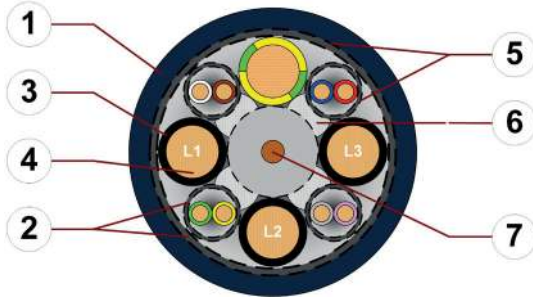


Data sheet

chainflex® CFROBOT7








Motor 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. Shield: Extremely torsion-resistant wrapping made of tinned copper wires
3. Core insulation: Mechanically high-quality TPE mixture
4. Conductor: Stranded conductor in especially bending-resistant version consisting of bare copper wires
5. Banding: Plastic fleece
6. Filling: Plastic yarns
7. Strain relief: Tensile stress-resistant and torsion-resistant centre element

Example image
For detailed overview please see design table

Cable structure

	Conductor	Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
	Core insulation	Mechanically high-quality TPE mixture.
	Core identification	Power cores: Black cores with white numbers, one green-yellow core. 2 Control pairs: Black cores with white numbers. 1. Control core: 5 2. Control core: 6 3. Control core: 74. Control core: 8 4 Control pairs: Colour code in accordance with DIN 47100
	Overall shield	Extremely torsion-resistant tinned wound copper shield. Coverage optical approx. 85 %
	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 m⁴** igus chainflex CFROBOT7---.C① -----② 600/1000V

E310776 cRUus AWM Style 21223 VW-1 AWM I/II A/B 80°C 1000V FT1

EAC CE UKCA 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 **CFROBOT7.15.03.C (3G1.5)C 600/1000V**



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



Example image

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Dynamic information

	Bend radius	e-chain® twisted flexible fixed	min. 10 x d min. 8 x d min. 5 x d
	Temperature	e-chain® twisted flexible fixed	-25 °C up to +80 °C -40 °C up to +80 °C (following DIN EN 60811-504) -50 °C up to +80 °C (following DIN EN 50305)
	v max.	twisted	180 °/s
	a max.	twisted	60 °/s ²
	Travel distance	Robots and 3D movements, Class 1	

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

	Nominal voltage	600/1000 V (following DIN VDE 0298-3) 1000 V (following UL)
	Testing voltage	4000 V (following DIN EN 50395)



Example image















Data sheet

chainflex® CFROBOT7



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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
-  **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
-  **NFPA** Following NFPA 79-2018, chapter 12.9
-  **EAC** Zertifikat-Nr. RU C-DE.ME77.B.00863/20
-  **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
-  **UKCA** In accordance with the valid regulations of the United Kingdom (as at 08/2021)



Properties and approvals

UL/CSA AWM Details

Conductor nominal cross section [mm ²]	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	10492	21223	1000	80
0.34	10492	21223	1000	80
0.75	10492	21223	1000	80
1.5	10492	21223	1000	80
2.5	10492	21223	1000	80
4.0	10492	21223	1000	80
6.0	10492	21223	1000	80

Example image

igus® chainflex® CFROBOT 7

Data sheet

chainflex® CFROBOT7

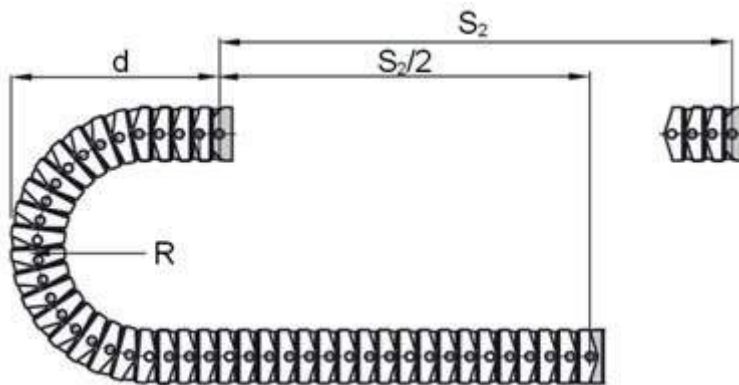


Motor cable (Class 6.1.3.3) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil-resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant



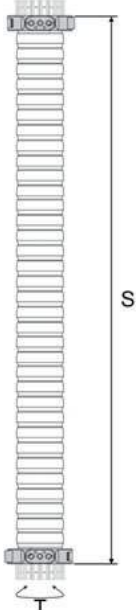
Typical lab test setup for this cable series

Test bend radius R	approx. 90 - 175 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/s ²



Typical lab test setup for this cable series

Torsion range T	$\pm 180^\circ/m$
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 ²



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



Example image

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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 $\pm 180^\circ$, with 1m cable length, Class 3
- Indoor and outdoor applications, UV-resistant
- Robots, Handling, spindle drives

Technical tables:

Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm ²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
without control pair				
CFROBOT7.15.03.C	(3G1.5)C	8.5	61	98
CFROBOT7.15.04.C	(4G1.5)C	9.5	77	120
CFROBOT7.25.03.C	(3G2.5)C	10.0	93	142
CFROBOT7.25.04.C	(4G2.5)C	11.0	119	173
CFROBOT7.60.04.C	(4G6.0)C	15.0	278	374
2 Control pairs				
CFROBOT7.07.03.02.02.C	(4G0.75+2x(2x0.34)C)C	11.5	88	155
CFROBOT7.15.15.02.02.C	(4G1.5+2x(2x1.5)C)C	16.5	197	304
CFROBOT7.25.15.02.02.C	(4G2.5+2x(2x1.5)C)C	16.5	243	349
4 Control pairs				
CFROBOT7.40.02.02.04.C	(4G4.0+4x(2x0.25)C)C	17.0	253	366

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 ²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C [A]
0.25	79	5
0.34	57	7
0.75	27	14
1.5	13.3	21
2.5	8	30
4	4.45	41
6	3.3	53

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


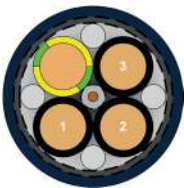


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Design table

Part No.	Number of cores	Core design
CFROBOT7.XX.03.C	3	
CFROBOT7.XX.04.C	4	
CFROBOT7.XX.XX.02.02.C	4+2x2	
CFROBOT7.XX.XX.XX.04.C	4+4x2	



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



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



Example image