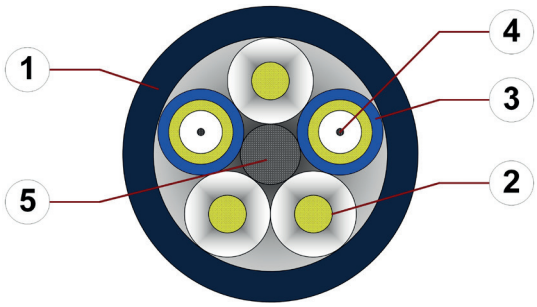
Data sheet
chainflex® CFROBOT5

Fibre Optic Cable (Class 6.1.4.3) ● For torsion applications ● TPE outer jacket ● Oil and bio-oil-resistant ● UV-resistant ● Low-temperature-flexible ● Hydrolysis and microbe-resistant ● PVC and halogen-free

Example image



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Filling: Aramid damper for high tensile stresses
3. Subcable jacket: LSZH („Low smoke & zero halogen“) Material
4. Fibre: Glass optical fibre (GOF)
5. Bend protection: Fibre-reinforced plastic rod (GRP rod)

Example image
For detailed overview please see design table

Cable structure

Fibre Optic Cable	50/125 µm, 62.5/125 µm bending-resistant solid glass fibre optic cores, with aramid strain relief elements.
Core structure	FOC cores wound with high-tensile aramid dampers around a GRP central element.
Core identification	▶ Product range table
Outer jacket	Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. **Colour:** Jet black (similar to RAL 9005) **Printing:** white

„00000 m“ igus chainflex CFROBOT5.---① -----② 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 **CFROBOT5.501 2x50/125** ...

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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	-35 °C up to +80 °C
	flexible	-50 °C up to +80 °C (following DIN EN 60811-504)
	fixed	-55 °C up to +80 °C (following DIN EN 50305)
v max.	twisted	180 °/s
a max.	twisted	60 °/s²
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]
-35/-25	±150	±90	±30
-25/+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.

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Example image

Properties and approvals

UV resistance	High
Oil resistance	Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
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“
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 CF9.15.07 - tested by IPA according to standard DIN EN ISO 14644-1
CE	Following 2014/35/EU

Guarantee igus chainflex 36 up to 36 months guarantee

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

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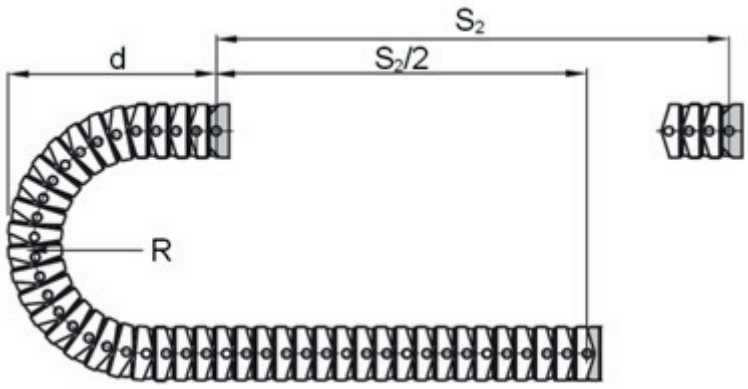
Example image

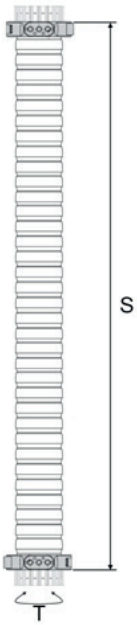
Typical lab test setup for this cable series

Test bend radius R	approx. 115 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 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°/s²



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Example image

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, also with bio-oils, Class 4
- Torsion ±180°, with 1m cable length, Class 3
- Indoor and outdoor applications, UV-resistant
- Robots, Handling

Technical tables:

Mechanical information

Part No.	Number of fibres Fibre diameter Conductor nominal cross section	Outer diameter (d) max. [mm]	Weight [kg/km]
Multimode (Graded index)			
CFROBOT5.500 [11]	2x62,5/125	8.5	53
CFROBOT5.501 [11]	2x50/125	8.5	53

[11] Phase-out model

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

Technical tables:

Optical features

Fibre diameter [µm]	Wave length [nm]	Bandwidth [MHz x km] [MHz x km]	Attenuation [dB/km] [dB/km]
62,5/125	850	≥ 200	≤ 3,0
62,5/125	1300	≥ 500	≤ 0,7
50/125	850	≥ 500	≤ 2,5
50/125	1300	≥ 500	≤ 0,7

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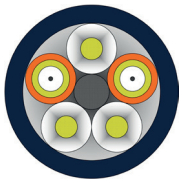
Example image

Design table
Fibre diameter: 62,5/125

Part No. (No. of cores)	Core design
CFROBOT5.500 (2x62,5/125)	

Design table
Fibre diameter: 50/125

Part No. (No. of cores)	Core design
CFROBOT5.501 (2x50/125)	

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