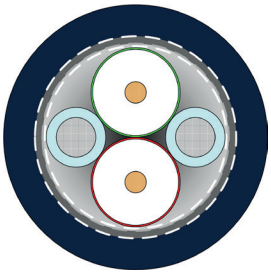
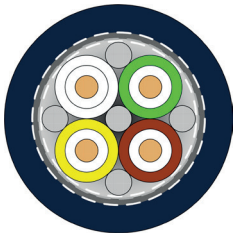
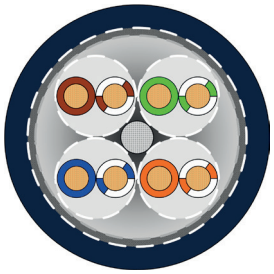
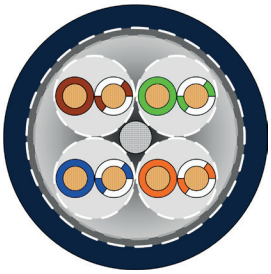
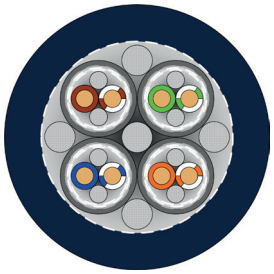
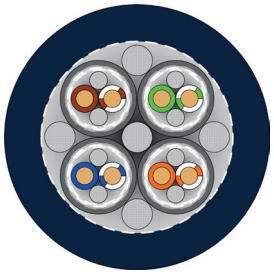
Data sheet
chainflex® CFROBOT8.PLUS

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	CAN-Bus	Ethernet (CAT5e/PoE)
CFROBOT8.PLUS.001	CFROBOT8.PLUS.022	CFROBOT8.PLUS.045
		

Ethernet (CAT6//PoE)	Ethernet (CAT6$_A$)	Ethernet (CAT7)
CFROBOT8.PLUS.049	CFROBOT8.PLUS.050	CFROBOT8.PLUS.052
		

Profinet (Type C)
CFROBOT8.PLUS.060


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

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. ▶ Design 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

„00000 m“* igus chainflex CFROBOT8.PLUS---① -----② E310776 cЯUus AWM

Style 20236 VW-1 AWM I/II A/B 80°C 30V FT1 CE ---③ conform

RoHS-II 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 **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.

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

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, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
Halogen-free	Following DIN EN 60754
PTFE-free	The design of these products does not contain PTFE
UL-verified	Certificate No. V293650: „igus 4-year 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
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

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	1598	21161	30	80
CFROBOT8.PLUS.022	1598	21161	30	80
CFROBOT8.PLUS.045	1598	21161	30	80
CFROBOT8.PLUS.049	1598	21161	30	80
CFROBOT8.PLUS.050	11321	21161	30	80
CFROBOT8.PLUS.052	11321	21161	30	80
CFROBOT8.PLUS.060	1589	21161	30	80

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

Dynamic information

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

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 multi-axis movements, Class 1
- Almost unlimited resistance to oil, Class 3
- Torsion ±360°, with 1m cable length, Class 4
- Indoor and outdoor applications, UV-resistant
- Robots, handling, lead screw drives

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

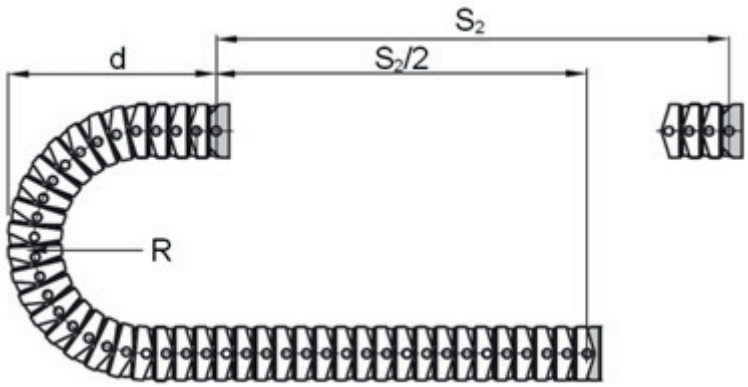
Data sheet
chainflex® CFROBOT8.PLUS

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

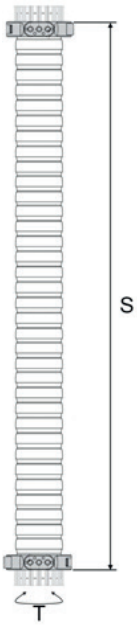
Typical lab test setup for this cable series

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



Typical lab test setup (torsion) for this cable series

Torsion T	±360°/m
Length 3D e-chain®	1 m
Test duration (torsion)	minimum 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
CAN-Bus				
CFROBOT8.PLUS.022	(4x0.5)C	9.5	47	103
Ethernet/CAT5e/PoE				
CFROBOT8.PLUS.045	(4x(2x0.15))C	7.5	32	67
Ethernet/CAT6/PoE				
CFROBOT8.PLUS.049	(4x(2x0.15))C	7.5	32	67
Ethernet/CAT6A				
CFROBOT8.PLUS.050	4x(2x0.15)C	10.5	49	115
Ethernet/CAT7				
CFROBOT8.PLUS.052	4x(2x0.15)C	10.5	49	115
Profinet				
CFROBOT8.PLUS.060 [2]	(4x0.34)C	7.0	32	64

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

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

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

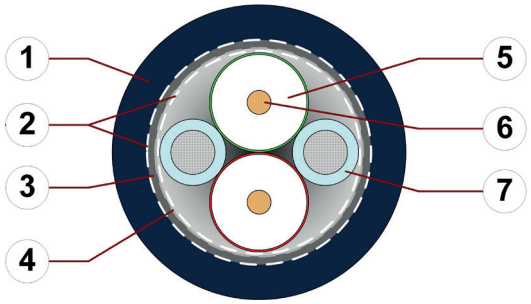
Example image

Profibus

CFROBOT8.PLUS.001

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

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.001
Nominal voltage	50V 30V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500V
Characteristic wave impedance (following DIN EN 50289-1-11)	150 ± 15Ω (1-20MHz)

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

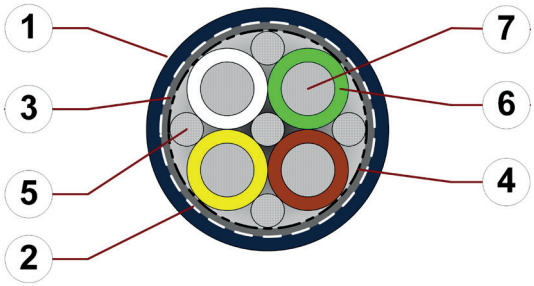
Example image

CAN-Bus

CFROBOT8.PLUS.022

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 tinned braided copper shield
4. Banding: Gliding PTFE foil
5. Filler: Plastic yarns
6. Core insulation: Mechanically high quality TPE mixture (according to bus specification)
7. Conductor: Fine-wire strand in especially bending-stable version consisting of tinned copper wires

Example image
For detailed overview please see design table

Design table

Part No.	Core group	Colour code	Drawing
CFROBOT8.PLUS.022	(4x0.5)C	white, green, brown, yellow (Star-quad)	

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.022

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.022
Nominal voltage	5 V 30V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500V
Characteristic wave impedance (following DIN EN 50289-1-11)	120 ± 12Ω (0,425-1MHz)
Operating capacity (following DIN EN 50289-1-5)	40pF/m

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]
0.5	44	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.

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year 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

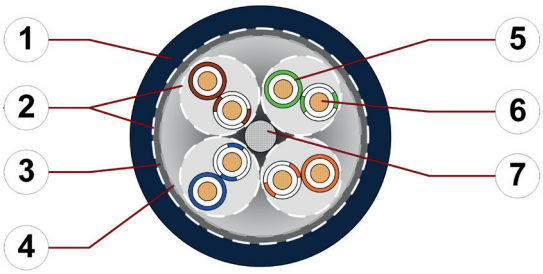
Example image

Ethernet (CAT5e/PoE)

CFROBOT8.PLUS.045

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 (CAT5e/PoE)

CFROBOT8.PLUS.045

Electrical information

(Cable structure please see previous page)

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

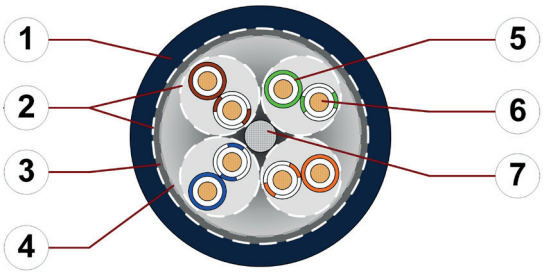
Example image

Ethernet (CAT6/PoE)

CFROBOT8.PLUS.049

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.049	(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 (CAT6/PoE)

CFROBOT8.PLUS.049

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.049
Nominal voltage	50V 30V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500V
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15Ω (1-100MHz)
Operating capacity	47pF/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

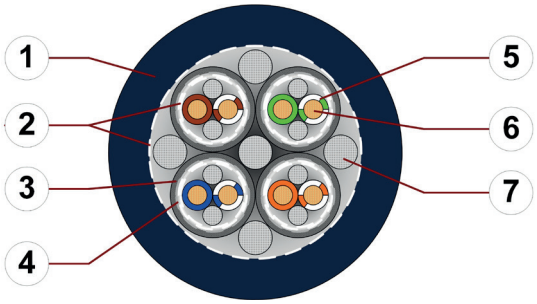
Example image

Ethernet (CAT6A)

CFROBOT8.PLUS.050

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/element banding: Plastic fleece
3. Element shield: Torsion-resistant braiding made of tinned copper wires
4. Shield foil: Double-sided aluminium-laminated plastic foil
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: Plastic yarns

Design table

Part No.	Core group	Colour code	Core design
CFROBOT8.PLUS.050	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 (CAT6A)

CFROBOT8.PLUS.050

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.050
Nominal voltage	50V 30V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500V
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15Ω (1-250MHz) 100 ± 20Ω (250-500MHz)
Operating capacity	48pF/m
Nominal Velocity of Propagation (NVP)	68%

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	140	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

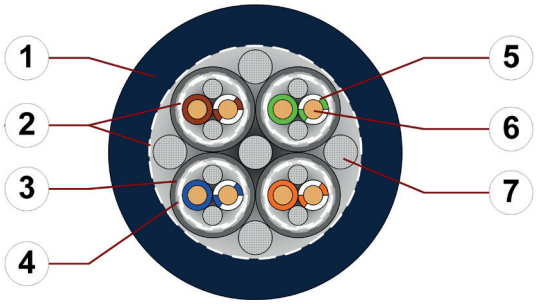
Example image

Ethernet (CAT7)

CFROBOT8.PLUS.052

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/element banding: Plastic fleece
3. Element shield: Torsion-resistant braiding made of tinned copper wires
4. Shield foil: Double-sided aluminium-laminated plastic foil
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: Plastic yarns

Design table

Part No.	Core group	Colour code	Core design
CFROBOT8.PLUS.052	4x(2x0.15)C	white-blue/blue, white-orange/ orange, white-green/green, white-brown/brown	

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year 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

Ethernet (CAT7)

CFROBOT8.PLUS.052

Electrical information

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.052
Nominal voltage	50V 30V (following UL)
Testing voltage (following DIN EN 50289-1-3)	500V
Characteristic wave impedance (following DIN EN 50289-1-11)	100 ± 15Ω (1-250MHz) 100 ± 20Ω (250-600MHz)
Operating capacity	48pF/m
Nominal Velocity of Propagation (NVP)	68%

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	140	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

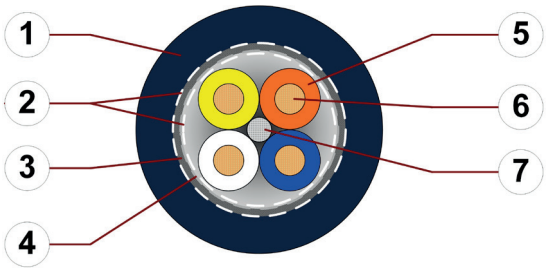
Example image

Profinet

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)	

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

CFROBOT8.PLUS.060

Electrical information

(Cable structure please see previous page)

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

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]
0.34	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.