



شرکت فرااتصال رایان عصر

پیشرو در زمینه فناوری اطلاعات و ارتباطات

کابل های صنعتی

کابل‌های Fieldbus، Modbus و Profibus از اجزای کلیدی شبکه‌های اتوماسیون صنعتی محسوب می‌شوند و برای انتقال مطمئن داده بین تجهیزات کنترلی، سنسورها و عملگرها به کار می‌روند. این کابل‌ها با ساختار استاندارد، شیلدینگ مناسب و مقاومت مطلوب در برابر تداخلات الکترومغناطیسی (EMI)، موجب افزایش پایداری شبکه و کاهش خطا در تبادل اطلاعات می‌شوند. انتخاب درست کابل باس، علاوه بر بهبود کیفیت سیگنال، باعث کاهش توقف‌های ناخواسته، افزایش بهره‌وری خط تولید و اطمینان از عملکرد مداوم تجهیزات خواهد شد.

شرکت فرااتصال با تأمین کابل‌های باس از برندهای معتبر لئونی (Leoni)، هلوکیبل (Helukabel) و بلدن (Belden)، امکان انتخاب محصول متناسب با نیاز هر پروژه را فراهم کرده و راهکاری قابل اتکا برای کاربردهای صنعتی ارائه می‌دهد. چه در پروژه‌های کارخانه‌ای و خطوط تولید، چه در سیستم‌های کنترلی و مانیتورینگ، فرااتصال با تمرکز بر کیفیت، اصالت برند و مشاوره انتخاب درست به شما کمک می‌کند شبکه‌ای پایدار، دقیق و قابل اعتماد داشته باشید.



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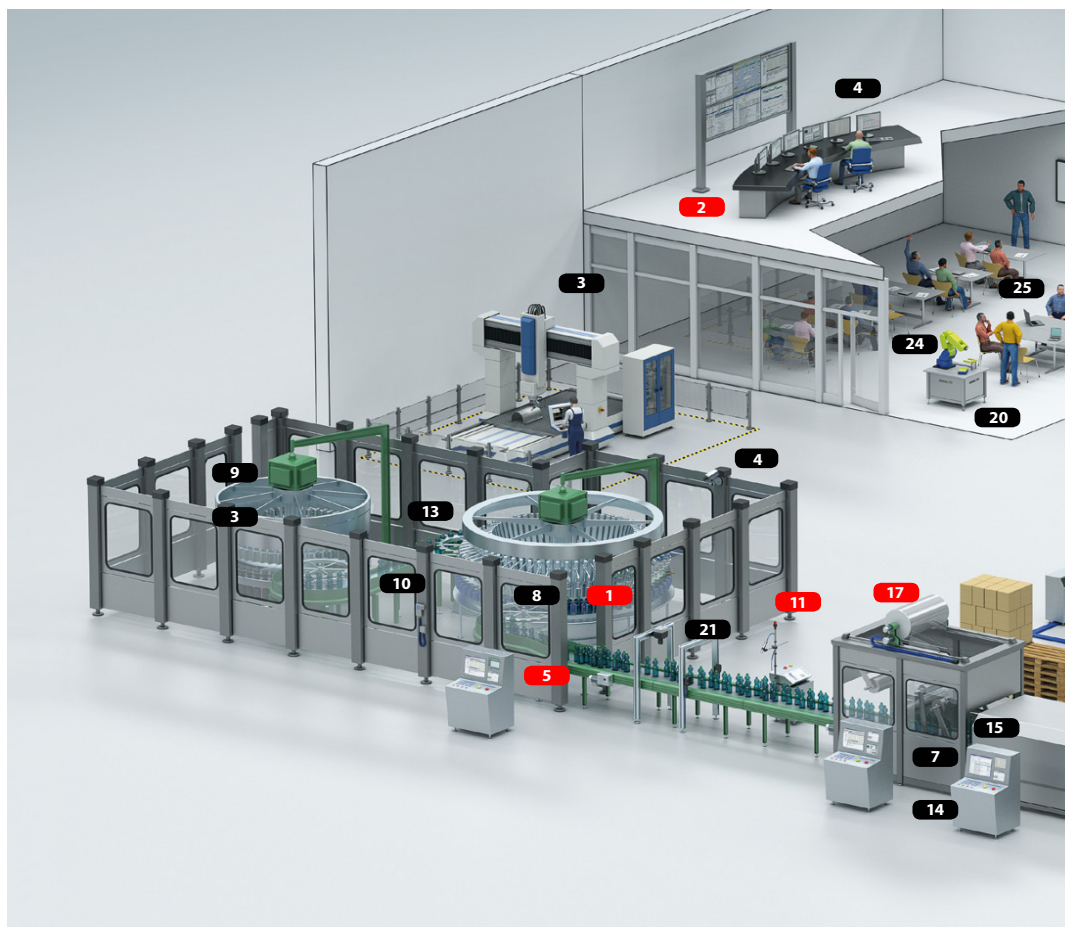
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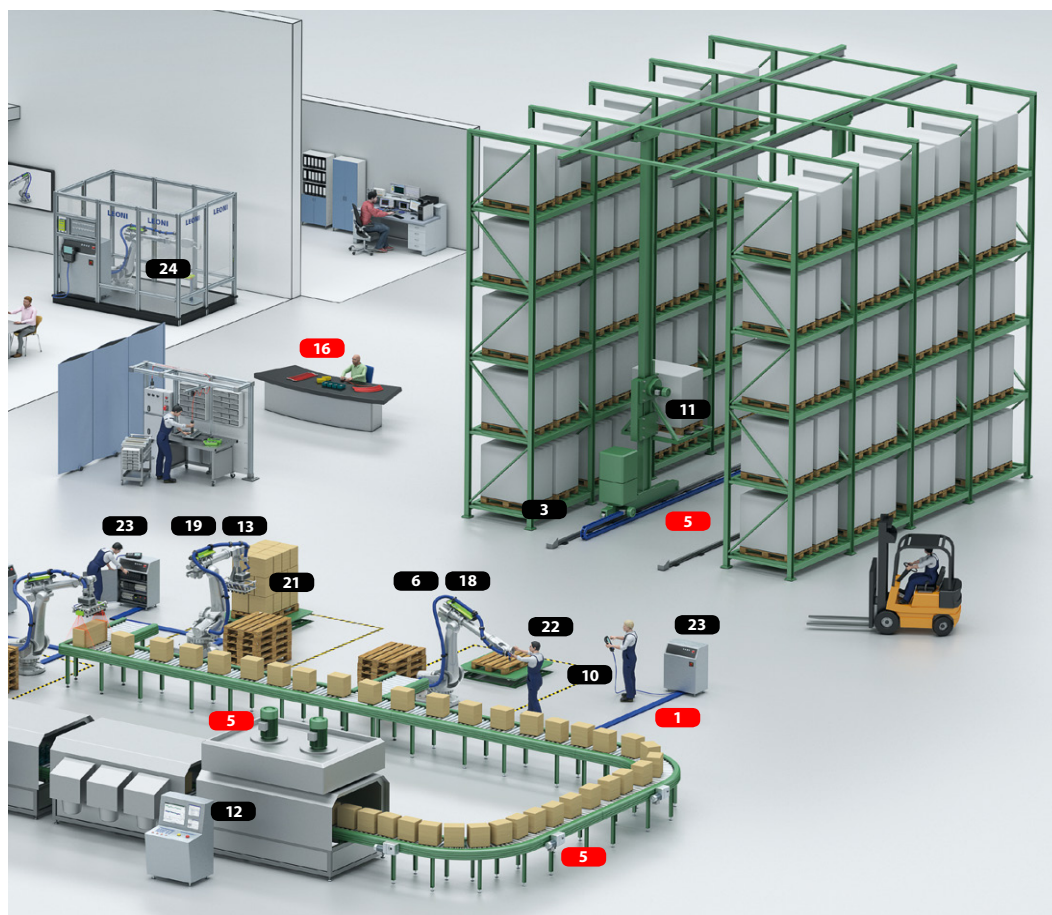
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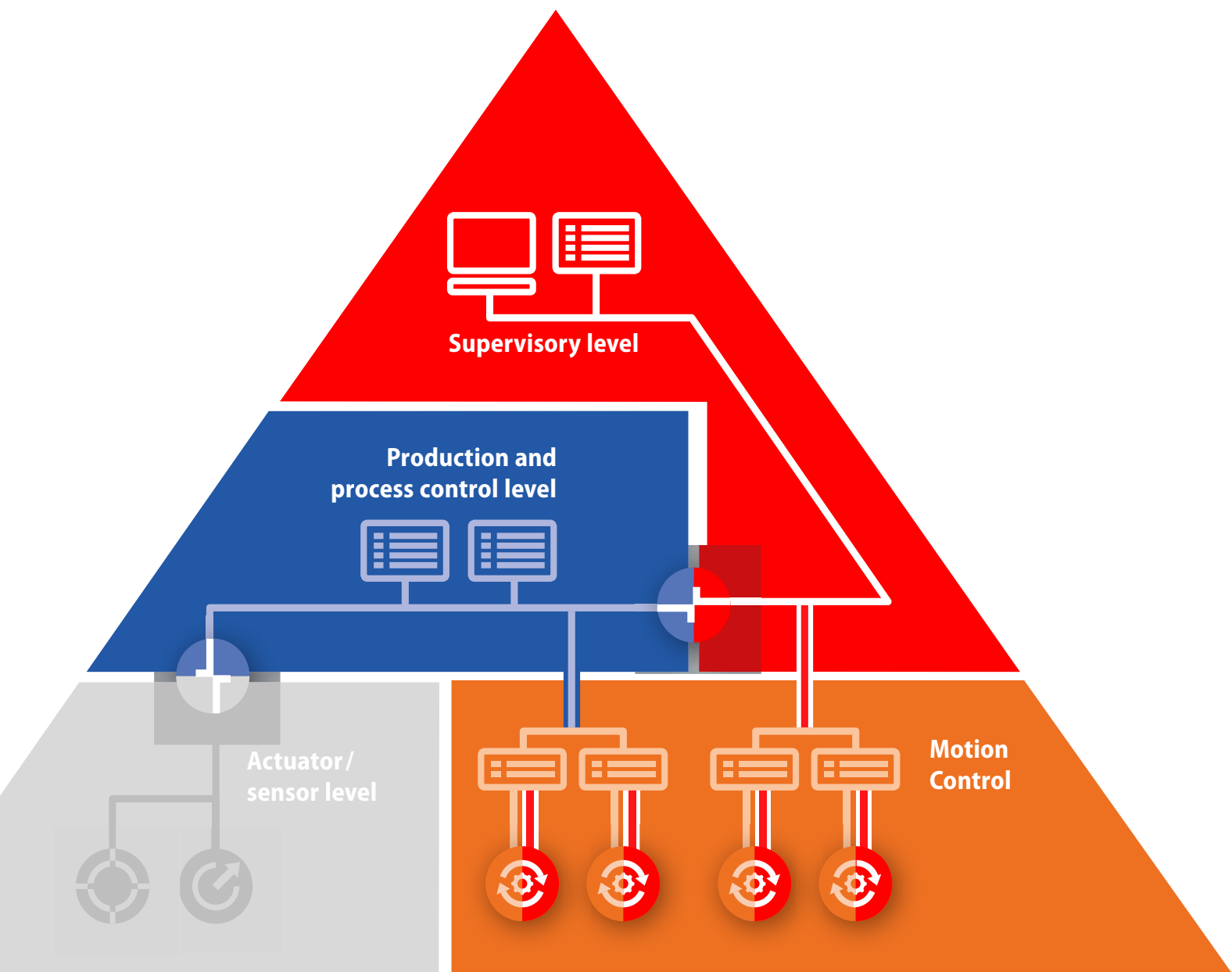
SENTECH



- 1** FieldLink® bus cables
- 2** FieldLink® Industrial Ethernet cables
- 3** Fiber optic cables
- 4** Audio and video cables
- 5** FieldLink®MC cables and cable systems for Motion Control
- 6** Robotic cables
- 7** Ribbon cables (high-performance-flex)
- 8** Miniature cables
- 9** Cleanroom cables
- 10** Coiled cables
- 11** Hybrid cables
- 12** High-temperature resistant cables

- 13** Polyurethane tubes & hoses, corrugated hoses
- 14** Electromechanical component assemblies
- 15** Casted and extrusion-coated products
- 16** Assembly of standardised and special cables
- 17** Cable drag chain systems
- 18** Dresspack systems
- 19** Robot function packages
- 20** advintec measurement and calibration systems
- 21** Machine vision systems
- 22** Installation & maintenance
- 23** Robot & PLC programming
- 24** Automation systems training
- 25** Project management





- IT communication – WAN
- Task: visualisation, archival, e.g. control post, interference indicating station



- Data communication – LAN
- Task: system control, e.g. reception, administration



- Field communication (process signals)
- Task (operation level):
processing, e.g. regulation/control of realtime functions
- Task (drive control):
input and output, e.g. measure, regulate, move, switch



- Field communication and power supply
- Task:
drive control with input and output and additional power supply



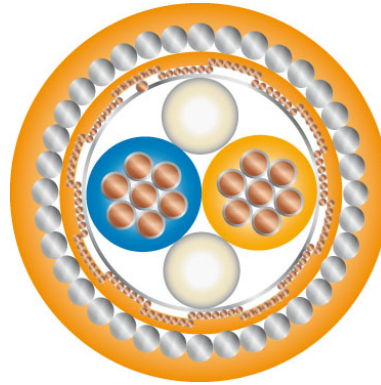
Bus system for process automation



Cable programme

FIELD BUS





Flame Retardant, Sunlight Resistant

EN 50288-7 & FF-844

ICON BUS 51110 M1 CEOS

90 °C / 300 V

Application

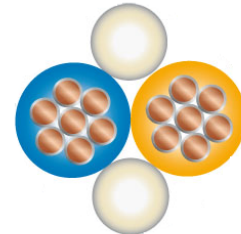
Registered Foundation Fieldbus cable according to IEC 61158-2 type A, for bus-systems Fieldbus Foundation. Suitable for use in hazardous classified locations class I and class II division 2 acc. to NEC 501.10(B) and NEC 502.10(B) or zone 1 and zone 2, group II, acc. to IEC 60079-14, resp. (Please note possible additional or special installation requirements of IEC 60079-14).

Recommended for indoor and outdoor installation, on racks, trays, in conduits, in dry and wet locations; for direct burial. Indoor installation is allowed in areas where the construction products regulation (CPR) acc. to EN 50575 of fire class is not required.

(Please note the relevant legal / local installation requirements)

Construction

Conductor	tinned copper wire, stranded, size: AWG 16, AWG 18
Insulation	cross-linked polyethylene XLPE
Colour	(+)-core: orange, (-)-core: blue
Collective	plastic coated aluminium tape, metallic surface outside, in contact with tinned copper drain wire and tinned copper wire braid
Inner	polyvinyl chloride PVC, orange
Armour	galvanised round steel wires
Outer	polyvinyl chloride PVC, orange, blue for intrinsically safe systems
Cable	LEONI KERPEN ICON BUS Code Size IEC 61158-2 TYPE A 100Ω FF-844 STP 300V 90°C SUN RES Production Lot Code Year Length Marking



Technical data

Flame propagation		Temperature range
- Test on single cable	IEC 60332-1-2	-30°C up to +90°C (during operation)
- Test on bunched cables	IEC 60332-3-24 (Cat. C)	-5°C up to +50°C (during installation)
Limiting Oxygen Index (LOI)	ASTM D 2863 (min. 30 %)	Minimum bending radius
Oil resistance	ICEA S-73-532	10 x cable diameter
Sunlight resistance	UL 1581 section 1200	

Abbreviations

ICON BUS
CEOS overall braid screen

ICON BUS 51110 M1 CEOS

Electrical Properties at 20 °C					
Conductor cross-section			AWG 16	AWG 18	
Conductor resistance (loop)	max.	Ω/km	29,8	47	
Insulation resistance	min.	MΩ x km		5000	
Mutual capacitance	max.	nF/km		80	
Inductance	nom.	mH/km		0,7	
Capacitance unbalance to earth	max.	nF/km		4	
Impedance at f = 31.25 kHz				100 Ω ± 20 Ω	
Attenuation at f = 39 kHz	max.	dB/km		3,0	
Propagation delay change (f = 7.9 kHz - 39 kHz)	max.	µs/km		1,7	
Test voltage U _{rms} (core : core)		V		1500	
Test voltage U _{rms} (core : screen)		V		1500	
Operating voltage		V		300	

ICON BUS 51110 M1 CEOS

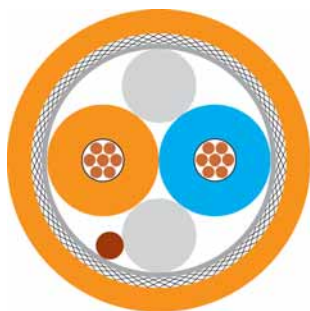
Geometrical data						
No. of elements	Dia. of armour wire nom. mm	RT of outer sheath nom. mm	Outer dia. approx. mm	Weight approx. kg/km	Part number (combined) Colour orange	
AWG 16 / 7						
1	0,9	1,4	14,0	338	LKX8262006U0000	
AWG 18 / 7						
1	0,9	1,4	12,7	291	LKX785100020000	

RT = Radial Thickness

کابل یک زوج سایز AWG18/7 Type a فیلدباس ساخت شرکت لٹونی

Part Number: _

کابل فیلدباس با کد: -



Type Cable structure	process automation 1x2x1.2/2,55-100 LI	Norms
Inner conductor diameter: Core insulation: Core colours: Stranding element: Separator: Shielding 1: Total shielding: Drain wire: Outer sheath material: Cable external diameter: Outer sheath colour:	Copper, bare (AWG 18/7) PO or, bl 2 cores + 2 fillers stranded together Polyester foil over stranded bundle Al-Foil Cu braid, tinned yes PVC app. 8,0 mm ± 0,3 mm Orange similar to RAL 2003	Applicable standards: Foundation Fieldbus Spec. FF-816-1.4 Flame-retardant acc. to IEC 60332-3 UL Style: CMG 75°C PLTC FT4 CSA standard: CSA FT 4
Electrical data	100 Ohm ± 20 Ohm 22 Ohm/km 5 GOhm x km 44 Ohm/km max. 60 nF/km nom. 300 V 1,5 kV 39 kHz ≤ 3,4 dB/km	
Technical data	app. 85 kg/km 80 mm -40°C +80°C 1,22 MJ/m 45,00 kg/km	

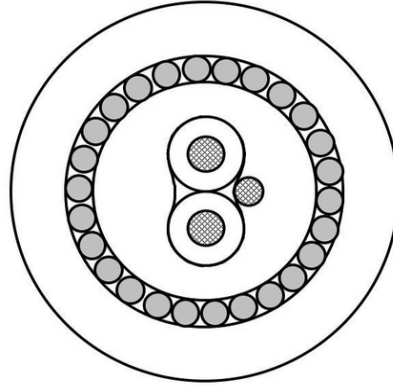
Application

HELUKABEL® FOUNDATION™ Fieldbus Basic for normal requirements in this industrial networks. Thanks to use of stranded conductors, this cable can be moved occasionally and satisfies the usual American requirements for such networks.

کابل یک زوج سایز (Foundation Fieldbus) فیلدباس AWG18 ساخت شرکت هلوکیبل

Part Number: 803354

کابل فیلدباس با کد: 803354



Product Description

18 AWG, Stranded (7 x 26) TC Conductors, Polyolefin Insulation, TC Drain Wire, Beldfoil® Shielding, LSZH Inner Jacket (Black and Blue), Steel Wire Armour, Black LSZH Outer Jacket

Technical Specifications

Product Overview

Environmental Space:	Indoor - Euroclass Eca
Suitable Applications:	Instrumentation and computer cable; For data transmission applications like Profibus or Foundation FieldBus

Physical Characteristics (Overall)

Conductor

AWG	Stranding	Material
18	7x26	TC - Tinned Copper

Conductor Count:	2
Total Number of Pairs:	1
Conductor Size:	18 AWG

Insulation

Material	Nominal Diameter	Diameter +/- Tolerance	Nominal Wall Thickness
PO - Polyolefin	2.55 mm	0.05 mm	0.67 mm

Color Chart

Number	Color
Option 1 with blue inner- and outerjacket	White & Black
Option 2 with yellow inner- and outerjacket	White & Black
Option 3 with orange inner- and outerjacket	White & Black
Option 4 with orange inner- and black outerjacket	Orange & Blue

Inner Shield Material

Type	Material	Drainwire Material	Drainwire AWG
Tape	Aluminum / Polyester	Tinned copper	AWG20/7

Inner Jacket Material

Material	Nominal Diameter	Nominal Wall Thickness
FRNC / LSZH	7.5 mm	1.15 mm

Outer Jacket Material

Material	Nominal Diameter	Nominal Wall Thickness
LSZH / FRNC (UV stabilised)	13 mm	1.85 mm

Construction and Dimensions

Armor

Type of Armor	Material	Thickness of Armoring Wires	Coverage Percentage
Steel Wire Armoring	Galvanized steel wire	0.9 mm	Min. 95 %

Electrical Characteristics

Conductor DCR

Max. Conductor DCR	Max. Outer Shield DCR
20.5 Ohm/km	26 Ohm/km

Capacitance

Max. Capacitance Conductor to Conductor	Max. Capacitance Conductor to Shield	Max. Capacitance Unbalance
80 pF/m	155 pF/m	4 pF/m

Inductance

Nominal Inductance
0.62 uH/m

Impedance

Frequency [MHz]	Nominal Characteristic Impedance	Nominal Characteristic Tolerance
0.03125 MHz	100 Ohm	5 Ohm

Delay

Nominal Velocity of Propagation (VP) [%]
66 %

High Freq

Frequency [MHz]	Max. Insertion Loss (Attenuation)
0.01 MHz	0.2 dB/100m
0.039 MHz	0.3 dB/100m
0.1 MHz	0.6 dB/100m
0.5 MHz	2.8 dB/100m
1 MHz	3.7 dB/100m

Voltage

Voltage Rating [V]
300 V

Temperature Range

Installation Temp Range:	-15°C To +80°C
Storage Temp Range:	-45°C To +80°C
Operating Temp Range (Flexible Install):	-15°C To +80°C
Operating Temp Range (Fixed Install):	-45°C To +80°C

Mechanical Characteristics

Oil Resistance:	IEC 60811-404
Min Bend Radius During Installation:	170 mm

Standards

CPR Euroclass:	Eca
CENELEC Compliance:	EN 50290-2-27

Applicable Environmental and Other Programs

EU RoHS Compliance Date (yyyy-mm-dd):	2005-01-01
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Flammability, LS0H, Toxicity Testing

ISO/IEC Flammability:	IEC 60332-3-24
Amount of Halogen acc. to IEC 60754-1 & EN50267-1:	Zero

Part Number

Variants

Item #	Color
3076ELS.001000	Blue
3076ELS.00500	Blue
3076ELS.031000	Orange
3076ELS.03320	Orange
3076ELS.03500	Orange
3076ELS.051000	Orange
3076ELS.021000	Yellow
3076ELS.02500	Yellow
3076ELS.021100	Yellow

History

Revision Number:	13
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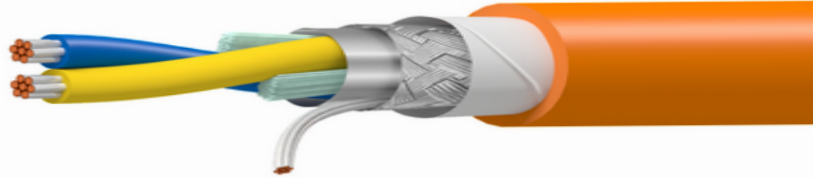
Product: 3076 ELS

Foundation FieldBus Type A Steel Wire Armour

کابل فیلد باس زره دار (مسلح) یک زوج ساخت شرکت بلدن

Part Number: 3076F

کابل فیلد باس با کد: 3076F



Product Description

Fieldbus, 1 Pair 18AWG (7x26) Tinned Copper, PO Insulation, Overall Beldfoil®+Tinned Copper Braid(65%) Shield, Orange PVC Outer Jacket, CMG

Technical Specifications

Product Overview

Suitable Applications: harsh environment digital and serial two-way communication, oil and gas extraction and refining sites, petrochemical, Profibus process automation or Foundation FieldBus process automation, extreme temperature environments, exposure to humidity/moisture, dust, and oil, remote locations long distance applications, etc.

Physical Characteristics (Overall)

Conductor

AWG	Stranding	Material	Nominal Diameter	No. of Pairs
18	7x26	TC - Tinned Copper	0.048 in	1

Conductor Count: 2

Insulation

Material
PP - Polypropylene

Color Chart

Number	Color
1	Blue & Orange

Outer Shield

Type	Layer	Material	Material Trade Name	Coverage [%]	Drainwire Material	Drainwire AWG	Drainwire Construction n x D
Tape	1	Bi-Laminate (Alum+Poly)	Beldfoil®	100%	TC - Tinned Copper	20	7x28
Braid	2	Tinned Copper (TC)		65%			

Outer Jacket

Material	Nominal Diameter	Ripcord
PVC - Polyvinyl Chloride	0.287 in	Yes

Electrical Characteristics

Conductor DCR

Max. Outer Shield DCR	Nominal Conductor DCR
4.9 Ohm/1000ft	5.86 Ohm/1000ft

Capacitance

Max. Capacitance Unbalance	Nom. Capacitance Conductor to Shield	Nom. Mutual Capacitance
1.2 pF/ft	45 pF/ft	24 pF/ft

Impedance

Nominal Characteristic Impedance
100 Ohm

High Frequency (Nominal/Typical)

Nom. Insertion Loss
0.069 dB/100ft

Delay

Nominal Velocity of Propagation (VP) [%]
66%

High Frequency

Max. Insertion Loss (Attenuation)	Max./Min. Input Impedance (unFitted)
0.091 dB/100ft	100 Ohm

Current

Element	Max. Recommended Current [A]
Per Conductor	5.2 Amps per Conductor

Voltage

UL Voltage Rating
300 V RMS

Electrical Characteristics Notes: Max Propagation Delay Change From 7.812 kHz to 39.06 kHz: 518 pS/ft

Other Electrical Characteristic 2: 31.25 KBits/sec

Temperature Range

UL Temp Rating:	90°C
Operating Temp Range:	-40°C to +105°C

Mechanical Characteristics

Oil Resistance:	Yes
UV Resistance:	Yes
Max. Pull Tension:	59 lbs
Min. Bend Radius/Minor Axis:	2.9 in

Standards

CEC/C(UL) Compliance:	CMG
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Applicable Environmental and Other Programs

EU Directive 2000/53/EC (ELV):	Yes
EU Directive 2011/65/EU (RoHS 2):	Yes
EU Directive 2012/19/EU (WEEE):	Yes
EU Directive 2015/863/EU (RoHS 2 amendment):	Yes
EU Directive Compliance:	EU Directive 2003/11/EC (BFR)
EU CE Mark:	Yes
MII Order #39 (China RoHS):	Yes

Suitability

Suitability - Burial:	Yes - UL
Suitability - Indoor:	Yes
Suitability - Outdoor:	Yes
Suitability - Sunlight Resistance:	Yes

Flammability, LSOH, Toxicity Testing

UL Flammability:	UL1685 FT4 Loading
IEC Flammability:	60332-3-24 (Category C)
IEEE Flammability:	1202
UL voltage rating:	300 V RMS

Plenum/Non-Plenum

Plenum (Y/N):	No
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Part Number

Variants

Item #	Color	Put-Up Type	Length	UPC
1334A 0061000	Blue, Light	Reel	1,000 ft	612825112143
1334A 0063280	Blue, Light	Reel	3,280 ft	612825112150
1334A 0031000	Orange	Reel	1,000 ft	612825112112
1334A 0033280	Orange	Reel	3,280 ft	612825112136

Footnote:	C - CRATE REEL PUT-UP.
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History

Update and Revision:	Revision Number: 0.445 Revision Date: 11-22-2021
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Product: 1334A

Fieldbus, 1 Pr #18 Str TC, PO Ins, OS+TC Brd, PVC Jkt, CMG

کابل فیلد باس یک زوج (AWG18) دارای شیلد بافته ساخت شرکت بلدن

Part Number: 1334A

کابل فیلد باس با کد: 1334A