cores for Signalling cable:  
4 x 0.34 mm<sup>2</sup>, 8 x 0.5 mm<sup>2</sup>, 16 x 0.5 mm<sup>2</sup>
- Suitable for cable chain
- Halogen-free according to VDE 0472-815
- Flame-retardant according to UL 1581 FT-2

### Norm references / Approvals

- UL-AWM-Style 21198 (80 °C / 300 V)
- UL-AWM-Style 21233 (80 °C / 1000 V)

### Product Make-up

- Fine-wire, bare copper strand
- Single wire diameter:  
0.34 mm<sup>2</sup> = (43 x 0.10 mm)  
0.5 mm<sup>2</sup> = (19 x 0.18 mm)  
0.75 mm<sup>2</sup> = (21 x 0.205 mm)  
1.0 mm<sup>2</sup> = (55 x 0.15 mm)
- Core insulation: PP
- Outer sheath: PUR, black

### Technical data

- Classification ETIM 5/6**  
 ETIM 5.0/6.0 Class-ID: EC001578  
 ETIM 5.0/6.0 Class-Description:  
 Flexible cable
- Conductor stranding**  
 Stranded conductor, fine-wire
- Minimum bending radius**  
 Flexing: 10 x outer diameter
- Temperature range**  
 Fixed installation: -40 °C to +80 °C  
 Flexing: -5 °C to +80 °C

| Article number                 | Article designation | Dimensions (mm <sup>2</sup> ) | Outer diameter [mm] | Core/outer sheath material | Copper index [kg/km] |
|--------------------------------|---------------------|-------------------------------|---------------------|----------------------------|----------------------|
| <b>UNITRONIC® SENSOR COMBI</b> |                     |                               |                     |                            |                      |
| 7038880                        | Li9Y11Y             | 3 x 0.75 + 4 x 0.34           | 6.6                 | PP/PUR                     | 34.5                 |
| 7038881                        | Li9Y11Y             | 3 x 1.0 + 8 x 0.5             | 8.4                 | PP/PUR                     | 67.2                 |
| 7038882                        | Li9Y11Y             | 3 x 1.0 + 16 x 0.5            | 9.8                 | PP/PUR                     | 105.6                |
| 68000963                       | Li9Y11Y             | 3G0,75 + 16x0,34              | 10.6                | PP/PUR                     | 8.1                  |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil 100m

Cables are printed

Other variations are available upon request.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet

**UNITRONIC® SENSOR**

Flexible cable for sensor/actuator cabling

**Info**

- Easy cable preparation
- UL recognized (LifYY A)

**Benefits**

- Easy installation (through cable trays, tubes, cabinets)
- Easy stripping and processing
- Space-saving due to compact dimensions

**Application range**

- Automation technology
- Sensor/ actuator cabling

**Product features**

- Core colour code in accordance with DIN EN 50044
- Black version: UV-resistant
- For higher mechanical stress (LifYY 11Y/ Desina)

**Norm references / Approvals**

- UL recognized (LifYY A)

**Product Make-up**

- Extra-fine wire strand made of bare copper wires
- Core insulation: PVC
- Colour-code:  
3-pin: bn, bu, bk  
4-pin: bn, wh, bu, bk  
5-pin: bn, wh, bu, bk, gy
- DESINA 4x0,34: bn, wh, bu, bk
- Outer sheath: PVC or PUR
- Sheath colour: black (RAL 9005)
- DESINA yellow (RAL 1021)

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC001578  
ETIM 5.0/6.0 Class-Description:  
Flexible cable

**Peak operating voltage**  
300 V (not for power applications)

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter

**Temperature range**  
PVC/PVC:  
Fixed installation: -40°C to +80°C  
Flexing: -5°C to +80°C  
PVC/PUR:  
Fixed installation: -30°C to +80°C  
Flexing: -10°C to +80°C

| Article number                   | Article designation | Dimensions (mm <sup>2</sup> ) | Outer diameter [mm] | Core/outer sheath material | Colour | UL  | Copper index [kg/km] |
|----------------------------------|---------------------|-------------------------------|---------------------|----------------------------|--------|-----|----------------------|
| <b>UNITRONIC® SENSOR PVC</b>     |                     |                               |                     |                            |        |     |                      |
| 7038898                          | LifYY               | 3x0.25                        | 3.8                 | PVC/PVC                    | black  |     | 7.5                  |
| 7038899                          | LifYY               | 4x0.25                        | 4.2                 | PVC/PVC                    | black  |     | 10.2                 |
| 7038900                          | LifYY               | 3 x 0.34                      | 4.1                 | PVC/PVC                    | black  |     | 9.8                  |
| 7038901                          | LifYY               | 4 x 0.34                      | 4.4                 | PVC/PVC                    | black  |     | 13                   |
| 7038902                          | LifYY               | 5 x 0.34                      | 4.8                 | PVC/PVC                    | black  |     | 16                   |
| <b>UNITRONIC® SENSOR PVC UL</b>  |                     |                               |                     |                            |        |     |                      |
| 7038903                          | LifYY A             | 3x0.25                        | 4.3                 | PVC/PVC                    | black  | yes | 7.5                  |
| 7038904                          | LifYY A             | 4x0.25                        | 4.6                 | PVC/PVC                    | black  | yes | 10.2                 |
| 7038905                          | LifYY A             | 3 x 0.34                      | 4.4                 | PVC/PVC                    | black  | yes | 9.8                  |
| 7038906                          | LifYY A             | 4 x 0.34                      | 4.8                 | PVC/PVC                    | black  | yes | 13                   |
| 7038907                          | LifYY A             | 5 x 0.34                      | 5.2                 | PVC/PVC                    | black  | yes | 16                   |
| <b>UNITRONIC® SENSOR PVC/PUR</b> |                     |                               |                     |                            |        |     |                      |
| 7038861                          | LifYY 11Y           | 4 x 0.34                      | 4.8                 | PVC/PUR                    | black  |     | 13.1                 |
| 7038862                          | LifYY 11Y           | 5 x 0.25                      | 4.9                 | PVC/PUR                    | black  |     | 12                   |
| 0040434                          | DESINA              | 4 x 0.34                      | 5.2                 | PVC/PUR                    | yellow |     | 13.5                 |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® SENSOR FD

High flexible cable for sensor/actuator cabling for use in cable chain, halogen-free



### Info

- For increased mechanical stress and harsh operating conditions



### Benefits

- Designs for highly flexible use
- Abrasion-resistant
- Wear-resistant
- Space-saving due to compact dimensions

### Application range

- Automation technology
- Sensor/ actuator cabling
- Mechanical and plant engineering
- Assembly and production lines

### Product features

- UV-resistant
- Halogen-free according to VDE 0472-815
- Flame-retardant according to IEC 60332-2-2, UL 1581 FT-2
- Suitable for cable chain
- Designed for 4 million alternating bending cycles and travel distances up to 10 m

### Norm references / Approvals

- UL AWM Style 20549

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: PP
- Colour-code:  
3-pin: bn, bu, bk  
4-pin: bn, wh, bu, bk  
5-pin: bn, wh, bu, bk, gy  
8-pin: bn, wh, gn, ye, gy, pk, bu, rd
- Outer sheath: PUR, black

### Technical data

|  |                                                                                                                        |
|--|------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC001578<br>ETIM 5.0/6.0 Class-Description:<br>Flexible cable |
|  | <b>Peak operating voltage</b><br>300 V (not for power applications)                                                    |
|  | <b>Conductor stranding</b><br>Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6                            |
|  | <b>Minimum bending radius</b><br>Fixed installation: 5 x outer diameter<br>Flexing: 10 x outer diameter                |
|  | <b>Temperature range</b><br>Occasional flexing: -25 °C to +80 °C<br>Fixed installation: -40 °C to +80 °C               |

| Article number                          | Article designation | Dimensions (mm²) | Outer diameter [mm] | Core/outer sheath material | Colour | Copper index [kg/km] |
|-----------------------------------------|---------------------|------------------|---------------------|----------------------------|--------|----------------------|
| <b>UNITRONIC® SENSOR FD</b>             |                     |                  |                     |                            |        |                      |
| 7038867                                 | Lif9Y11Y            | 5 x 0.25         | 4.7                 | PP/PUR                     | black  | 12                   |
| 7038868                                 | Lif9Y11Y            | 8 x 0.25         | 5.9                 | PP/PUR                     | black  | 19                   |
| 7038864                                 | Lif9Y11Y            | 3 x 0.34         | 4.6                 | PP/PUR                     | black  | 9.8                  |
| 7038865                                 | Lif9Y11Y            | 4 x 0.34         | 4.7                 | PP/PUR                     | black  | 13                   |
| <b>UNITRONIC® SENSOR FD - optimized</b> |                     |                  |                     |                            |        |                      |
| 7038889                                 | Lif9Y11Y            | 3x0.25           | 3.6                 | PP/PUR                     | black  | 7.5                  |
| 7038890                                 | Lif9Y11Y            | 4x0.25           | 3.8                 | PP/PUR                     | black  | 10.2                 |
| 7038893                                 | Lif9Y11Y            | 5 x 0.34         | 4.5                 | PP/PUR                     | black  | 16                   |
| <b>UNITRONIC® SENSOR FD screened</b>    |                     |                  |                     |                            |        |                      |
| 7038885                                 | Lif9YC11Y           | 3 x 0.34         | 4.3                 | PP/PUR                     | black  | 19.1                 |
| 7038886                                 | Lif9YC11Y           | 4 x 0.34         | 4.6                 | PP/PUR                     | black  | 23.5                 |
| 7038887                                 | Lif9YC11Y           | 5 x 0.34         | 5                   | PP/PUR                     | black  | 27.5                 |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Other types of composition are available upon request.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

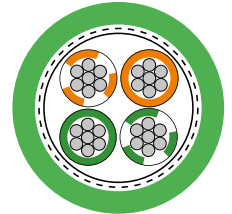


## ETHERLINE® EC FLEX Cat.5e

Flexible use

### Info

- For EtherCAT applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)



2170430/2170431

### Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Many applications with Industrial Ethernet, i.e. fixed installation and flexible use.
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

### Product features

- PUR (Polyurethane) Version with increased robustness, UV- resistance and halogen free
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214
- Flame-retardant according to UL VW1/ CSA FT1

### Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PVC or PUR jacket material
- Colour: green (based on RAL 6018)

### Technical data

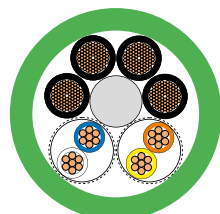
|  |                                                                                                                                                                                                             |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                                             |
|  | <b>Peak operating voltage</b><br>max. 100 V (not for power applications)                                                                                                                                    |
|  | <b>Minimum bending radius</b><br>Fixed installation: 4 x outer diameter<br>Flexing: 8 x outer diameter                                                                                                      |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-5                                                                                                                                           |
|  | <b>Temperature range</b><br>Cable with PVC jacket<br>Fixed installation: -30°C to +80°C<br>Flexing: -5°C to +50°C<br>Cable with PUR jacket<br>Fixed installation: -40°C to +80°C<br>Flexing: -30°C to +50°C |

| Article number                        | Article designation         | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------|-----------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PVC outer sheath</b>               |                             |                                       |                     |                   |                      |                |
| 2170430                               | ETHERLINE® Y EC FLEX Cat.5e | 1 x 4 x AWG26/7                       | 1                   | 4.8               | 20                   | 32             |
| <b>PUR outer sheath, halogen-free</b> |                             |                                       |                     |                   |                      |                |
| 2170431                               | ETHERLINE® P EC FLEX Cat.5e | 1 x 4 x AWG26/7                       | 1                   | 4.8               | 20                   | 31             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® Cat.5 FRNC HYBRID**

Hybrid cable for ethernet and power transmission

**2170887****Info**

- HYBRID: cable for data transmission + power supply
- Cat.5-Performance

**Benefits**

- Industrial use
- Screened against interference

**Application range**

- Industrial Ethernet cable
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- HYBRID: cable for data transmission + power supply
- Robust, halogen-free outer sheath

**Norm references / Approvals**

- UL AWM Style 21282
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- Cores for Power Supply  
4 x 1.5 mm<sup>2</sup> (AWG 16)
- Data transfer: braided conductor, 7-wire, bare
- Pair screening: wrapped with foil and braided copper wires
- Twisting: data pairs and power supply pairs twisted together
- Overlapping plastic tape
- FRNC outer sheath
- Colour: green (based on RAL 6018)

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable

**Minimum bending radius**

Fixed installation: 5 x outer diameter  
Occasional flexing: 10 x outer diameter

**Test voltage**

See data sheet

**Characteristic impedance**

nom. 100 Ω acc. to IEC 61156-5

**Temperature range**

Operation: -20 °C to +70 °C

| Article number | Article designation          | Number of pairs and AWG per conductor | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------|------------------------------|---------------------------------------|-------------------|----------------------|----------------|
| 2170887        | ETHERLINE® Cat.5 FRNC HYBRID | 2x2xAWG22/7 + 4x1.5                   | 10.3              | 94.2                 | 153            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

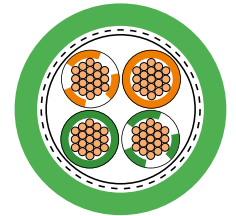


## ETHERLINE® EC FD Cat.5e

Highly flexible application

**Info**

- For EtherCAT applications
- For highly flexible industrial applications
- Cat.5e-Performance



2170433

### Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For highly flexible applications (cable chains, moving machine parts)
- Many applications with Industrial Ethernet, e.g. EtherCat, i.e. fixed installation, flexible and highly flexible use
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

### Product features

- Meets the requirements according to Cat. 5e and class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214-02
- Flame-retardant according to UL VW1/ CSA FT1
- Halogen-free according to VDE 0472-815

### Product Make-up

- Bare stranded copper wire, 26AWG
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath: PUR compound, halogen-free
- Colour: green (based on RAL 6018)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable
- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Fixed installation: 4 x Outer diameter  
Flexing: 16 x outer diameter
- Characteristic impedance**  
nom. 100  $\Omega$  acc. to IEC 61156-5
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +50°C

| Article number          | Article designation       | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® EC FD Cat.5e |                           |                                       |                     |                   |                      |                |
| 2170433                 | ETHERLINE® P EC FD Cat.5e | 1 x 4 x AWG26/19                      | 1                   | 4.8               | 20                   | 36             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



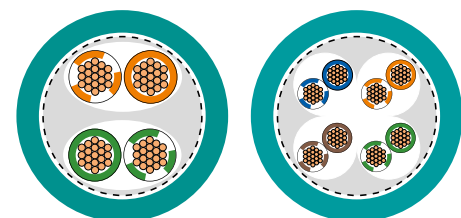
## ETHERLINE® Cat.5e FD

Ethernet cable Category 5e, Class D for use in cable chain applications - verified up to 100 MHz



### Info

- Industrial Ethernet cable
- For highly flexible applications
- Only for patch cable applications (max. 60 m)



2170289

2170489

### Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Industrial use
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

### Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Cable chain applications

### Product features

- Premium screening against electromagnetic interference
- Halogen-free outer sheath
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

### Norm references / Approvals

- UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Halogen-free according to VDE 0472-815

### Product Make-up

- Bare stranded copper wire, 26AWG
- Inner sheath: thermoplastic elastomer, halogen-free
- 2 or 4-pair version
- Screening: wrapped with braided tinned-copper wires
- PUR outer sheath
- Colour: water blue (similar to RAL 5021)

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Peak operating voltage

(not for power applications) 125 V



#### Minimum bending radius

Fixed installation: 8 x outer diameter  
Flexing: 15 x outer diameter



#### Test voltage

Core/core: 1000 V  
Core/screen: 500 V



#### Characteristic impedance

nom. 100 Ω acc. to IEC 61156-5



#### Temperature range

Fixed installation: VDE -30°C to +80°C;  
UL/CSA -30°C to +80°C  
Flexing: VDE -5°C to +50°C;  
UL/CSA -5°C to +80°C

| Article number        | Article designation    | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>2-pair version</b> |                        |                                       |                     |                   |                      |                |
| 2170289               | ETHERLINE® FD P Cat.5e | 2 x 2 x AWG26/19                      | 1                   | 5.9               | 20                   | 48             |
| <b>4-pair version</b> |                        |                                       |                     |                   |                      |                |
| 2170489               | ETHERLINE® FD P Cat.5e | 4 x 2 x AWG26/19                      | 1                   | 6.3               | 27                   | 56             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: Coil 100 m; Drum (500; 1000) m

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® FD bioP Cat.5e

Highly flexible with outer sheath made of partially bio-based plastic



### Info

- For highly flexible industrial applications
- Cat.5e-Performance



21704891

### Benefits

- The sustainable variant with the bio-based outer sheath consists of more than 40% renewable raw materials (according to ASTM D6866). The product properties are the same as for the standard variant made of purely fossil raw materials
- The outer sheath made from partially bio-based plastic reduces dependence on fossil fuels and reduces the CO<sub>2</sub> footprint
- Fast information exchange through Ethernet technology. Cat. 5e performance up to 1000 Mbit/s
- For transmission of analogue and digital signals in the frequency range up to 100 MHz
- Ideal protection against electromagnetic interference thanks to copper screening braiding with a high degree of coverage
- UL/CSA certification according to technical data enables the product to be used in the North American market

- Halogen-free and flame-retardant materials reduce the possible hazards in the event of a fire
- Successfully tested for over 10 million bending cycles in cable chains

### Application range

- Also suitable for EtherCAT and EtherNet/IP applications
- Especially for environments where electromagnetic compatibility (EMC) is required
- Suitable for patch cable assembly up to a cable length of 60 m
- Cable design allows highly flexible, continuously flexing use in moving machine parts and in the cable chain
- The bio-TPU outer sheath is insensitive to mineral-oil-based lubricants and resistant to many chemicals

### Technical data

|  |                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable    |
|  | <b>Peak operating voltage</b><br>max. 100 V (not for power applications)                                           |
|  | <b>Minimum bending radius</b><br>Fixed installation: 6 x outer diameter<br>Occasional flexing: 15 x outer diameter |
|  | <b>Test voltage</b><br>Core/core: 700 V<br>Core/screen: 700 V                                                      |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-5                                                  |
|  | <b>Temperature range</b><br>Fixed installation: -15°C to +80°C<br>flexing: -5°C to +70°C                           |

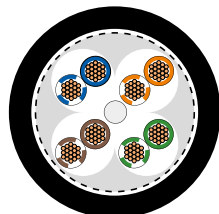
| Article number | Article designation       | Number of pairs and AWG per conductor | Number of cores | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------|---------------------------------------|-----------------|----------------------|----------------|
| 21704891       | ETHERLINE® FD bioP Cat.5e | 4 x 2 x 26 / 19AWG                    | 8               | 27                   | 56             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
 Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® Cat.5 FD BK

Ethernet cable Category 5e, Class D for installation in events - verified up to 100 MHz



CE217489



### Info

- For highly flexible industrial applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)

### Benefits

- Additional application options thanks to suitability for outdoor use, UV-resistant
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to coil for mobile use

### Application range

- IEEE 802.3: 10/100/1000Base-T
- IEEE 802.5: ISDN; FDDI; ATM
- Suitable for the transfer of audio signals (ETHERSOUND), light control signals (DMX over Ethernet), or for computer networking
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

### Product features

- Specifically developed for road environments
- Suitable for outdoor use, UV-resistant
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Premium screening against electromagnetic interference

### Norm references / Approvals

- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to VDE 0472-815

### Product Make-up

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm<sup>2</sup>)
- Insulation: foam skin, max. core diameter 1.0 mm
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- Inner sheath: thermoplastic elastomer, halogen-free
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: halogen-free PUR, black

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable



#### Peak operating voltage

(not for power applications) 125 V



#### Minimum bending radius

Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter



#### Test voltage

Core/core: 1000 V  
Core/screen: 500 V



#### Characteristic impedance

nom. 100 Ω acc. to IEC 61156-6



#### Temperature range

Fixed installation: VDE -30°C to +80°C;  
UL/CSA -30°C to +80°C  
Flexing: VDE -5°C to +50°C;  
UL/CSA -5°C to +80°C

| Article number         | Article designation      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|------------------------|--------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® Cat.5 FD BK |                          |                                       |                     |                   |                      |                |
| CE217489               | ETHERLINE® FD P BK Cat.5 | 4x2xAWG26/19                          | 1                   | 6.3               | 27                   | 54             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Standard lengths: (100; 500; 1000) m

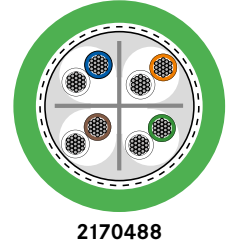
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**Info**

- Cat.6 for cable chain



### Benefits

- Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions
- Premium screening against electromagnetic interference

### Application range

- For use in cable chain and moving machinery parts in dry or damp rooms
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Plant engineering, machinery manufacturing
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

### Product features

- PUR outer sheath is resistant to most oils and hydraulic fluids
- Cat.6 for cable chain
- Min. 1 million bending cycles in the cable chain

### Norm references / Approvals

- UL/CSA type CMX (UL 444)
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- Stranded conductor, tinned
- AWG 26 (19-wire)
- PP core insulation
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable
- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Fixed installation: 4 x outer diameter  
Flexing: 7.5 x outer diameter
- Test voltage**  
700 V
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-6
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +70°C

| Article number                 | Article designation | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|--------------------------------|---------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® CAT.6 FD<br>2170488 | ETHERLINE® CAT.6 FD | 4 x 2 x AWG26/19                      | 1                   | 7.8               | 31.7                 | 63             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® Cat.6<sub>A</sub> FLEX FC**

Flexible with Fast Connect design, for applications with limited space and short transmission distances

**2170588****Info**

- Cat.6<sub>A</sub> qualified for 10 Gbit/s

**Benefits**

- The “Fast Connect” design, including inner sheath and cross separator, significantly reduces the cable assembly time, by eliminating the time-consuming removal of the pair screening. It also provides undiminished screening of the core pairs
- Additional protection against electromagnetic interference thanks to double overall screening made of aluminium-laminated foil and copper braided screening with a high degree of coverage (SF/UTP)
- UL certification according to technical data enables the product to be used on the North American market

- Fast information exchange through Ethernet technology
- Cat. 6<sub>A</sub> performance up to 10 Gbit/s
- For transmission of analogue and digital signals in the frequency range up to 500 MHz
- Available with robust PVC or halogen free FRNC outer sheath

**Application range**

- Also suitable for EtherCAT and EtherNet/IP applications
- The “FLEX” version with reduced conductor cross-section is suitable for applications with limited space
- For flexible use

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable

**Peak operating voltage**

(not for power applications) 125 V

**Minimum bending radius**

Fixed installation: 4 x outer diameter  
Flexing: 8 x outer diameter

**Test voltage**

2kV

**Characteristic impedance**

nom. 100 Ω acc. to IEC 61156-6

**Temperature range**

Fixed installation: -40°C to +80°C  
to 60°C according to UL AWM  
Occasional flexing: -5°C to +50°C

| Article number | Article designation                        | Number of pairs and AWG per conductor | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------|--------------------------------------------|---------------------------------------|-------------------|----------------------|----------------|
| <b>PVC</b>     |                                            |                                       |                   |                      |                |
| 2170588        | ETHERLINE® Cat.6 <sub>A</sub> Y FLEX FC    | 4 x 2 x 26/7AWG                       | 7.6               | 29                   | 72             |
| <b>FRNC</b>    |                                            |                                       |                   |                      |                |
| 2170589        | ETHERLINE® Cat.6 <sub>A</sub> FRNC FLEX FC | 4 x 2 x 26/7AWG                       | 7.6               | 29                   | 73             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



Highly flexible with Fast-Connect connection for permanently moving use in cable chain and short transmission distances

**Info**

- Cat.6<sub>A</sub> qualified for 10 Gbit/s



2170592

### Benefits

- The “Fast Connect” design, including inner sheath and cross separator, significantly reduces the cable assembly time, by eliminating the time-consuming removal of the pair screening. It also provides undiminished screening of the core pairs
- Additional protection against electromagnetic interference thanks to double overall screening made of aluminium-laminated foil and copper braided screening with a high degree of coverage (SF/UTP)
- UL certification according to technical data enables the product to be used on the North American market

- Fast information exchange through Ethernet technology
- Cat. 6<sub>A</sub> performance up to 10 Gbit/s
- For transmission of analogue and digital signals in the frequency range up to 500 MHz
- Available with robust PVC or abrasion-resistant PU outer sheath
- Successfully tested for over 1 million bending cycles in cable chains

### Application range

- Cable design allows highly flexible, continuously flexing use in moving machine parts and in the cable chain

### Technical data

|  |                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                 |
|  | <b>Peak operating voltage</b><br>(not for power applications) 125 V                                                             |
|  | <b>Minimum bending radius</b><br>Fixed installation: 4 x outer diameter<br>Flexing: 8 x outer diameter                          |
|  | <b>Test voltage</b><br>2kV                                                                                                      |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-6                                                               |
|  | <b>Temperature range</b><br>Fixed installation: -40°C to +80°C to 60°C according to UL AWM<br>Occasional flexing: -5°C to +50°C |

| Article number | Article designation                   | Number of pairs and AWG per conductor | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------------------------|-------------------|----------------------|----------------|
| 2170592        | ETHERLINE® Cat.6 <sub>A</sub> P FD FC | 4 x 2 x 26/19AWG                      | 8.8               | 44                   | 95             |
| 2170593        | ETHERLINE® Cat.6 <sub>A</sub> Y FD FC | 4 x 2 x 26/19AWG                      | 8.8               | 44                   | 105            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs and graphics are not to scale and do not represent detailed images of the respective products.



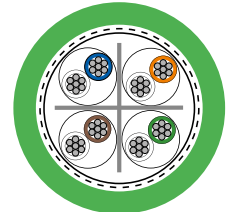
## ETHERLINE® FD CAT.6<sub>A</sub>

Ethernet cable Category 6<sub>A</sub>, Class EA for highly flexible use with FC inner sheath - verified up to 500 MHz



### Info

- CAT.6<sub>A</sub> for cable chain, qualified for 10Gbit/s
- For PROFINET applications with 4 pairs



2170485/2170484

### Benefits

- For use in cable chains and moving machinery parts in dry or damp rooms
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

### Application range

- For highly flexible applications (e.g. cable chains)
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PUR version is halogen-free according to VDE 0472-815
- Oil-resistant acc. IEC 60811-2-1
- CAT.6<sub>A</sub> for cable chain, qualified for 10Gbit/s
- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173
- Min. 2.5 million bending cycles in the cable chain

### Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- PUR cable is UL/CSA-certified (CMG)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: Based on Polyolefin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR/PVC
- Colour: green (based on RAL 6018)

### Technical data

|  |                                                                                                                                                                                                              |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                                              |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter<br>Flexing: 15 x outer diameter                                                                                                      |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-6                                                                                                                                            |
|  | <b>Temperature range</b><br>Cable with PUR jacket<br>Fixed installation: -40°C to +80°C<br>Flexing: -30°C to +70°C<br>Cable with PVC jacket<br>Fixed installation: -40°C to +80°C<br>Flexing: -10°C to +70°C |

| Article number                        | Article designation                | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------|------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PVC sheath</b>                     |                                    |                                       |                     |                   |                      |                |
| 2170485                               | ETHERLINE® FD CAT.6 <sub>A</sub>   | 4x2xAWG24/7                           | 1.3                 | 8.9               | 44                   | 88             |
| <b>PUR outer sheath, halogen-free</b> |                                    |                                       |                     |                   |                      |                |
| 2170484                               | ETHERLINE® FD P CAT.6 <sub>A</sub> | 4x2xAWG24/7                           | 1.3                 | 8.9               | 44                   | 90             |

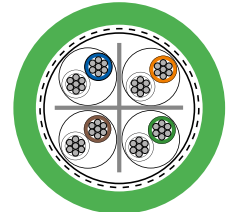
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet.



**Info**

- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- Cat.6<sub>A</sub> acc. to ISO/IEC 11801
- For PROFINET applications

LAPP KABEL STUTTGART ETHERLINE® TORSION P Cat.6<sub>A</sub> 4x2xAWG24/7



2170482/2170483

**Benefits**

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

**Application range**

- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Can be used for Industrial Ethernet in harsh industrial environments
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- PUR version is halogen-free according to VDE 0472-815
- Oil-resistant acc. IEC 60811-2-1
- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173

**Norm references / Approvals**

- Electrical requirements acc. to IEC 61156-6
- PUR cable is UL/CSA-certified (CMG)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR/PVC
- Colour: green (based on RAL 6018)

**Technical data**

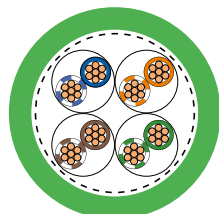
- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable
- Minimum bending radius**  
Fixed installation: 8 x cable diameter  
Flexing: 15 x outer diameter
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-6
- Temperature range**  
Cable with PUR jacket  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +70°C  
Cable with PVC jacket  
Fixed installation: -40°C to +80°C  
Flexing: -10°C to +70°C

| Article number                        | Article designation                    | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------|----------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PVC jacket</b>                     |                                        |                                       |                     |                   |                      |                |
| 2170482                               | ETHERLINE® TORSION Y CAT6 <sub>A</sub> | 4 x 2 x AWG24/7                       | 1.3                 | 8.9               | 44                   | 88             |
| <b>PUR outer sheath, halogen-free</b> |                                        |                                       |                     |                   |                      |                |
| 2170483                               | ETHERLINE® TORSION P CAT6 <sub>A</sub> | 4 x 2 x AWG24/7                       | 1.3                 | 8.9               | 44                   | 90             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet.

**ETHERLINE® Cat.7 FLEX**

Ethernet cable Category 7, Class F for flexible application

**2170934****Benefits**

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

**Application range**

- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for up to 10 Gbit/s is 60 m
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

**Norm references / Approvals**

- Halogen-free according to VDE 0472-815
- Electrical requirements acc. to IEC 61156-6
- AWM certification for USA and Canada
- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- Stranded conductor, bare, 7-wire
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)

**Info**

- Space-saving installation due to small cable diameters
- Cat.7 qualified for 10Gbit/s

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable

**Peak operating voltage**

(not for power applications) 125 V

**Minimum bending radius**

Fixed installation: 4 x outer diameter  
Flexing: 10 x outer diameter

**Test voltage**

Core/Core: 1000 V  
Core/screen: 1000 V

**Characteristic impedance**

nom. 100 Ω acc. to IEC 61156-6

**Temperature range**

Fixed installation: -50°C to +80°C  
Flexing: -40°C to +80°C

| Article number               | Article designation   | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|-----------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>ETHERLINE® Cat.7 FLEX</b> |                       |                                       |                     |                   |                      |                |
| 2170934                      | ETHERLINE® Cat.7 FLEX | 4x2xAWG26/7                           | 1                   | 6.4               | 28                   | 46             |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



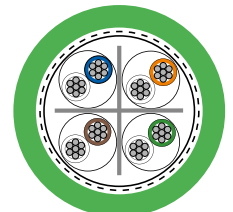
## ETHERLINE® TORSION Cat.7

Highly flexible application



### Info

- For Torsion applications ( $\pm 180^\circ$ )
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s



2170481

### Benefits

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- Halogen-free according to IEC 60754-1
- Oil-resistant acc. IEC 60811-2-1
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Cable suitable for high torsion stress. Tested with up to 5 million bending cycles and a right/left movement of  $180^\circ$  per metre

### Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- UL/CSA-certified (CMX)
- UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2

### Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)

### Technical data

|  |                                                                                                                                                   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                   |
|  | <b>Peak operating voltage</b><br>(not for power applications) 125 V                                                                               |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter<br>Flexing: 15 x outer diameter                                           |
|  | <b>Characteristic impedance</b><br>$100 \pm 5 \text{ Ohm } (> 1 \text{ MHz})$                                                                     |
|  | <b>Temperature range</b><br>Fixed installation: $-40^\circ\text{C}$ to $+80^\circ\text{C}$<br>Flexing: $-30^\circ\text{C}$ to $+70^\circ\text{C}$ |

| Article number           | Article designation      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|--------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® TORSION Cat.7 |                          |                                       |                     |                   |                      |                |
| 2170481                  | ETHERLINE® TORSION Cat.7 | 4x2xAWG24/7                           | 1.4                 | 9.4               | 44                   | 95             |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet.

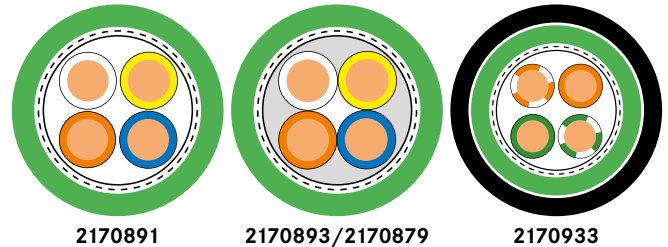


## ETHERLINE® PN Cat.5

Ethernet cable for category 5, class D for fixed installation

**Info**

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- For PROFINET applications type A



### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- ETHERLINE® TRAY ER PN Y FC: installation in open cable trays without any conduit

### Product features

- Fixed Installation
- Cat.5-Performance
- FC: "Fast Connect" cable design
- ETHERLINE® Y FC, ETHERLINE® YY, ETHERLINE® TRAY ER PN Y FC : flame-retardant according to CSA FT-4

### Norm references / Approvals

- Flame retardant acc. to IEC 60332-1-2
- ETHERLINE® Y FC with PLTC approbation and AWM Style 21694
- ETHERLINE® PN Cat.5e YY with UL CMG
- ETHERLINE® PN Cat.5e Y with UL CMX
- ETHERLINE® TRAY ER PN Y FC with PLTC ER approval

### Product Make-up

- Version for outdoor use: Colour black (similar to RAL 9005)
- Solid bare copper wire AWG22
- Core insulation: PE
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC
- Colour: green (based on RAL 6018)

### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000830  
ETIM 5.0/6.0 Class-Description: Data cable
- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
See data sheet
- Test voltage**  
See data sheet
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-5
- Temperature range**  
See data sheet

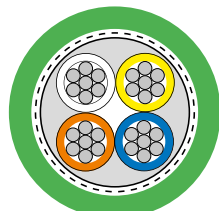
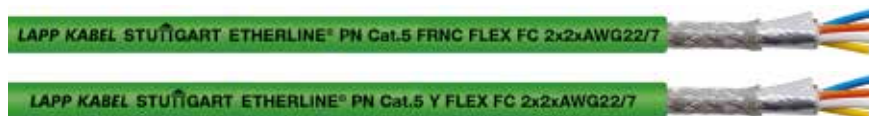
| Article number                                | Article designation        | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------------------------|----------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>conventional cable assembly</b>            |                            |                                       |                     |                   |                      |                |
| 2170891                                       | ETHERLINE® PN Cat.5e Y     | 2 x 2 x AWG22/1                       | 1.5                 | 6.3               | 30.4                 | 56             |
| <b>FC: "Fast Connect" cable design</b>        |                            |                                       |                     |                   |                      |                |
| 2170893                                       | ETHERLINE® Y FC Cat.5      | 2 x 2 x AWG22/1                       | 1.5                 | 6.5               | 30.4                 | 70             |
| 2170879                                       | ETHERLINE® TRAY ER PN Y FC | 2 x 2 x AWG22/1                       | 1.5                 | 6.5               | 30.4                 | 70             |
| <b>Suitable for outdoor use, UV-resistant</b> |                            |                                       |                     |                   |                      |                |
| 2170933                                       | ETHERLINE® PN Cat.5e YY    | 2 x 2 x AWG22/1                       | 1.5                 | 7.7               | 30.4                 | 62             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Cat.5 FLEX

Flexible use



2170886/2170890

### Benefits

- For PROFINET applications type B
- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Cat.5-Performance
- FRNC Version: Halogene free and flame retardant
- Fast Connect (FC) cable design

### Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.5 Y FLEX FC: ECOLAB®  
Industry standard for innovation and efficiency in the field of professional cleaning and disinfection

### Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: PE or PP
- Star quad
- Inner sheath made of PVC or FRNC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)
- UV resistance SUN RES acc. to UL 13 §29.1
- Oil resistance acc. to EN 50290-2-22

### Info

- CPR: Article number choice under [www.lapp.com](http://www.lapp.com)
- For PROFINET applications
- Flexible use

### Technical data

|  |                                                                                                                                                                                                               |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                                                                                               |
|  | <b>Peak operating voltage</b><br>(not for power applications) 125 V                                                                                                                                           |
|  | <b>Minimum bending radius</b><br>FRNC cable:<br>fixed: 4 x outer diameter<br>during installation: 8 x outer diameter<br>PVC cable:<br>Fixed installation: 3 x outer diameter<br>Flexing: 7 x outer diameter   |
|  | <b>Test voltage</b><br>Core/core: 2000 V<br>Core/screen: 2000 V                                                                                                                                               |
|  | <b>Characteristic impedance</b><br>100 Ω ± 15%                                                                                                                                                                |
|  | <b>Temperature range</b><br>cable halogenfree compound<br>Fixed installation: -25°C to +80°C<br>Moved: -25°C to +80°C<br>cable with PVC jacket<br>Fixed installation: -40°C to +80°C<br>Moved: -20°C to +60°C |

| Article number           | Article designation               | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|--------------------------|-----------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PVC jacket</b>        |                                   |                                       |                     |                   |                      |                |
| 2170886                  | ETHERLINE® PN Cat.5 Y FLEX FC     | 2 x 2 x AWG22/7                       | 1.5                 | 6.5               | 31.3                 | 67             |
| <b>FRNC outer sheath</b> |                                   |                                       |                     |                   |                      |                |
| 2170890                  | ETHERLINE® PN Cat.5e FRNC FLEX FC | 2 x 2 x AWG22/7                       | 1.5                 | 6.5               | 31.2                 | 65             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® MARINE FRNC FC Cat.5

Flexible application

### Info

- Certified for maritime applications
- Flexible use in conjunction with light mechanical stress



2170889

### Benefits

- Cable specially developed for maritime use with international DNV approval
- Flame-resistant, halogen free product that does not produce corrosive acids or hazardous gases in the event of a fire
- The "Fast Connect" design, including inner sheath and cross separator, significantly reduces the cable assembly time, by eliminating the time-consuming removal of the pair screening. It also provides undiminished screening of the core pairs
- Power over Ethernet-capable cable for simultaneous power and data supply of smaller network components with low energy requirements (e.g. IP cameras, wireless access points)
- High resistance to electromagnetic interference thanks to star quad stranding as well as double screening made of aluminium-laminated foil and high degree of copper screening braiding (SF/UTP)

- UL/CSA certification according to technical data enables the product to be used in the North American market
- Cat. 5 performance up to 100 Mbit/s
- For transmission of analogue and digital signals in the frequency range up to 100 MHz

### Application range

- For flexible use in the PROFINET network (type B)
- Also suitable for EtherCAT and EtherNet/IP applications
- Listed as a Power Limited Tray Cable (PLTC) according to UL, for open installation on cable trays
- Suitable for light mechanical stress.
- Can be used in dry, damp or wet environments
- Suitable for outdoor use, subject to the temperature range

### Technical data

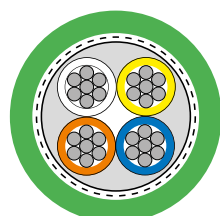
|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>(not for power applications) 125 V                                             |
|  | <b>Minimum bending radius</b><br>Fixed installation: 3 x outer diameter<br>Flexing: 7.5 x outer diameter        |
|  | <b>Test voltage</b><br>Core/core: 1000 V<br>Core/screen: 500 V                                                  |
|  | <b>Characteristic impedance</b><br>100 Ω ± 15%                                                                  |
|  | <b>Temperature range</b><br>Operating temperature: -25°C to +70°C<br>During installation: 0 °C to +50 °C        |

| Article number                  | Article designation             | Number of pairs and AWG per conductor | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------|---------------------------------|---------------------------------------|-------------------|----------------------|----------------|
| ETHERLINE® MARINE FRNC FC Cat.5 |                                 |                                       |                   |                      |                |
| 2170889                         | ETHERLINE® MARINE FRNC FC Cat.5 | 2 x 2 x 22/7AWG                       | 6.5               | 32                   | 68             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® PN Cat.5e FD**

Highly flexible application



2170894

**Info**

- Highly flexible application
- For PROFINET applications
- Cat.5e-Performance

**Benefits**

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Application range**

- Cable chain applications
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Optimized cable construction for cable chain use

**Norm references / Approvals**

- UL/CSA type CMX (UL 444)
- Flame-retardant according to UL VW1/CSA FT1
- Halogen-free according to VDE 0472-815

**Product Make-up**

- Fine-wire strand made of tinned-copper wires
- Star quad
- Colour-coded in accordance with PROFINET for Cat.5e applications
- Inner sheath: thermoplastic copolymer (FRNC)
- Overall screening with copper braid and plastic-laminated aluminium foil
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

**Technical data**

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>(not for power applications) 125 V                                             |
|  | <b>Minimum bending radius</b><br>8 x outer diameter                                                             |
|  | <b>Test voltage</b><br>Core/core: 700 V<br>Core/screen: 700 V                                                   |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-5                                               |
|  | <b>Temperature range</b><br>Fixed installation: -30°C to +70°C<br>Flexing: -20°C to +60°C                       |

| Article number          | Article designation      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|--------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® PN Cat.5e FD |                          |                                       |                     |                   |                      |                |
| 2170894                 | ETHERLINE® FD P FC Cat.5 | 2 x 2 x AWG22/7                       | 1.5                 | 6.5               | 31.3                 | 61             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

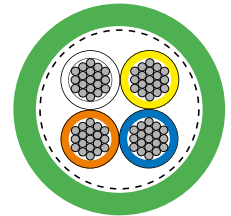


## ETHERLINE® TORSION Cat.5e

Ethernet cable category 5, class D for high flexible applications

**Info**

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- For PROFINET applications
- Cat.5e-Performance



2170888/2170884

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre
- Outer sheath with high abrasion-resistance
- Broad usages due to halogen-free materials
- PUR outer sheath is highly resistant to mineral oils and abrasion

### Norm references / Approvals

- UL AWM (Style 21161)
- Halogen-free according to VDE 0472-815
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- Screening: wrapped with braided tinned-copper wires
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>max. 100 V (not for power applications)                                        |
|  | <b>Minimum bending radius</b><br>5 x outer diameter                                                             |
|  | <b>Test voltage</b><br>700 V                                                                                    |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-6                                               |
|  | <b>Temperature range</b><br>-40°C to +80°C                                                                      |

| Article number                               | Article designation      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------------|--------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| ETHERLINE® TORSION Cat.5e<br>2170888/2170884 | ETHERLINE® TORSION Cat.5 | 2 x 2 x AWG22/19                      | 1.5                 | 6.5               | 31.3                 | 52             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® ROBOT PN Cat.5e

Ethernet cable category 5, class D for high flexible applications

**Info**

- Industrial Ethernet Cable, 2-pair, suitable for robot application
- For PROFINET applications
- Cat.5-Performance



2170941

### Benefits

- Variant "FC" with "Fast Connect" structure with inner sheath enables easy stripping and assembly of the cable
- Cable design in accordance with the PROFINET standard "Type R" for robotics applications
- Combines the essential cable chain, torsion and alternating bending properties in one cable
- Compatible with PROFINET-compliant components
- Special core stranding allows simultaneous bending and twisting (torsion angle up to  $\pm 180^\circ/\text{m}$ )
- Successfully tested for 5 million bending cycles in cable chains, 5 million torsion cycles and 1 million alternating bending cycles in the TicToc bending test
- High resistance to electromagnetic interference thanks to star quad stranding as well as double screening made of aluminium-laminated foil and high degree of copper screening braiding (SF/UTP)

- Low-capacitance core insulation for long transmission paths
- UL/CSA certification according to technical data enables the product to be used in the North American market

### Application range

- Especially for highly flexible, constantly flexing use under torsional stress in industrial robots and handling devices in the PROFINET network (type R)
- Also suitable for EtherCAT and EtherNet/IP applications
- Can be used in dry, damp and, especially, harsh and oily environments
- The PUR outer sheath withstands high mechanical loads
- The PUR outer sheath is resistant to mineral oil-based lubricants and highly resistant to chemicals

### Technical data

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>max. 100 V (not for power applications)                                        |
|  | <b>Minimum bending radius</b><br>5 x outer diameter                                                             |
|  | <b>Test voltage</b><br>2000 V                                                                                   |
|  | <b>Characteristic impedance</b><br>nom. 100 $\Omega$ acc. to IEC 61156-6                                        |
|  | <b>Temperature range</b><br>Fixed: -40 °C up to +80 °C<br>Continuous flexing: -20 °C up to +60 °C<br>UL: 80 °C  |

| Article number             | Article designation           | Number of pairs and AWG per conductor | Outer diameter [mm] | Core diameter n mm | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|-------------------------------|---------------------------------------|---------------------|--------------------|----------------------|----------------|
| ETHERLINE® ROBOT PN Cat. 5 |                               |                                       |                     |                    |                      |                |
| 2170941                    | ETHERLINE® ROBOT PN FC Cat.5e | 1 x 4 x 22/19AWG                      | 1.55                | 6.8                | 35.6                 | 66.4           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil  $\leq 30$  kg or  $\leq 250$  m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® FESTOON PN Cat.5e**

Highly flexible application

**2170936****Info**

- Fast and easy cable preparation by FC inner sheath
- CAT.5e-Performance

**Benefits**

- The “Fast Connect” design, including inner sheath and cross separator, significantly reduces the cable assembly time, by eliminating the time-consuming removal of the pair screening. It also provides undiminished screening of the core pairs
- UL/CSA certification according to technical data enables the product to be used in the North American market
- High resistance to electromagnetic interference thanks to star quad stranding as well as double screening made of aluminium-laminated foil and high degree of copper screening braiding (SF/UTP)
- Cat. 5e performance up to 100 Mbit/s
- For transmission of analogue and digital signals in the frequency range up to 100 MHz

**Application range**

- Specially designed for data and signal transmission in festoon systems (festoon suspension/cable trolley)
- For highly flexible, continuously flexing use in moving machine parts and in the cable chain in the PROFINET network (type C)
- Also suitable for EtherCAT and EtherNet/IP applications

**Technical data**

- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Moved: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Test voltage**  
Core/core: 2000 V  
Core/screen: 2000 V
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-6
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -10°C to +70°C

| Article number                      | Article designation          | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm |
|-------------------------------------|------------------------------|---------------------------------------|---------------------|-------------------|
| <b>ETHERLINE® FESTOON PN Cat.5e</b> |                              |                                       |                     |                   |
| 2170936                             | ETHERLINE® FESTOON PN Cat.5e | 2 x 2 x AWG22/7                       | 1.55                | 6.5               |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

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Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Cat.6<sub>A</sub> FC

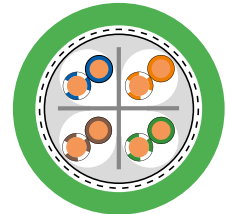
Ethernet cable Category 6<sub>A</sub>, Class E<sub>A</sub> for fixed installation with FC inner sheath - verified up to 500 MHz



### Info

- Fast and easy cable preparation by FC inner sheath
- For PROFINET applications with 4 pairs
- CAT.6<sub>A</sub> qualified for 10Gbit/s

LAPP KABEL STUTTGART ETHERLINE® PN Cat.6<sub>A</sub> FC 4x2xAWG23/1



2170583/2170584/2170585

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- The oil-resistant PVC sheath enables usage in industrial environments
- Robust, halogen-free FRNC outer sheath
- PUR outer sheath is highly resistant to mineral oils and abrasion
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- PVC version with PLTC approval and c(UL) us CMX (75 °C)
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- Solid bare copper wire AWG23
- Core insulation made of polyethylene (PE)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- Inner sheath: halogen-free compound
- Colour: green (based on RAL 6018)

### Technical data

- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Fixed installation: 8 x outer diameter
- Test voltage**  
see data sheet
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-5
- Temperature range**  
See data sheet

| Article number                        | Article designation                      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------|------------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PVC jacket</b>                     |                                          |                                       |                     |                   |                      |                |
| 2170583                               | ETHERLINE® PN CAT.6 <sub>A</sub> Y FC    | 4x2xAWG23/1                           | 1.5                 | 8.7               | 53                   | 98             |
| <b>Halogen-free jacket</b>            |                                          |                                       |                     |                   |                      |                |
| 2170584                               | ETHERLINE® PN CAT.6 <sub>A</sub> FRNC FC | 4x2xAWG23/1                           | 1.5                 | 8.7               | 53                   | 91             |
| <b>PUR outer sheath, halogen-free</b> |                                          |                                       |                     |                   |                      |                |
| 2170585                               | ETHERLINE® PN CAT.6 <sub>A</sub> P FC    | 4x2xAWG23/1                           | 1.5                 | 8.7               | 53                   | 99             |

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

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## ETHERLINE® PN Cat.6<sub>A</sub> FLEX FC

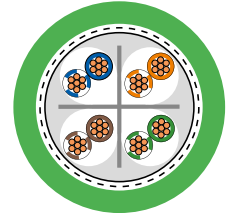
Ethernet cable Category 6<sub>A</sub>, Class E<sub>A</sub> for flexible use with FC inner sheath - verified up to 500 MHz



### Info

- For PROFINET applications with 4 pairs
- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Fast and easy cable preparation by FC inner sheath

LAPP KABEL STUTTGART ETHERLINE® PN Cat.6<sub>A</sub> FLEX FC 4x2xAWG23/7



2170586/2170587

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

### Product features

- CAT.6<sub>A</sub> for flexible application, qualified for 10Gbit/s
- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- The oil-resistant PVC sheath enables usage in industrial environments
- Robust, halogen-free FRNC outer sheath

### Norm references / Approvals

- UL c(UL)us CMX (75 °C)
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation: PE
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- Inner sheath: halogen-free compound
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

### Technical data

- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Flexing: 8 x outer diameter  
Fixed installation: 4 x outer diameter
- Test voltage**  
Core/Core: 1500 V AC  
Core/Screen: 1000 V AC
- Characteristic impedance**  
nom. 100 Ω acc. to IEC 61156-5
- Temperature range**  
PVC: Fixed: -30 °C up to +80 °C  
Moving: -25 °C up to +70 °C  
FRNC: Fixed: -25 °C up to +80 °C  
Moved: -25 up to +80 °C

| Article number             | Article designation                           | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) |
|----------------------------|-----------------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|
| <b>PVC jacket</b>          |                                               |                                       |                     |                   |                      |
| 2170586                    | ETHERLINE® PN CAT.6 <sub>A</sub> Y FLEX FC    | 4x2xAWG23/7                           | 1.5                 | 8.9               | 57                   |
| <b>Halogen-free jacket</b> |                                               |                                       |                     |                   |                      |
| 2170587                    | ETHERLINE® PN CAT.6 <sub>A</sub> FRNC FLEX FC | 4x2xAWG23/7                           | 1.5                 | 8.9               | 57                   |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

PROFINET, Cat.6<sub>A</sub> • Type B - Cables for flexible applications**ETHERLINE® PN Cat.6<sub>A</sub> FLEX**Ethernet cable Category 6<sub>A</sub>, Class E<sub>A</sub> for flexible use - verified up to 500 MHz**Info**

- For PROFINET applications with 4 pairs
- CAT.6<sub>A</sub> qualified for 10Gbit/s

**2170930****Benefits**

- Ideal protection against electromagnetic interference due to pair screening with aluminium compound foil and copper screening braiding as overall screening (S/FTP)
- UL certification according to technical data enables the product to be used on the North American market
- Fast information exchange through Ethernet technology
- Cat. 6<sub>A</sub> performance up to 10 Gbit/s
- For transmission of analogue and digital signals in the frequency range up to 500 MHz
- Available with robust PVC or halogen free FRNC outer sheath

**Application range**

- For flexible use in the PROFINET network (type B), due to stranded conductor design
- Suitable for all LAN networks and Ethernet applications up to 10GBase-T
- Can be used in dry, damp or wet environments

- Suitable for many applications, depending on the sheath material

**Norm references / Approvals**

- c(UL)us Listing Type CMG 75 °C acc. to UL 444 ECOLAB certified
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- 7-wire bare stranded copper conductor
- Core insulation: PE
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)
- UL certification according to technical data enables the product to be used on the North American market

**Technical data****Peak operating voltage**

(not for power applications) 100 V

**Minimum bending radius**

Fixed installation: 10 x outer diameter

**Test voltage**core/core: 700 V  
core/screen: 700 V**Characteristic impedance**

nom. 100 Ω acc. to IEC 61156-5

**Temperature range**

See data sheet

| Article number    | Article designation                                 | Number of pairs and AWG per conductor | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-------------------|-----------------------------------------------------|---------------------------------------|-------------------|----------------------|----------------|
| <b>PVC jacket</b> |                                                     |                                       |                   |                      |                |
| 2170930           | ETHERLINE® PN Cat.6 <sub>A</sub> Y FLEX 4x2x23/7    | 4 X 2 X 23/ 7AWG                      | 8.8               | 48                   | 92             |
| 2170931           | ETHERLINE® PN Cat.6 <sub>A</sub> FRNC FLEX 4x2x23/7 | 4 X 2 X 23/ 7AWG                      | 8.8               | 48                   | 87             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® PN Cat.6<sub>A</sub> FD FC**

Highly flexible with Fast-Connect connection for permanently moving use in cable chain

**Info**

- Cat.6<sub>A</sub> qualified for 10Gbit/s

**2170590/2170591****Benefits**

- The "Fast Connect" design, including inner sheath and cross separator, significantly reduces the cable assembly time, by eliminating the time-consuming removal of the pair screening. It also provides undiminished screening of the core pairs
- Additional protection against electromagnetic interference thanks to double overall screening made of aluminium-laminated foil and copper braided screening with a high degree of coverage (SF/UTP)
- Power over Ethernet-capable cable for simultaneous power and data supply of smaller network components with low energy requirements (e.g. IP cameras, wireless access points)
- UL/CSA certification according to technical data enables the product to be used in the North American market
- Fast information exchange through Ethernet technology

- Cat. 6<sub>A</sub> performance up to 10 Gbit/s
- For transmission of analogue and digital signals in the frequency range up to 500 MHz
- Available with robust PVC or abrasion-resistant PU outer sheath
- Successfully tested for over 1 million bending cycles in cable chains

**Application range**

- For highly flexible, continuously flexing use in moving machine parts and cable chains in the PROFINET network (type C), due to the extra-fine stranded conductor design
- Also suitable for EtherCAT and EtherNet/IP applications
- Can be used in dry, damp or wet environments
- Suitable for many applications, depending on the sheath material

**Technical data**

|  |                                                                                                                 |
|--|-----------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable |
|  | <b>Peak operating voltage</b><br>max. 125 V (not for power applications)                                        |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x cable diameter<br>Flexing: 15 x outer diameter         |
|  | <b>Test voltage</b><br>2kV                                                                                      |
|  | <b>Characteristic impedance</b><br>nom. 100 Ω acc. to IEC 61156-6                                               |
|  | <b>Temperature range</b><br>Fixed: -40°C to +80°C<br>Dynamic cont flex: -30°C to +50°C                          |

| Article number | Article designation                      | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------|------------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>PUR</b>     |                                          |                                       |                     |                   |                      |                |
| 2170590        | ETHERLINE® PN Cat.6 <sub>A</sub> P FD FC | 4 x 2 x AWG24/7                       | 1.05                | 8.9               | 52                   | 106            |
| <b>PVC</b>     |                                          |                                       |                     |                   |                      |                |
| 2170591        | ETHERLINE® PN Cat.6 <sub>A</sub> Y FD FC | 4 x 2 x AWG24/7                       | 1.05                | 8.9               | 52                   | 106            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



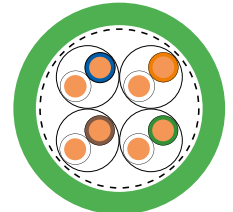
## ETHERLINE® PN Cat.7

Ethernet cable Category 7, Class F for fixed installation - verified up to 600 MHz



### Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s



2170605/2170606/2170607

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free FRNC outer sheath
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- Flame retardant acc. to IEC 60332-1-2
- Oil-resistant acc. IEC 60811-2-1
- PVC version (UL) CL3 ST1 SUN RES FT4 acc. to. UL 13 c(UL)us CMG 75°C acc. to. UL 444 and CSA C22.2 No. 214

### Product Make-up

- Solid bare copper wire AWG23
- Core insulation: foamed polyethylen (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

### Technical data

- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Fixed installation: 8 x outer diameter
- Test voltage**  
Core/core: 1500 V rms  
Core/screen: 1500 V eff.
- Characteristic impedance**  
100 ± 5 Ω (>1MHz)
- Temperature range**  
PVC/FRNC: -30 °C up to +80 °C  
PUR: -40°C to +80°C

| Article number             | Article designation        | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|----------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>ETHERLINE® PN Cat.7</b> |                            |                                       |                     |                   |                      |                |
| 2170605                    | ETHERLINE® PN CAT.7 Y A    | 4 x 2 x AWG23/1                       | 1.4                 | 8.1               | 40                   | 80             |
| 2170606                    | ETHERLINE® PN CAT.7 FRNC A | 4 x 2 x AWG23/1                       | 1.4                 | 8.1               | 40                   | 80             |
| 2170607                    | ETHERLINE® PN CAT.7 P A    | 4 x 2 x AWG23/1                       | 1.4                 | 8.1               | 40                   | 80             |

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

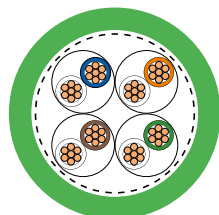
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Cat.7 FLEX

Ethernet cable Category 7, Class F for flexible application - verified up to 600 MHz



2170609/2170608

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- FRNC Version: Halogene free and flame retardant
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- Flame retardant acc. to IEC 60332-1-2
- PVC version with UL CL3 ST-1 approval and CMG listing

### Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation: foamed polyethylen (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)



### Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s

### Technical data



**Peak operating voltage**  
(not for power applications) 125 V



**Minimum bending radius**  
Fixed installation: 4 x outer diameter  
Flexing: 8 x outer diameter



**Test voltage**  
Core/core: 1500 V rms  
Core/screen: 1500 V eff.



**Characteristic impedance**  
100  $\Omega \pm 5 \text{ Ohm}$  (> 1 MHz)



**Temperature range**  
Fixed installation: -30°C to +80°C  
Occasional flexing: -5°C to +50°C

| Article number                  | Article designation             | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) |
|---------------------------------|---------------------------------|---------------------------------------|---------------------|-------------------|----------------------|
| <b>ETHERLINE® PN Cat.7 FLEX</b> |                                 |                                       |                     |                   |                      |
| 2170609                         | ETHERLINE® PN CAT.7 FRNC FLEX A | 4x2xAWG23/7                           | 1.5                 | 8.7               | 45                   |
| 2170608                         | ETHERLINE® PN CAT.7 Y FLEX A    | 4x2xAWG23/7                           | 1.5                 | 8.7               | 45                   |

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Cat.7 FD

Highly flexible application



2170487



### Info

- For PROFINET applications with 4 pairs
- For Cable chain Applications
- Cat.7 qualified for 10Gbit/s

### Benefits

- Cat. 7 performance up to 10 Gbit/s.
- For transmission of analogue and digital signals in the frequency range up to 600 MHz
- Successfully tested for over 3.0 million bending cycles in cable chains
- UL/CSA certification according to technical data enables the product to be used in the North American market
- Power over Ethernet-capable cable for simultaneous power and data supply of smaller network components (e.g. IP cameras, wireless access points)
- Ideal protection against electromagnetic interference through pair shielding with aluminum composite foil and double overall shielding made of aluminum-clad foil and copper shielding braid with high coverage (SF/FTP)
- Fast information exchange through Ethernet technology

### Application range

- For highly flexible, continuously flexing use in moving machine parts and in the cable chain in the PROFINET network (type C)
- Also suitable for EtherCAT and EtherNet/IP applications
- Can be used in dry and damp environments

### Technical data

|  |                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000830<br>ETIM 5.0/6.0 Class-Description: Data cable                     |
|  | <b>Peak operating voltage</b><br>(not for power applications) 100 V                                                                 |
|  | <b>Minimum bending radius</b><br>Fixed installation: 8 x outer diameter<br>Flexing: 15 x outer diameter                             |
|  | <b>Characteristic impedance</b><br>100 ± 5 Ω (>1MHz)                                                                                |
|  | <b>Temperature range</b><br>Fixed installation: -40°C to +80°C<br>Flexing: -10°C to +70°C<br>c(UL)us CMX: 75 °C<br>cRUus AWM: 80 °C |

| Article number                | Article designation                  | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-------------------------------|--------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>ETHERLINE® PN Cat.7 FD</b> |                                      |                                       |                     |                   |                      |                |
| 2170487                       | ETHERLINE® PN Cat.7 FD P 4x2x24/7AWG | 4 x 2 x AWG24/7                       | 1.4                 | 9.4               | 44                   | 98             |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet.



## ETHERLINE® T1 FLEX

Single Pair Ethernet cable; Flexible; Ethernet; PROFINET® application: Type B

**Info**

- Single Pair Ethernet
- 1000BASE-T1 (IEEE 802.3bp) and other
- Flexible use



2170925

### Benefits

- Fast information exchange thanks to future-proof Single Pair Ethernet (SPE) technology for a consistent and uniform network infrastructure right up to the field level
- Ethernet networking of the field devices enables real-time data collection and analysis as well as providing a wealth of additional information (big data) for process optimisation (e.g. predictive maintenance)
- Complete interoperability of field devices and systems from various manufacturers thanks to seamless connection to the Industrial Ethernet network
- For the transmission of analogue and digital signals in the frequency range up to 600 MHz and up to 40 m distance
- Single-paired cable design saves weight and space. Small bending radii and outer diameters are essential for connection to the field level
- Power over Data Line (PoDL)-capable cable according to IEEE 802.3bu for simultaneous power and data supply of SPE terminal devices with low energy requirements (up to 50 W)

- Ideal protection against electromagnetic interference thanks to double screening made of aluminium-laminated foil and copper screening braiding with high degree of coverage (SF/UTP)
- UL certification according to technical data enables the product to be used on the North American market

### Application range

- For structured building cabling according to DIN EN 50173 and ISO/IEC 11801
- For Single Pair Ethernet (SPE) applications 100Base-T1 according to IEEE 802.3bw and 1000Base-T1 according to IEEE 802.3bp
- Also available as a Power Limited Tray Cable (PLTC) variant listed according to UL for open installation on cable trays
- For fixed installation and occasional flexing
- Can be used in dry and damp rooms
- Suitable for medium mechanical stress
- The PVC outer sheath is resistant to acids and alkalis and has limited oil resistance

### Technical data

- Peak operating voltage**  
 125V (not intended to be used in sources, such as power grids) conjunction with low impedance
- Minimum bending radius**  
 Fixed installation: 4 × outer diameter  
 Occasional flexing: 8 × outer diameter
- Test voltage**  
 Core/core: 2000 V  
 Core/screen: 2000 V
- Characteristic impedance**  
 100 ± 5 Ω (>1MHz)
- Temperature range**  
 Fixed installation: -40 °C up to +80 °C  
 Occasional flexing: -10 °C up to +70 °C  
 UL: 75 °C acc. to UL 13 and UL 444  
 80 °C acc. to UL 758

| Article number             | Article designation                 | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|----------------------------|-------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>ETHERLINE® PN Cat.7</b> |                                     |                                       |                     |                   |                      |                |
| 2170922                    | ETHERLINE® T1 PN FLEX Y 1x2x22/7AWG | 1 x 2 x AWG22/7                       | 1.55                | 5.5               | 20                   | 43.3           |
| 2170924                    | ETHERLINE® T1 FLEX 1x2x22/7AWG      | 1 x 2 x AWG22/7                       | 1.6                 | 5.8               | 20                   | 42             |
| 2170925                    | ETHERLINE® T1 FLEX Y 1x2x26/7AWG    | 1 x 2 x AWG22/7                       | 1.05                | 4.6               | 11.9                 | 30.1           |

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
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**ETHERLINE® T1 FD**

Single Pair Ethernet cable; Cable chain, Flexible; SF/UTP; PUR; Halogenfree

**2170920****Benefits**

- Fast information exchange thanks to future-proof Single Pair Ethernet (SPE) technology for a consistent and uniform network infrastructure right up to the field level
- Ethernet networking of the field devices enables real-time data collection and analysis as well as providing a wealth of additional information (big data) for process optimisation (e.g. predictive maintenance)
- Complete interoperability of field devices and systems from various manufacturers thanks to seamless connection to the Industrial Ethernet network
- Successfully tested for over 3.0 million bending cycles in cable chains
- For the transmission of analogue and digital signals in the frequency range up to 600 MHz and up to 40 m distance
- Single-paired cable design saves weight and space. Small bending radii and outer diameters are essential for connection to the field level
- Power over Data Line (PoDL)-capable cable according to IEEE 802.3bu for simultaneous power and data supply of SPE terminal devices with low energy requirements (up to 50 W)

- Ideal protection against electromagnetic interference thanks to double screening made of aluminium-laminated foil and copper screening braiding with high degree of coverage (SF/UTP)
- UL certification according to technical data enables the product to be used on the North American market

**Application range**

- For structured building cabling according to DIN EN 50173 and ISO/IEC 11801
- For Single Pair Ethernet (SPE) applications 100Base-T1 according to IEEE 802.3bw and 1000Base-T1 according to IEEE 802.3bp
- Cable design allows highly flexible, continuously flexing use in moving machine parts and in the cable chain
- Can be used in dry, damp and, especially, harsh and oily environments
- The PUR outer sheath withstands high mechanical loads
- The PUR outer sheath is resistant to mineral oil-based lubricants and highly resistant to chemicals

**Info**

- Single Pair Ethernet
- 100BASE-T1 (IEEE 802.3bw) and other
- Highly flexible

**Technical data****Peak operating voltage**

125V (not intended to be used in sources, such as power grids) conjunction with low impedance

**Minimum bending radius**

Fixed installation: 4 x outer diameter  
Flexing: 8 x outer diameter

**Test voltage**

Core/core: 2000 V  
Core/screen: 2000 V

**Characteristic impedance**

100 ± 5 Ω (>1MHz)

**Temperature range**

Fixed installation: -40 °C to +80 °C  
Continuous flexing: -20 °C up to +60 °C  
UL: 80 °C acc. to UL 758

| Article number          | Article designation             | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) | Weight (kg/km) |
|-------------------------|---------------------------------|---------------------------------------|---------------------|-------------------|----------------------|----------------|
| <b>ETHERLINE® T1 FD</b> |                                 |                                       |                     |                   |                      |                |
| 2170920                 | ETHERLINE® T1 FD P 1x2x26/19AWG | 1 x 2 x AWG26/19                      | 1.05                | 4.6               | 12.3                 | 27.4           |

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® T1L - T1L FLEX

Shielded Ethernet APL data cable for the process industry, with Just “Fast Connected” design and UL approval



### Info

- Industrial Ethernet cable
- For potentially explosive areas
- 10Base-T1-L according to IEEE 802.3cg



2170919

### Benefits

- Ethernet Advanced Physical Layer (Ethernet-APL) enables data transmission via Ethernet up to the field level in potentially explosive environments in the process industry
- Fast and efficient transmission of large data volumes via Ethernet at 10 Mbit/s for bridging long distances (trunk length up to 1000 m or spurs up to 200 m)
- Complete interoperability of field devices and systems from various manufacturers thanks to seamless connection to the Industrial Ethernet network
- Ethernet networking of the field devices enables real-time data collection and analysis as well as providing a wealth of additional information (big data) for process optimisation (e.g. predictive maintenance)
- Ethernet APL supports the “intrinsically safe” ignition protection type and is based on the 2-WISE (2-Wire Intrinsically Safe Ethernet) concept according to IEC TS 60079-47. This achieves an explosion-protection technology with a high level of protection
- Power over Data Line (PoDL)-capable cable according to IEEE 802.3bu for simultaneous power and data supply of SPE terminal devices with low energy requirements (up to 50 W)

- The “Fast Connected” structure with inner sheath enables easy stripping and assembly of the cable
- Ideal protection against electromagnetic interference thanks to double screening made of aluminium-laminated foil and copper screening braiding with high degree of coverage (SF/UTP) UL/CSA certification according to technical data enables the product to be used in the North American market

### Application range

- For structured building cabling according to DIN EN 50173 and ISO/IEC 11801
- Especially suitable for long transmission distances of up to 1000 m according to IEC 61156-13
- For Single Pair Ethernet (SPE) applications 10Base-T1L according to IEEE 802.3cg
- Especially for challenging applications in the process industry
- Listed as a Power Limited Tray Cable (PLTC) according to UL, for open installation on cable trays
- For fixed installation
- Can be used in dry and damp environments
- Suitable for medium mechanical stress
- The PVC outer sheath is resistant to acids and alkalis and has limited oil resistance

### Technical data

- Peak operating voltage**  
125V (not intended to be used in conjunction with low impedance sources, such as power grids)
- Minimum bending radius**  
Fixed installation: 4 × outer diameter  
Occasional flexing: 8 × outer diameter
- Test voltage**  
Core/core: 2000 V  
Core/screen: 2000 V
- Characteristic impedance**  
100 ± 5 Ω (>1MHz)
- Temperature range**  
Fixed installation: -40°C up to +80°C  
Occasional flexing: -10°C up to +70°C  
UL: 80°C acc. to UL 758

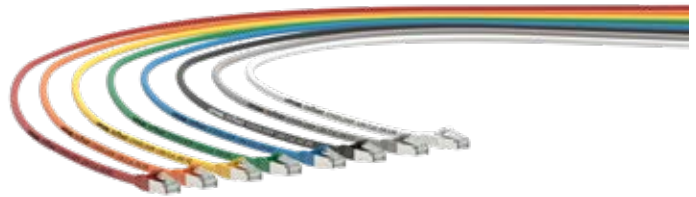
| Article number             | Article designation                  | Number of pairs and AWG per conductor | Core diameter in mm | Outer diameter mm | Copper index (kg/km) |
|----------------------------|--------------------------------------|---------------------------------------|---------------------|-------------------|----------------------|
| <b>ETHERLINE® T1L</b>      |                                      |                                       |                     |                   |                      |
| 2170918                    | ETHERLINE® T1L FC Y 1x2x18/1AWG      | 1 x 2 x 18/1AWG                       | 2.55                | 8                 | 0.001                |
| <b>ETHERLINE® T1L FLEX</b> |                                      |                                       |                     |                   |                      |
| 2170919                    | ETHERLINE® T1L FLEX FC Y 1x2x18/7AWG | 1 x 2 x 18/7AWG                       | 2.55                | 8                 | 0.001                |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lapp.com](http://www.lapp.com)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## ETHERLINE<sup>®</sup> LAN Cat.6<sub>A</sub> Patchcords

Pre-assembled Ethernet cable



### Info

- Suitable for Ethernet applications up to 10GBase-T

### Benefits

- Rapid information exchange at up to 10 Gbit/s over 60 m thanks to Cat.6<sub>A</sub> Ethernet
- Cable assembled on both sides saves time and eliminates the potential for errors during on-site assembly
- The narrow RJ45 connector allows use in devices with a very high port density
- Ideal protection against electromagnetic interference due to pair screening with aluminium compound foil and copper screening braiding as overall screening (S / FTP)
- UL/CSA certification according to technical data enables the product to be used in the North American market
- With halogen free LSZH outer sheath to meet special fire protection requirements

- Versatile properties allow universal use, reduce the variety of parts and thus result in savings in logistics
- Available in different colours

### Application range

- For structured building cabling according to DIN EN 50173 and ISO/IEC 11801
- Suitable for workplace cabling
- Can also be used in industrial control cabinets, taking electromagnetic stress into account
- Suitable for Ethernet applications up to 10GBase-T

### Technical data

-  **Minimum bending radius**  
5 x outer diameter
-  **Protection rating**  
RJ45: IP 20
-  **Temperature range**  
-20°C to +40°C

| Article number | Article designation                                   | Connector 1 and 2   | Length m | Cable sheath colour |
|----------------|-------------------------------------------------------|---------------------|----------|---------------------|
| 24441316       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,25 BK | RJ 45 Plug Straight | 0.25     | black               |
| 24441317       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,5 BK  | RJ 45 Plug Straight | 0.5      | black               |
| 24441318       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,0 BK  | RJ 45 Plug Straight | 1        | black               |
| 24441319       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,5 BK  | RJ 45 Plug Straight | 1.5      | black               |
| 24441320       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 2,0 BK  | RJ 45 Plug Straight | 2        | black               |
| 24441321       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 3,0 BK  | RJ 45 Plug Straight | 3        | black               |
| 24441322       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 5,0 BK  | RJ 45 Plug Straight | 5        | black               |
| 24441323       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 7,5 BK  | RJ 45 Plug Straight | 7.5      | black               |
| 24441324       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 10,0 BK | RJ 45 Plug Straight | 10       | black               |
| 24441325       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 15,0 BK | RJ 45 Plug Straight | 15       | black               |
| 24441326       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 20,0 BK | RJ 45 Plug Straight | 20       | black               |
| 24441327       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 25,0 BK | RJ 45 Plug Straight | 25       | black               |
| 24441328       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 30,0 BK | RJ 45 Plug Straight | 30       | black               |
| 24441329       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 40,0 BK | RJ 45 Plug Straight | 40       | black               |
| 24441330       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 50,0 BK | RJ 45 Plug Straight | 50       | black               |
| 24441331       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,25 BU | RJ 45 Plug Straight | 0.25     | blue                |
| 24441332       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,5 BU  | RJ 45 Plug Straight | 0.5      | blue                |
| 24441333       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,0 BU  | RJ 45 Plug Straight | 1        | blue                |
| 24441334       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,5 BU  | RJ 45 Plug Straight | 1.5      | blue                |
| 24441335       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 2,0 BU  | RJ 45 Plug Straight | 2        | blue                |
| 24441336       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 3,0 BU  | RJ 45 Plug Straight | 3        | blue                |
| 24441337       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 5,0 BU  | RJ 45 Plug Straight | 5        | blue                |
| 24441338       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 7,5 BU  | RJ 45 Plug Straight | 7.5      | blue                |
| 24441339       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 10,0 BU | RJ 45 Plug Straight | 10       | blue                |
| 24441340       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 15,0 BU | RJ 45 Plug Straight | 15       | blue                |
| 24441341       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 20,0 BU | RJ 45 Plug Straight | 20       | blue                |
| 24441342       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 25,0 BU | RJ 45 Plug Straight | 25       | blue                |
| 24441343       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 30,0 BU | RJ 45 Plug Straight | 30       | blue                |
| 24441344       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 40,0 BU | RJ 45 Plug Straight | 40       | blue                |
| 24441345       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 50,0 BU | RJ 45 Plug Straight | 50       | blue                |
| 24441346       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,25 GN | RJ 45 Plug Straight | 0.25     | green               |
| 24441347       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 0,5 GN  | RJ 45 Plug Straight | 0.5      | green               |
| 24441348       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,0 GN  | RJ 45 Plug Straight | 1        | green               |
| 24441349       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 1,5 GN  | RJ 45 Plug Straight | 1.5      | green               |
| 24441350       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 2,0 GN  | RJ 45 Plug Straight | 2        | green               |
| 24441351       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 3,0 GN  | RJ 45 Plug Straight | 3        | green               |
| 24441352       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 5,0 GN  | RJ 45 Plug Straight | 5        | green               |
| 24441353       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 7,5 GN  | RJ 45 Plug Straight | 7.5      | green               |
| 24441354       | ETHERLINE <sup>®</sup> LAN Cat.6 <sub>A</sub> 10,0 GN | RJ 45 Plug Straight | 10       | green               |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

| Article number | Article designation                       | Connector 1 and 2   | Length m | Cable sheath colour |
|----------------|-------------------------------------------|---------------------|----------|---------------------|
| 24441355       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 GN | RJ 45 Plug Straight | 15       | green               |
| 24441356       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 GN | RJ 45 Plug Straight | 20       | green               |
| 24441357       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 GN | RJ 45 Plug Straight | 25       | green               |
| 24441358       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 GN | RJ 45 Plug Straight | 30       | green               |
| 24441359       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 GN | RJ 45 Plug Straight | 40       | green               |
| 24441360       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 GN | RJ 45 Plug Straight | 50       | green               |
| 24441361       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,25 GY | RJ 45 Plug Straight | 0.25     | grey                |
| 24441362       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,5 GY  | RJ 45 Plug Straight | 0.5      | grey                |
| 24441363       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,0 GY  | RJ 45 Plug Straight | 1        | grey                |
| 24441364       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,5 GY  | RJ 45 Plug Straight | 1.5      | grey                |
| 24441365       | ETHERLINE® LAN Cat.6 <sub>A</sub> 2,0 GY  | RJ 45 Plug Straight | 2        | grey                |
| 24441366       | ETHERLINE® LAN Cat.6 <sub>A</sub> 3,0 GY  | RJ 45 Plug Straight | 3        | grey                |
| 24441367       | ETHERLINE® LAN Cat.6 <sub>A</sub> 5,0 GY  | RJ 45 Plug Straight | 5        | grey                |
| 24441368       | ETHERLINE® LAN Cat.6 <sub>A</sub> 7,5 GY  | RJ 45 Plug Straight | 7.5      | grey                |
| 24441369       | ETHERLINE® LAN Cat.6 <sub>A</sub> 10,0 GY | RJ 45 Plug Straight | 10       | grey                |
| 24441370       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 GY | RJ 45 Plug Straight | 15       | grey                |
| 24441371       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 GY | RJ 45 Plug Straight | 20       | grey                |
| 24441372       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 GY | RJ 45 Plug Straight | 25       | grey                |
| 24441373       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 GY | RJ 45 Plug Straight | 30       | grey                |
| 24441374       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 GY | RJ 45 Plug Straight | 40       | grey                |
| 24441375       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 GY | RJ 45 Plug Straight | 50       | grey                |
| 24441376       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,25 OR | RJ 45 Plug Straight | 0.25     | orange              |
| 24441377       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,5 OR  | RJ 45 Plug Straight | 0.5      | orange              |
| 24441378       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,0 OR  | RJ 45 Plug Straight | 1        | orange              |
| 24441379       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,5 OR  | RJ 45 Plug Straight | 1.5      | orange              |
| 24441380       | ETHERLINE® LAN Cat.6 <sub>A</sub> 2,0 OR  | RJ 45 Plug Straight | 2        | orange              |
| 24441381       | ETHERLINE® LAN Cat.6 <sub>A</sub> 3,0 OR  | RJ 45 Plug Straight | 3        | orange              |
| 24441382       | ETHERLINE® LAN Cat.6 <sub>A</sub> 5,0 OR  | RJ 45 Plug Straight | 5        | orange              |
| 24441383       | ETHERLINE® LAN Cat.6 <sub>A</sub> 7,5 OR  | RJ 45 Plug Straight | 7.5      | orange              |
| 24441384       | ETHERLINE® LAN Cat.6 <sub>A</sub> 10,0 OR | RJ 45 Plug Straight | 10       | orange              |
| 24441385       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 OR | RJ 45 Plug Straight | 15       | orange              |
| 24441386       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 OR | RJ 45 Plug Straight | 20       | orange              |
| 24441387       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 OR | RJ 45 Plug Straight | 25       | orange              |
| 24441388       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 OR | RJ 45 Plug Straight | 30       | orange              |
| 24441389       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 OR | RJ 45 Plug Straight | 40       | orange              |
| 24441390       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 OR | RJ 45 Plug Straight | 50       | orange              |
| 24441391       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,25 RD | RJ 45 Plug Straight | 0.25     | red                 |
| 24441392       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,5 RD  | RJ 45 Plug Straight | 0.5      | red                 |
| 24441393       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,0 RD  | RJ 45 Plug Straight | 1        | red                 |
| 24441394       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,5 RD  | RJ 45 Plug Straight | 1.5      | red                 |
| 24441395       | ETHERLINE® LAN Cat.6 <sub>A</sub> 2,0 RD  | RJ 45 Plug Straight | 2        | red                 |
| 24441396       | ETHERLINE® LAN Cat.6 <sub>A</sub> 3,0 RD  | RJ 45 Plug Straight | 3        | red                 |
| 24441397       | ETHERLINE® LAN Cat.6 <sub>A</sub> 5,0 RD  | RJ 45 Plug Straight | 5        | red                 |
| 24441398       | ETHERLINE® LAN Cat.6 <sub>A</sub> 7,5 RD  | RJ 45 Plug Straight | 7.5      | red                 |
| 24441399       | ETHERLINE® LAN Cat.6 <sub>A</sub> 10,0 RD | RJ 45 Plug Straight | 10       | red                 |
| 24441400       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 RD | RJ 45 Plug Straight | 15       | red                 |
| 24441401       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 RD | RJ 45 Plug Straight | 20       | red                 |
| 24441402       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 RD | RJ 45 Plug Straight | 25       | red                 |
| 24441403       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 RD | RJ 45 Plug Straight | 30       | red                 |
| 24441404       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 RD | RJ 45 Plug Straight | 40       | red                 |
| 24441405       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 RD | RJ 45 Plug Straight | 50       | red                 |
| 24441406       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,25 WH | RJ 45 Plug Straight | 0.25     | white               |
| 24441407       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,5 WH  | RJ 45 Plug Straight | 0.5      | white               |
| 24441408       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,0 WH  | RJ 45 Plug Straight | 1        | white               |
| 24441409       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,5 WH  | RJ 45 Plug Straight | 1.5      | white               |
| 24441410       | ETHERLINE® LAN Cat.6 <sub>A</sub> 2,0 WH  | RJ 45 Plug Straight | 2        | white               |
| 24441411       | ETHERLINE® LAN Cat.6 <sub>A</sub> 3,0 WH  | RJ 45 Plug Straight | 3        | white               |
| 24441412       | ETHERLINE® LAN Cat.6 <sub>A</sub> 5,0 WH  | RJ 45 Plug Straight | 5        | white               |
| 24441413       | ETHERLINE® LAN Cat.6 <sub>A</sub> 7,5 WH  | RJ 45 Plug Straight | 7.5      | white               |
| 24441414       | ETHERLINE® LAN Cat.6 <sub>A</sub> 10,0 WH | RJ 45 Plug Straight | 10       | white               |
| 24441415       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 WH | RJ 45 Plug Straight | 15       | white               |
| 24441416       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 WH | RJ 45 Plug Straight | 20       | white               |
| 24441417       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 WH | RJ 45 Plug Straight | 25       | white               |
| 24441418       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 WH | RJ 45 Plug Straight | 30       | white               |
| 24441419       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 WH | RJ 45 Plug Straight | 40       | white               |
| 24441420       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 WH | RJ 45 Plug Straight | 50       | white               |
| 24441421       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,25 YE | RJ 45 Plug Straight | 0.25     | yellow              |
| 24441422       | ETHERLINE® LAN Cat.6 <sub>A</sub> 0,5 YE  | RJ 45 Plug Straight | 0.5      | yellow              |
| 24441423       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,0 YE  | RJ 45 Plug Straight | 1        | yellow              |
| 24441424       | ETHERLINE® LAN Cat.6 <sub>A</sub> 1,5 YE  | RJ 45 Plug Straight | 1.5      | yellow              |
| 24441425       | ETHERLINE® LAN Cat.6 <sub>A</sub> 2,0 YE  | RJ 45 Plug Straight | 2        | yellow              |
| 24441426       | ETHERLINE® LAN Cat.6 <sub>A</sub> 3,0 YE  | RJ 45 Plug Straight | 3        | yellow              |
| 24441427       | ETHERLINE® LAN Cat.6 <sub>A</sub> 5,0 YE  | RJ 45 Plug Straight | 5        | yellow              |
| 24441428       | ETHERLINE® LAN Cat.6 <sub>A</sub> 7,5 YE  | RJ 45 Plug Straight | 7.5      | yellow              |
| 24441429       | ETHERLINE® LAN Cat.6 <sub>A</sub> 10,0 YE | RJ 45 Plug Straight | 10       | yellow              |
| 24441430       | ETHERLINE® LAN Cat.6 <sub>A</sub> 15,0 YE | RJ 45 Plug Straight | 15       | yellow              |
| 24441431       | ETHERLINE® LAN Cat.6 <sub>A</sub> 20,0 YE | RJ 45 Plug Straight | 20       | yellow              |
| 24441432       | ETHERLINE® LAN Cat.6 <sub>A</sub> 25,0 YE | RJ 45 Plug Straight | 25       | yellow              |
| 24441433       | ETHERLINE® LAN Cat.6 <sub>A</sub> 30,0 YE | RJ 45 Plug Straight | 30       | yellow              |
| 24441434       | ETHERLINE® LAN Cat.6 <sub>A</sub> 40,0 YE | RJ 45 Plug Straight | 40       | yellow              |
| 24441435       | ETHERLINE® LAN Cat.6 <sub>A</sub> 50,0 YE | RJ 45 Plug Straight | 50       | yellow              |

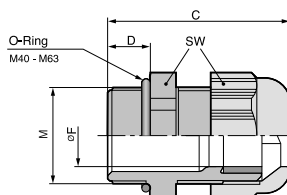
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Other lengths are available upon request.



## SKINTOP® ST-M / SKINTOP® STR-M



## Info

- With IP69 approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!

## Benefits

- High oil-resistance for maximum reliability
- Permanent vibration protection
- Wide, variable clamping ranges
- Optimum strain relief
- Various accessories (e.g. multiple sealing inserts)

## Application range

## SKINTOP® ST-M

- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- Machine and equipment manufacturing
- Photovoltaic
- Automation technology
- Offshore platforms, equipment and shipyards

## SKINTOP® STR-M

- With reducing seal insert, to seal cables with smaller outer diameters

## Norm references / Approvals

- UL File Nr. E79903
- GGVS: TÜ.EGG.020-95

## Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

## Note

- SKINTOP® ST(R) M ISO types have an extra-long connection thread
- SKINTOP® ST(R) M ISO versions with extra-long connection thread, see table, no DNV approval

## Suitable cables

- The following cables are recommended for IP 69 applications:  
ÖLFLEX® ROBUST 200  
H07RN8-F  
H07RN-F

## Suitable tools

- SKINMATIC® QUICK Set 1
- SKINMATIC® RZ

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Caution

Refer to Appendix T21 for the installation dimensions and torques  
Size M 40 x 1,5 up to  
M 63 x 1,5 with O-ring



## Colour delivered

Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant



## Material

Body: Polyamide  
Seal: CR

## Tests

GGVS: TÜ.EGG.020-95



## Protection rating

IP 68 - 5 bar  
IP 69  
NEMA Type 1, 12



## Temperature range

Fixed: -40°C to +100°C  
Dynamic: -20°C to +100°C

| Article number                                                            | Article designation / size | Ø F mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|---------------------------------------------------------------------------|----------------------------|--------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® ST-M silver grey</b>                                          |                            |        |                   |                     |                    |             |
| 53111000                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 30.0                | 8                  | 100         |
| 53111010                                                                  | M 16 x 1,5                 | 4-10   | 19                | 34.0                | 8                  | 100         |
| 53111020                                                                  | M 20 x 1,5                 | 6-13   | 25                | 37.0                | 9                  | 100         |
| 53111030                                                                  | M 25 x 1,5                 | 8-17   | 30                | 40.0                | 10                 | 50          |
| 53111040                                                                  | M 32 x 1,5                 | 9-21   | 36                | 47.0                | 10                 | 25          |
| 53111050                                                                  | M 40 x 1,5                 | 16-28  | 46                | 52.0                | 10                 | 10          |
| 53111060                                                                  | M 50 x 1,5                 | 27-34  | 55                | 62.0                | 12                 | 5           |
| 53111070                                                                  | M 63 x 1,5                 | 34-45  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® ST-M black</b>                                                |                            |        |                   |                     |                    |             |
| 53111200                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 30.0                | 8                  | 100         |
| 53111210                                                                  | M 16 x 1,5                 | 4-10   | 19                | 34.0                | 8                  | 100         |
| 53111220                                                                  | M 20 x 1,5                 | 6-13   | 25                | 37.0                | 9                  | 100         |
| 53111230                                                                  | M 25 x 1,5                 | 8-17   | 30                | 40.0                | 10                 | 50          |
| 53111240                                                                  | M 32 x 1,5                 | 9-21   | 36                | 47.0                | 10                 | 25          |
| 53111250                                                                  | M 40 x 1,5                 | 16-28  | 46                | 52.0                | 10                 | 10          |
| 53111260                                                                  | M 50 x 1,5                 | 27-34  | 55                | 62.0                | 12                 | 5           |
| 53111270                                                                  | M 63 x 1,5                 | 34-45  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® ST-M light grey</b>                                           |                            |        |                   |                     |                    |             |
| 53111400                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 30.0                | 8                  | 100         |
| 53111410                                                                  | M 16 x 1,5                 | 4-10   | 19                | 34.0                | 8                  | 100         |
| 53111420                                                                  | M 20 x 1,5                 | 6-13   | 25                | 37.0                | 9                  | 100         |
| 53111430                                                                  | M 25 x 1,5                 | 8-17   | 30                | 40.0                | 10                 | 50          |
| 53111440                                                                  | M 32 x 1,5                 | 9-21   | 36                | 47.0                | 10                 | 25          |
| 53111450                                                                  | M 40 x 1,5                 | 16-28  | 46                | 52.0                | 10                 | 10          |
| 53111460                                                                  | M 50 x 1,5                 | 27-34  | 55                | 62.0                | 12                 | 5           |
| 53111470                                                                  | M 63 x 1,5                 | 34-45  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® ST M ISO silver-grey (with long metric connecting thread)</b> |                            |        |                   |                     |                    |             |
| 53017010                                                                  | M 16 x 1,5 ISO             | 3,5-8  | 19                | 40.0                | 12                 | 100         |
| 53017030                                                                  | M 20 x 1,5 ISO             | 5-12   | 24                | 45.0                | 13                 | 100         |
| 53017040                                                                  | M 25 x 1,5 ISO             | 9-14   | 27                | 47.0                | 13                 | 50          |

| Article number                                                             | Article designation / size | Ø F mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|----------------------------------------------------------------------------|----------------------------|--------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® ST M ISO black (with long metric connecting thread)</b>        |                            |        |                   |                     |                    |             |
| 53010000                                                                   | M 12 x 1,5 ISO             | 3,5-7  | 15                | 36.7                | 15                 | 100         |
| 53017210                                                                   | M 16 x 1,5 ISO             | 3,5-8  | 19                | 40.0                | 12                 | 100         |
| 53017230                                                                   | M 20 x 1,5 ISO             | 5-12   | 24                | 45.0                | 13                 | 100         |
| 53017240                                                                   | M 25 x 1,5 ISO             | 9-14   | 27                | 47.0                | 13                 | 50          |
| <b>SKINTOP® STR-M silver grey</b>                                          |                            |        |                   |                     |                    |             |
| 53111100                                                                   | M 12 x 1,5                 | 2-5    | 15                | 30.0                | 8                  | 100         |
| 53111110                                                                   | M 16 x 1,5                 | 3,5-7  | 19                | 34.0                | 8                  | 100         |
| 53111120                                                                   | M 20 x 1,5                 | 4-10   | 25                | 37.0                | 9                  | 100         |
| 53111130                                                                   | M 25 x 1,5                 | 5-13   | 30                | 40.0                | 10                 | 50          |
| 53111140                                                                   | M 32 x 1,5                 | 6-15   | 36                | 47.0                | 10                 | 25          |
| 53111150                                                                   | M 40 x 1,5                 | 9-23   | 46                | 52.0                | 10                 | 10          |
| 53111160                                                                   | M 50 x 1,5                 | 24-29  | 55                | 62.0                | 12                 | 5           |
| 53111170                                                                   | M 63 x 1,5                 | 28-39  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® STR-M black</b>                                                |                            |        |                   |                     |                    |             |
| 53111300                                                                   | M 12 x 1,5                 | 2-5    | 15                | 30.0                | 8                  | 100         |
| 53111310                                                                   | M 16 x 1,5                 | 3,5-7  | 19                | 34.0                | 8                  | 100         |
| 53111320                                                                   | M 20 x 1,5                 | 4-10   | 25                | 37.0                | 9                  | 100         |
| 53111330                                                                   | M 25 x 1,5                 | 5-13   | 30                | 40.0                | 10                 | 50          |
| 53111340                                                                   | M 32 x 1,5                 | 6-15   | 36                | 47.0                | 10                 | 25          |
| 53111350                                                                   | M 40 x 1,5                 | 9-23   | 46                | 52.0                | 10                 | 10          |
| 53111360                                                                   | M 50 x 1,5                 | 24-29  | 55                | 62.0                | 12                 | 5           |
| 53111370                                                                   | M 63 x 1,5                 | 28-39  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® STR-M light grey</b>                                           |                            |        |                   |                     |                    |             |
| 53111500                                                                   | M 12 x 1,5                 | 2-5    | 15                | 30.0                | 8                  | 100         |
| 53111510                                                                   | M 16 x 1,5                 | 3,5-7  | 19                | 34.0                | 8                  | 100         |
| 53111520                                                                   | M 20 x 1,5                 | 4-10   | 25                | 37.0                | 9                  | 100         |
| 53111530                                                                   | M 25 x 1,5                 | 5-13   | 30                | 40.0                | 10                 | 50          |
| 53111540                                                                   | M 32 x 1,5                 | 6-15   | 36                | 47.0                | 10                 | 25          |
| 53111550                                                                   | M 40 x 1,5                 | 9-23   | 46                | 52.0                | 10                 | 10          |
| 53111560                                                                   | M 50 x 1,5                 | 24-29  | 55                | 62.0                | 12                 | 5           |
| 53111570                                                                   | M 63 x 1,5                 | 28-39  | 66                | 71.0                | 12                 | 5           |
| <b>SKINTOP® STR M ISO silver-grey (with long metric connecting thread)</b> |                            |        |                   |                     |                    |             |
| 53017110                                                                   | M 16 x 1,5 ISO             | 2-6    | 19                | 40.0                | 12                 | 100         |
| 53017130                                                                   | M 20 x 1,5 ISO             | 4-9    | 24                | 45.0                | 13                 | 100         |
| 53017140                                                                   | M 25 x 1,5 ISO             | 6-12   | 27                | 47.0                | 13                 | 50          |
| <b>SKINTOP® STR M ISO black (with long metric connecting thread)</b>       |                            |        |                   |                     |                    |             |
| 53017310                                                                   | M 16 x 1,5 ISO             | 2-6    | 19                | 40.0                | 12                 | 100         |
| 53017330                                                                   | M 20 x 1,5 ISO             | 4-9    | 24                | 45.0                | 13                 | 100         |
| 53017340                                                                   | M 25 x 1,5 ISO             | 6-12   | 27                | 47.0                | 13                 | 50          |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## SKINTOP® CLICK / SKINTOP® CLICK-R



## Info

- In practical box available in the web catalogue
- The most innovative cable insertion system in the market for a fast and highly flexible assembly. Simply click in - turn to the left - turn to the right - finished. The result: fixed, centred, strain-relieved fitting and maximum protection class in a few seconds.

## Benefits

- Fewer parts, counter nut no longer needed
- Save up to 70% of the time with the innovative CLICK system
- Simple, free assembly in any position
- Vibration protection
- No thread required

## Application range

## SKINTOP® CLICK

- Automation technology
- Solar applications
- Control cabinet manufacturing
- Measurement, control and electrical applications
- Air-conditioning technology

## SKINTOP® CLICK-R

- With reducing seal insert, to seal cables with smaller outer diameters

## Norm references / Approvals

- UL File Nr. E79903

## Included

- Included: disassembly tool

## Suitable tools

- SKINMATIC® QUICK Set 1
- SKINMATIC® RZ

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441

ETIM 5.0/6.0 Class-Description: Cable screw gland



## Colour delivered

Silver grey (RAL 7001)

Light grey (RAL 7035)

Black (RAL 9005), UV-resistant



## Material

Body: special polyamide

Seal: special elastomer



## Protection rating

IP 68 - 4 bar (M12)

IP 68 - 5 bar (M16 - M25)

IP 68 - 1 bar (M32)



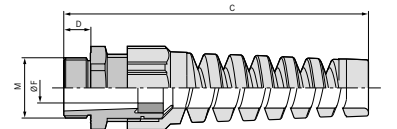
## Temperature range

Dynamic: -20°C to +100°C

Fixed: -40°C to +100°C

| Article number                      | Article designation / size | Ø F mm      | M (hole in mm) | SW1/SW2 mm  | Overall length C mm | Thread length D mm | Wall thickness, S (mm) | Pieces / PU |
|-------------------------------------|----------------------------|-------------|----------------|-------------|---------------------|--------------------|------------------------|-------------|
| <b>SKINTOP® CLICK light grey</b>    |                            |             |                |             |                     |                    |                        |             |
| 53112692                            | CLICK 12                   | 4.5 - 7.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112686                            | CLICK 16                   | 5.0 - 9.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112687                            | CLICK 20                   | 7.0 - 13.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112688                            | CLICK 25                   | 9.0 - 17.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112694                            | CLICK 32                   | 11.0 - 20.0 | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |
| <b>SKINTOP® CLICK silver grey</b>   |                            |             |                |             |                     |                    |                        |             |
| 53112921                            | CLICK 12                   | 4.5 - 7.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112876                            | CLICK 16                   | 5.0 - 9.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112877                            | CLICK 20                   | 7.0 - 13.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112878                            | CLICK 25                   | 9.0 - 17.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112922                            | CLICK 32                   | 11.0 - 20.0 | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |
| <b>SKINTOP® CLICK black</b>         |                            |             |                |             |                     |                    |                        |             |
| 53112923                            | CLICK 12                   | 4.5 - 7.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112882                            | CLICK 16                   | 5.0 - 9.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112883                            | CLICK 20                   | 7.0 - 13.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112884                            | CLICK 25                   | 9.0 - 17.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112924                            | CLICK 32                   | 11.0 - 20.0 | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |
| <b>SKINTOP® CLICK-R light grey</b>  |                            |             |                |             |                     |                    |                        |             |
| 53112925                            | CLICK-R 12                 | 3.5 - 5.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112689                            | CLICK-R 16                 | 4.0 - 7.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112690                            | CLICK-R 20                 | 5.0 - 10.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112691                            | CLICK-R 25                 | 6.0 - 13.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112926                            | CLICK-R 32                 | 7.0 - 15.0  | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |
| <b>SKINTOP® CLICK-R silver grey</b> |                            |             |                |             |                     |                    |                        |             |
| 53112927                            | CLICK-R 12                 | 3.5 - 5.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112879                            | CLICK-R 16                 | 4.0 - 7.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112880                            | CLICK-R 20                 | 5.0 - 10.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112881                            | CLICK-R 25                 | 6.0 - 13.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112928                            | CLICK-R 32                 | 7.0 - 15.0  | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |
| <b>SKINTOP® CLICK-R black</b>       |                            |             |                |             |                     |                    |                        |             |
| 53112929                            | CLICK-R 12                 | 3.5 - 5.0   | 12.3 (-0.2)    | 15.0 / 18.0 | 40.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112885                            | CLICK-R 16                 | 4.0 - 7.0   | 16.3 (-0.2)    | 19.0 / 22.0 | 42.0                | 8                  | 1.0 - 4.0              | 50          |
| 53112886                            | CLICK-R 20                 | 5.0 - 10.0  | 20.3 (-0.2)    | 25.0 / 27.0 | 45.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112887                            | CLICK-R 25                 | 6.0 - 13.0  | 25.3 (-0.2)    | 30.0 / 32.0 | 48.0                | 8                  | 1.0 - 4.0              | 25          |
| 53112931                            | CLICK-R 32                 | 7.0 - 15.0  | 32.3 (-0.2)    | 36.0 / 40.0 | 56.0                | 8                  | 1.0 - 4.0              | 25          |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



### Benefits

- Reliable bending and anti-kink protection
- Cable conservation
- Functional reliability
- To protect flexible cables

### Application range

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Robotics industry
- Light and sound applications
- Moving machine parts

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

### Note

- Version with reducing insert to seal smaller cable cross-sections SKINTOP® BSR-M on request
- SKINTOP® BS M ISO versions with extra-long connection thread, see table, no DNV approval

### Suitable tools

- SKINMATIC® QUICK Set 1
- SKINMATIC® RZ

### Technical data

|  |                                                                                                                        |
|--|------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000441<br>ETIM 5.0/6.0 Class-Description: Cable screw gland |
|  | <b>Caution</b><br>Refer to Appendix T21 for the installation dimensions and torques                                    |
|  | <b>On request</b><br>with reducing sealing ring                                                                        |
|  | <b>Colour delivered</b><br>Silver grey (RAL 7001)<br>Light grey (RAL 7035)<br>Black (RAL 9005), UV-resistant           |
|  | <b>Material</b><br>Body: Polyamide<br>Seal: CR                                                                         |
|  | <b>Protection rating</b><br>IP 68 - 5 bar<br>NEMA Type 1, 12                                                           |
|  | <b>Temperature range</b><br>-20°C to +100°C                                                                            |

| Article number                                                            | Article designation / size | Ø F mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|---------------------------------------------------------------------------|----------------------------|--------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® BS-M silver grey</b>                                          |                            |        |                   |                     |                    |             |
| 53111600                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 64.0                | 8                  | 100         |
| 53111610                                                                  | M 16 x 1,5                 | 4,5-10 | 19                | 86.0                | 8                  | 100         |
| 53111620                                                                  | M 20 x 1,5                 | 7-13   | 25                | 101.0               | 9                  | 50          |
| 53111630                                                                  | M 25 x 1,5                 | 9-17   | 30                | 125.0               | 10                 | 25          |
| 53111640                                                                  | M 32 x 1,5                 | 11-21  | 36                | 149.0               | 10                 | 25          |
| <b>SKINTOP® BS-M black</b>                                                |                            |        |                   |                     |                    |             |
| 53111700                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 64.0                | 8                  | 100         |
| 53111710                                                                  | M 16 x 1,5                 | 4,5-10 | 19                | 86.0                | 8                  | 100         |
| 53111720                                                                  | M 20 x 1,5                 | 7-13   | 25                | 101.0               | 9                  | 50          |
| 53111730                                                                  | M 25 x 1,5                 | 9-17   | 30                | 125.0               | 10                 | 25          |
| 53111740                                                                  | M 32 x 1,5                 | 11-21  | 36                | 149.0               | 10                 | 25          |
| <b>SKINTOP® BS-M light grey</b>                                           |                            |        |                   |                     |                    |             |
| 53111800                                                                  | M 12 x 1,5                 | 3,5-7  | 15                | 64.0                | 8                  | 100         |
| 53111810                                                                  | M 16 x 1,5                 | 4,5-10 | 19                | 86.0                | 8                  | 100         |
| 53111820                                                                  | M 20 x 1,5                 | 7-13   | 25                | 101.0               | 9                  | 50          |
| 53111830                                                                  | M 25 x 1,5                 | 9-17   | 30                | 125.0               | 10                 | 25          |
| 53111840                                                                  | M 32 x 1,5                 | 11-21  | 36                | 149.0               | 10                 | 25          |
| <b>SKINTOP® BS M ISO silver-grey (with long metric connecting thread)</b> |                            |        |                   |                     |                    |             |
| 53017610                                                                  | M 16 x 1,5 ISO             | 3,5-8  | 19                | 77.5                | 12                 | 100         |
| 53017630                                                                  | M 20 x 1,5 ISO             | 5-12   | 24                | 102.0               | 13                 | 50          |
| 53017640                                                                  | M 25 x 1,5 ISO             | 9-14   | 27                | 114.5               | 13                 | 50          |
| <b>SKINTOP® BS M ISO black (with long metric connecting thread)</b>       |                            |        |                   |                     |                    |             |
| 53017810                                                                  | M 16 x 1,5 ISO             | 3,5-8  | 19                | 77.5                | 12                 | 100         |
| 53017830                                                                  | M 20 x 1,5 ISO             | 5-12   | 24                | 102.0               | 13                 | 50          |
| 53017840                                                                  | M 25 x 1,5 ISO             | 9-14   | 27                | 114.5               | 13                 | 50          |

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SKINTOP® cable glands nickel-plated brass metric • Standard



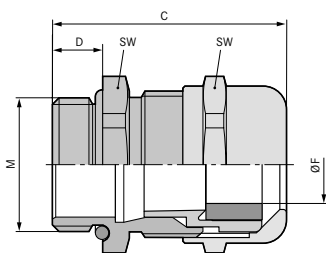
## SKINTOP® MS-M / SKINTOP® MSR-M



SKINTOP® MS-M



SKINTOP® MSR-M



## Info

- SKINTOP® MS-M sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters
- With IP69 approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!
- For item names with the addition "PLUS,, the clamping range corresponds to the next higher thread size. The extended clamping range allows cables with larger diameters to be inserted with the same connection thread

## Benefits

- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

## Application range

## SKINTOP® MS-M

- In areas where mechanical and chemical stability are critical
- Chemical industry
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

## SKINTOP® MSR-M

- With reducing seal insert, to seal cables with smaller outer diameters

## Norm references / Approvals

- UL File Nr. E79903

## Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

## Suitable tools

- SKINMATIC® QUICK Set 1
- SKINMATIC® MH Set
- SKINMATIC® RZ

## Technical data

## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Caution

Refer to Appendix T21 for the installation dimensions and torques



## Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing: CR  
O-ring: NBR



## Protection rating

IP 68 - 10 bar  
IP 69 (M12 - M63)  
NEMA Type 1, 4x, 6, 12



## Temperature range

Dynamic: -25°C up to + 100°C  
Fixed: -40°C to +100°C

| Article number        | Article designation / size | Ø F mm     | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|-----------------------|----------------------------|------------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® MS-M</b>  |                            |            |                   |                     |                    |             |
| 53112000              | M 12 x 1,5                 | 3.5 - 7.0  | 16                | 26.5                | 6,5                | 100         |
| 53112010              | M 16 x 1,5                 | 4.5 - 10.0 | 20                | 33.0                | 7                  | 100         |
| 53112020              | M 20 x 1,5                 | 7 - 13.0   | 24                | 37.0                | 8                  | 50          |
| 53112030              | M 25 x 1,5                 | 9 - 17.0   | 29                | 38.5                | 8                  | 25          |
| 53112040              | M 32 x 1,5                 | 11 - 21.0  | 36                | 45.5                | 9                  | 25          |
| 53112116              | M 32 x 1,5 PLUS            | 19 - 28.0  | 45                | 48.0                | 9                  | 10          |
| 53112050              | M 40 x 1,5                 | 19 - 28.0  | 45                | 48.0                | 9                  | 10          |
| 53112083              | M 40 x 1,5 PLUS            | 27 - 35.0  | 54                | 55.5                | 15                 | 5           |
| 53112060              | M 50 x 1,5                 | 27 - 35.0  | 54                | 55.5                | 10                 | 5           |
| 53112070              | M 63 x 1,5                 | 34 - 45.0  | 67                | 67.0                | 15                 | 5           |
| 53112080              | M 63 x 1,5 PLUS            | 44 - 55.0  | 75                | 65.5                | 15                 | 5           |
| 53112510              | M 75 x 1,5                 | 58 - 68.0  | 95                | 105.0               | 15                 | 1           |
| 53112512              | M 90 x 2                   | 66 - 78.0  | 115               | 135.5               | 20                 | 1           |
| 53112514              | M 110 x 2                  | 86 - 98.0  | 135               | 154.0               | 25                 | 1           |
| <b>SKINTOP® MSR-M</b> |                            |            |                   |                     |                    |             |
| 53112100              | M 12 x 1,5                 | 2 - 5.0    | 16                | 26.5                | 6,5                | 100         |
| 53112110              | M 16 x 1,5                 | 2 - 7.0    | 20                | 33.0                | 7                  | 100         |
| 53112120              | M 20 x 1,5                 | 5 - 10.0   | 24                | 37.0                | 8                  | 50          |
| 53112130              | M 25 x 1,5                 | 6 - 13.0   | 29                | 38.5                | 8                  | 25          |
| 53112140              | M 32 x 1,5                 | 7 - 15.0   | 36                | 45.5                | 9                  | 25          |
| 53112150              | M 40 x 1,5                 | 15 - 23.0  | 45                | 48.0                | 9                  | 10          |
| 53112160              | M 50 x 1,5                 | 22 - 29.0  | 54                | 55.5                | 10                 | 5           |
| 53112170              | M 63 x 1,5                 | 28 - 39.0  | 67                | 61.3                | 15                 | 5           |
| 53112511              | M 75 x 1,5                 | 53 - 63.0  | 95                | 105.0               | 15                 | 1           |
| 53112515              | M 110 x 2                  | 76 - 88.0  | 135               | 154.0               | 25                 | 1           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



**Info**

- Item numbers ending with “LF” are lead-free product alternatives with otherwise identical product properties. “Lead-free” items do not include lead, which is currently permitted to account for up to four per cent in copper alloys, but could in future be banned in accordance with the RoHS directive



- Benefits**
- Low-resistance screen contact, optimum EMC protection
  - Suitable for cables with and without inner sheath
  - Also suitable for continuing the cable screen to another connection
  - Highly conductive, flexible EMC contact for clamping various screen diameters
  - Few operation steps, easy to assemble
- Application range**
- For EMC-compliant earthing of the copper braiding
  - Telecommunication
  - Industrial machinery and plant engineering
  - Measurement and control technology
  - Automation technology

- Norm references / Approvals**
- UL File Nr. E79903
- Product Make-up**
- Metric connection thread acc. to DIN EN 60423
  - Basis for technical information DIN IEC 62444
- Note**
- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Suitable tools**
- SKINMATIC® QUICK Set 1
  - SKINMATIC® MH Set
  - SKINMATIC® RZ

**Technical data**

**Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**Note**  
In stainless steel V2A available

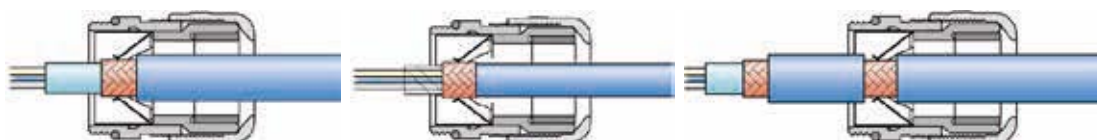
**Material**  
Body: nickel-plated brass  
Insert: polyamide  
Sealing: CR  
O-ring: NBR

**Protection rating**  
IP 68 - 10 bar  
NEMA Type 1, 4x, 6, 12

**Temperature range**  
Dynamic: -25°C up to + 100°C  
Fixed: -40°C up to +100°C

| Article number             | Article designation / size | Outer Ø (mm), from - to | Minimum Ø above braiding (mm) | SW wrench size mm | Thread length D mm | Pieces / PU |
|----------------------------|----------------------------|-------------------------|-------------------------------|-------------------|--------------------|-------------|
| <b>SKINTOP® MS-SC-M</b>    |                            |                         |                               |                   |                    |             |
| 53112610                   | M 12 x 1,5                 | 3.5 - 7.0               | 1                             | 16                | 6,5                | 50          |
| 53112620                   | M 16 x 1,5                 | 4.5 - 10.0              | 4                             | 20                | 7                  | 50          |
| 53112630                   | M 20 x 1,5                 | 7.0 - 13.0              | 5                             | 24                | 8                  | 25          |
| 53112640                   | M 25 x 1,5                 | 9.0 - 17.0              | 7.5                           | 29                | 8                  | 25          |
| 53112650                   | M 32 x 1,5                 | 11.0 - 21.0             | 9                             | 36                | 9                  | 25          |
| 53112660                   | M 40 x 1,5                 | 19.0 - 28.0             | 15                            | 45                | 9                  | 10          |
| 53112670                   | M 50 x 1,5                 | 27.0 - 35.0             | 21                            | 54                | 10                 | 5           |
| <b>SKINTOP® MS-SC-M-XL</b> |                            |                         |                               |                   |                    |             |
| 53112625                   | M 16 x 1,5                 | 4.5 - 10.0              | 4                             | 20                | 12                 | 50          |
| 53112635                   | M 20 x 1,5                 | 7.0 - 13.0              | 5                             | 24                | 12                 | 25          |
| 53112645                   | M 25 x 1,5                 | 9.0 - 17.0              | 7.5                           | 29                | 12                 | 25          |
| 53112655                   | M 32 x 1,5                 | 11.0 - 21.0             | 9                             | 36                | 15                 | 25          |
| 53112665                   | M 40 x 1,5                 | 19.0 - 28.0             | 15                            | 45                | 15                 | 10          |
| 53112675                   | M 50 x 1,5                 | 27.0 - 35.0             | 21                            | 54                | 15                 | 5           |
| <b>SKINTOP® MS-SC-M LF</b> |                            |                         |                               |                   |                    |             |
| 53112610LF                 | M 12 x 1,5                 | 3.5 - 7.0               | 1                             | 16                | 6,5                | 50          |
| 53112620LF                 | M 16 x 1,5                 | 4.5 - 10.0              | 4                             | 20                | 7                  | 50          |
| 53112630LF                 | M 20 x 1,5                 | 7.0 - 13.0              | 5                             | 24                | 8                  | 25          |
| 53112640LF                 | M 25 x 1,5                 | 9.0 - 17.0              | 7.5                           | 29                | 8                  | 25          |
| 53112650LF                 | M 32 x 1,5                 | 11.0 - 21.0             | 9                             | 36                | 9                  | 25          |
| 53112660LF                 | M 40 x 1,5                 | 19.0 - 28.0             | 15                            | 45                | 9                  | 10          |
| 53112670LF                 | M 50 x 1,5                 | 27.0 - 35.0             | 21                            | 54                | 10                 | 5           |

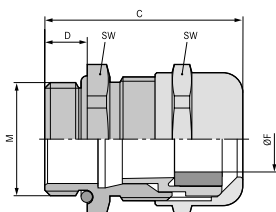
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SKINTOP® cable glands nickel-plated brass metric • EMC



## SKINTOP® MS-M BRUSH / SKINTOP® MS-M BRUSH XL

**Benefits**

- Optimum, low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

**Application range**

- For EMC-compliant earthing of the copper braiding
- Automation systems
- High-power drives
- Frequency converters
- Conveyor and transport systems

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

**Note**

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings

**Suitable tools**

- SKINMATIC® QUICK Set 1
- SKINMATIC® MH Set
- SKINMATIC® RZ

**Info**

- NEW: Now also available in size M16x1.5
- SKINTOP® MS-M sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters.

**Technical data****Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland

**Caution**

Refer to Appendix T21 for the installation dimensions and torques

**Material**

Body: nickel-plated brass  
Cap nut: nickel-plated brass  
Insert: polyamide  
EMC brush: brass wire  
Sealing ring: elastomer  
O-ring: elastomer

**Protection rating**

IP 68 - 10 bar (M12 - M110)  
IP 69 (M12 - M63)  
NEMA Type 1, 4x, 6, 12

**Temperature range**

Dynamic: -25°C up to + 100°C  
Fixed: -40°C to +100°C

| Article number                | Article designation / size | Outer Ø (mm),<br>from - to | Minimum Ø above<br>braiding (mm) | SW wrench<br>size mm | Thread length D mm | Pieces / PU |
|-------------------------------|----------------------------|----------------------------|----------------------------------|----------------------|--------------------|-------------|
| <b>SKINTOP® MS-M BRUSH</b>    |                            |                            |                                  |                      |                    |             |
| 53112506                      | M 16 x 1,5                 | 4.5 - 10                   | 2                                | 20                   | 7                  | 25          |
| 53112507                      | M 20 x 1,5                 | 7.0 - 13.0                 | 3                                | 24                   | 8                  | 25          |
| 53112676                      | M 25 x 1,5                 | 9.0 - 17.0                 | 6                                | 29                   | 8                  | 10          |
| 53112677                      | M 32 x 1,5                 | 11.0 - 21.0                | 8                                | 36                   | 9                  | 5           |
| 53112678                      | M 40 x 1,5                 | 19.0 - 28.0                | 10                               | 45                   | 9                  | 5           |
| 53112679                      | M 50 x 1,5                 | 27.0 - 35.0                | 14                               | 54                   | 10                 | 5           |
| 53112680                      | M 63 x 1,5                 | 34.0 - 45.0                | 20                               | 67                   | 15                 | 1           |
| 53112681                      | M 63 x 1,5 PLUS            | 44.0 - 55.0                | 25                               | 75                   | 15                 | 1           |
| 53112501                      | M 75 x 1,5                 | 53.0 - 63.0                | 25                               | 95                   | 15                 | 1           |
| 53112500                      | M 75 x 1,5 PLUS            | 58.0 - 68.0                | 25                               | 95                   | 15                 | 1           |
| 53112503                      | M 90 x 2                   | 66.0 - 78.0                | 40                               | 115                  | 20                 | 1           |
| 53112505                      | M 110 x 2                  | 76.0 - 88.0                | 50                               | 135                  | 25                 | 1           |
| 53112504                      | M 110 x 2 PLUS             | 86.0 - 98.0                | 50                               | 135                  | 25                 | 1           |
| <b>SKINTOP® MS-M BRUSH XL</b> |                            |                            |                                  |                      |                    |             |
| 53112516                      | M 16 x 1,5                 | 4.5 - 10                   | 2                                | 20                   | 12                 | 25          |
| 53112527                      | M 20 x 1,5                 | 7.0 - 13.0                 | 3                                | 24                   | 12                 | 25          |
| 53113727                      | M 25 x 1,5                 | 9.0 - 17.0                 | 6                                | 29                   | 12                 | 10          |
| 53113728                      | M 32 x 1,5                 | 11.0 - 21.0                | 8                                | 36                   | 15                 | 5           |
| 53113729                      | M 40 x 1,5                 | 19.0 - 28.0                | 10                               | 45                   | 15                 | 5           |
| 53112673                      | M 50 x 1,5                 | 27.0 - 35.0                | 14                               | 54                   | 15                 | 5           |

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## SKINTOP® COLD / SKINTOP® COLD-R



### Info

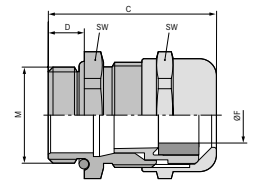
- For extreme sub-zero temperatures



SKINTOP® COLD



SKINTOP® COLD-R



### Benefits

- High cold-resistance
- Cold impact resistance
- High mechanical stability
- Optimum strain relief
- Wide, variable clamping ranges

### Application range

#### SKINTOP® COLD

- In areas where mechanical stability and high cold-resistance are critical
- Air-conditioning technology
- Freezing plants, cold storage
- Offshore sector
- Plant engineering

#### SKINTOP® COLD-R

- With reducing seal insert, to seal cables with smaller outer diameters

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

### Suitable tools

- SKINMATIC® QUICK Set 1
- SKINMATIC® MH Set
- SKINMATIC® RZ

### Technical data



#### Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



#### Caution

Refer to Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: special polyamide  
Sealing ring: silicone  
O-ring: silicone



#### Protection rating

IP 68 - 10 bar (M12 - M20)  
IP 68 - 5 bar (M25 - M63)  
NEMA Type 1, 2, 4x, 6, 12



#### Temperature range

-70°C to +100°C

| Article number         | Article designation / size | Ø F mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|------------------------|----------------------------|--------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® COLD</b>   |                            |        |                   |                     |                    |             |
| 53113500               | M 12 x 1,5                 | 3,5-7  | 16                | 26.5                | 6.5                | 100         |
| 53113510               | M 16 x 1,5                 | 4,5-10 | 20                | 33.0                | 7                  | 100         |
| 53113520               | M 20 x 1,5                 | 7-13   | 24                | 37.0                | 8.5                | 50          |
| 53113530               | M 25 x 1,5                 | 9-17   | 29                | 38.5                | 8                  | 25          |
| 53113540               | M 32 x 1,5                 | 11-21  | 36                | 45.5                | 9                  | 25          |
| 53113550               | M 40 x 1,5                 | 19-28  | 45                | 48.0                | 9                  | 10          |
| 53113560               | M 50 x 1,5                 | 27-35  | 54                | 55.5                | 10                 | 5           |
| 53113570               | M 63 x 1,5                 | 34-45  | 67                | 67.0                | 15                 | 5           |
| <b>SKINTOP® COLD-R</b> |                            |        |                   |                     |                    |             |
| 53113600               | M 12 x 1,5                 | 1-5    | 16                | 26.5                | 6.5                | 100         |
| 53113610               | M 16 x 1,5                 | 2-7    | 20                | 33.0                | 7                  | 100         |
| 53113620               | M 20 x 1,5                 | 5-10   | 24                | 37.0                | 8.5                | 50          |
| 53113630               | M 25 x 1,5                 | 6-13   | 29                | 38.5                | 8                  | 25          |
| 53113640               | M 32 x 1,5                 | 7-15   | 36                | 45.5                | 9                  | 25          |
| 53113650               | M 40 x 1,5                 | 15-23  | 45                | 48.0                | 9                  | 10          |
| 53113660               | M 50 x 1,5                 | 22-29  | 54                | 55.5                | 10                 | 5           |
| 53113670               | M 63 x 1,5                 | 28-39  | 67                | 67.0                | 15                 | 5           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.

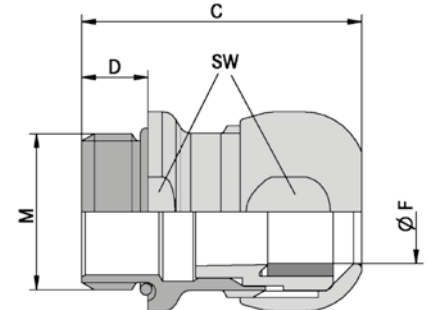


## SKINTOP® INOX / SKINTOP® INOX-R



### Info

- Stainless steel version with compact design
- For use in the splash zone in the food production



### Benefits

- Corrosion-resistant
- Sea water-resistant
- Smooth surfaces - no edges
- Compact design
- Wide, variable clamping ranges

### Application range

- Onshore and offshore applications
- Bottling plants and breweries
- Food industry (product-free zone, splash zone)

### Norm references / Approvals

- ECOLAB®  
Industry standard in the field of professional cleaning and disinfection in the food and beverage industry
- DIN EN 1672-2  
Guideline for the design of machinery
- DIN EN ISO 14159  
Security of machinery Hygienic requirements for the design of machinery
- NSF/ANSI 169  
Hygienic design for machinery and components

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

### Technical data

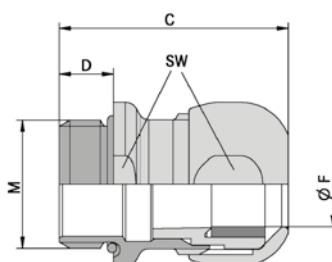
- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland
- Material**  
Body: stainless steel V4A (1.4404 / 316L)  
Insert: polyamide  
Sealing: silicone  
O-Ring: silicone
- Protection rating**  
IP 68 - 10 bar (M12 - M20)  
IP 68 - 5 bar (M25 - M50)  
IP 69  
NEMA Type 1, 2, 4x, 6, 12
- Temperature range**  
-40°C to +100°C

| Article number         | Article designation / size | Ø F mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|------------------------|----------------------------|--------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® INOX</b>   |                            |        |                   |                     |                    |             |
| 53806739               | M 12 x 1,5                 | 4-7    | 16                | 29.3                | 6.5                | 5           |
| 53806740               | M 16 x 1,5                 | 6-10   | 20                | 32.4                | 7                  | 5           |
| 53806741               | M 20 x 1,5                 | 7-13   | 24                | 35.5                | 8                  | 5           |
| 53806742               | M 25 x 1,5                 | 9-17   | 29                | 39.2                | 8                  | 5           |
| 53806743               | M 32 x 1,5                 | 11-21  | 36                | 44.6                | 9                  | 5           |
| 53806744               | M 40 x 1,5                 | 19-28  | 45                | 51.2                | 9                  | 5           |
| 53806745               | M 50 x 1,5                 | 27-35  | 54                | 56.2                | 10                 | 5           |
| <b>SKINTOP® INOX-R</b> |                            |        |                   |                     |                    |             |
| 53806749               | M 12 x 1,5                 | 3-5    | 16                | 29.3                | 6.5                | 5           |
| 53806750               | M 16 x 1,5                 | 5-7    | 20                | 32.4                | 7                  | 5           |
| 53806751               | M 20 x 1,5                 | 6-10   | 24                | 35.5                | 8                  | 5           |
| 53806752               | M 25 x 1,5                 | 7-13   | 29                | 39.2                | 8                  | 5           |
| 53806753               | M 32 x 1,5                 | 8-15   | 36                | 44.6                | 9                  | 5           |
| 53806754               | M 40 x 1,5                 | 15-23  | 45                | 51.2                | 9                  | 5           |
| 53806755               | M 50 x 1,5                 | 22-29  | 54                | 56.2                | 10                 | 5           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## SKINTOP® INOX SC



## Info

- Stainless steel version with compact design
- Optimum EMC protection

## Benefits

- Smooth surfaces - no edges
- Compact design
- Wide, variable clamping ranges
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters

## Application range

- For EMC-compliant earthing of the copper braiding
- Pharmaceutical industry
- Food industry (product-free zone, splash zone)
- Onshore and offshore applications
- Bottling plants and breweries

## Norm references / Approvals

- DIN EN ISO 14159  
Security of machinery Hygienic requirements for the design of machinery
- DIN EN 1672-2  
Guideline for the design of machinery
- ECOLAB®  
Industry standard in the field of professional cleaning and disinfection in the food and beverage industry
- NSF/ANSI 169  
Hygienic design for machinery and components

## Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

## Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Caution

Refer to the instruction leaflet for the installation dimensions and torques



## Material

Body: stainless steel V4A (1.4404 / 316L)  
Insert: polyamide  
Sealing: silicone  
O-Ring: silicone



## Protection rating

IP 68 - 10 bar (M12 - M20)  
IP 68 - 5 bar (M25 - M50)  
IP 69  
NEMA Type 1, 2, 4x, 6, 12



## Temperature range

-40°C to +100°C

| Article number          | Article designation / size | Ø F mm  | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|-------------------------|----------------------------|---------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® INOX SC</b> |                            |         |                   |                     |                    |             |
| 53806720                | M 12 x 1,5                 | 4 - 7   | 16                | 29.3                | 6.5                | 5           |
| 53806722                | M 16 x 1,5                 | 6 - 10  | 20                | 32.4                | 7                  | 5           |
| 53806724                | M 20 x 1,5                 | 7 - 13  | 24                | 35.5                | 8                  | 5           |
| 53806726                | M 25 x 1,5                 | 9 - 17  | 29                | 39.2                | 8                  | 5           |
| 53806728                | M 32 x 1,5                 | 11 - 21 | 36                | 44.6                | 9                  | 5           |
| 53806731                | M 40 x 1,5                 | 19 - 28 | 45                | 51.2                | 9                  | 5           |
| 53806732                | M 50 x 1,5                 | 27 - 35 | 54                | 56.2                | 10                 | 5           |

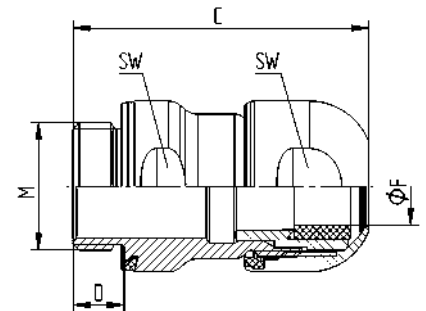
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## SKINTOP® HYGIENIC / SKINTOP® HYGIENIC-R

**Info**

- New: Available up to size M40x1,5
- Ideal for hygienic critical areas - resistant, edge-free, robust and reliable
- No gaps, voids or outer lying thread - so no risk of contamination of food machines, facilities or components



### Benefits

- Hygienic Design for ideal cleaning results
- Smooth surfaces and no edges prevent the accumulation of fluids and formation of micro-organisms

### Application range

- Food machinery, equipment and components
- For use in **product zone**
- Pharmaceutical industry

### Norm references / Approvals

- EHEDG (TYPE EL Class I AUX)  
Hygienic design for machinery and components
- ECOLAB®  
Industry standard in the field of professional cleaning and disinfection in the food and beverage industry
- FDA 21 CFR 177.2600  
Special sealing element for food and beverage industry in North America
- DIN EN 1672-2  
Guideline for the design of machinery
- DIN EN ISO 14159  
Security of machinery Hygienic requirements for the design of machinery
- NSF/ANSI 169  
Hygienic design for machinery and components

### Product Make-up

- Material and shape provide an easy and safe cleaning
- By the blue coloring of the sealing material clearly distinguishable from foodstuffs
- One complete assembly is easily mounted from the outside
- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

### Note

- Installation wrench for very high packing density on request

### Technical data

**Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland

**Certifications**  
UL approval for M32x1,5 and M40x1,5 pending

**Material**  
Body: stainless steel - V4A (1.4404 / 316L)  
Insert: polyamide  
Sealing: special elastomer

**Protection rating**  
IP 68 - 10 bar  
IP 69  
NEMA Type 1, 2, 4x, 6, 12

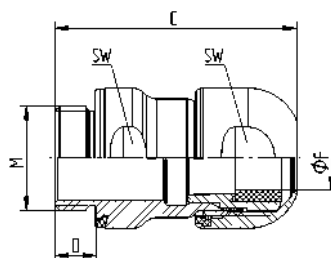
**Temperature range**  
-20°C to +100°C

| Article number             | Article designation / size | Ø F mm    | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|----------------------------|----------------------------|-----------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® HYGIENIC</b>   |                            |           |                   |                     |                    |             |
| 53105100                   | M 12 x 1,5                 | 4-6       | 16                | 38.4                | 6.5                | 5           |
| 53105110                   | M 16 x 1,5                 | 6,5-9     | 20                | 41.4                | 7                  | 5           |
| 53105120                   | M 20 x 1,5                 | 9-12      | 24                | 46.4                | 8                  | 5           |
| 53105130                   | M 25 x 1,5                 | 11,5-15,5 | 29                | 48.9                | 8                  | 5           |
| 53105140                   | M 32 x 1,5                 | 16-20     | 36                | 56.0                | 9                  | 5           |
| 53105141                   | M 40 x 1,5                 | 22-27     | 45                | 62.0                | 9                  | 5           |
| <b>SKINTOP® HYGIENIC-R</b> |                            |           |                   |                     |                    |             |
| 53105200                   | M 12 x 1,5                 | 3-4,5     | 16                | 38.4                | 6.5                | 5           |
| 53105210                   | M 16 x 1,5                 | 4,5-7     | 20                | 41.4                | 7                  | 5           |
| 53105220                   | M 20 x 1,5                 | 7-10      | 24                | 46.4                | 8                  | 5           |
| 53105230                   | M 25 x 1,5                 | 9-12,5    | 29                | 48.9                | 8                  | 5           |
| 53105240                   | M 32 x 1,5                 | 12,5-16,5 | 36                | 56.0                | 9                  | 5           |
| 53105142                   | M 40 x 1,5                 | 18-23     | 45                | 62.0                | 9                  | 5           |

Other sizes are available upon request.  
Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## SKINTOP® HYGIENIC SC



## Info

- New: Available up to size M40x1,5
- Ideal for hygienic critical areas - resistant, edge-free, robust and reliable
- No gaps, voids or outer lying thread - so no risk of contamination of food machines, facilities or components

## Benefits

- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Hygienic Design for ideal cleaning results
- Smooth surfaces and no edges prevent the accumulation of fluids and formation of micro-organisms

## Application range

- For EMC-compliant earthing of the copper braiding
- Food machinery, equipment and components
- For use in **product zone**
- Pharmaceutical industry

## Norm references / Approvals

- EHEDG (TYPE EL Class I AUX)  
Hygienic design for machinery and components
- ECOLAB®  
Industry standard in the field of professional cleaning and disinfection in the food and beverage industry
- FDA 21 CFR 177.2600  
Special sealing element for food and beverage industry in North America

- DIN EN 1672-2  
Guideline for the design of machinery
- DIN EN ISO 14159  
Security of machinery Hygienic requirements for the design of machinery
- NSF/ANSI 169  
Hygienic design for machinery and components

## Product Make-up

- Material and shape provide an easy and safe cleaning
- By the blue coloring of the sealing material clearly distinguishable from foodstuffs
- One complete assembly is easily mounted from the outside
- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

## Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Installation wrench for very high packing density on request

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Certifications

UL approval for M32x1,5 and M40x1,5 pending



## Material

Body: stainless steel - V4A (1.4404 / 316L)  
Insert: polyamide  
Sealing: special elastomer



## Protection rating

IP 68 - 10 bar  
IP 69  
NEMA Type 1, 2, 4x, 6, 12



## Temperature range

-20°C to +100°C

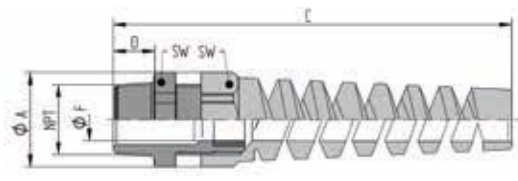
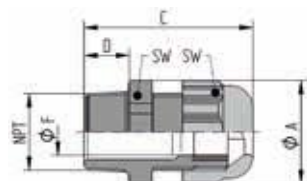
| Article number              | Article designation / size | Ø F mm    | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|-----------------------------|----------------------------|-----------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® HYGIENIC SC</b> |                            |           |                   |                     |                    |             |
| 53105300                    | M 12 x 1,5                 | 4-6       | 16                | 38.4                | 6.5                | 5           |
| 53105301                    | M 16 x 1,5                 | 6,5-9     | 20                | 41.4                | 7                  | 5           |
| 53105302                    | M 20 x 1,5                 | 9-12      | 24                | 46.4                | 8                  | 5           |
| 53105303                    | M 25 x 1,5                 | 11,5-15,5 | 29                | 48.9                | 8                  | 5           |
| 53105314                    | M 32 x 1,5                 | 16-20     | 36                | 56.0                | 9                  | 5           |
| 53105315                    | M 40 x 1,5                 | 22-27     | 45                | 62.0                | 9                  | 5           |

Other sizes are available upon request.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



## SKINTOP® ST NPT / BS NPT



## Benefits

- Conical NPT thread
- Permanent vibration protection
- Optimum strain relief
- Wide, variable clamping ranges
- Maximum reliability

## Application range

- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- Machine and equipment manufacturing
- Automation technology
- Devices
- Housings

## Norm references / Approvals

- UL File Nr. E79903

## Product Make-up

- NPT connection thread acc. to ASME B1.20.1 - 2013
- SKINTOP® STR NPT is equipped with a reduction seal insert to seal cables and wires with small outer diameters

## Suitable tools

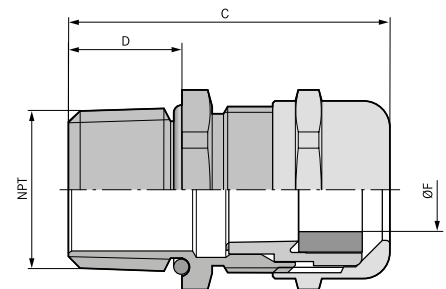
- SKINMATIC® RZ

## Technical data

|  |                                                                                                                        |
|--|------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000441<br>ETIM 5.0/6.0 Class-Description: Cable screw gland |
|  | <b>Colour delivered</b><br>Silver grey (RAL 7001)<br>Black (RAL 9005), UV-resistant                                    |
|  | <b>Material</b><br>Body: Polyamide<br>Seal: CR                                                                         |
|  | <b>Protection rating</b><br>IP 68 - 5 bar                                                                              |
|  | <b>Temperature range</b><br>Dynamic: -20°C to +100°C<br>Fixed: -40°C to +100°C                                         |

| Article number                      | Article designation / size | Ø F mm  | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|-------------------------------------|----------------------------|---------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® ST NPT silver grey</b>  |                            |         |                   |                     |                    |             |
| 53016010                            | NPT 3/8"                   | 3.5 - 8 | 19                | 43.0                | 15                 | 100         |
| 53016030                            | NPT 1/2"                   | 5 - 12  | 24                | 47.0                | 15                 | 100         |
| 53016050                            | NPT 3/4"                   | 13 - 18 | 33                | 53.0                | 15                 | 50          |
| 53016060                            | NPT 1"                     | 14 - 25 | 42                | 60.0                | 15                 | 25          |
| <b>SKINTOP® ST NPT black</b>        |                            |         |                   |                     |                    |             |
| 53016210                            | NPT 3/8"                   | 3.5 - 8 | 19                | 43.0                | 15                 | 100         |
| 53016230                            | NPT 1/2"                   | 5 - 12  | 24                | 47.0                | 15                 | 100         |
| 53016250                            | NPT 3/4"                   | 13 - 18 | 33                | 53.0                | 15                 | 50          |
| 53016260                            | NPT 1"                     | 14 - 25 | 42                | 60.0                | 15                 | 25          |
| <b>SKINTOP® STR NPT silver grey</b> |                            |         |                   |                     |                    |             |
| 53016110                            | NPT 3/8"                   | 2 - 6   | 19                | 43.0                | 15                 | 100         |
| 53016130                            | NPT 1/2"                   | 4 - 9   | 24                | 47.0                | 15                 | 100         |
| 53016150                            | NPT 3/4"                   | 9 - 16  | 33                | 53.0                | 15                 | 50          |
| <b>SKINTOP® STR NPT black</b>       |                            |         |                   |                     |                    |             |
| 53016310                            | NPT 3/8"                   | 2 - 6   | 19                | 43.0                | 15                 | 100         |
| 53016330                            | NPT 1/2"                   | 4 - 9   | 24                | 47.0                | 15                 | 100         |
| 53016350                            | NPT 3/4"                   | 9 - 16  | 33                | 53.0                | 15                 | 50          |
| <b>SKINTOP® BS NPT silver grey</b>  |                            |         |                   |                     |                    |             |
| 53016610                            | NPT 3/8"                   | 3.5 - 8 | 19                | 80.5                | 15                 | 100         |
| 53016630                            | NPT 1/2"                   | 5 - 12  | 24                | 104.0               | 15                 | 100         |
| 53016650                            | NPT 3/4"                   | 13 - 18 | 33                | 133.0               | 15                 | 50          |
| <b>SKINTOP® BS NPT black</b>        |                            |         |                   |                     |                    |             |
| 53016810                            | NPT 3/8"                   | 3.5 - 8 | 19                | 80.5                | 15                 | 100         |
| 53016830                            | NPT 1/2"                   | 5 - 12  | 24                | 104.0               | 15                 | 100         |
| 53016850                            | NPT 3/4"                   | 13 - 18 | 33                | 133.0               | 15                 | 50          |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



#### Benefits

- Conical NPT thread
- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

#### Application range

- In areas where mechanical and chemical stability are critical
- Chemical industry
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

#### Norm references / Approvals

- UL File Nr. E79903

#### Product Make-up

- NPT connection thread acc. to ASME B1.20.1 - 2013
- SKINTOP® MSR NPT is equipped with a reduction seal insert to seal cables and wires with small outer diameters

#### Suitable tools

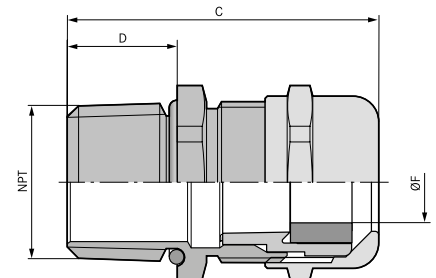
- SKINMATIC® RZ

#### Technical data

|  |                                                                                                                        |
|--|------------------------------------------------------------------------------------------------------------------------|
|  | <b>Classification ETIM 5/6</b><br>ETIM 5.0/6.0 Class-ID: EC000441<br>ETIM 5.0/6.0 Class-Description: Cable screw gland |
|  | <b>Material</b><br>Body: nickel-plated brass<br>Insert: polyamide<br>Sealing: CR<br>O-ring: NBR                        |
|  | <b>Protection rating</b><br>IP 68 - 10 bar<br>NEMA Type 1, 4x, 6, 12                                                   |
|  | <b>Temperature range</b><br>Dynamic: -25°C up to + 100°C<br>Fixed: -40°C to +100°C                                     |

| Article number          | Article designation / size | Ø F mm   | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|-------------------------|----------------------------|----------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® MS NPT</b>  |                            |          |                   |                     |                    |             |
| 53112004                | NPT 1/4"                   | 3.5 - 7  | 16                | 36.0                | 15                 | 100         |
| 53112014                | NPT 3/8"                   | 4.5 - 9  | 20                | 39.7                | 15                 | 100         |
| 53112024                | NPT 1/2"                   | 7 - 12.5 | 24                | 42.5                | 15                 | 50          |
| 53112034                | NPT 3/4"                   | 9 - 16.5 | 29                | 44.5                | 15                 | 25          |
| 53112044                | NPT 1"                     | 11 - 21  | 36                | 49.0                | 15                 | 25          |
| 53112054                | NPT 1 1/4"                 | 19 - 28  | 45                | 57.5                | 17                 | 10          |
| 53112064                | NPT 1 1/2"                 | 27 - 35  | 54                | 61.5                | 17                 | 5           |
| 53112074                | NPT 2"                     | 34 - 45  | 67                | 63.5                | 17                 | 5           |
| <b>SKINTOP® MSR NPT</b> |                            |          |                   |                     |                    |             |
| 53112006                | NPT 1/4"                   | 1 - 5    | 16                | 36.0                | 15                 | 100         |
| 53112016                | NPT 3/8"                   | 2 - 7    | 20                | 39.7                | 15                 | 100         |
| 53112026                | NPT 1/2"                   | 5 - 10   | 24                | 42.5                | 15                 | 50          |
| 53112036                | NPT 3/4"                   | 6 - 13   | 29                | 44.5                | 15                 | 25          |
| 53112046                | NPT 1"                     | 7 - 15   | 36                | 49.0                | 15                 | 25          |
| 53112056                | NPT 1 1/4"                 | 15 - 23  | 45                | 57.5                | 17                 | 10          |
| 53112066                | NPT 1 1/2"                 | 22 - 29  | 54                | 61.5                | 17                 | 5           |
| 53112076                | NPT 2"                     | 28 - 39  | 67                | 63.5                | 17                 | 5           |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.



#### Benefits

- Low-resistance screen contact, optimum EMC protection
- Suitable for cables with and without inner sheath
- Also suitable for continuing the cable screen to another connection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Few operation steps, easy to assemble

#### Application range

- For EMC-compliant earthing of the copper braiding
- Automation technology
- Telecommunication
- Measurement and control technology
- Industrial machinery and plant engineering

#### Norm references / Approvals

- UL File Nr. E79903

#### Product Make-up

- NPT connection thread acc. to ASME B1.20.1 - 2013

#### Suitable tools

- SKINMATIC® RZ

#### Technical data

- Classification ETIM 5/6**  
ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland
- Material**  
Body: nickel-plated brass  
Insert: polyamide  
Sealing: CR  
O-ring: NBR
- IP**  
Protection rating  
IP 68 - 10 bar  
NEMA Type 1, 4x, 6, 12
- Temperature range**  
Dynamic: -25°C up to + 100°C  
Fixed: -40°C up to +100°C

| Article number            | Article designation / size | Ø F mm   | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|---------------------------|----------------------------|----------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® MS-SC NPT</b> |                            |          |                   |                     |                    |             |
| 53112910                  | NPT 3/8"                   | 4.5 - 10 | 20                | 39.7                | 15                 | 100         |
| 53112920                  | NPT 1/2"                   | 7 - 13   | 24                | 42.5                | 15                 | 50          |
| 53112930                  | NPT 3/4"                   | 9 - 17   | 29                | 44.5                | 15                 | 25          |
| 53112940                  | NPT 1"                     | 11 - 21  | 36                | 49.0                | 15                 | 25          |
| 53112950                  | NPT 1 1/4"                 | 19 - 28  | 45                | 57.5                | 17                 | 10          |
| 53112960                  | NPT 1 1/2"                 | 27 - 35  | 54                | 61.5                | 17                 | 5           |

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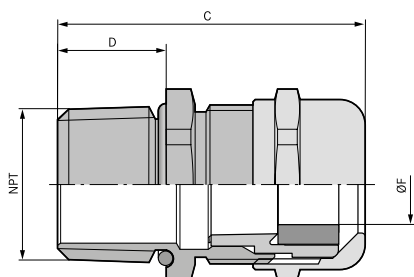


## SKINTOP® COLD NPT



## Info

- For extreme sub-zero temperatures



## Benefits

- High cold-resistance
- Cold impact resistance
- High mechanical stability
- Optimum strain relief
- Wide, variable clamping ranges

## Application range

- In areas where mechanical stability and high cold-resistance are critical
- Air-conditioning technology
- Freezing plants, cold storage
- Offshore sector
- Plant engineering

## Norm references / Approvals

- UL File Nr. E79903

## Product Make-up

- NPT connection thread acc. to ASME B1.20.1 - 2013
- SKINTOP® COLD-R NPT is equipped with a reduction seal insert to seal cables and wires with small outer diameters

## Suitable tools

- SKINMATIC® RZ

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Material

Body: nickel-plated brass  
Insert: special polyamide  
Sealing ring: silicone  
O-ring: silicone



## Protection rating

IP 68 - 10 bar (NPT 1/4" - 1/2")  
IP 68 - 5 bar (NPT 3/4" - 2")  
NEMA Type 1, 2, 4x, 6, 12



## Temperature range

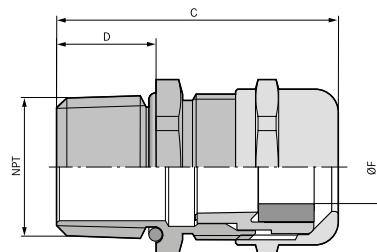
-70°C to +100°C

| Article number             | Article designation / size | Ø F mm  | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|----------------------------|----------------------------|---------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® COLD NPT</b>   |                            |         |                   |                     |                    |             |
| 53113700                   | 1/4"                       | 4 - 7   | 16                | 36.0                | 15                 | 100         |
| 53113701                   | 3/8"                       | 5 - 10  | 20                | 39.7                | 15                 | 100         |
| 53113702                   | 1/2"                       | 7 - 13  | 24                | 42.5                | 15                 | 50          |
| 53113703                   | 3/4"                       | 9 - 17  | 29                | 44.5                | 15                 | 25          |
| 53113704                   | 1"                         | 11 - 21 | 36                | 49.0                | 15                 | 25          |
| 53113705                   | 1 1/4"                     | 19 - 28 | 45                | 57.5                | 15                 | 10          |
| 53113706                   | 1 1/2"                     | 27 - 35 | 54                | 61.5                | 17                 | 5           |
| 53113707                   | 2"                         | 34 - 45 | 67                | 63.5                | 17                 | 5           |
| <b>SKINTOP® COLD-R NPT</b> |                            |         |                   |                     |                    |             |
| 53113710                   | 1/4"                       | 3 - 5   | 16                | 36.0                | 15                 | 100         |
| 53113711                   | 3/8"                       | 4.5 - 7 | 20                | 39.7                | 15                 | 100         |
| 53113712                   | 1/2"                       | 6 - 10  | 24                | 42.5                | 15                 | 50          |
| 53113713                   | 3/4"                       | 7 - 13  | 29                | 44.5                | 15                 | 25          |
| 53113714                   | 1"                         | 8 - 15  | 36                | 49.0                | 15                 | 25          |
| 53113715                   | 1 1/4"                     | 15 - 23 | 45                | 57.5                | 17                 | 10          |
| 53113716                   | 1 1/2"                     | 22 - 29 | 54                | 61.5                | 17                 | 5           |
| 53113717                   | 2"                         | 28 - 39 | 67                | 63.5                | 17                 | 5           |

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## SKINTOP® MS-NPT BRUSH



## Benefits

- Optimum, low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

## Application range

- For EMC-compliant earthing of the copper braiding
- Automation technology
- High-power drives
- Frequency converters
- Conveyor and transport systems

## Norm references / Approvals

- UL File Nr. E79903

## Product Make-up

- NPT connection thread acc. to ASME B1.20.1 - 2013

## Suitable tools

- SKINMATIC® RZ

## Technical data



## Classification ETIM 5/6

ETIM 5.0/6.0 Class-ID: EC000441  
ETIM 5.0/6.0 Class-Description: Cable screw gland



## Material

Body: nickel-plated brass  
Cap nut: nickel-plated brass  
Insert: polyamide  
EMC brush: brass wire  
Sealing ring: elastomer  
O-ring: elastomer



## Protection rating

IP 68 - 10 bar  
NEMA Type 1, 4x, 6, 12



## Temperature range

Dynamic: -25°C up to + 100°C  
Fixed: -40°C up to +100°C

| Article number               | Article designation / size | Ø F mm  | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU |
|------------------------------|----------------------------|---------|-------------------|---------------------|--------------------|-------------|
| <b>SKINTOP® MS-NPT BRUSH</b> |                            |         |                   |                     |                    |             |
| 53112037                     | NPT 3/4"                   | 9 - 17  | 29                | 43.0                | 15                 | 10          |
| 53112047                     | NPT 1"                     | 11 - 21 | 36                | 48.2                | 15                 | 1           |
| 53112057                     | NPT 1 1/4"                 | 19 - 28 | 45                | 57.5                | 17                 | 1           |
| 53112067                     | NPT 1 1/2"                 | 27 - 35 | 54                | 59.0                | 17                 | 1           |
| 53112077                     | NPT 2"                     | 34 - 45 | 67                | 63.3                | 17                 | 1           |
| 53112087                     | NPT 2" plus                | 44 - 55 | 75                | 72.5                | 17                 | 1           |

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**ÖLFLEX®**  
Power and control cables



**UNITRONIC®**  
Data communication systems



**ETHERLINE®**  
Data communication systems  
for ETHERNET technology



**HITRONIC®**  
Optical transmission systems



**EPIC®**  
Industrial connectors



**SKINTOP®**  
Cable glands



**SILVYN®**  
Protective cable conduit systems  
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**FLEXIMARK®**  
Marking systems

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