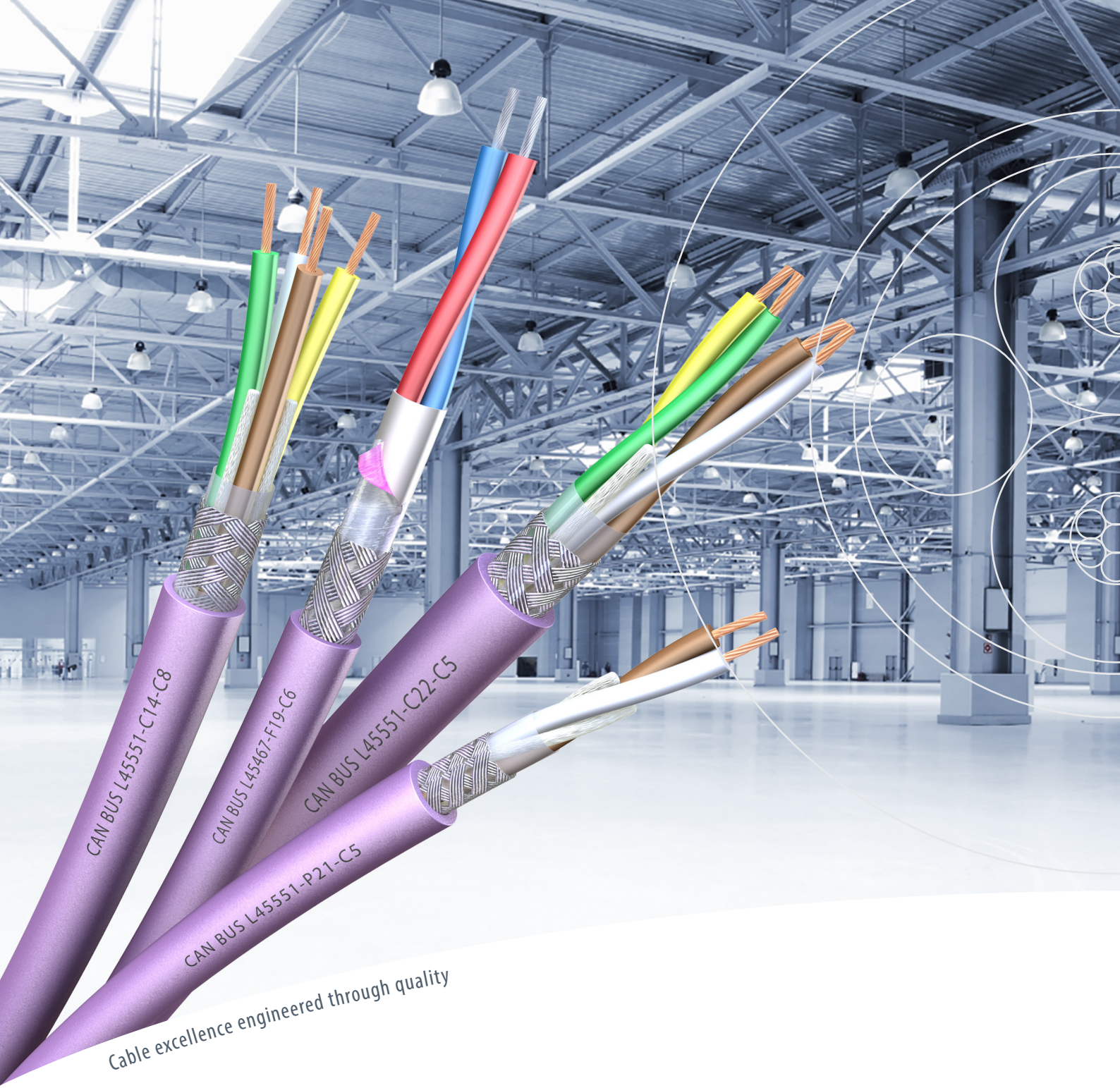


Cable excellence engineered through quality

CAN Bus

Cables for Industrial Automation

Belcom

Descriptions are correct at time of publication, however these may be reviewed at any time and are subject to change without notice. E&OE (Errors and Omissions Excepted) which means that whilst every effort has been made to ensure that the information contained within this publication is accurate, specifications may vary or be subject to change at Belcom's discretion. As such, this publication should be used as a guide only. Exact details can be confirmed at point of enquiry.
All cable renders are indicative of the product specified.

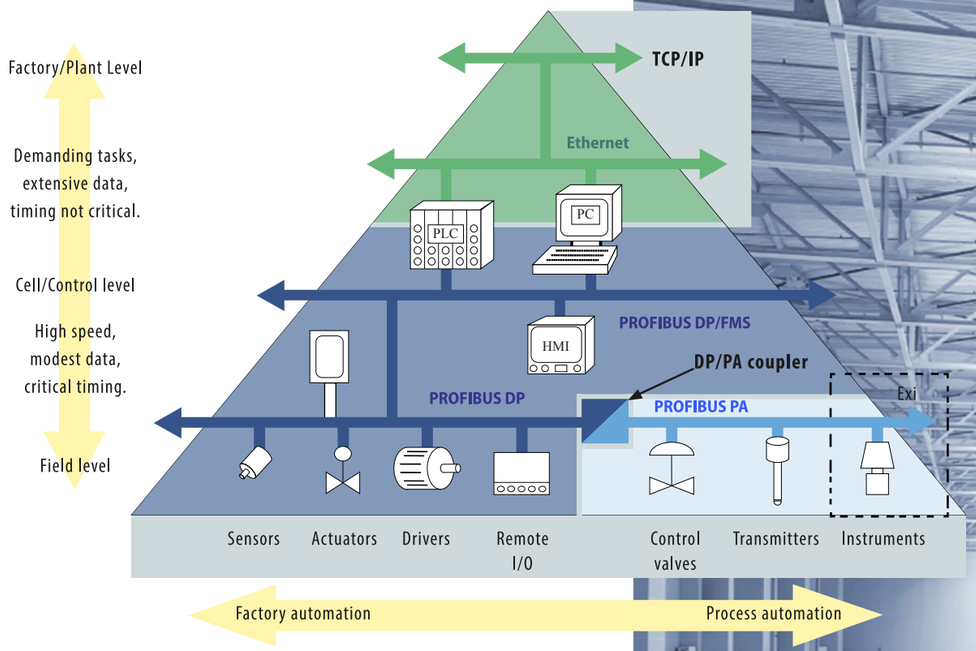
There are two major differences that separate Belcom from any other source of Fieldbus cables.

The first is stock, available cut to length and with a next day delivery across the UK or standard 2 day delivery to EIRE. The second is an unswerving commitment to providing the best quality Fieldbus cables available, this has been achieved by joining forces with Leoni special cables GmbH whose modern manufacturing plant in Northern Germany bristles with the latest in cable manufacturing technology. 'In process' continual testing cumulating in one of the best final test facilities we have seen, ensure strict adherence to performance standards critical to the performance of today's high speed data transfer requirements in the industrial network.

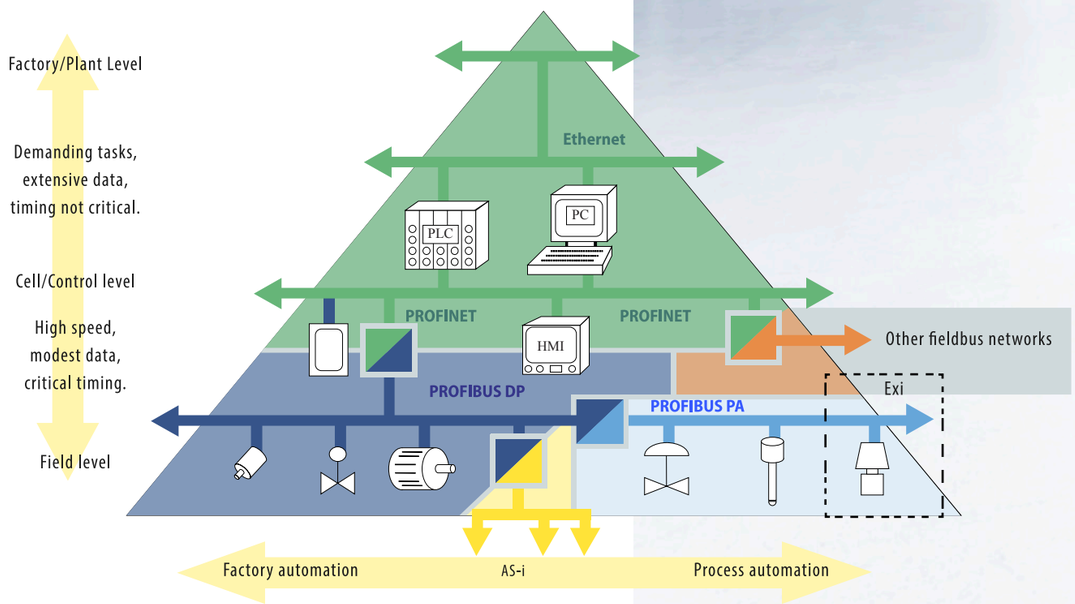
Many high tech intelligent process projects are functioning faultlessly over Leoni Fieldlink cables across the world, chemical, pharmaceutical, oil and gas, packaging, water treatment, food and beverage, automotive, you can name a process and there is already a strong presence or developing requirement for Fieldlink Fieldbus cables.

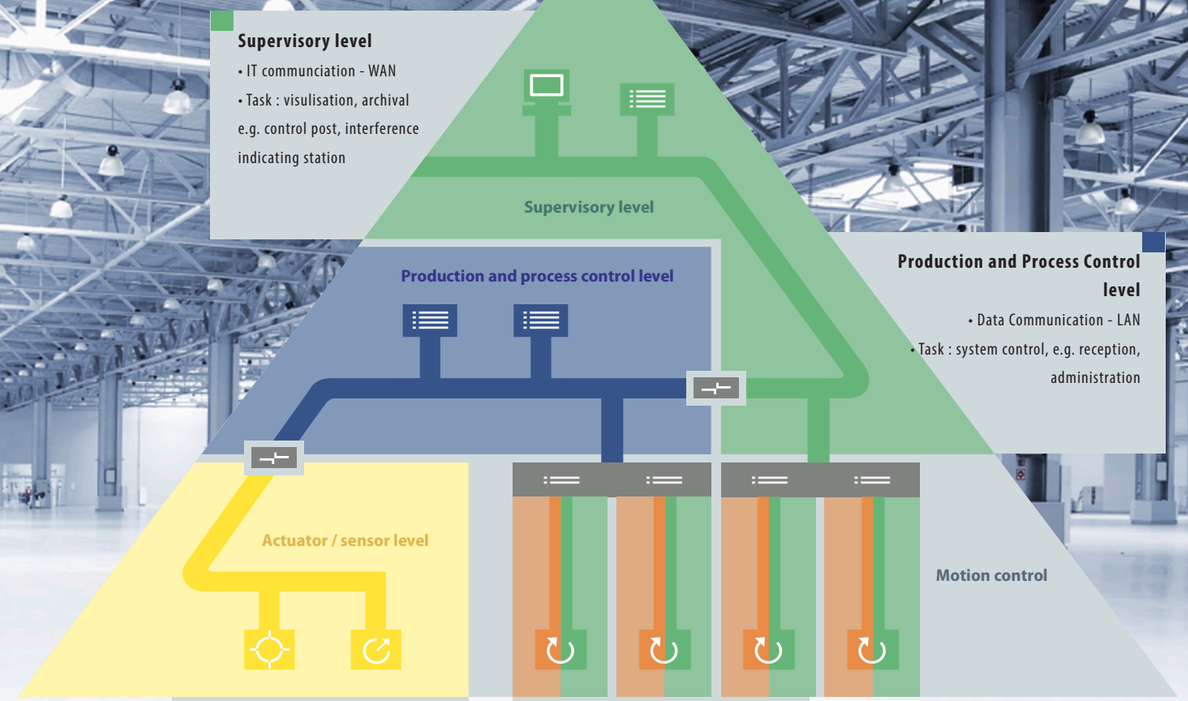
Cable is often an afterthought in the development of new technology process development, which often belies the time, research and testing that goes into producing specific cables for specific applications. With Belcom's range of Leoni Fieldlink cables you have the assurance and confidence that the best cable will be maintaining the itegrity of your industrial network.

Fields of Application



The Control system hierarchy and use of PROFIBUS and Ethernet technology





Supervisory level
- IT communciation - WAN
- Task : visulisation, archival e.g. control post, interference indicating station

Production and Process Control level
- Data Communication - LAN
- Task : system control, e.g. reception, administration

Actuator / sensor level
- Field communication (process signal)
- Task (Operation level) : processing, e.g. regulation/control of realtime functions
- Task (drive control) : Input and output, e.g, measure, regulate, move, switch.

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

CAN BUS

Cable Finder

Click on the cable cross section
to view the product specification

CAN stands for Control Area Network and is a single serial bus system which all network devices are equal, or peer to each other.

This means each control unit can send and receive signals independantly. In contrast to the other protocols, CAN does not address the device, but rather the message used by the device to decide whether or not the data is required. Each control unit on the CAN bus is equal to the other, so that important data can take precedance over unimportant data. The essential features of CAN bus are a high data transfer speed of 10 Kbps to 1 Mbps.
As a field bus, the CAN bus is used for networking complex controllers. An important field of application for the CAN bus is the automotive industry. Due to high demands e.g for protection against electromagnetic disturbances, real-time capability for fast procedures and high reliability, a two-wire bus should replace the extensive cable-trees used to connect electrical systems. The CAN bus also finds application in industry control systems and automation technology (such as programmable control systems, handling devices, robotics, medical equipment, building control systems).

- Flame retardant
- Highly flexible
- Permanent installation
- Trailing cable
- Halogen free
- Silicon free
- Oil resistant
- Cold resistant
- RoHS compliant

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www.can-cia.org

CAN BUS

CAN BUS

FieldLink®

For Permanent and Flexible Installation
1x2x24AWG/7

Cable Design

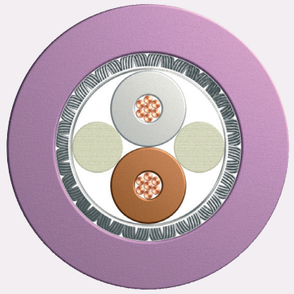
Wire		
Conductor	Stranded bare copper wire 7/0,20mm (24awg)	Ø 0,60 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,55 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 3,70 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 5,80 ± 0,30 mm
Wall thickness	1,05 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-A21-C35	CAN cable for permanent and flexible installation, 1x2x24AWG7, UL recognised: AWM



| Cable excellence engineered through quality

Electrical Data @ 20˚C

Conductor resistance			≤	87,6	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±15	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Test Voltage (wire/wire/screen rms 50Hz min.)				2000	V
Relative velocity of propagation			≈	76	%
Operating voltage (peak)			≤	250	V
Test voltage (wire/wire rms 50Hz 1min)				1500	V
Test voltage (wire/screen rms 50Hz 1min)				1000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,7	1,7	3,9	5,6	8,1

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		39	kg/km

CAN BUS

FieldLink®

For Permanent and Flexible Installation
1x2x22AWG/7

Cable Design

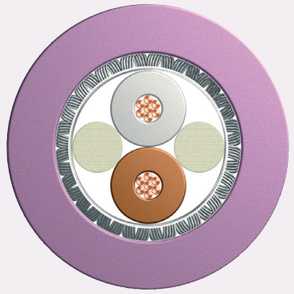
Wire		
Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,00 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	Ø 4,60 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 6,80 ± 0,30 mm
Wall thickness	1,10 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-P21-C5	CAN cable for permanent and flexible installation, 1x2x22AWG7, UL recognised: AWM



Electrical Data @ 20˚C

Conductor resistance			≤	55	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	38	nF/km
Characteristic Impedance	1	MHz		120±20	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	79	%
Operating voltage (peak)			≤	300	V
Test Voltage (wire/wire/screen rms 50Hz min.)				2000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,5	1,5	3,3	4,7	6,7

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		52	kg/km

CAN BUS

FieldLink®

For Permanent and Flexible Installation
1x2x20AWG/7

Cable Design

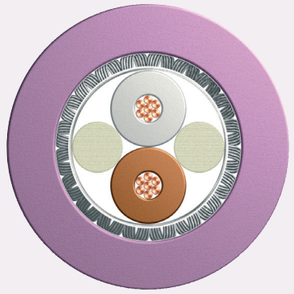
Wire		
Conductor	Stranded bare copper wire 7/0,32mm (20awg)	Ø 0,94 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,40 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 5,40 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 7,50 ± 0,30 mm
Wall thickness	1,0 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-C21-C5	CAN cable for permanent and flexible installation, 1x2x20AWG7, UL recognised: AWM



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Electrical Data @ 20˚C

Conductor resistance			≤	34,4	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	76	%
Operating voltage (peak)			≤	300	V
Test Voltage (wire/wire/screen rms 50Hz min.)				2000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,3	1,1	2,8	3,9	5,7

Mechanical & Thermal Characteristics

Permissable temperature range		-30 ~ +80	˚C
Min. Bending radius allowed	repeated	7	x Ø
Min. Bending radius allowed	single	5	x Ø
Weight (approx.)		64	kg/km

CAN BUS

FieldLink®

For Permanent and Flexible Installation
2x2x24AWG/7

Cable Design

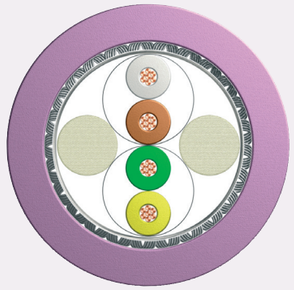
Wire		
Conductor	Stranded bare copper wire 7/0,20mm (24awg)	Ø 0,60 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,30 mm
Pair	2 wires twisted to a pair	
Core		
1° Layer	2 pairs twisted (WH/BN-GN/YW) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	Ø 5,00 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 7,50 ± 0,30 mm
Wall thickness	1,20 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-A22-C5	CAN cable for permanent and flexible installation, 2x2x24AWG7, UL listed: CMX



Electrical Data @ 20°C

Conductor resistance			≤	87,6	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±15	Ohm
Near-end crosstalk attenuation	20	MHz		40	dB
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	76	%
Operating voltage (peak)			≤	250	V
Test voltage (wire/wire rms 50Hz 1min)				1500	V
Test voltage (wire/screen rms 50Hz 1min)				1000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,6	1,7	3,9	5,6	8,1

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	°C
Min. Bending radius allowed	repeated	7	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		64	kg/km

CAN BUS

FieldLink®

For Permanent and Flexible Installation
2x2x22AWG/7

Cable Design

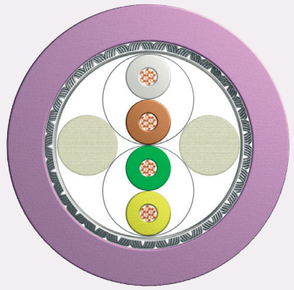
Wire		
Conductor	Stranded bare copper wire 7/0,25mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,70 mm
Pair	2 wires twisted to a pair	
Core		
1° Layer	2 pairs twisted (WH/BN-GN/YW) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	Ø 6,40 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 8,50 ± 0,30 mm
Wall thickness	1,0 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-P22-C5	CAN cable for permanent and flexible installation, 2x2x22AWG7, UL listed: CMX



Electrical Data @ 20°C

Conductor resistance			≤	55	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	35	nF/km
Characteristic Impedance	1	MHz		120±20	Ohm
Near-end crosstalk attenuation	20	MHz		40	dB
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	76	%
Operating voltage (peak)			≤	300	V
Test Voltage (wire/wire/screen rms 50Hz min.)				2000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,4	1,3	3,1	4,3	6,4

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	°C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		77	kg/km

CAN BUS

FieldLink®

For Permanent and Flexible Installation
2x2x21AWG/7

Cable Design

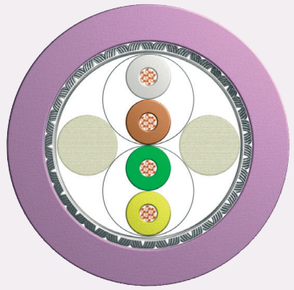
Wire		
Conductor	Stranded bare copper wire 7/0,30mm (21awg)	Ø 0,90 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,00 mm
Pair	2 wires twisted to a pair	
Core		
1° Layer	2 pairs twisted (WH/BN-GN/YW) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	Ø 7,20 mm
Outer Jacket	Polyvinylchloride (PVC), Violet	Ø 9,60 ± 0,30 mm
Wall thickness	1,0 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- UL-Style 2464

Specification

Part Number	Type
L45551-C22-C5	CAN cable for permanent and flexible installation, 2x2x21AWG7, UL listed: CMX



Electrical Data @ 20°C

Conductor resistance			≤	38	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Near-end crosstalk attenuation	20	MHz		40	dB
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	76	%
Operating voltage (peak)			≤	250	V
Test voltage (wire/wire rms 50Hz 1min)				1500	V
Test voltage (wire/screen rms 50Hz 1min)				1000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,45	1,1	2,8	3,9	5,7

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	°C
Min. Bending radius allowed	repeated	7	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		97	kg/km

CAN BUS

FieldLink®

For High Flexible Installation
in Harsh Environments 1x2x24AWG/19

Cable Design

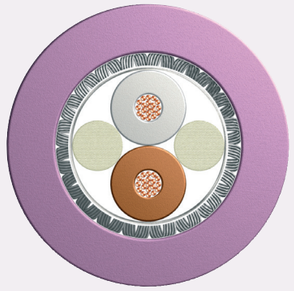
Wire		
Conductor	Stranded bare copper wire 19/0,135mm (24awg)	Ø 0,70 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,60 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	
Tape	Plastic tape overlapped	Ø 3,90 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 6,30 ± 0,30 mm
Wall thickness	1,20 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Oil resistant acc. to IEC 60811-2-1

Specification

Part Number	Type
L45551-B21-C8	CAN cable for high flexible installation in harsh environments, 2x24AWG19



Electrical Data @ 20˚C

Conductor resistance			≤	80	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	78	%
Operating voltage (peak)			≤	250	V
Test voltage (wire/wire rms 50Hz 1min)				1500	V
Test voltage (wire/screen rms 50Hz 1min)				1000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,65	1,9	4,3	8,1	10,5

Mechanical & Thermal Characteristics

Permissable temperature range		-30 ~ +80	˚C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		44	kg/km

CAN BUS

FieldLink®

For High Flexible Installation
in Harsh Environments 1x2x22AWG/44

Cable Design

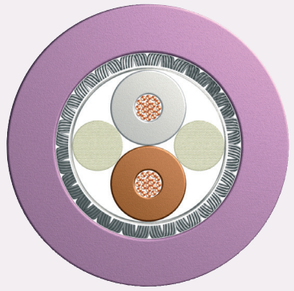
Wire		
Conductor	Stranded bare copper wire 44/0,10mm (22awg)	Ø 0,76 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,00 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 80% coverage	Ø 4,60 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 6,90 ± 0,30 mm
Wall thickness	1,10 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Oil resistant acc. to IEC 60811-2-1,
- UL-Style 20351

Specification

Part Number	Type
L45551-P21-C8	CAN cable for high flexible installation in harsh environments, 2x22AWG44, UL recognised: AWM



Electrical Data @ 20˚C

Conductor resistance			≤	55	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±20	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	79	%
Operating voltage (peak)			≤	250	V
Test Voltage (wire/wire/screen rms 50Hz min.)				1500	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,5	1,5	4,0	6,6	9,0

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		52	kg/km

CAN BUS

FieldLink®

For High Flexible Installation
in Harsh Environments 1x2x21AWG/66

Cable Design

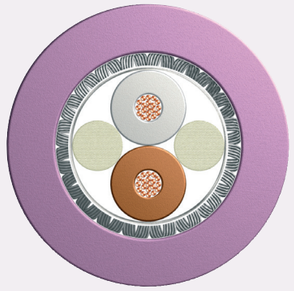
Wire		
Conductor	Stranded bare copper wire 66/0,10mm (22awg)	Ø 0,95 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,40 mm
Core		
Pair	2 wires twisted to a pair (WH-BN) with fillers	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 5,40 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 7,70 ± 0,30 mm
Wall thickness	1,15 mm	

Characteristics

- Flame retardant acc. to IEC 60332-1-2,
- Oil resistant acc. to IEC 60811-2-1,

Specification

Part Number	Type
L45551-C21-C8	CAN cable for high flexible installation in harsh environments, 2x21AWG66



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Electrical Data @ 20˚C

Conductor resistance			≤	38	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	36	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Surface Transfer Impedance	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	80	%
Operating voltage (peak)			≤	300	V
Test Voltage (wire/wire/screen rms 50Hz min.)				2000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,5	1,3	3,4	4,9	7,3

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	repeated	7	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		62	kg/km

| Cable excellence engineered through quality

CAN BUS

FieldLink®

Trailing Cable for High Flexible Installation in Harsh Environments 4x24AWG/19

Cable Design

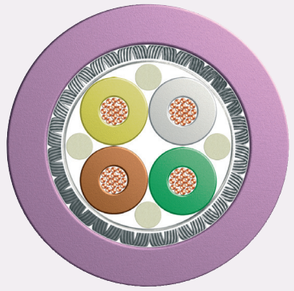
Wire		
Conductor	Stranded bare copper wire 19/0,125mm (24awg)	Ø 0,60 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,40 mm
Core		
Central element	Filler	
1˚ Layer	4 wires twisted (WH-GN-BN-YW)	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	
Tape	Plastic tape overlapped	Ø 4,40 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 6,40 ± 0,20 mm

Characteristics

- Sunlight resistant,

Specification

Part Number	Type
L45551-B14-C8	CAN trailing cable for high flexible installation in harsh environments, 4x24AWG19, UL listed: CMX



Electrical Data @ 20˚C

Conductor resistance			≤	84	Ohm/km
Insulation resistance			≥	10	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±12	Ohm
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				1500	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,75	2,2	5,2	7,8	11,4

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	repeated	8	x Ø
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		46	kg/km
Trailing Cable		5 million cycles	
		bending radius 15 x max. Ø	
		acceleration 4/ms^2	
		at a speed of 4 m/s	

| Cable excellence engineered through quality

CAN BUS

FieldLink®

Trailing Cable for High Flexible Installation in Harsh Environments 4x22AWG/19

Cable Design

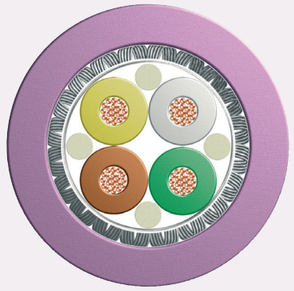
Wire		
Conductor	Stranded bare copper wire 19/0,16mm (22awg)	Ø 0,77 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 1,80 mm
Core		
Central element	Filler	
1˚ Layer	4 wires twisted (WH-GN-BN-YW)	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 85% coverage	
Tape	Plastic tape overlapped	Ø 5,40 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 7,40 ± 0,20 mm

Characteristics

- Sunlight resistant,

Specification

Part Number	Type
L45551-P14-C8	CAN trailing cable for high flexible installation in harsh environments, 4x22AWG19, UL listed: CMX



Electrical Data @ 20˚C

Conductor resistance			≤	52	Ohm/km
Insulation resistance			≥	10	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±12	Ohm
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				1500	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,6	1,8	4,2	6,0	8,8

Mechanical & Thermal Characteristics

Temperature range	fixed	-50 ~ +80	˚C
Temperature range	mobile	-30 ~ +80	˚C
Weight (approx.)		65	kg/km
Trailing Cable		5 million cycles	
		bending radius 15 x max. Ø	
		acceleration 4/ms²	
		at a speed of 4 m/s	

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FieldLink®

Trailing Cable for High Flexible Installation in Harsh Environments 4x21AWG/66

Cable Design

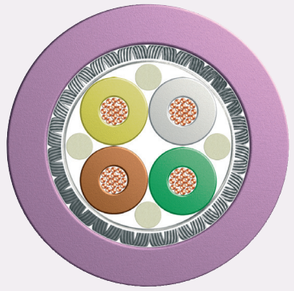
Wire		
Conductor	Stranded bare copper wire 66/0,10mm (1awg)	Ø 0,95 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,30 mm
Core		
Central element	Filler	
1° Layer	4 wires twisted to form a star-quad (WH-GN-BN-YW)	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 90% coverage	
Tape	Plastic tape overlapped	Ø 6,80 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 8,80 ± 0,40 mm

Characteristics

- Sunlight resistant,
- Halogen free acc. to IEC 60754,

Specification

Part Number	Type
L45551-C14-C8	CAN trailing cable for high flexible installation in harsh environments, 4x21AWG66, UL listed: CMX



Electrical Data @ 20°C

Conductor resistance			≤	38	Ohm/km
Insulation resistance			≥	10	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±12	Ohm
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				1500	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,48	1,5	4,1	5,9	8,6

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	°C
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		89	kg/km
Trailing Cable	5 million cycles		
	bending radius 15 x max. Ø		
	acceleration 4/ms²		
	at a speed of 4 m/s		

CAN BUS

FieldLink®

Trailing Cable for High Flexible Installation in Harsh Environments 4x19AWG/37

Cable Design

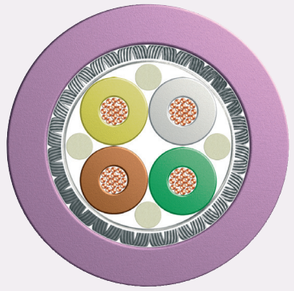
Wire		
Conductor	Stranded bare copper wire 66/0,10mm (1awg)	Ø 0,95 mm
Insulation	Foamed Polyethylene (PE) with skin	Ø 2,30 mm
Core		
Central element	Filler	
1˚ Layer	4 wires twisted to form a star-quad (WH-GN-BN-YW)	
Tape	Plastic tape overlapped	
Braid	Tinned copper wire braid, 90% coverage	
Tape	Plastic tape overlapped	Ø 6,80 mm
Outer Jacket	Thermoplastic Polyurethane (TPU), Violet	Ø 8,80 ± 0,40 mm

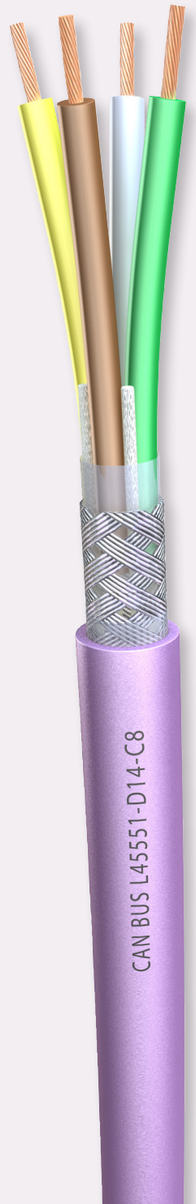
Characteristics

- Sunlight resistant,
- Halogen free acc. to IEC 60754,

Specification

Part Number	Type
L45551-D14-C8	CAN trailing cable for high flexible installation in harsh environments, 4x19AWG37, UL listed: CMX





| Cable excellence engineered through quality

Electrical Data @ 20˚C

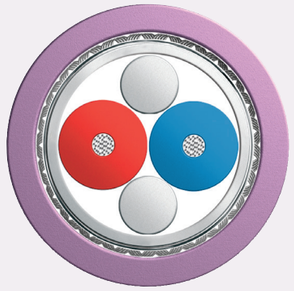
Conductor resistance			≤	26	Ohm/km
Insulation resistance			≥	10	GOhm*km
Capacitance (1 kHz)			≈	40	nF/km
Characteristic Impedance	1	MHz		120±12	Ohm
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				1500	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,40	1,25	3,2	4,8	7,0

Mechanical & Thermal Characteristics

Permissable temperature range		-40 ~ +80	˚C
Min. Bending radius allowed	single	4	x Ø
Weight (approx.)		100	kg/km
Trailing Cable	5 million cycles		
	bending radius 15 x max. Ø		
	acceleration 4/ms²		
	at a speed of 4 m/s		

Armada® *ES Cable for Marine Applications*
2x21AWG19



Cable Design

Wire

Conductor	Stranded tinned copper wire 19/0,18mm (21awg)	Ø 0,90 mm
Insulation	Foamed Polypropylene (PP) with skin	Ø 2,40 mm

Core

1° Layer	2 wires twisted to a Pair (RD-BU) with fillers	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,20 mm
Screen	Alulaminate foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 5,80 mm

Outer Jacket	Low Smoke Zero Halogen FireFighter® SHF-1	Ø 7,70 ± 0,20 mm

Characteristics

- Flame retardant acc. to IEC 60332-3-22 (Cat. A/F),
- Halogen free acc. to IEC 60754
- **Maritime and offshore approvals: Germanischer Lloyd, Det Norske Veritas**

Specification

Part Number	Type
L45467-F19-C6	Violet CAN ES cable for marine applications (easy to strip), LSZH FireFighter® SHF-1, 2x21AWG19
L45467-F19-C16	Black CAN ES cable for marine applications (easy to strip), LSZH FireFighter® SHF-1, 2x21AWG19

Germanischer Lloyd DNV

Electrical Data @ 20°C

Conductor resistance			≤	44	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	36	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Surface transfer impedance of screen	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	80	%
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				2000	V

Frequency (MHz)		0,1	1	5	10	20
Attenuation	typ. Value (dB/100m)	0,3	1,1	2,8	3,9	5,7

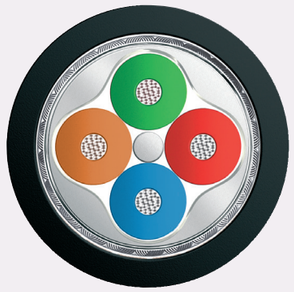
Mechanical & Thermal Characteristics

Permissable temperature range		-30 ~ +80	°C
Min. Bending radius allowed	single	4	x Ø
Min. Bending radius allowed	repeated	8	x Ø
Weight (approx.)		79	kg/km

CAN BUS

FieldLink®

Armada® *ES Cable for Marine Applications*
4x21AWG19



Cable Design

Wire		
Conductor	Stranded tinned copper wire 19/0,18mm (21awg)	Ø 0,90 mm
Insulation	Foamed Polypropylene (PP) with skin	Ø 2,20 mm
Core		
Central element	Filler	
1˚ Layer	4 wires, RD (Printing: L1 Hi), BU (Printing: L2 Lo), BN (Printing: L1 Lo), GN (Printing: L2 Hi)	
Tape	Plastic tape overlapped	
Easystrip Jacket	Soft Thermoplastic copolymer	Ø 5,80 mm
Screen	Alulaminate foil overlapped	
Braid	Tinned copper wire braid, 85% coverage	Ø 6,40 mm
Outer Jacket	Low Smoke Zero Halogen FireFighter® SHF-1	Ø 8,40 ± 0,20 mm

Characteristics

- Flame retardant acc. to IEC 60332-3-22 (Cat. A/F),
- Halogen free acc. to IEC 60754
- **Maritime and offshore approvals: Germanischer Lloyd, Det Norske Veritas, Lloyds Register**

Specification

Part Number	Type
L45467-F19-C26	CAN ES cable for marine applications (easy to strip), LSZH FireFighter® SHF-1, 4x21AWG19

Electrical Data @ 20˚C

Conductor resistance			≤	44	Ohm/km
Insulation resistance			≥	5	GOhm*km
Capacitance (1 kHz)			≈	36	nF/km
Characteristic Impedance	1	MHz		120±18	Ohm
Surface transfer impedance of screen	30	MHz	≤	250	mOhm/m
Relative velocity of propagation			≈	80	%
Operating voltage			≤	300	V
Test voltage (wire/wire/screen rms 50Hz 1min)				2000	V

Frequency (MHz)	0,1	1	5	10	20
Attenuation typ. Value (dB/100m)	0,3	1,1	2,8	3,9	5,7

Mechanical & Thermal Characteristics

Permissable temperature range		-30 ~ +80	˚C
Min. Bending radius allowed	single	4	x Ø
Min. Bending radius allowed	repeated	8	x Ø
Weight (approx.)		90	kg/km

FireFighter®

FireFighter cables are produced to exacting IEC standards for fire performance covering 60332-1 flame resistance for single cables and section 3 for bunched cables as well as low smoke generation (61034) and negligible halogen gas emission (60754-1). In addition to these, all FireFighter® cables are sheathed according to IEC60092-359 where applicable for electrical installation in ships as well as being 600 V rated for Tray Cable applications.

In order to meet demanding and diverse customer applications, FireFighter® performance materials are used in conjunction with other brands including DataGuard® (Armoured Cables), Armada® (MOG Cables), SureLAN® (Local area network cables), SureLIGHT® (Fibre Optic) and EventSeries® (Audio & Broadcast).

Whatever the application or installation, where public safety and reliability are concerned, FireFighter® Low smoke zero halogen properties have been proven to perform. It's not just LSZH sheath, It's a FireFighter® Cable.

FireFighter
Fire Performance Cables

Index

DNV

DNV BUSINESS ASSURANCE

MANAGEMENT SYSTEM CERTIFICATE

Certificate No. 136879-2013-AQ-GBR-UKAS

This is to certify that

Belcom Cables Limited

Warish Hall Road
Takeley
Bishop's Stortford
CM22 6NZ
United Kingdom

has been found to conform to the Management System Standard:

BS-EN-ISO 9001:2008

This Certificate is valid for the following product or service ranges:

Stocking and distribution of industrial electrical and optical insulated wire and cable.

Initial Certification date:
17 May 2013

This Certificate is valid until:
29 May 2016

The audit has been performed under the supervision of:
Steve Hansen
Lead Auditor

UKAS MANAGEMENT SYSTEMS

Place and date:
London, 30 May 2013

for the Accredited Unit:
DNV CERTIFICATION LIMITED, UNITED KINGDOM

Niraj Thawani
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

ACCREDITED UNIT: DNV CERTIFICATION LIMITED, PALACE HOUSE, 3, SE1 9DE, CATHEDRAL STREET, LONDON, UNITED KINGDOM, TEL: +44 (0) 20 7357 6080, www.dnvba.co.uk

Quality Management

Belcom recognise the importance of quality control and constantly monitor our quality performance to ensure compliance with relevant standards whether they are self imposed, satutory or regulatory.

Our management system is approved by DNV to BS-EN-ISO 9001:2008 standard and is an imperative part of our organisation.

Environmental documentation is available at www.belcom.co.uk/qa-environmental

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