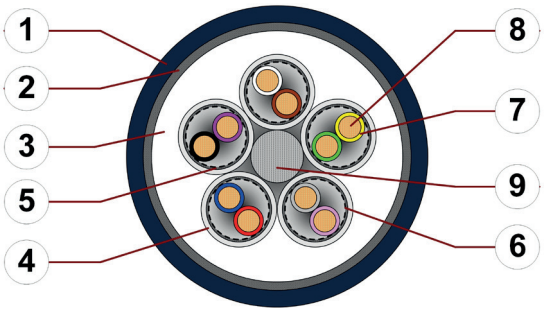
Data sheet
chainflex® CF12

Data cable (Class 6.6.4.1) ● For extremely heavy duty applications ● TPE outer jacket ● Double-shielded ● Oil and bio-oil resistant ● PVC and halogen-free ● Hydrolysis and microbe-resistant

Example image



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Highly flexible shield consisting of galvanized steel wire braid.
3. Inner jacket: Pressure extruded, gusset-filling TPE mixture
4. Element jacket: Mechanically high-quality TPE mixture
5. Element shield: Extremely bending-resistant braiding made of tinned copper wires.
6. Banding: Plastic foil
7. Core insulation: Mechanically high-quality TPE mixture
8. Conductor: Stranded conductor in especially bend-resistant version consisting of bare copper wires
9. Strain relief: Tensile stress-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 structure	Cores twisted in pairs with a short pitch length, core pairs then wound with short pitch lengths.
Core identification	**Cores < 0.5 mm²:** Colour code in accordance with DIN 47100 **Cores ≥ 0.5 mm²:** Black cores with white numbers.
Element shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % optical
Element jacket	TPE mixture on pair shielding adapted to suit the requirements in e-chains®.
Inner jacket	TPE mixture adapted to suit the requirements in e-chains®.
Overall shield	Highly flexible shield consisting of galvanized steel wire braid. Coverage approx. 70 % linear, approx. 90 % optical
Outer jacket	Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. Colour: Steel-blue (similar to RAL 5011) Printing: white

„00000 m“* igus chainflex CF12.--.--.02① ---② E310776

ЯU AWM Style 22357 90°C 300V EAC CE UKCA RoHS-II conform

www.igus.eu +++ 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 **CF12.02.04.02 (4x(2x0.25)C)C EAC** ...

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

Dynamic information

Bend radius	e-chain® linear	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	e-chain® linear	-35 °C up to +100 °C
	flexible	-50 °C up to +100 °C (following DIN EN 60811-504)
	fixed	-55 °C up to +100 °C (following DIN EN 50305)
v max.	unsupported	10 m/s
	gliding	6 m/s
a max.		100 m/s²
Travel distance		Unsupported travel distances and up to 400 m for gliding applications, Class 6

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

Double strokes	5 million	7.5 million	12.5 million
Temperature. from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	12.5	13.5	14.5
-25/+90	10	11	12
+90/+100	12.5	13.5	14.5

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	300/300 V (following DIN VDE 0298-3) 300 V (following UL)
Testing voltage	1500 V (following DIN EN 50395)

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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“
UL AWM	Details see table UL AWM
EAC	Certificate No. RU C-DE.ME77.B.00300/19
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
UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Properties and approvals

UL AWM details

Conductor nominal cross section [mm²]	Number of cores	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	8	11884	22357	300	90
0.5	6-28	11884	22357	300	90
1	12	11884	22357	300	90

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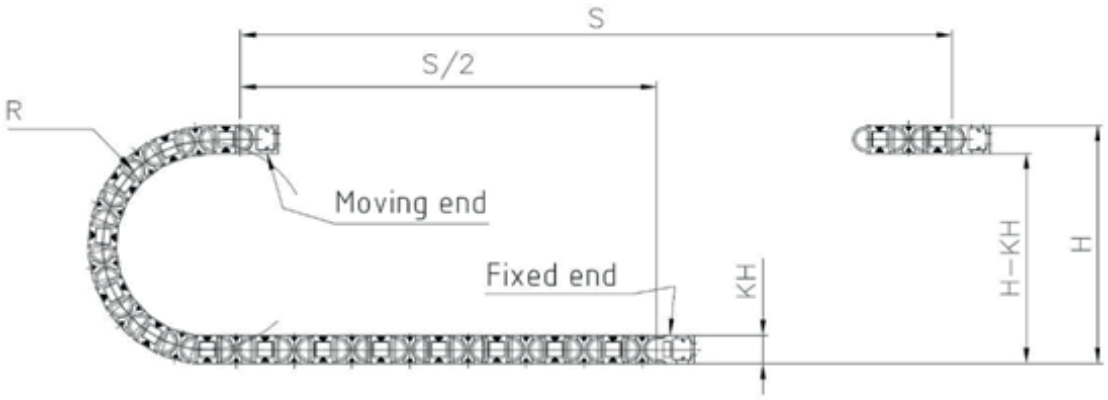
Example image

Typical lab test setup for this cable series

Test bend radius R	approx. 100 - 200 mm
Test travel S	approx. 1 - 15 m
Test duration	minimum 2 - 4 million double strokes
Test speed	approx. 0.5 - 2 m / s
Test acceleration	approx. 0.5 - 1.5 m / s²



Typical application areas

- For heaviest duty applications, Class 6
- Unsupported travel distances and up to 400 m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- No torsion, Class 1
- Indoor and outdoor applications, UV-resistant
- For maximum EMC protection
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, outdoor cranes, low temperature applications

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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]
CF12.02.04.02	(4x(2x0.25)C)C	11.5	52	172
CF12.05.03.02	(3x(2x0.5)C)C	13.5	65	224
CF12.05.04.02	(4x(2x0.5)C)C	14.5	83	267
CF12.05.06.02	(6x(2x0.5)C)C	17.0	128	376
CF12.05.08.02	(8x(2x0.5)C)C	20.5	163	503
CF12.05.10.02	(10x(2x0.5)C)C	22.5	203	605
CF12.05.14.02	(14x(2x0.5)C)C	22.5	297	679
CF12.10.06.02	(6x(2x1.0)C)C	20.0	198	529

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 [mm²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Max. current rating at 30 °C [A]
0.25	79	5
0.5	39	10
1	19.5	17

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

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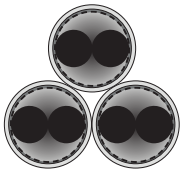
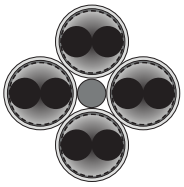
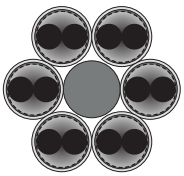
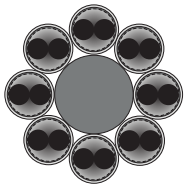
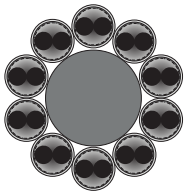
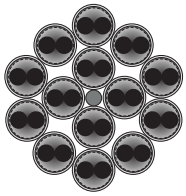
Example image

Design table

Part No.	Number of cores	Core design
CF12.XX.03.02	3x2	
CF12.XX.04.02	4x2	
CF12.XX.06.02	6x2	

Part No.	Number of cores	Core design
CF12.XX.08.02	8x2	
CF12.XX.10.02	10x2	
CF12.XX.14.02	14x2	

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Example image

Colour code in accordance with DIN 47100

Conductor no.	Colours according to DIN ISO 47100
1	white
2	brown
3	green
4	yellow
5	grey
6	pink
7	blue
8	red
9	black
10	violet
11	grey-pink
12	red-blue
13	white-green
14	brown-green
15	white-yellow
16	yellow-brown
17	white-grey
18	grey-brown

Conductor no.	Colours according to DIN ISO 47100
19	white-pink
20	pink-brown
21	white-blue
22	brown-blue
23	white-red
24	brown-red
25	white-black
26	brown-black
27	grey-green
28	yellow-grey
29	pink-green
30	yellow-pink
31	green-blue
32	yellow-blue
33	green-red
34	yellow-red
35	green-black
36	yellow-black

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