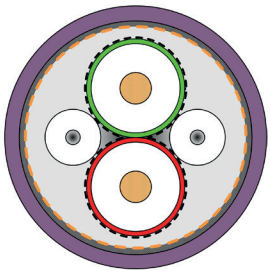
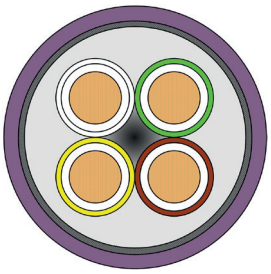
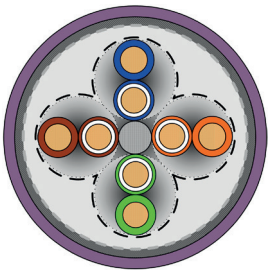
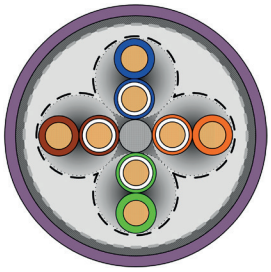
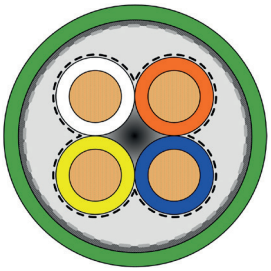
Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Profibus	CAN-Bus/Feldbus	Ethernet (CAT5/CAT5e/GigE/PoE)
CFBUS.LB.001-CFBUS.LB.004	CFBUS.LB.020-CFBUS.LB.022	CFBUS.LB.040-CFBUS.LB.045
		

Ethernet (CAT6/GigE/PoE)	Profinet (Type C)
CFBUS.LB.049	CFBUS.LB.060
	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Cable structure

Conductor	Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
Core insulation	According to bus specification.
Core structure	According to bus specification.
Core identification	According to bus specification. ▶ Product range table
Inner jacket	TPE mixture adapted to suit the requirements in e-chains®.
Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % optical
Outer jacket	Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. Colour: Red lilac (similar to RAL 4001), Variants ▶ Product range table Printing: black

„00000 m“* igus chainflex CFBUS.LB---① -----② E310776

ЯU AWM Style 22354 80°C 300V RoHS-II conform CE DESINA

---③ conform www.igus.de +++ chainflex cable works +++

*** Length printing:** Not calibrated. Only intended as an orientation aid.
① / ② Cable identification according to Part No.(see technical table).
③ Printing according to bus specification (inclusive wave resistance).
Example: ... chainflex ... **CFBUS.LB.001** ... **(2x0.25)C** ... **EAC** ...

Guaranteed service life according to guarantee conditions

Double strokes	5 million		7.5 million		12.5 million	
Temperature, from/to [°C]	CFBUS.LB .001-.022	CFBUS.LB .040-.060	CFBUS.LB .001-.022	CFBUS.LB .040-.060	CFBUS.LB .001-.022	CFBUS.LB .040-.060
	R min. [x d]	R min. [x d]	R min. [x d]	R min. [x d]	R min. [x d]	R min. [x d]
-35/-25	12.5	10	13.5	11	14.5	12
-25/+60	10	7.5	11	8.5	12	9.5
+60/+70	12.5	10	13.5	11	14.5	12

Minimum guaranteed service life of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Properties and approvals

UV resistance	Medium
Oil resistance	Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
Halogen-free	Following DIN EN 60754
PFAS-free	Use of PFAS-free materials according to the content of the REACH directive and its rules for the production and processing of chemical substances
UL verified	Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
UL AWM	Details siehe Tabelle UL AWM
CLPA	**CFBUS.LB.045:** CC-Link IE Field, Reference no. 131 **CFBUS.LB.049:** CC-Link IE Field, Reference no. 138
REACH	In accordance with regulation (EC) No. 1907/2006 (REACH)
Lead-free	Following 2011/65/EC (RoHS-II/RoHS-III)
Cleanroom	According to ISO Class 1. The outer jacket material of this series complies with CF9.15.07 - tested by IPA according to standard DIN EN ISO 14644-1
DESINA	According to VDW, DESINA standardisation
CE	Following 2014/35/EU

Properties and approvals

UL AWM details

Part no.	UL style core insultation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
CFBUS.LB.001	11807	22354	600	80
CFBUS.LB.020	11807	22354	600	80
CFBUS.LB.021	11807	22354	600	80
CFBUS.LB.022	11807	22354	600	80
CFBUS.LB.040	11632	22354	600	80
CFBUS.LB.045	11632	22354	600	80
CFBUS.LB.049	11632	22354	600	80
CFBUS.LB.060	11632	22354	600	80

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

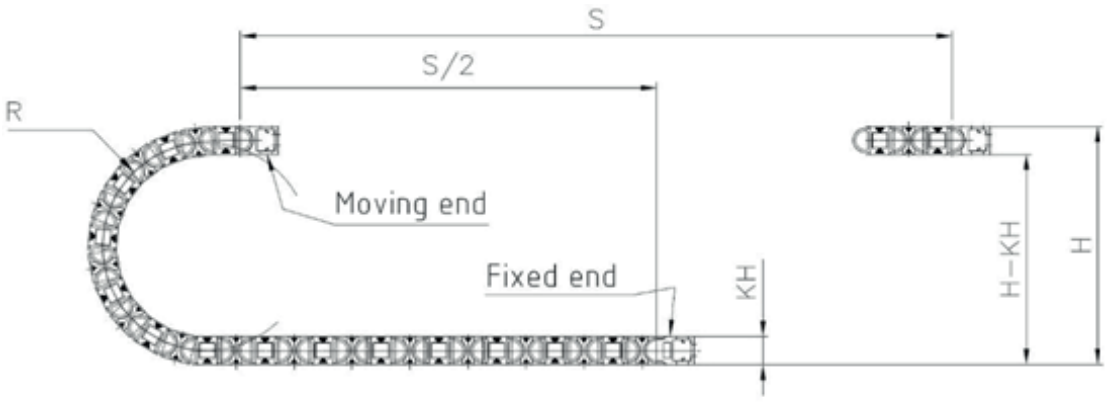
Dynamic information

Bend radius	e-chain® linear	minimum 7.5 x d
	flexible	minimum 6 x d
	fixed	minimum 4 x d
Temperature	e-chain® linear	-35 °C up to +70 °C
	flexible	-50 °C up to +70 °C (following DIN EN 60811-504)
	fixed	-55 °C up to +70 °C (following DIN EN 50305)
v max.	unsupported	10 m/s
	gliding	6 m/s
a max.		100 m/s²
Travel distance		Unsupported travel distances and up to 400 m for gliding applications, Class 6

These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

Typical lab test setup for this cable series

Test bend radius R	approx. 75 - 100 mm
Test travel S	approx. 1 - 15 m
Test duration	minimum 2 - 4 million double strokes
Test speed	approx. 0,5 - 2 m / s
Test acceleration	approx. 0.5 - 1.5 m / s²



Typical application areas

- For heaviest duty applications, Class 7
- Unsupported travel distances and up to 400 m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- No torsion, Class 1
- Indoor and outdoor applications without direct solar radiation
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, indoor cranes, low temperature applications

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Technical tables:

Mechanical information

Part No.		Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
Profibus (1x2x0,64 mm)					
CFBUS.LB.001		(2x0.25)C	9.0	33	78
CAN-Bus					
CFBUS.LB.020 [2]		(4x0.25)C	6.5	28	49
CFBUS.LB.021		(2x0.5)C	8.0	39	67
CFBUS.LB.022 [2]		(4x0.5)C	8.0	43	78
Ethernet/CAT5					
CFBUS.LB.040 [2]	EtherCAT	(4x0.25)C	7.0	33	50
Ethernet/CAT5e					
CFBUS.LB.045	CC-Link IE Field	(4x(2x0.15))C	8.5	42	71
Ethernet/CAT6					
CFBUS.LB.049	CC-Link IE Field	(4x(2x0.15))C	8.5	42	71
Profinet					
CFBUS.LB.060 [2] [13]	PROFINET EtherCAT	(4x0.38)C	7.5	39	67

[2] The chainflex® types marked with 2) are cables designed as a star-quad.
[13] Colour outer jacket: Yellow-green (RAL 6018)
G = with green-yellow earth core
x = without earth core
Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

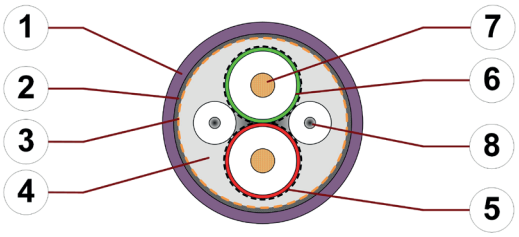
Example image

Profibus

CFBUS.LB.001-CFBUS.LB.004

Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Shield: Extremely bending-resistant braiding made of tinned copper wires
3. Shield foil: Kupfer kaschierte Kunststofffolie
4. Inner jacket: Pressure extruded, gusset-filling TPE mixture
5. Banding: Plastic foil
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
8. Filling: Plastic dummy

Example image
For detailed overview please see design table

Design table

Part No.	Core group	Colour code	Core design
CFBUS.LB.001	(2x0.25)C	red, green	
CFBUS.LB.004	(4x0.25)C	green, yellow, red, brown (Star-quad)	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Profibus

CFBUS.LB.001-CFBUS.LB.004

Electrical information

(Cable structure please see previous page)

Part No.	CFBUS.LB.001	CFBUS.LB.004
Nominal voltage	50 V 600 V (following UL)	
Testing voltage (following DIN EN 50289-1-3)	500 V	
Characteristic wave impedance (following DIN EN 50289-1-11)	150 ± 15 Ω (at 20 MHz)	

Line attenuation approx. [dB/100m]

Part No.	9.6 kHz	38.4 kHz	4 MHz	16 MHz
CFBUS.LB.001	0.3	0.4	2.6	5.5
CFBUS.LB.004	0.3	0.4	2.6	5.5

Conductor nominal cross section	Part No.	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2)	Maximum current rating at 30 °C (following DIN VDE 0298-4)
[mm²]		[Ω/km]	[A]
0.25	CFBUS.LB.001	68	5
0.25	CFBUS.LB.004	82	5

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

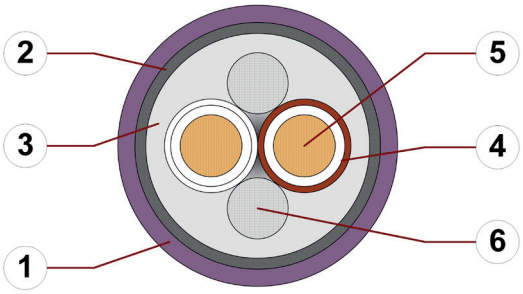
Example image

CAN-Bus/Feldbus

CFBUS.LB.020-CFBUS.LB.022

Cable structure

(Electrical information please see next page)



Example image
For detailed overview please see design table

1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
3. Inner jacket: Pressure extruded, gusset-filling TPE mixture
4. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
5. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
6. Filling: Plastic yarn

Design table

Part No.	Core group	Colour code	Core design
CFBUS.LB.020	(4x0.25)C	white, green, brown, yellow (Star-quad)	
CFBUS.LB.021	(2x0.5)C	white, brown	
CFBUS.LB.022	(4x0.5)C	white, green, brown, yellow (Star-quad)	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

CAN-Bus/Feldbus

CFBUS.LB.020-CFBUS.LB.022

Electrical information

(Cable structure please see previous page)

Part No.	CFBUS.LB.020	CFBUS.LB.021	CFBUS.LB.022
Nominal voltage		50 V 600 V (following UL)	
Testing voltage (following DIN EN 50289-1-3)		500 V	
Characteristic wave impedance (following DIN EN 50289-1-11)		120 ± 12 Ω (at 1 MHz)	

Conductor nominal cross section	Part No.	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2)	Maximum current rating at 30 °C (following DIN VDE 0298-4)
[mm²]		[Ω/km]	[A]
0.25	CFBUS.LB.020	79	5
0.5	CFBUS.LB.021	41	10
0.5	CFBUS.LB.022	44.1	10

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

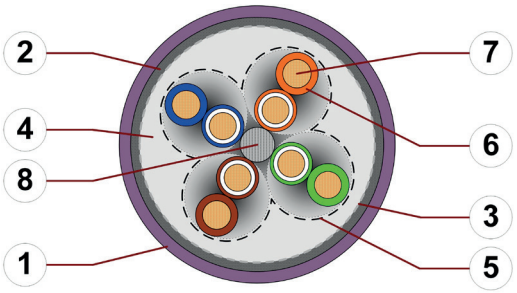
Example image

Ethernet (CAT5/CAT5e/GigE/PoE)

CFBUS.LB.040-CFBUS.LB.045

Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Inner jacket: Pressure extruded, gusset-filling TPE mixture
5. Banding: Plastic fleece
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
8. Strain relief: Tensile stress-resistant centre element

Example image
For detailed overview please see design table

Design table

Part No.	Core group	Colour code	Core design
CFBUS.LB.040	(4x0.25)C	white, green, brown, yellow (Star-quad)	
CFBUS.LB.045	(4x(2x0.15))C	white-blue/blue, white-orange/ orange, white-green/green, white-brown/brown	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Ethernet (CAT5/CAT5e/GigE/PoE)

CFBUS.LB.040-CFBUS.LB.045

Electrical information

(Cable structure please see previous page)

Part No.	CFBUS.LB.040	CFBUS.LB.045
Nominal voltage	50 V 600 V (following UL)	
Testing voltage (following DIN EN 50289-1-3)	500 V	
Operating capacity	50 pF/m	60 pF/m
Nominal Velocity of Propagation (NVP)	66 %	67 %
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 25 Ω	

Line attenuation approx. [dB/100m]

Part No.	1 MHz	4 MHz	10 MHz	16 MHz	20 MHz	31.25 MHz	62.5 MHz	100 MHz
CFBUS.LB.040	3.2	6.0	9.5	12.1	13.6	17.1	24.8	32.0
CFBUS.LB.045	3.2	6.0	9.5	12.1	13.6	17.1	24.8	32.0

Conductor nominal cross section	**Maximum conductor resistance at 20 °C** (following DIN EN 50289-1-2)	**Maximum current rating at 30 °C** (following DIN VDE 0298-4)
[mm²]	**[Ω/km]**	**[A]**
0.15	111	2.5
0.25	70	5

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

Part No.	Bus type	Link class	Maximum transmission length
CFBUS.LB.040	Ethernet/CAT5	Class D - (Data applications up to 100 MHz)	60 m
CFBUS.LB.045	Ethernet/CAT5e	Class D - (Data applications up to 100 MHz)	60 m

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

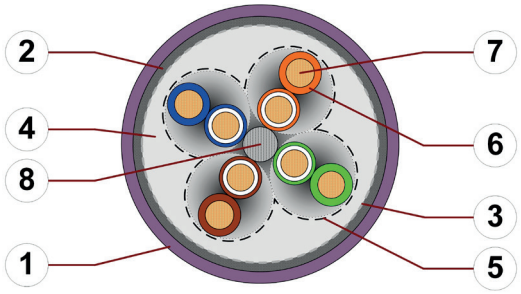
Example image

Ethernet (CAT6/GigE/PoE)

CFBUS.LB.049

Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Inner jacket: Pressure extruded, gusset-filling TPE mixture
5. Banding: Plastic fleece
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
8. Strain relief: Tensile stress-resistant centre element

Example image
For detailed overview please see design table

Design table

Part No.	Core group	Colour code	Core design
CFBUS.LB.049	(4x(2x0.15))C	white-blue/blue, white-orange/ orange, white-green/green, white-brown/brown	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Ethernet (CAT6/GigE/PoE)
CFBUS.LB.049

Electrical information
(Cable structure please see previous page)

Part No.	CFBUS.LB.049
Nominal voltage	50 V 600 V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500 V
Operating capacity	60 pF/m
Nominal Velocity of Propagation (NVP)	67 %
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 25 Ω

Line attenuation approx. [dB/100m]

Part No.	1 MHz	4 MHz	10 MHz	16 MHz	20 MHz	31.25 MHz	62.5 MHz	100 MHz	150 MHz	200 MHz	250 MHz
CFBUS.LB.049	3.2	6.0	9.5	12.1	13.6	17.1	24.8	32.0	40.0	47.5	55.0

Conductor nominal cross section	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2)	Maximum current rating at 30 °C (following DIN VDE 0298-4)
[mm²]	[Ω/km]	[A]
0.15	111	2.5

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

Part No.	Bus type	Link class	Maximum transmission length
CFBUS.LB.049	Ethernet/CAT6	Class E - (Data applications up to 250 MHz)	60 m

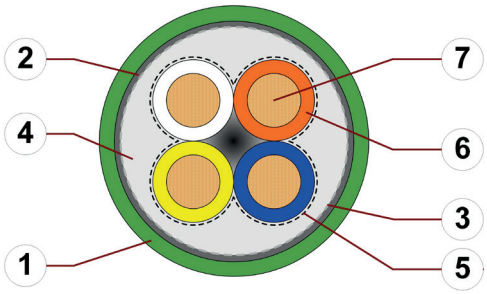
Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Profinet (Type C)
CFBUS.LB.060

Cable structure
(Electrical information please see next page)



Example image
For detailed overview please see design table

1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
3. Shield foil: Aluminium clad plastic foil
4. Inner jacket: Pressure extruded, gusset-filling TPE mixture
5. Banding: Plastic foil
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires

Design table

Part No.	Core group	Colour code	Core design
CFBUS.LB.060	(4x0.38)C	white, orange, blue, yellow (Star-quad)	

Data sheet
chainflex® CFBUS.LB

Bus cable (Class 7.6.4.1) ● For heaviest duty applications ● TPE outer jacket ● Shielded ● Oil and bio-oil resistant ● Low-temperature-flexible ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image

Profinet (Type C)
CFBUS.LB.060

Electrical information
(Cable structure please see previous page)

Part No.	CFBUS.LB.060
Nominal voltage	50 V 600 V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500 V
Operating capacity	50 pF/m
Nominal Velocity of Propagation (NVP)	66 %
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15 Ω

Line attenuation approx. [dB/100m]

Part No.	1 MHz	4 MHz	10 MHz	16 MHz	20 MHz	31.25 MHz	62.5 MHz	100 MHz
CFBUS.LB.060	2.4	4.8	7.6	9.6	10.7	13.4	19.0	24.0

Conductor nominal cross section	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2)	Maximum current rating at 30 °C (following DIN VDE 0298-4)
[mm²]	[Ω/km]	[A]
0.38	51	7

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.