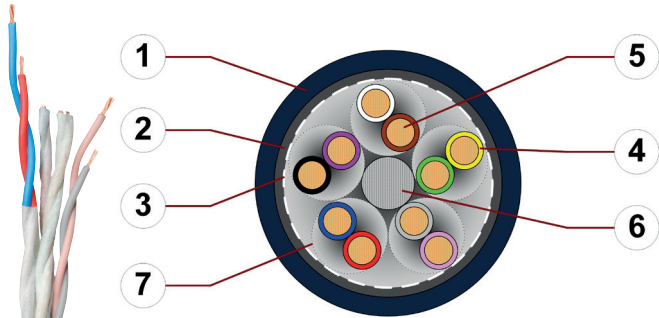


# Data sheet

## chainflex® CFROBOT3



- Data cable (Class 6.1.3.3)
- For torsion applications
- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded PUR mixture
2. Overall shield: Extremely torsion-resistant wrapping made of tinned copper wires
3. Banding: Plastic fleece
4. Core insulation: Mechanically high-quality TPE mixture
5. Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires
6. Strain relief: Tensile stress-resistant centre element
7. Core structure: Pairs with optimised pitch length and pitch direction

**Example image**  
For detailed overview please see design table



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



### Cable structure

	<b>Conductor</b>	Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
	<b>Core insulation</b>	Mechanically high-quality TPE mixture.
	<b>Core structure</b>	Cores twisted in pairs with a short pitch length, core pairs then wound with short pitch lengths.
	<b>Core identification</b>	Colour code in accordance with DIN 47100.
	<b>Overall shield</b>	Extremely torsion-resistant tinned wound copper shield. Coverage approx. 85% optical
	<b>Outer jacket</b>	Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2) <b>Colour:</b> Steel-blue (similar to RAL 5011) <b>Printing:</b> white

„00000 m\*\* igus chainflex CFROBOT3.--.02① ---② E310776 cAUus

AWM Style 20911 VW-1 AWM I/II A/B 80°C 300V FT1 CE

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).  
Example: ... chainflex CFROBOT3.05.05.02 (5x(2x0.5))C ...

Example image igus® chainflex® CFROBOT3

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### Dynamic information

	<b>Bend radius</b>	<b>flexible twisted</b>	minimum 10 x d
		<b>fixed</b>	minimum 5 x d
	<b>Temperature</b>	<b>flexible twisted</b>	-25°C up to +80°C
		<b>fixed</b>	-50°C up to +80°C (following DIN EN 50305)
	<b>v max.</b>	<b>twisted</b>	180°/s
	<b>a max.</b>	<b>twisted</b>	60°/s <sup>2</sup>
	<b>Travel distance</b>	Robots and multi-axis movements, Class 1	
	<b>Torsion</b>	Torsion ±180°, with 1m cable length, Class 3	

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

### 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	±150	±90	±30
-15/+70	±180	±120	±60
+70/+80	±150	±90	±30

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

### Electrical information

	<b>Nominal voltage</b>	300/500V (following DIN VDE 0298-3) 300V (following UL)
	<b>Testing voltage</b>	2000V (following DIN EN 50395)



Example image
















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### 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
-  **NFPA** Following NFPA 79-2018, chapter 12.9
-  **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



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



### Properties and approvals

#### UL/CSA AWM Details

Conductor nominal cross section [mm <sup>2</sup> ]	Number of cores	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	8-16	10497	20911	300	80
0.5	10	10497	20911	300	80



Example image

# Data sheet

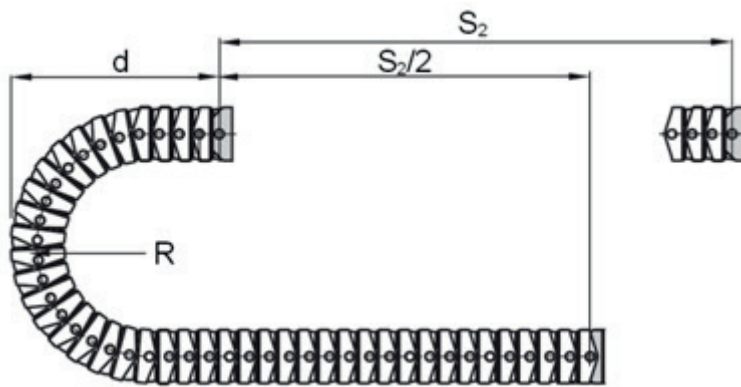
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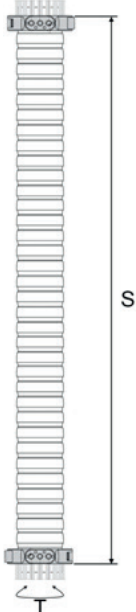
### Typical lab test setup for this cable series

Test bend radius R	approx. 100 - 125 mm
Test travel S/S <sub>2</sub>	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/s <sup>2</sup>



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

Torsion range T	±180°/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°/s <sup>2</sup>



Example image



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### 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  $\pm 180^\circ$ , with 1m cable length, Class 3
- Indoor and outdoor applications, UV-resistant
- Robots, handling, lead screw drives

### Technical tables:

#### Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm <sup>2</sup> ]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CFROBOT3.02.03.02	(3x(2x0.25))C	9.0	33	84
CFROBOT3.02.04.02	(4x(2x0.25))C	10.5	38	103
CFROBOT3.02.06.02	(6x(2x0.25))C	11.5	52	127
CFROBOT3.02.08.02	(8x(2x0.25))C	13.5	66	170
CFROBOT3.05.05.02	(5x(2x0.5))C	12.5	80	170

**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

#### Electrical information

Conductor nominal cross section [mm <sup>2</sup> ]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C [A]
0.25	78.0	5
0.5	39.0	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.



Example image



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### Design table

Part No.	Number of cores	Core design
CFROBOT3.XX.03.02	3x2	
CFROBOT3.XX.04.02	4x2	
CFROBOT3.XX.05.02	5x2	
CFROBOT3.XX.06.02	6x2	
CFROBOT3.XX.08.02	8x2	



Example image



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### Colour code in accordance with DIN 47100

Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100
1	white	19	white-pink
2	brown	20	pink-brown
3	green	21	white-blue
4	yellow	22	brown-blue
5	grey	23	white-red
6	pink	24	brown-red
7	blue	25	white-black
8	red	26	brown-black
9	black	27	grey-green
10	violet	28	yellow-grey
11	grey-pink	29	pink-green
12	red-blue	30	yellow-pink
13	white-green	31	green-blue
14	brown-green	32	yellow-blue
15	white-yellow	33	green-red
16	yellow-brown	34	yellow-red
17	white-grey	35	green-black
18	grey-brown	36	yellow-black



Example image



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

