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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, e.g. PROFINET®. The systems are made up of durable and robust cables and connection components for passive and active network technology, and deliver an effective solution for almost any application, particularly in an industrial environment.

Application range
• Industry and building networks
• Industrial machinery and plant engineering
• Automation technology
• Control engineering

⊛ LAPP

Sidebar tabs: ÖLFLEX® · UNITRONIC® · ETHERLINE® · HITRONIC® · EPIC® · SKINTOP® · SILVYN® · FLEXIMARK® · ACCESSORIES · APPENDIX

Ethernet is the leading standard for computer networks in office buildings. However, due to its widespread availability, reliability, and performance, it is increasingly prevalent in industrial environments as well.

Our ETHERLINE® portfolio offers comprehensive solutions for your Ethernet network.

You can always rely on our high-quality products to avoid downtimes and expensive breakdowns.

LAPP places great importance on fitting products and strives to offer the best solution possible for your application.

Our large ETHERLINE® portfolio offers solutions for varied applications in industrial environments as well as for structured building cabling.

We offer matching field-mountable connectors and pre-assembled patch cables for your applications.

The portfolio is completed by our ETHERLINE® ACCESS-products.

These robust, managed and unmanaged switches are the perfect network devices for a demanding and industrial environment.

This allows us to provide you with end-to-end solutions from just one source.

Our products are thoroughly tested in our in-house laboratory to ensure that we can provide the quality that you have come to expect from us.

ETHERLINE® – Industrial Ethernet

- Resilient cabling solutions for demanding industrial Ethernet applications
- Compliance with international standards (e.g. PROFINET®)
- Field-mountable connectors – quick assembly and reliable without special tools
- Pre-assembled patch cables with overmolded connectors

ETHERLINE® LAN – Structured building cabling

- Cables ranging from Cat.5e up to Cat.7$_A$
- Transmission frequencies up to 1600MHz
- Office patch cables complying with Cat.6$_A$
- Field-mountable connectors as well as accessories

ETHERLINE® ACCESS – Industrial data communication

- Reliable and robust industrial Ethernet switches
- Easy construction of redundant networks with quick reconfiguration time of less than 20ms
- High quality and availability of industrial networks

Type specification according to the PROFINET® Guideline

PROFINET® is an international standard for communication systems that defines the cabling within and between production islands. The PROFINET® system specifies copper-based as well as fibre optic transmission media.

Its foundation, the 'PROFINET® Cabling and Interconnection Technology Guideline', defines three cable types for copper-based cables. These types specify the exact structure and the mechanical and electrical properties. PROFINET® compliant cables

can be distinguished by their cable marking that states the PROFINET® compliance as well as their respective cable type according to the aforementioned guideline.

Number of pairs / Type of cable	Type A	Type B	Type C
Application	For fixed installation	For flexible Installation	For special application
2-pair (2x2)	AWG22 / 1	AWG22 / 7	AWG22 / 1…19
4-pair (4x2)	min. AWG23 / 1	min. AWG23 / 7	min. AWG24 / 1…19

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

Sidebar navigation: ÖLFLEX® | UNITRONIC® | ETHERLINE® | HITRONIC® | EPIC® | SKINTOP® | SILVYN® | FLEXIMARK® | ACCESSORIES | APPENDIX

PROFINET® finder

PROFINET® 2-pair up to 100 Mbit/s

Cables				Suitable connectors		
Application		**Article number**	**Description**	**Application**	**Article number**	**Description**
4-pin type A for fixed installation		2170891	ETHERLINE® PN Cat.5e Y 2X2XAWG22			
		2170893	ETHERLINE® Y FC Cat.5			
		2170494	ETHERLINE® PN Cat.5e YY			
4-pin type B for flexible application		2170886	ETHERLINE® PN Cat.5 Y FLEX FC	M12 plug, D-coded	22260820	AB-C4-M12MSD-SH
		2170890	ETHERLINE® PN Cat.5e FRNC FLEX FC			
		2170889	ETHERLINE® MARINE FRNC FC Cat.5	M12 socket, D-coded	22261016	AB-C4-M12FSD-SH
4-pin type C for special application	Drag chain	2170894	ETHERLINE® FD P FC Cat.5	RJ45 connector, straight	21700605	ED-IE-AX-5-PN-20-FC
	Torsion	2170888	ETHERLINE® TORSION P Cat.5 AWM			
	Routing underground	2170496	ETHERLINE® Cat.5 ARM	RJ45 connector, angled	21700638	ED-IE-90-6A-PN-20-FC
	Outdoor installation	2170901	ETHERLINE® Y Cat.5e BK			
	Increased temperature range	2170636	ETHERLINE® Cat.5e 105 plus			
	Food & Beverage	2170451 2170454	ETHERLINE® ROBUST PN Cat.5 ETHERLINE® ROBUST PN FR Cat.5			

PROFINET® 4-pair up to 10 Gbit/s

Cables				Suitable connectors		
Application		**Article number**	**Description**	**Application**	**Article number**	**Description**
8-pin type A for fixed installation	Cat.6$_A$	2170466	ETHERLINE® Cat.6$_A$ H			
		2170465	ETHERLINE® Cat.6$_A$ P	M12 plug, X-coded	21700602	ED-IE-AX-M12X-6A-67-FC
		2170464	ETHERLINE® Cat.6$_A$ Y			
	Cat.7	2170476	ETHERLINE® H Cat.7 H	M12 socket, X-coded	21700621	ED-IE-AX-M12XF-6A-67-FC
		2170475	ETHERLINE® Cat.7 P	M12 socket, X coded, with flange	21700622	ED-IE-AX-M12XF-RM-6A-67-FC
		2170474	ETHERLINE® Cat.7 Y			
8-pin type B for flexible application	Cat.6$_A$	2170930	ETHERLINE® PN Cat.6$_A$ Y FLEX 4x2x23/7	RJ45 connector, straight, TIA568-A	21700600	ED-IE-AX-6A-A-20-FC
		2170931	ETHERLINE® PN Cat.6$_A$ FRNC FLEX 4x2x23/7	RJ45 connector, straight, TIA568-B	21700601	ED-IE-AX-6A-B-20-FC
8-pin type C for special application	Drag chain, Cat.6$_A$	2170485	ETHERLINE® FD Cat.6$_A$ 4X2X24/7AWG	RJ45 connector, angled, TIA568-A	21700636	ED-IE-90-6A-A-20-FC
		2170484	ETHERLINE® FD P Cat.6$_A$ 4X2X24/7AWG	RJ45 connector, angled, TIA568-B	21700637	ED-IE-90-6A-B-20-FC
	Torsion, Cat.6$_A$	2170483	ETHERLINE® TORSION P Cat.6$_A$ 4X2XAWG24/7			
		2170482	ETHERLINE® TORSION Y Cat.6$_A$ 4X2XAWG24/7			

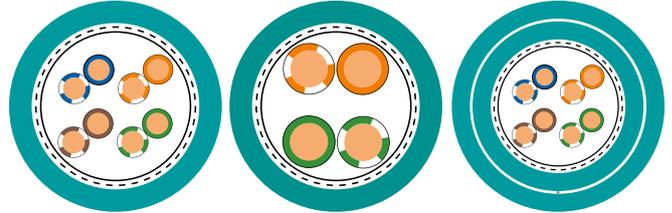Photographs and graphics are not to scale and do not represent detailed images of the respective products.

cRUus EtherNet/IP™

ETHERLINE® Cat.5e

Ethernet cable Category 5e, Class D for fixed installation – verified up to 100 MHz

LAPP KABEL STUTTGART ETHERLINE® P Cat.5e 4x2xAWG24/1

LAPP KABEL STUTTGART ETHERLINE® H-H CAT.5e

Info
- Industrial Ethernet cable
- Cat.5e

Benefits
- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- Industrial use
- Fixed Installation

Product features
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath

Norm references / Approvals
- PUR versions: UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to VDE 0472-815

Product Make-up
- Solid conductor
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 7.5 x outer diameter (2 pair cable)
Fixed installation: 8 x outer diameter (4 pair cable)

Test voltage
Core/core: 1000 V
Core/screen: 500 V

Characteristic impedance
100 Ω ± 15%

Temperature range
cable with PUR jacket
Fixed installation: VDE –30°C to +80°C;
UL/CSA –30°C to +80°C
flexing: VDE –5°C to +50°C;
UL/CSA –5°C to +80°C
Cable halogenfree compound
Fixed installation: –30°C to +80°C
Moved: –5°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
2-pair version						
Halogen-free jacket						
2170280	ETHERLINE® H CAT.5e	2 x 2 x AWG24/1	0.95	5.6	22	45
PUR outer sheath, halogen-free						
2170281	ETHERLINE® P CAT.5e	2 x 2 x AWG24/1	0.95	5.8	22	53
4-pair version						
Halogen-free jacket						
2170296	ETHERLINE® H CAT.5e	4 x 2 x AWG24/1	0.95	6.1	32	54
2170298	ETHERLINE® H-H CAT.5e	4 x 2 x AWG24/1	0.95	6.1 / 8.1	32	80
PUR outer sheath, halogen-free						
2170297	ETHERLINE® P CAT.5e	4 x 2 x AWG24/1	0.95	6.1	32	62

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 472
- EPIC® DATA AX RJ45 Cat.6A refer to page 459
- EPIC® DATA 90 RJ45 Cat.6A refer to page 459
- EPIC® DATA HS RJ45F Cat.6A refer to page 461
- EPIC® DATA M12D refer to page 462
- EPIC® DATA M12X refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- EPIC® DATA CCR FA refer to page 463
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

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c(UL)us C(M)US **EtherNet/IP**™

ETHERLINE® Cat.5e FLEX

Ethernet cable Category 5e, Class D for flexible use – verified up to 100 MHz
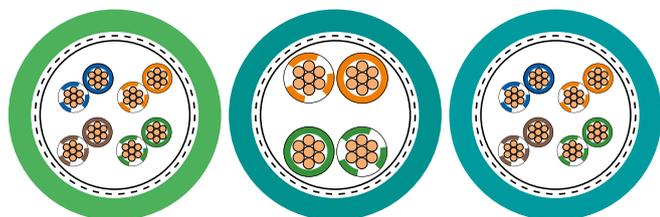
Info
• Industrial Ethernet cable
• Cat.5e
• Only for patch cable applications (max. 60 m)

Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range

- 2pair: 10 / 100 Mbit/s for Industrial Ethernet
- 4pair: 10 / 100 / 1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Only for patch cable applications (max. 60 m)

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Halogen-free outer sheath
- PUR outer sheath is highly resistant to mineral oils and abrasion

Norm references / Approvals

- PVC version with UL/CSA (CMX) certification
- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Cable with PUR or halogenfree compound: Halogen-free according to VDE 0472-815

Product Make-up

- Stranded conductor, bare, 7-wire
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)
- PVC jacket colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1000 V
Core/screen: 500 V

Characteristic impedance
100 Ω ± 15%

Temperature range
cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +50°C;
UL/CSA -5°C to +80°C
cable halogenfree compound
Fixed installation: -30°C to +80°C
flexing: -5°C to +60°C
cable with PVC jacket
Fixed installation: -40°C to +80°C
flexing: -10°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
2-pair version						
Halogen-free jacket						
2170283	ETHERLINE® H Flex CAT.5e	2 x 2 x AWG26/7	0.95	5.6	19	43
PUR outer sheath, halogen-free						
2170284	ETHERLINE® P Flex CAT.5e	2 x 2 x AWG26/7	0.95	5.6	19	45
4-pair version						
Halogen-free jacket						
2170299	ETHERLINE® H Flex CAT.5e	4 x 2 x AWG26/7	0.95	6.1	25	48
PUR outer sheath, halogen-free						
2170300	ETHERLINE® P Flex CAT.5e	4 x 2 x AWG26/7	0.95	6.1	25	54
PVC outer sheath						
2170486	ETHERLINE® Y Flex CAT.5e	4 x2 x AWG26/7	0.9	6.4	30	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 472
- EPIC® DATA AX RJ45 Cat.6ₐ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6ₐ refer to page 459
- EPIC® DATA HS RJ45F Cat.6ₐ refer to page 461
- EPIC® DATA M12D refer to page 462

- EPIC® DATA M12X refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- EPIC® DATA CCR FA refer to page 463
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

Sidebar tabs: ÖLFLEX® · UNITRONIC® · ETHERLINE® · HITRONIC® · EPIC® · SKINTOP® · SILVYN® · FLEXIMARK® · ACCESSORIES · APPENDIX

® LAPP

cULus EtherNet/IP™

ETHERLINE® EC FLEX Cat.5e
Flexible use

Info
- For EtherCAT applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)

LAPP KABEL STUTTGART ETHERLINE® P EC FLEX Cat.5e

LAPP KABEL STUTTGART ETHERLINE® Y EC FLEX Cat.5e

Benefits
- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

Application range
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Many applications with Industrial Ethernet, i.e. fixed installation and flexible use.
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

Product features
- PUR (Polyurethane) Version with increased robustness, UV- resistance and halogen free
- Meets the requirements according to Cat. 5e and class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Norm references / Approvals
- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214
- Flame-retardant according to UL VW1/ CSA FT1

Product Make-up
- Stranded tinned 7-wire conductor
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PVC or PUR jacket material
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
max. 100 V (not for power applications)

Minimum bending radius
Fixed installation: 4 x outer diameter
Moved: 10 x outer diameter

Characteristic impedance
100 Ω ± 15%

Temperature range
Cable with PVC jacket
Fixed installation: -30°C to +80°C
Flexing: -5°C bis +50°C
Cable with PUR jacket
Fixed installation: -40°C to +80°C
Flexing:-30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PVC outer sheath						
2170430	ETHERLINE® Y EC FLEX Cat.5e	1 x 4 x AWG26/7	1.03	4.8	20	37
PUR outer sheath, halogen-free						
2170431	ETHERLINE® P EC FLEX Cat.5e	1 x 4 x AWG26/7	1.03	4.8	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
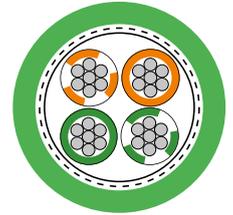
Accessories
- EPIC® SENSOR M8 refer to page 391
- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 472
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX

c(UL)US   EtherNet/IP™

ETHERLINE® Cat.5e FD

Ethernet cable Category 5e, Class D for use in drag chain applications – verified up to 100 MHz

LAPP KABEL STUTTGART ETHERLINE® FD P Cat.5e 2x2xAWG26/19

ℹ️ **Info**
- Industrial Ethernet cable
- For highly flexible applications
- Only for patch cable applications (max. 60 m)
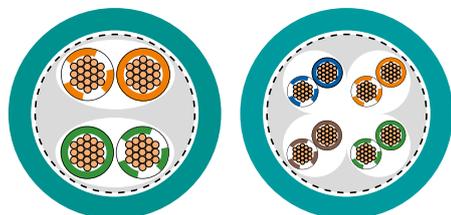
Benefits
- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Industrial use
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Application range
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Power chain applications

Product features
- Premium screening against electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

Norm references / Approvals
- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Halogen-free according to VDE 0472-815

Product Make-up
- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Inner sheath: thermoplastic elastomer, halogen-free
- 2 or 4-pair version
- Screening: wrapped with braided tinned-copper wires
- PUR outer sheath
- Colour: water blue (RAL 5021)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1000 V
Core/screen: 500 V

Characteristic impedance
100 Ω ± 15%

Temperature range
cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +70°C;
UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
2-pair version						
2170289	ETHERLINE® FD P CAT.5e	2 x 2 x AWG26/19	1	5.9	20	48
4-pair version						
2170489	ETHERLINE® FD P CAT.5e	4 x 2 x AWG26/19	1	6.3	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: Coil 100 m; Drum (500; 1000) m
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to page 473
- EPIC® DATA AX RJ45 Cat.6_A refer to page 459
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 459
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

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c**UL**us **EtherNet/IP**

ETHERLINE® Cat.5 FD BK

Ethernet cable Category 5e, Class D for installation in events - verified up to 100 MHz

Info

- For highly flexible industrial applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)
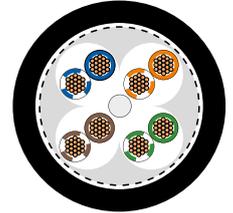
Benefits

- Additional application options thanks to suitability for outdoor use, UV-resistant
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to coil for mobile use
- Usable on the roads

Application range

- IEEE 802.3: 10/100/1000Base-T IEEE 802.5: ISDN; FDDI; ATM
- Suitable for the transfer of audio signals (ETHERSOUND), light control signals (DMX over Ethernet), or for computer networking
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product features

- CAT.5-Performance
- Specifically developed for road environments
- Suitable for outdoor use, UV-resistant
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Premium screening against electromagnetic interference

Norm references / Approvals

- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to VDE 0472-815

Product Make-up

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Insulation: foam skin, max. core diameter 1.0 mm
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- Inner sheath: thermoplastic elastomer, halogen-free
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: halogen-free PUR, black

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter

Test voltage
Core/core: 1000 V
Core/screen: 500 V

Characteristic impedance
100 Ω ± 15%

Temperature range
cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +70°C;
UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® Cat.5 FD BK						
CE217489	ETHERLINE® FD P BK Cat.5	4x2xAWG26/19	1	6.3	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Standard lengths: (100; 500; 1000) m
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).
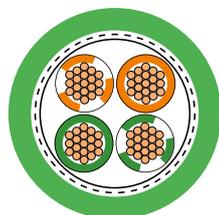Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to page 473
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

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c(UL)us   EtherNet/IP

ETHERLINE® EC FD Cat.5e
Highly flexible application

Info
- For EtherCAT applications
- For highly flexible industrial applications
- Cat.5e-Performance

Benefits
- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

Application range
- Suitable for EtherCAT and EtherNet/IP applications
- For highly flexible applications (power chains, moving machine parts)
- Many applications with Industrial Ethernet, e.g. EtherCat, i.e. fixed installation, flexible and highly flexible use
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

Product features
- PUR outer sheath, halogen-free
- Meets the requirements according to Cat. 5e and class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Norm references / Approvals
- UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214-02
- Flame-retardant according to UL VW1/ CSA FT1
- Halogen-free according to VDE 0472-815

Product Make-up
- Tinned stranded copper wire, 26AWG (19 x 0.10), (0.14 mm²)
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath: PUR compound, halogen-free
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
max. 100 V (not for power applications)

Minimum bending radius
Fixed installation: 4 x Outer diameter
Flexing: 16 x outer diameter

Characteristic impedance
$100 \ \Omega \pm 15\%$

Temperature range
Fixed installation: -40°C to +80°C
Flexing: -30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® EC FD Cat.5e						
2170433	ETHERLINE® P EC FD Cat.5e	1 x 4 x AWG26/19	1.03	4.8	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® SENSOR M8 refer to page 391
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

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Data communication systems for ETHERNET technology
Industrial Ethernet, Cat.5/Cat.5e • Patch cables for flexible applications

EtherNet/IP™

ETHERLINE® H Flex Cat.5e Patch cables

ⓘ Info

- Halogen-free and flame-retardant
- Additional variants are available at www.lappgroup.com/assemblyfinder or on request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications

Product features

- Meets the requirements according to Cat.5e and class D
- 2 pairs: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Braided conductor, 2x2x AWG26/7
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flameretardant compound, 5.6mm in diameter
- Colour: water blue (based on RAL 5021)

Technical data

◆ Classification
ETIM 5.0/6.0: EC002599
Description: Patch cord copper (twisted pair) industry

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 6 x outer diameter

IP Protection rating
M12: IP 67
RJ45: IP 20

Temperature range
During installation: -5°C to +60°C
Fixed installation: -30°C to +80°C

Coding
M12: D-Standard

		RJ45	M12, plug, straight	M12, plug, angled	Open end
	Length		**Article number**		
RJ45	1.0m	2171091	2171085	2171878	
	2.0m	2171092	2171086	2171879	On request
	3.0m	2171093	2171087	2171880	
	5.0m	2171094	2171088	2171881	
M12, plug, straight	1.0m	2171085	2171073		2171079
	2.0m	2171086	2171074	On request	2171080
	3.0m	2171087	2171075		2171081
	5.0m	2171088	2171076		2171082
M12, plug, angled	1.0m	2171878			
	2.0m	2171879	On request	On request	On request
	3.0m	2171880			
	5.0m	2171881			

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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.

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Data communication systems for ETHERNET technology

Industrial Ethernet, Cat.5/5e • Patch cables for continuous flexing applications

⊛ LAPP

EtherNet/IP™

ETHERLINE® EC FD Cat.5e Patch cables

Info

- Suitable for drag chains
- Additional variants are available at www.lappgroup.com/assemblyfinder or on request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components

Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications

Product features

- Meets the requirements according to Cat.5e and class D
- 2 pairs: 10/100 Mbit/s for Industrial Ethernet

Product Make-up

- Braided conductor, 2x2x AWG26/19
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR, 4.8mm in diameter
- Colour: green (based on RAL 6018)

Technical data

Classification
ETIM 5.0/6.0: EC002599
Description: Patch cord copper (twisted pair) industry

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

Protection rating
M8: IP 67
M12: IP 67
RJ45: IP 20

Temperature range
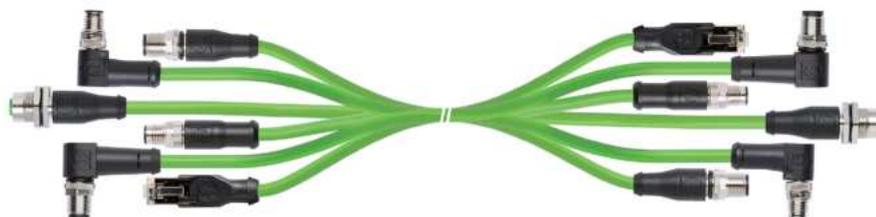During installation: –30°C to +50°C
Fixed installation: –40°C to +80°C

Coding
M8: A-Standard
M12: D-Standard

		RJ45	M12, plug, straight	M12, plug, angled	M12, socket, straight	M8, plug, straight	M8, plug, angled	Open end
Length					Article number			
RJ45	1.0m	2171765	2171751	2171924		2171758		2171772
	2.0m	2171766	2171752	2171925	On request	2171759	On request	2171773
	5.0m	2171768	2171754	2171927		2171761		2171775
	10.0m	2171769	2171755	2171928		2171762		2171776
M12, plug, straight	1.0m	2171751	2171779	2171786	2171737	2171945		2171793
	2.0m	2171752	2171780	2171787	2171738	2171946	On request	2171794
	5.0m	2171754	2171782	2171789	2171740	2171948		2171796
	10.0m	2171755	2171783	2171790	2171741	2171949		2171797
M12, plug, angled	1.0m	2171924	2171786	2171907	2171744			2171871
	2.0m	2171925	2171787	2171908	2171745	On request	On request	2171872
	5.0m	2171927	2171789	2171910	2171748			2171874
	10.0m	2171928	2171790	2171911	2171749			2171875
M12, socket, straight	1.0m		2171737	2171744	2171916			
	2.0m	On request	2171738	2171745	2171917	On request	On request	On request
	5.0m		2171740	2171748	2171919			
	10.0m		2171741	2171749	2171920			
M8, plug, straight	1.0m	2171758	2171945			2171701	2171719	2171710
	2.0m	2171759	2171946	On request	On request	2171702	2171720	2171711
	5.0m	2171761	2171948			2171704	2171722	2171713
	10.0m	2171762	2171949			2171706	2171724	2171715
M8, plug, angled	1.0m					2171719	2171960	2171728
	2.0m	On request	On request	On request	On request	2171720	2171961	2171729
	5.0m					2171722	2171963	2171731
	10.0m					2171724	2171965	2171733

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Other lengths are available upon request.

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cULus EtherNet/IP™

ETHERLINE® CAT.6 FD

Ethernet cable Category 6, Class E for use in drag chain applications - verified up to 250 MHz

LAPP KABEL STUTTGART ETHERLINE® Cat.6 FD 4x2xAWG26/19

Info
• CAT.6 for drag chain!

Benefits
• Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions
• Premium screening against electromagnetic interference

Application range
• For use in drag chains and moving machinery parts in dry or damp rooms
• Only for patch cable applications (max. 60 m)
• Suitable for EtherCAT and EtherNet/IP applications
• Plant engineering, machinery manufacturing
• 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Product features
• Flame-retardant according IEC 60332-1-2
• PUR outer sheath is resistant to most oils and hydraulic fluids
• CAT.6 for drag chain!
• Min. 1 million bending cycles in the drag chain

Norm references / Approvals
• UL/CSA type CMX (UL 444)

Product Make-up
• Stranded conductor, tinned
• AWG 26 (19-wire)
• PP core insulation
• Inner sheath: thermoplastic copolymer (FRNC)
• SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
• PUR outer sheath, halogen-free
• Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
max. 100 V (not for power applications)

Minimum bending radius
Fixed installation: 4 x outer diameter
Flexing: 7.5 x outer diameter

Test voltage
700 V

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Fixed installation: -40°C to +80°C
Flexing: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® CAT.6 FD						
2170488	ETHERLINER CAT.6 FD	4 x 2 x AWG26/19	0.98	7.8	31.7	63

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

Accessories
• EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
• EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459
• KNIPEX Elektronik Super Knips® refer to page 983
• FC STRIP stripping tool refer to page 986

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PROFI NET®

ETHERLINE® FD Cat.6 Patch cables

Info

- Cat.6 for drag chain, qualified for 10Gbit/s
- Other types are available at www.lappgroup.com/assemblyfinder or on request

Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components

Application range

- Continuous flexing applications
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to Cat.6 and class E
- Suitable for drag chain applications

Product Make-up

- Braided conductor, 4x2x AWG26/19
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR, 7.8mm in diameter
- 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
Flexing: 7.5 x outer diameter
Fixed installation: 4 x outer diameter

Protection rating
IP 67

Temperature range
Flexing: –30°C to +70°C
Fixed installation: –30°C to +80°C

Coding
M 12: X-Standard

		M 12, plug, straight	M 12, socket, straight	Open end
	Length	**Article number**		
M 12, plug, straight	1.0m	2172238	2172208	2172247
	2.0m	2172239	2172209	2172248
	3.0m	2172240	2172210	2172249
	5.0m	2172241	2172211	2172250
	10.0m	2172243	2172213	2172252
M 12, socket, straight	1.0m	2172208	2172304	2172255
	2.0m	2172209	2172300	2172256
	3.0m	2172210	2172301	2172257
	5.0m	2172211	2172302	2172258
	10.0m	2172213	2172304	2172260

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Other lengths are available upon request.

EtherNet/IP

ETHERLINE® Cat.6$_A$ Flex Patch cables

NEW

Info

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

Benefits

- Only for patch cable applications (max. 60m)
- 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$_A$ and Class E$_A$

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, 6.4mm in diameter
- 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

IP Protection rating
M12: IP 67
RJ45: IP 20

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

Coding
M12: X-Standard

		RJ45	M12, plug, straight	M12, socket, straight	Open end
	Length		**Article number**		

	Length	RJ45	M12, plug, straight	M12, socket, straight	Open end
RJ45	0.5m	2172362	2172380	2172389	2172371
	1.0m	2172363	2172381	2172390	2172372
	2.0m	2172364	2172382	2172391	2172373
	3.0m	2172365	2172383	2172392	2172374
	5.0m	2172366	2172384	2172393	2172375
	10.0m	2172368	2172386	2172395	2172377
	20.0m	2172370	2172388	2172397	2172379
M12, plug, straight	0.5m	2172380	2172326	2172335	2172317
	1.0m	2172381	2172327	2172336	2172318
	2.0m	2172382	2172328	2172337	2172319
	3.0m	2172383	2172329	2172338	2172320
	5.0m	2172384	2172330	2172339	2172321
	10.0m	2172386	2172332	2172341	2172323
	20.0m	2172388	2172334	2172343	2172325
M12, socket, straight	0.5m	2172389	2172335	2172344	2172353
	1.0m	2172390	2172336	2172345	2172354
	2.0m	2172391	2172337	2172346	2172355
	3.0m	2172392	2172338	2172347	2172356
	5.0m	2172393	2172339	2172348	2172357
	10.0m	2172395	2172341	2172350	2172359
	20.0m	2172397	2172343	2172352	2172361

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Other lengths are available upon request.

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ⒸⓊⓁUS   EtherNet/IP™

ETHERLINE® Cat.7 FLEX

Flexible use
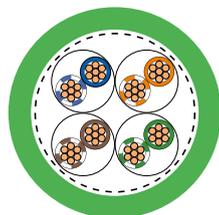
Info

- Space-saving installation due to small cable diameters
- 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

- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 60 m max. cable lenght for 10 Gbit/s is 60 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- AWM certification for USA and Canada
- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- Stranded conductor, bare, 7-wire
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

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

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

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

Article number	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)
ETHERLINE® Cat.7 FLEX				
2170934	4x2xAWG26/7	1	6.4	28

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

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 459
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 459
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 460
- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

Side tabs: ÖLFLEX® · UNITRONIC® · ETHERLINE® · HITRONIC® · EPIC® · SKINTOP® · SILVYN® · FLEXIMARK® · ACCESSORIES · APPENDIX

Data communication systems for ETHERNET technology

PROFINET, Cat.5 • Type A – Cables for fixed installation

ETHERLINE® PN Cat.5
Fixed Installation

Info

- CPR: Article number choice under www.lappkabel.com/cpr
- For PROFINET applications type A

Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications
- ETHERLINE® TRAY ER PN Y FC: installation in open cable trays without any conduit

Product features

- Fixed Installation
- CAT.5-Performance
- FC: "Fast Connect" cable design
- Flame-retardant according IEC 60332-1-2
- ETHERLINE® Y FC, ETHERLINE® YY, ETHERLINE® TRAY ER PN Y FC : flame-retardant according to CSA FT-4

Norm references / Approvals

- ETHERLINE® Y FC with PLTC approbation and AWM Style 21694
- ETHERLINE® PN Cat.5e YY with UL CMG
- ETHERLINE® PN Cat.5e Y with UL CMX
- ETHERLINE® TRAY ER PN Y FC with PLTC ER approval

Product Make-up

- Version for outdoor use and direct burial: Colour black (similar to RAL 9005)
- Solid bare copper wire AWG22
- Core insulation: PE
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
See data sheet

Test voltage
See data sheet

Characteristic impedance
100 Ω ± 15%

Temperature range
See data sheet

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
conventional cable assembly						
2170891	ETHERLINE® PN Cat.5e Y	2 x 2 x AWG22/1	1.5	6.3	30.4	56
FC: "Fast Connect" cable design						
2170893	ETHERLINE® Y FC Cat.5	2 x 2 x AWG22/1	1.5	6.5	30.4	70
2170879	ETHERLINE® TRAY ER PN Y FC	2 x 2 x AWG22/1	1.5	6.5	30.4	70
Suitable for outdoor use and direct burial						
2170494	ETHERLINE® Cat.5e YY	2 x 2 x AWG22/1	1.5	7.7	30.4	62

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

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6A IP68 refer to page 460
- EPIC® DATA RJ45F Cat.6A refer to page 460
- EPIC® DATA M12D refer to page 462

- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- FC STRIP stripping tool refer to page 986
- Fibre Strip DC

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c(UL)us PROFINET ECOLAB® EtherNet/IP™

ETHERLINE® PN FLEX
Flexible use

LAPP KABEL STUTTGART ETHERLINE® PN Cat.5 FRNC FLEX FC 2x2xAWG22/7

LAPP KABEL STUTTGART ETHERLINE® PN Cat.5 Y FLEX FC 2x2xAWG22/7

ℹ Info

- CPR: Article number choice under www.lappkabel.com/cpr
- For Profinet applications
- Flexible use

Benefits

- For PROFINET applications type B
- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- CAT.5-Performance
- FRNC Version: Halogene free and flame retardant
- Fast Connect (FC) cable design

Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.5 Y FLEX FC: ECOLAB®
  Industry standard for innovation and efficiency in the field of professionllen cleaning and disinfection

Product Make-up

- Stranded 7-wire bare conductor
- Core insulation: PE or PP
- Star quad
- Inner sheath made of PVC or FRNC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

Technical data

◆ Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

⚡ Peak operating voltage
(not for power applications) 125 V

◿ Minimum bending radius
FRNC cable:
during installation: 8 x outer diameter
fixed: 4 x outer diameter
PVC cable:
Flexing: 7 x outer diameter
Fixed installation: 3 x outer diameter

⚡ Test voltage
Core/core: 2000 V
Core/screen: 2000 V

Z∞ Characteristic impedance
100 Ω ± 15%

Temperature range
cable halogenfree compound
Fixed installation: -25°C to +80°C
Moved: -25°C to +80°C
cable with PVC jacket
Fixed installation: -40°C to +80°C
Moved: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PVC jacket						
2170886	ETHERLINE® PN Cat.5 Y FLEX FC	2 x 2 x AWG22/7	1.5	6.5	31.3	67
FRNC outer sheath						
2170890	ETHERLINE® PN Cat.5e FRNC FLEX FC	2 x 2 x AWG22/7	1.5	6.5	31.2	65

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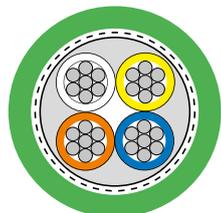
Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA RJ45F Cat.6A refer to page 460
- EPIC® DATA M12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- FC STRIP stripping tool refer to page 986

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FLEXIMARK®

ACCESSORIES

APPENDIX

ETHERLINE® Y Cat.5e BK 2x2AWG22/7

Flexible application

Info

- For PROFINET applications
- CAT.5-Performance
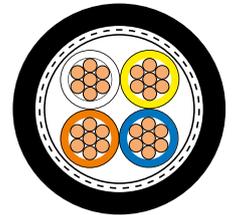
Benefits

- UV and weather-resistant in black
- Can be used in dry or damp rooms
- Screened against interference
- Suitable for outdoor use, UV-resistant
- 2pair: 10 / 100 Mbit/s for Industrial Ethernet

Application range

- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PVC compound TM2 acc. to EN 50363-4-1
- Resistant to acids, alkalis and certain oils at room temperature
- Flame retardant acc. to IEC 60332-1-2
- CAT.5-Performance

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with PROFINET for Cat.5 apllications
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC outer sheath, black

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 1000 V
Core/screen: 500 V

Characteristic impedance
$100 \pm 15\ \Omega$ (> 1 MHz)

Temperature range
Flexing: -10°C to +70°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® Y Cat.5e BK 2x2AWG22/7						
2170901	ETHERLINE® Y CAT.5e BK 2x2xAWG22/7	2 x 2 x AWG22/7	1.5	6.2	30.4	59

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).
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Similar products

Accessories

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ETHERLINE® Cat.5e 105 plus

Flexible application
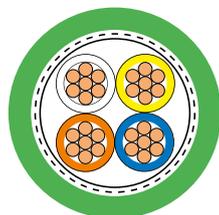
Info

- For PROFINET applications
- Extended temperature range

Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance
- Industrial use
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- For installation in hollow shaft between gear units and pitch system
- Suitable for fixed installation and occasionally flexible use in high temperature areas
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- Wiring of machines, tools, devices, appliances and control cabinets

Product features

- Optimum EMC protection
- Permanent load up to +105°C, temporary load +120°C

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-5

Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 apllications
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE-based
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Minimum bending radius
Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter

Characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -40°C to +105°C
occasionally flexing: -30°C to +105°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)
ETHERLINE® Cat.5e 105 plus					
2170636	ETHERLINE Cat.5e 105 plus	2x2xAWG22/7	1.5	6.2	30.4

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
- EPIC® DATA RJ45F Cat.6$_A$ refer to page 460
- EPIC® DATA M12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
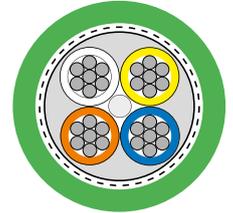- Fibre Strip DC

® LAPP

ETHERLINE® MARINE FRNC FC CAT.5
Flexible application

Info
- Certified for maritime applications
- Flexible use in conjunction with light mechanical stress

Benefits
- Can be used for Industrial Ethernet in harsh industrial environments
- For use in dry, damp and wet rooms
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range
- Shipbuilding
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- Onshore and offshore applications
- Max. cable lenght for 100 Mbit/s is 85 m

Product features
- High flame retardancy in accordance with IEC 60332-3 and FT4
- CAT.5-Performance
- Fast Connect (FC) cable design

Norm references / Approvals
- CMG UL/CSA certification 75°C or PLTC, Sun Res
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

Product Make-up
- Fine-wire strand made of tinned-copper wires
- Colour-coded in accordance with PROFINET for Cat.5 apllications
- Star quad
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Halogen-free and flame-retardant FRNC outer sheath
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 3 x outer diameter
Flexing: 7.5 x outer diameter

Characteristic impedance
$100\ \Omega \pm 15\%$

Temperature range
Operating temperature: -25°C to +70°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]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® MARINE FRNC FC CAT.5						
2170889	ETHERLINE® MARINE FRNC FC CAT.5	2 x 2 x AWG22/7	1.5	6.5	32	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
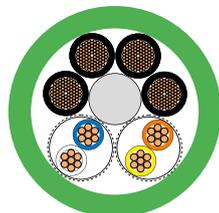
Accessories
- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA M12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- FC STRIP stripping tool refer to page 986

UL® | PROFI NET® | EtherNet/IP™

ETHERLINE® Cat.5 FRNC HYBRID
Hybrid cable for ethernet and power transmission

Info

- HYBRID: cable for data transmission + power supply

Benefits
- Industrial use
- Screened against interference

Application range
- Industrial Ethernet cable
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features
- Flame-retardant according IEC 60332-1-2
- HYBRID: cable for data transmission + power supply
- Robust, halogen-free outer sheath
- CAT.5-Performance

Norm references / Approvals
- UL AWM Style 21282

Product Make-up
- Cores for Power Supply 4 x 1.5 mm² (AWG 16)
- Data transfer: braided conductor, 7-wire, bare
- Pair screening: wrapped with foil and braided copper wires
- Twisting: data pairs and power supply pairs twisted together
- Overlapping plastic tape
- FRNC outer sheath
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Minimum bending radius
Occasional flexing: 10 x outer diameter
Fixed installation: 5 x outer diameter

Test voltage
See data sheet

Characteristic impedance
100 Ω ± 15%

Temperature range
Operation: -20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Flexible use					
2170887	ETHERLINE® Cat.5 FRNC HYBRID	2x2xAWG22/7 + 4x1.5	10.3	94.2	153

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

Accessories

- KNIPEX Elektronik Super Knips® refer to page 983
- STAR STRIP stripping tool refer to page 985

LAPP

ETHERLINE® PN Cat.5 FD

Highly flexible application

Info

- Highly flexible application
- For PROFINET applications
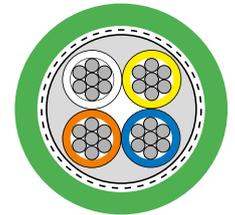
LAPP KABEL STUTTGART ETHERLINE® FD P FC Cat.5 2x2x22AWG

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

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

Product features

- CAT.5-Performance
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Flame-retardant according IEC 60332-1-2
- Optimized cable construction for power chain use
- Broad usages due to halogen-free materials

Norm references / Approvals

- UL/CSA type CMX (UL 444)

Product Make-up

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Moved: 10 x outer diameter
Fixed installation: 5 x outer diameter

Test voltage
Core/core: 700 V
Core/screen: 700 V

Characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -30°C to +70°C
Flexing: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® PN Cat.5 FD						
2170894	ETHERLINE® FD P FC CAT.5	2 x 2 x AWG22/7	1.5	6.5	31.3	63

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

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
- EPIC® DATA M 12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- FC STRIP stripping tool refer to page 986

ÖLFLEX®
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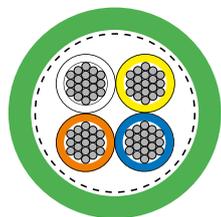EPIC®
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APPENDIX

c ⓊLⓇ us | PROFINET INDUSTRIAL ETHERNET | EtherNet/IP™

ETHERLINE® TORSION Cat. 5

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® TORSION Cat.5 2x2xAWG22/19

Info

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- 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
- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 55 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Outer sheath with high abrasion-resistance
- Broad usages due to halogen-free materials
- PUR outer sheath is highly resistant to mineral oils and abrasion

Norm references / Approvals

- UL AWM (Style 21161)
- Halogen-free according to VDE 0472-815
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- Screening: wrapped with braided tinned-copper wires
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
max. 100 V (not for power applications)

Minimum bending radius
Flexing: up from 5 x outer diameter

Test voltage
700 V

Characteristic impedance
100 ± 15 Ω (> 1 MHz)

Temperature range
–40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® TORSION Cat. 5						
2170888	ETHERLINE® TORSION CAT.5	2 x 2 x AWG22/19	1.5	6.5	31.3	52

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

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA HS RJ45F Cat.6A refer to page 461
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- Fibre Strip DC

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ACCESSORIES

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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
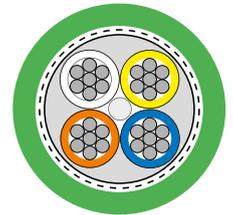
Benefits
- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10 / 100 Mbit/s for Industrial Ethernet

Application range
- For conveying systems and cable trolleys
- Power chain applications
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 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

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Moved: 10 x outer diameter
Fixed installation: 4 x outer diameter

Test voltage
Core/core: 2000 V
Core/screen: 2000 V

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Fixed installation: –40°C to +80°C
Flexing: -10°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]
ETHERLINE® FESTOON PN Cat.5e				
2170936	ETHERLINE® FESTOON PN Cat.5e	2x2xAWG22/7	1.55	6.5

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

Accessories
- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
- EPIC® DATA M12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- FC STRIP stripping tool refer to page 986

ETHERLINE® Cat.5 ARM

Fixed Installation

LAPP KABEL STUTTGART ETHERLINE® Y2Y ARM Type C Cat.5

Info

- Industrial Ethernet cable
- CAT.5-Performance
- Suitable for outdoor use and direct burial

Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- EMC-optimised design
- With armouring for improved rodent protection
- Screened against interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Application range

- Suitable for outdoor use, UV-resistant
- Suitable for direct burial
- Max. cable lenght for 100 Mbit/s is 100 m
- PROFINET application Type C but for fixed installation
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Fast Connect (FC) cable design

Product Make-up

- Solid and bare copper conductor
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 apllications
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Inner sheath made of PVC (green RAL6018) 2 layer galvanzid steel tape
- Outer sheath made of black polyethylene (PE)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 10 x outer diameter
Flexing: 15 x outer diameter

Test voltage
Core/core: 2000 V
Core/screen: 2000 V

Characteristic impedance
100 Ω ± 15%

Temperature range
Fixed installation: -40°C to +70°C
Flexing: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
Fixed Installation						
2170496	ETHERLINE® Cat.5 ARM	2 x 2 x AWG22/1	1.5	6.5 / 9.3	30.4	124

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
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
- EPIC® DATA M12D refer to page 462
- KNIPEX Elektronik Super Knips® refer to page 983
- DATA STRIP stripping tool refer to page 986
- FC STRIP stripping tool refer to page 986
- Fibre Strip DC

Data communication systems for ETHERNET technology

PROFINET®, Cat.5 • Type A - Patch cables for fixed installation

LAPP

PROFINET® INDUSTRIAL ETHERNET   EtherNet/IP™

ETHERLINE® PN Cat.5 Patch cables

Info

• For PROFINET® applications (D-coded)
• Additional variants are available at www.lappgroup.com/assemblyfinder or on request

Benefits

• Non-permanent connections allow for easy change of equipment

Application range

• For PROFINET® applications type A
• Fixed installation
• Suitable for EtherCAT and EtherNet/IP applications
• Suitable for use in industrial applications
• For indoor use

Product features

• Meets the requirements according to Cat.5e and class D
• 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

• The cable is UL/CSA-certified (CMG)

Product Make-up

• Solid conductor, 2x2x AWG22/1
• Star quad
• Overall screening with copper braid and plastic-laminated aluminium foil
• Outer sheath made of PVC, 6.5mm in diameter
• 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
During installation: 15 x outer diameter
Fixed installation: 10 x outer diameter

Protection rating
M12: IP 67
RJ45: IP 20

Temperature range
During installation: -20°C to +60°C
Fixed installation: -40°C to +80°C

Coding
M12: D-Standard

	Length	RJ45	M12, plug, straight	M12, plug, angled	M12, socket, straight	Open end
				Article number		
RJ45	1.0m	2171179	2171165	2171172		2171186
	2.0m	2171180	2171166	2171173		2171187
	3.0m	2171181	2171167	2171174	On request	2171188
	5.0m	2171182	2171168	2171175		2171189
	10.0m	2171183	2171169	2171176		2171190
	20.0m	2171184	2171170	2171177		2171191
M12, plug, straight	1.0m	2171165	2171001	2171013	2171151	2171007
	2.0m	2171166	2171002	2171014	2171152	2171008
	3.0m	2171167	2171003	2171015	2171153	2171009
	5.0m	2171168	2171004	2171016	2171154	2171010
	10.0m	2171169	2171005	2171017	2171155	2171011
	20.0m	2171170	2171006	2171018	2171156	2171012
M12, plug, angled	1.0m	2171172	2171013			2171019
	2.0m	2171173	2171014			2171020
	3.0m	2171174	2171015	On request	On request	2171021
	5.0m	2171175	2171016			2171022
	10.0m	2171176	2171017			2171023
	20.0m	2171177	2171018			2171024
M12, socket, straight	1.0m		2171151			
	2.0m		2171152			
	3.0m	On request	2171153	On request	On request	On request
	5.0m		2171154			
	10.0m		2171155			
	20.0m		2171156			

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Other lengths are available upon request.

ETHERLINE® PN Flex Cat.5 Patch cables
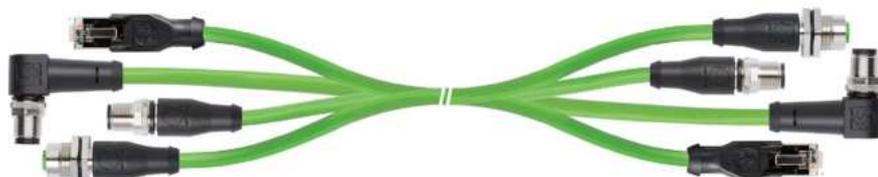
PROFINET / **EtherNet/IP**

Benefits
- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components

Application range
- For PROFINET® applications type B
- Flexible applications
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features
- Meets the requirements according to Cat.5e and class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals
- The cable is UL/CSA-certified (CMG)

Product Make-up
- Braided conductor, 2x2x AWG22/7
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC, 6.5mm in diameter
- 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
Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter

Protection rating
M12: IP 67
RJ45: IP 20

Temperature range
Flexing: –20°C to +60°C
Fixed installation: –40°C to +80°C

Coding
M12: D–Standard

	Length	RJ45	M12, plug, straight	M12, plug, angled	M12, socket, straight	Open end
RJ45	0.5m	2171228	2171214	2171221	2171293	2171235
	1.0m	2171229	2171215	2171222	2171294	2171236
	2.0m	2171230	2171216	2171223	2171295	2171237
	5.0m	2171232	2171218	2171225	2171297	2171239
	10.0m	2171233	2171219	2171226	On request	2171240
M12, plug, straight	0.5m	2171214	2172192	2172196	2171200	2172194
	1.0m	2171215	2171025	2171037	2171201	2171031
	2.0m	2171216	2171026	2171038	2171202	2171032
	5.0m	2171218	2171028	2171040	2171204	2171034
	10.0m	2171219	2171029	2171041	2171205	2171035
M12, plug, angled	0.5m	2171221	2172196	On request	On request	2172198
	1.0m	2171222	2171037			2171043
	2.0m	2171223	2171038			2171044
	5.0m	2171225	2171040			2171046
	10.0m	2171226	2171041			2171047
M12, socket, straight	0.5m	2171293	2171200	On request	On request	On request
	1.0m	2171294	2171201			
	2.0m	2171295	2171202			
	5.0m	2171297	2171204			
	10.0m	On request	2171205			

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Other lengths are available upon request.

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APPENDIX

Data communication systems for ETHERNET technology

PROFINET®, Cat.5 • Type C – Patch cables for continuous flexing applications

PROFINET **EtherNet/IP™**

ETHERLINE® PN FD Cat.5 Patch cables

Info

- For PROFINET® applications
- Additional variants are available at www.lappgroup.com/assemblyfinder or on request
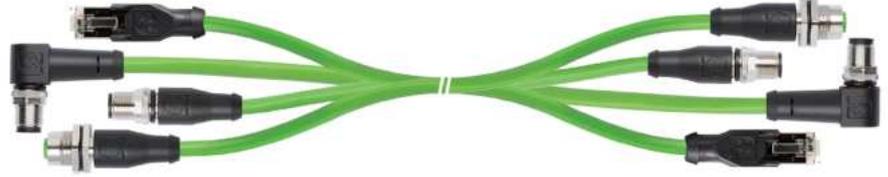
Benefits

- For directly connecting two electric components
- Non-permanent connections allow for easy change of equipment

Application range

- For PROFINET® applications type C
- Continuous flexing applications
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features

- Meets the requirements according to Cat.5e and class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

Norm references / Approvals

- The cable is UL/CSA-certified (CMX)

Product Make-up

- Braided conductor, 2x2x AWG22/7
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR , 6.5mm in diameter
- 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
Flexing: 8 x outer diameter
Fixed installation: 5 x outer diameter

Protection rating
M12: IP 67
RJ45: IP 20

Temperature range
Flexing: -20°C to +60°C
Fixed installation: -30°C to +70°C

Coding
M12: D-Standard

	Length	RJ45	M12, plug, straight	M12, plug, angled	M12, socket, straight	Open end
				Article number		
RJ45	0.5m	2171278	2171264	2171271		2171285
	1.0m	2171279	2171265	2171272		2171286
	2.0m	2171280	2171266	2171273	On request	2171287
	3.0m	2171281	2171267	2171274		2171288
	5.0m	2171282	2171268	2171275		2171289
	10.0m	2171283	2171269	2171276		2171290
M12, plug, straight	0.5m	2171264	2171121	2171122	2171250	2172201
	1.0m	2171265	2171049	2171061	2171251	2171055
	2.0m	2171266	2171050	2171062	2171252	2171056
	3.0m	2171267	2171051	2171063	2171253	2171057
	5.0m	2171268	2171052	2171064	2171254	2171058
	10.0m	2171269	2171053	2171065	2171255	2171059
M12, plug, angled	0.5m	2171271	2171122		2171257	2172204
	1.0m	2171272	2171061		2171258	2171067
	2.0m	2171273	2171062	On request	2171259	2171068
	3.0m	2171274	2171063		2171260	2171069
	5.0m	2171275	2171064		2171261	2171070
	10.0m	2171276	2171065		2171262	2171071
M12, socket, straight	0.5m		2171250	2171257		
	1.0m		2171251	2171258		
	2.0m	On request	2171252	2171259	On request	On request
	3.0m		2171253	2171260		
	5.0m		2171254	2171261		
	10.0m		2171255	2171262		

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Other lengths are available upon request.

Data communication systems for ETHERNET technology

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PROFINET, Cat.6$_A$ • Type A – Cables for fixed installation

NEW

PROFINET **EtherNet/IP**

ETHERLINE® PN Cat.6$_A$ FC

Ethernet cable Category 6$_A$, Class E$_A$ for fixed installation with FC inner sheath – verified up to 500 MHz

LAPP KABEL STUTTGART ETHERLINE® PN Cat.6$_A$ FC 4x2xAWG23/1

ⓘ Info

- Fast and easy cable preparation by FC inner sheath
- For PROFINET applications with 4 pairs
- CAT.6$_A$ 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
- 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 made of polyethylene (PE)
- Inner sheath: halogen-free compound
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- Colour: green (based on RAL 6018)

Technical data

Peak operating voltage (not for power applications) 125 V

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

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-5

Temperature range
cable with PUR jacket
Fixed installation: VDE -30°C to +80°C;
UL/CSA -30°C to +80°C
flexing: VDE -5°C to +50°C;
UL/CSA -5°C to +80°C
cable halogenfree compound
Fixed installation: -25°C to +80°C
cable with PVC jacket
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter [mm]	Copper index (kg/km)
PVC jacket				
2170583	ETHERLINE® PN CAT.6$_A$ Y FC	4x2xAWG23/1	8.7	53
Halogen-free jacket				
2170584	ETHERLINE® PN CAT.6$_A$ FRNC FC	4x2xAWG23/1	8.7	53
PUR outer sheath, halogen-free				
2170585	ETHERLINE® PN CAT.6$_A$ P FC	4x2xAWG23/1	8.7	53

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).
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

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PROFINET® EtherNet/IP™

NEW

ETHERLINE® PN Cat.6$_A$ FLEX FC

Ethernet cable Category 6$_A$, Class E$_A$ for flexible use with FC inner sheath – verified up to 500 MHz

Info

- For PROFINET applications with 4 pairs
- CAT.6$_A$ qualified for 10Gbit/s
- Fast and easy cable preparation by FC inner sheath

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
- At 100 Mbit/s: max 90 m cable length
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

Product features

- CAT.6$_A$ for flexible application, qualified for 10Gbit/s
- Meets the requirements according to CAT.6$_A$, ISO/IEC 11801 and EN 50173
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- The oil-resistant PVC sheath enables usage in industrial environments

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: PE
- Inner sheath: halogen-free compound
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening, 2 cores stranded to pair, 4 pairs stranded to bundle with central cross
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

Technical data

Peak operating voltage
(not for power applications) 125 V

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

Z∞ Characteristic impedance
nom. 100 Ω acc. to IEC 61156-5

Temperature range
cable halogenfree compound
Fixed installation: -25°C to +80°C
cable with PVC jacket
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter [mm]	Copper index (kg/km)
PVC jacket				
2170586	ETHERLINE® PN CAT.6$_A$ Y FLEX FC	4x2xAWG23/7	8.9	57
Halogen-free jacket				
2170587	ETHERLINE® PN CAT.6$_A$ FRNC FLEX FC	4x2xAWG23/7	8.9	57

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
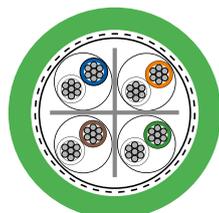Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

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c ⓊL us **PROFINET** **EtherNet/IP™**

ETHERLINE® FD CAT.6$_A$
For highly flexible applications

Info

- CAT.6$_A$ for drag chain, qualified for 10Gbit/s
- For PROFINET applications with 4 pairs

Benefits

- For use in power chains and moving machinery parts in dry or damp rooms
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

Application range

- For highly flexible applications (e.g. power chains)
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- PUR version is halogen-free according to IEC 60754
- Oil-resistant acc. IEC 60811-2-1
- CAT.6$_A$ for drag chain, qualified for 10Gbit/s
- Meets the requirements according to CAT.6$_A$, ISO/IEC 11801 and EN 50173
- Min. 2.5 million bending cycles in the power chain

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- PUR cable is UL/CSA-certified (CMX)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: Based on Polyolefin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR, halogen-free/PVC
- Colour: green (based on RAL 6018)

Technical data

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 8 x cable diameter

Z∞ **Characteristic impedance**
100 Ω

Temperature range
Cable with PUR jacket
Fixed installation: -40°C to +80°C
Flexing: -30°C to +70°C
Cable with PVC jacket
Fixed installation: -40°C to +80°C
Flexing: -10°C bis +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PVC sheath						
2170485	ETHERLINE® FD CAT.6$_A$	4x2xAWG24/7	1.3	8.9	44	88
PUR outer sheath, halogen-free						
2170484	ETHERLINE® FD P CAT.6$_A$	4x2xAWG24/7	1.3	8.9	44	90

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
UL certifications can be found in the data sheet.

Accessories

- EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
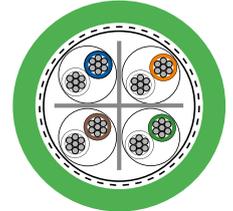- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

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Data communication systems for ETHERNET technology

PROFINET, Cat.6$_A$ • Type C - Cables for continuous flexing applications

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ETherNet/IP™

ETHERLINE® TORSION Cat.6$_A$
Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® TORSION P Cat.6$_A$ 4x2xAWG24/7

Info
- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- CAT.6$_A$ qualified for 10Gbit/s
- For PROFINET applications

Benefits
- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

Application range
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Can be used for Industrial Ethernet in harsh industrial environments
- Max. cable lenght for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features
- PUR version is halogen-free according to IEC 60754
- Oil-resistant acc. IEC 60811-2-1
- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Meets the requirements according to CAT.6$_A$, ISO/IEC 11801 and EN 50173

Norm references / Approvals
- Electrical requirements acc. to IEC 61156-6
- PUR cable is UL/CSA-certified (CMX)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

Product Make-up
- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR, halogen-free/PVC
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 8 x cable diameter

Z∞ Characteristic impedance
100 Ω

Temperature range
Cable with PUR jacket
Fixed installation: -40°C to +80°C
Flexing: -30°C to +70°C
Cable with PVC jacket
Fixed installation: -40°C to +80°C
Flexing: -10°C bis +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)
PVC jacket					
2170482	ETHERLINE® TORSION Y CAT6$_A$	4 x 2 x AWG24/7	1.3	8.9	44
PUR outer sheath, halogen-free					
2170483	ETHERLINE® TORSION P CAT6$_A$	4 x 2 x AWG24/7	1.3	8.9	44

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
UL certifications can be found in the data sheet.

Accessories

ETHERLINE® TORSION Cat.6$_A$ Patch cables

Info
- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- Cat.6$_A$ qualified for 10Gbit/s
- Other types are available at www.lappgroup.com/assemblyfinder or on request

Benefits
- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components

Application range
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

Product features
- Meets the requirements according to Cat.6$_A$ and class E$_A$
- Suitable for torsion stress

Product Make-up
- Braided conductor, 4x2x AWG24/7
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR, 9.4mm in diameter
- Colour: green (based on RAL 6018)

Technical data

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

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 8 x outer diameter

IP **Protection rating**
IP 67

Temperature range
Flexing: –30°C to +70°C
Fixed installation: –30°C to +80°C

Coding
M 12: X-Standard

	M 12, plug, straight	M 12, socket, straight	Open end

Length	Article number		
M 12, plug, straight			
1.0m	2172264	2172278	2172271
2.0m	2172265	2172279	2172272
3.0m	2172266	2172280	2172273
5.0m	2172267	2172281	2172274
10.0m	2172268	2172282	2172275
M 12, socket, straight			
1.0m	2172278	2172292	2172285
2.0m	2172279	2172293	2172286
3.0m	2172280	2172294	2172287
5.0m	2172281	2172295	2172288
10.0m	2172282	2172296	2172289

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Other lengths are available upon request.

® LAPP

PROFINET®   EtherNet/IP™

NEW

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

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 8 x outer diameter

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-5

Temperature range
Cable with PVC jacket
Fixed installation: -30°C to +80°C
Flexing: -5°C bis +50°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

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

Accessories

- EPIC® DATA AX RJ45 Cat.6_A refer to page 459
- EPIC® DATA 90 RJ45 Cat.6_A refer to page 459
- EPIC® DATA AX RJ45 Cat.6_A IP68 refer to page 460
- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

ETHERLINE® PN Cat.7 FLEX

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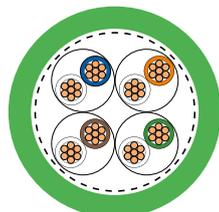
Info

- 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

- 7-wire bare stranded copper conductor
- Core insulation: foamed polyethylen (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

Technical data

Peak operating voltage
(not for power applications) 125 V

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

Characteristic impedance z_∞
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					
2170597	ETHERLINE® PN CAT.7 Y FLEX	4x2xAWG23/7	1.53	8.7	45
2170598	ETHERLINE® PN CAT.7 FRNC FLEX	4x2xAWG23/7	1.53	8.7	45

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
UL certifications can be found in the data sheet.

Accessories

- EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
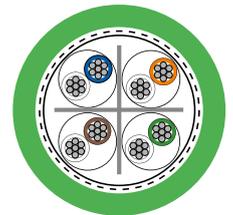- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

LAPP

ETHERLINE® TORSION Cat.7
Highly flexible application

Info

- For Torsion applications (±180°)
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s

Benefits

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m Max. cable length for 10 Gbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- Halogen-free according to IEC 60754-1
- Oil-resistant acc. IEC 60811-2-1
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Cable suitable for high torsion stress. Tested with up to 5 million bending cycles and a right/left movement of 180° per metre.

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- UL/CSA-certified (CMX)
- UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 8 x outer diameter
Flexing: 15 x outer diameter

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Fixed installation: -40°C to +80°C
Flexing: -30°C to +70°C

Article number	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)
ETHERLINE® TORSION Cat.7				
2170481	4x2xAWG24/7	1.4	9.4	44

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
UL certifications can be found in the data sheet.

Accessories

- EPIC® DATA 90 RJ45 Cat.6A refer to page 459
- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

ÖLFLEX® / UNITRONIC® / ETHERLINE® / HITRONIC® / EPIC® / SKINTOP® / SILVYN® / FLEXIMARK® / ACCESSORIES / APPENDIX

LAPP

ETHERLINE® TRAIN

Ethernet cables according to EN 50264-3-1 Type XM for high requirements in railway applications

PROFINET® **EtherNet/IP™**
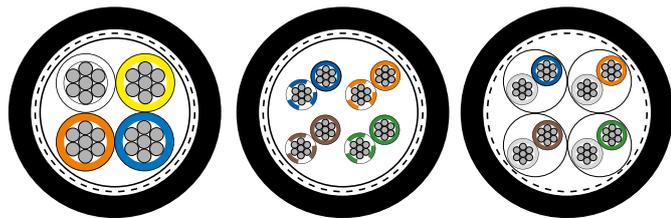
Info
• Meets EN 50264-3-2 type XM and EN 45545-2
• Cat.5e Performance up to 100 / 1000 MBit/s Cat.6_A & Cat.7 qualified for 10 GBit/s

Benefits

- Good chemical resistance
- Resistant to mechanical influences in harsh environmental conditions
- Extended temperature range
- Reduced flame spreading increase the protection against damage to persons and property in the event of a fire

Application range

- For use in railway vehicles and buses, for fixed installations and applications where limited movement may occur
- Suitable for connecting to of e.g. camera systems, enter-/ infotainment for passengers, ticketing systems
- Also applicable within oily environments and areas with increased ambient temperature

Product features

- Fire behaviour according to EN/IEC:
  - Halogen-free acc. to EN 60754-1
  - No corrosive gases acc. to EN 60754-2
  - No fluorine acc. to EN 60684-2
  - No toxic gases acc. to EN 50305
  - Low smoke density acc. to EN 61034-2
  - Flame-retardant acc. to EN 60332-1-2
  - No fl ame propagation acc. to EN 60332-3-25

- Fire behaviour according to NF:
  - Toxicity of gases acc. to NF X 70-100
  - Low smoke density acc. to NF X 10-702
  - No flame propagation acc. to NF C 32-070, Cat. C1 and C2
- Chemical properties:
  - Oil resistant acc. to EN 50264-1
  - Fuel resistant acc. to EN 50264-1
  - Acid resistant acc. to EN 50264-1
  - Alkali resistant acc. to EN 50264-1
  - Ozone resistant acc. to EN 50264-3-2

Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- EN 50264-1
- EN 45545-2 HL1, HL2, HL3

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: Based on Polyolefin
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- Cat.6_A/Cat.7: S/FTP - copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: electron beam cross-linked polymer-compound EM 104
- Outer sheath colour: Black

Technical data

Peak operating voltage (not for power applications) 125 V	
Minimum bending radius Flexing: 10 x outer diameter Fixed installation: 8 x outer diameter	
Test voltage Core/core: 1000 V Core/screen: 1000 V	
Characteristic impedance nom. 100 Ω acc. to IEC 61156-6	
Temperature range Fixed installation: -45°C to +90°C Occasional flexing: -35°C up to +90°C	

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)
Cat.5e, 2-pair version					
2170906	ETHERLINE TRAIN FLEX Cat.5e 1x4x22/7 PE	1x4xAWG22/7	1.5	6.5	30
2170910	ETHERLINE TRAIN FLEX Cat.5e 1x4x0,5 PE	1x4x0,5/7	2	7.6	41
Cat.5e, 4-pair version					
2170907	ETHERLINE TRAIN Cat.5e 4x2x24/7 PE	4x2xAWG24/7	1.2	7.7	38
Cat.6_A					
2170908	ETHERLINE TRAIN FLEX Cat. 6A 4x2x24/7 PE	4x2xAWG24/7	1.4	8.4	38
Cat.7					
2170909	ETHERLINE TRAIN FLEX Cat.7 4x2x24/7 PE	4x2xAWG24/7	1.4	8.4	43

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
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

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ETHERLINE® HEAT 6722

Info

- Designed according to ISO 6722
- Tested acc.to ECE-R 118.01
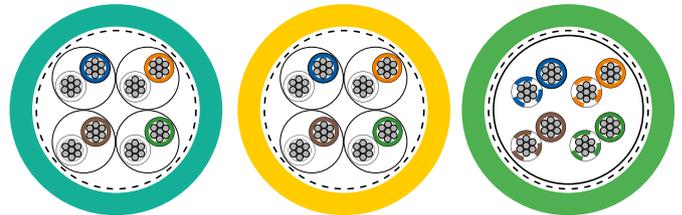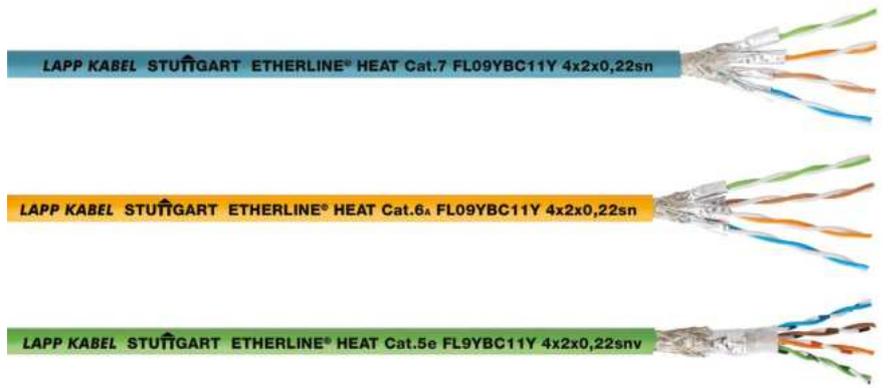
Benefits

- Easy to strip and dismantle
- Extended temperature range
- Good resistance to oil, petrol, acids and alkalis
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire

Application range

- For flexible applications (7-wire stranded conductor)
- For fixed, flexible and protected installations inside buses
- Suitable for connecting to of e.g. camera systems, enter-/ infotainment for passengers, ticketing systems
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

Product features

- Halogen-free according to VDE 0472-815
- Good chemical resistance
- Flame retardant acc. to ISO 6722-1
- Temperature class B on the basis of ISO 6722-1

Norm references / Approvals

- DIN/ISO 6722
- Electrical requirements acc. to IEC 61156-6
- Tested acc.to ECE-R 118.01
- ISO 14572, 5.21
- LV 112-1, LV 212-2, LV 213-2

Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with EIA/TIA 568A and B
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- Cat.6$_A$/Cat.7: S/FTP - copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR compound, halogen-free
- Outer sheath colour:
  Cat.5e green (RAL 6018)
  Cat.6$_A$ yellow (RAL 1003)
  Cat.7 blue (RAL 5021)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Flexing: -30 °C to +105 °C
Fixed installation: -40 °C to +105 °C

| Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® HEAT 6722						
2170850	ETHERLINE® Cat. 5e FL9YBC11Y 4x2x0,22sn	4x2xAWG24/7	1.17	7.7	38	72
2170581	ETHERLINE® Cat. 6A FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	1.3	8.1	38	77
2170582	ETHERLINE® Cat. 7 FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	1.3	8.1	38	77

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

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ETHERLINE® FIRE Cat.5e PH120

Ethernet cable Category 5e, Class D with isolation integrity – verified up to 100 MHz
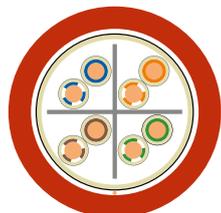
Info
• Isolation integrity for at least 120 minutes in the event of fire

Benefits
• Ensures that the cable can still transmit data during and after a fire for 120 min (according to EN50200)
• High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

Application range
• In industrial areas that use fire as a tool
• Highly combustible or fire-prone areas
• For fixed installation
• For indoor use

Product features
• Fire behaviour:
  - Halogen-free (IEC 60754–1 & EN50267-2-1)
  - Flame-retardant (IEC 60332–1)
  - Fire retardant (IEC 60332-3-24)
  - Low smoke density (IEC 61034–2)
  - Circuit integrity (EN50200); 120 min
• Meets the requirements according to Cat. 5e and class D

Product Make-up
• Solid bare copper conductor
• Core insulation: Based on Polyolefin
• Each insulation will be wrapped with a special tape (anti-fire barrier)
• Twisting: 2 twisted-pair cores, stranding from 4 pairs
• F/UTP: foil screening as overall screening
• Halogen-free and flame-retardant FRNC outer sheath, colour: red (similar to RAL3000)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Fixed installation: 15 x outer diameter

Characteristic impedance
$100\ \Omega \pm 15\%$

Temperature range
Operation: –20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® FIRE Cat.5e PH120						
2170905	ETHERLINE® FIRE Cat.5e PH120	4 x 2 x AWG23/1	0.95	8.6	24	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

LAPP

ETHERLINE® TRAY

LAPP KABEL STUTTGART ETHERLINE® TRAY Cat.5e Y 4x2xAWG22

Info

- PLTC (power limited tray cable) for protected use on cable trays

Benefits

- Wide application range due to multiple certifications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

Application range

- Suitable for EtherNet/IP applications
- Fixed Installation
- Industrial machinery; plant engineering
- Can be used for Industrial Ethernet in harsh industrial environments
- Methods of Deployment: laying in trunking, ducts, trays, building riser

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

Norm references / Approvals

- c(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- c(UL)us Typ CMR acc.to UL 444
- c(UL)us Typ PLTC acc. to UL 13
- UL AWM Style 2570
- Electrical requirements acc. to IEC 61156-5 Type III

Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with EIA/TIA 568A and B
- TP structure
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- PVC outer sheath

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

Peak operating voltage
(not for power applications) 125 V

Minimum bending radius
Flexing: 15 x outer diameter
Fixed installation: 10 x outer diameter

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Occasional flexing: -25°C to +80°C
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® TRAY					
2170450	ETHERLINE® TRAY Cat.5e Y 4x2x22AWG	4x2xAWG22/7	9.6	59	119
2170463	ETHERLINE® TRAY Cat.6$_A$ Y 4x2x22AWG	4x2xAWG22/7	9.9	84	133

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

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ACCESSORIES
APPENDIX

ETHERLINE® ROBUST

Flexible use

ECOLAB®

Info
- For PROFINET applications
- 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 substances, 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 steam cleaning

Application range
- For flexible applications (7-wire stranded conductor)
- 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 industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702

Product features
- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396
- Low smoke density according to IEC 61034-2

Product Make-up
- 7-wire bare stranded copper conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
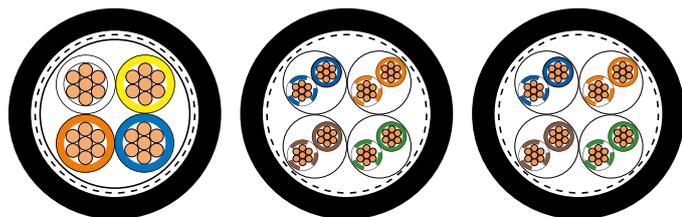Occasional flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PROFINET Cat.5e						
2170451	ETHERLINE® ROBUST PN Cat.5	2x2xAWG22/7	1.5	6.5	30.4	50
PROFINET Cat.7						
2170452	ETHERLINE® ROBUST PN Cat.7	4x2xAWG23/7	1.5	8.7	48	75
Industrial Ethernet Cat.7						
2170453	ETHERLINE® ROBUST Cat.7 FLEX	4x2xAWG26/7	1	6.2	27	36

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA AX RJ45 Cat.6$_A$ IP68 refer to page 460
- EPIC® DATA M12D refer to page 462
- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

⊗ LAPP

ECOLAB®

ETHERLINE® ROBUST FR

Info

- For PROFINET applications
- Flame-retardant
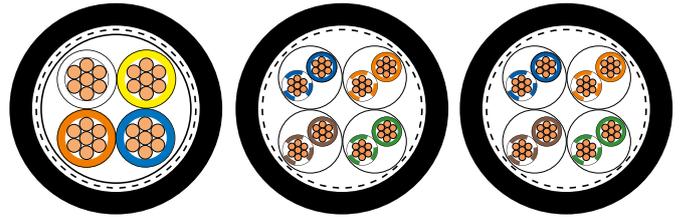
Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Good resistance to cold and hot water as well as water-soluble cleaning and cooling agents
- Well-suited to steam cleaning

Application range

- For flexible applications (7-wire stranded conductor)
- 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 industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Suitable for EtherCAT and EtherNet/IP applications

Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Flame retardance makes it suitable for indoor and outdoor installations
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.

Norm references / Approvals

- UV-resistant according to ISO 4892-2 and ozone-resistant according to EN 50396
- Flame-retardant according IEC 60332-1-2

Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

Technical data

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Characteristic impedance
nom. 100 Ω acc. to IEC 61156-6

Temperature range
Occasional flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Core diameter in mm	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PROFINET Cat.5e						
2170454	ETHERLINE® ROBUST PN FR Cat.5	2x2xAWG22/7	1.5	6.5	30.4	55
PROFINET Cat.7						
2170455	ETHERLINE® ROBUST PN FR Cat.7	4x2xAWG23/7	1.5	8.7	48	80
Industrial Ethernet Cat.7						
2170456	ETHERLINE® ROBUST FR Cat.7 FLEX	4x2xAWG26/7	1	6.2	27	40

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
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- EPIC® DATA PN AX RJ45 refer to page 458
- EPIC® DATA PN 90 RJ45 refer to page 458
- EPIC® DATA AX RJ45 Cat.6ₐ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6ₐ refer to page 459
- EPIC® DATA AX RJ45 Cat.6ₐ IP68 refer to page 460
- EPIC® DATA M12D refer to page 462
- EPIC® DATA M12X refer to page 462
- EPIC® DATA CCR FA refer to page 463

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NEW

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

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000734
ETIM 5.0/6.0 Class-Description: Network switch

Protection rating
IP 30

Temperature range
0°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

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

Accessories

- ETHERLINE® EC FD Cat.5e RJ4

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

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000734
ETIM 5.0/6.0 Class-Description: Network switch

IP **Protection rating**
IP 30

Temperature range
-10°C to +60°C

Article number	Article designation	Type	RJ45 ports	MTBF in years
ETHERLINE® ACCESS U05T/U08T				
21700118	ETHERLINE® ACCESS U05T	Unmanaged	5	> 347
21700119	ETHERLINE® ACCESS U08T	Unmanaged	8	> 277

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Accessories

- ETHERLINE® EC FD Cat.5e RJ4

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EPIC® DATA PN AX RJ45

Info
- For PROFINET applications
- Installation without tools

Product features
- For PROFINET applications
- Housing: zinc die-casting, grey
- Suitable for use in industrial applications
- By a multi-level relief setting the connector can accomodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Colour-coded in accordance with PROFINET for Cat.5 apllications

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

Protection rating
IP 20

Ambient temperature (operation)
-40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Core diameter in mm	AWG solid	AWG 7-wire
EPIC® DATA PN AX RJ45							
21700605	ED-IE-AX-5-PN-20-FC	5	9	1.6	1	24 - 22	27 - 22

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
10 pieces in one blister
An approval is necessary for 19-wire cables by Lapp Group
Approved cable: 2170888 ETHERLINE® TORSION Cat.5

EPIC® DATA PN 90 RJ45

Info
- For PROFINET applications
- Installation without tools
- 4 different angled cable outlets possible

Product features
- For PROFINET applications
- Cable outlet in 4 different 90° angles possible
- Housing: zinc die-casting, grey
- Suitable for use in industrial applications
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Colour-coded in accordance with PROFINET for Cat.5 apllications

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

Protection rating
IP 20

Ambient temperature (operation)
-40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Core diameter in mm	AWG solid	AWG 7-wire
EPIC® DATA PN 90 RJ45							
21700638	ED-IE-90-6A-PN-20-FC	5.5	10	1	1.6	24 - 22	27 - 22

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
An approval is necessary for 19-wire cables by Lapp Group
Approved cable: 2170888 ETHERLINE® TORSION Cat.5

Data communication systems for ETHERNET technology
Industrial Ethernet, Cat.6$_A$ • RJ45 Connectors

® LAPP

EPIC® DATA AX RJ45 Cat.6$_A$

Info
- CAT.6$_A$ qualified for 10Gbit/s
- Installation without tools

Product features
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accomodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

ETIM	**Classification ETIM 5/6** ETIM 5.0/6.0 Class-ID: EC001121 ETIM 5.0/6.0 Class-Description: Modular connector
IP	**Protection rating** IP 20
	Ambient temperature (operation) -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
RJ45 connector acc. to T568A								
21700600	EPIC® DATA ED-IE-AX-6A-A-20-FC	5	9	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568A, specifically for cables with 19-wire cores								
21700615	EPIC DATA ED-IE-AX-6$_A$-A-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26*
RJ45 connector acc. to T568B								
21700601	EPIC® DATA ED-IE-AX-6A-B-20-FC	5	9	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568B, specifically for cables with 19-wire cores								
21700616	EPIC DATA ED-IE-AX-6$_A$-B-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26*

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
10 pieces in one blister
An approval is necessary for 19-wire cables by Lapp Group
Approved cables: 2170289 & 2170489 ETHERLINE® Cat.5e FD; CE217489 ETHERLINE® Cat.5 FD BK; 2170488 ETHERLINE® Cat.6 FD

EPIC® DATA 90 RJ45 Cat.6$_A$

Info
- CAT.6$_A$ qualified for 10Gbit/s
- Installation without tools
- 4 different angled cable outlets possible

Product features
- Cable outlet in 4 different 90° angles possible
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

ETIM	**Classification ETIM 5/6** ETIM 5.0/6.0 Class-ID: EC001121 ETIM 5.0/6.0 Class-Description: Modular connector
IP	**Protection rating** IP 20
	Ambient temperature (operation) -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
RJ45 connector acc. to T568A								
21700636	ED-IE-90-6A-A-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568A, specifically for cables with 19-wire cores								
21700639	ED-IE-90-6A-A-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26*
RJ45 connector acc. to T568B								
21700637	ED-IE-90-6A-B-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
RJ45 connector acc. to T568B, specifically for cables with 19-wire cores								
21700640	ED-IE-90-6A-B-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26*

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For current information see: www.lappgroup.com

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EPIC® DATA AX RJ45 Cat.6$_A$ IP68

RJ45 connector in IP68 housing

Product features
- Housing: brass nickel plated
- Qualified for 10 Gigabit Ethernet
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1
- By a multi-level relief setting the connector can accomodate a cable diameter from 5,0 mm up to 9,0 mm

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51

Info
- CAT.6$_A$ qualified for 10Gbit/s
- Installation without tools

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002062
ETIM 5.0/6.0 Class-Description: Sensor-actuator connector

Protection rating
IP 68

Ambient temperature (operation)
Plug/socket -40°C to +70°C
circular housing: -40°C to +85°C

Article number	Article designation
circular connector (male) inclusive RJ45 connector	
21700630	ED-IE-AX-RJ45-6A-B-68-FC
dust cap for RJ45 connector	
21700631	ED-IE-AX-RJ45-AC-DC
circular bulkead housing inclusive RJ45 Modul acc. to T568B	
21700632	ED-IE-RJ45F-6A-B-68-FC
dust cap for RJ45 Modul	
21700633	ED-IE-RJ45F-AC-DC

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

EPIC® DATA RJ45F Cat.6$_A$

RJ45 female connector

Product features
- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accomodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

Norm references / Approvals
- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

Protection rating
IP 20

Ambient temperature (operation)
-40°C to +70°C

Article number	Article designation
RJ45 Modul acc. to T568A	
21700611	ED-IE-AX-RJ45F-6A-A-FC
RJ45 Modul acc. to T568B	
21700612	ED-IE-AX-RJ45F-6A-B-FC

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EPIC® DATA HS RJ45F Cat.6$_A$

Cat.6$_A$ rail mount adapter

Product features

- Plastic housing including Easy Connect RJ45 Modul Cat.6$_A$ 10G
- Suitable for use in industrial applications
- Integrated strain relief for cable O.D. to 9 mm
- Colour: light grey (RAL 7035)
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1

Norm references / Approvals

- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

Protection rating
IP 20

Ambient temperature (operation)
–40°C to +70°C

Article number	Article designation
Inclusive RJ45 Modul acc. to T568A	
21700613	EPIC DATA HS RJ45 F 10G A
Inclusive RJ45 Modul acc. to T568B	
21700614	EPIC DATA HS RJ45 F 10G B

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

EPIC® DATA M12D

M12 D-coded connectors

Info

- CAT.5-Performance
- Installation without tools

Product features

- Field assembly Industrial Ethernet connector, M12 D-coded according to IEC 61076-2-101
- Suitable for use in industrial applications
- Robust and vibrations- resistant
- Toolfree installation, small and compact design

Norm references / Approvals

- Data transmission is conform to category Cat.5 acc. to ISO 11801

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

IP **Protection rating**
IP 67

Ambient temperature (operation)
-25°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	AWG solid	AWG 7-wire
M12 D-coded plug, straight, colour coding acc. to PROFINET					
21700647	ED-IE-AX-M12D-5-PN-67-FC	6.2	9.7	24 - 22	26 - 22
M12 D-coded plug, straight, colour coding acc. to TIA 568					
21700648	ED-IE-AX-M12D-5-67	5	6.1	24 - 22	26 - 22
M12 D-coded socket, straight, TIA 568 colour coding					
22261016	AB-C4-M12FSD-SH	4	8	26 - 22	26 - 22

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

EPIC® DATA M12X

M12 X-coded connectors

Info

- CAT.6$_A$ qualified for 10Gbit/s
- Installation without tools

Product features

- Field assembly Industrial Ethernet connector, M12 X-coded according to IEC 61076-2-109
- Qualified for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibrations- resistant
- Housing: zinc die-casting, grey
- Insulation displacement contacts for conductor diameter of AWG27/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm
- Toolfree installation, small and compact design

Norm references / Approvals

- Acc. to standard IEC 61076-2-109
- Data transmission is conform to category Cat.6$_A$acc. to ISO/IEC 11801:2010
- UL-listed (E-File E353543)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

IP **Protection rating**
IP 67

Ambient temperature (operation)
Plug/socket -40°C to +85°C

Article number	Article designation
M12 x-coded male connector straight	
21700602	ED-IE-AX-M12X-6$_A$-67-FC
M12 x-coded female connector straight	
21700621	ED-IE-AX-M12XF-6$_A$-67-FC
M12 x-coded female connector straight for wall mounting	
21700622	ED-IE-AX-M12XF-RM-6$_A$-67-FC

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

EPIC® DATA FT IE
Industrial Ethernet feed through

Product features
- Designs for front and rear wall-mounting
- M12 panel feed-throughs for direct connecting with PCB
- Can be used for Industrial Ethernet in harsh industrial environments
- Housing: zinc die-casting, grey

Norm references / Approvals
- Acc. to standard IEC 61076-2
- D-coded: Cat.5 acc. to ISO 11801
  X-coded: Cat.6_A acc. to ISO 11801

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002061
ETIM 5.0/6.0 Class-Description: Sensor-actuator connector chassis

Protection rating
IP 67

Ambient temperature (operation)
-25°C to +85°C

Article number	Article designation
M12 feed through, socket on socket, D-coded	
22262022	AB-C4-DSI-M12FSD-M12FSD-M16-SH
M12 flush-type connector socket for front-mounting, X-coded	
21700617	ED-IE-M12F-X-FM
M12 flush-type connector socket for rear wall mounting, solder contacts for circuit board, X-coded	
21700618	ED-IE-M12F-X-RM

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

EPIC® DATA CCR FA
Cable coupler round

Info
- Installation without tools

Product features
- Field mountable cable coupler for data cables up to Cat.7_A
- Compact, round design
- Qualified for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibrations- resistant
- Housing: zinc die-casting, grey
- Insulation displacement contacts for conductor diameter of AWG24/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm

Norm references / Approvals
- Compliance to class FA up to 1000 MHz in connection with Cat.7_A cables
- Data transmission is conform to category Cat.7_A acc. to ISO/IEC 11801
- UL-listed (E-File E353543)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001121
ETIM 5.0/6.0 Class-Description: Modular connector

Protection rating
IP 67

Ambient temperature (operation)
Plug/socket -40°C to +85°C

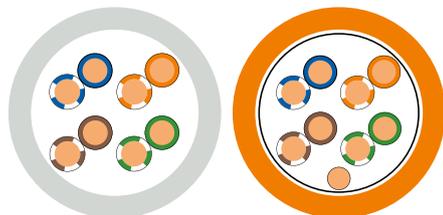| Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	AWG solid	AWG 7-wire
EPIC® DATA CCR FA					
21700623	EPIC® DATA CCR FA	5	9.7	24 - 22	24 - 22

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
An approval is necessary for 19-wire cables by Lapp Group
Approved cables: 2170289 & 2170489 ETHERLINE® Cat.5e FD; CE217489 ETHERLINE® Cat.5 FD BK; 2170488 ETHERLINE® Cat.6 FD

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Data communication systems for ETHERNET technology

⊛ LAPP

Structured building cabling, Cat.5e • Cables for fixed installation

NEW

ETHERLINE® LAN 200 Cat.5e

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

LAPP KABEL STUTTGART ETHERLINE® LAN 200 U/UTP Cat.5e

LAPP KABEL STUTTGART ETHERLINE® LAN 200 F/UTP Cat.5e

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-T IEEE 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
- 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 (grey RAL 7035) or LSZH (orange RAL 2003)

Technical data

ETIM
Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Z∞ **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							
2170126	200 F/UTP Cat.5e	4 x 2 x AWG24/1	1.0	6,2	grey	18	39
2170950	200 U/UTP Cat.5e	4 x 2 x AWG24/1	0.9	5.1	grey	17	32
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

Copper price basis: EUR 100/100 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: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 472
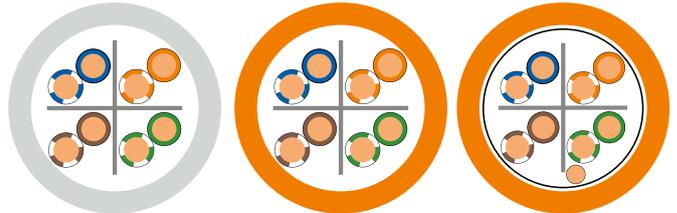- Crimping tool RJ45 Hirose refer to page 473

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-T IEEE 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 either as PVC (grey RAL 7035) or LSZH (orange RAL 2003)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Characteristic impedance
$100\ \Omega \pm 15\%$

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

Copper price basis: EUR 100/100 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: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.
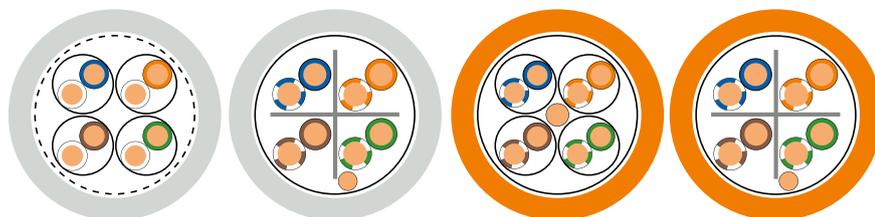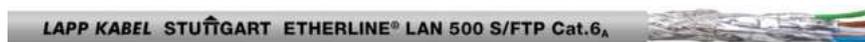
Accessories

• EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
• EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459

Data communication systems for ETHERNET technology

Structured building cabling, Cat.6$_A$ • Cables for fixed installation

NEW

ETHERLINE® LAN 500 Cat.6$_A$

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

LAPP KABEL STUTTGART ETHERLINE® LAN 500 S/FTP Cat.6$_A$

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-T IEEE 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 either as PVC (grey RAL 7035) or LSZH (orange RAL 2003)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

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

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the defi nition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

• EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459

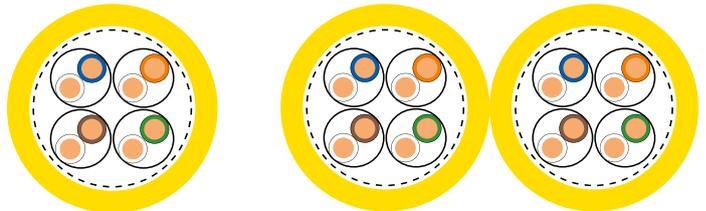• EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459

LAPP

Data communication systems for ETHERNET technology
Structured building cabling, Cat.7$_A$ • Cables for fixed installation

NEW

ETHERLINE® LAN 1000 Cat. 7$_A$
Ethernet cable for Category 7$_A$/ class F$_A$ - verified up to 1000 MHz

LAPP KABEL STUTTGART ETHERLINE® LAN 1000 S/FTP Cat.7$_A$

LAPP KABEL STUTTGART ETHERLINE® LAN 1000 S/FTP Cat.7$_A$ duplex

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

ETHERLINE® LAN 1200 Cat.7$_A$
Ethernet cable for Category 7$_A$/ class F$_A$ - verified up to 1200 MHz

LAPP KABEL STUTTGART ETHERLINE® LAN 1200 S/FTP Cat.7$_A$

LAPP KABEL STUTTGART ETHERLINE® LAN 1200 S/FTP Cat.7$_A$ duplex

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-T IEEE 802.5: ISDN; FDDI; ATM; cable sharing IEEE 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.7$_A$ 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 FA - permanent link).

Product Make-up
• Solid conductor 4x2xAWG23/1, duplex 2x(4x2xAWG23/1)
• 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

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Z$_∞$ **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

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.
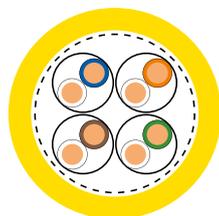Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX

NEW

ETHERLINE® LAN 1600 Cat.7$_A$

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

LAPP KABEL STUTTGART ETHERLINE® LAN 1600 S/FTP Cat.7$_A$

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-T IEEE 802.5: ISDN; FDDI; ATM; cable sharing IEEE 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.7$_A$ 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 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 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Z$_∞$ 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

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the defi nition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

⊛ LAPP

UNITRONIC® LAN OUTDOOR

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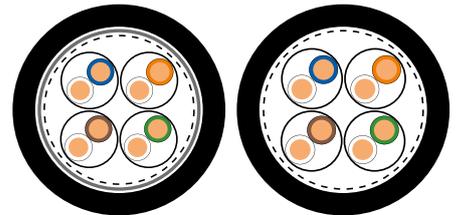
NEW

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 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Z∞ 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

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the defi nition and calculation of copper-related surcharges.
Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Packaging size: Drum
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

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ACCESSORIES

APPENDIX

ETHERLINE® LAN FLEX

Data cable for patchcable applications

LAPP KABEL STUTTGART ETHERLINE® LAN 200 F/UTP Cat.5e Flex

LAPP KABEL STUTTGART ETHERLINE® LAN 600 S/FTP Cat.7 LSZH Flex

Info

- Only for patch cable applications (max. 60 m)

Benefits

- For directly connecting two electric components
- Easy to assemble

Application range

- Indoor applications
- LAN connections
- Control cabinet wiring

Product features

- Good flexibility - easy installation with tight space requirements
- Flame retardant acc. to IEC 60332-1-2 2170139: flame retardant acc. to IEC 60332-1-2 and IEC 60332-3-24

Product Make-up

- F/UTP: foil screening as overall screening
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath either as PVC or LSZH (color grey RAL 7035)

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000830
ETIM 5.0/6.0 Class-Description: Data cable

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

Mean characteristic Impedance
$100 \ \Omega \pm 15\%$

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

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter [mm]	Copper index (kg/km)	Weight (kg/km)
PVC versions					
2170127	200 F/UTP Cat.5e	4 x 2 x AWG26/7	5.6	13	28
2170129	200 SF/UTP Cat.5e	4 x 2 x AWG26/7	6.0	22	36
2170144	600 S/FTP CAT7 Y	4 x 2 x AWG26/7	6.5	22	39
Halogen-free versions					
2170172	200 F/UTP Cat.5e LSZH	4 x 2 x AWG26/7	5.6	13	28
2170139	200 SF/UTP Cat.5e LSZH	4 x 2 x AWG26/7	6.0	22	36
2170142	600 S/FTP CAT7 LSZH	4 x 2 x AWG26/7	6.2	21	40

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 100 m; Drum (500; 1000) m
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 472
- EPIC® DATA AX RJ45 Cat.6$_A$ refer to page 459
- EPIC® DATA 90 RJ45 Cat.6$_A$ refer to page 459

NEW

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 structured 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 IEC 60603-7-51

Product Make-up
- Cable make up: 4x2xAWG27/7 PIMF
- Core insulation: cellular-PE
- Tin-plated copper wire braiding
- Outer sheath: halogen-free, flame-retardant compound

Technical data

Minimum bending radius	In operation: 5 x outer diameter
IP Protection rating	IP20
Z∞ 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.
No copper surcharge.
Details of the clamping force are available upon request, halogen-free.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

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ACCESSORIES

APPENDIX

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APPENDIX

Connector RJ45 CAT.5e Hirose TM 11

Product features
- Suitable for cross section (AWG24-27)
- Connection type: crimp
- Core insulation: app. 0,9-1,0 mm
- Max. outer sheath diameter: 5.8 mm
- Anti-kink protection: beige
- Set includes: RJ plug, anti-kink protection and guide plate
- Screened version

Technical data

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC002641
ETIM 5.0/6.0 Class-Description: Modular connector (industrial connector)

Article number	Article designation
Connector RJ45 CAT.5e Hirose TM 11	
CE6321	Connector RJ45 CAT.5e Hirose TM 11

Hirose is a registered trademark of the HIROSE ELECTRIC Group
Other colours are available upon request.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Crimping tool RJ45 Hirose refer to page 473

Connector RJ45 CAT.5 Stewart SS37

Product features
- Screened version
- Suitable for stranded conductors (AWG26)
- Included: bend protection and guide plate
- Anti-kink protection: light grey
- Max. outer sheath diameter: 5.72 mm

Technical data

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC002641
ETIM 5.0/6.0 Class-Description: Modular connector (industrial connector)

Article number	Article designation
Connector RJ45 CAT.5 Stewart SS37	
CE6323	Connector RJ45 CAT.5 Stewart SS37

Stewart is a registered trademark of Bel Fuse Inc.
Other colours are available upon request.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories

- Crimping tool RJ45 Stewart refer to page 474

Field-Terminable Connector RJ45 CAT.5e FM45

Product features
- Screened version
- Suitable for AWG 23 - 26, AWG 22 possible with restrictions
- IDC/piercing terminal according to 60352-4
- Suitable for solid and stranded conductors
- Suitable for use in industrial applications

Technical data

ETIM **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC002641
ETIM 5.0/6.0 Class-Description: Modular connector (industrial connector)

IP **Protection rating**
IP 20

Ambient temperature (operation)
-20°C to +70°C

Article number	Article designation
RJ45 connector acc. to T568A	
21700540	Field-Terminable Connector RJ45 CAT.5e FM45

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

LAPP — Data communication systems for ETHERNET technology
Structured building cabling, Cat.5e • RJ45 Connectors

Connector RJ45 CAT.6 Hirose TM21

Product features
- Channel Class E up to 250 MHz (CAT.6)
- Fully screened
- Conductor: Ø 0.5 mm solid wire: AWG 24 & 26; guide plate for 1.1 mm diameter wire; cable outer diameter: 6.6 mm
- Easy to handle
- Included: bend protection and guide plate
- Anti-kink protection: beige
- Suitable for solid and stranded conductors

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC002641
ETIM 5.0/6.0 Class-Description: Modular connector (industrial connector)

Article number	Article designation
Connector RJ45 CAT.6 Hirose TM21	
CE6324	Connector RJ45 CAT.6 Hirose TM21

Hirose is a registered trademark of the HIROSE ELECTRIC Group
Other colours are available upon request.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- Crimping tool RJ45 Hirose refer to page 473

LAPP — Data communication systems for ETHERNET technology
Structured building cabling, Cat.6 • RJ45 Connectors

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
- 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

Technical data

IP — Protection rating IP 20

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

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

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

Accessories
- Crimping tool RJ45 Hirose refer to page 473

Crimping tool RJ45 Hirose

Product features
- Crimping tool for RJ45 connector Hirose TM11 TM21 and TM31

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000385
ETIM 5.0/6.0 Class-Description: Special tool for telecommunication technique

Article number	Article designation
Crimping tool RJ45 Hirose	
CE5091	Crimping tool RJ45 Hirose TM11/TM21 8-pole

Hirose is a registered trademark of the HIROSE ELECTRIC Group
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- Connector RJ45 CAT.5 Hirose TM11 refer to page 472
- Connector RJ45 CAT.6 Hirose TM21 refer to page 473

For current information see: www.lappgroup.com

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Data communication systems for ETHERNET technology

Structured building cabling, Accessories • Tools

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ACCESSORIES

APPENDIX

Crimping tool RJ45 Stewart

Product features
- Crimping tool for RJ45 connector CAT.5 Stewart SS37
- Crimping tool for RJ plug 4, 6, 6-DEC and 8-pin

Technical data

◆ **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC000385
ETIM 5.0/6.0 Class-Description: Special tool for telecommunication technique

Article number	Article designation
Crimping tool RJ45 Stewart	
CE5093	Crimping tool RJ45 Stewart SS37 8-pole
CE5092	Crimping tool RJ 4-, 6-, 6-DEC- and 8-pole

Stewart is a registered trademark of Bel Fuse Inc.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- Connector RJ45 CAT.5 Stewart SS37 refer to page 472

Frontplate 19" 1HE Cat.6A

Product features
- 19" modular patch panel, for fixed installation
- 24 Ports
- Stable metal structure
- Dimensions: 19" – 1RU
- Colour: grey (RAL 7035)
- Unpopulated
- Incl. cable strain relief and cable ties
- On frontplate portnumbers are printed on
- Potential equalisation with incl. grounding set (0,3 m)

ⓘ **Info**

- Specially for RJ45 Cat.6$_A$ female connector

Technical data

◆ **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC002601
ETIM 5.0/6.0 Class-Description: Box/ housing for built-in mounting in the wall/ceiling

Article number	Article designation
Frontplate 19" 1HE Cat.6$_A$	
24441122	Frontplate 19" 1HE Cat.6$_A$

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

Accessories
- EPIC® DATA RJ45F Cat.6$_A$ refer to page 460

Punch down tool LSA+

Product features
- LSA+ punch-down tool for setting the individual cores on the data outlets or patch panel.
- Cores are set properly in the terminal strip and cut off at the same time.

Technical data

◆ **Classification ETIM 5/6**
ETIM 5.0/6.0 Class-ID: EC000385
ETIM 5.0/6.0 Class-Description: Special tool for telecommunication technique

Article number	Article designation
Punch down tool LSA+	
CE5076	Punch down tool LSA+

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