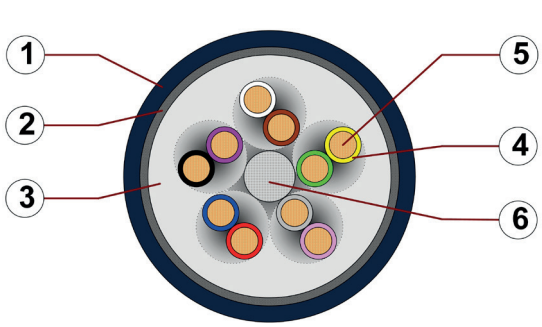
Data sheet
chainflex® CF11

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



1. Outer jacket: Pressure extruded, halogen-free TPE mixture
2. Overall shield: Aluminum/Polyester tape and extremely bending-resistant braiding made of tinned copper wires.
3. Inner jacket: Pressure extruded, gusset-filling TPE mixture
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

Example image

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 < 1.0 mm²:** Colour code in accordance with DIN 47100 **Cores ≥ 1.0 mm²:** Black cores with white numbers.
Inner jacket	TPE mixture adapted to suit the requirements in e-chains®.
Overall shield	Aluminum/Polyester tape and extremely bending-resistant braiding made of tinned copper wires. 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 CF11.--.--.02① ---② EAC 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 ... **CF11.01.04.02** ... **(4x(2x0.14))C** ... **EAC** ...

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Example image

Dynamic information

Bend radius	e-chain® linear	minimum 6.8 x d
	flexible	minimum 5 x d
	fixed	minimum 4 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	10 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	7.5	8.5	9.5
-25/+90	6.8	7.5	8.5
+90/+100	7.5	8.5	9.5

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)
Testing voltage	1500 V (following DIN EN 50395)

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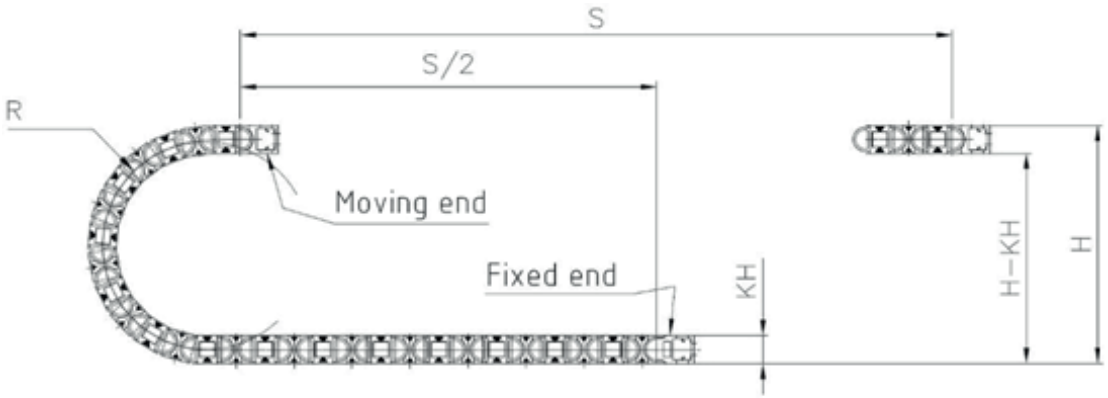
Example image

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
EAC	Certificate No. RU C-DE.ME77.B.01254 (TR ZU)
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	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

Typical lab test setup for this cable series

Test bend radius R	approx. 38 - 115 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



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Example image

Typical application areas

- For extremely heavy 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
- 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]
CF11.01.04.02	(4x(2x0.14))C	7.5	30	64
CF11.01.18.02	(18x(2x0.14))C	12.0	101	192
CF11.02.01.02	(2x0.25)C	6.0	17	38
CF11.02.02.02 [2)]	(2x(2x0.25))C	6.5	26	49
CF11.02.03.02	(3x(2x0.25))C	8.0	35	78
CF11.02.04.02	(4x(2x0.25))C	8.5	42	89
CF11.02.05.02	(5x(2x0.25))C	9.0	49	104
CF11.02.06.02	(6x(2x0.25))C	10.0	69	130
CF11.02.09.02 [11)]	(9x(2x0.25))C	12.5	102	208
CF11.02.10.02	(10x(2x0.25))C	13.0	103	217
CF11.02.14.02	(14x(2x0.25))C	13.5	124	224
CF11.03.08.02	(8x(2x0.34))C	13.0	106	220
CF11.05.04.02	(4x(2x0.5))C	9.5	77	133
CF11.05.06.02	(6x(2x0.5))C	12.0	103	198
CF11.05.08.02	(8x(2x0.5))C	14.0	135	261
CF11.07.03.02	(3x(2x0.75))C	10.0	83	155
CF11.10.04.02	(4x(2x1.0))C	12.0	125	228
CF11.15.06.02	(6x(2x1.5))C	17.0	247	411
CF11.25.03.02 [11)]	(3x(2x2.5))C	15.5	212	379

[2)] The chainflex® types marked with 2) are cables designed as a star-quad.
[11)] Phase-out model

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]	Maximum current rating at 30 °C (following DIN VDE 0298-4) [A]
0.14	138.0	2.5
0.25	79.0	5
0.34	57.0	7
0.5	39.0	10
0.75	26.0	14
1	19.5	17
1.5	13.3	21
2.5	7.98	30

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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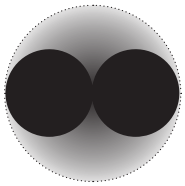
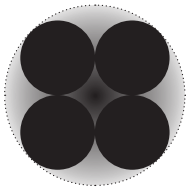
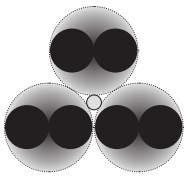
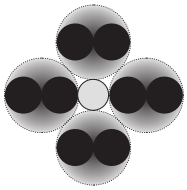
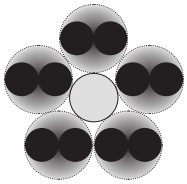
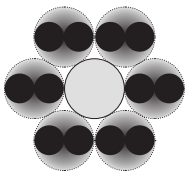
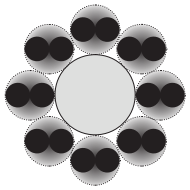
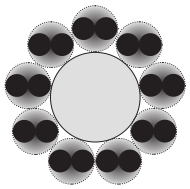
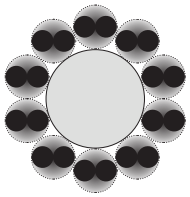
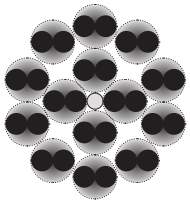
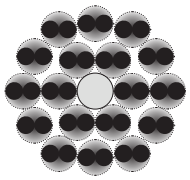
Example image

Design table

Part No.	Number of cores	Core design
CF11.XX.01.02	2	
CF11.XX.02.02	4	
CF11.XX.03.02	3x2	
CF11.XX.04.02	4x2	
CF11.XX.05.02	5x2	
CF11.XX.06.02	6x2	

Part No.	Number of cores	Core design
CF11.XX.08.02	8x2	
CF11.XX.09.02	9x2	
CF11.XX.10.02	10x2	
CF11.XX.14.02	14x2	
CF11.XX.18.02	18x2	

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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	brown-yellow
17	white-grey
18	brown-grey
19	white-pink
20	white-brown
21	white-blue

Conductor no.	Colours according to DIN ISO 47100
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
37	grey-blue
38	pink-blue
39	grey-red
40	pink-red
41	grey-black
42	pink-black

Conductor no.	Colours according to DIN ISO 47100
43	blue-black
44	red-black
45	white-brown-black
46	yellow-green-black
47	grey-pink-black
48	red-blue-black
49	white-green-black
50	brown-green-black
51	white-yellow-black
52	yellow-brown-black
53	white-grey-black
54	grey-brown-black
55	white-pink-black
56	pink-brown-black
57	white-blue-black
58	brown-blue-black
59	white-red-black
60	brown-red-black
61	black-white