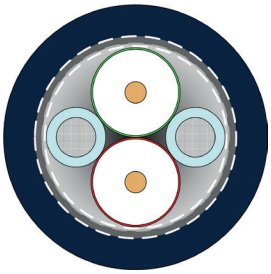
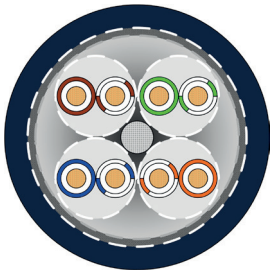
Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

Profibus	Ethernet (CAT5/CAT5e/GigE/PoE)	Profinet (Type C)
CFROBOT8.PLUS.001	CFROBOT8.PLUS.045	CFROBOT8.PLUS.060
		

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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
Intermediate layer	Foil taping over the outer layer.
Overall shield	Torsion resistant tinned braided copper shield. Coverage approx. 80 % optical
Outer jacket	Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2). **Colour:** Steel-blue (similar to RAL 5011) **Printing:** white

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*** 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 **CFROBOT8.PLUS.001 (2x0.25)C**

Guaranteed service life according to guarantee conditions

Cycles	5 million	7.5 million	10 million
Temperature, from/to [°C]	Torsion max. [°/m]	Torsion max. [°/m]	Torsion max. [°/m]
-25/-15	±330	±240	±150
-15/+60	±360	±270	±180
+60/+70	±330	±240	±150

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

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Example image

Properties and approvals

UV resistance	High
Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
Flame retardant	According to IEC 60332-1-2, FT1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
Halogen-free	Following DIN EN 60754
UL verified	Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
UL/CSA AWM	See table UL/CSA AWM for details
EAC	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
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 CF77. UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
CE	Following 2014/35/EU

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Properties and approvals

UL/CSA AWM Details

Part No.	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
CFROBOT8.PLUS.001	1589	20236	30	80
CFROBOT8.PLUS.045	1589	20236	30	80
CFROBOT8.PLUS.060	1589	20236	30	80

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Example image

Dynamic information

Bend radius	**e-chain® twisted**	min. 10 x d
	flexible	min. 8 x d
	fixed	min. 5 x d
Temperature	**e-chain® twisted**	-25 °C up to +70 °C
	flexible	-40 °C up to +70 °C (following DIN EN 60811-504)
	fixed	-50 °C up to +70 °C (following DIN EN 50305)
v max.	**twisted**	360 °/s
a max.	**twisted**	60 °/s²
Travel distance	Robots and multi-axis movements, Class 1	
Torsion	Torsion ±360°, with 1 m cable length, Class 4	

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

Typical application areas

- For heaviest duty applications with torsion movements, Class 6
- Especially for robots and 3D movements, Class 1
- Almost unlimited resistance to oil, Class 3
- Torsion ±360°, with 1 m cable length, Class 4, Class 4
- Indoor and outdoor applications, UV-resistant
- robots, Handling, spindle drives

Data sheet
chainflex® CFROBOT8.PLUS

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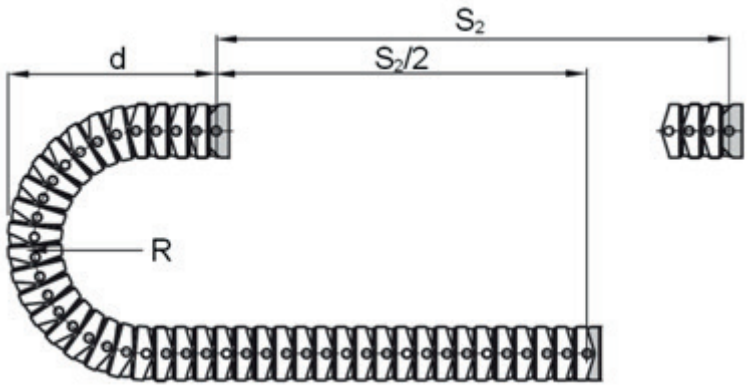
Example image

Typical lab test setup for this cable series

Test bend radius R	approx. 63 - 75 mm
Test travel S/S_2	approx. 1 - 12 m
Test duration	minimum 1.5 - 3 million double strokes
Test speed	approx. 0.5 m/s
Test acceleration	approx. 1.5 m/s²



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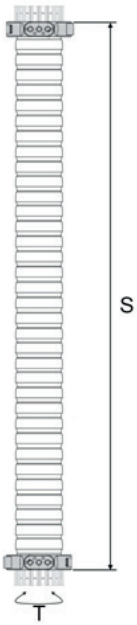
Typical lab test setup (torsion) for this cable series

Torsion T	±360°/m
Length 3D e-chain®	1 m
Test duration (torsion)	min. 3 - 5 million cycles
Test speed (torsion)	approx. 80 - 120 °/s
Test acceleration (torsion)	approx. 40°/s²



Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● 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)				
CFROBOT8.PLUS.001	(2x0.25)C	9.0	30	80
Ethernet/CAT5e/PoE				
CFROBOT8.PLUS.045	(4x(2x0.15))C	7.5	32	67
Profinet				
CFROBOT8.PLUS.060 [2)]	(4x0.34)C	7.0	32	64

[2)] The chainflex® types marked with 2) are cables designed as a star-quad.

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.

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

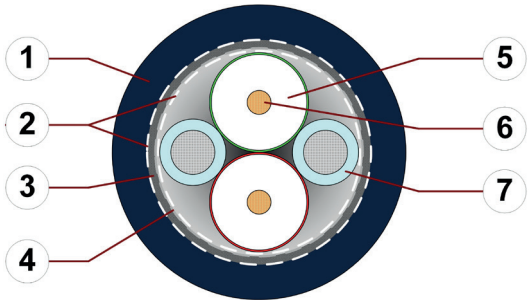
Profibus

CFROBOT8.PLUS.001

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

Cable structure

(Electrical information please see next page)



Example image
For detailed overview please see design table

1. Outer jacket: Pressure extruded PUR mixture
2. Overall banding: Plastic fleece
3. Overall shield: Torsion-resistant special braiding made of tinned copper wires
4. Shield foil: Plastic foil with aluminium clad on both sides
5. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
6. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
7. Filler: Platic yarns with extruded TPE jacket

Design table

Part No.	Core group	Colour code	Core design
CFROBOT8.PLUS.001	(2x0.25)C	red, green	

Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

Profibus

CFROBOT8.PLUS.001

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.001
Nominal voltage	50 V 30 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 (1-20 MHz)

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]**
0.25	78	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® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

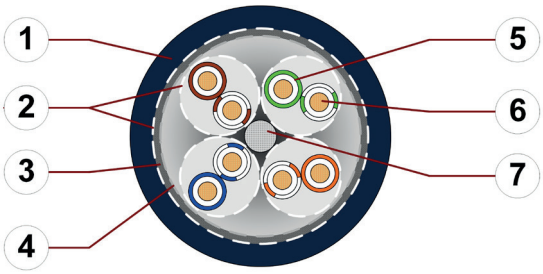
Ethernet (CAT5/CAT5e/GigE/PoE)

CFROBOT8.PLUS.045

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded PUR mixture
2. Overall/element banding: Plastic fleece
3. Overall shield: Torsion-resistant special braiding made of tinned copper wires
4. Shield foil: Plastic yarns
5. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
6. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
7. 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
CFROBOT8.PLUS.045	(4x(2x0.15))C	white-blue/blue, white-orange/ orange, white-green/green, white-brown/brown	

Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

Ethernet (CAT5/CAT5e/GigE/PoE)

CFROBOT8.PLUS.045

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.045
Nominal voltage	50 V 30 V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500 V
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15 Ω (1-100 MHz)
Operating capacity	47 pF/m
Nominal Velocity of Propagation (NVP)	73 %

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	149	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.

Data sheet
chainflex® CFROBOT8.PLUS

Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

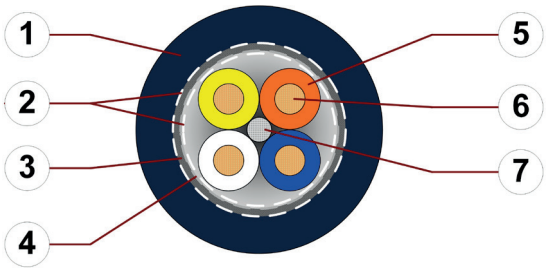
Example image

Profinet (Type C)

CFROBOT8.PLUS.060

Cable structure

(Electrical information please see next page)



1. Outer jacket: Pressure extruded PUR mixture
2. Overall banding: Plastic fleece
3. Overall shield: Torsion-resistant special braiding made of tinned copper wires
4. Shield foil: Plastic foil with aluminium clad on both sides
5. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
6. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
7. 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
CFROBOT8.PLUS.060	(4x0.34)C	white, orange, blue, yellow (Star-quad)	

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Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

Profinet (Type C)

CFROBOT8.PLUS.060

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.060
Nominal voltage	50 V 30 V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500 V
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15 Ω (1-100 MHz)
Operating capacity	47 pF/m
Nominal Velocity of Propagation (NVP)	67 %

Conductor nominal cross section **[mm²]**	**Maximum conductor resistance at 20 °C** (following DIN EN 50289-1-2) **[Ω/km]**	**Maximum current rating at 30 °C** (following DIN VDE 0298-4) **[A]**
0.34	60	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.