THE WORLD OF LAPP

Innovations 2017/18

LAPP GROUP

Legend for icons

INDUSTRIES

- Automation
- e-Mobility
- Food & Beverage
- Mechanical and Plant Engineering
- Oil & Gas
- Rail
- Solar Energy
- Wind Energy

PRODUCT CHARACTERISTICS

- Suitable for outdoor use
- Good chemical resistance
- Flame-retardant
- Wide clamping range
- Halogen-free
- Heat-resistant
- Cold-resistant
- Corrosion-resistant
- Maximum vibration protection
- Mechanical resistance
- Assembly time
- Low weight
- Oil-resistant
- Optimum strain relief
- Space requirement
- Power chain
- Clean room
- Robust
- Acid-resistant
- Reliability
- Integrated SKINTOP® cable gland
- Voltage
- Connector with standard housing unit
- Interference signals
- Temperature-resistant
- Torsion-resistant
- Torsion load
- UV-resistant
- Waterproof
- Variety of approval certifications

Please note: the purpose of the icons is to provide you with a quick overview and a rough indication of the product features to which the corresponding information relates. You can find details of product characteristics in the “technical data” sections on the product pages.

Content

	Company information	2
	ÖLFLEX® Power and control cables	10
	ETHERLINE® Data communication systems for ETHERNET technology	20
	EPIC® Industrial connectors	33
	SKINTOP® Cable glands	38
	SILVYN® Protective cable conduit systems and cable carrier systems	39
	FLEXIMARK® Marking systems	40
	Tools and cable accessories	41

Success through values

Rock solid, high performance. Regional roots, global aspirations. Fast, reliable, high quality – and development that is always one step ahead. For products for the railway industry as well. This is Lapp.

The southwest region of Germany is considered one of the most innovative and powerful industrial sectors in the world, and for good reason. Lapp is a part of this region, helping to guide it and its success worldwide.

As a completely family run company, we know: Everything that we have achieved since our founding in 1959 is based on the daily commitment of our skilled staff and partnerships with our customers based on trust. Each of them has made a decisive contribution to our mutual success.

Today, Lapp is one of the world's leading manufacturers of cables, leads, cable accessories and systems of the highest level of quality. We have approximately 3,440 employees worldwide. With 17 production sites on four continents, more than 40 sales companies and hundreds of dedicated consulting experts, we are always close by. And not just physically: customer proximity cannot be measured in mere kilometres. It is based on listening, making your challenges our own and developing solutions that help to further your business model.

Candid closeness and a trusting, partnership-based cooperation are more than just words for Lapp, they are values upon which we have built our family company.

The result? Intelligent and reliable connectivity solutions precisely tailored to the needs of our globally active customers. For you as well.

Customer-oriented
Successful
Family based
Innovative. **Lapp.**

- Founded in 1959
- A leading manufacturer of cables, leads, accessories and complete system solutions for connection technology
- Approximately 3,440 employees worldwide
- 17 production facilities
- More than 40 sales companies
- Hundreds of dedicated consulting experts worldwide
- Years of experience in the rail industry

Andreas Lapp,
Matthias Lapp,
Ursula Ida Lapp,
Alexander Lapp,
Siegbert Lapp.

Lapp makes it into the TOP 100

The Stuttgart-based company has become one of Germany's elite innovators/Company to receive award from TOP 100 mentor Ranga Yogeshwar

Lapp makes it into the TOP 100 and belongs to the most innovative German SMEs. v.l. Dr. Simon Alig, Assitant of the Managing Board Technology & Innovation, mentor Ranga Yogeshar, Guido Ege, Head of Product Management and Product Development, and Georg Stawowy, Member of the Board for Technology and Innovation. Picture: KD Busch/comamedia, www.top100-germany.com

The TOP 100 companies, a title bestowed upon the most innovative German SMEs, are to be named in the 23rd edition of this competition. The Lapp Group is among the innovative elite this year. The Stuttgart-based company had taken part in a demanding scientific selection process to achieve this status. The Group's innovation management and success in innovation were examined. The mentor of the innovation competition, Ranga Yogeshwar, will present the award for Top Innovator during the German SME Summit on 24 June in Essen.

The innovative strength behind the Lapp Group, which has been awarded the TOP 100 seal, has a name: "technology and innovation management", or TIM for short. The workshops of the same name run by the Stuttgart-based experts in connection technology are a breeding ground for new ideas. Employees from around the world working in a wide range of roles are invited to develop new solution approaches for customers three or four times per year. There are also a number of smaller TIM workshops in various departments throughout the company. "Our aim is for our employees to view innovations as part of their day-to-day work going forward so that they no longer need managers in order to come up with innovations," said Siegbert Lapp, Chairman of the Supervisory Board.
The Top Innovator develops and produces complete solutions for cable technology and creates a broad portfolio of branded products, including flexible cables, power and control cables, data and fibre optic cables, cable glands, industrial connectors and cable accessories. 3,300 or so employees around the world work for the family company, which was founded in 1959. 1,200 of these employees are based in Germany. The portfolio of standard products, not including the company's countless special-purpose solutions, now consists of over 40,000 items. This huge range is the result of many successful innovations.

Lapp is the market leader in the industry in Germany as well as being in the top tier internationally. Georg Stawowy, Member of the Board for Technology and Innovation, explains Lapp's philosophy for innovation: "Firstly, we want to tap into new markets with our innovations. Secondly, we want to be the company that is always providing the latest and best products."

Over 4,000 companies expressed an interest in participating in TOP 100 this year. 366 applied for the qualifying round. 284 reached the final round. 238 then managed the leap into the TOP 100 (a maximum of 100 companies in each of the three size categories). The companies were once again assessed by Professor Nikolaus Franke and his team at the Chair for Entrepreneurship and Innovation of Vienna University of Economics and Business. They used 100 parameters in five assessment categories – "innovation-friendly executive management", "innovation climate", "innovative processes and organisation", "innovation marketing/external orientation" and "innovation success" – to perform their evaluation. The TOP 100 companies are seen as the trendsetters in their industries. This is also reflected in the assessment's figures: Among the companies, 97 are market leaders on a national scale and 32 are market leaders on a global scale. Looking at recent statistics, they generated an average of 40 percent of their turnover with market innovations and product improvements brought onto the market ahead of their competitors. Their sales growth was around 28 percentage points higher than the respective average in the industry. In total, the SMEs have filed 2,292 national and international patents over the past three years. This innovative capacity is also paying off in the workplace as the TOP 100 companies are planning to hire around 9,500 new employees over the next three years.

Ranga Yogeshwar, the mentor of TOP 100 who is also a science journalist and TV presenter, is impressed by the quality of the companies and is hoping to see others follow in their footsteps: "The way in which the TOP 100 companies come up with new ideas and develop groundbreaking products and services from these ideas is truly remarkable. I am so glad that this award shines a light on these qualities. Hopefully their success will encourage other companies to follow suit. After all, this culture of innovation will become increasingly significant to all companies in future."

TOP 100

Die innovativsten Unternehmen im Mittelstand

Lapp Group

TOP-INNOVATOR 2016

Unter der wissenschaftlichen Leitung von Professor Dr. Nikolaus Franke vom Institut für Entrepreneurship und Innovation der Wirtschaftsuniversität Wien werden jedes Jahr die innovativsten Unternehmen des deutschen Mittelstands ermittelt. Die Prüfung des Innovationsmanagements der Lapp Group brachte hervorragende Ergebnisse. Damit zählt das Unternehmen zu den Top-Innovatoren im Mittelstand.

PROF. DR. NIKOLAUS FRANKE
Institut für Entrepreneurship und Innovation
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24. Juni 2016

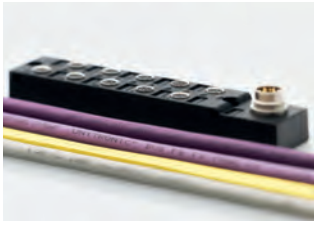
RANGA YOGESHWAR
Mentor
von TOP 100

Picture: KD Busch/compamedia, www.top100-germany.com

Eight brands, one promise: uncompromising quality – worldwide

ÖLFLEX®
Power and control cables

ÖLFLEX® has become synonymous with power and control cables. Our flexible and oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions.

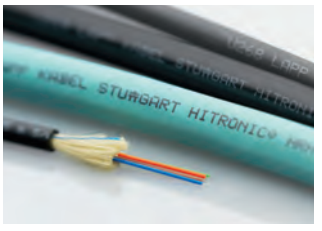


UNITRONIC®
Data communication systems

Our high-quality UNITRONIC® data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures – we offer a dependable cabling and connection solution for almost every situation.

ETHERLINE®
Data communication systems for ETHERNET technology

Our ETHERLINE® branded products open up a secure, fast and reliable path to the future of Ethernet applications. The systems are made up of durable and robust cables and connection components for passive network technology, and deliver an effective solution for almost any application, particularly in an industrial environment.



HITRONIC®
Optical transmission systems

HITRONIC® fibre optic cables make transmitting large data volumes easy: fault free, bug proof and at almost light speed. Even electromagnetic radiation does not interfere with the transmission. The HITRONIC® range includes the ideal solution for indoor or outdoor use, for demanding conditions, and even for use in power chains.

EPIC®
Industrial connectors

EPIC® industrial connectors can be found everywhere in industrial machinery and plant engineering, for measuring, control and drives. EPIC® is a flexible system of housings, inserts and contacts: all extremely robust, absolutely safe and simplicity itself to assemble.

SKINTOP®
Cable glands

Simply feed in the cable and twist. That's it. Our SKINTOP® cable glands provide secure connections in no time. The universal systems are simple but effective. They secure and centre the cable, hermetically seal it and guarantee optimum strain relief.

SILVYN®
Protective cable conduit systems and cable carrier systems

The universal range of SILVYN® protection and guidance systems protect cables effectively against dust, moisture, mechanical, thermal and chemical influences. The versatile SILVYN® CHAIN range of energy supply chains also protects and guides cables in dynamic applications.

FLEXIMARK®
Marking systems

The requirement: permanent marking. The solution: FLEXIMARK®. These sophisticated systems mean that a clear overview inside a control cabinet is no longer just a pipe dream. From simple labels for manual marking through to electronic markings, the FLEXIMARK® range is guaranteed to be permanent.

Reliably connecting the world

We want to help you become even more productive and successful. This is why we work tirelessly on optimising our processes. We do everything to make sure we always find the best solution for you and also provide you with quick, efficient and effective support.

No matter where you are – we are always by your side. Our plants, sales companies, partners and, above all, our competent teams of advisers ensure we offer you a comprehensive service on every continent. We do not simply distribute cable technology, we also manufacture our products ourselves – which represents another advantage for you. As a manufacturer with 17 of our own production facilities, you will benefit from our expertise in the development, design and manufacture of cables, system products and cable accessories. Thanks to this expertise, we can guarantee that Lapp will provide you with the quality that you require and that you demand.

You can always rely on quality from Lapp – wherever you are in the world. This is also embodied by our strong brands.

100
sales partners

8
strong brands

1
innovation after another

Employees from
152
countries

More than
40,000
standard products

40
proprietary sales companies

3,440
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LAPP CABLES MIDDLE EAST FZE

ÖLFLEX® SERVO 728 CY

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

Info

- Successor of ÖLFLEX® SERVO 720 CY
- Fits to various encoder systems

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

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable

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 mm²

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 mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO 728 CY				
1020100	10x0,14+2x0,5	7.0	41	84
1020101	10x0,14+4x0,5	7.6	53	101
1020102	15x0,14+4x0,5	7.6	68	115
1020133	4x2x0,14+4x0,5	7.9	58	97
1020134	7x2x0,14+2x0,5	8.5	60	115
1020110	4x2x0,34+4x0,5	8.3	79	129
1020111	3x(2x0,14)+4x0,14+2x0,5	8.2	68	120
1020135	3x(2x0,14)+ 4x0,14+2x0,5+4x0,22	9.7	80	160
1020120	4x2x0,25+2x0,5	7.9	59	103
1020121	4x2x0,25+2x1,0	7.6	63	112
1020122	4x2x0,14+4x1,0+(4x0,14)	9.0	110	155
1020130	3x(2x0,14)+2x(0,5)	9.0	87	140
1020131	3x(2x0,14)+(3x0,14)	9.2	41	115
1020132	4x(2x0,14)+(2x1,0)	10.4	84	145
1020140	5x2x0,25	7.4	50	96
1020141	6x2x0,25	8.0	60	114

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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO FD 798 CP refer to main catalogue
- Special Encoder and resolver cables refer to main catalogue
- SERVO cables in acc. to SIEMENS® Standard 6FX 5008- (see online catalogue)

Accessories

- EPIC® SIGNAL M23 Housings refer to main catalogue
- EPIC® SIGNAL M23 Inserts refer to main catalogue
- EPIC® SIGNAL M23 Contacts, tools, accessories refer to main catalogue

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

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)
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- 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
- 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
- c(UL) CIC/TC FT4; 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 5.0 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 mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO 7TCE				
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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO 719 CY refer to main catalogue
- ÖLFLEX® TRAY II CY refer to main catalogue

Accessories

- SKINTOP® BRUSH ADD-ON refer to main catalogue
- SKINTOP® MS-SC-M refer to main catalogue
- SKINTOP® MS-M BRUSH refer to main catalogue

ÖLFLEX® SERVO FD 796 CP

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

Info

- Extended Line - 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
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- 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 power 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 power 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 5.0 Class-ID: EC000104
ETIM 5.0 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

Bending cycles & operation parameters
10 mio. cycles

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)
ÖLFLEX® SERVO FD 796 CP				
0027950	4 G 1,5	9.1	79	140
0027951	4 G 2,5	10.6	129	197
0027952	4 G 4	11.9	186	268
0027953	4 G 6	14.5	296	397
0027954	4 G 10	17.5	449	591
0027955	4 G 16	21.6	716	955
0027956	4 G 25	25.2	1073	1337
0027957	4 G 35	28.6	1480	1769
0027958	4 G 50	33.4	2115	2468
0027930	4 G 0,75 + (2 x 0,5)	11.0	86	155
0027925	4 G 1 + (2 x 0,5)	11.5	97	164
0027931	4 G 1 + (2 x 1,0)	11.7	107	174
0027926	4 G 1,5 + (2 x 0,5)	12.0	117	187
0027948	4 G 1,5 + (2 x 1,0)	12.2	130	202
0027932	4 G 1,5 + (3 x 1,0)	12.0	144	220

Article number	Number of cores and mm² per conductor	Outer diameter (mm) approx.	Copper index (kg/km)	Weight (kg/km)
0027959	4 G 1,5 + (2 x 1,5)	11.6	135	261
0027927	4 G 2,5 + (2 x 0,5)	12.6	161	243
0027978	4 G 2,5 + (2 x 1,0)	13.5	169	253
0027933	4 G 2,5 + (3 x 1,0)	13.5	204	294
0027960	4 G 2,5 + (2 x 1,5)	13.4	188	318
0027981	4 G 4 + (2 x 1,0)	14.8	239	359
0027934	4 G 4 + (3 x 1,0)	14.7	250	361
0027961	4 G 4 + (2 x 1,5)	14.8	235	385
0027982	4 G 6 + (2 x 1,0)	16.8	340	469
0027962	4 G 6 + (2 x 1,5)	16.8	329	486
0027935	4 G 6 + (3 x 1,5)	16.5	381	505
0027983	4 G 10 + (2 x 1,0)	18.8	530	689
0027963	4 G 10 + (2 x 1,5)	19.4	515	701
0027936	4 G 10 + (3 x 1,5)	19.7	569	722
0027984	4 G 16 + (2 x 1,0)	22.8	787	985
0027964	4 G 16 + (2 x 1,5)	23.1	757	1048
0027937	4 G 16 + (3 x 1,5)	23.3	825	1030
0027965	4 G 25 + (2 x 1,5)	26.6	1147	1532
0027966	4 G 35 + (2 x 1,5)	30.9	1538	2097
0027967	4 G 50 + (2 x 1,5)	34.0	2181	2721
0027969	4 G 1,5 + 2 x (2 x 0,75)	12.2	159	313
0027970	4 G 2,5 + 2 x (2 x 1,0)	14.6	207	395
0027980	4 G 4 + 2 x (2 x 1,0)	16.1	274	466
0027971	4 G 4 + (2 x 1,0) + (2 x 1,5)	16.3	344	485
0027972	4 G 6 + (2 x 1,0) + (2 x 1,5)	18.1	436	588
0027973	4 G 10 + (2 x 1,0) + (2 x 1,5)	21.8	610	819
0027974	4 G 16 + 2 x (2 x 1,5)	25.5	801	1135
0027975	4 G 25 + 2 x (2 x 1,5)	28.8	1187	1559
0027976	4 G 35 + 2 x (2 x 1,5)	30.9	1588	2093
0027977	4 G 50 + 2 x (2 x 2,5)	36.3	2557	2920

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Circular connectors refer to main catalogue
- SKINTOP® EMC/Earthing refer to main catalogue

ÖLFLEX® SERVO 7DSL

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

Info

- Suitable for SCS open link and ACURO®link
- Suitable for Hiperface DSL® motor-feedback systems
- EMC-compliant

Benefits

- Only one connection line between drive and motor-feedback system. Instead of the encoder cable an integrated DSL 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 signal pair twisted together
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 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
Signal 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)
Hybrid cables for fixed installation				
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.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
HIPERFACE DSL® is a registered trademark of SICK AG, ACURO®link and SCS open link are registered trademarks of Hengstler GmbH
Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO 719 CY refer to main catalogue

Accessories

- Protective cable conduit systems and cable carrier systems refer to main catalogue
- Circular connectors refer to main catalogue

ÖLFLEX® SERVO FD 7DSL

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

Info

- Suitable for SCS open link and ACURO®link
- Suitable for Hiperface DSL® motor-feedback systems
- Extended Line - 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 an integrated DSL 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 power 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 power 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 (signal pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL signal pair twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 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 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
Signal pair: 1kV

Protective conductor
G = with GN-YE protective conductor

Bending cycles & operation parameters
10 mio. cycles

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 mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Hybrid cables for power chain applications				
1023275	4 G 1,5 + (2 x 22AWG)	11.2	115	198
1023276	4 G 2,5 + (2 x 22AWG)	12.6	160	269
1023277	4 G 4 + (2 x 22AWG)	14.0	218	343
1023274	4 G 1 + (2 x 0,75) + (2 x 22AWG)	11.8	133	202
1023278	4 G 1,5 + (2 x 1,0) + (2 x 22AWG)	13.2	152	256
1023279	4 G 2,5 + (2 x 1,0) + (2 x 22AWG)	14.0	195	313
1023280	4 G 4 + (2 x 1,0) + (2 x 22AWG)	15.8	268	407

Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
HIPERFACE DSL® is a registered trademark of SICK AG, ACURO®link and SCS open link are registered trademarks of Hengstler GmbH
Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO 7DSL refer to page 14
- ÖLFLEX® SERVO FD 796 CP refer to page 12

Accessories

- Protective cable conduit systems and cable carrier systems refer to main catalogue
- Circular connectors refer to main catalogue

ÖLFLEX® ROBUST FD

Highly flexible, all-weather control cable with TPE sheath - resistant to a wide range of chemical media

Info

- New dimensions available !
- Extended Line - Long travel lengths or high acceleration
- Good chemical resistance

Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning and cooling agents
- Well-suited to frequent steam cleaning
- Low particle emission at moved chain application

Application range

- In power chains or moving machine parts
- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For indoor and outdoor use

Product features

- Highly resistant to oil and chemicals
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Hydrolysis-resistant to warm and hot water
- Good chemical resistance to ester-based hydraulic fluids
- Flexible down to -40°C

Norm references / Approvals

- Based on VDE 0250 / 0285
- Clean room classification for individual items on request
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- Robust outer sheath made of special halogen-free TPE, black (RAL 9005)

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable

Core identification code
Black cores with printed white numbers (VDE 0293-1)

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 (at temperatures < 70 °C)
up from 10 x outer diameter (at max. temperature of 105 °C)
Fixed installation: 4 x outer diameter

Nominal voltage
U0/U: 300/500 V

Bending cycles & operation parameters
10 mio. cycles

Test voltage
4000 V

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

Temperature range
Flexing: -40°C to +105°C
Fixed installation: -50°C to +105°C

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® ROBUST FD				
0026536	2 X 0.5	6.1	10	34
0026537	3 G 0.5	6.6	14	45
0026538	4 G 0.5	7.3	19	55
0026539	5 G 0.5	8	24	67
0026540	7 G 0.5	9.6	34	93
0026544	12 G 0.5	11.6	58	142
0026545	18 G 0.5	13.9	86	208
0026546	25 G 0.5	17.3	120	298
0026547	2 X 0.75	6.4	14	41
0026501	3 G 0.75	6.9	22	51
0026502	4 G 0.75	7.7	29	69
0026503	5 G 0.75	8.6	36	87
0026504	7 G 0.75	10.4	50	127
0026505	12 G 0.75	12.2	86	182
0026506	18 G 0.75	14.9	130	277
0026507	25 G 0.75	18.5	180	421
0026508	2 X 1.0	6.8	29	49
0026509	3 G 1.0	7.4	29	63
0026510	4 G 1.0	8.2	38	82
0026511	5 G 1.0	9.2	48	105

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
0026516	7 G 1.0	11.1	68	157
0026517	12 G 1.0	13.3	115	226
0026518	18 G 1.0	15.9	173	345
0026519	25 G 1.0	19.8	240	547
0026548	2 X 1.5	8	29	73
0026521	3 G 1.5	8.9	43	90
0026522	4 G 1.5	9.9	58	118
0026523	5 G 1.5	11	72	149
0026524	7 G 1.5	13.4	101	233
0026525	12 G 1.5	15.8	173	322
0026526	18 G 1.5	18.9	259	494
0026527	25 G 1.5	23.5	360	695
0026531	4 G 2.5	11.8	96	181
0026532	5 G 2.5	12.9	120	228
0026533	7 G 2.5	15.7	168	329
0026534	12 G 2.5	18.7	288	491
0026541	4 G 4.0	13.8	153	261
0026551	4 G 6.0	14.8	230	356
0026561	4 G 10.0	20.1	384	596
0026571	4 G 16.0	23.8	614	910

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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Similar products

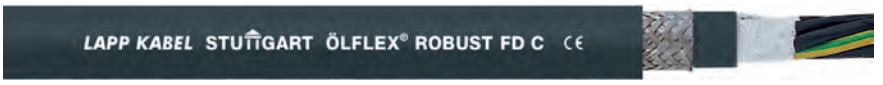
- ÖLFLEX® FD 855 P refer to main catalogue

Accessories

- SILVYN® CHAIN cable protection and guiding systems

ÖLFLEX® ROBUST FD C

Highly flexible, screened all-weather control cable with TPE sheath - resistant to a wide range of chemical media



Info

- New dimensions available !
- Extended Line - Long travel lengths or high acceleration
- Good chemical resistance

Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning and cooling agents
- Well-suited to frequent steam cleaning

Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

Product features

- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Highly resistant to oil and chemicals
- Hydrolysis-resistant to warm and hot water
- Good chemical resistance to ester-based hydraulic fluids
- Flexible down to -40°C

Norm references / Approvals

- Based on VDE 0250 / 0285
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- Inner sheath made of TPE
- Tinned-copper braiding
- Robust outer sheath made of special halogen-free TPE, black (RAL 9005)

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable

Core identification code
Black cores with printed white numbers (VDE 0293-1)

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
(at temperatures < 70 °C)
up from 10 x outer diameter
(at max. temperature of 105 °C)
Fixed installation: 4 x Outer diameter

Nominal voltage
U0/U: 300/500 V

Bending cycles & operation parameters
10 mio. cycles

Test voltage
4000 V

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

Temperature range
Flexing: -40 °C to +105 °C
Fixed installation: -50 °C to +105 °C

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® ROBUST FD C				
0026736	2 X 0.5	8.3	34	77
0026737	3 G 0.5	8.8	42	92
0026738	4 G 0.5	9.5	50	108
0026739	5 G 0.5	10.4	58	127
0026740	7 G 0.5	12	74	165
0026744	12 G 0.5	14.4	121	248
0026745	18 G 0.5	16.7	158	330
0026746	25 G 0.5	20.3	231	471
0026747	2 X 0.75	8.6	41	87
0026701	3 G 0.75	9.1	50	110
0026702	4 G 0.75	10.1	61	137
0026703	5 G 0.75	10.8	73	160
0026704	7 G 0.75	12.6	107	238
0026705	12 G 0.75	15	152	312
0026706	18 G 0.75	17.7	206	448
0026707	25 G 0.75	21.7	299	657
0026708	2 X 1.0	9	47	105
0026709	3 G 1.0	9.8	61	125
0026710	4 G 1.0	10.6	75	157
0026711	5 G 1.0	12.1	86	198

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
0026716	7 G 1.0	13.9	132	278
0026717	12 G 1.0	16.1	189	370
0026718	18 G 1.0	18.7	278	549
0026719	25 G 1.0	23	370	784
0026748	2 X 1.5	10.2	59	127
0026721	3 G 1.5	10.9	80	163
0026722	4 G 1.5	12.1	99	210
0026723	5 G 1.5	13.6	130	264
0026724	7 G 1.5	15.8	175	370
0026725	12 G 1.5	18.4	257	498
0026726	18 G 1.5	22.1	379	749
0026727	25 G 1.5	27.1	556	1042
0026731	4 G 2.5	14.4	162	307
0026732	5 G 2.5	15.5	188	361
0026733	7 G 2.5	18.3	253	512
0026734	12 G 2.5	21.9	407	730
0026741	4 G 4.0	16.2	227	412
0026751	4 G 6.0	17.2	307	519
0026761	4 G 10.0	23.3	514	853
0026771	4 G 16.0	27.2	810	1273

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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® PETRO FD 865 CP refer to main catalogue

Accessories

- SKINTOP® MS-HF-M BRUSH refer to main catalogue
- SKINTOP® MS-M BRUSH refer to main catalogue
- SILVYN® CHAIN cable protection and guiding systems

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 - 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 power 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 WTTC Wind Turbine Tray Cable AWM Style 20886
- Certifications Canada c(UL) & CSA AWM: CIC/TC Control Instrumentation Cable/ Tray Cable FT4, AWM I/II A/B FT4
- Class 1 Division 2 per NEC Article 501
- For use in power 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

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable

Core identification code
Black with white numbers

Certifications
(UL) TC-ER, MTW, WTTC, UL AWM
c(UL) CIC/TC FT4, CSA AWM I/II A/B FT4

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_0/U 300/500 V

Bending cycles & operation parameters
5 mio. cycles

Test voltage
2000 V

Protective conductor
G = with GN-YE protective conductor

Temperature range
Fixed installation: -40°C to +90°C (according to AWM +105°C)
Flexing: -25°C to +90°C

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® CHAIN TM				
8718030	3 G 1.0	7.8	30	66
8718040	4 G 1.0	8.6	39	82
8718050	5 G 1.0	9.3	33	95
8718070	7 G 1.0	10.7	68	125
8718120	12 G 1.0	12.3	118	210
8718180	18 G 1.0	15.4	175.6	308
8718250	25 G 1.0	17.8	244	414
8716030	3 G 1.5	8.6	43	92
8716040	4 G 1.5	9.5	58	112
8716050	5 G 1.5	10.3	73	134
8716070	7 G 1.5	12	101	180
8716120	12 G 1.5	14.7	167	311
8716180	18 G 1.5	17.2	261	443
8716250	25 G 1.5	20	360	621
8714040	4 G 2.5	10.6	97	180
8714070	7 G 2.5	14.5	168	286
8712040	4 G 4.0	12.4	155	295
8710040	4 G 6.0	15.2	231	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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Accessories

- SILVYN® CHAIN cable protection and guiding systems

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 - 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 power 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
  WTTC Wind Turbine Tray Cable
  AWM Style 20886
- Certifications Canada c(UL) & CSA AWM:
  CIC/TC Control Instrumentation Cable/ Tray Cable FT4, AWM I/II A/B FT4
- Class 1 Division 2 per NEC Articles 336, 501
- For use in power 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

Technical data

Classification
ETIM 5.0 Class-ID: EC000104
ETIM 5.0 Class-Description: Control cable

Core identification code
Black with white numbers

Certifications
(UL) TC-ER, MTW, WTTC, UL AWM
c(UL) CIC/TC FT4, CSA AWM I/II A/B FT4

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

Bending cycles & operation parameters
5 mio. cycles

Test voltage
2000 V

Protective conductor
G = with GN-YE protective conductor

Temperature range
Fixed installation: -40°C to +90°C (according to AWM +105°C)
Flexing: -25°C to +90°C

Article number	Number of cores and mm² per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® CHAIN TM CY				
8718030S	3 G 1.0	8.4	60	122
8718040S	4 G 1.0	9.1	71	158
8718050S	5 G 1.0	10	85	183
8718070S	7 G 1.0	11.4	140	207
8718120S	12 G 1.0	13.9	228	341
8718180S	18 G 1.0	16.1	321	472
8718250S	25 G 1.0	18.6	336	649
8716030S	3 G 1.5	9.2	77	170
8716040S	4 G 1.5	10.2	98	190
8716050S	5 G 1.5	11	113	223
8716070S	7 G 1.5	12.7	146	269
8716120S	12 G 1.5	15.4	249	463
8716180S	18 G 1.5	18.1	350	679
8716250S	25 G 1.5	22.1	466	951
8714040S	4 G 2.5	11.4	138	269
8714070S	7 G 2.5	15.2	219	420
8712040S	4 G 4.0	13.1	229	463
8710040S	4 G 6.0	16.1	310	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.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Accessories

- SILVYN® CHAIN cable protection and guiding systems

ETHERLINE® FESTOON PN Cat.5e

Ethernet cable for Category 5e, Class D for Festoon applications - verified up to 100 MHz

Info

- Fast and easy cable preparation by FC inner sheath
- For PROFINET applications

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 conveying systems and cable trolleys
- Power chain applications
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght für 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Cat.5e-Performance
- Optimized cable construction for use in Festoon applications
- Fast Connect (FC) cable design
- The oil-resistant PVC sheath enables usage in industrial environments
- High flame retardance acc. to IEC 60332-3-24 and FT4

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- UL AWM Style 21694

Product Make-up

- Fine-wire strand made of tinned-copper wires
- Star quad
- Colour-coded in accordance with PROFINET for Cat.5e apllications
- Inner sheath: PVC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC outer sheath
- Colour: green (based on RAL 6018)

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

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

Mean 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]	Copper index (kg/km)
ETHERLINE® FESTOON PN Cat.5e					
2170936	ETHERLINE® FESTOON PN Cat.5e	2x2xAWG22/7	1.55	6.5	32

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to main catalogue
- EPIC® DATA PN 90 RJ45 refer to main catalogue
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to main catalogue
- EPIC® DATA M12D refer to main catalogue
- KNIPEX Elektronik Super Knips® refer to main catalogue
- FC STRIP stripping tool refer to main catalogue

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

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
- Max. cable lenght for 100 Mbit/s up to 10 Gbit/s is 100 m
- 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
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

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

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 8 x outer diameter

Mean characteristic impedance
nom. 100 Ω acc. to IEC 61156-5

Temperature range
fixed installation
PVC: -30°C to +80°C
PUR: -40°C to +80°C
FRNC: -30°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)
PVC outer sheath					
2170594	ETHERLINE® PN CAT.7 Y	4x2xAWG23/1	1.4	8.1	40
Halogen-free jacket					
2170595	ETHERLINE® PN CAT.7 FRNC	4x2xAWG23/1	1.4	8.1	40
PUR outer sheath, halogen-free					
2170596	ETHERLINE® PN CAT.7 P	4x2xAWG23/1	1.4	8.1	40

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to main catalogue
- EPIC® DATA 90 RJ45 Cat.6_A refer to main catalogue
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to main catalogue
- EPIC® DATA M12X refer to main catalogue
- EPIC® DATA CCR FA refer to main catalogue

ETHERLINE® PN Cat.7 FLEX

Ethernet cable Category 7, Class F for flexible application - verified up to 600 MHz

Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s

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
- Max. cable lenght for 100 Mbit/s up to 10 Gbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Robust, halogen-free outer sheath
- 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

- For fixed installation - UL/CSA CMG (PVC) and UL/CSA CM (FRNC) certification

Product Make-up

- Stranded conductor, 7-wire, bare
- 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

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 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

Mean characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

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)
ETHERLINE® PN Cat.7 FLEX					
2170598	ETHERLINE® PN CAT.7 FRNC FLEX	4x2xAWG23/7	1.53	8.7	45
2170597	ETHERLINE® PN CAT.7 Y FLEX	4x2xAWG23/7	1.53	8.7	45

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
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 are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to main catalogue
- EPIC® DATA 90 RJ45 Cat.6_A refer to main catalogue
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to main catalogue
- EPIC® DATA M12X refer to main catalogue
- EPIC® DATA CCR FA refer to main catalogue

EtherNet/IP™

ETHERLINE® Cat.6$_A$ Flex patch cables

Pre-assembled patch cables based on our ETHERLINE® Cat.7 FLEX.

Info

- Additional variants are available at www.lappgroup.com/assemblyfinder or on request.

Benefits

- Only for patch cable applications (max. 60 m)
- Plug & Play for flexible connection solutions

Application range

- CAT.6$_A$ qualified for 10Gbit/s
- M12 X-coded connectors, comp. with IEC 61076-2-109
- RJ45 connectors, comp. with IEC 60603-7-51

Product features

- Meets the requirements according to CAT.6$_A$, ISO/IEC 11801 and EN 50173
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product Make-up

- Braided conductor, 4x2x AWG26/7
- Twisted pair construction permits largely interference-free operation (decoupling).
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Outer sheath: PUR compound, halogenfree
- Pre-assembled patchcord with normcompliant connectors
- Colour: green (based on RAL 6018)

Technical data

Classification
ETIM 5.0 Class-ID: EC002599
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

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

Protection rating
IP65 / IP67 (M12)
IP20 (RJ45)

Temperature range
Flexing: -30°C to +80°C (M12)
Flexing: -40°C to +70°C (RJ45)

		RJ45	M12 plug straight	M12 socket straight	Free cable end
	Length (m)	Article number			
RJ45	0,5	2172362	2172380	2172389	2172371
	1	2172363	2172381	2172390	2172372
	2	2172364	2172382	2172391	2172373
	3	2172365	2172383	2172392	2172374
	5	2172366	2172384	2172393	2172375
	10	2172368	2172386	2172395	2172377
	20	2172370	2172388	2172397	2172379
M12 plug straight	0,5	2172380	2172326	2172335	2172317
	1	2172381	2172327	2172336	2172318
	2	2172382	2172328	2172337	2172319
	3	2172383	2172329	2172338	2172320
	5	2172384	2172330	2172339	2172321
	10	2172386	2172332	2172341	2172323
	20	2172388	2172334	2172343	2172325
M12 socket straight	0,5	2172389	2172335	2172344	2172353
	1	2172390	2172336	2172345	2172354
	2	2172391	2172337	2172346	2172355
	3	2172392	2172338	2172347	2172356
	5	2172393	2172339	2172348	2172357
	10	2172395	2172341	2172350	2172359
	20	2172397	2172343	2172352	2172361

Photographs 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.

ETHERLINE® ACCESS M05T/M08T

Managed switches for industrial communication

Info

- Redundant power inputs
- Robust metal housing and DIN rail mounting
- Fanless maintenance free

Benefits

- Improve your total cost of ownership with faster installation and lower downtime
- Most flexible and globally present solutions from one hand

Product features

- Simple setup of redundant networktopologies with reconfiguration time < 20 ms
- RJ45 Ports: 10/100BaseT(X)
- Packet Buffer Size: 1 Mbit
- Supported protocols: HTTP, Telnet,EtherNet/IP, Modbus/TCP, IPv6, and many more
- Redundant Power Input: 24 VDC

Norm references / Approvals

- Shock IEC 60068-2-27
- Freefall IEC60068-2-32
- Vibration IEC 60068-2-6

Technical data

Protection rating
IP 30

Temperature range
0°C to +60°C

ETHERLINE® ACCESS U05T/U08T

Unmanaged switches for industrial communication

Info

- Redundant power inputs
- Robust metal housing and DIN rail mounting
- Fanless maintenance free

Benefits

- Improve your total cost of ownership with faster installation and lower downtime
- Most flexible and globally present solutions from one hand

Product features

- RJ45 Ports: 10/100BaseT(X)
- Packet Buffer Size: 512 kbit
- Broadcast storm protection
- Redundant Power Input: 24 VDC

Norm references / Approvals

- Shock IEC 60068-2-27
- Freefall IEC60068-2-32
- Vibration IEC 60068-2-6

Technical data

Protection rating
IP 30

Temperature range
-10°C to +60°C

Article number	Article designation	Type	RJ45 ports	MTBF in years
ETHERLINE® ACCESS M05T/M08T				
21700121	ETHERLINE® ACCESS M05T	Managed	5	> 97
21700122	ETHERLINE® ACCESS M08T	Managed	8	> 125
ETHERLINE® ACCESS U05T/U08T				
21700118	ETHERLINE® ACCESS U05T	Unmanaged	5	> 347
21700119	ETHERLINE® ACCESS U08T	Unmanaged	8	> 277

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

Accessories

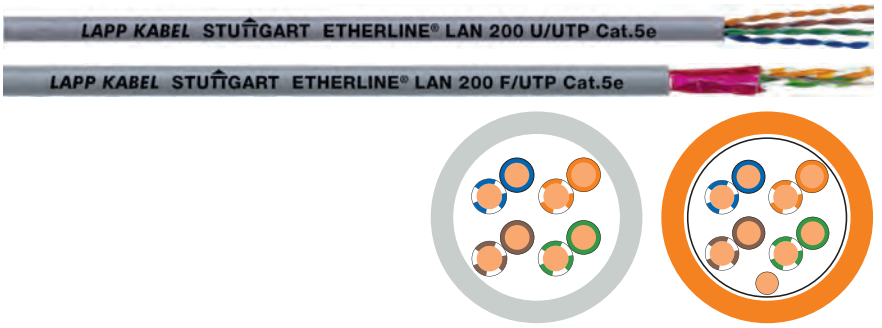
- ETHERLINE® EC FD Cat.5e RJ45 refer to main catalogue

ETHERLINE® LAN 200 Cat.5e

Ethernet cable for Category 5e/ class D - verfied up to 200 MHz

Info

- CPR: Article number choice under www.lappkabel.com/cpr



Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

Application range

- Areas where the end device density is very high
- For office wiring, administration and development buildings in the tertiary sector (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/ IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-TIEEE 802.5: ISDN; FDDI; ATM; cable sharing
- Flame retardant acc. to IEC 60332-1-2

Norm references / Approvals

- LAN CAT.5e cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class D).

Product Make-up

- Solid conductor 4x2xAWG24/1
- U/UTP: no overall or pair screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- F/UTP: foil screening as overall screening
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath either as PVC or LSZH (color grey RAL 7035)

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%/ 100 MHz

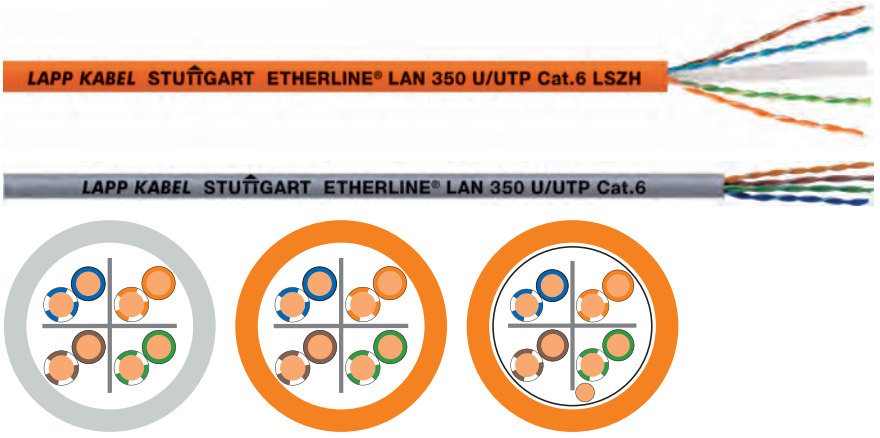
Temperature range
Fixed installation: -20°C to +60°C
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
PVC							
2170950	200 U/UTP Cat.5e	4 x 2 x AWG24/1	0.9	5.1	grey	17	32
2170126	200 F/UTP Cat.5e	4 x 2 x AWG24/1	1.06	6.4	grey	18	39
2170951	200 SF/UTP Cat.5e	4 x 2 x AWG24/1	1.05	6.3	grey	28	46
LSZH							
2170952	200 F/UTP Cat.5e LSZH	4 x 2 x AWG24/1	1.05	6.3	orange	18	40
2170953	200 SF/UTP Cat.5e LSZH	4 x 2 x AWG24/1	1.05	6.4	orange	28	46

Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

ETHERLINE® LAN 350 Cat.6

Ethernet cable for Category 6/ class E - verified up to 350 MHz



Info

- CPR: Article number choice under www.lappkabel.com/cpr

Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

Application range

- Areas where the end device density is very high
- For office wiring, administration and development buildings in the tertiary sector (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/ IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-TIEEE 802.5: ISDN; FDDI; ATM; cable sharing
- Backward compatible
- Flame retardant acc. to IEC 60332-1-2

Norm references / Approvals

- LAN CAT.6 cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class E - permanent link).
- Class E out of the standard ISO/IEC 11801 corresponds to CAT.6

Product Make-up

- Solid conductor
- U/UTP: no overall or pair screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- F/UTP: Foil shielding as overall shielding, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- Outer sheath as PVC or LSZH version

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -20°C to +60°C
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
PVC							
2170954	350 U/UTP Cat.6	4 x 2 x AWG24/1	0.95	6.0	grey	18	40
LSZH							
2170955	350 U/UTP Cat.6 LSZH	4 x 2 x AWG24/1	0.95	6.0	orange	18	40
2170956	350 F/UTP Cat. 6 LSZH	4 x 2 x AWG23/1	1.07	7.4	orange	19	52

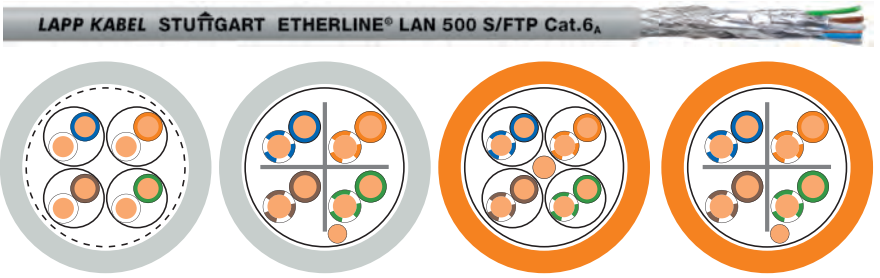
Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

ETHERLINE® LAN 500 Cat.6$_A$

Ethernet cable for Category 6$_A$ / class E$_A$ -verified up to 500 MHz

Info

- CPR: Article number choice under www.lappkabel.com/cpr



Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

Application range

- Areas where the end device density is very high
- For office wiring, administration and development buildings in the tertiary sector (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-TIEEE 802.5: ISDN; FDDI; ATM; cable sharing
- Backward compatible
- Flame retardant acc. to IEC 60332-1-2

Norm references / Approvals

- LAN Cat.6$_A$ cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class EA - permanent link).

Product Make-up

- Solid conductor 4x2xAWG23/1
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- F/UTP: Foil shielding as overall shielding, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- F/FTP: aluminium compound foil as overall screening and pair screening
- Outer sheath as PVC or LSZH version

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -20°C to +60°C
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
PVC							
2170960	500 S/FTP Cat.6$_A$	4 x 2 x AWG23/1	1.28	7.3	grey	24	52
2170961	500 F/UTP Cat.6$_A$	4 x 2 x AWG23/1	1.09	7.4	grey	24	52
LSZH							
2170962	500 F/FTP Cat.6$_A$ LSZH	4 x 2 x AWG23/1	1.28	7.3	orange	22	54
2170963	500 F/UTP Cat.6$_A$ LSZH	4 x 2 x AWG23/1	1.09	7.4	orange	24	56

Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA AX RJ45 Cat.6$_A$ refer to main catalogue

ETHERLINE® LAN 1000 Cat. 7A

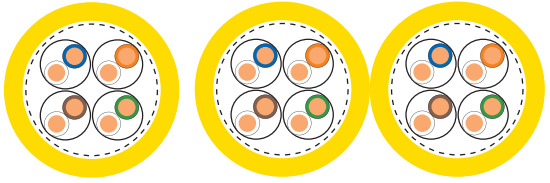
Ethernet cable for Category 7$_A$/ class F$_A$ - verified up to 1000 MHz

Info

- CPR: Article number choice under www.lappkabel.com/cpr

ETHERLINE® LAN 1200 Cat.7A

Ethernet cable for Category 7$_A$/ class F$_A$ - verified up to 1200 MHz



Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

Application range

- Areas where the end device density is very high
- For office wiring, administration and development buildings in the tertiary sector (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-TIEEE 802.5: ISDN; FDDI; ATM; cable sharingIEEE 802.3at: suitable for PoE, VoIP
- Backward compatible
- Flame-retardant according IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

Norm references / Approvals

- LAN Cat.7A cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class FA - permanent link).

Product Make-up

- Solid conductor 4x2xAWG23/1, duplex 2x(4x2xAWG23)
- Core insulation: PE
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 1021)

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -20°C to +60°C
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® LAN 1000 S/FTP Cat.7$_A$							
2170971	1000 S/FTP Cat.7$_A$ LSZH	4 x 2 x AWG23/1	1.3	7.5	yellow	24	56
2170972	1000 S/FTP Cat.7$_A$ LSZH duplex	2x (4x2xAWG23/1)	1.3	15.2	yellow	48	113
ETHERLINE® LAN 1200 S/FTP Cat.7$_A$							
2170974	1200 S/FTP Cat.7$_A$ LSZH	4 x 2 x AWG23/1	1.33	7.5	yellow	26	58
2170975	1200 S/FTP Cat.7$_A$ LSZH duplex	2x (4x2xAWG23/1)	1.33	15.2	yellow	52	114

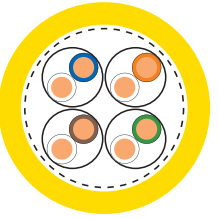
Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

ETHERLINE® LAN 1600 Cat.7$_A$

Data cable for Category 7$_A$/ class F$_A$ - verified up to 1600 MHz

Info

- CPR: Article number choice under www.lappkabel.com/cpr
- Verified up to 1600 MHz at max. 30m cable length (data centers)



Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- 1500 MHz: Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)
- 1600 MHz: at max. 30m length (typical in data centers)

Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-TIEEE 802.5: ISDN; FDDI; ATM; cable sharingIEEE 802.3at: suitable for PoE, VoIP
- Backward compatible
- Flame-retardant according IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

Norm references / Approvals

- LAN Cat.7A cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class FA - permanent link).
- Exceeds the requirements of EN 50173 and ISO/IEC 11801 standards

Product Make-up

- Solid conductor 4x2xAWG22/1
- Core insulation: cellular polyolefin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 1021)

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%

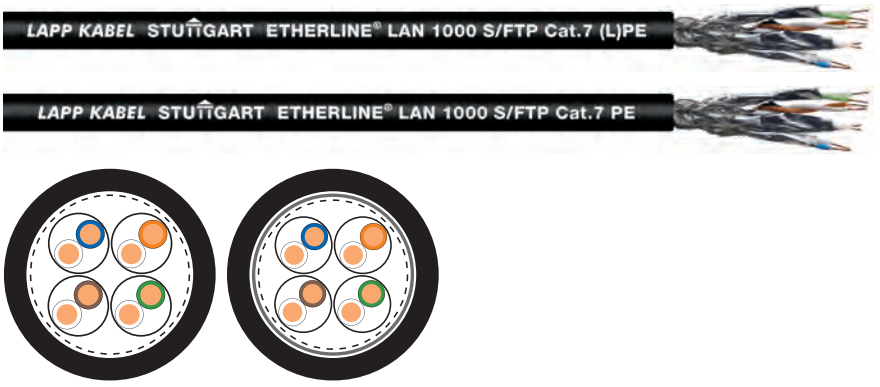
Temperature range
Fixed installation: -20°C to +60°C
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® LAN 1600 Cat.7$_A$							
2170976	1600 S/FTP Cat.7$_A$ LSZH	4 x 2 x AWG22/1	1.56	8.2	yellow	34	71

Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

UNITRONIC® LAN OUTDOOR

Ethernet cable for Category 7 / class F - verified up to 1000 MHz, for outdoor applications and direct burial



Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801
- Suitable for outdoor use and direct burial
- UV-resistant

Application range

- For outdoor use
- Suitable for direct burial
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

Norm references / Approvals

- LAN Cat.7 cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class F - permanent link).

Product Make-up

- Solid conductor 4x2xAWG23/1
- Core insulation: PE
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PE, black
  (L)PE additional with aluminum tape

Technical data

Classification
ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable

Minimum bending radius
during installation: 8 x outer diameter
Fixed installation: 4 x outer diameter

Mean characteristic impedance
100 Ω ± 15%

Temperature range
Flexing: -10°C to +50°C
During laying: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Colour	Copper index (kg/km)	Weight (kg/km)
Suitable for direct burial							
2170978	1000 S/FTP Cat.7 PE	4 x 2 x AWG23/1	1.3	7.7	black	24	48
Suitable for direct routing underground, not transversely waterproof							
2170977	1000 S/FTP Cat.7 (L)PE	4 x 2 x AWG23/1	1.3	9.6	black	24	77

Packaging size: Drum
Photographs are not to scale and do not represent detailed images of the respective products.

ETHERLINE® LAN RJ45 Cat.6$_A$

Double shielded S/FTP office patchcords RJ45 Cat.6$_A$

Info

- With flexible anti-kink protection and simple mechanism to unlock

Benefits

- Improved bending and anti-kink protection for lower bending radii without damage
- Stable locking lugs
- Gold plated contacts
- High EMC protection
- Different colors for the assignment of different applications

Application range

- Connecting- and Patchcable for use in structered building cabling acc. to ISO/IEC 11801 and EN 50173 (2nd Version)
- For use in the workplace (tertiary area) to connect various devices within the scope of “Structured Cabling”
- Suited for all applications of classes D to F Multimedia (video, data, voice)> 10 GbE acc. to IEEE802.3 (cable sharing, VoIP)

Product features

- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Backward compatible

Norm references / Approvals

- Halogen-free according to IEC 60754-1/2
- Flame retardant acc. to IEC 60332-1-2
- Connector acc. to IEC60603-7-51

Product Make-up

- Cable make up: 4x2xAWG27/7 PIMF
- Core insulation: cellular-PE
- Outer sheath: halogen-free, flame-retardant compound

Technical data

Classification
ETIM 5.0 Class-ID: EC001262
ETIM 5.0 Class-Description: Patch cord copper (twisted pair)

Minimum bending radius
In operation: 5 x outer diameter

Protection rating
IP20

Mean characteristic impedance
100 Ω ± 5%

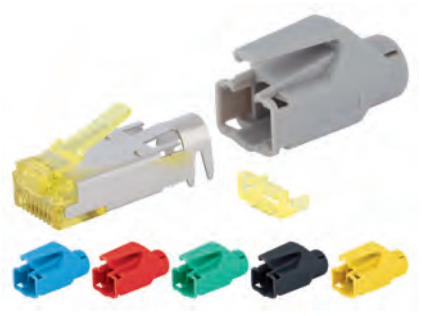
Temperature range
-20°C to +60°C

Length (m)	Outer diameter (mm)	black	grey	blue	white	green	yellow	red
0.5	5.7	24441240	24441200	24441224	24441248	24441216	24441232	24441208
1	5.7	24441241	24441201	24441225	24441249	24441217	24441233	24441209
1.5	5.7	24441242	24441202	24441226	24441250	24441218	24441234	24441210
2	5.7	24441243	24441203	24441227	24441251	24441219	24441235	24441211
3	5.7	24441244	24441204	24441228	24441252	24441220	24441236	24441212
5	5.7	24441245	24441205	24441229	24441253	24441221	24441237	24441213
7.5	5.7	24441246	24441206	24441230	24441254	24441222	24441238	24441214
10	5.7	24441247	24441207	24441231	24441255	24441223	24441239	24441215

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Details of the clamping force are available upon request, halogen-free.
Photographs are not to scale and do not represent detailed images of the respective products.

Connector RJ45 CAT.6$_A$ Hirose TM31

Connector RJ45 CAT.6$_A$, Class E$_A$ bis 500 MHz



Application range

- Connector RJ45 CAT.6$_A$ Hirose TM31 (STP)
- For data transfer rates up to 500 MHz

Product features

- Channel class E$_A$ up to 500 MHz (CAT.6$_A$)
- For core insulation ca. 0.9 - 1.0 mm
- Outer diameter max. 6,6 mm
- Easy to handle

Product Make-up

- Connector (inkl. Antikink & Guide Plate)
- Suitable for braided conductors: AWG24/7, AWG26/7, AWG27/7
- Fully screened

Technical data

Classification
ETIM 5.0 Class-ID: EC002641
ETIM 5.0 Class-Description: Modular connector (industrial connector)

Protection rating
IP 20

Ambient temperature (operation)
-25°C .. +60°C (operation + storage)

Article number	Article designation
Connector RJ45 CAT.6$_A$ Hirose TM31	
24441256	RJ45 connector TM31 Hirose Cat.6$_A$ GY
24441258	RJ45 Connector TM31 Hirose Cat.6$_A$ BK
24441259	RJ45 connector TM31 Hirose Cat.6$_A$ RD
24441260	RJ45 connector TM31 Hirose Cat.6$_A$ GN
24441261	RJ45 connector TM31 Hirose Cat.6$_A$ BU
24441262	RJ45 connector TM31 Hirose Cat.6$_A$ YE

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

Accessories

- Crimping tool RJ45 Hirose refer to main catalogue

EPIC® MH Gigabit Modul

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Modular connector system, mateable with the market standard
- Gigabit module for Ethernet data rates up to 10 GBit/s, Cat. 7

Suitable housing

- EPIC MH 6 R
- EPIC MH 10 R
- EPIC MH 16 R
- EPIC MH 24 R

Suitable contacts:

- EPIC® MH 1.0mm contacts machined Page 36

Benefits

- Gigabitmodule, all around shielded, 4 pair of wires, for Ethernet data rates up to 10 GBit/s, Cat. 7
- EPIC® MH system is mateable with the market standard
- The mix of different functions in one plug guarantees high flexibility
- Railway applications
  - Fire protection on railway vehicles: Test according EN 45545-2. Requirement sets R22 and R23. Hazard level HL1, HL2 and HL4

Application range

- Industrial machinery and plant engineering
- Industry 4.0 applications
- Robotics industry
- Renewable energy
- Railway applications / vehicle construction

Technical data

Classification
ETIM 5.0 Class-ID: EC002641
ETIM 5.0 Class-Description: Modular connector

Rated voltage (V)
50

Rated impulse voltage
0,8 kV

Rated current (A)
5

Flammability
UL94 V-0

Number of contacts
8

Material
PA Polyamid
Zinc die-cast

Cycle of mechanical operation
500

Temperature range
-40 °C
+125 °C

Article number	Article description	Contact type	Clamping range in mm	Slots	Pieces / PU
EPIC® MH Gigabit Kit					
44423291	EPIC® MHS Gigabit Kit small	male	5 - 7	1	1
44423292	EPIC® MHB Gigabit Kit small	female	5 - 7	1	1
44423326	EPIC® MHS Gigabit Kit medium	male	7 - 10	1	1
44423327	EPIC® MHB Gigabit Kit medium	female	7 - 10	1	1
EPIC® MH Gigabit Parts					
44423276	EPIC® MHS Gigabit	male		1	10
44423277	EPIC® MHB Gigabit	female		1	10
44423278	EPIC® MHS Gigabit PIN	male			10
44423279	EPIC® MHS Gigabit PIN + GND	male			10
44423280	EPIC® MHB Gigabit PIN	female			10
44423281	EPIC® MHB Gigabit PIN + GND	female			10
cable clamp					
44423282	EPIC® MH Clamp 5 - 7 mm		5 - 7		10
44423283	EPIC® MH Clamp 7 - 10 mm		7 - 10		10
44423284	EPIC® MH Clamp 10 - 12 mm		10 - 12		10

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

EPIC® MH 3+4

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Modular connector system, mateable with the market standard
- Modul with 3 power contacts and 4 signal contacts

Suitable housing

- EPIC MH 6 R
- EPIC MH 10 R
- EPIC MH 16 R
- EPIC MH 24 R

Suitable contacts:

- EPIC MH 4.0mm Contacts
- EPIC® H-D 1.6 machined contacts

Benefits

- Hybridmodul for energy- and signal transmission in a minimum of space
- Crimp connection for permanent vibration proof contact
- EPIC® MH system is mateable with the market standard
- The mix of different functions in one plug guarantees high flexibility
- Railway applications
  - Fire protection on railway vehicles: Test according EN 45545-2. Requirement sets R22 and R23. Hazard level HL1, HL2 and HL4

Application range

- Mechanical engineering
- Robotics industry
- Plant engineering
- Renewable energy
- Railway applications / vehicle construction

Technical data

Classification
ETIM 5.0 Class-ID: EC002641
ETIM 5.0 Class-Description: Modular connector (industrial connector)

Rated voltage (V)
830 V

Rated impulse voltage
8 kV

Rated current (A)
40
10

Pollution degree
3

Flammability
UL94 V-0

Number of contacts
3 + 4

Material
PA

Cycle of mechanical operation
500

Temperature range
-40°C
+125°C

Article number	Article description	Contact type	Conductor cross-section (mm²)	Rated voltage (V)	Rated current (A)	Slots	Pieces / PU
EPIC® MH 3+4							
44423293	EPIC® MHS 3+4 CM	male	0.14 - 6.00	830V	40A	1	10
44423294	EPIC® MHB 3+4 CM	female	0.14 - 6.00	830V	40A	1	10

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

EPIC® MH D-SUB

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Modular connector system, mateable with the market standard
- D-SUB insert with 9 or 15 contacts

Suitable housing

- EPIC MH 6 R
- EPIC MH 10 R
- EPIC MH 16 R
- EPIC MH 24 R

Suitable contacts:

- For D-SUB 9 pin: use contacts
  EPIC® MH 1.0mm stamped
  EPIC® MH 1.0mm contacts stamped
  Page 36
- For D-SUB 15 pin: use contacts
  EPIC® MH 0.8mm stamped
  EPIC® MH 0.8mm contacts stamped
  Page 36

Benefits

- D-Sub module for signal and data transmission with shielding
- Order contacts separately

Application range

- Mechanical engineering
- Robotics industry
- Plant engineering
- For renewable energy plants
  e.g. wind power
- Railway applications / vehicle construction

Technical data

Classification
ETIM 5.0 Class-ID: EC002641
ETIM 5.0 Class-Description: Modular connector (industrial connector)

Rated voltage (V)
500

Rated impulse voltage
0,8 kV

Rated current (A)
5

Pollution degree
3

Flammability
UL94 V-0

Number of contacts
9
15

Material
PA

Cycle of mechanical operation
500

Temperature range
-40 °C
+125 °C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
EPIC® MH D-SUB 9 pins					
44423295	EPIC® MHS D-SUB 9 CM	male	9	1	10
44423296	EPIC® MHB D-SUB 9 CM	female	9	1	10
EPIC® MH D-SUB 15 pins					
44423297	EPIC® MHS D-SUB 15 CM	male	15	1	10
44423298	EPIC® MHB D-SUB 15 CM	female	15	1	10

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

EPIC® MH 1.0mm contacts machined

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Machined gold plated contacts with 1mm diameter for EPIC® MH Gigabit module
- Gold-plated contacts for low transfer resistance

Benefits

- Machined gold plated contacts with 1mm diameter for EPIC® MH Gigabit module
- Gold-plated contacts for low transfer resistance

Application range

- Mechanical and plant engineering
- Robotics industry
- Renewable energy
- Railway applications / vehicle construction

Technical data

Classification
ETIM 5.0 Class-ID: EC000796
ETIM 5.0 Class-Description: Contact for industrial connectors

Stripping length (mm)
4.2 ± 0.5mm

Material
brass gold plated CuZn / Au

Cycle of mechanical operation
500

Article number	Article description	Contact type	Conductor cross-section AWG	Pieces / PU
EPIC® MH 1.0mm contacts machined				
44423285	EPIC® MH SCEM AU 0.09 - 0.25sqmm D=1.0	male	28 - 24	100
44423286	EPIC® MH BCEM AU 0.09 - 0.25sqmm D=1.0	female	28 - 24	100
44423287	EPIC® MH SCEM AU 0.13 - 0.33sqmm D=1.0	male	26 - 22	100
44423288	EPIC® MH BCEM AU 0.13 - 0.33sqmm D=1.0	female	26 - 22	100
44423289	EPIC® MH SCEM AU 0.25 - 0.52sqmm D=1.0	male	24 - 20	100
44423290	EPIC® MH BCEM AU 0.25 - 0.52sqmm D=1.0	female	24 - 20	100

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

EPIC® MH 1.0mm contacts stamped

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Stamped gold plated contacts with 1.0mm diameter for D-Sub inserts

Benefits

- Stamped gold plated contacts with 1.0mm diameter for D-Sub inserts
- Gold-plated contacts for low transfer resistance

Application range

- Mechanical and plant engineering
- Robotics industry
- Renewable energy
- Railway applications / vehicle construction

Technical data

Classification
ETIM 5.0 Class-ID: EC000796
ETIM 5.0 Class-Description: Contact for industrial connectors

Termination methods
Crimp termination

Stripping length (mm)
3 ± 0.5

Material
brass gold plated CuZn / Au

Cycle of mechanical operation
500

Article number	Article description	Contact type	Conductor cross-section AWG	Pieces / PU
EPIC® MH 1.0mm contacts stamped				
44423320	EPIC® MH SCEG AU 0.09 - 0.25sqmm D=1.0	male	28 - 24	100
44423322	EPIC® MH BCEG AU 0.09 - 0.25sqmm D=1.0	female	28 - 24	100
44423321	EPIC® MH SCEG AU 0.25 - 0.52 sqmm D=1.0	male	24 - 20	100
44423323	EPIC® MH SCEG AU 0.25 - 0.52 sqmm D=1.0	female	24 - 20	100

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

EPIC® MH 0.8mm contacts stamped

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Info

- Stamped gold plated contacts with 0.8mm diameter for D-Sub inserts
- Gold-plated contacts for low transfer resistance

Benefits

- Stamped gold plated contacts with 0.8mm diameter for D-Sub inserts
- Gold-plated contacts for low transfer resistance

Application range

- Mechanical and plant engineering
- Robotics industry
- Renewable energy
- Railway applications / vehicle construction

Article number	Article description	Contact type	Conductor cross-section AWG	Pieces / PU
EPIC® MH 0.8mm contacts stamped				
44423324	EPIC® MH SCEG AU 0.09 - 0.25sqmm D=0.8	male	28 - 24	100
44423325	EPIC® MH BCEG AU 0.09 - 0.25sqmm D=1.0	female	28 - 24	100

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

EPIC® POWERLOCK Crimp contacts

Contacts, tools, accessories for circular connectors

Info

- Max. crimp 660 A
- Do not plug with screw-type (400 A)

Suitable cables

- For best results at the connection, choose the smallest possible crimp contact

Technical data

Classification
ETIM 5.0 Class-ID: EC000796
ETIM 5.0 Class-Description: Contact for industrial connectors

Article number	Article designation	Version	Crimp sunk	PU
Contact with M12 threaded post, contact retaining pin included				
For type POWERLOCK A6 C, source				
44420260	POWERLOCK SP M12	Contact Drain, M12 Thread for cable lugs		1
Für Bauform POWERLOCK A6 C, Quelle				
44420261	POWERLOCK QP M12	Lamella contact source, M12 thread for cable lug		1
Crimp contact, contact retaining pin included				
For type POWERLOCK D6 C, source				
44420290	POWERLOCK QCM 35	35mm²	35	1
44420291	POWERLOCK QCM 50	50mm²	50	1
44420292	POWERLOCK QCM 70	70mm²	70	1
44420236	POWERLOCK QCM 95	95mm²	95	1
44420554	POWERLOCK QCM 120 NEW	120mm²	120	1
44420556	POWERLOCK QCM 150 NEW	150mm²	150	1
44420558	POWERLOCK QCM 185 NEW	185mm²	185	1
44420240	POWERLOCK QCM 240	240mm²	240	1
For type POWERLOCK F6 C, drain				
44420293	POWERLOCK SCM 35	35mm²	35	1
44420294	POWERLOCK SCM 50	50mm²	50	1
44420295	POWERLOCK SCM 70	70mm²	70	1
44420231	POWERLOCK SCM 95	95mm²	95	1
44420555	POWERLOCK SCM 120 NEW	120mm²	120	1
44420557	POWERLOCK SCM 150 NEW	150mm²	150	1
44420559	POWERLOCK SCM 185 NEW	185mm²	185	1
44420235	POWERLOCK SCM 240	240mm²	240	1

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

SKINTOP® BRUSH ADD-ON 24

Info

- EMC Kit with brush technology suitable for the SKINTOP® multi cable bushing systems for the 24 pin cut-outs

Benefits

- Faster, easier screen contact
- Optimum EMC protection
- Quicker installation and EMC contacting compared with other systems
- Maximum assembly freedom during adjustment
- Usable with different cable diameters at the same time

Product features

- Low-resistance screen contact
- Visible, large-scale screen contact

Application range

- For the EMC screen contacting of cables when using the SKINTOP® multi-cable entry systems
- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Control cabinet manufacturing
- Automation systems

Included

- Brush frame
- spacers
- mounting material

Technical data

Classification
ETIM 5.0 Class-ID: EC000240
ETIM 5.0 Class-Description: Cable entry system

Material
Frame: Aluminium
EMC brush: brass

Temperature range
-30°C to +110°C

Article number	Dimension in total	Lead-through opening	Bore-hole	PU
SKINTOP® BRUSH ADD-ON 24				
52220089	40x120mm	36x112mm	4,2mm	1

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

SILVYN® E-KIT

Info

- Orange coloured conduit kit with short lengths

Benefits

- Protection and bundling of cables, lines and wires
- Maintenance and retrofit
- Additional abrasion protection for critical areas
- Low rodent-protection

Application range

- E-Mobility

Product features

- Divisible and closed protection conduits
- High mechanical and chemical resistance
- Halogenfree

Norm references / Approvals

- Use acc. to the european regulation ECE/TRANS/WM.29/GRSP/2009/16 to mark high voltage systems and components (> 25V AC / > 60V DC) with the signal colour orange

Included

- Corrugated conduit, slit and closable
- Corrugated conduit, two-part and closable
- Knit woven fabric, closed and puncture-resistant
- Braided sleeve, slit and self-wrapping
- Cable ties (200x2.5mm) and installation tool

Technical data

Colour delivered
Orange

Material
Polyamide 6 (PA6)
Polypropylene (PP)
Polyester (PET)
Fire behaviour according to UL94 V-2

Temperature range
PP: -30 to +105°C
PA6: -55 to +125°C
PET: -40 to +160°C

Article number	Content	Dimension in mm	Properties	Material	Quantity	PU
SILVYN® E-KIT						
61737407	Corrugated conduit NW 17	16,8x21,0	slit with overlap	PP	3m	1
	Corrugated conduit NW 16	16,0x21,5	divisible and closeable	PP	3m	
	Knit woven fabric NW 20	20,0	puncture-resistant	PET	3m	
	Braided sleeve NW 19	19,0	self-wrapping	PET	3m	
	Cable ties	200x2,5	-	PA6	100 pcs	
	Installation tool	-	-	PA6	1 pc	

Other colours and sizes are available upon request.
Photographs are not to scale and do not represent detailed images of the respective products.

DYMO® XTL 300 / 500

Labelling of vinyl tapes, shrink tubes and wrapping labels

Benefits

- Label printer recognizes automatically inserted label
- Intuitive handling through integrated labelling applications
- Time-saving by pre-sized labels
- Accurate print preview
- Integrated rubber bumpers help prevent damage from accidental drops and falls

Application range

- Marking of cables, wires and components
- Resistant to UV-light, oil, humidity and chemicals

Product features

- Thermal transfer printing technology
- XTL 300: max. label width 24mm, colour display, manual cutter
- XTL 500: max. label width 54mm, touchscreen, automatic cutter

Note

- Free DYMO ID software for PC connection (available at www.dymo.com) for easy tranfer of labels

Included

- Kit contains 1 DYMO XTL 300 (incl. labels VIN 24BK / WH and LAM 21x39 WH) or XTL 500 (incl. labels VIN 54BK / WH and LAM 38x39 WH), charging adapter, USB cable, Li-Ion battery, lanyard and instruction in a hard case

Technical data

Classification
ETIM 5.0 Class-ID: EC001288
ETIM 5.0 Class-Description: Labelling material

Material
Vinyl tapes and wrapping labels: Vinyl
Shrink tube: Polyolefin (flame retardant UL224), shrink ratio 3:1

Temperature range
-40 °C to +60 °C

Article number	Article designation	Width (mm)	Length mm	For cable Ø (mm)	Colour of tape	Colour of lettering	Printer	Markers / PU	m / PU
DYMO XTL Kit									
83257106	DYMO XTL KIT 300								
83257107	DYMO XTL KIT 500								
Vinyl tapes									
83257146	DYMO XTL VIN 12BK/TR	12			transparent	black	XTL 300/500		7
83257147	DYMO XTL VIN 19BK/TR	19			transparent	black	XTL 300/500		7
83257150	DYMO XTL VIN 54BK/TR	54			transparent	black	XTL 500		7
83257156	DYMO XTL VIN 12BK/WH	12			white	black	XTL 300/500		7
83257157	DYMO XTL VIN 19BK/WH	19			white	black	XTL 300/500		7
83257160	DYMO XTL VIN 54BK/WH	54			white	black	XTL 500		7
83257166	DYMO XTL VIN 12WH/RD	12			red	white	XTL 300/500		7
83257167	DYMO XTL VIN 19WH/RD	19			red	white	XTL 300/500		7
83257170	DYMO XTL VIN 54WH/RD	54			red	white	XTL 500		7
83257176	DYMO XTL VIN 12BK/YE	12			yellow	black	XTL 300/500		7
83257177	DYMO XTL VIN 19BK/YE	19			yellow	black	XTL 300/500		7
83257180	DYMO XTL VIN 54BK/YE	54			yellow	black	XTL 500		7
Shrink tube tapes									
83257214	DYMO XTL SHRINK 6-2700BK/WH	6		2.0 - 6.0	white	black	XTL 300/500		2.7
83257215	DYMO XTL SHRINK 12-2700BK/WH	12		4.0 - 12.0	white	black	XTL 300/500		2.7
83257216	DYMO XTL SHRINK 24-2700BK/WH	24		8.0 - 24.0	white	black	XTL 300/500		2.7
83257217	DYMO XTL SHRINK 54-1800BK/WH	54		18.0 - 54.0	white	black	XTL 500		1.8
Pres-sized shrink tubes									
83257132	DYMO XTL SHRINK 6X34WH	6	34	2.0 - 6.0	white	black	XTL 500	81	
83257133	DYMO XTL SHRINK 12X34WH	12	34	4.0 - 12.0	white	black	XTL 500	65	
83257134	DYMO XTL SHRINK 24X34WH	24	34	8.0 - 24.0	white	black	XTL 500	60	
83257135	DYMO XTL SHRINK 54X34WH	54	34	18.0 - 54.0	white	black	XTL 500	25	
83257136	DYMO XTL SHRINK 6X47WH	6	47	2.0 - 6.0	white	black	XTL 500	81	
83257137	DYMO XTL SHRINK 12X47WH	12	47	4.0 - 12.0	white	black	XTL 500	65	
83257138	DYMO XTL SHRINK 24X47WH	24	47	8.0 - 24.0	white	black	XTL 500	60	
83257139	DYMO XTL SHRINK 54X47WH	54	47	18.0 - 54.0	white	black	XTL 500	25	
Laminated wrapping labels									
83257119	DYMO XTL LAM 21X21 WH	21	21		white	black	XTL 300/500	250	
83257120	DYMO XTL LAM 21X39 WH	21	39		white	black	XTL 300/500	150	
83257121	DYMO XTL LAM 21X102 WH	21	102		white	black	XTL 300/500	75	
83257122	DYMO XTL LAM 38X21 WH	38	21		white	black	XTL 500	250	
83257123	DYMO XTL LAM 38X39 WH	38	39		white	black	XTL 500	150	
83257124	DYMO XTL LAM 38X102 WH	38	102		white	black	XTL 500	75	
83257125	DYMO XTL LAM 51X21 WH	51	21		white	black	XTL 500	250	
83257126	DYMO XTL LAM 51X39 WH	51	39		white	black	XTL 500	100	
83257127	DYMO XTL LAM 51X102 WH	51	102		white	black	XTL 500	70	

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Detectable cable tie sockets

Benefits

- Retrievable cable tie sockets with a special polymer compound that activates metal detectors, X-ray equipment and visual detection systems
- Minimize the risk of product contamination
- The colour blue facilitates visual detection
- Polyamid version: resistant to conventional solvents such as alcohol and ketone, aliphatic and aromatic hydrocarbons such as oil, grease, gasoline and weak alkalis; not resistant to acids (weak or strong) and metallic salts
  Polypropylene version: especially resistant against chemical detergents
- Help achieve the HACCP EU-Directive

Application range

- Are recommended for applications using detection systems to detect foreign objects where plastic residuals are not allowed in the finished product
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Pharmaceutical production

Norm references / Approvals

- UL 94 V-2

Included

- Delivered without screws

Technical data

Classification
ETIM 5.0 Class-ID: EC000449
ETIM 5.0 Class-Description: Mounting base and -element for cable ties

Colour delivered
Blue

Material
Polyamide 6.6 or polypropylene with metal parts
Halogen-free

Temperature range
-40°C to +85°C

Article number	Article description	Fastening type	Material	Diameter (mm)	Tie width (mm)	Length x width (mm)	Pieces / PU
Socket with 4 entries (Picture 1)							
61724100	Socket Detect XS PA	screwing	PA 6.6 with metal parts	3	3.6	13.0 x 13.0	100
61724101	Socket Detect S PA	screwing	PA 6.6 with metal parts	3	3.6	20.0 x 20.0	100
61724102	Socket Detect M PA	screwing	PA 6.6 with metal parts	4,5	4.8	28.0 x 28.0	100
61724103	Socket Detect L PA	screwing	PA 6.6 with metal parts	4,5	7.6	38.0 x 38.0	100
61724107	Socket Detect S PP	screwing	PP with metal parts	3	3.6	19.1 x 19.1	100
61724108	Socket Detect M PP	screwing	PP with metal parts	3	7.6	29.0 x 29.0	100
Small Socket (Picture 2)							
61724104	Small Socket Detect PA	screwing	PA 6.6 with metal parts	3	4.8	21.2 x 10.0	100
61724109	Small Socket Detect PP	screwing	PP with metal parts	4,4	4.8	19.1 x 12.7	1000
Socket with saddle (Picture 3)							
61724105	Saddle Socket Detect XS PA	screwing	PA 6.6 with metal parts	4,3	4.7	14.9 x 9.5	100
61724106	Saddle Socket Detect S PA	screwing	PA 6.6 with metal parts	4,5	9	22.2 x 15.9	100
61724110	Saddle Socket Detect XS PP	screwing	PP with metal parts	3,8	4.8	17.0 x 11.1	100
61724111	Saddle Socket Detect S PP	screwing	PP with metal parts	5.2	7.6	23.4 x 14.2	100

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Cable Trolley Systems Overview

All cable trolley systems are available as flat cable system or round cable system. Various mounting options are available:

- C-profile rails with wall brackets or direclty on beams / ceilings,
- with a steel wire
- or on an I-beam.

Mounting	Picture	Characteristics	Application areas
C30		• Suitable for C profiles 30 x 32mm • Max. cable diameter round: 36mm • Max. cable dimensions flat: 30 x 54mm • Max. cable load: 20kg • Material: Galvanized steel	• Mounting offset to the beam, thus more flexible • Wall mounting also possibel • Crane and conveying machinery, hoisting equipment • E.g. indoor cranes, sawmills, ...
C40		• Suitable for C profiles 40 x 40mm • Max. cable diameter round: 36mm • Max. cable dimensions flat: 35 x 132mm • Max. cable load: 32kg • Material: Galvanized steel	• For higher weights and wider cable dimensions
C30 Stainless Steel		• Suitable for C profiles 30 x 32mm • Max. cable diameter round: 36mm • Max. cable dimensions flat: 30 x 54mm • Max. cable load: 20kg • Material: Stainless steel	• For demanding surroundings • E.g. washing plants, food and beverage industry, harbours
Steel Wire		• Suitable for steel wire • Max. cable diameter round: 36mm • Max. cable dimensions flat: 15 x 44mm • Max. cable load: 6kg • Material: Galvanized steel	• For cables with lower weight • E.g. pendant stations
I-Beam		• Suitable for I-Beam • Max. cable diameter round: 36mm • Max. cable dimensions flat: 15 x 54mm • Max. cable load: 20kg • Material: Galvanized steel	• Mounting space saving, since no side offset to the beam

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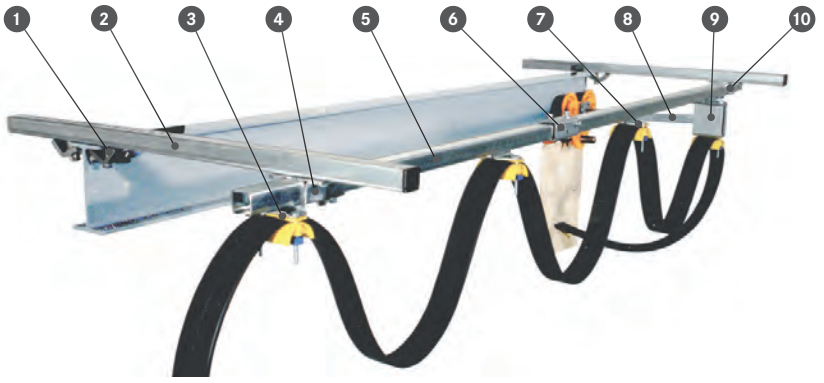

1. Girder clips
2. Support arm
3. End clamp
4. Support brackets flexible mounting
5. C-Profile rail
6. Track coupler
7. Cable trolley
8. Towing arm
9. Towing trolley
10. End stop

Cable trolley system for C-rails

Info

- NEW: C40 System and C30 System in stainless steel
- Steel wire and I-Beam system in the web catalogue
- Configuration tool on our homepage (Knowledge center-cable accessories)

Benefits

- Gentle cable clamps prevent the cables from sharp bends
- Dustproof ball bearing (wheels) guarantee smooth running in the rails

Note

- Round- and flat cables are not allowed to combine a sight below and above
- Don't assemble more than three clamps for round cables below each other
- Bending radius on the bracket corresponds to a fixed installation
- Cable trolleys with suffix "b" are suitable for cables with a larger bending radius (see data sheet)

Product Make-up

- The installation of a system depends on various criteria, e.g. maximum cable slack (cable weight) and working length.

Technical data

Classification
ETIM 5.0 Class-ID: EC002935
ETIM 5.0 Class-Description:
Accessories for cable carrying system

General
Max. cable load:
C30 System: 20 kg
C40 System: 32 kg
Steel wire system: 6 kg
I-Beam System: 10 kg

Material
Metal parts: Galvanized steel
Clamps: Polyamide 6
Stainless steel components:
Metal parts: Acid proof steel SS 2343
Nuts and bolts: Acid proof steel A4

Temperature range
-40°C to +120°C

Article designation	Max. cable dimensions mm	Article number C30	Article number C40	Article number C30 stainless steel
Cable trolley flat cable				
Cable trolley flat C30 15x54	15x54	62200421		62200453
Cable trolley flat C30 30x54	30x54	62200442		62200462
Cable trolley flat C30 22x54 b	22x54	62200477		-
Towing trolley flat C30 30x54	30x54	62200420		62200630
Towing trolley flat C30 22x54 b	22x54	62200482		-
End clamp flat C30 15x54	15x54	62200422		62200640
End clamp flat C30 22x54 b	22x54	62200483		-
Cable trolley flat C40 22x52	22x52		62200464	
Cable trolley flat C40 22x72	22x72		62200479	
Cable trolley flat C40 22x97	22x97		62200419	
Cable trolley flat C40 22x132	22x132		62200480	
Cable trolley flat C40 35x72	35x72		62200446	
Cable trolley flat C40 35x97	35x97		62200457	
Cable trolley flat C40 35x132	35x132		62204505	
Towing trolley flat C40 22x52	22x52		62200465	
Towing trolley flat C40 22x72	22x72		62200488	
Towing trolley flat C40 22x97	22x97		62200418	
Towing trolley flat C40 22x132	22x132		62200489	
Towing trolley flat C40 35x72	35x72		62200447	
Towing trolley flat C40 35x97	35x97		62200458	
Towing trolley flat C40 35x132	35x132		62200466	
End clamp flat C40 22x52	22x52		62200484	
End clamp flat C40 22x72	22x72		62200485	
End clamp flat C40 22x97	22x97		62200417	
End clamp flat C40 22x132	22x132		62200486	
End clamp flat C40 35x72	35x72		62200448	
End clamp flat C40 35x97	35x97		62200459	
End clamp flat C40 35x132	35x132		62204504	
Cable trolley round cable				
Cable trolley round		62200434	62200478	62200120
Towing trolley round		62200435	62200481	62200680
Clamp round 10-16mm	10-16	62200437		62200130
Clamp round 17-25mm	17-25	62200438		62200463
Clamp round 26-36mm	26-36	62200439		62200700
End clamp round		62200436		62200690
Fastening components round cable / flat cable				
C Profile rail 6m		62200440	62200444	62200454
Track coupler		62200424	62200445	62200600
Support brackets flex.		62200427	62200456	62200610
Support brackets wall		62200429	62200461	62200487
End stop		62200425	62200449	62200620
Support arm 800mm		62200432	62200467	62200660
Wall bracket		62200460		-
Towing arm 400mm		62200430		62200650
Towing arm 630mm		62200431		-
Girder clips		62200433		62200670

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Similar products
Cable trolley system for C-rails stainless steel
- SILVYN® CHAIN cable protection and guiding systems

PEW 12 Crimping inserts for SHIELD-KON screen connectors

Info

- Replace the previous ERG and WT inserts
- Additional inserts will follow soon

Benefits

- Product Ref. is engraved on the upper part and on the lower part of the die set
- Inserts are easy changeable
- Parallel jaw closing
- One or two-hand operation

Application range

- Crimping of RSK One-piece screen connectors and SHIELD-KON Two-part screen connectors
- For use in combination with the universal tool PEW 12 (art. no. 61813807)

Technical data

Classification
ETIM 5.0 Class-ID: EC000168
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

Article number	Article designation	Shield Ø (mm)	Suitable connectors	Pieces / PU
One piece screen connectors RSK				
61813869	PEW 12.374/301 H	4.14-4.71	RSK 5301	1
61813868	PEW 12.373/301 J	4.72-5.12	RSK 5301	1
61813864	PEW 12.599/401 K	5.13-5.86	RSK 5401	1
61813865	PEW 12.375 / 401 L	5.87-6.36	RSK 5401	1
61813866	PEW 12.354/ 401 M	6.37-7.00	RSK 5401	1
61813867	PEW 12.619/ 401 N	7.01-7.62	RSK 5401	1
Two-part connector screen connectors SHIELD-KON				
61813881	PEW 12.1425 SK		GSC 101 / 128 / 149 / 156 / 175	1
61813882	PEW 12.1426 SK		GSC 187 / 194 / 199 / 205 / 219 / 225 / 232	1
61813883	PEW 12.1427 SK		GSC 261 / 275 / 281 / 287 / 297	1
61813884	PEW 12.1428 SK		GSC 312 / 327 / 348	1
61813885	PEW 12.1429 SK		GSC 359 / 375	1
61813886	PEW 12.1430 SK		GSC 405 / 415 / 425	1

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The following applies for the use of our products

The conformity of our products to the relevant European directives and compliance with the provisions contained therein shall be indicated by the CE marking.

The safety of our products is closely associated with how they are used. A knowledge of and adherence to the respective international/national standards of use (e.g. DIN VDE 0100; 0298) are mandatory. There are particular risks if installed improperly. This applies to all our products/items:

Processing is only to be done by an authorised electrician! Otherwise, there is the risk of an electric shock or a fire ignited by electric current!

Safety

Without exception, our products are tested for application safety in accordance with defined standards and our own regulations, which complement the standards. Relevant legal requirements and safety regulations are also observed. Provided due care and attention is paid, the possibility of product-specific danger to the user may thus reasonably be excluded. Where products are used carelessly or incorrectly, however, considerable danger to persons and the environment may arise. For this reason, our cables must only be processed and/or used responsibly by trained electricians or specialists. This catalogue contains general information for the application of each product. Independent of such information, the application standards DIN VDE 0298 and DIN VDE 0891 for cables will apply. Excerpts from these standards, as well as complementary selection and application tables, design and installation guidelines, are contained in the tables in the appendix to the current main catalogue. Our machines and installation tools are – where necessary – designed in accordance with the machine guidelines and display the CE identification mark. It must be noted, however, that our machines and installation tools must only be used by trained specialist personnel and for the purpose for which they were designed.

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