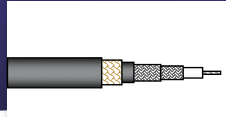
Draka

Multimedia Specials

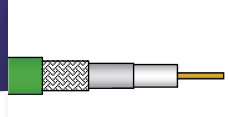
DATA CABLES FOR INDUSTRIAL COMMUNICATIONS, BUILDING MANAGEMENT & BROADCAST APPLICATIONS

INDUSTRIAL COMMUNICATION SOLUTIONS



COAXIAL CABLES

BUILDING MANAGEMENT SYSTEMS



BROADCASTING & STUDIO

A brand of the Prysmian Group

Prysmian Group - Linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities. With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through two renowned commercial brands – Prysmian and Draka – based in almost 100 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

What links communications to communities?

Cable solutions to support the development of the world's telecoms infrastructure. As the world's largest producer of telecoms cables, supporting the infrastructures of many of the world's leading telecoms operators, the Prysmian Group delivers optical fibre and copper cabling solutions that help link communications to communities around the globe. Covering voice, video and data transmission, we are world leader in the production of optical fibre, offering unique and fully owned technology. Our portfolio sets the benchmark in global innovation, and is the outcome of continuous multi-million Euro investment in R&D and production in more than 30 facilities worldwide.

Index

1. Industrial Communication Solutions

Industrial Communication Solutions

An interesting cabling concept for industrial automation has established itself under the keyword ICS (Industrial Communication Solutions). It concerns the structured cabling of industrial plants similar to the cabling used for office communications.

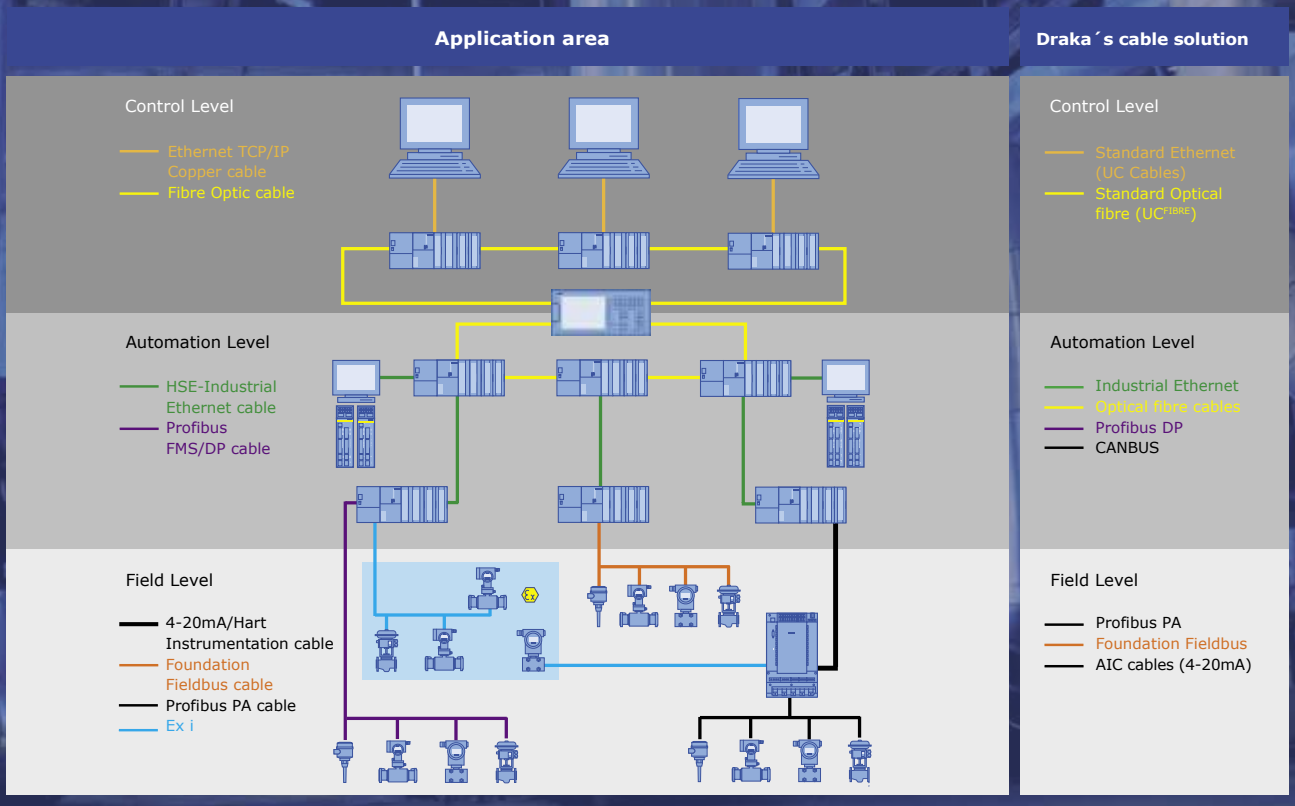
Ethernet in industry is increasingly asserting itself be-cause the communication standard used in countless office applications can be classified today as being simple, cost-effective and highly flexible, as well as having broad support on the system side.

Industrial Ethernet and bussystems are proven standards in the industry. More and more plants are completely equipped with these systems and connected with special cabling, functioning in every environment.

Access to specific areas throughout the network makes adjustments and changes easily manageable.

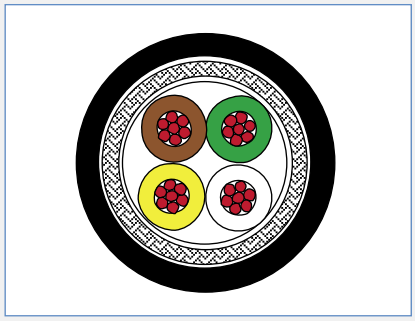
The Draka brand of Multimedia Specials cables are supplied to almost all of the world's major Industrial projects developments. These cables provide utmost protection and transmission capabilities in very harsh environments.

Requirements of the cabling



Li-2YC11Y 2 x 2 x 0.22 mm² FRNC

CanBus-Cable



Application

- The following CanBus cable is suitable for transmission of CanBus signals according **to DIN 19245 and EN 50170**
- The following CanBus cable is suitable for transmission of CanBus signals according **to ISO 11898-2**
- The cable is suited for fixed indoor and outdoor installation and under certain conditions also for mobile use.
- The cable is halogen free, flame retardant and oil resistant. The sheath material is tested in Hydraulic oil
- ARAL VITAM 32, Mobil DTE 13 M, Gear oil ARAL DEGOL BG Plus 320 and Tribol 1710/320.

Standards

acc. to customer Specification

Fire Rating

- IEC 60332-1, IEC 60332-3, IEC 60754-1/2

Construction

Conductor	stranded bare copper wire, diameter 7 x 0.20 mm (cross section 0.22 mm²)	Ø 0.60 mm
Insulation	PE, Wall thickness 0.46 mm	Ø 1.75 ± 0.05 mm
Colour code	Pair 1: 1 x white, 1 x brown	
Core identification	Pair 2: 1 x yellow, 1 x green	
Cable lay up	4 cores twisted to a star quad	Ø 4.2 mm
Wrapping	1 x PET-foil, overlapping	Ø 4.3 mm
Overall screen	Tinned copper braid Optical coverage ≥ 85%	Ø 5.0 mm
Foil	1 x PET-foil under sheath	Ø 5.1 mm
Sheath	PUR Low Smoke Zero Halogen	Ø 6.9 ± 0.2 mm
Sheath colour	Black, RAL 9005	
Outer Diameter	Nom. 6.9 mm	
Weight	Nom. 70 kg/km	
Tensile force N	165	

Mechanical Properties

Bending radius	
- moving application	≥ 10 x outer diameter of cable
- fixed application	≥ 5 x outer diameter of cable
Operating temperature	- 40°C up to + 85°C
UV resistance	acc. to IEC60068-2-5
Testing of oil resistance of PU sheath material acc. to VDE 0282 Part 10 and EN 60811-2-1 and thermal endurance graph (Arrhenius) and life expectancy of PU sheath material acc. to ISO 2578	
Requirements after aging:	
max. change of tensile strength: -50%	
max. change of elongation at break: -50%	
Mobil DTE 13 M (Hydraulic oil)	150 days at 100°C approx. 24 years at 65°C ≥ 25 years at 20°C
Tribol 1710/20 (Gear oil)	140 days at 100°C approx. 18 years at 65°C ≥ 25 years at 20°C
Ozone resistance	acc. to EN 60811-2-1, clause 8
Smoke density	acc. to EN 50268-2, IEC61034-1 and 2
Corrosivity	EN 50267-1 and 2, IEC 60754-1 and 2

Electrical Properties at 20°C

Conductor resistance (at 20 ± 5 °C)	≤ 87 Ω/km
Characteristic impedance at 1 MHz	120 Ω ± 15%
Capacitance at 800 Hz (nominal)	41 nF/km
Insulation resistance (at 20 ± 5 °C and 500 V)	≥ 10 GΩxkm
Test voltage (AC, 1 min) Core/core and core/screen	1.2 kV

Ordering Information

P/N	Product Description	P.U
1003018 CS2878600	CanBus, Li-2YC11Y 2 x 2 x 0.22 mm² FRNC	1000m/drum

Li-09YS(St)C11Y 2 x 0.35 mm² LSZH

CanBus-Cable

Construction

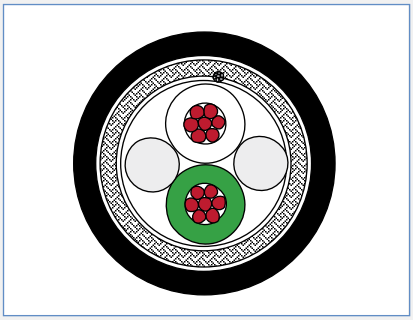
Conductor	stranded bare copper wire, diameter 7 x 0.26 mm (cross section 0.35 mm²)	Ø 0.78 mm
Insulation	Foam-Skin PP, wall thickness 0.71 mm	Ø 2.2 ± 0.1 mm
Twisting	2 cores + 2 x PP-fillers twisted to the pair	Ø 4.4 mm
Core identification	1x white, 1x green	
Overall screen	1 x PET-Al-foil + tinned stranded drain wires 19 x 0,15 mm + tinned copper braid optical coverage ≥ 65%	Ø 4.6 mm Ø 5.2 mm
Foil	1 x PET-foil under sheath	Ø 5.3 mm
Sheath	PUR Low Smoke Zero Halogen wall thickness 0.75 mm	Ø 6.8 ± 0.2 mm
Sheath colour	Black, RAL 9005	
Outer Diameter	Nom. 6.8 mm	
Weight	Nom. 46.7 kg/km	
Tensile force N	165	

Mechanical Properties

Bending radius during installation **- without load** **- with load**	 ≥ 5 x cable diameter ≥ 10 x cable diameter
Operating temperature	- 30°C up to + 70°C
Storage temperature	-40°C up to 85°C
UV resistance of sheath material	acc. to IEC60068-2-5
Ozone resistance	acc. to EN 60811-2-1, clause 8
Smoke density (light transmittance ≥ 25%)	acc. to EN 50268-2, IEC61034-1 and 2
Corrosivity	acc. EN 50267-1 and 2, IEC 60754-1 and 2
Testing of oil resistance of PU sheath material acc. to VDE 0282 Part 10 and EN 60811-2-1 and thermal endurance graph (Arrhenius) and life expectancy of PU sheath material acc. to ISO 2578 Requirements after aging: **max. change of tensile strength: -50%** **max. change of elongation at break: -50%** **Mobil DTE 13 M (Hydraulic oil)** **Tribol 1710/20 (Gear oil)**	 150 days at 100°C approx. 24 years at 65°C ≥ 25 years at 20°C 140 days at 100°C approx. 18 years at 65°C ≥ 25 years at 20°C

Electrical Properties at 20°C

Conductor resistance (at 20 ± 5 °C)	≤ 54.5 Ω/km
Characteristic impedance at 1 MHz	120 Ω ± 15%
Insulation resistance (at 20 ± 5 °C and 500 V)	≥ 10 GΩxkm
Operating voltage (50 Hz, rms)	60 V
Test voltage (AC, 1 min) Core/core and core/screen	1.2 kV
Transfer impedance (up to 10 MHz, acc. to IEC 62153-4-3)	≤ 10 mΩ/m



Application

- The following CanBus cable is suitable for transmission of CanBus signals according **to DIN 19245 and EN 50170**
- The following CanBus cable is suitable for transmission of CanBus signals according **to ISO 11898-2**
- The cable is suited for fixed indoor and outdoor installation and under certain conditions also for mobile use.
- The cable is halogen free, flame retardant and oil resistant. The sheath material is tested in Hydraulic oil
- ARAL VITAM 32, Mobil DTE 13 M, Gear oil ARAL DEGOL BG Plus 320 and Tribol 1710/320.

Standards

acc. to customer Specification

Fire Rating

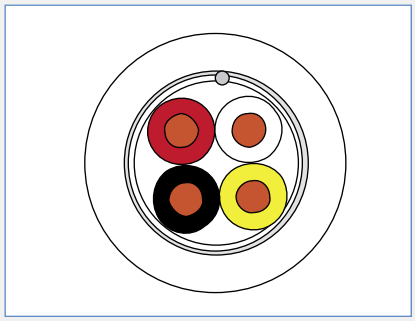
- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Ordering Information

P/N	Product Description	P.U
1003011 CS2875900	CanBus-Cable, Li-09YS(St)C11Y 2 x 0.35 mm² LSZH	1000m/drum

EIB - BUS, PVC

EIB Bus cables
Symmetrical data cable for EIB – BUS Systems



Application

Bus cable for indoor installations in EIB (European Installation Bus) systems. The cable is suitable for installation in ducts, on risers and under data floors. PE insulated plain copper conductors. The cable has an overall Al/PETP-foil screen and a tinned copper drain wire. The overall sheath is made of flame retardant PVC. The pair is colour coded for easy identification.
1 pair: black/red **2 pair:** yellow/white

Fire Rating

- IEC 60332-1

Construction

Conductor	Copper wire, bare 0.5 mm2, 0.80 mm Ø
Insulation	PE, 1.6 mm Ø
Conductor identification	Pair 1: red, black, Pair 2: Yellow, white
Pair stranding	2 conductors to the pair
Cable lay up	1 or 2 pairs to the core
Wrapping	1 x PET foil
Overall shielding	Laminated AL-foil + copper drain wire 0.4mm2
Rip cord and identification thread	yes
Outer sheath	PVC, alternative LSFROH, white RAL 9010 / green RAL 6018
Outer Diameter	Nom. 5.5 - 7.5 mm
Weight	Nom. 35 - 60 kg/km

Mechanical Properties

Operating temperature	- 25°C up to + 70°C
Min. Installation temperature	- 5°C
Minimum bending radius	7.5 x D
Smoke density (only for LSFROH types)	acc. to IEC 61034-2
Corrosivity of fire gases (only for LSZH types)	acc. to IEC 60754-1/2

Electrical Properties at 20°C

Loop DC resistance (max.)	73.2 Ω/km
Insulation resistance (at 500 V, 1 min.)	10 GΩ*km
Mutual capacitance at 800 Hz (max.)	100 nF/km
Inductance	0.65 mH/km
Max. operating voltage DC	800 V
AC Testvoltage, (5 min)	2500 V
AC Testvoltage, (1 min)	4000 V

Ordering Information

P/N	Product Description	P.U
1003582	EIB BUS Cable PVC, 1x2x0.8	1000m/drum
1003583	EIB BUS Cable PVC, 2x2x0.8	1000m/drum
1003584	EIB BUS Cable LSFROH, 1x2x0.8	1000m/drum
1003585	EIB BUS Cable LSFROH, 2x2x0.8	1000m/drum
1021615	EIB BUS Cable LSFROH GN, 2x2x0.8	1000m/drum

FF FC 1x2xAWG16/7 PVC

FOUNDATION Fieldbus FC AWG16 FLEX PVC Cable

Construction

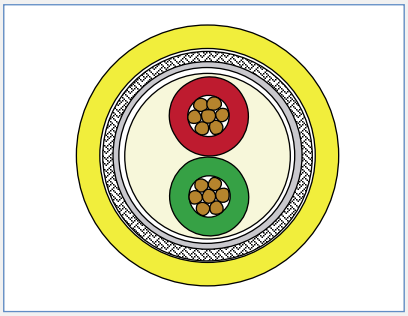
Conductor	stranded bare copper wires, 7x0.51 Ø 1.53 mm, (cross-section AWG16/7)
Insulation	PE, Ø 3.25 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 9.5 mm
Colour	yellow
Outer Diameter	Nom. 9.5 mm
Weight	Nom. 129 kg/km
Tensile force N	270

Mechanical Properties

Bending radius	
Single bending	≥ 50 mm
Repeated bending	≥ 100 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 28.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

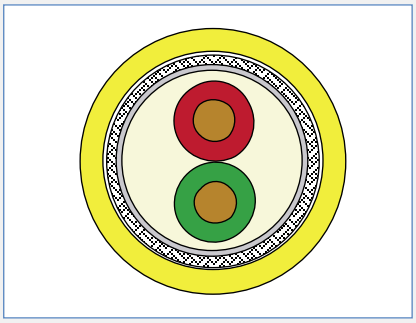
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025039	FOUNDATION Fieldbus FC AWG16 FLEX PVC Cable, FF FC 1x2xAWG16/7 PVC	1000m/drum

FF FC 1x2xAWG18/1 PVC

FOUNDATION Fieldbus FC INST PVC Cable



Application

Spur and trunk cable for fixed installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1

Construction

Conductor	bare copper wire, Ø 1.05 mm, (cross-section AWG18)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Sheath Colour	yellow
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 78 kg/km
Tensile force N	175

Mechanical Properties

Bending radius	
Single bending	≥ 40 mm
Repeated bending	≥ 80 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 46 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025042	FOUNDATION Fieldbus FC INST PVC Cable, FF FC 1x2xAWG18/1 PVC	1000m/drum

02YSY(St)CY 1x2x1.3/2.55-100 Li PVC

FOUNDATION Fieldbus FC FLEX PVC Cable

Construction

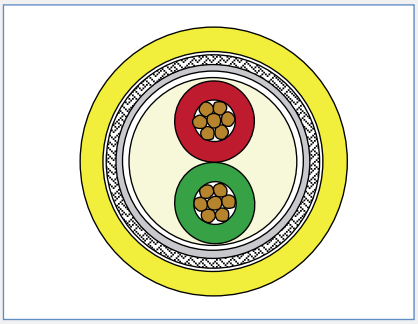
Conductor	Stranded bare copper wires, 19x0.26 Ø 1.3 mm (Cross-section AWG18/19)
Insulation	Foam-skin-PE, Ø 2.55 mm
Stranding	Two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	Tinned copper Braid Coverage approx. 70%
Sheath	PVC, yellow, Ø 8.0 mm
Outer Diameter	Nom. 8.0mm
Weight	Nom. 89 kg/km
Tensile force N	190

Mechanical Properties

Bending radius	
Single bending	≥ 40 mm
Repeated bending	≥ 80 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and Grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

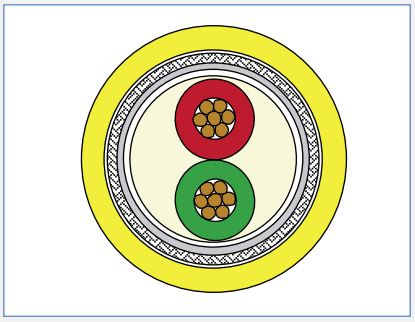
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025041	FOUNDATION Fieldbus FC FLEX PVC Cable, 02YSY(St)CY 1x2x1.3/2.55-100 Li PVC	1000m/drum

FF FC 1x2xAWG18/7 LSHF-FR

FOUNDATION Fieldbus FC FLEX LSZH-FR Cable



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø 8.0 mm
Colour	yellow
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 83 kg/km
Tensile force N	180

Mechanical Properties

Bending radius	
Single bending	≥ 40 mm
Repeated bending	≥ 80 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025038	FOUNDATION Fieldbus FC FLEX LSHF-FR Cable, FF FC 1x2xAWG18/7 LSZH-FR	1000m/drum

FF FC 1x2xAWG18/1 GST PVC

FOUNDATION Fieldbus FC Galvanized Steel Tape Armoured PVC Installation Cable

Construction

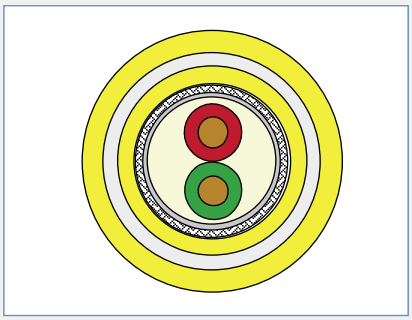
Conductor	bare copper wire, Ø 1.05 mm, (cross-section AWG18)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Colour	yellow
Wrapping	PP foil overlapping, Ø 8.2 mm
Armouring	2 galvanized steel tapes, thickness of tapes 0.10 mm, Ø 9.0 mm
Outer sheath	PVC, Ø 12.0 mm
Sheath colour	yellow
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 193 kg/km
Tensile force N	175

Mechanical Properties

Bending radius	
Single bending	≥ 120 mm
Repeated bending	≥ 180 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 46 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for fixed installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

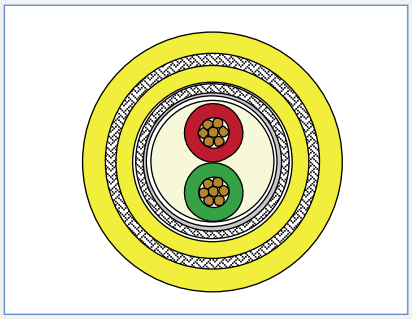
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025043	FOUNDATION Fieldbus FC Galvanized Steel Tape Armoured PVC Installation Cable, FF FC 1x2xAWG18/1 GST PVC	1000m/drum

FF FC 1x2xAWG18/7 SWB PVC

FOUNDATION Fieldbus FC FLEX Steel Wire Braid Armoured PVC Cable



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1

Construction

Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Colour	yellow
Armouring	galvanized steel wire braid, optical coverage 85%, Ø 9.3 mm
Outer sheath	PVC, Ø 12.0 mm
Colour	yellow
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 211 kg/km
Tensile force N	500

Mechanical Properties

Bending radius	
Single bending	≥ 60 mm
Repeated bending	≥ 120 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025040	FOUNDATION Fieldbus FC FLEX Steel Wire Braid Armoured PVC Cable, FF FC 1x2xAWG18/7 SWB PVC	1000m/drum

FF FC 1x2xAWG18/7 SWB LSZH

FOUNDATION Fieldbus FC FLEX Steel Wire Braid Armoured LSZH Cable

Construction

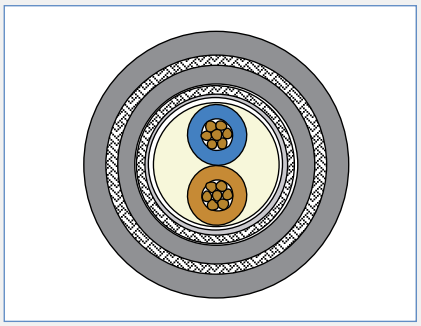
Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores blue / orange to the pair
Bedding	LSHF, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	LSZH, Ø 8.0 mm
Colour	grey
Armouring	galvanized steel wire braid, optical coverage 85%, Ø 9.3 mm
Outer sheath	LSZH, Ø 12.0 mm
Colour	grey
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 202 kg/km
Tensile force N	500

Mechanical Properties

Bending radius	
Single bending	≥ 60 mm
Repeated bending	≥ 120 mm
Temperature range	- 30°C to + 70°C
Transport and storage	- 30°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits,
- FastConnect-Assembly
- Halogen free and flame resistant
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to FOUNDATION Fieldbus

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Electrical Data at 20°C

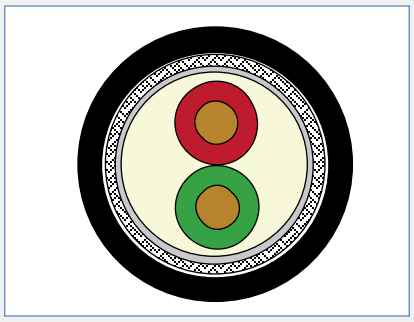
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1030290	FOUNDATION Fieldbus FC FLEX Steel Wire Braid Armoured LSZH Cable, FF FC 1x2xAWG18/7 SWB LSZH	1000m/drum

PB PA FC 1x2xAWG18/1 PVC

PROFIBUS PA FC INST PVC Cable



Application

Spur and trunk cable for fixed installation indoor and outdoor on racks in dry conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1

Construction

Conductor	bare copper wire, Ø 1.05 mm, (cross-section AWG18)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper Braid Coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Colour	black
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 87 kg/km
Tensile force N	175

Mechanical Properties

Bending radius	
single bending	≥ 40 mm
repeated bending	≥ 80 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 46 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025051	PROFIBUS PA FC INST PVC Cable, PB PA FC 1x2xAWG18/1 PVC	1000m/drum

PB PA FC 1x2xAWG16/7 PVC

PROFIBUS PA FC AWG16 FLEX PVC Cable

Construction

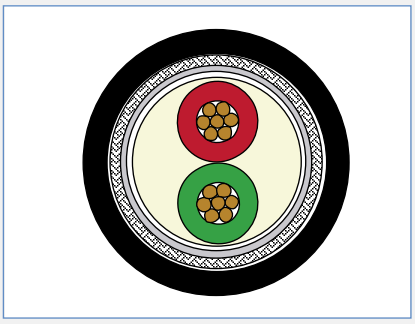
Conductor	stranded bare copper wires, 7x0.51 Ø 1.53 mm, (cross-section AWG16/7)
Insulation	PE, Ø 3.25 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 9.5 mm
Colour	black or blue
Outer Diameter	Nom. 9.5 mm
Weight	Nom. 129 kg/km
Tensile force N	270

Mechanical Properties

Bending radius	
Single bending	≥ 50 mm
Repeated bending	≥ 100 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 28.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

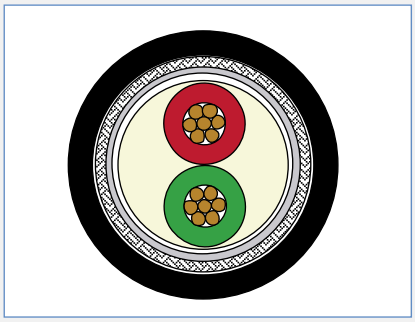
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025048	PROFIBUS PA FC AWG16 FLEX PVC Cable, PB PA FC 1x2xAWG16/7 PVC	1000m/drum

PB PA FC 1x2xAWG16/7 LSHF-FR

PROFIBUS PA FC AWG16 FLEX LSHF-FR Cable, 100 Ohm



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silikon free
- Limited oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	stranded bare copper wires, 7x0.51 Ø 1.53 mm, (cross-section AWG16/7)
Insulation	PE, Ø 3.25 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø 9.5 mm
Colour	black
Outer Diameter	Nom. 9.5 mm
Weight	Nom. 143 kg/km
Tensile force N	270

Mechanical Properties

Bending radius	
single bending	≥ 50 mm
repeated bending	≥ 100 mm
Temperature range	- 30°C to + 70°C
Transport and storage	- 30°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 28.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

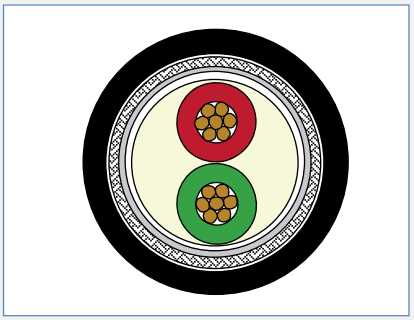
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1027134	PROFIBUS PA FC AWG16 FLEX LSHF-FR Cable, PB PA FC 1x2xAWG16/7 LSHF-FR	1000m/drum

PB PA FC 1x2xAWG 18/19 PVC

PROFIBUS PA FC FLEX PVC Cable,100 Ohm



Construction

Conductor	Stranded bare copper wires, 19x0.26 Ø 1.3 mm (Cross-section AWG18/19)
Insulation	Foam-skin-PE, Ø 2.55 mm
Stranding	Two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	Tinned copper Braid Coverage approx. 70%
Sheath	PVC, black or blue, Ø 8.0 mm
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 89 kg/km
Tensile force N	190

Mechanical Properties

Bending radius	
Single bending	≥ 40 mm
Repeated bending	≥ 80 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in dry conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

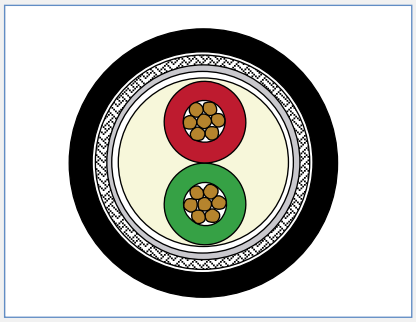
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025050	PROFIBUS PA FC FLEX PVC Cable, PB PA FC 1x2xAWG 18/19 PVC	1000m/drum

PB PA FC 1x2xAWG18/7 LSHF-FR

PROFIBUS PA FC FLEX LSHF-FR Cable, 100 Ohm



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in dry conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Limited oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø 8.0 mm
Colour	black or blue
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 83 kg/km
Tensile Force N	180

Mechanical Properties

Bending radius	
single bending	≥ 40 mm
repeated bending	≥ 80 mm
Temperature range	- 30°C to + 70°C
Transport and storage	- 30°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance	12 Ω/km
Characteristic impedance (Nominal)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025047	1 x 2 x 1.2/2.55-100, PROFIBUS PA FC FLEX LSHF-FR Cable, PB PA FC 1x2xAWG18/7 LSZH-FR BK	1000m/drum
1029194	1 x 2 x 1.2/2.55-100, PROFIBUS PA FC FLEX LSHF-FR Cable, PB PA FC 1x2xAWG18/7 LSZH-FR BU	1000m/drum

PB PA 1x2xAWG18/7 LSHF-FR

PROFIBUS PA FLEX LSZH-FR Cable, 100 Ohm

Construction

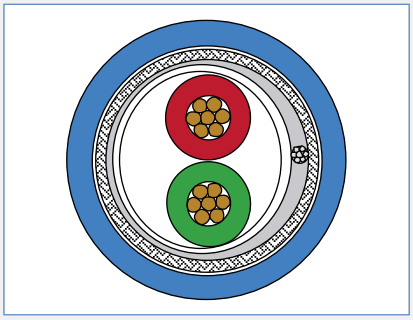
Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	Polypropylene (PP) Ø 2.0 mm
Stranding	two cores gn / rd to the pair + two fillers
Static screen	PET-Al-Foil longitudinally applied
Drain wire	Tinned Copper 0.5mm2
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27 with thermal resistance up to 90°C Ø 7.0 mm
Colour	Blue RAL5015
Outer Diameter	Nom. 7.0 mm
Weight	Nom. 72.3 kg/km
Tensile force N	190

Mechanical Properties

Bending radius	
single bending	≥ 40 mm
repeated bending	≥ 80 mm
Temperature range	- 40°C to + 90°C
Transport and storage	- 40°C to + 90°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in dry conduits,
- UV-resistant
- Silicon free
- Limited oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Electrical Data at 20°C

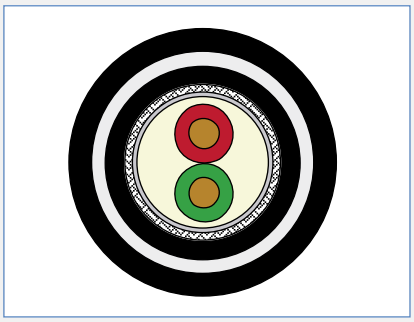
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
60031151	PROFIBUS PA FLEX LSHF-FR Cable, PB PA 1x2xAWG18/7 LSZH-FR	1000m/drum

PB PA FC 1x2xAWG18/1 GST PVC

PROFIBUS PA FC Galvanized Steel Tape Armoured PVC Installation Cable, 100 Ohm



Application

Spur and trunk cable for fixed installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1

Construction

Conductor	bare copper wire, Ø 1.05 mm, (cross-section AWG18)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper Braid Coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Colour	black or blue
Wrapping	PP foil overlapping, Ø 8.2 mm
Armouring	2 galvanized steel tapes, thickness of tapes 0.10 mm, Ø 9.0 mm
Outer sheath	PVC, Ø 12.0 mm
Colour	black or blue
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 193 kg/km
Tensile force N	175

Mechanical Properties

Bending radius	
Single bending	≥ 120 mm
repeated bending	≥ 180 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 46 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (Nominal)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025052	PROFIBUS PA FC Galvanized Steel Tape Armoured PVC Installation Cable, PB PA FC 1x2xAWG18/1 GST PVC	1000m/drum

PB PA FC 1x2xAWG18/7 SWB PVC

PROFIBUS PA FC FLEX Steel Wire Braid Armoured PVC Cable, 100 Ohm

Construction

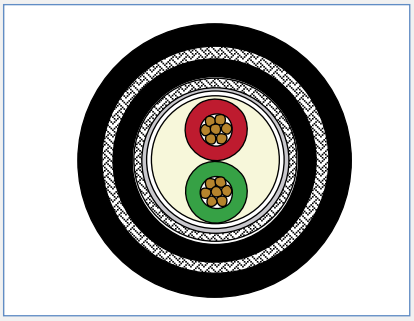
Conductor	stranded bare copper wires, 7x0.40 Ø 1.2 mm, (cross-section AWG18/7)
Insulation	foam-skin-PE, Ø 2.55 mm
Stranding	two cores gn / rd to the Pair
Bedding	PVC, filling the interstices
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PVC, Ø 8.0 mm
Colour	black or blue
Armouring	galvanized steel wire braid, optical coverage 85% Ø 9.3 mm
Outer sheath	PVC, Ø 12.0 mm
Colour	black or blue
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 211 kg/km
Tensile force N	500

Mechanical Properties

Bending radius	
single bending	≥ 60 mm
repeated bending	≥ 120 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 43.6 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (at 31.25 kHz)	100 Ω ± 20 Ω
Mutual capacitance (at 1 kHz)	approx. 60 nF/km
Capacitance unbalance to earth max.	2 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.70 mH/km



Application

Spur and trunk cable for flexible installation indoor and outdoor on racks in conduits, FastConnect-Assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- IEC 61158 and IEC 61784
- Cable type A acc. to Profibus PA

Fire Rating

- IEC 60332-1

Electrical Data at 20°C

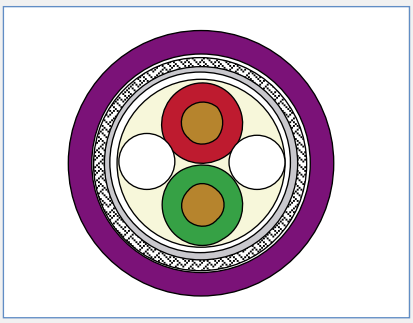
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)	Propagation delay change (µs/km)
7.9-39	-	-	≤ 1.7
31.25	100 ± 20	-	-
39	-	≤ 0.3	-

Ordering Information

P/N	Product Description	P.U
1025049	PROFIBUS PA FC FLEX Steel Wire Braid Armoured PVC Cable, PB PA FC 1x2xAWG18/7 SWB PVC	1000m/drum

PB DP BASIC 1x2xAWG22/1 LSHF

PROFIBUS DP Basic LSZH Cable,150 Ohm



Application

Installation cable :
- Halogen free and flame resistant
- Limited segment length (according to PROFIBUS-Net Manual)
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- Customer specification
- EN 50170 part 8-2, cable type A, IEC 61158 and IEC 61784

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	Bare copper wire, Ø 0.64 mm, (cross-section 0.32 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the pair and two fillers
Wrapping	PET-Foil, Ø 5.2 mm
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 60%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø 8.0 mm
Colour	violet RAL 4005
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 71 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	
single bending	≥ 60 mm
repeated bending	≥ 80 mm
Max. operating voltage	- 25°C to + 80°C
Relative velocity factor NVP	- 25°C to + 80°C
Impedance (at 10 MHz)	- 25°C to + 80°C

Electrical Properties at 20°C

Loop resistance	≤ 110 Ω/km
Screen resistance	≤ 9,5 Ω/km
Characteristic impedance (Nominal)	150 Ω
Mutual capacitance (at 1 kHz)	ca. 28.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.25
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.2
16 MHz	150 ± 15	≤ 4.2
20 MHz	150 ± 15	≤ 4.7

Ordering Information

P/N	Product Description	P.U
1026560	PROFIBUS DP Basic LSHF Cable, PB DP BASIC 1x2xAWG22/1 LSHF	1000m/drum

PB DP FC 1x2xAWG22/1 LSHF-FR

PROFIBUS FC LSHF-FR Cable, 150 Ohm

Construction

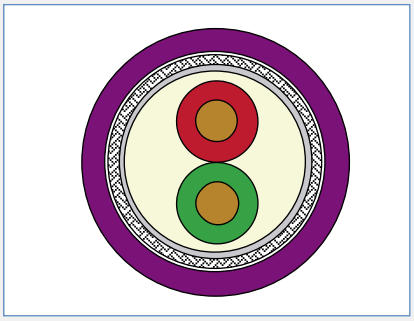
Conductor	bare copper wire, Ø 0.64 mm, (cross-section 0.32 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices Ø 5.4 mm
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 60%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, violet, Ø 8.0 mm
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 83 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	
single bending	≥ 60 mm
repeated bending	≥ 80 mm
Temperature range	- 25°C to + 80°C
Transport and storage	- 25°C to + 80°C
Installation	- 25°C to + 80°C

Electrical Properties at 20°C

Loop resistance	≤ 110 Ω/km
Screen resistance nominal	≤ 9.5 Ω/km
Characteristic impedance (Nominal)	150 Ω
Mutual capacitance (at 1 kHz)	ca. 28.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V



Application

Installation cable :
- Halogen free and flame resistant
- Limited segment length (according to PROFIBUS-Net Manual)
- FastConnect-assembly
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- Customer specification

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Electrical Data at 20°C

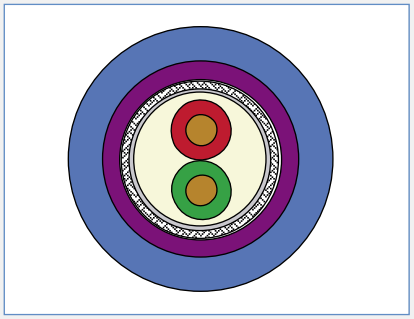
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.25
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.5
16 MHz	150 ± 15	≤ 4.2
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
1026561	PROFIBUS FC LSHF-FR Cable, PB DP FC 1x2xAWG22/1 LSHF-FR	1000m/drum

PB DP FC 1x2xAWG22/1 LSHF-FR + PE

PROFIBUS FC LSHF-FR Cable with additional PE-Sheath, 150 Ohm



Application

Installation cable (up to inner sheath) :
- Halogen free and flame resistant
- Limited segment length (according to PROFIBUS-Net Manual)
- FastConnect-assembly
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- Customer specification

Fire Rating

Basic cable:
- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	bare copper wire, Ø 0.64 mm, (cross-section 0.32 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices Ø 5.4 mm
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 60%
Inner Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, violet, Ø 8.0 mm
Outer Sheath	PE, blue or black, Ø 10.8 mm
Outer Diameter	Nom. 10.8 mm
Weight	Nom. 122 kg/km

Mechanical Properties

Bending radius	
single bending	≥ 10 x D
repeated bending	≥ 15 x D
Temperature range	- 25°C to + 70°C
Transport and storage	- 25°C to + 70°C
Installation	- 25°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 110 Ω/km
Screen resistance	≤ 9.5 Ω/km
Characteristic impedance (Nominal)	150 Ω
Mutual capacitance (at 1 kHz)	ca. 28.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.25
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.2
16 MHz	150 ± 15	≤ 4.2
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
1027325	1 x 2 x 0.64/2.55-150, PROFIBUS FC LSZH-FR Cable with additional PE-Sheath, PB DP FC 1x2xAWG22/1 LSHF-FR + PE, BLUE	1000m/drum
1027326	1 x 2 x 0.64/2.55-150, PROFIBUS FC LSZH-FR Cable with additional PE-Sheath, PB DP FC 1x2xAWG22/1 LSHF-FR + PE, BLACK	1000m/drum

PB DP FC 1x2xAWG22/1 PE

PROFIBUS DP FC PE Sheathed Cable, 150 Ohm

Construction

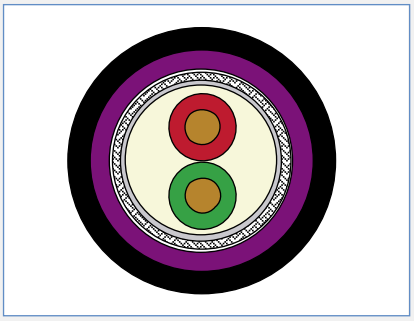
Conductor	bare copper wire, Ø 0.64 mm, (cross-section 0.32 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices Ø 5.4 mm
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, violet, RAL 4005 Ø 8.0 mm
Outer sheath	PE, Ø 11.0 mm
Colour	black, RAL 9005
Outer Diameter	Nom. 11.0 mm
Weight	Nom. 113 kg/km
Tensile force N	120

Mechanical Properties

Bending radius	
single bending	≥ 60 mm
repeated bending	≥ 120 mm
Temperature range	- 30°C to + 70°C
Transport and storage	- 30°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 110 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (nominal)	150 Ω
Mutual capacitance (at 1 kHz)	approx. 28.5 nF/km
Capacitance unbalance to earth max.	1.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.90 mH/km



Application

Outdoor installation cable, also for direct burial :
- Limited segment length (according to PROFIBUS-Net Manual)
- FastConnect-assembly
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- EN 50170 part 8-2 Cable type A, IEC 61158 and IEC 61784
- IEC 60754-1/2; IEC 61034

Electrical Data at 20°C

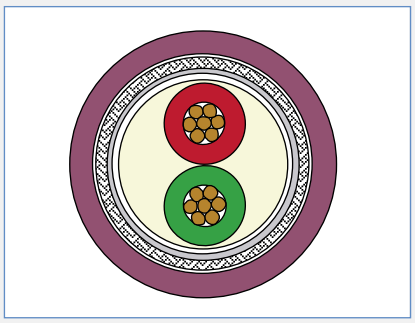
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.25
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.2
16 MHz	150 ± 15	≤ 4.2
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
1025046	PROFIBUS DP FC PE Sheathed Cable, PB DP FC 1x2xAWG22/1 PE	1000m/drum

PB DP FC 1x2xAWG24/19 PUR

PROFIBUS DP FC FLEX-PUR Cable, 150 Ohm



Application

Flexible cable :
- For mobile use
- FastConnect-assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- EN 50170 part 8-2, cable type A, IEC 61158 and IEC 61784

Fire Rating

- IEC 60332-1, VDE 0482-265-2-1
- IEC 61034-2, IEC 60754-1/2

Construction

Conductor	Stranded bare copper wires, AWG24/7, 19 x0.13, Ø 0.65 mm, (Cross-section 0.25 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the pair
Bedding	PVC, filling the interstices, Ø 5.4 mm
Wrapping	non woven Polyestertape
Static screen	PET-Al-Foil spirally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PUR, Ø 8.0 mm
Colour	violet, RAL 4005
Outer Diameter	Nom. 8.0 mm
Weight	nom. 70 kg/km
Tensile force N	120

Mechanical Properties

Bending radius	
single bending	≥ 40 mm
repeated bending	≥ 120 mm
Temperature range	- 40°C to + 70°C
Transport and storage	- 40°C to + 60°C
Installation	- 40°C to + 60°C

Electrical Properties at 20°C

Loop resistance	≤ 135 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (Nominal)	150 Ω
Mutual capacitance (at 1 kHz)	< 30 nF/km
Capacitance unbalance to earth max.	1.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.90 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.3
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.5
16 MHz	150 ± 15	≤ 4.9
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
1025044	PROFIBUS DP FC FLEX-PUR Cable, PB DP FC 1x2xAWG24/19 PUR	1000m/drum

PB DP FC 1x2xAWG24/19 TRAILING PUR

PROFIBUS DP FC Trailing-Cable, 150 Ohm

Construction

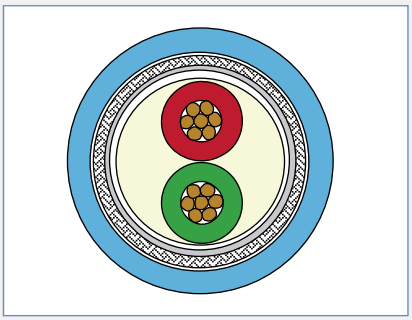
Conductor	stranded bare copper wires, 19x0.13, Ø 0.65 mm, (cross-section 0.25 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the Pair
Wrapping	PET-Foil
Bedding	PVC, filling the interstices Ø 5,4 mm
Wrapping	non woven Polyestertape
Static screen	PET-Al-Foil spirally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	PUR, Ø 8.0 mm
Colour	petrol
Outer Diameter	Nom. 8.0 mm
Weight	Nom. 70 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	
single bending	≥ 40 mm
repeated bending	≥ 120 mm
Bending cycles (at 20°C)	3.000.000
Temperature range	- 40°C to + 60°C
Transport and storage	- 40°C to + 60°C
Installation	- 40°C to + 60°C

Electrical Properties at 20°C

Loop resistance	≤ 133 Ω/km
Screen resistance	≤ 14 Ω/km
Characteristic impedance (Nominal)	150 Ω
Mutual capacitance (at 1 kHz)	ca. 28.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V



Application

Trailing cable :
- Min. 3.000.000 bending cycles with min. bending radius and a maximum accelleration of 4 m/s2
- Limited segment length (according to PROFIBUS-Net Manual)
- FastConnect-assembly
- UV-resistant
- Silicon free
- Oil and grease resistant

Standards

- Customer specification
- UL-Listing / 300V Rating / CMX

Fire Rating

- IEC 60332-1, VDE 0482-265-2-1
- UL1581 VW-1
- IEC 61034-2, IEC 60754-1/2

Electrical Data at 20°C

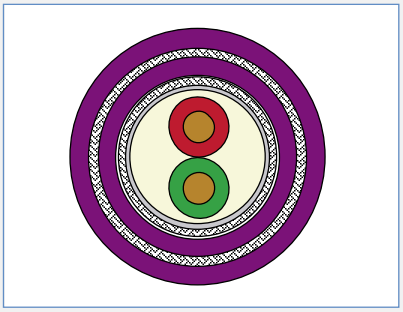
Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.3
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.5
16 MHz	150 ± 15	≤ 4.9
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
1026562	PROFIBUS DP FC Trailing-Cable, PB DP FC 1x2xAWG24/19 TRAILING PUR	1000m/drum

PB DP FC 1x2xAWG22/1 SWB LSHF

PROFIBUS DP FC Steel Wire Braid Armoured LSHF Cable, 150 Ohm



Application

Armoured indoor and outdoor installation cable:
- Halogen free and flame resistant
- Limited segment length (according to PROFIBUS-Net Manual)
- FastConnect-assembly
- UV-resistant
- Silicon free
- Limited oil and grease resistance

Standards

- EN 50170 part 8-2, cable type A, IEC 61158 and IEC 61784

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	bare copper wire, Ø 0.64 mm, (cross-section 0.32 mm²)
Insulation	foam-skin-PE, Ø 2.5 mm
Stranding	two cores gn / rd to the Pair
Bedding	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, filling the interstices Ø 5.4 mm
Static screen	PET-Al-Foil longitudinally applied
Braid	tinned copper braid, coverage approx. 70%
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to
Armouring	EN 50290-2-27, violet, Ø 8.0 mm galvanized steel wire braid, optical coverage 85% Ø 9.1 mm
Outer sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, violet, RAL 4005 Ø 12.0 mm
Outer Diameter	Nom. 12.0 mm
Weight	Nom. 208 kg/km
Tensile force N	450

Mechanical Properties

Bending radius	
single bending	≥ 60 mm
repeated bending	≥ 120 mm
Temperature range	- 30°C to + 70°C
Transport and storage	- 30°C to + 70°C
Installation	- 5°C to + 50°C

Electrical Properties at 20°C

Loop resistance	≤ 110 Ω/km
Screen resistance nominal	12 Ω/km
Characteristic impedance (nominal)	150 Ω
Mutual capacitance (at 1 kHz)	approx. 28.5 nF/km
Capacitance unbalance to earth max.	1.5 nF/km
Insulation resistance	≥ 5 GΩkm
Test Voltage (DC, 1 min) Core/Core and Core/Screen	1 kV
Operating voltage (RMS)	≤ 100 V
Inductance (nominal)	0.90 mH/km

Electrical Data at 20°C

Frequency (kHz)	Impedance (Ohm)	Attenuation (dB/100m)
9.6 kHz	270 ± 27	≤ 0.25
38.4 kHz	185 ± 18.5	≤ 0.4
1 MHz	-	-
3 MHz	150 ± 15	-
4 MHz	150 ± 15	≤ 2.2
16 MHz	150 ± 15	≤ 4.2
20 MHz	150 ± 15	-

Ordering Information

P/N	Product Description	P.U
60039258	PROFIBUS DP FC Steel Wire Braid Armoured LSHF Cable, PB DP FC 1x2xAWG22/1 SWB LSHF	1000m/drum

UC300 Cat.5e F/UTP SWB LSZH-FR

Category cable for demanding environments

Construction

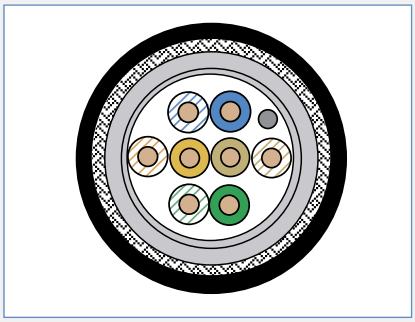
Conductor	Bare copper wire Ø 0.51 mm (AWG24)
Insulation	PE, Nom. Ø 1.03 mm
Twisting	2 cores to the pair
Overall screen	Aluminium Polyester Tape
Drain Wire	Tinned Copper ; Ø 0.495 ± 0.008 mm
Inner Sheath	LSZH-FR
Armouring	0.3mm Galvanised Steel Braid, Coverage 80%
Outer sheath	LSZH-FR
Sheath colour	Black

Mechanical Properties

Bending radius	Installation	8 x D
Temperature range	During operation	-10°C to + 60°C
	During installation	-10°C to + 60°C

Electrical Properties at at 20°C± 5°C

loop resistance	-	≤ 170 Ω/km
Resistance unbalance	-	≤ 2%
Characteristic Impedence	1-130Mhz	100 Ω ± 15 ohm
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 300 pF/km
Nominal Velocity of Propagation	-	0.69c



Application

- Generic Data transmission. This cable is a Cat5e F/UTP cable is meant for use as installation/horizontal cable in demanding electrical and mechanical environment.

Standards

- EIA/TIA 568C;
- ISO/IEC 11801 2nd ed.; IEC 61156-5
- EN 50173; EN 50288-3-1

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Electrical Data Nominal at 20°C

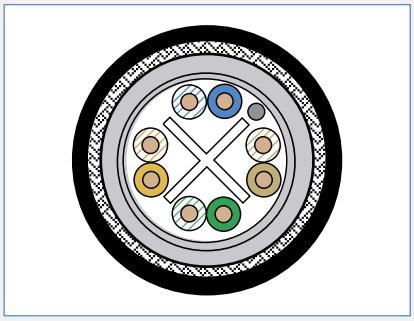
-	-	-	Pair to Pair		Power Sum		-
F (MHZ)	Max. Ins. Loss (dB/100m)	Min. Return loss (dB)	Min. NEXT (dB/100m)	Min ELFEXT (dB/100m)	Min. NEXT (dB/100m)	Min ELFEXT (dB/100m)	ELFEXT (dB/100m)
1	-	20	-	-	-	-	-
4	4.1	23	56.3	52	53.3	55	552
10	6.5	25	50.3	44	47.3	47	545.4
16	8.3	25	47.2	39.9	44.2	42.9	543
20	9.3	25	45.8	38	42.8	41	542
31.2	11.7	23.6	42.9	34.1	39.9	37.1	540.4
62.5	17	21.5	38.4	28.1	35.4	31.1	538.6
100	22	20.1	35.3	24	32.3	27	537.6

Ordering Information

P/N	Product Description	P.U
53048B	UC 300 Cat 5e F/UTP 24 AWG LSZH-FR SWB	500m/drum

UC400 Cat.6 F/UTP SWB LSZH-FR

Category cable for demanding environments



Application

Generic Data transmission. This cable is a Cat6 F/UTP cable meant for use as installation/horizontal cable in demanding electrical and mechanical environment.

Standards

- EIA/TIA 568C;
- ISO/IEC 11801 2nd ed.; IEC 61156-5
- EN 50173; EN 50288-3-1

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	Bare copper wire Ø 0.57 mm (AWG23)
Insulation	PE, Nom. Ø 0.95 mm
Twisting	2 cores to the pair
Overall Screen	Aluminum Polyester Tape
Inner Sheath	Special Flame retardant and halogen free LSZH-FR
Armouring	0.3mm Galvanised Steel Braid, Coverage 80%
Outer Sheath	Black Special Flame retardant and halogen free LSZH-FR
Sheath Colour	Black

Mechanical Properties

Bending radius	Installation	8 X D
Temperature range	During operation	-10°C to + 60°C
	During installation	-10°C to + 60°C

Electrical Properties at 20°C± 5°C

Loop resistance	≤ 110 Ω/km	≤ 176 Ω/km
Resistance unbalance	12 Ω/km	≤ 2%
Insulation resistance	(500 V)	≥ 2000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Test voltage	(DC, 1 min) core/core and core/screen	1000 V

Electrical Data Nominal at 20°C

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	PS-NEXT (dB)	EL-FEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	2.1	81.3	78.2	77.3	71	68	21.5
4	3.8	71.3	67.4	68.3	59	56	24.5
10	6	65.3	59.3	62.3	51	48	26.5
16	7.6	62.2	54.6	59.2	46.9	43.9	26.5
20	8.5	60.8	52.3	57.8	45	42	26.5
31.2	10.7	57.9	47.1	54.9	41.1	38.1	25.1
62.5	15.5	53.4	37.9	50.4	35.1	32.1	23
100	19.9	50.3	30.4	47.3	31	28	21.6
155.5	25.3	47.4	22.1	44.4	27.2	24.2	20.3
200	29.1	45.8	16.6	42.8	25	22	19.5
250	33	44.3	11.3	41.3	23	20	18.8

Ordering Information

P/N	Product Description	P.U
61048B	UC 400 Cat 6 F/UTP 23 AWG LSZH-FR SWB, IEC 60332-1	500m/drum

IE ToughCat 5e LSHF-FR

S/FTP Installation Cable 4x2xAWG24/7 for tougher environments

Construction

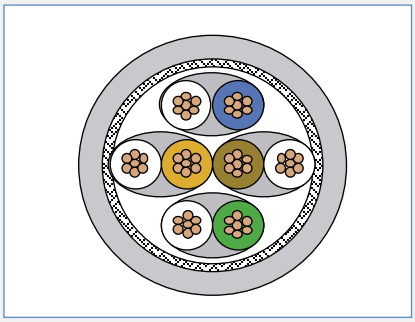
Conductor	Stranded copper wire, cross section 0.22 mm² (AWG24/7)
Insulation	PE, Ø 1.4 mm
Twisting	2 cores to the pair
Cable lay up	4 pairs
Pair screen	Al-laminated plastic foil around each pair
Overall screen	Copper braid, tinned Ø 6.2 mm
Sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1), diameter 7.7 mm
Colour	Grey RAL 7035
Outer Diameter	Nom. 7.7 mm
Weight	Nom. 68 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	Without load	8 x D
	With load	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	670 MJ/km
Maximum tensile load	During operation	No load
	During installation	100 N

Electrical Properties at 20°C

DC loop resistance	-	≤ 158 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz	100 ± 5 Ω
Nominal velocity of propagation	-	0.75c
Propagation delay	-	≤ 450 ns/100 m
Delay skew	-	≤ 15 ns/100 m
Transfer impedance	at 1 MHz	≤ 10 mΩ /m
	at 10 MHz	≤ 8 mΩ /m
	at 30 MHz	≤ 10 mΩ /m
Coupling attenuation	-	≥ 85 dB



Application

- Generic Data transmission. This cable is a **Cat5e S/FTP** cable meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

- EN 50288-2-1
- Det Norske Veritas (DNV) specification No. 6-827.50-2 and Lloyd Register approval, system, 2002

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Chemical Resistance

- Mineral oils IRM 902 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C
- Diesel - IRM 903 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C

Certification

- This cable is certified by: Det Norske Veritas (DNV) and Lloyd Register

Nominal Transmission Characteristics at 20°C

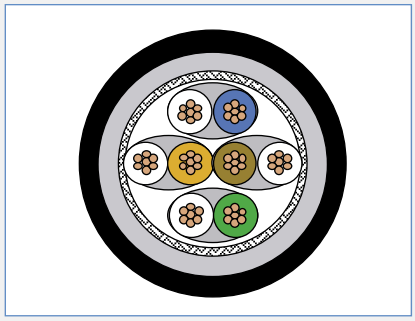
F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2.1	90	88	-	87	85	85	82
4	4.0	90	86	27	87	83	85	82
10	6.3	90	84	30	87	81	79	76
16	8.0	90	82	30	87	79	75	72
20	9.0	90	81	30	87	78	73	70
31.25	11.4	90	79	30	87	76	69	66
62.50	16.5	86	70	30	83	67	63	60
100	21.3	83	62	30	80	59	59	56
155	24.2	81	57	26	78	54	57	54
200	31.5	78	47	25	75	44	53	50
250	35.8	77	41	25	74	38	51	48
300	47.1	73	26	23	70	23	47	44
600	60.1	71	11	20	68	8	44	41

Ordering Information

P/N	Product Description	P.U
60015830	S/FTP Installation Cable 4x2xAWG24/7 for tougher environments, IE ToughCat 5e LSHF-FR	500m/drum
60011599	S/FTP Installation Cable 4x2xAWG24/7 for tougher environments, IE ToughCat 5e LSHF-FR	1000m/drum

IE ToughCat 5e LSHF-FR MUD

S/FTP Installation Cable 4x2xAWG24/7 for tougher environments



Application

- Generic Data transmission. This **Cat5e S/FTP** cable is based on our DNV and Lloyd Register certified ToughCat, but with an additional fire retardant, halogen-free, low smoke MUD protecting outer jacket. This cable is meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

- EN 50173-1, EN 50288-4-1
- ISO/IEC 11801, IEC 61156-5

Fire Rating

- MUD protecting outer sheath : IEC 60754-2; IEC 61034, IEC 60332-3-24
- Inner sheath: IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Chemical Resistance

- Mineral oils IRM 902 (IEC60811-2-1) : 7 days/100°C
- Diesel - IRM 903 (IEC60811-2-1) : 7 days/100°C

Construction

Conductor	Stranded copper wire, cross section 0.22 mm² (AWG24/7)
Insulation	PE, Ø 1.4 mm
Twisting	2 cores to the pair
Cable lay up	4 pairs
Pair screen	Al-laminated plastic foil around each pair
Overall screen	Copper braid, tinned Ø 6.2 mm
Inner Sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1), diameter 7.7 mm
Colour	Grey RAL 7035
Outer sheath	MUD protecting, diameter 9.5 mm
Colour	Grey RAL 7024
Outer Diameter	Nom. 9.5 mm
Weight	Nom. 100 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	Without load	8 x D
	With load	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	(on request) MJ/km
Maximum tensile load	During operation	No load
	During installation	100 N

Electrical Properties at 20°C

DC loop resistance	-	≤ 158 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz	100 ± 5 Ω
Nominal velocity of propagation	-	0.75c
Propagation delay	-	≤ 450 ns/100 m
Delay skew	-	≤ 15 ns/100 m
Transfer impedance	at 1 MHz	≤ 10 mΩ /m
	at 10 MHz	≤ 8 mΩ /m
	at 30 MHz	≤ 10 mΩ /m
Delay skew	-	≥ 85 dB

Nominal Transmission Characteristics at 20°C

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2.1	90	88	-	87	85	85	82
4	4.0	90	86	27	87	83	85	82
10	6.3	90	84	30	87	81	79	76
16	8.0	90	82	30	87	79	75	72
20	9.0	90	81	30	87	78	73	70
31.25	11.4	90	79	30	87	76	69	66
62.50	16.5	86	70	30	83	67	63	60
100	21.3	83	62	30	80	59	59	56
155	24.2	81	57	26	78	54	57	54
200	31.5	78	47	25	75	44	53	50
250	35.8	77	41	25	74	38	51	48
300	47.1	73	26	23	70	23	47	44
600	60.1	71	11	20	68	8	44	41

Ordering Information

P/N	Product Description	P.U
60015703	S/FTP Installation Cable 4x2xAWG24/7 for tougher environments, IE ToughCat 5e LSHF-FR MUD	500m/drum
60015701	S/FTP Installation Cable 4x2xAWG24/7 for tougher environments, IE ToughCat 5e LSHF-FR MUD	1000m/drum

IE ToughCat 7 LSHF-FR

S/FTP Installation Cable 4x2xAWG23/7 for tougher environments

Construction

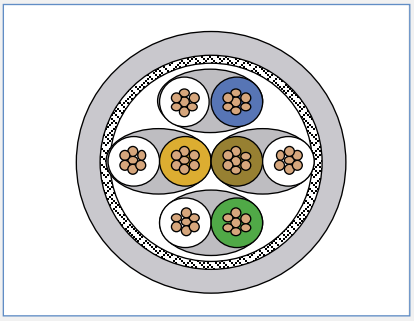
Conductor	Stranded copper wire, cross section 0.27 mm² (AWG23/7)
Insulation	PE, Ø 1.6 mm
Twisting	2 cores to the pair
Cable lay up	4 pairs
Pair screen	Al-laminated plastic foil around each pair
Overall screen	Copper braid, tinned Ø 6.6 mm
Sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1), diameter 8.1 mm
Colour	Grey RAL 7035
Outer Diameter	Nom. 8.1 mm
Weight	Nom. 75 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	Without load	8 x D
	With load	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	670 MJ/km
Maximum tensile load	During operation	No load
	During installation	100 N

Electrical Properties at 20°C

DC loop resistance	-	≤ 138 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz	100 ± 5 Ω
Nominal velocity of propagation	-	0.76c
Propagation delay	-	≤ 450 ns/100 m
Delay skew	-	≤ 15 ns/100 m
Transfer impedance	at 1 MHz	≤ 10 mΩ /m
	at 10 MHz	≤ 8 mΩ /m
	at 30 MHz	≤ 10 mΩ /m
Coupling attenuation	-	≥ 85 dB



Application

- Generic Data transmission. This cable is a **Cat7 S/FTP** cable meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5
- Det Norske Veritas (DNV) specification No. 6-827.50-2

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Chemical Resistance

- Mineral oils IRM 902 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C
- Diesel - IRM 903 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C

Certification

- This cable is certified by: Det Norske Veritas (DNV) and American Bureau of Shipping (ABS)

Nominal Transmission Characteristics at 20°C

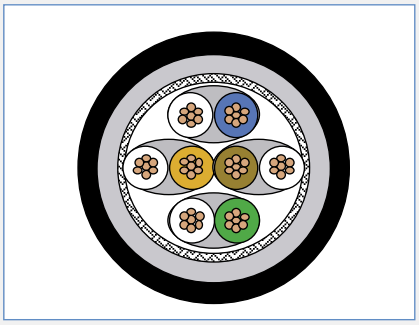
F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	PS-ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2.0	90	88	-	87	85	85	82
4	3.6	90	86	27	87	83	85	82
10	5.5	90	84	30	87	81	79	76
16	7.5	90	82	30	87	79	75	72
20	7.7	90	82	30	87	79	73	70
31.25	9.8	90	80	30	87	77	69	66
62.50	14.0	86	72	30	83	69	63	60
100	17.9	83	65	30	80	62	59	56
155	22.4	81	59	26	78	55	57	54
200	25.6	78	52	25	75	49	53	50
250	28.8	77	48	25	74	45	51	48
300	31.6	73	41	23	70	38	47	44
600	45.7	71	25	20	68	22	44	41

Ordering Information

P/N	Product Description	P.U
60015820	S/FTP Installation Cable 4x2xAWG23/7 for tougher environments, IE ToughCat 7 LSHF-FR	500m/drum
60011619	S/FTP Installation Cable 4x2xAWG23/7 for tougher environments, IE ToughCat 7 LSHF-FR	1000m/drum

IE ToughCat 7 LSHF-FR MUD

S/FTP Installation Cable 4x2xAWG23/7 for tougher environments



Application

- Generic Data transmission. This **Cat7 S/FTP** cable is based on our DNV and Lloyd Register certified ToughCat, but with an additional fire retardant, halogen-free, low smoke MUD protecting outer jacket. This cable is meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5
- Det Norske Veritas (DNV) specification No. 6-827.50-2

Fire Rating

- MUD protecting outer sheath : IEC 60754-2, IEC 61034, IEC 60332-3-24
- Inner sheath: IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Chemical Resistance

- Mineral oils IRM 902 (IEC60811-2-1): 7 days/100°C
- Diesel - IRM 903 (IEC60811-2-1) : 7 days/100°C

Construction

Conductor	Stranded copper wire, cross section 0.27 mm² (AWG23/7)
Insulation	PE, Ø 1.6 mm
Twisting	2 cores to the pair
Cable lay up	4 pairs
Pair screen	Al-laminated plastic foil around each pair
Overall screen	Copper braid, tinned Ø 6.6 mm
Inner Sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1), diameter 8.1 mm
Colour	Grey RAL 7035
Outer sheath	MUD protecting, diameter 10.1 mm
Colour	Grey RAL 7024
Outer Diameter	Nom. 10.1 mm
Weight	Nom. 112 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	Without load	8 x D
	With load	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	(on request) MJ/km
Maximum tensile load	During operation	No load
	During installation	100 N

Electrical Properties at 20°C

DC loop resistance	-	≤ 138 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair to ground)	≤ 1500 pF/km
Mean Characteristic impedance	@ 100 MHz	100 ± 5 Ω
Nominal velocity of propagation	-	0.76c
Propagation delay	-	≤ 450 ns/100 m
Delay skew	-	≤ 15 ns/100 m
Transfer impedance	at 1 MHz	≤ 10 mΩ /m
	at 10 MHz	≤ 8 mΩ /m
	at 30 MHz	≤ 10 mΩ /m
Coupling attenuation	-	≥ 85 dB

Nominal Transmission Characteristics at 20°C

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	ACR (dB/100m)	Return loss (dB)	PS-NEXT (dB)	PS-ACR (dB/100m)	PS-ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)
1	2.0	90	88	-	87	85	85	82
4	3.6	90	86	27	87	83	85	82
10	5.5	90	84	30	87	81	79	76
16	7.5	90	82	30	87	79	75	72
20	7.7	90	82	30	87	79	73	70
31.25	9.8	90	80	30	87	77	69	66
62.50	14.0	86	72	30	83	69	63	60
100	17.9	83	65	30	80	62	59	56
155	22.4	81	59	26	78	55	57	54
200	25.6	78	52	25	75	49	53	50
250	28.8	77	48	25	74	45	51	48
300	31.6	73	41	23	70	38	47	44
600	45.7	71	25	20	68	22	44	41

Ordering Information

P/N	Product Description	P.U
60015695	S/FTP Installation Cable 4x2xAWG23/7 for tougher environments, IE ToughCat 7 LSHF-FR MUD	500m/drum
60015692	S/FTP Installation Cable 4x2xAWG23/7 for tougher environments, IE ToughCat 7 LSHF-FR MUD	1000m/drum

IE ToughCat 7S* Armoured

S/FTP Installation Cable for tougher environments

Construction

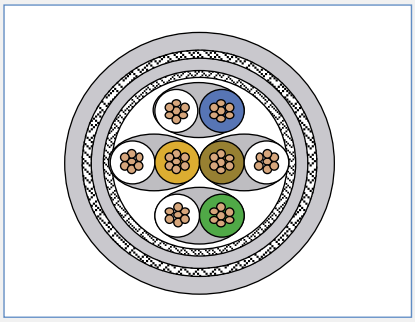
Conductor	Solid copper wire, Ø 0.56 mm (AWG 23)
Insulation	foamskin PE, Ø 1.4 mm
Twisting	2 cores to the pair
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core
Screen	copper braid, tinned
Inner Sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1)
Outer sheath	Grey RAL7035
Armouring	Galvanized steel wire braid, Wire diameter 0,25mm
Outer sheath	Oil resistant, Fire retardant and halogen free LSZH-FR (SHF1)
Outer Diameter	Nom. 10.6 mm
Weight	Nom. 168 kg/km

Mechanical Properties

Bending radius	Installation	8 x D
	Installed	4 x D
Temperature range	During operation	-40°C to + 85°C
	During installation	-15°C to + 50°C
Fire load	4 pair	1540 MJ/km
Maximum tensile load	During operation	No load
	During installation	200 N

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 150 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩxkm
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Characteristic impedance	(1-100 MHz)	100 ± 5 Ω
	(100 - 250) MHz	100 ± 10 Ω
	(250 - 600) MHz	100 ± 15 Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	≤ 570 ns/100m
Delay skew	-	≤ 9 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance(Grade 1)	at 1 MHz	≤ 10 mΩ/m
	at 10 MHz	≤ 10 mΩ/m
	at 30 MHz	≤ 10 mΩ/m
	at 100 MHz	≤ 20 mΩ/m
Coupling attenuation	-	≥ 85 dB



Application

- Generic Data transmission. This cable is a **Cat7 S/FTP** cable meant for use as installation/horizontal cable in tougher electrical and mechanical environment, including ships and offshore units.

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5
- Det Norske Veritas (DNV) specification No. 6-827.50-2

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Chemical Resistance

- Mineral oils IRM 902 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C
- Diesel - IRM 903 (IEC60811-2-1) : 7 days/23°C, 4 hours/70°C

Certification

- This cable is based on the unarmoured version certified by: Det Norske Veritas (DNV)

Electrical Data (Nominal) acc. to Cat.7 (at 20°C)

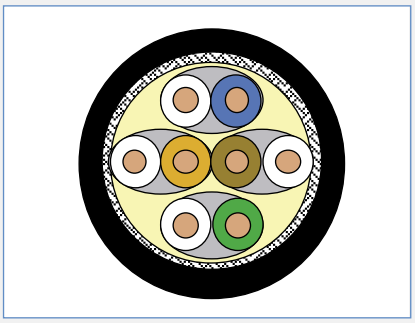
F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT (dB)	ACR (dB/100m)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Retuen loss (dB/100m)
1	1.8	100	97	98	95	105	105	-
4	3.4	100	97	97	94	105	102	27
10	5.4	100	97	95	92	97	94	30
16	6.8	100	97	93	90	93	90	30
20	7.7	100	97	92	89	91	88	30
31.2	9.6	100	97	90	87	87	84	30
62.5	13.7	100	97	86	83	81	78	30
100	17.4	100	97	83	80	77	74	30
125	19.5	95	92	75	72	75	72	26
155.5	21.9	94	91	72	69	73	70	26
175	23.3	93	90	70	67	72	69	25
200	25.0	92	89	67	64	71	68	25
250	28.1	90	87	62	59	69	66	24
300	30.9	89	86	58	55	67	64	24
450	38.3	87	84	48	45	64	61	23
600	44.8	85	82	40	37	61	58	22

Ordering Information

P/N	Product Description	P.U
60027371	S/FTP Installation Cable for tougher environments, IE ToughCat 7S* Armoured	500m/drum

IE SuperCat 7 HS23 Cat.7 LSHF

Water resistant S/FTP Installation Cable 4x2xAWG23/1 for Indoor/Outdoor use



Application

- Indoor- and outdoor installations, filled with compound to prevent water penetration
- Primary (Campus), Secondary (Riser), Tertiary (Horizontal)
- IEEE 802.3: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5

Water Penetration Rating

- IEC 60794-1-2F5, method B

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Construction

Conductor	Solid bare copper wire, Ø 0.55 mm (AWG 23)
Insulation	Foam-skin PE, Ø 1.45 mm
Twisting	2 cores to the pair, WBC filled
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core, swelling yarn and tape
Cable core filling	Special Waterproofing/compound to prevent moisture migration*). To prevent water penetration and to ensure electrical properties even in continuous wet conditions.
Screen	Copper braid, tinned
Sheath	LSZH, UV stabilized, diameter 8.7 mm
Colour	Black, RAL 9011
Outer Diameter	Nom. 8.7 mm
Weight	Nom. 1000 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	During operation	4 x Outer diameter
	During installation	8 x Outer diameter
Temperature range	During operation	-40°C to + 60°C
	During installation	-10°C to + 50°C
Fire load	-	838 MJ/km
	During operation	-
Maximum tensile load	During installation	100 N

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 165 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 2000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Characteristic impedance	(1-100 MHz)	(100 ± 15) Ω
	(100 - 250) MHz	(100 ± 18) Ω
	(250 - 600) MHz	(100 ± 25) Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	≤ 550 ns/100m
Delay skew	-	≤ 10 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 1 MHz	≤ 20 mΩ/m
	at 10 MHz	≤ 30 mΩ/m
	at 30 MHz	≤ 40 mΩ/m
	at 100MHz	≤ 200 mΩ/m
Delay skew	-	≥ 75 dB

Nominal Transmission Characteristics at 20°C

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT * (dB)	ACR (dB/100m)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	1.8	100	97	98	95	105	105	-
4	3.4	100	97	97	94	105	102	27
10	5.4	100	97	95	92	97	94	30
16	6.8	100	97	93	90	93	90	30
20	7.7	100	97	92	89	91	88	30
31.2	9.6	100	97	90	87	87	84	30
62.5	13.7	100	97	86	83	81	78	30
100	17.4	100	97	83	80	77	74	30
125	19.5	95	92	75	72	75	72	26
155.5	21.9	94	91	72	69	73	70	26
175	23.3	93	90	70	67	72	69	25
200	25.0	92	89	67	64	71	68	25
250	28.1	90	87	62	59	69	66	24
300	30.9	89	86	58	55	67	64	24
450	38.3	87	84	48	45	64	61	23
600	44.8	85	82	40	37	61	58	22
750	52.0	83	80	31	28	59	56	21
900	59.4	82	79	23	20	58	55	20

Ordering Information

P/N	Product Description	P.U
60014892	Water resistant S/FTP Installation Cable 4x2xAWG23/1 for Indoor/Outdoor use, IE SuperCat 7 HS23 Cat.7 LSHF	500m/drum
60014810	Water resistant S/FTP Installation Cable 4x2xAWG23/1 for Indoor/Outdoor use, IE SuperCat 7 HS23 Cat.7 LSHF	1000m/drum

IE UC900 SS23 Cat.7 (L)H LSHF-FR

IE S/FTP cable 4x2xAWG23/1 with LSHF-FR moisture barrier sheath

Construction

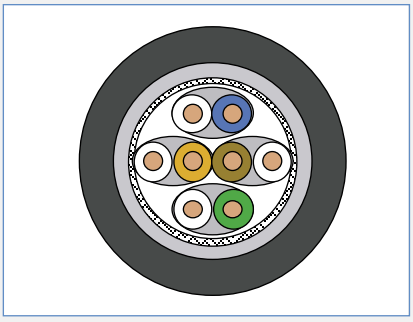
Conductor	bare copper wire, Ø 0.56 mm (AWG 23)
Insulation	foam-skin PE, Ø 1.4 mm
Twisting	2 cores to the pair
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core
Screen	copper braid, tinned
Sheath	aluminum tape connected with halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, wall thickness 1.5 mm
Colour	black RAL 9005
Outer Diameter	Nom. 9.5 mm
Weight	Nom. 114 kg/km
Tensile force N	350

Mechanical Properties

Bending radius	Without load	≥ 40 mm
	With load	≥ 80 mm
Temperature range	During operation	-20°C to + 60°C
	During installation	0°C to + 50°C

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 165 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Mean characteristic impedance	100 MHz	100 ± 5 Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	427 ns/100m
Delay skew	-	12 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 1 MHz	10 mΩ/m
	at 10 MHz	10 mΩ/m
	at 30 MHz	30 mΩ/m
	at 100MHz	60 mΩ/m
Coupling attenuation	-	85 dB



Application

- Primary (Campus), Secondary (Riser), Tertiary (Horizontal)
- IEEE 802.3: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Electrical Data (Nominal) acc. to Cat.7 (at 20°C)

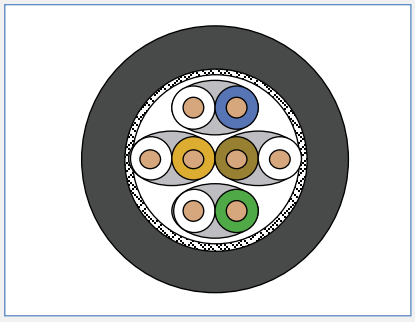
F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT (dB/100m)	ACR (dB)	PS-ACR (dB)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB/100m)
1	1.8	100	97	98	95	105	105	-
4	3.4	100	97	97	94	105	102	27
10	5.4	100	97	95	92	97	94	30
16	6.8	100	97	93	90	93	90	30
20	7.7	100	97	92	89	91	88	30
31.2	9.6	100	97	90	87	87	84	30
62.5	13.7	100	97	86	83	81	78	30
100	17.4	100	97	83	80	77	74	30
125	19.5	95	92	75	72	75	72	26
155.5	21.9	94	91	72	69	73	70	26
175	23.3	93	90	70	67	72	69	25
200	25.0	92	89	67	64	71	68	25
250	28.1	90	87	62	59	69	66	24
300	30,9	89	86	58	55	67	64	24
450	38.3	87	84	48	45	64	61	23
600	44,8	85	82	40	37	61	58	22
750	52.0	83	80	31	28	59	56	21
900	59.4	82	79	23	20	58	55	20
1000	63.1	80	77	17	14	57	54	20

Ordering Information

P/N	Product Description	P.U
60015223	IE S/FTP cable 4x2xAWG23/1 with LSHF-FR moisture barrier sheath, IE UC900 SS23 Cat.7 (L)H LSHF-FR	500m/drum
60015222	IE S/FTP cable 4x2xAWG23/1 with LSHF-FR moisture barrier sheath, IE UC900 SS23 Cat.7 (L)H LSHF-FR	1000m/drum

IE UC900 SS23 Cat.7 PE

IE S/FTP cable 4x2xAWG23/1 with PE sheath



Application

- Primary (Campus), Secondary (Riser), Tertiary (Horizontal)
- IEEE 802.3: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM

Fire Rating

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5

Construction

Conductor	bare copper wire, Ø 0.56 mm (AWG 23)
Insulation	foam-skin PE, Ø 1.4 mm
Twisting	2 cores to the pair
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core
Screen	copper braid, tinned
Sheath	PE, for outdoor installation
Colour	black, RAL 9005
Outer Diameter	Nom. 8.4 mm
Weight	Nom. 95 kg/km
Tensile force N	340

Mechanical Properties

Bending radius	Without load	≥ 40 mm
	With load	≥ 80 mm
Temperature range	During operation	-55°C to + 60°C
	During installation	-20°C to + 50°C

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 165 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Characteristic impedance	(1-100 MHz)	(100 ± 15) Ω
	(100 - 250) MHz	(100 ± 18) Ω
	(250 - 600) MHz	(100 ± 25) Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	≤ 427 ns/100m
Delay skew	-	≤ 12 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 1 MHz	10 mΩ/m
	at 10 MHz	10 mΩ/m
	at 30 MHz	30 mΩ/m
	at 100MHz	60 mΩ/m
Coupling attenuation	-	85 dB

Electrical Data (Nominal) acc. to Cat.7 (at 20°C)

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT (dB)	ACR (dB/100m)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	1.8	100	97	98	95	105	105	-
4	3.4	100	97	97	94	105	102	27
10	5.4	100	97	95	92	97	94	30
16	6.8	100	97	93	90	93	90	30
20	7.7	100	97	92	89	91	88	30
31.2	9.6	100	97	90	87	87	84	30
62.5	13.7	100	97	86	83	81	78	30
100	17.4	100	97	83	80	77	74	30
125	19.5	95	92	75	72	75	72	26
155.5	21.9	94	91	72	69	73	70	26
175	23.3	93	90	70	67	72	69	25
200	25.0	92	89	67	64	71	68	25
250	28.1	90	87	62	59	69	66	24
300	30.9	89	86	58	55	67	64	24
450	38.3	87	84	48	45	64	61	23
600	44.8	85	82	40	37	61	58	22
750	52.0	83	80	31	28	59	56	21
900	59.4	82	79	23	20	58	55	20
1000	63.1	80	77	17	14	57	54	20

Ordering Information

P/N	Product Description	P.U
60011276	IE S/FTP cable 4x2xAWG23/1 with PE sheath, IE UC900 SS23 Cat.7 PE	500m/drum
60011278	IE S/FTP cable 4x2xAWG23/1 with PE sheath, IE UC900 SS23 Cat.7 PE	1000m/drum

IE UC900 SS23 Cat.7 PUR

IE S/FTP cable 4x2xAWG23/1 with abrasion and oil resistant PUR sheath

Construction

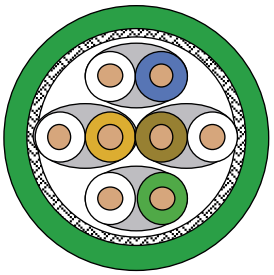
Conductor	bare copper wire, Ø 0.56 mm (AWG 23)
Insulation	foam-skin PE, Ø 1.4 mm
Twisting	2 cores to the pair
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core
Screen	copper braid, tinned
Sheath	PUR, oil resistant
Colour	green RAL 6018
Outer Diameter	Nom. 7.5 mm
Weight	Nom. 92 kg/km
Tensile force N	340

Mechanical Properties

Bending radius	Without load	≥ 30 mm
	With load	≥ 60 mm
Temperature range	During operation	-30°C to + 75°C
	During installation	-0°C to + 50°C

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 150 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V)	≥ 5000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Characteristic impedance	(1-100 MHz)	(100 ± 5) Ω
	(100 - 250) MHz	(100 ± 10) Ω
	(250 - 600) MHz	(100 ± 15) Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	≤ 427 ns/100m
Delay skew	-	≤ 9 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 1 MHz	5 mΩ/m
	at 10 MHz	5 mΩ/m
	at 30 MHz	10 mΩ/m
	at 100MHz	20 mΩ/m
Coupling attenuation	-	85 dB



Application

- Primär (Campus), Sekundär (Riser), Tertiär (Horizontal)
- IEEE 802.3: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM

Standards

- EN 50173-1; EN 50288-4-1
- ISO/IEC 11801; IEC 61156-5

Fire Rating

- IEC 60332-1; IEC 60754-2; IEC 61034

Electrical Data (Nominal) acc. to Cat.7 (at 20°C)

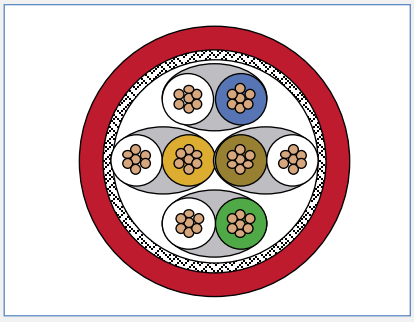
F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT (dB)	ACR (dB/100m)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	1.8	100	97	98	95	105	105	-
4	3.4	100	97	97	94	105	102	27
10	5.4	100	97	95	92	97	94	30
16	6.8	100	97	93	90	93	90	30
20	7.7	100	97	92	89	91	88	30
31.2	9.6	100	97	90	87	87	84	30
62.5	13.7	100	97	86	83	81	78	30
100	17.4	100	97	83	80	77	74	30
125	19.5	95	92	75	72	75	72	26
155.5	21.9	94	91	72	69	73	70	26
175	23.3	93	90	70	67	72	69	25
200	25.0	92	89	67	64	71	68	25
250	28.1	90	87	62	59	69	66	24
300	30.9	89	86	58	55	67	64	24
450	38.3	87	84	48	45	64	61	23
600	44.8	85	82	40	37	61	58	22
750	52.0	83	80	31	28	59	56	21
900	59.4	82	79	23	20	58	55	20
1000	63.1	80	77	17	14	57	54	20

Ordering Information

P/N	Product Description	P.U
60015297	IE S/FTP cable 4x2xAWG23/1 with abrasion and oil resistant PUR sheath, IE UC900 SS23 Cat.7 PUR	500m/drum
60015294	IE S/FTP cable 4x2xAWG23/1 with abrasion and oil resistant PUR sheath, IE UC900 SS23 Cat.7 PUR	1000m/drum

IE UC900 SS27 Cat.7 PUR

IE S/FTP patch cable 4x2xAWG27/7 with abrasion and oil resistant PUR sheath



Application

- Work area and patch cord cable
- IEEE 802.3: 10Base-T; 100Base-T; 1000Base-T; 10GBase-T
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM

Standards

- EIA/TIA 568A;
- ISO/IEC 11801 2nd ed.; IEC 61156-6
- EN 50173-1; EN 50288-4-2

Fire Rating

- IEC 60332-1; IEC 60754-2; IEC 61034

Chemical Resistance

- Oil resistant against Mineral – oil, ASTM – oil
- The sheath material is tested in Hydraulic oil
- ARAL VITAM 32, Mobil DTE 13 M, Gear oil ARAL DEGOL BG Plus 320 and Tribol 1710/320.

Construction

Conductor	stranded bare copper wires, Ø 0.42 mm (AWG 27/7)
Insulation	foam-skin Polyethylene, Ø 0.98 mm
Twisting	2 cores to the pair
Pair screen	Al-laminated plastic foil
Cable lay up	4 pairs (PiMF) to the core
Screen	copper braid, tinned
Sheath	PUR
Colour	red
Outer Diameter	Nom. 5.9 mm
Weight	Nom. 34 kg/km
Tensile force N	100

Mechanical Properties

Bending radius	Without load	≥ 25 mm
	With load	≥ 50 mm
Temperature range	During operation	-35°C to + 75°C
	During installation	-5°C to + 50°C
UV resistance of sheath material	-	acc. to IEC60068-2-5
Ozone resistance	-	acc. to EN 60811-2-1, clause 8
Smoke density	-	acc. to EN 50268-2, IEC61034-1 and 2
Corrosivity	-	acc. EN 50267-1 and 2, IEC 60754-1 and 2

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 340 Ω/km
Resistance unbalance	-	≤ 3%
Insulation resistance	(500 V)	≥ 2000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 43 nF/km
Capacitance unbalance	(pair/ground)	≤ 1500 pF/km
Characteristic impedance	(1-100 MHz)	(100 ± 15) Ω
	(100 - 250) MHz	(100 ± 18) Ω
	(250 - 600) MHz	(100 ± 25) Ω
Nominal velocity of propagation	-	ca. 79 %
Propagation delay	-	≤ 427 ns/100m
Delay skew	-	≤ 12 ns/100m
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 1 MHz	25 mΩ/m
	at 10 MHz	15 mΩ/m
	at 30 MHz	30 mΩ/m
Coupling attenuation	-	75 dB

Electrical Data (Nominal) acc. to Cat.7 (at 20°C)

F (MHZ)	Attenuation (dB/10m)	NEXT (dB)	PS-NEXT (dB)	ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	0.3	90	87	90	77	77	23
4	0.6	90	87	89	77	77	24
10	1.0	90	87	89	77	77	25
16	1.3	90	87	89	73	73	25
20	1.4	90	87	89	71	71	25
31.2	1.8	90	87	88	67	67	25
62.5	2.6	90	87	87	61	61	23
100	3.2	87	84	84	57	57	21
125	3.6	85	82	81	55	55	20
155.5	4.0	84	81	80	53	53	19
175	4.3	83	80	79	52	52	19
200	4.6	82	79	77	51	51	18
250	5.1	81	78	76	49	49	18
300	5.6	80	77	74	47	47	17
450	6.9	77	74	70	44	44	17
600	7.9	75	72	67	41	41	17
750	8.7	73	70	64	39	39	-
900	9.7	72	69	62	38	38	-
1000	10.2	71	68	61	37	37	-

Ordering Information

P/N	Product Description	P.U
60011459	IE S/FTP patch cable 4x2xAWG27/7 with abrasion and oil resistant PUR sheath, IE UC900 SS27 Cat.7 PUR	500m/drum
60014237	IE S/FTP patch cable 4x2xAWG27/7 with abrasion and oil resistant PUR sheath, IE UC900 SS27 Cat.7 PUR	1000m/drum

JAMAK®

Symmetrical data cable for industrial control equipment

Construction

Conductor	Tinned stranded copper 7x 0.29 mm
Insulation	PE (2Y)
Conductor identification	a-conductor blue; b-conductor red
Stranding	2 conductors to pair
Stranding to core	(0+4)
Pair shielding	Laminated AL-foil + copper drain wire 0.5 mm^2
Overall shielding	2pairs- 48pairs: Laminated AL-foil + copper drain wire 0.5 mm^2 , 1pair: without overall shielding
Outer sheath	PVC (Y), grey
Outer Diameter	Nom. 7.2(2pair) - 28.0(48pair) mm
Weight	Nom. 60(2pair) - 980(48pair) kg/km

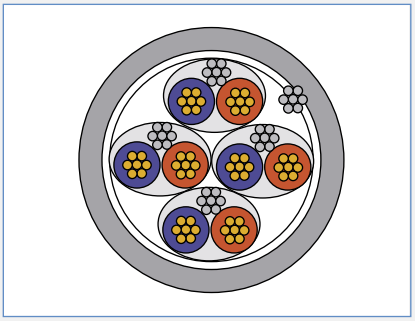
Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	2 GΩ*km
Capacitance at 800 Hz	85 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.66
Impedance (at 10 MHz)	70 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.6
1000	4.5



Application

These symmetrical data transmission cables are used in control and supervision centre for industrial sites. They are suitable for fixed installation inside housings.

Fire Rating

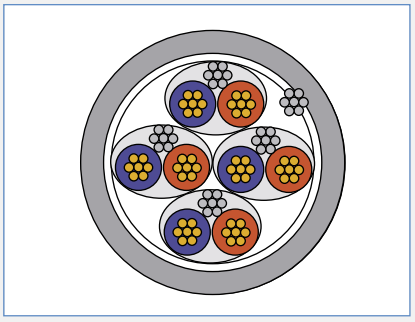
- Oxygen Index LOI acc. to ASTM-D-2863: no limit
- IEC 60332-1

Ordering Information

P/N	Product Description	P.U
1004685	1x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1006411-01000DX	2x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1005579-00200DX	2x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	200m/drum
1005540-01000DX	4x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1005578-00200DX	4x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	200m/drum
1005533-01000DX	8x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1005525-00500DX	8x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	500m/drum
1005534-01000DX	12x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1005524-00500DX	24x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	500m/drum
1005541-01000DX	24x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	1000m/drum
1005535-00500DX	48x(2+1)x0.5, Symmetrical data cable for industrial control equipment, JAMAK®	500m/drum

JAMAK®-C LSZH

Symmetrical Data Cable for Industrial Control Equipment



Application

These halogen-free, flame retardant and symmetrical data transmission cables are used in control and supervision center for industrial sites. They are suitable for fixed installation inside housings.

Fire Rating

• IEC 60332-1; IEC 60754-2; IEC 61034

Construction

Conductor	Stranded tinned copper 7x 0.29 mm
Insulation	PE (2Y)
Conductor identification	a-conductor blue; b-conductor red
Stranding	2 conductors to pair
Stranding to core	(0+4)
Pair shielding	Laminated AL-foil + copper drain wire 0.5 mm^2
Overall shielding	2 Laminated AL-foils with inner copper drain wire 0.5 mm^2
Outer sheath	LSZH (H), grey (RAL 7035), light resistant
Outer Diameter	Nom. 7.5(2pair) - 30.5(48pair) mm
Weight	Nom. 70(2pair) - 1000(48pair) kg/km

Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	2 GΩ*km
Capacitance at 800 Hz	85 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.66
Impedance (at 10 MHz)	70 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.6
1000	4.5

Ordering Information

P/N	Product Description	P.U
1005528-01000DX	2x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	1000m/drum
1005529-01000DX	4x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	1000m/drum
1005530-01000DX	8x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	1000m/drum
1005531-01000DX	24x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	1000m/drum
1006195-01000DX	24x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	1000m/drum
1006197-00500DX	48x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-C LSZH	500m/drum

JAMAK® -HF

Symmetrical Data Cable for Industrial Control Equipment

Construction

Conductor	Tinned stranded copper 7x 0.29 mm
Insulation	PE (2Y)
Conductor identification	a-conductor blue; b-conductor red
Stranding	2 conductors to pair
Stranding to core	(0+4)
Pair shielding	Laminated AL-foil + copper drain wire 0.5 mm^2
Overall shielding	Laminated AL-foil + copper drain wire 0.5 mm^2
Outer sheath	LSZH (H), grey
Outer Diameter	Nom. 7.5(2pair) - 30.5(48pair) mm
Weight	Nom. 70(2pair) - 1500(48pair) kg/km

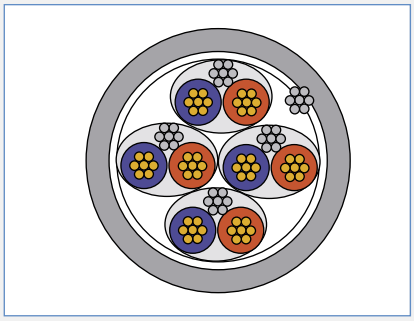
Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	2 GΩ*km
Capacitance at 800 Hz	85 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.66
Impedance (at 10 MHz)	70 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.6
1000	4.5



Application

These symmetrical data transmission cables are used in control and supervision center for industrial sites. They are suitable for fixed installation inside housings.

Fire Rating

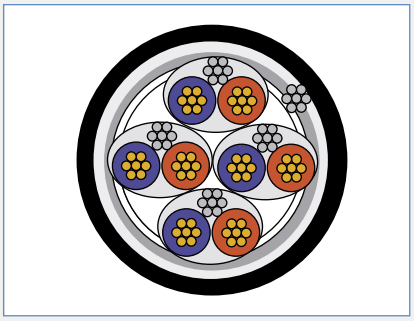
- IEC 60332-1; IEC 60754-2; IEC 61034

Ordering Information

P/N	Product Description	P.U
JAMAK -HF	2x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	1000m/drum
JAMAK -HF	4x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	1000m/drum
JAMAK -HF	8x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	1000m/drum
JAMAK -HF	12x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	1000m/drum
JAMAK -HF	24x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	1000m/drum
JAMAK -HF	48x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK® -HF	500m/drum

JAMAK®-ARM

Symmetrical Data Cable for Industrial Control Equipment



Application

These symmetrical data transmission cables are used in control and supervision center for industrial sites. The cables with armouring and PE outer sheath are suitable for direct buried installation.

Fire Rating

- Oxygen Index LOI acc. to ASTM-D-2863: no limit
- IEC 60332-1

Water Penetration Rating

MIL-C-24640A

Construction

Conductor	Stranded tinned copper 7x 0.29 mm
Insulation	PE (2Y)
Conductor identification	a-conductor blue; b-conductor red
Stranding	2 conductors to pair
Stranding to core	(0+4)
Pair shielding	Laminated AL-foil + copper drain wire 0.5 mm²
Overall shielding	Laminated AL-foil + copper drain wire 0.5 mm²
Inner sheath	PVC (Y), grey
Armouring	Steel tape, helically wounded
Outer sheath	PE (2Y), black
Outer Diameter	Nom. 13(4pair) - 34.5(48pair) mm
Weight	Nom. 250 (4pair) - 1500(48pair) kg/km

Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	2 GΩ*km
Capacitance at 800 Hz	85 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.66
Impedance (at 10 MHz)	70 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.6
1000	4.5

Ordering Information

P/N	Product Description	P.U
1005536-01000DX	4x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-ARM	1000m/drum
1005537-01000DX	8x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-ARM	1000m/drum
1005538-01000DX	12x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-ARM	1000m/drum
1005539-01000DX	24x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-ARM	1000m/drum
1005539-01000DX	48x(2+1)x0.5, Symmetrical Data Cable for Industrial Control Equipment, JAMAK®-ARM	1000m/drum

NOMAK®

Symmetrical data cable for industrial control equipment

Construction

Conductor	Stranded tinned copper 7x0,29 mm
Insulation	PVC (Y)
Conductor identification	a-conductor orange; b-conductor white (with number printing)
Stranding	2 conductors to pair
Stranding to core	(0+4)
Overall shielding	Laminated AL-foil + tinned copper drain wire 0.5 mm²
Outer sheath	PVC (Y), grey (RAL 7035)
Outer Diameter	Nom. 6.7(2pair) - 23.5(48pair) mm
Weight	Nom. 52(2pair) - 745(48pair) kg/km

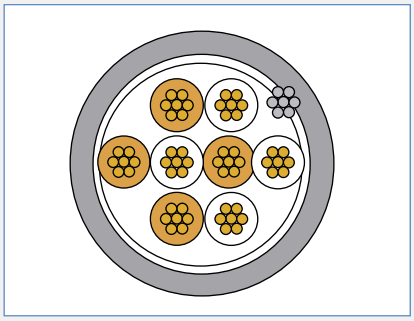
Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Capacitance at 800 Hz	85 nF/km
for 2 and 4 pairs	90 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.60
Impedance (at 10 MHz)	100 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.5
1000	2.9



Application

These symmetrical data transmission cables are used in control and supervision centre for industrial sites. They are suitable for fixed installation inside housings.

Fire Rating

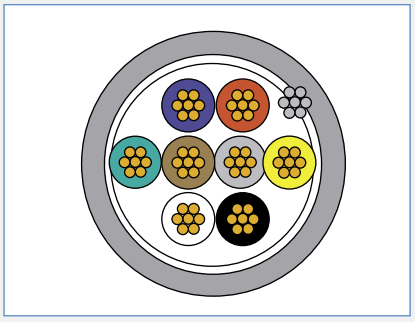
- Oxygen Index LOI acc. to ASTM-D-2863: no limit
- IEC 60332-1

Ordering Information

P/N	Product Description	P.U
1003555-01000DO	2x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum
1003555-00200DW	2x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	200m/drum
1003575-01000DO	4x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum
1003575-00200DW	4x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	200m/drum
1005542-01000DX	8x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum
1005543-01000DX	12x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum
1005544-01000DX	24x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum
1005545-01000DX	48x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®	1000m/drum

NOMAK®-E

Symmetrical data cable for industrial control equipment



Application

These symmetrical data transmission cables are used in control and supervision centre for industrial sites. They are suitable for fixed installation inside housings.

Fire Rating

- Oxygen Index LOI acc. to ASTM-D-2863: no limit
- IEC 60332-1

Construction

Conductor	Stranded tinned copper 7x0,29 mm	
Insulation	PVC (Y)	
Conductor identification	a-conductor	b-conductor
Pair 1	Blue	Red
Pair 2	Grey	Yellow
Pair 3	Green	Brown
Pair 4	White	Black
Stranding	2 conductors to pair	
Stranding to core	(0+4) each 4-pair bundle with numbered	
Overall shielding	Laminated AL-foil + tinned copper drain wire 0.5 mm^2	
Outer sheath	PVC (Y), grey (RAL 7035)	
Outer Diameter	Nom. 7.0(2pair) - 23.5(48pair) mm	
Weight	Nom. 55(2pair) - 747(48pair) kg/km	

Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C

Electrical Properties at 20°C

Loop resistance	81 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Capacitance at 800 Hz	85 nF/km
for 2 and 4 pairs	90 nF/km
Max. operating voltage	75 V
Relative velocity factor NVP	0.60
Impedance (at 10 MHz)	100 Ω +/- 10 %

Frequency [kHz]	Attenuation [dB/100 m]
9.6	0.3
19.2	0.5
64	0.7
100	0.9
200	1.5
1000	2.9

Ordering Information

P/N	Product Description	P.U
1003576	2x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	1000m/drum
1003577	4x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	200m/drum
1005546-01000DX	8x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	1000m/drum
1005551-01000DX	12x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	200m/drum
1005547-01000DX	24x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	1000m/drum
1006473-01000DX	48x2x0.5, Symmetrical data cable for industrial control equipment, NOMAK®-E	1000m/drum

LONAK® 2 x 1.3 mm²

Building automation cable

Construction

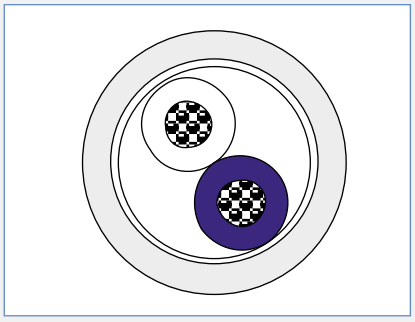
Conductor	Stranded copper wires, tinned 1.3 mm2 , 7x0.49 mm, Ø 1.47 mm
Insulation	PVC, 2.69 mm Ø
Conductor identification	1 x white, 1 x blue
Pair stranding	2 conductors to the pair
Cable lay up	1 pair to the core
Wrapping	1 x PET foil
Rip cord	yes
Outer sheath	PVC, grey RAL 7035, Ø 7.0 mm
Outer Diameter	Nom. 7.0 mm
Weight	Nom. 70 kg/km

Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C
Minimum bending radius	10 x D
Minimum bending radius (during pulling)	15 x D
Maximum pulling force	130 N

Electrical Properties at 20°C

Loop DC resistance (max.)	28 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Mutual capacitance at 800 Hz (max.)	72 nF/km
Velocity factor	0.55
Max. operating voltage DC	75 V
Test voltage conductor/conductor	3.5 kV



Application

- Fixed indoor installations
- LON cabling
- Building automation

Fire Rating

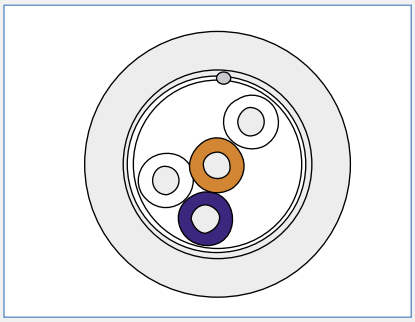
- IEC 60332-1

Ordering Information

P/N	Product Description	P.U
60013675 (1003578) (L432332)	2x1.3 mm², Building automation cable, LONAK® 2 x 1.3 mm²	1000m/drum

LONAK® 2x2x0.65

Building automation cable



Application

- Fixed indoor installations
- LON cabling
- Building automation

Fire Rating

- IEC 60332-1

Construction

Conductor	Copper wire, tinned 0.34 mm2 , Ø 0.65 mm
Insulation	PE, 1.55 mm Ø
Conductor identification	Pair 1: white, blue, Pair 2: white, orange
Stranding	2 conductors to the pair
Cable lay up	2 pairs to the core
Wrapping	1 x PET foil
Overall shielding	Laminated AL-foil + copper drain wire
Rip cord and identification thread	yes
Outer sheath	PVC, grey RAL 7035, Ø 7.1 mm
Outer Diameter	Nom. 7.1 mm
Weight	Nom. 43 kg/km

Mechanical Properties

Operating temperature	- 30°C to + 70°C
Min. Installation temperature	- 5°C
Minimum bending radius	10 x D
Minimum bending radius (during pulling)	15 x D
Maximum pulling force	65 N

Electrical Properties at 20°C

Loop DC resistance (max.)	106 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Mutual capacitance at 800 Hz (max.)	49 nF/km
Velocity factor	0.67
Resistance unbalance (max.)	3 %
Capacitance unbalance (max.)	1600 pF/m
Max. operating voltage DC	75 V
Test voltage conductor/conductor	2 kV DC, 1 min
Test voltage conductor/screen	2 kV DC, 1 min.

Ordering Information

P/N	Product Description	P.U
1003579 CS2638100 L432911	2x2x0.65 mm, Building automation cable, LONAK® 2x2x0.65	1000m/drum

LONAK® 2x2x0.8

Building automation cable

Construction

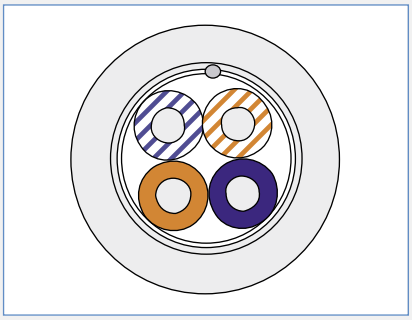
Conductor	Copper wire, tinned 0.5 mm2 , Ø 0.80 mm
Insulation	PVC, 1.6 mm Ø
Conductor identification	Pair 1: white-blue, blue, Pair 2: white-orange, orange
Stranding	4 conductors to the quad
Cable lay up	1 quad to the core
Wrapping	1 x PET foil
Overall shielding	Laminated AL-foil + copper drain wire
Rip cord and identification thread	yes
Outer sheath	PVC, grey RAL 7035, Ø 7.0 mm
Outer Diameter	Nom. 7.0 mm
Weight	Nom. 54 kg/km

Mechanical Properties

Operating temperature	- 30°C up to + 70°C
Min. Installation temperature	- 5°C
Minimum bending radius	10 x D
Minimum bending radius (during pulling)	15 x D
Maximum pulling force	100 N

Electrical Properties at 20°C

Loop DC resistance (max.)	73 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Mutual capacitance at 800 Hz (max.)	98 nF/km
Velocity factor	0.55
Max. operating voltage DC	75 V
Test voltage conductor/conductor	2.25 kV DC, 1 min.
Test voltage conductor/screen	1.5 kV DC, 1 min.



Application

- Fixed indoor installations
- LON cabling
- Building automation

Fire Rating

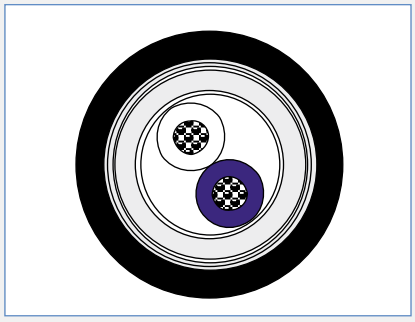
- IEC 60332-1

Ordering Information

P/N	Product Description	P.U
1003580 CS2638200 L432498	2x2x0.8 mm, Building automation cable, LONAK® 2x2x0.8	1000m/drum

LONAK® 2 x 1.3 mm² ARM

Building automation cable



Application

- Fixed indoor installations
- LON cabling
- Building automation

Construction

Conductor	Stranded copper wires, tinned 1.3 mm2 , 7x0.49 mm, Ø 1.47 mm
Insulation	PE, 2.69 mm Ø
Conductor identification	1 x white, 1 x blue
Pair stranding	2 conductors to the pair
Cable lay up	1 pair to the core
Wrapping	1 x PET foil
Rip cord and identification thread	yes
Inner sheath	PVC, grey RAL 7035, Ø 7.0 mm
Wrapping	1 x PET foil
Armouring	2 x galvanized steel tape 15x0.20 mm
Outer sheath	PE, black RAL 9005, Ø 10.3 mm
Outer Diameter	Nom. 10.3 mm
Weight	Nom. 172 kg/km

Mechanical Properties

Operating temperature	- 30°C up to + 70°C
Min. Installation temperature	- 5°C
Minimum bending radius	10 x D
Minimum bending radius (during pulling)	15 x D
Maximum pulling force	130 N

Electrical Properties at 20°C

Loop DC resistance (max.)	28 Ω/km
Insulation resistance (at 500 V, 1 min.)	100 MΩ*km
Mutual capacitance at 800 Hz (max.)	72 nF/km
Velocity factor	0.67
Max. operating voltage DC	75 V
Test voltage conductor/conductor	3.5 kV

Ordering Information

P/N	Product Description	P.U
60013680 (1003581) (L432494)	2x1.3 mm², Building automation cable, LONAK® 2 x 1.3 mm² ARM	1000m/drum

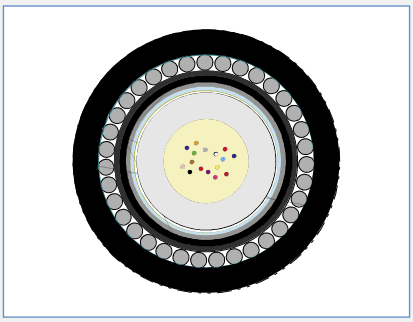
UMNWV

Steel Wire Armoured ALPA™ Uni-tube Optical Cable

MADE IN EU

Features

- **Loose Tube:** The secondary coating consists of a central loose tube made of special thermoplastic plastic. Each fibre in the central tube is uniquely identified by a different colour, for fibre counts above 12 fibres a coloured bundle yarn is used.
- **Cable core:** the cable core is covered with water blocking swellable tape.
- **Moisture Barrier:** The cable is completely covered with an aluminium foil applied longitudinally with an overlap. The aluminium foil is bonded to the inner sheath.
- **1st Inner sheath:** The 1st inner sheath consists of HDPE (high density polyethylene) (Black) compound. (Two ripcords underneath).
- **2nd Inner Sheath:** The 2nd inner sheath consists of PA.
- **Armour:** The armour consists of one layer of galvanized soft steelwires (SWA)
- **Outer sheath:** The cable sheath consists of Flame Retardant PVC compound, resistant to UV, Heat & Oil. (Black)



Application

The cable is especially designed for harsh environments. The multi-layer inner sheath system ALPA™: Aluminium/HDPE/PA (nylon) withstands aggressive constituents and fluids that might occur on (petro)chemical plants. (chemical moisture - barrier). The steel wire armour and the PVC outer sheath make the cable suitable for installation under and above ground.

- The ALPA design provides anti-termite protection.
- The steel wire armour provides rodent protection.

The outer sheath is of a Flame Retardant, Poly Vinyl Chloride (PVC) compound, resistant to Heat & Oil and UV.

Fire Rating

• IEC 60332-1, IEC 60332-3-24

Technical Data

No.of Fibres		1 - 24
Loose Tube- Ø	mm	3.1
1st Inner sheath thickness	mm	1.0
2nd Inner sheath thickness	mm	0.5
Dia over 2nd inner sheath	mm	7.1
Armour SWA thickness	mm	1.0
Dia over SWA armour	mm	9.1
Sheath thickness	mm	1.6
Cable Diameter	mm	12.3
Cable Weight	kg/km	280

Please refer to our General Installation, Safety & Handling recommendations before handling.

Main Characteristics

Test	Standard	Specified value	Acceptance Criteria*
Max. Tension(long term)	IEC 60794-1-2-E1	4000N	Δα ≤ 0.05 dB(MM), no fibre strain
Max. Tension(short term)	IEC 60794-1-2-E1	4800N	Δα ≤ 0.05 dB(MM), no fibre strain
Crush	IEC 60794-1-2-E3	2500N / 100mm, short term	Δα reversible
Impact	IEC 60794-1-2-E4	20 Nm, R=200mm, 3 impacts	Δα ≤ 0.05 dB(MM), no damage
Repeated bending	IEC 60794-1-2-E6	R= 20 x cable Ø,100 cycles	Δα ≤ 0.05 dB(MM), no damage
Cable bend	IEC 60794-1-2-E11	R= 15 x cable Ø, 5 turns,3cycles	Δα ≤ 0.05 dB(MM), no damage
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water=1m	No water leakage after 24 hour, up to inner sheath
UV resistancy	ISO 4892-2		In ISO
Heat & Oil resistancy	IEC 60811	IRM902 ; 4 hrs, 70°C	
Flame retardancy		Reduced flame propagation	In IEC
Single cable test	IEC 60332-1		
Bundle cable test	IEC 60332-3-24 (Cat C)		
Resistance to nitric acid	Draka - Kema	7 mol/l, 6 weeks	No damage to optical fibers
Resistance to hydrocarbon mixture	Draka - Kema	Metyl-etyl-keton, trichloro-ethene, cyclo-hexane, heptane, toluene	No damage to optical fibers

** values for single-mode fibres, all optical measurements performed at 1550 nm*

Min. bending radius	mm	Without Tension 15 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø	
Temperature range	°C	Installation -10 to +50	Transport. & Storage -30 to +70	Operation -30 to +70

Ordering Information

UMNWV SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters UMNWV to denote that it is a UMNWV SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a UMNWV SERIES FO Cable part number:

UMNWV008M1

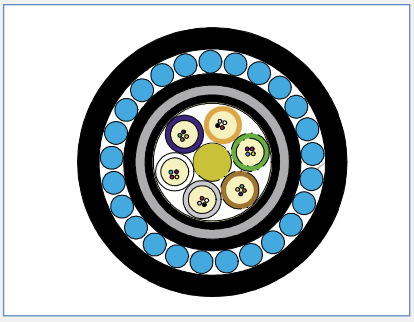
The above example describes an OM1 (62.5um, Orange Sheath) UMNWV SERIES FO Cable, with 8 cores.

UMNWV SERIES	CORE QUANTITY	FIBRE TYPE
UMNWV	XXX	XX
	002 - 2 CORES 004 - 4 CORES 006 - 6 CORES 008 - 8 CORES 012 - 12 CORES 024 - 24 CORES	SM - SINGLEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

SM-LVLVWV

Loose Tube Fibre Optic Cable - Dry Core - Lead Sheath - Steel Wire Armour - FR-PVC Sheaths

MADE IN EU



Application

This cable is especially designed for harsh environments. The steel wire armour and the PVC outer sheath make the cable suitable for installation under and above ground. Swellable water blocking tape over the stranding and water tightness compound within loose tube provide resilient and robust moisture protection to the fibre. Having an outer PVC sheath over an inner lead sheath make this cable relatively flexible, flame retardant, and resistant to chemical solvent , oil , and abrasion.

Fire Rating

- IEC 60332-1, IEC 60332-3-24

Features

- **Central Strength Member (CSM):** glass fiber reinforced plastic rod (FRP), with plastic oversheathing when needed
- **Loose Tube:** thermoplastic material, containing up to 12 fibers and filled with a suitable water tightness compound
- **Filler Elements:** thermoplastic rods, where needed
- **Stranding:** loose tubes (and fillers), SZ stranded around the CSM
- **Cable core:** swellable water blocking tapes are applied over the stranding
- **1st Inner sheath:** Flame retardant PVC (Black)
- **Lead sheath:** lead compound 0,55% antimoon
- **2nd Inner sheath:** Flame retardant PVC (Black)
- **Armour:** one layer of galvanized steel wires
- **Outer sheath:** The outer sheath is of a flame retardant PVC compound

Configuration

No.of Fibres	12	16	24	48	96
No: of tubes/ fillers	2 / 0	4 / 0	4 / 0	4 / 0	8 / 0
Loose Tube / Filler – Ø [mm]	2.1	2.1	2.1	2.4	2.4
CSM – Ø [mm]	2.3	2.3	2.3	2.6	2.6 [4.2]
1st Inner sheath [mm]	1.0	1.0	1.0	1.0	1.0
Lead Sheath [mm]	1.0	1.0	1.0	1.0	1.0
Lead Weight [kg/km]	410	410	410	440	460
2nd Inner sheath [mm]	1.0	1.0	1.0	1.0	1.0
Armor wire [mm]	1.0	1.0	1.0	1.0	1.0
Outer Sheath [mm]	2.0	2.0	2.0	2.0	2.0
Cable Diameter [mm]	19.6	19.6	19.6	20.5	21.9
Cable Weight [kg/km]	980	980	980	1070	1161
Pulling Force Da ≤ 0.05 dB [kN]	7	7	7	8	8

Main Mechanical and Environmental Characteristics

Test	Standard	Specified value	Acceptance Criteria*
Max. Tension(long term)	IEC 60794-1-2-E1	See configuration	Δα ≤ 0.10 dB
Crush	IEC 60794-1-2-E3	4000 N / 100 mm ; reversible	Δα ≤ 0.10 dB
Impact	IEC 60794-1-2-E4	30 Nm, R= 200 mm, 3 spots	Δα ≤ 0.10 dB
Repeated bending	IEC 60794-1-2-E6	R=20x D, 100 cycle	Δα ≤ 0.10 dB
Cable bend	IEC 60794-1-2-E11	R=15x D	Δα ≤ 0.10 dB
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water column=1m	no water leakage in 24h, up to inner sheath
Flame retardancy Single cable test Bundle cable test	IEC 60332-1 IEC 60332-3-24 (Cat C)	Reduced flame propagation, In IEC	In IEC

All optical measurements at 1550 nm.

Temperature Range	Transportation & Storage:	- 30 to + 70°C
Temperature range	Installation:	- 10 to + 50°C
	Operation:	- 30 to + 70°C

Ordering Information

SM-LVLVWV SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters SM-LVLVWV to denote that it is a SM-LVLVWV SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a SM-LVLVWV SERIES FO Cable part number:

SM-LVLVWV012M1

The above example describes an OM1 (62.5um, Orange Sheath) SM-LVLVWV SERIES FO Cable, with 12 cores.

SM-LVLVWV SERIES	CORE QUANTITY	FIBRE TYPE
SM-LVLVWV	XXX	XX
	012 - 12 CORES 016 - 16 CORES 024 - 24 CORES 048 - 48 CORES 096 - 96 CORES	SM - SINGLEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

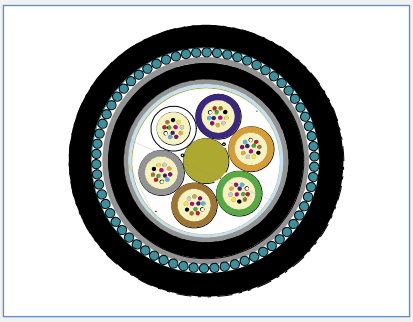
LMNWG

Steel Wire Armoured ALPA™ Optical Cable

MADE IN EU

Features

- **Central Strength Member (CSM):** glass fiber reinforced plastic rod (FRP), with plastic oversheathing when needed.
- **Loose Tube:** The secondary coating consists of a loose tube made of thermoplastic polyester. Each fibre in a tube is uniquely identified by a different colour.
- **Filler Elements:** thermoplastic rods, where needed.
- **Stranding:** loose tubes (and fillers), SZ stranded around the CSM.
- **Cable core:** the cable core is covered with water blocking swellable tape.
- **Aramid yarns:** are applied to give extra tensile performance.
- **Moisture Barrier:** The cable is completely covered with an aluminium foil applied longitudinally with an overlap. The aluminium foil is bonded to the inner sheath.
- **1st Inner sheath:** The 1st inner sheath consists of HDPE (high density polyethylene) (Black)compound. (Two ripcords underneath).
- **2nd Inner Sheath:** The 2nd inner sheath consists of PA (Black)
- **Armour:** The armour consists of one layer of galvanized steel wire (SWA) with a counter spiral binder.
- **Outer sheath:** Flame Retardant Low Smoke, Zero Halogen compound. This compound is UV, Heat & Oil resistant.



Application

The cable is especially designed for harsh environments. The multi-layer inner sheath system ALPA: Aluminium/HDPE/PA (nylon) withstands aggressive constituents and fluids that might occur on (petro)chemical plants. (chemical moisture - barrier). The Steel Wire Armour and FR LSZH sheath make the cable suitable for installation under and above ground.
- The ALPA design provides anti-termite protection.
- The Steel Wire Armour provides rodent protection.

Fire Rating

- IEC 60332-1, IEC 60332-3-22

Technical Data

No.of Fibres		12	24	48	72	120
Number of tubes / fillers		2 / 4	4 / 2	4 / 2	6 / 0	10 / 0
Number of fibres per tube	mm	6			12	
Loose Tube- Ø	mm	2.1			2.4	
Central Strength member	mm	2.3		2.6		3.0/5.8
1st Inner sheath thickness	mm			1.0		
2nd Inner sheath thickness	mm			0.5		
Dia over 2nd inner sheath	mm	10.8		11.7		14.8
Steel Wire thickness	mm			1.0		
Sheath thickness	mm			2.0		
Cable Diameter	mm	16.8		17.7		20.8
Cable Weight	kg/km	465		510		665

Please refer to our General Installation, Safety & Handling recommendations before handling.

Main Characteristics

Test	Standard	Specified value	Acceptance Criteria*
Max. Tension	IEC 60794-1-2-E1	7000 N	Δα ≤ 0.05 dB(MM), no fibre strain
Crush	IEC 60794-1-2-E3	4000N / 100mm, short term	Δα reversible
Impact	IEC 60794-1-2-E4	30 Nm, R=200mm, 3 impacts	Δα ≤ 0.10 dB(MM), no damage
Repeated bending	IEC 60794-1-2-E6	R= 20 x cable Ø,100 cycles	Δα ≤ 0.10 dB(MM), no damage
Cable bend	IEC 60794-1-2-E11	R= 15 x cable Ø, 5 turns,3cycles	Δα ≤ 0.10 dB(MM), no damage
Torsion	IEC 60794-1-2-E7	±180°, L=1m, 10 cycles	No damage
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water=1m	No water leakage after 24 hour, up to inner sheath
UV resistancy	ISO 4892-2	-	In ISO
Halogen free	IEC 60754-1 IEC 60811	Amount of halogen acid pH value	In IEC
Heat & Oil resistancy	-	IRM902 ; 4 hrs, 70°C	In IEC
Flame retardancy Single cable test Bundle cable test	 IEC 60332-1 IEC 60332-3-22 (Cat A)	Reduced flame propagation	
Resistance to nitric acid	Draka - Kema	7 mol/l, 6 weeks	No damage to optical fibers
Resistance to hydrocarbon mixture	Draka - Kema	Metyl-etyl-keton, trichloro-ethene, cyclo-hexane, heptane, toluene	No damage to optical fibers

** values for single-mode fibres, all optical measurements performed at 1550 nm*

Min. bending radius	mm	Without Tension 15 x Cable-Ø	Under Maximum Tension 25 x Cable-Ø	
Temperature range	°C	Installation -10 to +70	Transport. & Storage -40 to +70	Operation -40 to +70

Ordering Information

LMNWG SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters LMNWG to denote that it is a LMNWG SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a LMNWG SERIES FO Cable part number:

LMNWG024M1

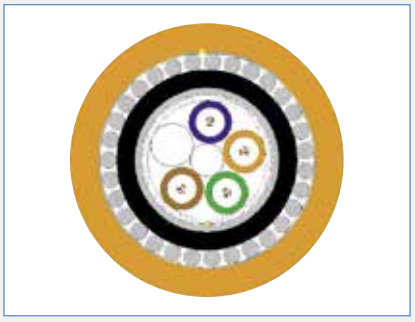
The above example describes an OM1 (62.5um, Orange Sheath) LMNWG SERIES FO Cable, with 24 cores.

LMNWG SERIES	CORE QUANTITY	FIBRE TYPE
LMNWG	XXX	XX
	012 - 12 CORES 024 - 24 CORES 048 - 48 CORES 072 - 72 CORES 120 - 120 CORES	SM - SINGLEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

TF10020

Dry Core, Aluminium Tape Screened, Steel Wire Armoured, LSZH Double Sheathed, Fibre Optic Cable

MADE IN EU



Application

This cable is especially designed for harsh environments. The steel wire armour and the flame retardant zero halogen outer sheath make the cable suitable for installation under and above ground. Its UV stabilized low smoke zero halogen double sheath makes this cable flame retardant and relatively resistant to UV , oil, water and nuclear radiation. This dry core cable employs dual-side copolymer coated aluminum tape and water tightness compound within loose tube to provide resilient and robust moisture protection to the fibre.

Fire Rating

- IEC 60332-1, IEC 60332-24, IEC 61034-2, IEC 60754-1/2

Features

- **Central strength member (CSM):** glass fibre reinforced plastic material, LSZH covered if needed.
- **Tube:** thermoplastic material, containing up to 12 single mode optical fibres and filled with a suitable water tightness compound.
- **Stranding:** The required numbers of elements (tubes or fillers) are SZ stranded around the central strength member.
- **Longitudinal Water Tightness:** dry core
- **Peripheral reinforcement:** glass yarns.
- **Moisture barrier:** both sides copolymer coated aluminiumtape. (Nomaluminium thickness 0.15mm, one rip cord beneath the tape)
- **Inner sheath:** LSZH according to EN 50290-2-27, UV stabilised (Nom thickness: 0.9mm, oxygen index ≥ %25).
- **Armour :** Galvanized steel wire (Nom wire diameter : 0.9 mm, one layer helically polyester tape will applied over the armour)
- **Outer Sheath:** LSZH according to EN 50290-2-27, UV stabilised (one rip cord beneath the sheath, oxygen index ≥ %25)

Technical Data

No.of Fibres		**12**	**24**	**48**	**120**
Design		2x6E+3Fillers	4x6E+1Filler	4x12E+1Filler	10x12E
Loose Tube / Filler - Ø	mm	2.0	2.0	2.3	2.3
CSM/Covered	mm	1.5	1.5	1.8	3.0/5.5
Sheath thickness-nom	mm	1.5	1.5	1.5	1.5
Cable Diameter	mm	14.0	14.0	14.9	19.0
Cable Weight	kg/km	321	321	357	544
Max installation tension	N	6000 Nt			
Min. bending radius	mm	Without Tension 15 x Cable-Ø		Under Maximum Tension 20 x Cable-Ø	
Temperature range	°C	Installation -10->+60;	Transport & Storage -40->+70;	Operation -20->+70;	

Please refer to our General Installation, Safety & Handling recommendations before handling.

Main Characteristics

Test	Standard	Value	Sanction*
Maximum Tension at installation (short term)	IEC 60794-1-2-E1	6000 Nt	ΔI/I fibre ≤ 0.33%, Δα reversible
Tension opération max	IEC 60794-1-2-E1	2000 Nt	no fiber strain(≤ 0.05), Δα ≤ 0.05 dB
Crush	IEC 60794-1-2-E3	2500 N / 100mm, max. 5 min	Δα reversible, after test
Impact	IEC 60794-1-2-E4	10 Nm, 3 impacts, r=300mm	Δα ≤ 0.05 dB (after the test)
Repeated bending	IEC 60794-1-2-E6	R= 20 x cable Ø, 100N, 5 cycles	Δα ≤ 0.05 dB (after the test)
Cable bend	IEC 60794-1-2-E11	R = 15 x cable Ø	Δα ≤ 0.05 dB (after the test)
Temperature range	IEC 60794-1-2-F1	-30 -> +60°C	Δα ≤ 0.05 dB /km
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water=1m	No water leakage after 24 hour (up to inner sheath)

** values for single-mode fibres, all optical measurements performed at 1550 nm*

Ordering Information

TF10020 SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters TF10020 to denote that it is a TF10020 SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a TF10020 SERIES FO Cable part number:

TF10020048M1

The above example describes an OM1 (62.5um, Orange Sheath) TF10020 SERIES FO Cable, with 48 cores.

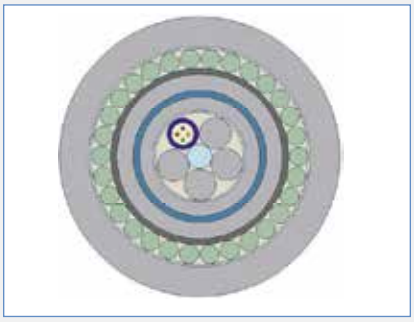
TF10020 SERIES	CORE QUANTITY	FIBRE TYPE
TF10020	XXX	XX
	012 - 12 CORES 024 - 24 CORES 048 - 48 CORES 120 - 120 CORES	SM - SINGLEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

LTFMSMNWM

Heavy Armoured Cable Nylon + LSZH Sheath, Chemical/Corrosive Resistant

Features

- **Central Strength Member (CSM):** glass fibre reinforced plastic material (FRP) with PE coating when needed
- **Tube:** thermoplastic material, containing up tp 12 optical fibres and filled with a suitable water tightness compound
- **Stranding:** The required numbers of elements (tubes or fillers) are SZ stranded around the central strength member
- **Core Wrapping:** polyester tape (jelly filled)
- **Inner Sheath:** MDPE (P) or LSZH (M)
- **Inner Armour:** Corrugated steel tape
- **Middle Sheath:** HDPE (P) or LSZH (M)
- **Nylon sheath:** Black Nylon Polyamide 12 (PA 12)
- **Outer Armour:** Galvanized steel wire. WB jelly filled
- **Outer Sheath:** LSZH flame retardant to IEC 60332-24



Application

This cable is especially designed for harsh environments. The double armour combination of corrugated steel tape and galvanized steel provide superior crush protection to the fibers . The nylon inner sheath provides anti-termite protection and the galvanized steel wire outer sheath provides anti-rodent protection. Water tightness compound within loose tube reinforced by polyster tape and jelly protects the fibers against chemical , corrosion and moisture.

Fire Rating

- IEC 60332-1, IEC 60332-24, IEC 61034-2, IEC 60754-1/2

Technical Data

No.of Fibres		2,4,8	6,12	24,36,48	72	96
Number of fibres per tube		5 x 4	5 x 6	5 x 12	6 x 12	8 x 12
Loose Tube- Ø	mm	2.0 nominal		2.0 nominal		2.0 nominal
CSM/sheath diameter	mm	1.5 nominal		2.2 nominal		2.0/3.5 nominal
Inner sheath thickness	mm	0.8 nominal		0.8 nominal		0.8 nominal
Middle sheath thickness	mm	1.0 nominal		1.0 nominal		1.0 nominal
Nylon sheath thickness	mm	0.4 nominal		0.4 nominal		0.4 nominal
Galvanized steel wire	mm	1.0 nominal		1.0 nominal		1.25 nominal
Outer sheath thickness	mm	1.9 nominal		1.9 nominal		1.9 nominal
Cable Diameter	mm	17.9 nominal		18.6 nominal		20.4 nominal
Cable Weight	kg/km	523			523	709
Max installation tension	N	6000				
Min. bending radius	mm	Without Tension 15 x Cable-Ø		Under Maximum Tension 25 x Cable-Ø		
Temperature range	°C	Installation -5 -> +50;		Transport. & Storage -40 -> +70 ;		Operation -30 -> +70

Please refer to our General Installation, Safety & Handling recommendations before handling.

Main Characteristics

Test	Standard	Specified value	Sanction*
Max. installation tension	IEC 60794-1-2-E1	6000 N	No visible fibre strain, $\Delta\alpha \leq 0.05$ dB
Crush	IEC 60794-1-2-E3	4000N / 100mm	$\Delta\alpha \leq 0.3$ dB(MM), 0.05 dB(SM)
Impact	IEC 60794-1-2-E4	30 Nm, 3 impacts, R=300mm	$\Delta\alpha \leq 0.3$ dB(MM), 0.05 dB(SM)
Temperature Cycling	IEC 60794-1-2-F1	-30 -> +70°C	$\Delta\alpha \leq 0.3$ dB/km(MM), 0.05 dB/km(SM)
Water Penetration	IEC 60794-1-2-F5B	sample=3m, water=1m	No water leakage after 24 hour

** Values for single-mode fibres, all optical measurements performed at 1550 nm*
** Values for multi-mode fibres, all optical measurements performed at 1300 nm*

Ordering Information

UC$^{FIBRE™}$ LTFMSMNWM SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters LTFMSMNWM to denote that it is a UC$^{FIBRE™}$ LTFMSMNWM SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

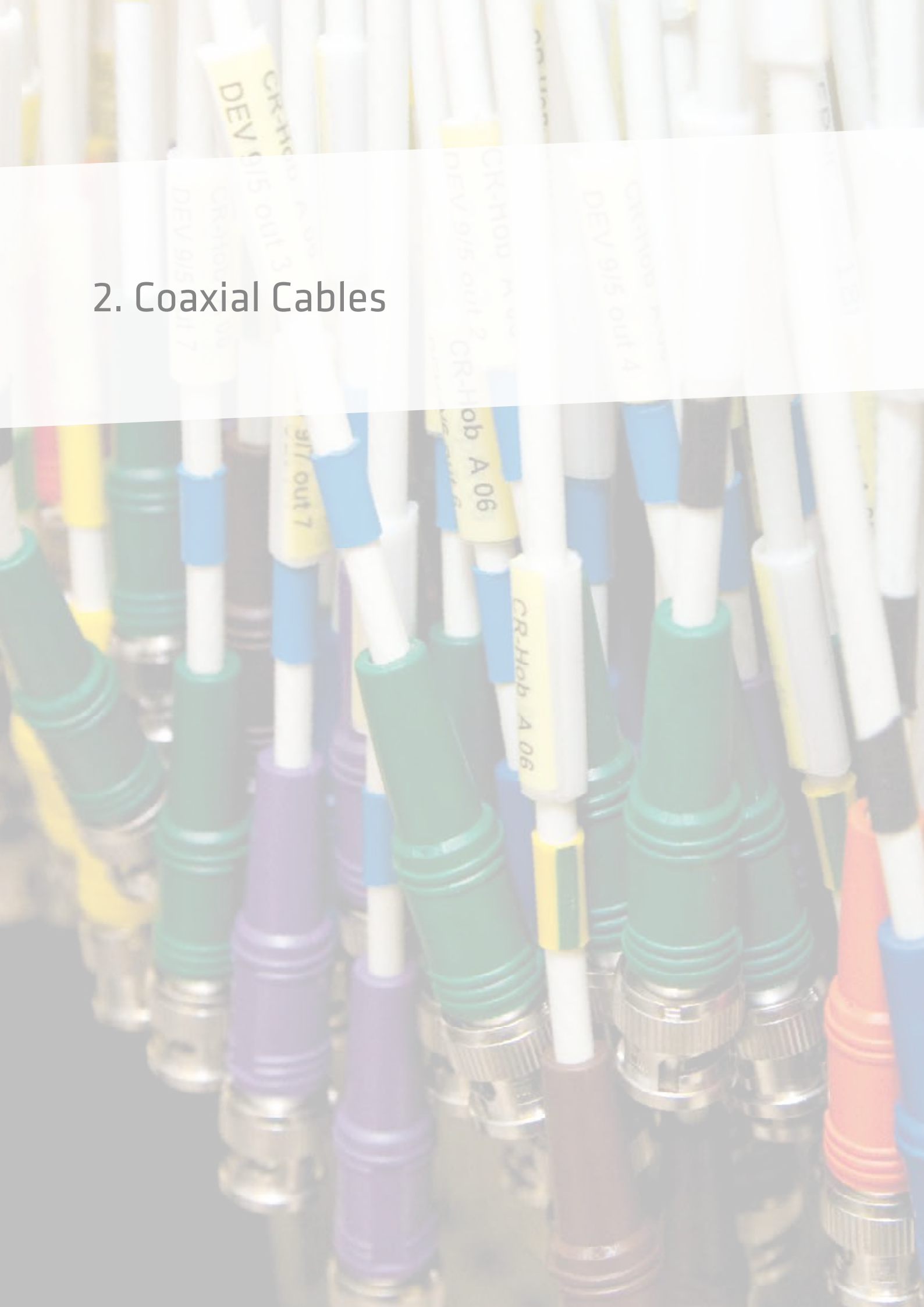
Example of a UCFIBRE™ LTFMSMNWM SERIES FO Cable part number:

LTFMSMNWM008M1

The above example describes an OM1 (62.5um, Orange Sheath) UC$^{FIBRE™}$ LTFMSMNWM SERIES FO Cable, with 8 cores.

LTFMSMNWM SERIES	CORE QUANTITY	FIBRE TYPE
LTFMSMNWM	XXX	XX
	002 - 2 CORES 004 - 4 CORES 006 - 6 CORES 008 - 8 CORES 012 - 12 CORES 024 - 24 CORES 036 - 36 CORES 048 - 48 CORES 072 - 72 CORES 096 - 96 CORES	SM - SINGLEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

2. Coaxial Cables



2. Coaxial Cables

50 Ohm Coaxial Cable, RG58, STC, 95% TCB

Application

Any device that functions as a transmitter or transceiver tends to use 50 Ohm Coaxial Cable. Widely used for radiocommunication and amateur radio, thin Ethernet (10BASE2) and Nuclear Instrumentation Module electronics.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2, MIL-C17

Construction

Material	Detail	mm
Inner Conductor	Stranded Tin Copper (19*32)	0.94
Dielectric	Solid PE	2.90
First Shield	36 AWG Tinned Copper Braid (TCB) 95% coverage	N.A
Jacket	PVC / LSZH	4.93
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	50 ± 3.0 Ohm
Capacitance, Nominal	87 ± 3 pF/m
Velocity of Propagation, %	> 73 %
Return Loss	5 - 1000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG8156	RG58, Stranded TC, 95% Tin Copper Braid, PVC, 50 Ohm	500m/reel
RG8756	RG58, Stranded TC, 95% Tin Copper Braid, PVC CM, 50 Ohm	500m/reel
RG8256	RG58, Stranded TC, 95% Tin Copper Braid, LSZH, 50 Ohm	500m/reel

75 Ohm Coaxial Cable, RG59, CCS, APA, 65% ALB

Application

RG59 75 Ohm coaxial is used to carry baseband video in closed-circuit television. expect to get a distance of about 225m - 305m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	0.81
Dielectric	Foam PE	3.66
First Shield	Aluminum/Polymer/Aluminum (APA) Bonded	N.A
Second Shield	36 AWG Aluminum Braid (ALB) 65% coverage	N.A
Jacket	PVC / PVC CM / LSZH	6.00
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG9175	RG59, CCS, 65% Aluminum Braid, PVC, 75 Ohm	500m/reel
RG9775	RG59, CCS, 65% Aluminum Braid, PVC CM, 75 Ohm	500m/reel
RG9275	RG59, CCS, 65% Aluminum Braid, LSZH, 75 Ohm	500m/reel

75 Ohm Coaxial Cable, RG59, CCS, APA, 60% ALB, APA, 40% ALB

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	0.81
Dielectric	Foam PE	3.66
First Shield	Aluminum/Polymer/Aluminum (APA) Bonded	N.A
Second Shield	36 AWG Aluminum Braid (ALB) 60% coverage	N.A
Third shield	Aluminum/Polymer/Aluminum (APA)	N.A
Quad Shied	36 AWG Aluminum Braid 40% coverage	N.A
Jacket	PVC CMR / LSZH	6.60
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG9570	RG59, CCS, 60% Aluminum Braid, APA, 40% Aluminum Braid, PVC CMR, 75 Ohm	500m/reel
RG9270	RG59, CCS, 60% Aluminum Braid, APA, 40% Aluminum Braid, LSZH, 75 Ohm	500m/reel

Application

RG59 75 Ohm coaxial is used to carry baseband video in closed-circuit television. Expect to get a distance of about 225m - 305m. Steel wire braid provides outdoor protection against harsh handling.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2, IEC 60332-3C(SWB)

75 Ohm Coaxial Cable, RG59 BC, APA, 95% ALB, APA, 95% ALB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	0.81
Dielectric	Foam PE	3.66
First Shield	Aluminium Polymer Aluminium (APA) Bonded	N.A
Second Shield	36 AWG Aluminium Braid (ALB) 95% coverage	N.A
Third Shield	Aluminium Polymer Aluminium (APA) Bonded	N.A
Fourth Shield	36 AWG Tinned Copper Braid 95% coverage	N.A
Outer Jacket	PVC CMR/ LSZH / PE	6.60
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG917A	RG59, BC, 95% Aluminum Braid, APA, 95% Aluminum Braid, PVC CMR, 75 Ohm	500m/reel
RG927A	RG59, BC, 95% Aluminum Braid, APA, 95% Aluminum Braid, LSZH, 75 Ohm	500m/reel
RG967A	RG59, BC, 95% Aluminum Braid, APA, 95% Aluminum Braid, PE, 75 Ohm	500m/reel

Application

RG59 75 Ohm coaxial is used to carry baseband video in closed-circuit television. expect to get a distance of about 225m - 305m.

Suitable for high EMI environments & clearer definition.

Fire Rating

- IEC 60332-1

75 Ohm Coaxial Cable, RG59, CCS, 95% BCB

Application

RG59 75 Ohm coaxial is used to carry baseband video in closed-circuit television. expect to get a distance of about 225m - 305m.

Fire Rating

- IEC 60332-1

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	0.81
Dielectric	Foam PE	3.66
First Shield	36 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Jacket	PVC / PVC CM / LSZH	6.00
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG9171	RG59, CCS, 95% Bare Copper Braid, PVC, 75 Ohm	500m/reel
RG9771	RG59, CCS, 95% Bare Copper Braid, PVC CM, 75 Ohm	500m/reel
RG9271	RG59, CCS, 95% Bare Copper Braid, LSZH, 75 Ohm	500m/reel

75 Ohm Coaxial Cable, RG59 CCS, 95% BCB, SWB Armour

Application

RG59 75 Ohm coaxial is used to carry baseband video in closed-circuit television. Expect to get a distance of about 225m - 305m. Steel wire braid provides outdoor protection against harsh handling.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2, IEC 60332-3C(SWB)

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	0.81
Dielectric	Foam PE	3.66
First Shield	36 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Inner Jacket	PVC / LSZH	6.00
Armour	Steel Wire Braid (SWB)	N.A
Outer Jacket	PVC / LSZH	9.00
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG9171B	RG59, CCS, 95% Bare Copper Braid, PVC, SWB, 75 Ohm, Armoured	500m/reel
RG9271B	RG59, CCS, 95% Bare Copper Braid, LSZH, SWB, 75 Ohm, Armoured	500m/reel

75 Ohm Coaxial Cable, RG6, CCS, APA, 60% ALB

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminum/Polymer/Aluminum (APA) bonded	4.75
Second Shield	34 AWG Aluminum Braid (ALB) 60% coverage	N.A
Jacket	PVC / PVC CM / LSZH	6.93
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6176	RG6, CCS. 60% Aluminum Braid, PVC, 75 Ohm	500m/reel
RG6776	RG6, CCS. 60% Aluminum Braid, PVC CM, 75 Ohm	500m/reel
RG6276	RG6, CCS. 60% Aluminum Braid, LSZH, 75 Ohm	500m/reel

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1

75 Ohm Coaxial Drop Cable, RG6, CCS, APA, 60% ALB

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminum/Polymer/Aluminum (APA) bonded	N.A
Second Shield	34 AWG Aluminum Braid (ALB) 60% coverage	N.A
Jacket	PVC CMR / LSZH / PE	6.93
Messenger	18 AWG Galvanized Steel Wire	N.A
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6576M	RG6 Drop, CCS. 60% Aluminum Braid, PVC CMR, 75 Ohm	500m/reel
RG6276M	RG6 Drop,CCS. 60% Aluminum Braid, LSZH, 75 Ohm	500m/reel
RG6676M	RG6 Drop, CCS. 60% Aluminum Braid, PE, 75 Ohm	500m/reel

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1

75 Ohm Coaxial Cable, RG6, CCS, APA, 90% ALB

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminum/Polymer/Aluminum (APA) Bonded	4.75
Second Shield	34 AWG Aluminum Braid (ALB) 90% coverage	N.A
Jacket	PVC / PVC CM / LSZH	6.93
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6174	RG6, CCS. 90% Aluminum Braid, PVC, 75 Ohm	500m/reel
RG6774	RG6, CCS. 90% Aluminum Braid, PVC CM, 75 Ohm	500m/reel
RG6274	RG6, CCS. 90% Aluminum Braid, LSZH, 75 Ohm	500m/reel

75 Ohm Coaxial Cable, RG6, CCS, APA, 60% ALB, APA, 40% ALB

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Fire Rating

- IEC 60332-1

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminum/Polymer/Aluminum (APA) Bonded	N.A
Second Shield	34 AWG Aluminim Braid (ALB) 60% coverage	N.A
Third Shield	Aluminum/Polymer/Aluminum (APA)	N.A
Fourth Shield	34AWG Aluminum Braid (ALB) 40% coverage	N.A
Jacket	PVC / PVC CM / LSZH	7.54
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6170	RG6, CCS, 60% Aluminum Braid, APA, 40% Aluminum Braid, PVC, 75 Ohm	500m/reel
RG6770	RG6, CCS, 60% Aluminum Braid, APA, 40% Aluminum Braid, PVC CM, 75 Ohm	500m/reel
RG6270	RG6, CCS, 60% Aluminum Braid, APA, 40% Aluminum Braid, LSZH, 75 Ohm	500m/reel

75 Ohm Coaxial Cable, RG6, CU, 60% TCB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminum/Polymer/Aluminum (APA) bonded	N.A
Second Shield	36 AWG Tin Copper Braid (TCB) 60% coverage	N.A
Jacket	PVC / LSZH	6.83
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6179	RG6, BC. 60% Tin Copper Braid, PVC, 75 Ohm	500m/reel
RG6279	RG6, BC. 60% Tin Copper Braid, LSZH, 75 Ohm	500m/reel

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1

75 Ohm Coaxial Cable, RG6 BC, APA, 95% TCB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminium Polymer Aluminium (APA) Bonded	4.75
Second Shield	36 AWG Tin Copper Braid (TCB) 95% coverage	N.A
Outer Jacket	PVC / PVC CM / PVC CMR / LSZH / LSFRZH	6.93
Fire Performance	IEC 60332-1 or IEC 60332-24 (LSFRZH)	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6178	RG6, BC. 95% Tin Copper Braid, PVC, 75 Ohm	500m/reel
RG6778	RG6, BC. 95% Tin Copper Braid, PVC CM, 75 Ohm	500m/reel
RG6578	RG6, BC. 95% Tin Copper Braid, PVC CMR, 75 Ohm	500m/reel
RG6278	RG6, BC. 95% Tin Copper Braid, LSZH, 75 Ohm	500m/reel
RG6478	RG6, BC. 95% Tin Copper Braid, LSFRZH, 75 Ohm	500m/reel

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1

PREMIUM

75 Ohm Coaxial Cable, RG6 BC, APA, 95% TCB, SWB

Application

RG6 75 Ohm coaxial is used for cable television, satellite television and cable modems. Can expect distances of about 305m - 457m. Steel wire braid provides outdoor protection against harsh handling.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2, IEC 60332-3C(SWB)

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	1.02
Dielectric	Foam PE	4.57
First Shield	Aluminium Polymer Aluminium (APA) Bonded	4.75
Second Shield	36 AWG Tin Copper Braid (TCB) 95% coverage	N.A
Inner Jacket	PVC / LSZH	N.A
Armour	Steel Wire Braid (SWB)	N.A
Outer Jacket	PVC / LSZH	6.93
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG6178B	RG6, BC. 95% Tin Copper Braid, PVC, SWB, 75 Ohm, Armoured	500m/reel
RG6278B	RG6, BC. 95% Tin Copper Braid, LSZH, SWB, 75 Ohm, Armoured	500m/reel

75 Ohm Coaxial Cable, RG11, CCS, APA, 60% ALB

Application

RG11 75 Ohm coaxial is ideal if the device being connected is a receiver of some kind. This includes devices such as Satellite and Cable TV Receiver Boxes. Can expect distances of up to 610m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.63
Dielectric	Foam PE	7.11
First Shield	Aluminum/Polymer/Aluminum (APA) bonded	N.A
Second Shield	34 AWG Aluminum Braid (ALB) 60% coverage	N.A
Jacket	PVC CMR / LSZH / PE	10.03
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG1576	RG11, CCS, 60% Aluminum Braid, PVC CMR, 75 Ohm	500m/reel
RG1276	RG11, CCS, 60% Aluminum Braid, LSZH, 75 Ohm	500m/reel
RG1676	RG11, CCS, 60% Aluminum Braid, PE, 75 Ohm	500m/reel

75 Ohm Coaxial Drop Cable, RG11, CCS, APA, 60% ALB

Construction

Material	Detail	mm
Inner Conductor	Copper Clad Steel (CCS)	1.63
Dielectric	Foam PE	7.11
First Shield	Aluminum/Polymer/Aluminum (APA) Bonded	N.A
Second Shield	34 AWG Aluminim Braid (ALB) 60% coverage	N.A
Jacket	PVC CMR / LSZH / PE	10.03
Messenger	14 AWG Galvanized Steel Wire	1.80
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG1576M	RG11, Drop, CCS, 60% Aluminum Braid, PVC CMR, 75 Ohm	500m/reel
RG1276M	RG11, Drop, CCS, 60% Aluminum Braid, LSZH, 75 Ohm	500m/reel
RG1676M	RG11, Drop, CCS, 60% Aluminum Braid, PE, 75 Ohm	500m/reel

Application

RG11 75 Ohm coaxial is ideal if the device being connected is a receiver of some kind. This includes devices such as Satellite and Cable TV Receiver Boxes. Can expect distances of up to 610m.

Suitable for CATV applications.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

75 Ohm Coaxial Cable, RG11 BC, 95% BCB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	1.63
Dielectric	Foam PE	7.11
First Shield	34 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Jacket	PVC / PVC CM / LSZH	10.03
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG1171	RG11, BC. 95% Bare Copper Braid, PVC, 75 Ohm	500m/reel
RG1171	RG11, BC. 95% Bare Copper Braid, PVC CM, 75 Ohm	500m/reel
RG1271	RG11, BC. 95% Bare Copper Braid, LSZH, 75 Ohm	500m/reel

Application

RG11 75 Ohm coaxial is ideal if the device being connected is a receiver of some kind. This includes devices such as Satellite and Cable TV Receiver Boxes. Can expect distances of up to 610m.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

PREMIUM

75 Ohm Coaxial Cable, RG11 BC 95% BCB, SWB

Application

RG11 75 Ohm coaxial is ideal if the device being connected is a receiver of some kind. This includes devices such as Satellite and Cable TV Receiver Boxes. Can expect distances of up to 610m.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	1.63
Dielectric	Foam PE	7.11
First Shield	34 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Inner Jacket	PVC / LSZH	10.03
Armour	Steel Wire Braid (SWB)	N.A
Outer Jacket	PVC / LSZH	13.60
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83%
Return Loss	5 - 1000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG1171B	RG11, BC. 95% Bare Copper Braid, PVC, SWB, 75 Ohm, Armoured	500m/reel
RG1271B	RG11, BC. 95% Bare Copper Braid, LSZH, SWB, 75 Ohm, Armoured	500m/reel

PREMIUM

75 Ohm Coaxial Cable, RG11 BC, APA, 95% BCB

Application

RG11 75 Ohm coaxial is ideal if the device being connected is a receiver of some kind. This includes devices such as Satellite and Cable TV Receiver Boxes. Can expect distances of up to 610m.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Material	Detail	mm
Inner Conductor	Bare Copper (BC)	0.94
Dielectric	Foam PE	2.90
First Shield	Aluminium/Polymer/Aluminuim (APA) Bonded	N.A
Second Shield	34 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Jacket	PVC CMR / LSZH / LSFRZH	4.93
Fire Performance	IEC 60332-1 or IEC 60332-24 (LSFRZH)	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	75 ± 3.0 Ohm
Capacitance, Nominal	52 ± 3 pF/m
Velocity of Propagation, %	> 83 %
Return Loss	5 - 1000 MHz ≥ 20dB 1000 - 3000 MHz ≥ 20dB

Ordering Information

P/N	Product Description	P.U
RG1571	RG11, BC. APA, 95% Bare Copper Braid, PVC CMR, 75 Ohm	500m/reel
RG1271	RG11, BC. APA, 95% Bare Copper Braid, LSZH, 75 Ohm	500m/reel
RG1471	RG11, BC. APA, 95% Bare Copper Braid, LSFRZH, 75 Ohm	500m/reel

50 Ohm Coaxial Cable, RG213 BC, 95% BCB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Stranded Bare Copper (SBC)	7 x 0.75
Dielectric	Solid PE	7.25
First Shield	34 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Jacket	PVC / PVC CM / LSZH	10.03
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	50 ± 3.0 Ohm
Capacitance, Nominal	100 ± 3 pF/m
Velocity of Propagation, %	> 66 %
Maximum Operating Voltage VRMS	3.7 kV
Spark Test	5.0 kV

Ordering Information

P/N	Product Description	P.U
RG3151	RG213, BC. 95% Bare Copper Braid, PVC, 50 Ohm	500m/reel
RG3751	RG213, BC. 95% Bare Copper Braid, PVC CM, 50 Ohm	500m/reel
RG3251	RG213, BC. 95% Bare Copper Braid, LSZH, 50 Ohm	500m/reel

Application

Any device that functions as a transmitter or transceiver tends to use 50 Ohm Coaxial Cable (e.g. radiocommunication and amateur radio, EMC test antenna cables). Typically lower loss than RG58.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1

50 Ohm Coaxial Cable, RG213 BC, 95% BCB, SWB

PREMIUM

Construction

Material	Detail	mm
Inner Conductor	Stranded Bare Copper (SBC)	7 x 0.75
Dielectric	Solid PE	7.25
First Shield	34 AWG Bare Copper Braid (BCB) 95% coverage	N.A
Inner Jacket	PVC / LSZH	10.03
Armour	Steel Wire Braid (SWB)	N.A
Outer Jacket	PVC / LSZH	13.60
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Specification at 20°C

Impedance, Ω	50 ± 3.0 Ohm
Capacitance, Nominal	100 ± 3 pF/m
Velocity of Propagation, %	> 66 %
Maximum Operating Voltage VRMS	3.7 kV
Spark Test	5.0 kV

Ordering Information

P/N	Product Description	P.U
RG3151B	RG213, BC. 95% Bare Copper Braid, PVC, SWB, , 50 Ohm, Armoured	500m/reel
RG3251B	RG213, BC. 95% Bare Copper Braid, LSZH, SWB, , 50 Ohm, Armoured	500m/reel

Application

Any device that functions as a transmitter or transceiver tends to use 50 Ohm Coaxial Cable (e.g. radiocommunication and amateur radio, EMC test antenna cables). Typically lower loss than RG58. Steel wire braid provides outdoor protection against harsh handling.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 60332-3C (SWB)

PREMIUM

50 Ohm Coaxial Cable, RG214 Stranded BC, 94% 97% SCB

Application

Any device that functions as a transmitter or transceiver tends to use 50 Ohm Coaxial Cable. Widely used for industrial and commercial two-way radio frequency applications (including radio, and telecommunications). Used for high-frequency signal transmission.

Suitable for high EMI environments.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Construction

Material	Detail	mm
Inner Conductor	Stranded Bare Copper Braid	7 x 0.75
Dielectric	Solid PE	7.25
First Shield	34 AWG Silver-plated Copper Braid (SCB) 94% coverage	N.A
Second Shield	34 AWG Silver-plated Copper Braid (SCB) 97% coverage	N.A
Jacket	PVC / LSZH	10.80
Fire Performance	IEC 60332-1	N.A
Bending Radius		10 x O.D.

Electrical Characteristics

Impedance, Ω	50 ± 3.0 Ohm
Capacitance, Nominal	101 ± 3 pF/m
Velocity of Propagation, %	> 66 %
Maximum Operating Voltage VRMS	3.7 kV
Spark Test	5.0 kV

Ordering Information

P/N	Product Description	P.U
RG4157	RG214, Stranded BC. 94%/97% Silver Copper Braid, PVC, 50 Ohm	500m/reel
RG4257	RG214, Stranded BC. 94%/97% Silver Copper Braid, LSZH, 50 Ohm	500m/reel

PREMIUM MADE IN EU

Firetuf™ DATA Coaxial

Application

Firetuf™ Data Coax (FDZ_6CU7SS) is designed for sending high frequency or high data rates The FDZ_6CU7SS is capable of withstanding the Fire Test that are currently used to indicate whether a power cable has Circuit Integrity (CI), this does and must include voltage pressure test. This combination offers the system applications designer to consider mission critical systems that require extended working/-monitoring during fire conditions.

Fire Rating

- IEC 60332-1-2, IEC60332.3.24, IEC60332.3.22, IEC60332.3.25, BS5839-1 (clause 26.2e), BS8434-2, BS5839 BSEN 50200 (180 mins), EN50200, EN50399 B2 S1a, IEC 60331-23, IEC 60332-1-2, IEC 60754-2

Construction

Inner Conductor	bare copper wire, diameter 1/0.65± .01 mm
Insulation	PE skin, natural colour, silicone rubber outer insulation 4.65± .1 mm (Patent Protected)
Outer conductor	Glass Tape, copper braid , optical coverage 95%, + second braid , optical coverage 70%
Sheath	LSHR, flame retardant non-corrosive Copolymer Diameter 9.1 ± 0.2 mm
Sheath Colour	Red

Mechanical Properties

Bending radius	without load	5 x Ø Cable
	with load	10 x Ø Cable
Temperature range	during operation	-30°C to +70°C
	during installation	-5°C to +60°C

Electrical Properties at 20°C ± 5°C

Impedance, Ω		75 ± 5
Attenuation at	0,5 MHz	0.65dB/100m
	1 MHz	0.90dB/100m
	5 MHz	2.24dB/100m
	10 MHz	3.35dB/100m
	100 MHz	15.03dB/100m
	300 MHz	32.51dB/100m
Screening Attenuation	30-1000 MHz	> 100dB
	1000 MHz-2000 MHz	> 95dB
	2000 MHz-3000 MHz	> 89dB
Transfer Impedance	5 MHz-30 MHz	≤ 5mΩ/m
Velocity Ratio		61.4%
DC Resistance	-	-
Inner Conductor		55.3Ω/km
Outer Conductor		3.7Ω/km
Return Loss	5 - 1000 MHz ≥ 22dB	
Mutual Capacitance	76pF/m	
Electrical Strength (1 Min.)	Dielectric	2kV d.c.
	Sheath	3.75kV d.c.

Ordering Information

P/N	Product Description	P.U
60017668	FTZ_6CU7SS Coax	500m/drum

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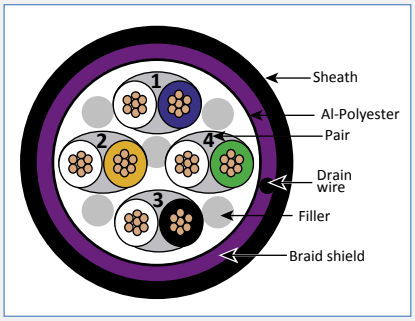
EIA-485 22 & 24AWG LSZH

Serial Data Communication Cable



Application

For multidropped, medium-speed, serial data communication in electrically noisy industrial environments.
Application includes industrial networks using RS-485/RS-422 transcievers :
- RS-422 systems for Process Automation (chemicals, brewing, paper mills), factory automation (autos, metal fabrication), HVAC, security, motor control and motion control.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Optional

- PVC / PE

Construction

Conductor	Stranded Tinned Copper
Insulation	HD-PE
Colour	Pair 1: 1 x white, 1 x blue Pair 2: 1 x white, 1 x orange Pair 3: 1 x white, 1 x black Pair 4: 1 x green
1st screen	1 x AL-Polyester Wrap, overlapping >= 25 %
Drain wire	Stranded Tinned Copper
Braid Shield	Tinned copper
Braid Shield Coverage	≥85%
Sheath	LSZH
Sheath colour	Black

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Conductor Ø mm	0.77				0.61			
Insulation Ø mm	2.0 ± 0.2				1.8 ± 0.08			
Drain wire Ø mm	7 *0.254				7 *0.254			
Braid shield	16*8* 0.12mm	16*10* 0.12mm	16*13* 0.12mm	16*15* 0.12mm	16*7* 0.12mm	16*8* 0.12mm	16*12* 0.12mm	16*13* 0.12mm
Sheath Ø mm	6.5	8.2	9.5	11.0	6.3	8.0	9.2	10.2

Electrical Specification at 20°C

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Conductor resistance	≤ 59 Ω/km				≤ 94.2 Ω/km			
Rated Voltage	300 V							

Mechanical Properties

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Rated temperature	+80°C							

Ordering Information

EIA-485 22 & 24 AWG part numbers are made up using the table below.

The part number starts with 48 to denote that it is an EIA-485 cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of an EIA-485 part number -
48422L

The above example describes an EIA-485 cable with 4 pairing, 22 AWG. Sheath type LSZH.

EIA - 485	PAIRING	AWG	SHEATH
48	X	XX	X
	1 - 1 Pair 2 - 2 Pair 4 - 4 Pair	22 -22 AWG 24 -24 AWG	(nil) - PVC L- LSZH P - PE

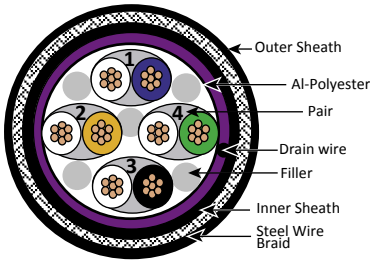
EIA-485 22&24 AWG SWB LSZH

Serial Data Communication Cable, Armoured

Construction

Conductor	Stranded Tinned Copper
Insulation	HD-PE
Colour	Pair 1: 1 x white, 1 x blue Pair 2: 1 x white, 1 x orange Pair 3: 1 x white, 1 x black Pair 4: 1 x green
1st screen	1 x AL-Polyester Wrap, overlapping >= 25 %
Drain wire	Stranded Tinned Copper
Braid Shield	Tinned copper ; coverage ≥85%
Inner Sheath	PVC or LSZH
Braid Armour	Galvanized Steel Wire Braid ; >85%
Outer Sheath	LSZH

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Conductor Ø mm	0.77				0.61			
Insulation Ø mm	2.0 ± 0.2				1.8 ± 0.08			
Drain wire Ø mm	7 *0.254				7 *0.254			
Braid shield	16*8* 0.12mm	16*10* 0.12mm	16*13* 0.12mm	16*15* 0.12mm	16*7* 0.12mm	16*8* 0.12mm	16*12* 0.12mm	16*13* 0.12mm
Inner Sheath Ø mm	6.5	8.2	9.5	11.0	6.3	8.0	9.2	10.2
Braid Armour Ø mm	7.4	9.4	11.0	12.8	7.5	9.6	10.9	12.0
Outer Sheath Ø mm	11.1	13.0	14.7	16.7	10.8	13.1	14.1	12.5



Application

For multidropped, medium-speed, serial data communication in electrically noisy industrial environments.
Application includes industrial networks using RS-485/RS-422 transcievers:
- RS-422 systems for Process Automation (chemicals, brewing, paper mills), factory automation (autos, metal fabrication), HVAC, security, motor control and motion control.
- Suitable for outdoor installation due to steel wire braiding.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Optional

- PVC / PE

Electrical Specification at 20°C

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Conductor resistance	≤ 59 Ω/km				≤ 94.2 Ω/km			
Rated Voltage	300 V							

Mechanical Properties

AWG / Pair	22 / 1P	22 / 2P	22 / 3P	22 / 4P	24 / 1P	24 / 2P	24 / 3P	24 / 4P
Rated temperature	+80°C							

Ordering Information

EIA-485 22 & 24 AWG SWB part numbers are made up using the table below.

The part number starts with 48 to denote that it is an EIA-485 cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. The following letter describes the sheath type and the alphabet at the end shows that this is a steel wire braided cable.

Example of an EIA-485 SWB part number -
48422LB

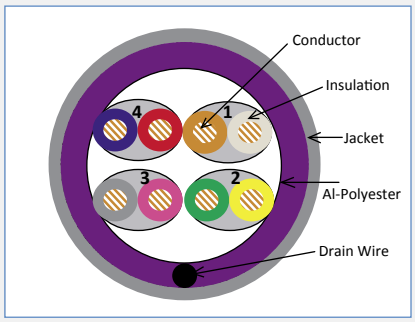
The above example describes an EIA-485 SWB cable with 4 pairing, 22 AWG. Sheath type LSZH, SWB.

EIA - 485	PAIRING	AWG	SHEATH	OUTER JACKET
48	X	XX	X	X
	1 - 1 Pair 2 - 2 Pair 4 - 4 Pair	22 -22 AWG 24 -24 AWG	(nil) - PVC L - LSZH P - PE	B - SWB

3.2 Screened Control Cable

UL 2464 Overall Screen 16-24AWG PVC

Overall Screened Data Control Cable



Application

For installation requiring flexible connector cable to fulfill measuring, controls & command applications ie Computer Interconnection, Data Transmission, Control Circuits, Industrial Equipment Control, suitable for EIA RS-232 and RS-422 applications.

Optional

- LSZH Gray Colour

Technical Details

Conductor	Fully annealed stranded tinned copper per ASTM B-33
Operating Voltage	300V
Insulation	Premium grade SR-PVC
Overall diameter (±0.2mm)	4.6 to 6.2 nominal
Insulation Dia. (±0.2mm)	1.1 to 2.1 nominal
Twist(Direction)	S
Drain wire(Construction,mm)	7/0.254mm Stranded Tinned Copper
Assembly	Pairs + Drain wire
Al-Mylar Wrap(overlapping,%)	≥25%
Jacket	PVC Gray Colour
Insulation colour	White/Brown, Green/Yellow, Gray/Pink, Blue/Red
Rated Temperature	+80°C

Cable Dimension

Conductor Size	DC Resistance @ 20°C (Ω/km)	No of Pairs	OD (mm) ± 5%
16 AWG	<= 14.50	1 Pair	6.50
	<= 14.50	2 Pairs	9.00
	<= 14.50	3 Pairs	9.60
	<= 87.0	4 Pairs	11.0
18 AWG	<= 23.60	1 Pair	5.60
	<= 23.60	2 Pairs	8.0
	<= 23.60	3 Pairs	8.2
	<= 23.60	4 Pairs	10.0
20 AWG	<= 36.0	1 Pair	5.00
	<= 36.0	2 Pairs	6.40
	<= 36.0	3 Pairs	7.70
	<= 36.0	4 Pairs	8.00
22 AWG	<= 56.0	1 Pair	4.60
	<= 56.0	2 Pairs	5.50
	<= 56.0	3 Pairs	6.40
	<= 56.0	4 Pairs	7.00
24 AWG	<= 86.60	1 Pair	4.00
	<= 86.60	2 Pairs	5.00
	<= 86.60	3 Pairs	5.80
	<= 86.60	4 Pairs	6.70

Ordering Information

UL 2464 16-24 AWG part numbers are made up using the table below.

The part number starts with 24 to denote that it is an UL 2464 cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of an UL 2464 part number -
24318L

The above example describes an UL 2464 cable with 3 pairing, 18 AWG. Sheath type LSZH.

UL 2464	PAIRING	AWG	SHEATH
24	X	XX	X
	1 - 1 Pair 2 - 2 Pair 3 - 3 Pair 4 - 4 Pair	16 - 16 AWG 18 - 18 AWG 20 - 20 AWG 22 - 22 AWG 24 - 24 AWG	(nil) - PVC L- LSZH

UL 2464 OVERALL SCREEN 16-24AWG SWB LSZH

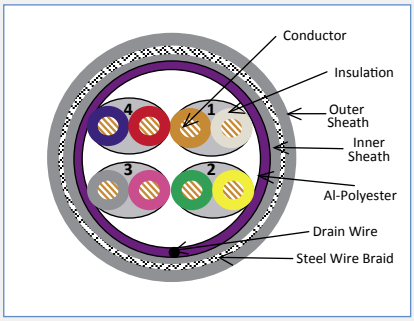
Overall Screened Data Control Cable, Armoured

Technical Details

Conductor	Fully annealed stranded tinned copper per ASTM B-33
Operating Voltage	300V
Insulation	Premium grade SR-PVC
Insulation colour	White/Brown, Green/Yellow, Gray/Pink, Blue/Red
Insulation Dia. (±0.2mm)	1.1 to 2.1 nominal
Twist(Direction)	S
Drain wire(Construction,mm)	7/0.254mm Stranded Tinned Copper
Assembly	Pairs + Drain wire
Al-Mylar Wrap(overlapping,%)	≥ 25%
Inner Sheath	LSZH Gray Colour
Braid Armour	Galvanized Steel Wire Braid , >85%
Outer Sheath	LSZH Gray Colour
Rated Temperature	+80°C

Cable Dimension

Conductor Size	DC Resistance @ 20°C (Ω/km)	No of Pairs	Inner Sheath (mm) ± 5%	Outer Sheath over Armour Braid (mm) + 5%
16 AWG	<= 14.50	1 Pair	6.50	8.00
	<= 14.50	2 Pairs	9.00	10.60
	<= 14.50	3 Pairs	9.60	11.30
	<= 87.0	4 Pairs	11.0	12.80
18 AWG	<= 23.60	1 Pair	5.60	7.10
	<= 23.60	2 Pairs	8.0	9.60
	<= 23.60	3 Pairs	8.2	9.90
	<= 23.60	4 Pairs	10.0	11.80
20 AWG	<= 36.0	1 Pair	5.00	6.50
	<= 36.0	2 Pairs	6.40	8.00
	<= 36.0	3 Pairs	7.70	9.40
	<= 36.0	4 Pairs	8.00	9.80
22 AWG	<= 56.0	1 Pair	4.60	6.10
	<= 56.0	2 Pairs	5.50	7.10
	<= 56.0	3 Pairs	6.40	8.10
	<= 56.0	4 Pairs	7.00	8.80
24 AWG	<= 86.60	1 Pair	4.00	5.50
	<= 86.60	2 Pairs	5.00	6.60
	<= 86.60	3 Pairs	5.80	7.50
	<= 86.60	4 Pairs	6.70	8.50



Application

For installation requiring flexible connector cable to fulfill measuring, controls & command applications ie Computer Interconnection, Data Transmission, Control Circuits, Industrial Equipment Control, suitable for EIA RS-232 and RS-422 applications. Steel wire braid provides outdoor protection against harsh handling.

Optional

- PVC Gray Colour

Ordering Information

UL 2464 16-24 AWG SWB part numbers are made up using the table below.

The part number starts with 24 to denote that it is an UL 2464 cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. The following letter describes the sheath type and the alphabet at the end shows that this is a steel wire braided cable.

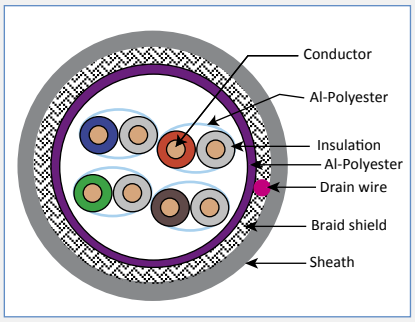
Example of an UL 2464 SWB part number -
24220LB

The above example describes an UL 2464 cable with 2 pairing, 20 AWG. Sheath type LSZH, SWB.

UL 2464	PAIRING	AWG	SHEATH	OUTER JACKET
24	X	XX	X	X
	1 - 1 Pair 2 - 2 Pair 3 - 3 Pair 4 - 4 Pair	16 - 16 AWG 18 - 18 AWG 20 - 20 AWG 22 - 22 AWG 24 - 24 AWG	(nil) - PVC L- LSZH	B- SWB

UL 2919 INDIV-PAIR SCREEN 18-24AWG LSZH

Individual Pair Screened and Overall Screened Control Cable



Application

Multipairs individual shielded in sensitive EMI environment for general data control & BUS applications, including RS-422 and RS-485.

Can be used for Security & Control Application. Designed to pass UC 1666 burn test.

Suitable for high EMI environments.

Optional:

- PVC / Steel Wire Braid
- High pair counts upon request.

Technical Details

Conductor	Stranded Tinned Copper , AWG 18, diameter 16 x 0.254 mm
Operating Voltage	300V
Insulation	HD-PE
Insulation colour	Pair 1: 1 x white, 1 x Blue Pair 2 : 1 x white , 1 x orange Pair 3 : 1 x white , 1 x green Pair 4 : 1 x white , 1 x brown
Overall screen	Individual Pair Screen 1 x AL-Polyester Wrap, overlapping >= 25 %
Drain wire	7/0.254mm Stranded Tinned Copper
Coverage	Braid Shield coverage ≥85%
Sheath	LSZH
Sheath colour	Grey
Rated temperature	+80°C

Cable Dimension

Conductor Size	DC Resistance @ 20°C (Ω/km)	No. of Pairs	Insulation Diameter (MM)	Braid Shield %	OD (mm) ± 5%
16 AWG	<= 14.6	1 Pair	**2.7 ± 0.2**	16 / 12 / 0.12	8.5
	<= 14.6	2 Pairs	**2.7 ± 0.2**	16 / 16 / 0.12	11.5
	<= 14.6	3 Pairs	**2.7 ± 0.2**	16 / 18 / 0.12	12.5
18 AWG	<= 23.2	1 Pair	**2.4 ± 0.2**	16 / 11 / 0.12	7.5
	<= 23.2	2 Pairs	**2.4 ± 0.2**	16 / 14 / 0.12	10.4
	<= 23.2	3 Pairs	**2.4 ± 0.2**	16 / 16 / 0.12	11.2
	<= 23.2	4 Pairs	**2.4 ± 0.2**	16 / 18 / 0.12	13.0
20 AWG	<= 36.7	1 Pair	**2.4 ± 0.2**	16 / 10 / 0.12	7.0
	<= 36.7	2 Pairs	**2.4 ± 0.2**	16 / 13 / 0.12	9.5
	<= 36.7	3 Pairs	**2.4 ± 0.2**	16 / 12 / 0.12	10.3
	<= 36.7	4 Pairs	**2.4 ± 0.2**	16 / 16 / 0.12	11.8
22 AWG	<= 59.4	1 Pair	**2.0 ± 0.2**	16 / 09 / 0.12	6.5
	<= 59.4	2 Pairs	**2.0 ± 0.2**	16 / 13 / 0.12	8.7
	<= 59.4	3 Pairs	**2.0 ± 0.2**	16 / 14 / 0.12	9.8
	<= 59.4	4 Pairs	**2.0 ± 0.2**	16 / 15 / 0.12	11.0
24 AWG	<= 94.2	1 Pair	**1.8 ± 0.2**	16 / 08 / 0.12	5.9
	<= 94.2	2 Pairs	**1.8 ± 0.2**	16 / 13 / 0.12	8.7
	<= 94.2	3 Pairs	**1.8 ± 0.2**	16 / 13 / 0.12	9.2
	<= 94.2	4 Pairs	**1.8 ± 0.2**	16 / 15 / 0.12	10.2

Ordering Information

UL 2919 18-24 AWG part numbers are made up using the table below.

The part number starts with 24 to denote that it is a UL 2919 cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of a UL 2919 part number -
29418L

The above example describes an UL 2919 cable with 4 pairing, 18 AWG. Sheath type LSZH.

UL 2919	PAIRING	AWG	SHEATH
29	X	XX	X
	1 - 1 Pair 2 - 2 Pair 3 - 3 Pair 4 - 4 Pair	16 - 16 AWG 18 - 18 AWG 20 - 20 AWG 22 - 22 AWG 24 - 24 AWG	(nil) - PVC L- LSZH

Security & Comms Cable, SACU Series

Unshielded, PVC CMR, PE, LSZH

Application

Security, Intercom, Broadcast, Sound, Audio Systems

Fire Rating

PVC IEC 60332-1, NEC A T SPLR, CMR
LSZH IEC 61034, IEC 60754-1 & 2, IEC 60332-1

Construction

Conductor	Grade A Bare Copper, Stranded
Operating Voltage	300V
Insulation	PVC
Insulation colour	1 - Black, 2 - Red, 3 - White, 4 - Green
Ripcord	Available
Sheath colour	PVC-CMR or LSZH Grey; PE Black
Rated temperature	Up to 75°C

Cable Dimension

Conductor Size	Conductor Diameter (mm)	No. of Pairs	Insulation Diameter (MM)	OD (mm)
12 AWG	19*0.47	1 Pair	**0.3**	6.95
		2 Pairs		7.60
14 AWG	19*0.37	1 Pair	**0.3**	6.08
		2 Pairs		7.15
16 AWG	19*0.29	1 Pair	**0.25**	4.81
		2 Pairs		5.63
18 AWG	7*0.39	1 Pair	**0.25**	4.23
		2 Pairs		4.92
20 AWG	7*0.31	1 Pair	**0.20**	3.65
		2 Pairs		4.23
22 AWG	7*0.25	1 Pair	**0.20**	3.29
		2 Pairs		3.80

Ordering Information

SACU 12-22 AWG part numbers are made up using the table below.

The part number starts with SACU to denote that it is a SACU cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of a SACU part number -
SACU2P16E

The above example describes an SACU cable with 2 pairing, 16 AWG. Sheath type PE.

SACU	PAIRING	AWG	SHEATH
SACU	X	XX	X
	1P - 1 Pair 2P - 2 Pairs	12 - 12 AWG 14 - 14 AWG 16 - 16 AWG 18 - 18 AWG 20 - 20 AWG 22 - 22 AWG	(nil) - PVC-CMR E - PE L- LSZH

Security & Comms Cable, SACS Series

Shielded, PVC CMR, PE, LSZH

Application

Security, Intercom, Broadcast, Sound, Audio Systems

Fire Rating

PVC IEC 60332-1, NEC A T SPLR, CMR
LSZH IEC 61034, IEC 60754-1 & 2, IEC 60332-1

Construction

Conductor	Grade A Bare Copper, Stranded
Operating Voltage	300V
Insulation	PVC
Insulation colour	1 - Black, 2 - Red, 3 - White, 4 - Green
1st Screen	100% Overall Aluminum Foil Screen
Sheath	PVC-CMR, PE or LSZH with Ripcord
Sheath colour	PVC-CMR Grey or LSZH Grey; PE Black
Rated temperature	Up to 75°C

Cable Dimension

Conductor Size	Conductor Diameter (mm)	No. of Pairs	Insulation Diameter (MM)	OD (mm)
12 AWG	19*0.47	1 Pair	**0.3**	7.15
		2 Pairs		7.80
14 AWG	19*0.37	1 Pair	**0.3**	6.19
		2 Pairs		7.56
16 AWG	19*0.29	1 Pair	**0.25**	4.92
		2 Pairs		5.73
18 AWG	7*0.39	1 Pair	**0.25**	4.33
		2 Pairs		5.02
20 AWG	7*0.31	1 Pair	**0.20**	3.72
		2 Pairs		4.31
22 AWG	7*0.25	1 Pair	**0.20**	3.34
		2 Pairs		3.90

Ordering Information

SACS 12-22 AWG part numbers are made up using the table below.

The part number starts with SACS to denote that it is a SACS cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of a SACS part number -
SACS1P22L

The above example describes an SACS cable with 1 pairing, 22 AWG. Sheath type LSZH.

SACS	PAIRING	AWG	SHEATH
SACS	X	XX	X
	1P- 1 Pair 2P - 2 Pairs	12 - 12 AWG 14 - 14 AWG 16 - 16 AWG 18 - 18 AWG 20 - 20 AWG 22 - 22 AWG	(nil) - PVC-CMR E - PE L- LSZH

Security & Comms Cable, FACU Series

Unshielded, PVC CMR, PE, LSZH

Construction

Conductor	Grade A Bare Copper, Solid
Operating Voltage	300V
Insulation	PVC
Insulation colour	1 - Black, 2 - Red, 3 - Brown, 4 - Blue
Ripcord	Available
Sheath colour	PVC-CMR or LSZH RED ; PE Black
Rated temperature	Up to 75°C

Cable Dimension

Conductor Size	Conductor Diameter (mm)	No. of Pairs	Insulation Diameter (MM)	OD (mm)
12 AWG	2.05	1 Pair	**0.3**	6.34
		2 Pairs		6.85
14 AWG	1.63	1 Pair	**0.3**	5.55
		2 Pairs		6.52
16 AWG	1.29	1 Pair	**0.25**	4.56
		2 Pairs		5.25
18 AWG	1.02	1 Pair	**0.25**	3.98
		2 Pairs		4.61

Application

Widely used in indoor fire alarm or intercom system requiring flame retardancy properties.

Fire Rating

PVC IEC 60332-1, NEC A T SPLR, CMR
LSZH IEC 61034, IEC 60754-1 & 2, IEC 60332-1

Ordering Information

FACU 12-18 AWG part numbers are made up using the table below.

The part number starts with FACU to denote that it is a FACU cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of a FACU part number -
FACU2P12C

The above example describes an FACU cable with 2 pairing, 12 AWG. Sheath type PVC-CMR.

FACU	PAIRING	AWG	SHEATH
FACU	X	XX	X
	1P - 1 Pair 2P - 2 Pairs	12 - 12 AWG 14 - 14 AWG 16 - 16 AWG 18 - 18 AWG	C - PVC-CMR E - PE L- LSZH

Security & Comms Cable, FACS Series

Shielded, PVC CMR, PE, LSZH

Application

Widely used in indoor fire alarm or intercom system requiring flame retardancy properties.

Fire Rating

PVC IEC 60332-1, NEC A T SPLR, CMR
LSZH IEC 61034, IEC 60754-1 & 2, IEC 60332-1

Construction

Conductor	Grade A Bare Copper, Solid
Operating Voltage	300V
Insulation	PVC
Insulation colour	1 - Black, 2 - Red, 3 - Brown, 4 - Blue
1st Screen	100% Overall Aluminum Foil Screen
Sheath	PVC-CMR, PE or LSZH with Ripcord
Sheath colour	PVC-CMR or LSZH RED ; PE Black
Rated temperature	Up to 75°C

Cable Dimension

Conductor Size	Conductor Diameter (mm)	No. of Pairs	Insulation Diameter (MM)	OD (mm)
12 AWG	2.05	1 Pair	**0.3**	6.44
		2 Pairs		7.05
14 AWG	1.63	1 Pair	**0.3**	5.65
		2 Pairs		6.62
16 AWG	1.29	1 Pair	**0.25**	4.66
		2 Pairs		5.35
18 AWG	1.02	1 Pair	**0.25**	4.08
		2 Pairs		4.71

Ordering Information

FACS 12-18 AWG part numbers are made up using the table below.

The part number starts with FACS to denote that it is a FACS cable. The following number shows the number of pairing and the last 2 numbers signifies the AWG. Any letter behind would describe the sheath type.

Example of a FACS part number -
FACS1P18L

The above example describes an FACS cable with 1 pairing, 18 AWG. Sheath type LSZH.

FACS	PAIRING	AWG	SHEATH
FACS	X	XX	X
	1P - 1 Pair 2P - 2 Pairs	12 - 12 AWG 14 - 14 AWG 16 - 16 AWG 18 - 18 AWG	C - PVC-CMR E - PE L- LSZH

MAX-FOH™ Flexible Speaker Cable, PAGA Series

Unshielded Public Address General Alarm, Data Cable, Fire Resistance

Construction

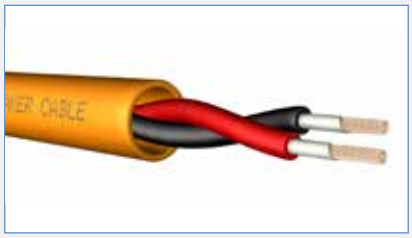
Conductor	Grade A Copper specially protected by fire barrier tape to ensure circuit
Construction	integrity in fire situations.
Core Insulation	Twisted pair for better signal transmission
Outer Sheath	High temperature resistance PE
	LSZH in accordance to IEC 61034, IEC 60754-1 & 2.

Main Characteristics

Nominal overall diameter	mm	8.0 (±0.5)
Nominal weight (completed cable)	Kg/km	66
Min bending radius	mm	60
Max pulling tension	kgf	21
Max conductor resistance @ 20°C	Ω/km	12.1
Min insulation resistance @ 20°C	MΩ/km	2000
Dielectric withstand test	kV/min	1/1

Technical Data

Conductor material	mm	Plain annealed copper wire to IEC
Max operating temperature	°C	90
Conductor shape	-	Circular stranded
Insulation	-	Cross-linked PE, XLPE
Core Colour	mm	Black & White OR Black & Red



Application

Most widely used fire resistance speaker & Audio/Motor control cables, which is highly flexible due to the unique tubing design. Draka MAX-FOH™ flexible speaker cables meets the stringent BS 6387 fire performance standards and can be used in all critical Public Address General Alarm Systems.

Fire Rating

Generally to: ISO/IEC 11801: 95, IEC 61156, EN 50173:95; EN 50288-1, BS 6387

Ordering Information

P/N	Product Description	P.U
PAGA1P15	MAXFOH™ FlexiTube, 1Pr x 1.5mm², PAGA Fire Res, BS 6387, 60331, LSZH, Orange	500m/drum
PAGA1P25	MAXFOH™ FlexiTube, 1Pr x 2.5mm², PAGA Fire Res, BS 6387, 60331, LSZH, Orange	500m/drum
PAGA1P40	MAXFOH™ FlexiTube, 1Pr x 4.0mm², PAGA Fire Res, BS 6387, 60331, LSZH, Orange	500m/drum
PAGA2C15	MAXFOH™ FlexiTube, 2C x 1.5mm², PAGA Fire Res, BS 6387, 60331, LSZH, Orange	500m/drum
PAGA2C25	MAXFOH™ FlexiTube, 2C x 2.5mm², PAGA Fire Res, BS 6387, 60331, LSZH, Orange	500m/drum

MAX-FOH™ Flexible Speaker Cable, PAGAS Series

Shielded Public Address General Alarm, Data Cable, Fire Resistance

Application

Most widely used fire resistance speaker & Audio/Motor control cables, which is highly flexible due to the unique tubing design. Draka MAX-FOH™ flexible speaker cables meets the stringent BS 6387 fire performance standards and can be used in all critical Public Address General Alarm Systems.

Fire Rating

Generally to: ISO/IEC 11801: 95, IEC 61156, EN 50173:95; EN 50288-1, BS 6387

Construction

Conductor	Grade A Copper specially protected by fire barrier tape to ensure circuit
Construction	integrity in fire situations.
Core Insulation	Twisted pair for better signal transmission
Overall Screen	Aluminium Foil
Outer Sheath	High temperature resistance PE
	LSZH in accordance to IEC 61034, IEC 60754-1 & 2.

Main Characteristics

Nominal overall diameter	mm	8.0 (±0.5)
Nominal weight (completed cable)	Kg/km	66
Min bending radius	mm	60
Max pulling tension	kgf	21
Max conductor resistance @ 20°C	Ω/km	12.1
Min insulation resistance @ 20°C	MΩ/km	2000
Dielectric withstand test	kV/min	1/1

Technical Data

Conductor material	mm	Plain annealed copper wire to IEC
Max operating temperature	°C	90
Conductor shape	-	Circular stranded
Insulation	-	Cross-linked PE, XLPE
Core Colour	mm	Black & White OR Black & Red

Ordering Information

P/N	Product Description	P.U
PAGAS1P15	MAXFOH™ FlexiTube, 1Pr x 1.5mm2, PAGA Fire Res, Overall Screened, BS 6387, 60331, LSZH, Orange	500m/drum
PAGAS1P25	MAXFOH™ FlexiTube, 1Pr x 2.5mm2, PAGA Fire Res, Overall Screened, BS 6387, 60331, LSZH, Orange	500m/drum
PAGAS1P40	MAXFOH™ FlexiTube, 1Pr x 4.0mm2, PAGA Fire Res, Overall Screened, BS 6387, 60331, LSZH, Orange	500m/drum

IE Firetuf™ DATA 1P, 2P or 4P LSZH-FR

MADE IN EU

IE SF/UTP 4x2xAWG22/1 cable with circuit integrity behaviour

Construction

Conductor	bare copper wire, Ø 0.65 mm (AWG 22)
Insulation	PE/Sil Rbr, Ø 1.7 mm
Twisting	2 cores to the pair
Cable lay up	1, 2 or 4 pairs to the core
Fire protection wrapping	glass tape
Screen	copper braid, tinned
Sheath	halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø 10.5 mm
Colour	red RAL 3000
Outer Diameter	Nom. 6.8(1 Pair) – 10.5 (4 Pair) mm
Weight	Nom. 48(1 Pair) – 122 (4 Pair) kg/km
Tensile force N	100

Mechanical Properties

Bending radius	without load	≥ 42 mm
	with load	≥ 84 mm
Temperature range	during operation	-20°C to + 60°C
	during installation	0°C to + 50°C

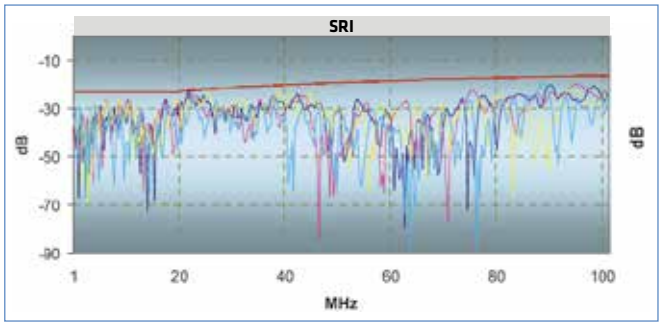
Fire Tests BC 5839: 2002 & IEC60331

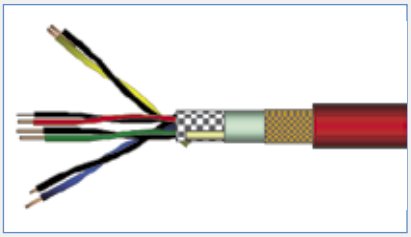
BS5839 enhanced 3 in 1	passed
Continued Data Operation @ 950°	> 2 Hours
BS6387	> 3 Hours
BS EN 50200 (IEC60331)	> 3 Hours

Electrical Properties at 20°C ± 5°C

Loop resistance	-	≤ 110 Ω/km
Resistance unbalance	-	≤ 2%
Insulation resistance	(500 V) 1 minute	≥ 2000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 60 nF/km
Capacitance unbalance	(pair/ground)	≤ 1600 pF/km
Characteristic impedance	(at 10) MHz	(100 ± 15) Ω
Nominal velocity of propagation	-	ca. 57 %
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer Impedance	at 10 MHz	5 mΩ/m

Electrical Data (Nominal) acc. to Cat.5 (at 20°C)





Application

- Primär (Campus), Sekundär (Riser), Tertiär (Horizontal)
- IEEE 802.3: 10Base-T; 100Base-T;
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM
- RS485 (10Mbits)
- Circuit integrity structured wiring alarm cable, compatible with all known connection systems to EN 50173, part of intelligent building technology

Standards

Generally to: ISO/IEC 11801: 95, IEC 61156; EN 50173:95; EN 50288-1

Fire Rating

- IEC 60332-1, IEC 60754-1&2, IEC 61034-2, IEC 60332-3-24, UL 1581 VW 1, BS5839-1 (clause 26.2e), BS8434-2, BSEN 50200, BS4066 part 3, BSEN 20568, IEC60332-3-24, EN50399

Certification

- Approved to LUL - Fire resistant BS5839-1 (clause 26.2e); BS8434-2; BSEN 50200
- Flame retardant BS4066 part 3; Smoke emission BSEN 20568
- LUL-Flammability, smoke & fume 2-01001-002
- LUL STANDARD e4156 part 1 - approved

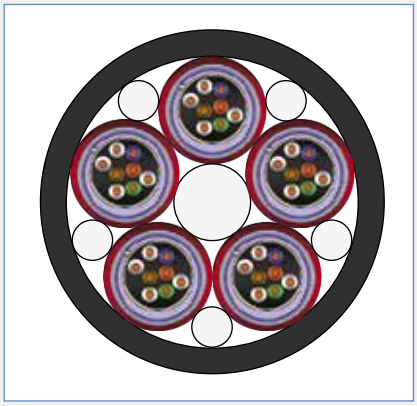
Ordering Information

P/N	Product Description	P.U
1010851	IE FIRETUF DATA 1P LSZH-FR	500m/drum
1010852	IE FIRETUF DATA 2P LSZH-FR	500m/drum
1010853	IE FIRETUF DATA 4P LSZH-FR	500m/drum

MADE IN EU

ICS IE Firetuf™ Data N x 2xAWG22/1 LSHF-FR

IE SF/UTP N x 2xAWG22/1 cable with circuit integrity behavior and MUD resistance



Application

Campus wiring, Riser applications, Horizontal backbone wiring, Building control systems, Intelligent fire alarm systems. Circuit integrity structured wiring alarm cable, compatible with all known connection systems to EN 50173
IEEE 802.3: 10Base-T; (100Base-T <75m), IEEE 802.5 16 MB; ISDN; TPDDI; ATM RS485 (10Mbits)

Fire Rating

- IEC 61034-2, IEC 60754-1&2, IEC 60332-1, IEC 60332-3-24

Construction

Conductor	Bare copper wire, Ø 0.65 mm (AWG 22) 0.332mm2
Insulation	PE/Silicone Rubber1, Ø PE 1.0mm and Silicone Rubber 1.7 mm
Fire Protection Wrapping	Glass Tape
Screen	Aluminium tape + tinned copper braid + Drain Wire
Sheath	Halogen free, flame retardant thermoplastic sheathing compound acc. to EN 50290-2-27, Ø OD - 10.5 mm
Sheath Colour	Anthracite RAL 7016

Mechanical Properties

Bending radius	without load (4P - 20P)	≥ 50 mm - 130mm
	with load (4P - 20P)	≥ 100 mm - 260mm
Temperature range	during operation	-20°C to + 60°C
	during installation	0°C to + 50°C

Electrical Properties at 20°C ± 5°C

Loop resistance		≤ 110 Ω/km
Braid resistance		9.9Ω/Km
Drain wire + braid resistance		78Ω/Km (with braid = 8.79Ω/Km)
Resistance unbalance		≤ 2%
Insulation resistance	(500 V) 1 minute	≥ 2000 MΩ*km
Mutual capacitance	at 800 Hz	Nom. 60 nF/km
Capacitance unbalance	(pair/ground)	≤ 1600 pF/km
Characteristic impedance	(at 10) MHz	(100 ± 15) Ω
Nominal velocity of propagation		ca. 57 %
Test voltage	(DC, 1 min) core/core and core/screen	1000 V
Transfer impedance	at 10 MHz	5 mΩ/m

Ordering Information

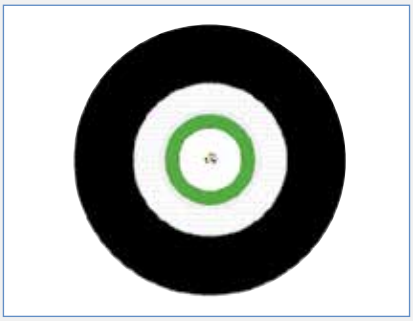
P/N	Product Description	P.U
TBA	DRAKA ICS IE FIRETUF™ DATA 4P LSHF-FR - MUD	500m/drum
TBA	DRAKA ICS IE FIRETUF™ DATA 10P LSHF-FR - MUD	500m/drum
TBA	DRAKA ICS IE FIRETUF™ DATA 20P LSHF-FR - MUD	500m/drum

Firetuf™ OFC-UT-NM Fire Resistant Universal Central Tube Cable

Indoor/Outdoor non-metallic LSHF-FR sheathed optical cable with 2 – 24 fibers.
VDE: A/I-DQ(ZN)H

MADE IN EU

BUREAU VERITAS



Application

The application of this cable is circumstances where a very high degree of fire safety is required as the cable will function during a fire, has limited fire spread, has limited smoke generation and is halogen free.
The typical installation environment is indoor and indoor/outdoor in and between public buildings, in tunnels, metro lines and other places where one need very high degree of fire safety and support for critical communication.
This cable is also suitable shipboard application.
The primary means of installation is on cable ladders, raceways and cable trays. The cable may also be pulled or blown into ducts over short distances. The cable can be installed outdoor in the open, but shall be not be installed directly exposed the sun.

Standards

- ISO 11801 2nd edition, EN 50173-1:2002, IEC 60794-1

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Fire Rating

Fire resistance tests	
IEC 60331-25 (120)	Fire resistance: 120 minutes at 750 °C (No fibre break)
EN 50200 PH 120	Fire resistance with fire and impact 120 minutes 830 °C (No fibre break)
EN 50200 ANNEX E PH 30	Fire resistance until 15 minutes of fire and impact alone, followed by 15 minutes of fire, impact and water spray at 830 °C (No fibre break)
BS 8434 - 2	Fire resistance until 60 minutes of fire and impact alone, followed by 60 minutes of fire, impact and water spray at 930 °C (No fibre break)
Flame retardant tests	
IEC 60332-1-2	Single vertical wire test
Flame propagation test	
IEC 60332-3-24 = IEC 332-3C	Vertically-mounted bunched wires and cables
Halogen acid & gas tests	
IEC 60754-1	No halogens
IEC 60754-2	No acid matters
Smoke emission tests	
IEC 61034-2	No dense smoke

Construction

Loose tube	Ø4.0 mm jelly filled loose tube green colored with up to 2 - 24 fibres			
Fibre colour code	1	Red	13	Yellow w/mark per 100 mm
	2	Green	14	White w/mark per 100 mm
	3	Blue	15	Grey w/mark per 100 mm
	4	Yellow	16	Turquoise w/mark per 100 mm
	5	White	17	Orange w/mark per 100 mm
	6	Grey	18	Pink w/mark per 100 mm
	7	Brown	19	Yellow w/mark every 50 mm
	8	Violet	20	White w/mark every 50 mm
	9	Turquoise	21	Grey w/mark every 50 mm
	10	Black	22	Turquoise w/mark every 50 mm
	11	Orange	23	Orange w/mark every 50 mm
	12	Pink	24	Pink w/mark every 50 mm
Fire barrier	Tape(s)			
Strength member	Water blocked E-Glass fibre elements			
Ripcord	1			
Inner sheath	2.5 mm black LSHF-FR sheath according to EN 50290-2-27 , UV stabilised			

Physical Properties

Property	Test method	Value
Nominal outer diameter	-	12.1 mm
Nominal weight	-	167 kg/km
Maximum installation tensile strength	E1	2000 N (ΔI/I fibre 0.5%, Δα reversible) *
Compressive strength (crush)	E3	1500 N / 100 mm, max 5 min (Δα reversible) *
Impact	E7	No fibre break, 5 Nm, 3 impacts, r=300mm
Torsion	E7	5 cycles ± 1 turn
Kink	E10	The cables do not form a kink when a loop is drawn together to a diameter of 20xD (Cable diameter) mm
Min. bending radius, unloaded	E11	R = 121 mm
Min. bending radius, loaded	-	R = 240 mm
Temperature range	F1	Storage: -30°C to +60°C
		Installation: 0°C to +50°C
		Operation: -25°C to +70°C. (Δα 0.05 dB /km)**
Water penetration	F5B	No water leakage after 24 hour, sample=3m, water=1m

** Values for single-mode fibres, all optical measurements performed at 1550 nm,*
*** Values for multi-mode fibres, all optical measurements performed at 850 nm or 1300 nm with 0.10 dB as threshold (tensile and crush will not be performed for MM fibres)*

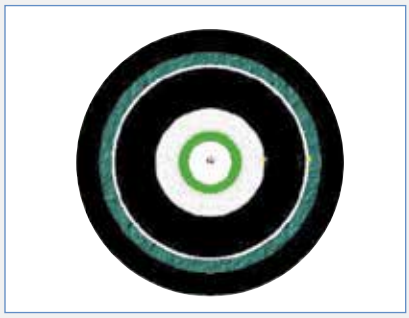
Ordering Information

P/N	Product Description	P.U
A/I-DQ(ZN)H	Indoor/ourdoor non-metalic LSHF-FR sheathed optical cable with 2-24 fibres	4km/drum

Firetuf™ OFC-UT-CST Fire Resistant Armoured Central Tube Cable

Indoor/Outdoor steel tape armoured (CST) double LSHF-FR sheathed optical cable with 2 – 24 fibres.
VDE: A/I-DQ(ZN)H(SR)H

MADE IN EU



Application

The application of this cable is circumstances where a very high degree of fire safety is required as the cable will function during a fire, has limited fire spread, has limited smoke generation and is halogen free.
The typical installation environment is indoor and indoor/outdoor in and between public buildings, in tunnels, metro lines and other places where one need very high degree of fire safety and support for critical communication.
This cable is also suitable for shipboard application.
The steel tape armouring makes the cable rodent proof.
The primary means of installation are on cable ladders, raceways and cable trays. The cable may however also be directly buried. The cable can be installed outdoor in the open, but shall be not be installed directly exposed the sun.

Standards

- ISO 11801, EN 50173

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Fire Rating

Fire resistance tests	
IEC 60331-25 (120)	Fire resistance: 120 minutes at 750 °C (No fibre break)
EN 50200 PH 120	Fire resistance with fire and impact 120 minutes 830 °C (No fibre break)
EN 50200 ANNEX E PH 30	Fire resistance until 15 minutes of fire and impact alone , followed by 15 minutes of fire , impact and water spray at 830 °C (No fibre break)
BS 8434 - 2	Fire resistance until 60 minutes of fire and impact alone , followed by 60 minutes of fire , impact and water spray at 930 °C (No fibre break)
Flame retardant tests	
IEC 60332-1-2	Single vertical wire test
Flame propagation test	
IEC 60332-3-24 = IEC 332-3C	Vertically-mounted bunched wires and cables
Halogen acid & gas tests	
IEC 60754-1	No halogens
IEC 60754-2	No acid matters
Smoke emission tests	
IEC 61034-2	No dense smoke

Construction

Loose tube	Ø 4.0 mm jelly filled loose tube green colored with up to 2 - 24 fibres			
Fibre colour code	1	Red	13	Yellow w/mark per 100 mm
	2	Green	14	White w/mark per 100 mm
	3	Blue	15	Grey w/mark per 100 mm
	4	Yellow	16	Turquoise w/mark per 100 mm
	5	White	17	Orange w/mark per 100 mm
	6	Grey	18	Pink w/mark per 100 mm
	7	Brown	19	Yellow w/mark every 50 mm
	8	Violet	20	White w/mark every 50 mm
	9	Turquoise	21	Grey w/mark every 50 mm
	10	Black	22	Turquoise w/mark every 50 mm
	11	Orange	23	Orange w/mark every 50 mm
	12	Pink	24	Pink w/mark every 50 mm
Fire barrier	Tape(s)			
Strength member	Water blocked E-Glass fibre elements			
Ripcord	1			
Inner sheath	2.5 mm black LSHF-FR sheath according to EN 50290-2-27 , UV stabilised			
Armouring	Coated and corrosion protected corrugated steel tape (CST), thickness 0.15 mm			
Ripcord	1			
Outer sheath	1.4 mm black LSHF-FR sheath according to EN 50290-2-27, UV stabilised			

Physical Properties

Property	Test method	Value
Nominal outer diameter	-	17 mm
Nominal weight	-	351 kg/km
Maximum installation tensile strength	E1	2500 N (ΔI/I fibre 0.5%, Δα reversible) *
Compressive strength (crush)	E3	2500 N / 100 mm, max 5 min (Δα reversible) *
Impact	E7	10 Nm, No fibre break, 3 impacts, r=300mm,
Torsion	E7	5 cycles ± 1 turn
Kink	E10	The cables do not form a kink when a loop is drawn together to a diameter of 20xD (Cable diameter) mm
Min. bending radius, unloaded	E11	R = 255 mm
Min. bending radius, loaded	-	R = 340 mm
Temperature range	F1	Storage: -40°C to +80°C
		Installation: 0°C to +50°C
		Operation: -40°C to +70°C. (Δ α.05 dB /km)**
Water penetration	F5B	No water leakage after 24 hour, sample=3m, water=1m,

** Values for single-mode fibres, all optical measurements performed at 1550 nm,*
*** Values for multi-mode fibres, all optical measurements performed at 850 nm or 1300 nm with 0.10 dB as threshold (tensile and crush will not be performed for MM fibres)*

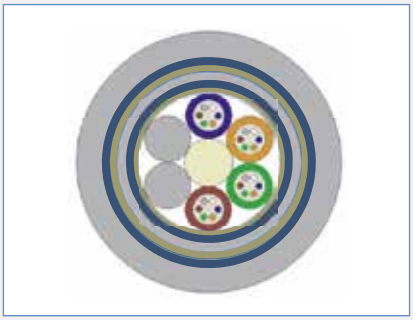
Ordering Information

P/N	Product Description	P.U
A/I-DQ(ZN)H(SR)H	Indoor/ourdoor steel tape armoured (CST) double LSHF-FR sheathed optical cable with 2-24 fibres	4km/drum

12-96 Core Firetuf™ I10S Fire Resistant Fibre Optic Cable, LSZH

Features

- **Central strength member (CSM) :** steel wire with plastic coating when needed.
- **Tube:** thermoplastic material, containing up 4,6 or 12 optical fibres and filled with a suitable water tightness compound.
- **Stranding:** The required numbers of elements (tubes or fillers) are SZ stranded around the central strength member.
- **Longitudinal Water Tightness:** Water Blocking Tape & Yarn.
- **Fire Barriers:** Inner & outer special fire blocking tapes.
- **Armours:** Inner & outer corrugated steel tapes.
- **Sheaths:** Inner & outer LSZH



Technical Data

No.of Fibres		**4,6,12,24**	**36,48,72**	**96**
Design (Elements × Fibres per Tube)		Up to 4x6	6x6, 4x12, 6x12	8×12
Loose Tube / Filler-Ø	mm	2.1	2.1	2.1
CSM / sheath diameter	mm	2.0	2.2	2.0/3.5
Inner sheath thickness	mm	1.0 nominal	1.0 nominal	1.0 nominal
Outer sheath thickness	mm	2.0 nominal	2.0 nominal	2.0 nominal
Cable Diameter	mm	15.3 nominal	15.3 nominal	16.8 nominal
Cable Weight	kg/km	300	317	340
Max installation tension	N	3000		
Min.bending radius	mm	Without Tension		Under Maximum Tension
		10 x Cable-Ø		20 x Cable-Ø
Temperature range	°C	Installation	Transport & Storage	Operation
Flame Retardant		-10->+60;	-10->+60;	-10->+60;
Fire Resistance		IEC 60332-3-24		
		IEC60331-25, In house test up to 800°C, 2hrs.		

Please refer to our General Installation, Safety & Handling recommendations before handling.

Application

The application of this cable is circumstances where a very high degree of fire safety is required as the cable will function during a fire, has limited fire spread, has limited smoke generation and is halogen free. Widely used in Industrial environment due to its robust construction.

Standards

- EN 60794-3-10

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Optional

- Armouring SWA or SWB

Main Characteristics

Test	Standard	Value	Sanction*
Max. installation tension	IEC 60794-1-2-E1	3000 N	fibre strain ≤ 0.33%, Δα reversible
Crush (short term)	IEC 60794-1-2-E3	3000 N / 100mm	Δα ≤ 0.3 dB(MM), 0.1 dB(SM)
Temperature range	IEC 60794-1-2-F1	40->+70°C	Δα ≤ 0.3 dB/km(MM), 0.1 dB/km(SM)
Water Penetration	IEC 60794-1-2-F5B	40->+70°C	No water leakage after 24 hour

** values for single-mode fibres, all optical measurements performed at 1550 nm.*
** values for multi-mode fibres, all optical measurements performed at 1300 nm*

Ordering Information

FIRETUF® I10S Fire Resistant FO Cable part numbers are made up using the table below.

The part number always starts with the letters I10S to denote that it is a FIRETUF® I10S Fire Resistant FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

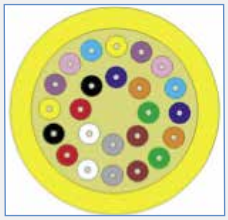
Example of a I10S part number:
I10S024M1

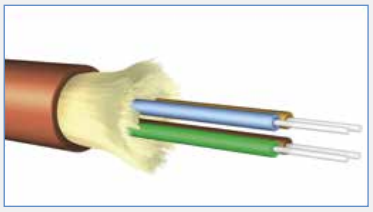
The above example describes an OM1 (50um) FIRETUF® I10S Fire resistance FO Cable, with 24 cores.

I10S	CORE QUANTITY	FIBRE TYPE
I10S	XXX	XX
	012 - 12 CORES 024 - 24 CORES 036 - 36 CORES 048 - 48 CORES 096 - 96 CORES	SM - SINGEMODE, G652D, 9um M1 - OM1, 62.5um M2 - OM2, 50um M3 - OM3, 50um M4 - OM4, 50um

UC$^{FIBRE®}$ MT SERIES

2-24 Cores, Indoor Tight Buffer Distribution Cable, LSZH





Features

- **Tight buffer** : Each fibre is coated to 0.9mm with LSZH
- **Strength Member** : Aramid yarn
- **Outer Sheath** : LSZH compliant to IEC 61034, IEC 60754-1&2, IEC 60332-1 & 60332-3-24
- **Suitable for indoor installation requiring flame retardant, low smoke and halogen free environment**

Overview

One of the most widely used UC$^{FIBRE®}$ Indoor cable, MT series is excellent for indoor installation that provides a safe setup against flame propagation and its flexible yet robust construction makes installation at ease.

Additional Options

- PVC Sheath for indoor applications
- PE Sheath for outdoor applications
- Steel Wire Braiding for armouring protection.

Fire Rating

- IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Main Characteristics

Test	Standard	Value	Sanction*
Maximum installation load (a few hours)	IEC 60794-1-2-E1	1000 N (2F-8F), 1200N (12F, 24F)	Fibre strain ≤ 0.6%, Δα reversible
Short term tensile strength (some days)	IEC 60794-1-2-E1	600N	Fibre strain ≤ 0.4%, Δα reversible
Max operation tension	IEC 60794-1-2-E1	280N (2F-12F), 340N (24F)	Fibre strain ≤ 0.2%, Δα ≤ 0.4 dB(MM), ≤0.30(SM)
Crush (short term)	IEC 60794-1-2-E3	1000 N / 100mm	Δα ≤ 0.4 dB(MM), ≤0.30(SM), no damage
Temperature range	IEC 60794-1-2-F1	-20 -> +70°C	Δα ≤ 0.6 dB /km(MM), ≤ 0.40dB/km(SM)

* values for multi-mode fibres, all optical measurements performed at 1300 nm
values for single-mode fibres, all optical measurements performed at 1550 nm

Technical Data

No. of Fibres		2,4,6	8	12	24
Design		1×6 TB	1×8 TB	1×12 TB	1×24 TB
Tight buffer	mm	0.9 ± 0.05	0.9 ± 0.05	0.9 ± 0.05	0.9 ± 0.05
Outer sheath thickness	mm	0.7 nominal	0.75 nominal	0.75 nominal	0.9 nominal
Cable Nominal Diameter	mm	4.8 nominal	5.4 nominal	6.2 nominal	8.8 nominal
Cable Weight	kg / km	20	26	33	60
Min. bending radius	mm	Without Tension 10 × Cable-Ø		Under Maximum Tension 20 × Cable-Ø	
Temperature range	°C	Installation -10 -> +60;	Transport. & Storage -40 -> +70 ;	Operation -20 -> +70	
Flame Retardant		IEC 60332-3-24			

Ordering Information

UC$^{FIBRE®}$ MT SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters MT to denote that it is a UC$^{FIBRE®}$ MT SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a UC$^{FIBRE®}$ MT SERIES FO Cable part number:
MT008M1

The above example describes an OM1 (62.5um, Orange Sheath) UC$^{FIBRE®}$ MT SERIES FO Cable, with 8 cores.

MT SERIES	CORE QUANTITY	FIBRE TYPE
MT	XXX	XX
	002 - 2 CORES 004 - 4 CORES 006 - 6 CORES 008 - 8 CORES 012 - 12 CORES	SM - SINGEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

UC$^{FIBRE®}$ MT SERIES

36,48,96 Cores, Indoor Tight Buffer Distribution Cable, LSZH

Features

- **Tight buffer:** Each fibre is coated to 0.9mm with LSZH.
- **Strength Member:** Aramid yarn within each sub-unit
- **Sub-unit sheath:** LSZH material
- **Central Strength Member:** FRP with up-coating
- **Core Wrapping:** Polyester tape
- **Outer Sheath:** LSZH compliant to IEC 61034, IEC 60754-1&2, IEC 60332-1 & 60332-3-24
- **Suitable for Indoor Flame Retardant, Low Smoke and Halogen Free Environment**

Overview

One of the most widely used UC$^{FIBRE®}$ Indoor cable, MT series is excellent for indoor installation that provides a safe setup against flame propagation and its flexible yet robust construction makes installation at ease.

Additional Options

- PVC Sheath for indoor applications
- PE Sheath for outdoor applications
- Steel Wire Braiding for armouring protection.

Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Main Characteristics

Test	Standard	Value	Sanction*
Maximum installation load (a few hours)	IEC 60794-1-2-E1	4200 N (36F, 48F), 6600N (96F)	Fibre strain ≤ 0.6%, Δα reversible
Short term tensile strength (some days)	IEC 60794-1-2-E1	2800 N (36F, 48F), 4400N (96F)	Fibre strain ≤ 0.4%, Δα reversible
Max operation tension	IEC 60794-1-2-E1	1400 N (36F, 48F), 2200N (96F)	Fibre strain ≤ 0.2%, Δα ≤ 0.4 dB(MM), ≤0.30(SM)
Crush (short term)	IEC 60794-1-2-E3	1000 N / 100mm	Δα ≤ 0.4 dB(MM), ≤ 0.30(SM), no damage
Temperature range	IEC 60794-1-2-F1	-20 -> +70°C	Δα ≤ 0.6 dB /km(MM), ≤ 0.40dB/km(SM)

* values for multi-mode fibres, all optical measurements performed at 1300 nm
values for single-mode fibres, all optical measurements performed at 1550 nm

Technical Data

No. of Fibres		36	48	96
Design		6×6 TB	4×12 TB	8×12 TB
Tight buffer	mm	0.9 ± 0.05	0.9 ± 0.05	0.9 ± 0.2
Sub-unit Diameter	mm	4.8 ± 0.2	6.0 ± 0.2	6.0 ± 0.2
Cable Nominal Diameter	mm	0.7 nominal	0.65 nominal	0.65 nominal
Sub-unit sheath thickness	mm	1.4 nominal	1.4 nominal	1.5 nominal
Outer sheath thickness	mm	17.7 ± 1.5	17.9 ± 1.5	25.3 ± 1.5
Cable Outer Diameter	kg/km	276	244	538
Min. bending radius	mm	Without Tension 10 × Cable-Ø		Under Maximum Tension 20 × Cable-Ø
Temperature range	°C	Installation -10 -> +60;	Transport. & Storage -40 -> +70 ;	Operation -20 -> +70
Flame Retardant		IEC 60332-3-24		

Please refer to our General Installation, Safety & Handling recommendations before handling.

Ordering Information

UC$^{FIBRE®}$ MT SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters MT to denote that it is a UC$^{FIBRE®}$ MT SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

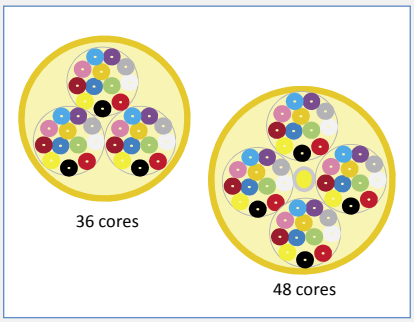
Example of a UC$^{FIBRE®}$ MT SERIES FO Cable part number:
MT036M1

The above example describes an OM1 (62.5um, Orange Sheath) UC$^{FIBRE®}$ MT SERIES FO Cable, with 36 cores.

MT SERIES	CORE QUANTITY	FIBRE TYPE
MT	XXX	XX
	036 - 36 CORES 048 - 48 CORES 096 - 96 CORES	SM - SINGEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

UC$^{FIBRE®}$ MTC SERIES, 36 & 48 Cores, COMPACT Indoor

Tight Buffer Distribution Cable, LSZH



Fire Rating

- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Features

- **Tight buffer:** Each fibre is coated to 0.9mm with LSZH.
- **Strength Member:** Aramid yarn
- **Core Wrapping:** Polyester tape
- **Outer Sheath:** LSZH compliant to IEC 61034, IEC 60754-1&2, IEC 60332-1 & 60332-3-24.
- **Suitable for Indoor Flame Retardant Environment.**
- **Up to 40% more compact & lighter than standard indoor types but with lesser tensile load.**

Main Characteristics

Test	Standard	Value	Sanction*
Maximum installation load (a few hours)	IEC 60794-1-2-E1	1300 N (36F, 48F)	Fibre strain ≤ 0.6%, Δα reversible
Short term tensile strength. (some days)	IEC 60794-1-2-E1	1300 N (36F, 48F)	Fibre strain ≤ 0.4%, Δα reversible
Max operation tension	IEC 60794-1-2-E1	400 N (36F, 48F)	Fibre strain ≤ 0.2%, Δα ≤ 0.4 dB(MM), ≤0.30(SM)
Crush (short term)	IEC 60794-1-2-E3	1000 N / 100mm	Δα ≤ 0.4 dB(MM), ≤0.30(SM), no damage
Temperature range	IEC 60794-1-2-F1	-20 -> +70°C	Δα ≤ 0.6 dB /km(MM), ≤ 0.30dB/km(SM)

* values for multi-mode fibres, all optical measurements performed at 1300 nm
values for single-mode fibres, all optical measurements performed at 1550 nm

Technical Data

No. of Fibres		36	48	
Design		6x6 TB	4x12 TB	
Tight buffer Size	mm	0.9 ± 0.05	0.9 ± 0.05	
Outer sheath thickness	mm	1.2 nominal	1.2 nominal	
Cable Outer Diameter	mm	11.0± 1.5	12± 1.5	
Cable Weight	mm	100	140	
Min. bending radius	kg / km	Without Tension 10 × Cable-Ø	Under Maximum Tension 20 × Cable-Ø	
Temperature range	°C	Installation -10 -> +60;	Transport. & Storage -40 -> +70 ;	Operation -20 -> +70
Flame Retardant		IEC 60332-3-24 (3C)		

Ordering Information

UC$^{FIBRE®}$ MTC SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters MTC to denote that it is a UC$^{FIBRE®}$ MTC SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

Example of a UC$^{FIBRE®}$ MTC SERIES FO Cable part number:
MTC048M4

The above example describes an OM4 (50um, Aqua Sheath) UC$^{FIBRE®}$ MTC SERIES FO Cable, with 48 cores.

MTC SERIES	CORE QUANTITY	FIBRE TYPE
MTC	XXX	XX
	036 - 36 CORES 048 - 48 CORES	SM - SINGEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

UC$^{FIBRE®}$ MB SERIES

2-12 Core, Indoor, Breakout, Tight Buffer Distribution Cable, LSZH

Features

- **Buffer Coating** : LSZH, 0.9mm tight buffered fibre.
- **Strength Member** : Aramid yarn within each sub-unit
- **Sub-unit sheath** : LSZH
- **Central Strength Member** : FRP with up-coating when needed
- **Outer Sheath** : LSZH compliant to IEC 61034, IEC 60754-1&2, IEC 60332-1 & 60332-3-24
- Easy to strip and excellent for use in indoor installations requiring efficient terminations, and also in flame retardant, low smoke and halogen free environments.

Overview
MB Series provides easy stripping and terminations in indoor application due to its unique tight buffering of each fibre unit.

Additional Options
- PVC Sheath (MBV Series) for indoor applications
- PE Sheath (MBP Series) for outdoor applications
- Steel Wire Braiding (MBB Series) for armouring protection

Fire Rating
- IEC 60332-1, IEC 60332-3-24, IEC 61034-2, IEC 60754-1/2

Main Characteristics

Test	Standard	Value	Sanction*
Maximum Tension at installation (short term)	IEC 60794-1-2-E1	600N	ΔI/I fibre ≤ 0.6%, Δα reversible
Tension opération max (long term)	IEC 60794-1-2-E1	198N	ΔI/I fibre ≤ 0.2%, Δα ≤ 0.30 dB(SM)/ 0.40 dB(MM)
Crush	IEC 60794-1-2-E3	1000 N / 100mm	Δα ≤ 0.30 dB(SM)/ 0.40 dB(MM) , cable integrity

* values for multi-mode fibres, all optical measurements performed at 1300 nm
values for single-mode fibres, all optical measurements performed at 1550 nm

Technical Data

No. of Fibres		2,4	6	8	12
Design		Breakout			
Buffer Diameter - Ø	mm	0.9 ± 0.05	0.9 ± 0.05	0.9 ± 0.05	0.9 ± 0.05
CSM/sheath diameter	mm	1.0 nominal	1.0/2.2 nominal	2.0/3.5 nominal	2.0/6.2 nominal
Sub-unit sheath thickness	mm	0.35 nominal	0.35 nominal	0.35 nominal	0.35 nominal
Sub-units diameter	mm	2.0 ± 0.15	2.0 ± 0.15	2.0 ± 0.15	2.0 ± 0.15
Outer sheath thickness	mm	1.0 nominal	1.0 nominal	1.0 nominal	1.0 nominal
Cable Diameter (AxB)	mm	7.0 ± 0.5	8.2 ± 0.5	0.9 ± 0.5	12.3 ± 0.5
Cable Weight	kg / km	48	64	89	149
Min. bending radius		Without Tension 10 × Cable-Ø		Under Maximum Tension 20 × Cable-Ø	
Temperature range	°C	Installation -10 -> +60;	Transport. & Storage -40 -> +70 ;	Operation -20 -> +70	
Flame Retardant		IEC 60332-1, IEC60332-3-24			

Ordering Information

UC$^{FIBRE®}$ MB SERIES FO Cable part numbers are made up using the table below.

The part number always starts with the letters MB to denote that it is a UC$^{FIBRE®}$ MB SERIES FO Cable. This is followed by 3 numbers which symbolises the core quantity and then 2 letters to denote the fibre type.

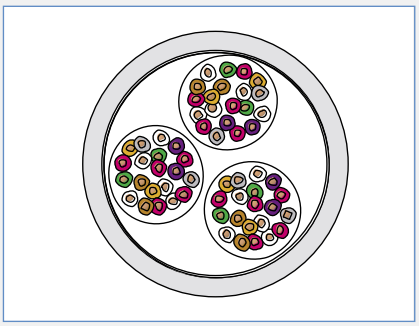
Example of a UC$^{FIBRE®}$ MB SERIES FO Cable part number:
MB008M3

The above example describes an OM3 (50um, Aqua Sheath) UC$^{FIBRE®}$ MB SERIES FO Cable, with 8 cores.

MB SERIES	CORE QUANTITY	FIBRE TYPE
MB	XXX	XX
	002 - 2 CORES 004 - 4 CORES 006 - 6 CORES 008 - 8 CORES 012 - 12 CORES	SM - SINGEMODE, G652D, 9um (yellow sheath) M1 - OM1, 62.5um (orange sheath) M2 - OM2, 50um (orange sheath) M3 - OM3, 50um (aqua sheath) M4 - OM4, 50um (aqua sheath)

Category 3 UTP Multipairs

U/UTP Data Cable



Application

Supports up to 100Base-T4, 16MHz frequency range.Suitable for Telephony & Security applications.

Standards

- IEC 61156, ISO/IEC 11801 /1995, TIA/EIA 568-B

Fire Rating

PVC	IEC 60332-1
LSZH	IEC 60332-1, IEC 61034-2, IEC 60754-1/2

*Category 5 multipairs available upon request.

Construction

Conductor	Solid bare copper wire, diameter 0.45 mm			
Insulation	High-density polyethylene HDPE			
Stranding	25 pairs stranded to sub units. Cables with 100 pairs are built up with 1st layer: 3 basic units, 2nd layer: 7 basic units			
Sub-units no.	One	Two	Three	Four
Pair no.	1 ~ 25	26 ~ 50	51 ~ 75	75 ~ 100
Identification	Pair 1 Blue-White	Pair 10 Grey-Red	Pair 19 Brown-Yellow	
	Pair 2 Orange-White	Pair 11 Blue-Black	Pair 20 Grey-Yellow	
	Pair 3 Green-White	Pair 12 Orange-Black	Pair 21 Blue-Violet	
	Pair 4 Brown-White	Pair 13 Green-Black	Pair 22 Orange-Violet	
	Pair 5 Grey-White	Pair 14 Brown-Black	Pair 23 Green-Violet	
	Pair 6 Blue-Red	Pair 15 Grey-Black	Pair 24 Brown-Violet	
	Pair 7 Orange-Red	Pair 16 Blue-Yellow	Pair 25 Grey-Violet	
	Pair 8 Green-Red	Pair 17 Orange-Yellow	-	
	Pair 9 Brown-Red	Pair 18 Green-Yellow	-	
Wrapping	Polyester			
Sheath	PVC Black , also available on request with LSZH or PE			
Outer Diameter	Nom. 11.4(25pair) - 23.8(100pair PVC) mm			
Tensile force N	Nom. 500(25pair) - 2000(100pair PVC)			

Mechanical Properties

Minimum bending radius	Without load	4 x D (D= outer diameter)
	With load	8 x D (D= outer diameter)
Temperature	During operation	- 20° C to + 60° C
	During operation	0° C to + 50° C

Electrical Properties at 20°C

Maximum DC Resistance	≤ 95 Ω / km
Minimum Insulation DC Resistance	≥ 5000 M Ω . km
Dielectric Strength (DC)	1KV / min
Conductor resistance maximum unbalance percentage	≤ 2.5 %

Electrical Data at 20°C

Frequency (MHZ)	Max. Insertion Loss (dB) (nominal value)	Min. Return Loss (dB)	Min. NEXT (Test length> 300 m) (dB) (nominal value)	Min. ELFEXT (dB)	Min. PSELFEXT (dB/100m)	Max. DELAY (dB/100m)
1	26	12	41	39	39	570
4	56	12	32	27	27	552
8	6.7	12	28	21	21	547
10	98	12	26	19	19	545
16	131	12	23	15	15	543

Technical Data

Type	Outer diameter mm	Standard delivery length m	Tensile force N
25 x 2 x 0.45 Cat. 3 PVC	12.4 ± 1.0	500	500
50 x 2 x 0.45 Cat. 3 PVC	16.8 ± 1.0	500	1000
100 x 2 x 0.45 Cat. 3 PVC	22.8 ± 1.0	500	2000
25 x 2 x 0.45 Cat. 3 LSZH	12.7	500	500
50 x 2 x 0.45 Cat. 3 LSZH	16.1	500	1000
100 x 2 x 0.45 Cat. 3 LSZH	21.9	500	2000

Ordering Information

P/N	Product Description	P.U
ISV Series	Cat 3 U/UTP, Multipairs, Indoor, PE/PVC, 2~200 prs*	500m/drum
ISAV Series	Cat 3 U/UTP, Multipairs, Indoor, PE/APL/PVC, 2~100 prs**	500m/drum
ISM Series	Cat 3 U/UTP, Multipairs, Indoor, PE/LSZH 2~200 prs*	500m/drum
ISAM Series	Cat 3 U/UTP, Multipairs, Indoor, PE/APL/LSZH 2~100 prs**	500m/drum
ISP Series	Cat 3 U/UTP, Multipairs, Outdoor, PE/PE 2~200 prs*	500m/drum
OSAP Series	Cat 3 U/UTP, Multipairs, Outdoor, PE/APL/PE 2~100 prs**	500m/drum
OSJP Series	Cat 3 U/UTP, Multipairs, Outdoor, PE/JF/PE 2~200 prs*	500m/drum
OSJAP Series	Cat 3 U/UTP, Multipairs, Outdoor, PE/JF/APL/PE 2~100 prs**	500m/drum

*Available in X pairs x 0.5mm; X = 2 , 5 , 10 , 20 , 25 , 30 , 40 , 50 , 100 , 200 **Available in Y pairs x 0.5mm; X = 2 , 5 , 10 , 20 , 25 , 30 , 40 , 50 , 100

Category 5e Multipairs

U/UTP Symmetrical Data Cable

Construction

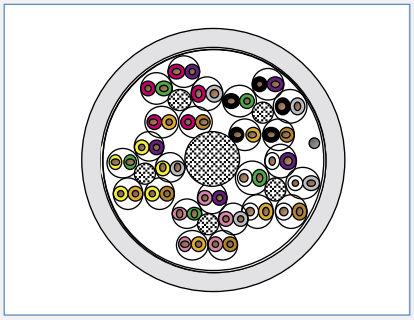
Conductor	Bare copper wire, diameter 0.52 mm (AWG24)		
Insulation	PE, diameter 0.95 mm		
Twisting	2 cores to pair, diameter 1.9 mm		
Sub unit stranding	5 pairs to subunit + filler, diameter 5.0 mm		
Main unit stranding	5 subunits to a 25" unit + filler		
Identification	PET foil wrapping		
	Pair 1 Blue-White	Pair 10 Grey-Red	Pair 19 Brown-Yellow
	Pair 2 Orange-White	Pair 11 Blue-Black	Pair 20 Grey-Yellow
	Pair 3 Green-White	Pair 12 Orange-Black	Pair 21 Blue-Violet
	Pair 4 Brown-White	Pair 13 Green-Black	Pair 22 Orange-Violet
	Pair 5 Grey-White	Pair 14 Brown-Black	Pair 23 Green-Violet
	Pair 6 Blue-Red	Pair 15 Grey-Black	Pair 24 Brown-Violet
	Pair 7 Orange-Red	Pair 16 Blue-Yellow	Pair 25 Grey-Violet
	Pair 8 Green-Red	Pair 17 Orange-Yellow	-
	Pair 9 Brown-Red	Pair 18 Green-Yellow	-
Sheath	PVC or LSZH, diameter 15.5 mm grey, RAL 7035		
Outer Diameter	Nom. 15.5(25pair) - 35.8(100pair PVC) mm		
Weight	Nom. 207(25pair) LSZH - 920(100pair PVC) kg/km		
Tensile force N	Nom. 500(25 pair) - 2000(100pair)		

Mechanical Properties

Minimum bending radius	Without load	≥ 60 mm
	With load	≥ 120 mm
Temperature	During operation	- 20° C to + 60° C
	During operation	0° C to + 50° C

Electrical Properties (Nominal) at 20°C

Loop resistance	-	≤ 190 Ω/km
Resistance unbalance	-	≤ 2%
Test voltage	core/core	1000 VDC 1 min
Mutual capacitance	800 Hz	Nom. 48 nF/km
Capacitance unbalance	pair/ground	≤ 1500 pF/km
Mean characteristic impedance	100 MHz	100 Ω ± 5 Ω
Nominal velocity of propagation	-	ca. 67%
Insulation resistance	500 V	≥ 2000 MΩ*km



Application

- IEEE 802.3: 10Base-T; 100Base-T; ISDN; xDSL
- IEEE 802.5 16 MB; ISDN; TPDDI; ATM155Mbit/s

Standards

- EN 50173, ISO/IEC 11801, IEC 56-5

Fire Rating

PVC	IEC 60332-1
LSZH	IEC 60332-1, IEC 61034-2, IEC 60754-1/2

Nominal Transmission Characteristics at 20°C

F (MHZ)	Attenuation (dB/100m)	NEXT (dB)	PS-NEXT (dB)	ACR (dB/100m)	PS-ACR (dB/100m)	ELFEXT (dB/100m)	PS-ELFEXT (dB/100m)	Return loss (dB)
1	1.9	71	68	69.1	66.1	68	65	20
4	3.7	62	59	58.3	55.3	56	53	23
10	6.0	56	53	50.0	47.0	48	45	25
16	7.6	53	50	45.4	42.4	44	41	25
20	8.5	51	48	42.5	39.5	42	39	25
31.2	10.7	49	46	38.3	35.3	38	35	24
62.5	15.7	44	41	28.3	25.3	32	29	22
100	19.8	41	38	21.2	18.2	28	25	20
125	22.3	40	37	17.7	14.7	26	23	19

Ordering Information

P/N	Product Description	P.U
ISV5E2524	Cat 5e U/UTP, Multipairs, Indoor, PE/PVC, 25pr x 24AWG	500m/drum
ISV5E5024	Cat 5e U/UTP, Multipairs, Indoor, PE/PVC, 50pr x 24AWG	500m/drum
ISM5E2524	Cat 5e U/UTP, Multipairs, Indoor, PE/LSZH 60332-1, 25pr x 24AWG	500m/drum
ISM5E5024	Cat 5e U/UTP, Multipairs, Indoor, PE/LSZH 60332-1, 50pr x 24AWG	500m/drum

4. Broadcasting & Studio

Quality cables for the transmission of digital and analogue audio and video signals to professional levels

RANKED AS NUMBER ONE IN EUROPE, DRAKA IS A LEADING PROVIDER OF PROFESSIONAL BROADCAST AND STUDIO CABLES. SINCE 1958 DRAKA BROADCAST SOLUTIONS HAVE DELIVERED LEVELS OF TECHNICAL EXCELLENCE THAT HAVE PROVEN THEMSELVES IN PRACTICE UNDER THE MOST DEMANDING CONDITIONS.

Draka broadcast cables are optimally tailored to an information and entertainment market which is now spanning the analogue and digital world. Whether broadcasting a regional traffic report by a local radio station or the transmission of a World Class soccer into the world – the success of broadcast production always depends on the reliability of the audio, video, camera and lighting control cables. Draka has decades of experience in the cable manufacturing, research and development in close cooperation with broadcasting professionals.

Inspiring partnerships

Since the beginning of professional broadcasting, Draka has worked in close cooperation with leading national and international broadcasting companies. Leading edge solutions in the form of high-quality analogue, SDI, HDTV and hybrid fiber optic arise from these partnerships. With 30 billion viewers around the globe, the World Cup 2006 in Germany, for example, was the most-watched event in television history during a period of 4 weeks. Draka delivered the cables necessary for this new record and enabled broadcasts in HDTV for the first time. Draka also supported Euro Masters 2008 in Austria and Switzerland. Draka meets the specifications of national broadcasters as well as with AES/EBU, SMPTE, IEC, EN and VDE.

Leading sound studios are users of Draka cables. Superior quality of sound requires cutting edge technology where cabling is an essential link. In this field, Draka offers modern cable solutions for analogue and digital recording as well as for microphone and speaker cabling. As one of the world's leading manufacturers of passive network cables, Draka can guarantee the high efficiency of passive transmission cables which are produced using the latest technology. For live events, there is only a single chance for a successful performance. There is no alternative to absolute reliability. Draka offe rs the best solutions for lighting control, sound, microphone and speaker interconnections and can quickly respond to the requirements of production companies in order to guarantee an optimum live performance.

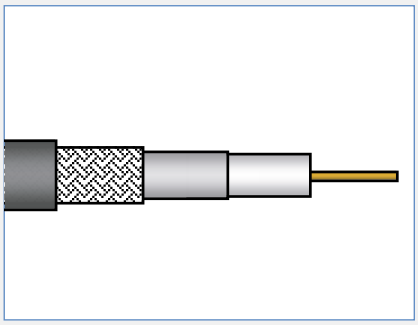
Comprehensive product line

The studio broadcast solutions of Draka comprise:

- High-precision analogue and digital 75 Ω video cables
- Analogue and digital multicore audio cables
- Microphone cables, speaker cables
- Lighting control and Sound cables
- Camera cables for studio and outdoor transmission
- Multicore camera cables
- Studio connecting cables
- Hybrid camera cables

HD PRO 0.6/2.8 AF

HD Video Cable 75 Ω



Application

Video cables are primary used in closed circuit TV systems and in several studio applications for transmission of image signals.

Standards

For analogue and digital video signals (Composite, component, SDI, SDV, SDTI, HDTV)

Fire Rating

FRNC: IEC 60332-1, IEC 60754, IEC 61034

Construction

Inner conductor	solid copper wire, bare, diameter 0.6 mm
Insulation	Foam-PE, diameter 2.8 mm
Outer conductor	Al-PET-Al-foil under tinned copper braid, diameter 3.4 mm
Sheath	FRNC, diameter 4.5 mm Anthracite
Printing	**DRAKA** - HD PRO 0.6/2.8 AF - 75 Ω ± 1%

Electrical Properties at 20°C

DC resistance	Inner conductor	61 Ω/km
	Outer conductor	17 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	78 %
Screening factor	-	> 100 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	1.2	50 – 300	≥ 26
3	1.9	300 – 3000	≥ 22
5	2.5	3000 – 3500	≥ 18
10	3.5	3500 – 5000	≥ 15
30	5.9	-	-
100	10.0	-	-
200	14.1	-	-
300	17.8	-	-
500	24.0	-	-
800	29.7	-	-
1000	33.2	-	-
1500	39.6	-	-
2250	50.2	-	-
3000	60.9	-	-
3500	65.8	-	-
4000	69.8	-	-
4500	74.2	-	-
5000	78.9	-	-

Ordering Information

P/N	Product Description	P.U
1014488	HD PRO 0.6/2.8 AF, HD Video Cable 75 Ω	1000m/drum

HD PRO 1.0/4.8 AF

HD Video Cable 75 Ω

Construction

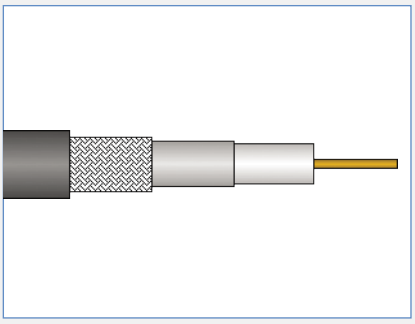
Inner conductor	Solid copper wire, bare, diameter 1.0 mm
Insulation	Foam-PE, diameter 4.8 mm
Outer conductor	Al-PET-Al-foil under tinned copper braid, diameter 5.6 mm
Sheath	FRNC diameter 7.0 mm Anthracite
Printing	**DRAKA** - HD PRO 1.0/4.8 AF - 75 Ω ± 1%

Electrical Properties at 20°C

DC resistance	Inner conductor	22 Ω/km
	Outer conductor	7 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	78 %
Screening factor	-	≥ 100 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.8	50 – 300	≥ 26
3	1.3	300 – 3000	≥ 22
5	1.6	3000 – 3500	≥ 18
10	2.1	3500 – 5000	≥ 15
30	3.5	-	-
100	6.2	-	-
200	8.9	-	-
300	11.3	-	-
500	14.8	-	-
800	18.5	-	-
1000	20.7	-	-
1500	24.9	-	-
2250	31.7	-	-
3000	37.3	-	-
3500	41.5	-	-
4000	47.2	-	-
4500	51.2	-	-
5000	55.1	-	-



Application

Video cables are primary used in closed circuit TV systems and in several studio applications for transmission of image signals.

Standards

For analogue and digital video signals (Composite, Component, SDI, SDV, SDTI, HDTV)

Fire Rating

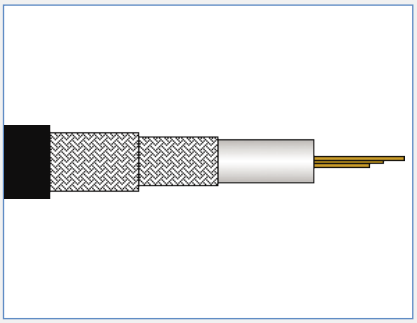
FRNC: IEC 60332-1; IEC 60754-2; IEC 61034

Ordering Information

P/N	Product Description	P.U
1014490	HD PRO 1.0/4.8 AF, HD Video Cable 75 Ω	1000m/drum

HD PRO FLEX 1.0L/4.8 Dz

HD Video Cable 75 Ω



Application

Video cables are primary used in closed circuit TV systems and in studio applications.

Standards

For analogue and digital video signals (Composite, Component, SDI, SDV, SDTI, HDTV)

Construction

Inner conductor	Stranded copper wire, diameter 1.0 mm
Insulation	Foam-PE, diameter 4.8 mm
Outer conductor	2xCu-braid, tinned
Sheath	DMC FLEX PVC diameter 7.0 mm black, RAL 9005
Printing	**DRAKA** COMTEQ – HD PRO FLEX 1.0L/4.8Dz – 75 Ω ± 1% - HDTV

Electrical Properties at 20°C

DC resistance	Inner conductor	21 Ω/km
	Outer conductor	5 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	67 %
Screening factor	-	> 90 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.5	50 – 300	≥ 26
10	1.9	300 – 3000	≥ 22
100	8.0	3000 – 3500	≥ 18
200	10.1	3500 – 5000	≥ 15
300	14.0	-	-
500	17.3	-	-
800	22	-	-
1000	25.8	-	-
1500	32	-	-
2250	41.6	-	-
3000	49	-	-
3500	54.4	-	-
4000	57.1	-	-
4500	62.2	-	-
5000	67.1	-	-

Ordering Information

P/N	Product Description	P.U
60011389	HD PRO FLEX 1.0L/4.8Dz PVC, Video Cables 75 Ω	1000m/drum

0.8L/3.7 Dz

High Flexible Video Cable 75 Ω

Construction

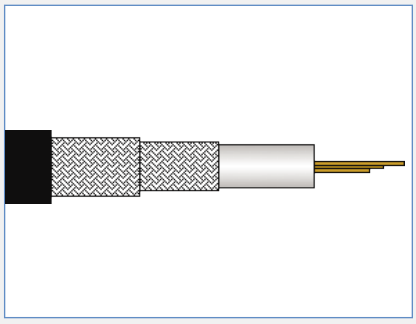
Inner conductor	Stranded copper wire, diameter 0.8 mm
Insulation	Foam-PE, diameter 3.7 mm
Outer conductor	2xCu-braid, tinned 4.6 mm
Sheath	DMC FLEX PVC diameter 6.0 mm black, RAL 9005
Printing	**DRAKA** 0.8L/3.7Dz - 75 Ω +- 1% - HIGHFLEX HDTV 5GHz + batch no. + meter marking

Electrical Properties at 20°C

DC resistance	Inner conductor	50 Ω/km
	Outer conductor	10 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	78 %
Screening factor	-	> 90 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	1.0	50 – 300	≥ 26
10	2.9	300 – 3000	≥ 22
100	8.4	3000 – 3500	≥ 18
200	11.6	3500 – 5000	≥ 15
300	14.1	-	-
500	18.6	-	-
800	24.2	-	-
1000	27	-	-
1500	33.9	-	-
2250	44.1	-	-
3000	51.9	-	-
3500	57.4	-	-
4000	60.2	-	-
4500	65.8	-	-
5000	71.1	-	-



Application

Video cables are primary used in closed circuit TV systems and in studio applications.

Standards

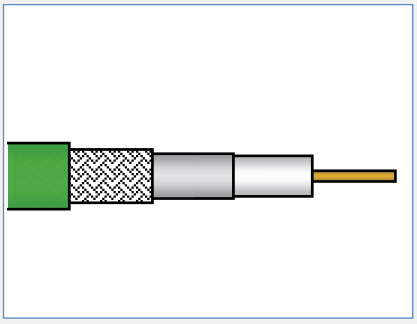
For analogue and digital video signals (Composite, Component, SDI, SDV, SDTI, HDTV)

Ordering Information

P/N	Product Description	P.U
60014488	DR 0.8L/3.7Dz PVC/rubber black HDTV	TBA
60014489	DR 0.8L/3.7Dz PVC/rubber HDTV 500DW	500m/drum
60014492	DR 0.8L/3.7Dz PVC/rubber HDTV 1000DW	1000m/drum

1.6/7.3 AF

Video Cable 75 Ω



Application

Video cables are primary used in closed circuit TV systems and in several studio applications for transmission of image signals.

Standards

For analogue and digital video signals (Composite, Component, SDI, SDV, SDTI, HDTV)

Fire Rating

- PVC: IEC 60332-1
- LSZH: IEC 60332-1, IEC 61034-2, IEC 60754-1/2
- FRNC-C: EC 60332-3 C

Construction

Inner conductor	solid copper wire, bare, diameter 1.6 mm
Insulation	Foam-PE, diameter 7.3 mm
Outer conductor	Al-PET-Al-foil under tinned copper braid, diameter 8.2 mm
Sheath	FRNC, diameter 10.3 mm green, RAL 6018
Weight	Nom. 120(PUR) - 135(LSZH) kg/km
Tensile force N	270

Electrical Properties at 20°C

DC resistance	Inner conductor	9.5 Ω/km
	Outer conductor	4.3 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	78 %
Screening factor	-	≥ 100 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.4	50 – 300	≥ 26
3	0.7	300 – 3000	≥ 22
5	0.9	3000 – 3500	≥ 18
10	1.3	3500 – 5000	≥ 15
30	2.2	-	-
100	3.9	-	-
200	5.3	-	-
300	7.0	-	-
500	9.2	-	-
800	11.8	-	-
1000	13.2	-	-
1500	16.9	-	-
2250	22.0	-	-
3000	26.4	-	-
3500	30.6	-	-
4000	36.1	-	-
4500	38.1	-	-
5000	41.3	-	-

Ordering Information

P/N	Product Description	P.U
1002202 CT2760901	Video Cable 75 Ω, 1.6/7.3 AF FRNC-C gn,	1000m/drum
1002197 CT2757800	Video Cable 75 Ω, 1.6/7.3 AF PVC green	1000m/drum
1002461 CT2757900	Video Cable 75 Ω, 1.6/7.3 AF PUR green	1000m/drum
1002462 CT2757902	Video Cable 75 Ω, 1.6/7.3 AF PUR blue	1000m/drum

1.2L/4.8 Dz

Video Cable 75 Ω

Construction

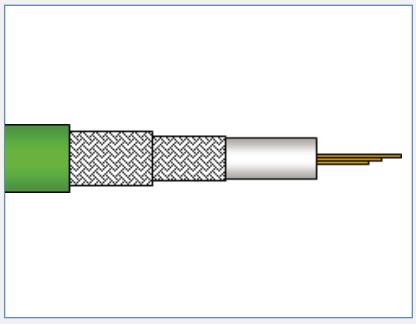
Inner conductor	Stranded copper wire, diameter 1.2 mm
Insulation	Foam-PE, diameter 4.8 mm
Outer conductor	2xCu-braid, tinned
Sheath	DMC FLEX PUR, PUR, diameter 7.2 mm green, RAL 6018
Printing	**DRAKA** COMTEQ – 1.2L/4.8Dz – 75 Ω ± 1% - HDTV

Electrical Properties at 20°C

DC resistance	Inner conductor	21 Ω/km
	Outer conductor	5 Ω/km
Mutual capacitance	-	56 pF/m
Characteristic impedance	-	75 Ω ± 0.75 Ω
Velocity ratio	-	67 %
Screening factor	-	> 90 dB

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.5	50 – 300	≥ 26
10	1.9	300 – 3000	≥ 22
100	8.0	3000 – 3500	≥ 18
200	10.1	3500 – 5000	≥ 15
300	14.0	-	-
500	17.3	-	-
800	22	-	-
1000	25.8	-	-
1500	32	-	-
2250	41.6	-	-
3000	49	-	-
3500	54.4	-	-
4000	57.1	-	-
4500	62.2	-	-
5000	67.1	-	-



Application

Video cables are primary used in closed circuit TV systems and in studio applications.

Standards

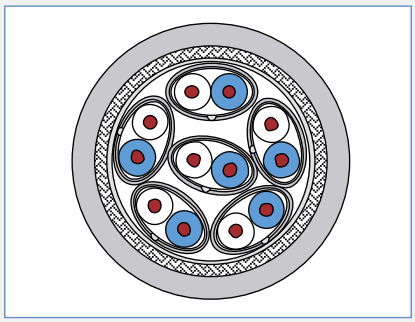
For analogue and digital video signals (Composite, Component, SDI, SDV, SDTI, HDTV)

Ordering Information

P/N	Product Description	P.U
60016740	DR 1.2L/4.8DZ DMC FLEX PUR HDTV	TBA
60016741	DR 1.2L/4.8DZ DMC FLEX PUR HDTV 1000DW	1000m/drum

AC10 SS 23/1 nxP

Audio Cable



Application

Audio cables are used in professional broadcasting systems for the transmission of analogue and digital audio signals.

Standards

Basing upon ARD-Specification and acc. to AES/EBU-Recommendation.)

Fire Rating

- VDE 0472 part 804 class B or C and IEC 332-1 or 332-3 cat. CF

Construction

Conductor	solid copper wire, bare 0.56 mm (cross section 0.26 mm²)	Ø AWG23/1
Insulation	Foam-skin-PE	Ø 1.4 mm
Pair stranding	Two cores twisted to the pair	
Pair identification	a - core: white, b - core: blue (the above colours in regular intervals)	
Pair screen	Al-PET-foil, Aluminium outside + solid copper drain wire, tinned	Ø 2.9 mm
Pair insulation of the one pair cable	PET-foil	
Overall screen of the one pair cable	copper braid, tinned	
Pair sheath of the multi-pair cables	halogen free, flame retardant copolymere	
Colour and identification	grey RAL 7001 with number printing	
Sheath	halogen free, flame retardant copolymere	
Sheath colour	grey, RAL 7001	
Outer Diameter	Nom. 4.6(1pair) - 15.6(12pair) mm	
Weight	Nom. 27(1pair) - 320 (12pair) kg/km	
Tensile force N	Nom. 80(1pair) - 725(12pair)	

Mechanical Properties at 20°C

Bending radius during installation	with load	≥ 15 x cable diameter
	without load	≥ 10 x cable diameter
Temperature range	- 30 °C bis + 70 °C	

Electrical Properties at 20°C

BendaDC loop resistance	≤ 165 Ω/km	
Insulation resistance	≥ 2000 MΩxkm	
Mutual capacitance at 800 Hz	nom. 45 nF/km	
Capacitance unbalance (pair to ground)	≤ 1200 pF/km	
Velocity ratio	approx. 78 %	
Test voltage (50 Hz, 1 min)	700 V rms	
core/core and core/screen		
Characteristic impedance	6 MHz : 110 Ω ± 10%	
Transfer impedance	up to 10 MHz	≤ 10 mΩ/m
	up to 100 MHz	≤ 100 mΩ/m

Nominal Transmission Characteristics at 20°C

Frequency (MHz)	Near-end crosstalk (cable length: 300 m) Draka Multimedia Cable - Measurement values		Attenuation Draka Multimedia Cable - Measurement values
	neighboured pairs [dB]	unneighboured pairs [dB]	[dB/100m]
0.015	85	95	0.33
1.0	90	90	2.45
4.0	90	90	4.2
10.0	90	90	6.3
20.0	90	90	8.6

Ordering Information

P/N	Product Description	P.U
1002105 CT7649010	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 1P FRNC-C	1000m/drum
1002115 CT7649710	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 2P FRNC-C	1000m/drum
1002106 CT7649110	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 3P FRNC-C	1000m/drum
1002108 CT7649210	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 5P FRNC-C	1000m/drum
1002109 CT7649310	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 6P FRNC-C	1000m/drum
1002103 CT7648710	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 8P FRNC-C	1000m/drum
1002111 CT7649410	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 10P FRNC-C	1000m/drum
1002113 CT7649510	Audio Cable, AC10 SS 23/1 nxP, AC10 SS 23/1 12P FRNC-C	1000m/drum

AC10 SS 26/7 x pairs

Audio Cable

Construction

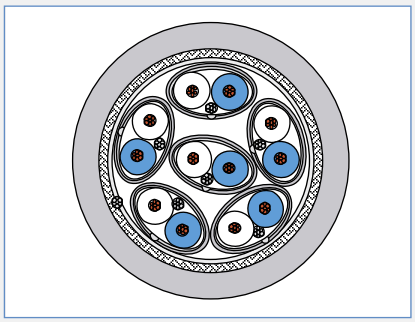
Conductor	stranded copper wires, bare 0.48 mm (cross section 0.14 mm²)	Ø AWG26/7 mm
Insulation	Foam-skin-PE	Ø 1.2 mm
Pair stranding	two cores twisted to the pair	Ø 2.4 mm
Pair identification	a - core: white, b - core: blue (the above colours in regular intervals)	
Pair screen	Al-PET-foil, Aluminum inside + stranded copper drain wires, tinned	Ø 2.5 mm
Pair insulation of the one pair cable	PET-foil,	
Pair sheath of the multi-pair cables	FRNC, flame retardant	
Colour and identification	grey RAL 7001 with number printing	
Cable lay up	n pairs twisted in layers	
Overall screen	Al-PET-foil + copper braid, tinned	
Sheath	LSZH-C	
Sheath colour	grey, RAL 7001	
Outer Diameter	Nom. 4.2(1pair) - 19.5(24pair) mm	
Weight	Nom. 23(1pair) - 395(24pair) kg/km	
Tensile force N	Nom. 50(1pair) - 1325(24pair)	

Mechanical Properties at 20°C

Bending radius during installation	with load	≥ 10 x cable diameter
	without load	≥ 15 x cable diameter
Temperature range	-	- 30 °C up to + 70 °C
Fire propagation	-	VDE 0472 part 804 class B or C and IEC 332-1 or 332-3 cat. CF

Electrical Properties at 20°C

DC loop resistance (at 20 ± 5 °C)	≤ 288 Ω/km	
Insulation resistance (at 20 ± 5 °C and 500 V)	≥ 2000 MΩxkm	
Mutual capacitance at 800 Hz	nom. 45 nF/km	
Capacitance unbalance (pair to ground)	≤ 1200 pF/km	
Velocity ratio	approx. 78 %	
Test voltage (50 Hz, 1 min)	700 V rms	
core/core and core/screen		
Characteristic impedance	6 MHz : 110 Ω ± 10%	
Transfer impedance	up to 10 MHz	≤ 10 mΩ/m
	up to 100 MHz	≤ 100 mΩ/m



Application

Audio cables are used in professional broadcasting systems for the transmission of analog and digital audio signals.

Standards

Basing upon ARD-Specification and acc. to AES/EBU-Recommendation.)

Fire Rating

- VDE 0472 part 804 class B or C and IEC 332-1 or 332-3 cat. CF

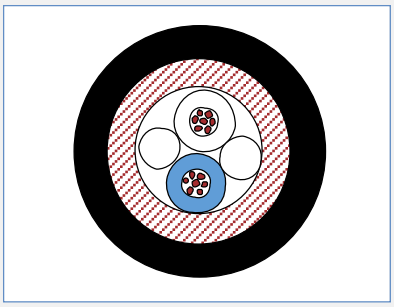
Electrical Data at 20°C

Frequency (MHz)	Near-end crosstalk (cable length: 300 m) Draka Multimedia Cable - Measurement values		Attenuation Draka Multimedia Cable - Measurement values
	neighboured pairs [dB]	unneighboured pairs [dB]	[dB/100m]
0.015	85	85	0.55
1.0	90	85	3.0
4.0	90	90	5.3
10.0	90	90	8.1
20.0	90	85	11.5

Ordering Information

P/N	Product Description	P.U
60011576	Audio Cable, AC10 SS 26/7 1P FRNC-C	1000m/drum
60011555	Audio Cable, AC10 SS 26/7 2P FRNC-C	1000m/drum
60011556	Audio Cable, AC10 SS 26/7 4P FRNC-C	1000m/drum
60013624	Audio Cable, AC10 SS 26/7 6P FRNC-C	1000m/drum
60010079	Audio Cable, AC10 SS 26/7 8P FRNC-C	1000m/drum
60013628	Audio Cable, AC10 SS 26/7 10P FRNC-C	1000m/drum
60013631	Audio Cable, AC10 SS 26/7 12P FRNC-C	1000m/drum
60013635	Audio Cable, AC10 SS 26/7 16P FRNC-C	1000m/drum
60013674	Audio Cable, AC10 SS 26/7 24P FRNC-C	1000m/drum

XLR PRO FLEX analogue / digital



Application

Audio cables are used in professional broadcasting systems for the transmission of analogue and digital audio signals.

Standards

AES/EBU and analogue Audio

Construction

Conductor	stranded copper wires, bare, diameter 0.60 mm
Insulation	Foam-PE + skin-layer, diameter 1.5 mm
Identification	a - core: white; b - core: blue
Stranding	two cores twisted to the bundle + cotton filler, diameter 3.0 mm
Screen	spiralled wires, CU bare, diameter 3.2 mm
Sheath	DMC FLEX PVC, diameter 6.5 mm ± 0.2 mm black, RAL 9005
Outer Diameter	Nom. 6.5 mm
Weight	Nom. 50 kg/km
Tensile force N	55

Mechanical Properties

Minimum bending radius	without load	≥ 4 x D (D= outer diameter)
	with load	≥ 8 x D (D= outer diameter)
Temperature range	during operation	- 30° C to + 70° C
	during installation	- 5° C to + 50° C

Electrical Properties at 20°C

Loop resistance	-	≤ 175 Ω/km
Insulation resistance	500 V	≥ 2000 MΩ*km
Mutual capacitance	800 Hz	nom. 45 nF/km
Velocity ratio	-	ca .78%
Test voltage	(DC. 1 min) core/core and	1000 V
	core/screen	
Characteristic impedance	6 MHz	110 Ω ± 10 %

Electrical Data at 20°C

Frequency (MHz)	Attenuation (dB/100m)
0.015	0.3
1.0	1.5
4.0	3.8
10.0	6.0
20.0	8.5

Ordering Information

P/N	Product Description	P.U
1018270	1x2x0.22², XLR PRO FLEX analogue / digital	500m/drum

Triax Cables

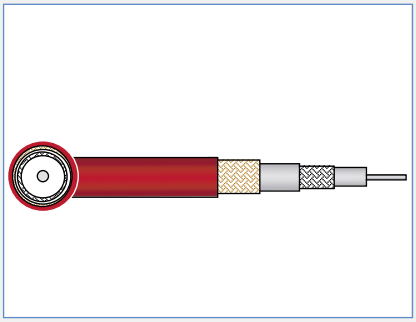
Triaxial Camera Cables

Construction

Inner conductor	solid copper wire, silvered or stranded copper wires, silvered
Insulation	Foam-PE
1st outer conductor	copper braid, thick silvered
Insulation	PE
2nd outer conductor	copper braid, bare
Sheath	PVC, PU (standard or reinforced type) or LSZH
	red, RAL 3000 altern. black or grey
Weight	87(Triax8PU) - 250(Triax 14 PVC) mm
Tensile force N	220(Triax8PU) - 550(Triax 14 PVC)

Dimensions

	Triax 8	Triax 11, Triax 11/1	AtteTriax 14ation
Inner conductor copper wire, silvered	Ø 1.0 mm	Ø 1.4 mm	–
stranded copper wires, silvered	–	–	Ø 2.2 mm
Insulation foam-PE	Ø 4.5 mm	Ø 6.5 mm	Ø 9.7 mm
Inner screen copper braid, silvered	Ø 5.1 mm	Ø 7.1 mm	Ø 10.5 mm
Insulation PE	Ø 6.6 mm	Ø 8.6 mm	Ø 11.9 mm
Outer screen copper braid, bare	Ø 7.2 mm	Ø 9.2 mm	Ø 12.7 mm
Sheath red, RAL 3000	Ø 8.4 mm	Ø 10.9 mm	Ø 14.5 mm
reinforced, sign/1	Ø 8.9 mm	Ø 12.2 mm	–



Application

Triaxial camera cables are used in professional studio applications for simultaneous transmission of energy and multiplex image signals between camera head and control system for SDI and HD-SD.
They are available as different types optimized for use inside studios and outdoor application.

Electrical properties: Triax 8 at 20°C

Characteristic impedance	-	75 Ω ± 3 %
Mutual capacitance	800 Hz	54 pF/m
DC resistance	inner conductor	25 Ω/km
	inner screen	12 Ω/km
	outer screen	10 Ω/km
Insulation resistance	inner conductor/inner screen	≥ 104 MΩ*km
	inner screen/outer screen	≥ 103 MΩ*km
Max. operating voltage	-	300 V
Screening factor		≥ 75 dB

Electrical properties: Triax 11, Triax 11/1 at 20°C

Characteristic impedance	-	75 Ω ± 3 %
Mutual capacitance	800 Hz	54 pF/m
DC resistance	inner conductor	13 Ω/km
	inner screen	10 Ω/km
	outer screen	8 Ω/km
Insulation resistance	inner conductor/inner screen	≥ 10^4 MΩ*km
	inner screen/outer screen	≥ 10^3 MΩ*km
Max. operating voltage	-	400 V
Screening factor		≥ 75 dB

Electrical properties: Triax 14

Characteristic impedance	-	75 Ω ± 3 %
Mutual capacitance	800 Hz	54 pF/m
DC resistance	inner conductor	6 Ω/km
	inner screen	6 Ω/km
	outer screen	4 Ω/km
Insulation resistance	inner conductor/inner screen	≥ 10^4 MΩ*km
	inner screen/outer screen	≥ 10^3 MΩ*km
Max. operating voltage	-	600 V
Screening factor		≥ 75 dB

4.3 Camera Cables

Electrical Properties: Triax 8 at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.6	1 - 100	> 26
10	2.2	100 - 300	> 23
20	3.2	-	-
40	4.6	-	-
50	5.1	-	-
60	5.6	-	-
100	7.5	-	-
300	13.8	-	-

Electrical Data: Triax 11, Triax 11/1 at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.5	1 - 100	> 26
10	1.6	100 - 300	> 23
20	2.3	-	-
40	3.3	-	-
50	3.7	-	-
60	4.1	-	-
100	5.4	-	-
300	10.3	-	-

Electrical Data: Triax 14 at 20°C

Frequency (MHz)	Attenuation (dB/100m)	Frequency (MHz)	Return loss (dB)
1	0.4	1 - 100	> 26
10	1.1	100 - 300	> 23
20	1.6	-	-
40	2.3	-	-
50	2.6	-	-
60	2.8	-	-
100	3.8	-	-
300	7.7	-	-

Ordering Information

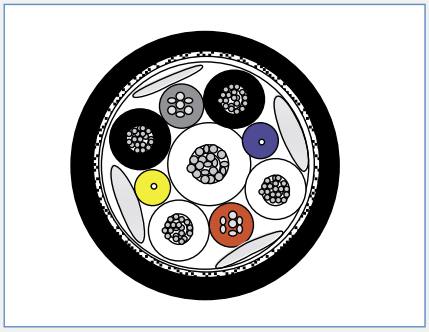
P/N	Product Description	P.U
1002223 CT2765700	Triax 8 PVC red, Triaxial Camera Cables	1000m/drum
1017271 CT2765702	Triax 8 PVC black, Triaxial Camera Cables	1000m/drum
1002221 CT2765500	Triax 8 PU, Triaxial Camera Cables	1000m/drum
1002266 CT2853201	Triax 8 LSZH, Triaxial Camera Cables	1000m/drum
1002268 CT2853203	Triax 8 LSZH reinforced, Triaxial Camera Cables	1000m/drum
1002226 CT2766400	Triax 11 PVC, Triaxial Camera Cables	1000m/drum
1002229 CT2766404	Triax 11 PE black, Triaxial Camera Cables	1000m/drum
1002233 CT2766600	Triax 11 PU red, Triaxial Camera Cables	1000m/drum
1002234 CT2766601	Triax 11 PU black, Triaxial Camera Cables	1000m/drum
1002243 CT2767101	Triax 11/1 PU reinforced, Triaxial Camera Cables	1000m/drum
1002264 CT2850801	Triax 11 LSZH, Triaxial Camera Cables	1000m/drum
1002236 CT2766700	Triax 14 PVC, Triaxial Camera Cables	1000m/drum
1002239 CT2766704	Triax 14 PE, Triaxial Camera Cables	1000m/drum
1002273 CT7666700	Triax 14 LSZH, Triaxial Camera Cables	1000m/drum
1002240 CT2767000	Triax 14 PU, Triaxial Camera Cables	1000m/drum

SMPTE 311M-HD-Hybrid-Camera Cable

Hybrid-HDTV-Camera Cable

Construction

Element 1: Auxiliary Conductors AWG20 (4 x 0.6 mm²)	
Conductor	tinned stranded copper wires, 19 x 0.20 mm, diameter 1.0 mm
Insulation	HDPE, diameter 1.5 mm
Identification	2 x black, 2 x white
Element 2: Signal Conductors AWG24 (2 x 0.22 mm²)	
Conductor	tinned stranded copper wires, 7 x 0.20 mm, diameter 0.6 mm
Insulation	HDPE, diameter 1.1 mm
Identification	1 x red, 1 x grey
Element 3: Fibre Optic Single Mode (2 x 9/125µ)	
Mode field diameter	at 1310 nm, diameter 9.5 µm ± 1 µm
Cladding diameter	diameter 125 µm ± 1 µm
Concentricity error	≤ 1 µm
Coating material	UV-cross-linked Acrylate, diameter 245 µm
Buffer material	Thermoplastic, diameter 0.9 µm ± 0.05 µm
Identification	1 x blue, 1x yellow
Element 4: Strength Member AWG16 (1 x 1.22 mm²)	
Conductor	galvanized steel wires, diameter 1.6 mm
Insulation	HDPE, diameter 2.1 mm
Identification	1 x white
Cable lay up	
Stranding	Core: 1 x Element 4, diameter 2.1 mm
	Layer: 4 x Element 1 + 2 x Element 2 + 2 x Element 3 and in the outer interstices 4 x fibrillated Polypropylene as needed for roundness, diameter 5.2 mm
	Sequence according to the above drawing
Wrapping	1 x non-woven fabric tape, diameter 5.4 mm
Screen	Copper wire braid, tinned 95% opt. coverage, diameter 5.9 mm
Sheath	FRNC, diameter 9.2 mm
	black, RAL 9005
Weight	Nom. 115 kg/km
Tensile force N	Nom. 800



Application

This Hybrid HD Camera Cable 2SM 9/125 + 4 x AWG20 + 2 x AWG24 acc. to SMPTE 311M-Standard contains Single-Mode Optical Fibres, Auxiliary- and Signal Conductors. It is used in professional video productions for simultaneous transmission of energy, video, audio and control signals and is intended to interconnect Camera Units and Base Stations in conjunction with the Connector Interface Standard. It is suitable for all new digital camera systems of well-known manufacturers.

Standards

SMPTE 311M

Fire Rating

IEC 60332-1, IEC 60754-2, IEC 61034

Mechanical Properties at 20°C

Temperature range PUR (FRNC)	during operation	- 40° C to + 70° C (-25°C to +70°C)
Max. humidity	-	95 %

Electrical Properties at 20°C

Auxiliary Conductors AWG20 (4 x 0.6 mm²)		
DC resistance	-	≤ 35.3 Ω/km
Loop resistance	-	≤ 43 Ω/km
Insulation resistance	-	≥ 10^4 MΩ*km
Test voltage	-	1750 $V_{AC\ rms}$
Operating voltage	-	≤ 300 $V_{AC\ rms}$
Signal Conductors AWG24 (2 x 0.22 mm²)		
DC resistance	-	≤ 97.5 Ω/km
Loop resistance	-	≤ 184 Ω/km
Insulation resistance	-	≥ 10^4 MΩ*km
Test voltage	-	1750 $V_{AC\ rms}$
Operating voltage	-	≤ 300 $V_{AC\ rms}$
Overall screen		
DC resistance	-	≤ 20 Ω/km

Optical Properties

Fibre Optic Single Mode (2 x 9/125µ)		
Cut-off wavelength	-	1100 – 1350 nm
Attenuation	at 1310 nm	0.5 dB
Dispersion	at 1310 nm	3.5 ps/nm*km

Ordering Information

P/N	Product Description	P.U
60011292	SMPTE 311M Hybrid Camera Cable, FRNC	1000m/drum

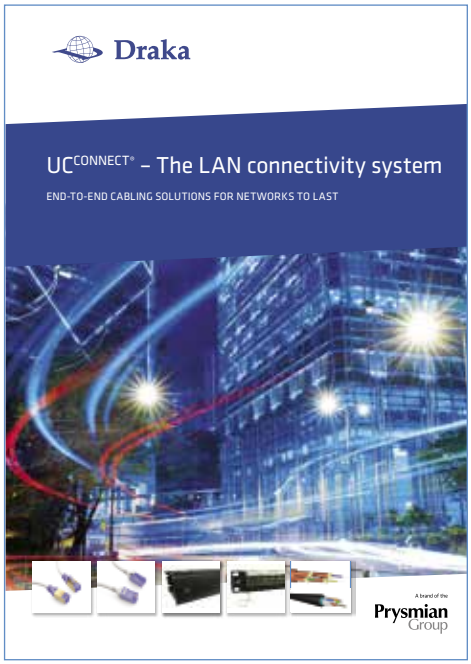
Services and related documents

Certified engineers enjoy full vendor support before, during and after completion of their projects.

Before
Already before your project commences – we are there to train you on all features of Draka UC cabling system. If you are an experienced professional or still improving your engineering skills – it offers you the right mix of theory and practice to get you going better. Take advantage of a world leading manufacturer's resources.

During
If your project is fully running and you face an issue – trust in our experienced in-field support. You will not be alone if there are questions about testing, standards or installation practices. If there is uncertainty about your specification, we are there to give you support.

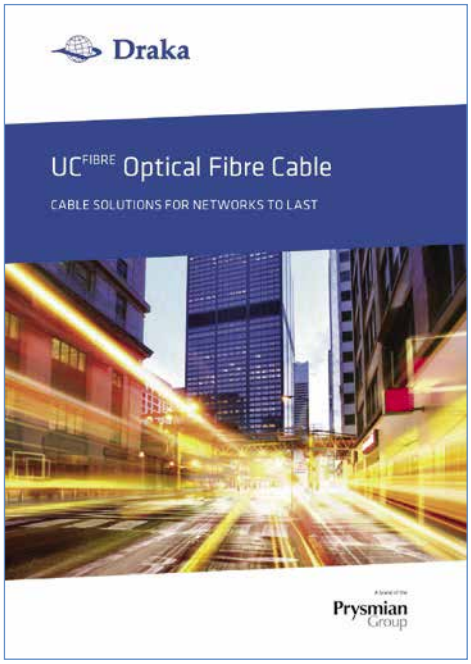
After
Needless to say – the 3rd party approved Draka solutions are entirely covered by an end-to-end system warranty.
Please contact our local offices to enquire about the Draka UC Structure Cabling System Warranty Program.



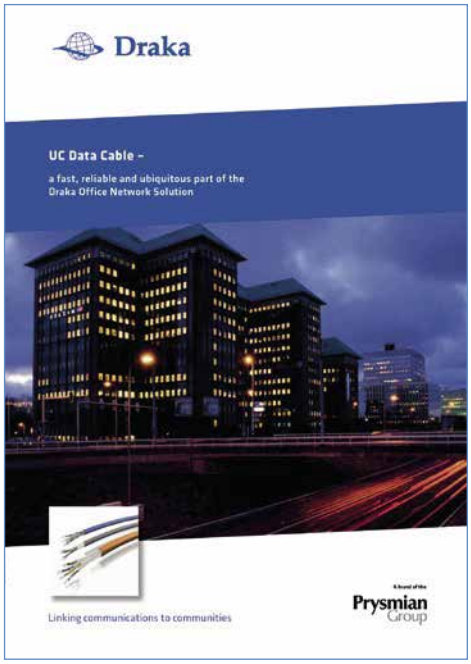
UC CONNECT® The LAN connectivity system

Draka UC Structured Cabling Warranty

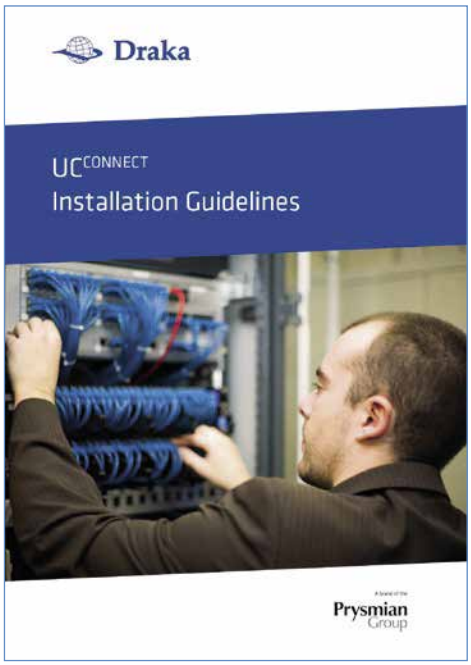
UC CONNECT® 3rd party approvals



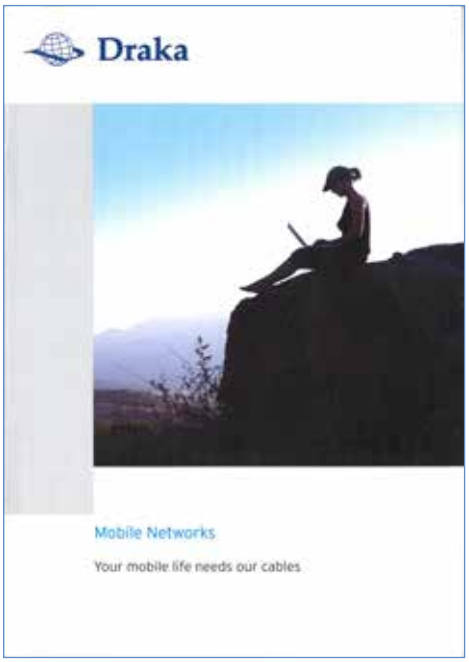
UC FIBRE® Optical Fibre Cable



UC Data® Cable



UC CONNECT® Installation Guidelines



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SINGAPORE (ASIA PACIFIC)

No 20. Jurong Port Road,
Jurong Town
SINGAPORE 619094
Tel +65 6898 3633 Fax: +65 6265 2226

INDONESIA

Perkantoran Hijau Arkadia, Tower F,
7th Floor Suite 701
Jl. T.B. Simatupang Kav. 88, Jakarta 12520
INDONESIA
Tel +62 21 7816515 Fax +62 21 7816504

THAILAND

2170 Bangkok Tower, New Petchburi Rd,
Huaykhwang, Bangkapi, Bangkok 10310
THAILAND
Tel +662 3080 830 Fax +662 6080 054

MALAYSIA

Suite 1201-3, Level 12, Tower 2,
Kelana Brem Towers,
Jalan SS7/15 Off Jalan Stadium,
Kelana Jaya, 47301 Petaling Jaya,
MALAYSIA
Tel +60 3 7803 7171 FAX +60 3 7803 7575

VIETNAM

9th Floor, Central Park Building,
208 Nguyen Trai Street, Dist 1, HCM,
VIETNAM
Tel +84 8 392 60581 Fax +84 8 392 60580

UNITED KINGDOM

Chickenhall Lane,
Eastleigh,
Hampshire, SO50 6YU
England
Email: uc-connect@prysmiangroup.com
Tel +44 23 8029 5555 Fax: +44 23 8060 8769

TURKEY

Haktan Is Merkezi No:39 Kat 2
setustu Kabatas
34427 Istanbul
Email: tpks@prysmiangroup.com
Tel +90 212 393 7700 Fax: +90 212 393 7762

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