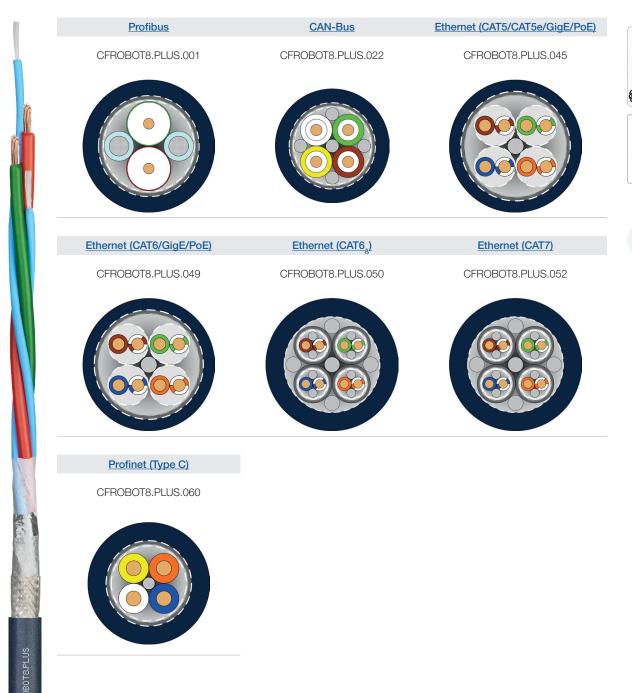
## chainflex® CFROBOT8.PLUS



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



























CE UK

## 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

#### Cable structure



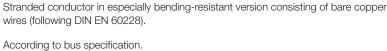
Conductor



Core insulation

Core structure

According to bus specification.









Core identification

According to bus specification. ► Product range table



Foil taping over the outer layer.



Overall shield

Torsion resistant tinned braided copper shield.





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).

Printing: white

Colour: Steel-blue (similar to RAL 5011)







- \* 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.









## 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

### 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



UL verified Certificate No. B129699: "igus 36-month chainflex cable guarantee and service life





UL/CSA AWM See table UL/CSA AWM for details



NFPA Following NFPA 79-2018, chapter 12.9



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.

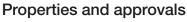
UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1



Following 2014/35/EU



In accordance with the valid regulations of the United Kingdom (as at 08/2021)



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





























## 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

### **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

-25 °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 °/s<sup>2</sup>

Travel distance Robots and multi-axis movements, Class 1

Torsion ±360°, with 1 m 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 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





























## chainflex® CFROBOT8.PLUS



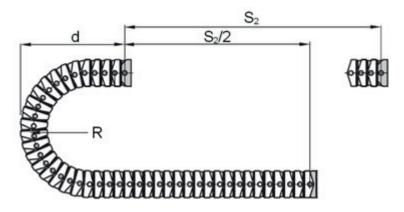
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Typical lab test setup for this cable series

**Test bend radius R** approx. 63 - 75 mm **Test travel S/S**<sub>2</sub> approx. 1 - 12 m

**Test duration** minimum 1.5 - 3 million double strokes

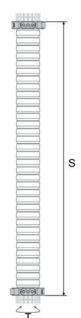
Test speedapprox. 0.5 m/sTest accelerationapprox. 1.5 m/s²



### Typical lab test setup (torsion) for this cable series

Torsion T  $\pm 360^{\circ}$ /m Length 3D e-chain® 1 m

Test duration (torsion)min. 3 - 5 million cyclesTest speed (torsion)approx. 80 - 120 °/sTest acceleration (torsion)approx. 40°/s²































## chainflex® CFROBOT8.PLUS

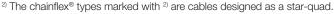


Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

#### Technical tables:

Mechar	าเตลโ	intori	mation

Part No.	Number of cores and conduct nominal cross section	tor Outer diameter (d) max.	Copper index	Weight
	[mm²]	[mm]	[kg/km]	[kg/km]
Profibus (1x2x0,64 mm)				
CFROBOT8.PLUS.001	(2x0.25)C	9.0	30	80
CAN Bus				
CFROBOT8.PLUS.022	(4x0.5)C	9.0	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 <sup>2)</sup>	#####################################	7.0	32	64



 $\mathbf{G}$  = with green-yellow earth core

 $\mathbf{x}$  = without earth core

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.





























## chainflex® CFROBOT8.PLUS



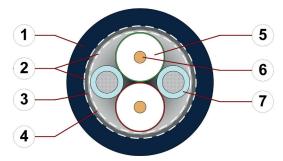
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

#### **Profibus**

CFROBOT8.PLUS.001

#### 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)
- Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
- 7. Filler: Platic yarns with extruded TPE jacket

























#### Example image

For detailed overview please see design table

### Design table

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

## 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

### **Profibus**

CFROBOT8.PLUS.001

### **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 [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]
0.25	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.





























## chainflex® CFROBOT8.PLUS



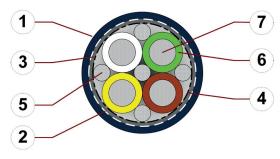
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

#### **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
- Core insulation: Mechanically high quality TPE mixture (according to bus specification)
- Conductor: Fine-wire strand in especially bending-stable version consisting of tinned copper wires



























UK

#### 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)	

igus chainflex CFROBOT 8

## 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

### **Profibus**

CFROBOT8.PLUS.022

### **Electrical information**

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.022
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)	120 ± 12 Ω (0,425-1 MHz)
Operating capacity (following DIN EN 50289-1-5)	40 pF/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.



























UK UK

## chainflex® CFROBOT8.PLUS



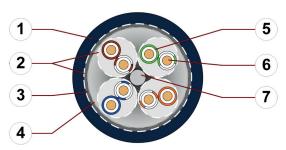
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### Ethernet (CAT5/CAT5e/GigE/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	

## 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

### Ethernet (CAT5/CAT5e/GigE/PoE)

CFROBOT8.PLUS.045

### **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]	$[\Omega/km]$	[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.



























CE UK

## chainflex® CFROBOT8.PLUS



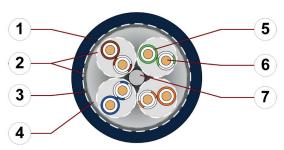
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### 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	

# 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

### Ethernet (CAT6/PoE)

CFROBOT8.PLUS.049

### **Electrical information**

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.049
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.



























UK UK

## chainflex® CFROBOT8.PLUS



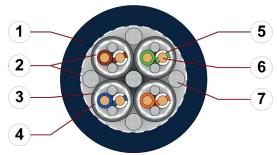
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### 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. 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)
- Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
- 7. Strain relief: Tensile stress-resistant centre element

























UK CA

### Design table

Part No.	Core group	Colour code	Core design
CFROBOT8.PLUS.050	(4x(2x0.15)C)C	white-blue/blue, white-orange/ orange, white-green/green, white-brown/brown	

;

05/2023

## 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

### Ethernet (CAT6A)

CFROBOT8.PLUS.050

### **Electrical information**

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.050
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 $\Omega$ (1-250 MHz) 100 ± 20 $\Omega$ (250-500 MHz)
Operating capacity	48 pF/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.





























## chainflex® CFROBOT8.PLUS



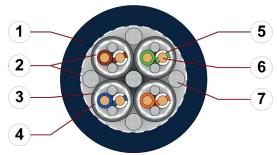
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### 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.** 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)
- Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
- 7. Strain relief: Tensile stress-resistant centre element

























### 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	

## 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

### Ethernet (CAT7)

CFROBOT8.PLUS.052

### **Electrical information**

(Cable structure please see previous page)

Part No.	CFROBOT8.PLUS.052
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 $\Omega$ (1-250 MHz) 100 ± 20 $\Omega$ (250-600 MHz)
Operating capacity	48 pF/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.



























CE UK

## chainflex® CFROBOT8.PLUS



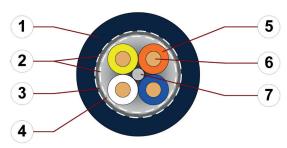
Bus cable (Class 6.1.3.4) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant

### 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)
- 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)	

## 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

### 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	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2)	Maximum current rating at 30 °C (following DIN VDE 0298-4)
[mm <sup>2</sup> ]	[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.

























