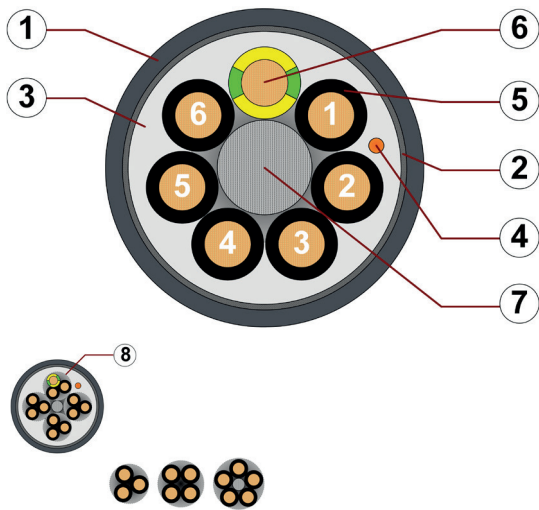


Data sheet

chainflex® CF10.UL



Control cable (Class 6.6.4.1) ● For extremely heavy duty applications ● TPE outer jacket
 ● Shielded ● Oil and bio-oil resistant ● Flame retardant ● PVC-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded, flame-retardant TPE mixture
2. Overall shield: Extremely bending-stable braid made of tinned copper wires
3. Inner jacket: Pressure extruded, gusset-filling TPE mixture
4. CFRIP: Tear strip for faster cable stripping
5. Core insulation: Mechanically high-quality TPE mixture
6. Conductor: Stranded conductor in especially bend-resistant version consisting of bare copper wires
7. Strain relief: Tensile stress-resistant centre element
8. 12 cores or more: Bundles with optimised pitch length and pitch direction

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	Number of cores < 12: Cores wound in a layer with short pitch length. Number of cores ≥ 12: Cores wound in bundles which are then wound around a high tensile strength centre element, all with optimised short pitch lengths and directions. Especially low-torsion structure.
	Core identification	Cores < 0.75 mm²: Colour code in accordance with DIN 47100. Cores ≥ 0.75 mm²: Black cores with white numbers, one green-yellow core.
	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: Slate grey (similar to RAL 7015) Printing: white
	CFRIP®	Strip cables faster: a tear strip is moulded into the inner jacket Video ► www.igus.eu/CFRIP

„00000 m^{***} igus chainflex CF10.UL.---① -----② 300/500V E310776

cRUus AWM Style -----③ VW-1 AWM I/II A/B 90°C ---V④ FT1 DNV TAE00003X2

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).
 ③ / ④ Printing of the UL Style / Voltage (see certifications for details).
 Example: ... chainflex **CF10.UL.02.04 (4x0,25)C 300/500 V ...**



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



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Dynamic information

	Bend radius	e-chain® linear flexible fixed	minimum 5 x d minimum 4 x d minimum 3 x d
	Temperature	e-chain® linear flexible fixed	-35 °C up to +100 °C -45 °C up to +100 °C (following DIN EN 60811-504) -50 °C up to +100 °C (following DIN EN 50305)
	v max.	unsupported gliding	10 m/s 6 m/s
	a max.		100 m/s ²
	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. [Faktor x d]	R min. [Faktor x d]	R min. [Faktor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

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	300/500 V (following DIN VDE 0298-3) Cores < 0.5 mm ² : 300 V (following UL) Cores ≥ 0.5 mm ² : 1000 V (following UL)
	Testing voltage	2000 V (following DIN EN 50395)



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Example image

Data sheet















chainflex® CF10.UL



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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
	Flame retardant	According to IEC 60332-1-2, FT1, VW-1
	Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	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 for details
	NFPA	Following NFPA 79-2018, chapter 12.9
	DNV	Type Approval Certificate TAE00003X2
	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 CF34. UL.25.04.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)



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



Example image

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Properties and approvals

UL/CSA AWM details

Conductor nominal cross section [mm ²]	Number of cores	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	4-8	11884	22345	300	90
0.25	12-25	11884	22344	300	90
0.5	4-5	11886	22022	1000	90
0.5	12-25	11886	22021	1000	90
0.75	4-7	11886	22022	1000	90
0.75	12-25	11886	22021	1000	90
1	2-7	11886	22022	1000	90
1	18-25	11886	22021	1000	90
1.5	4-7	11886	22022	1000	90
1.5	12-18	11886	22021	1000	90
2.5	4-7	11886	22022	1000	90
2.5	12	11886	22021	1000	90
4	4	11886	22022	1000	90



Example image



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



Data sheet

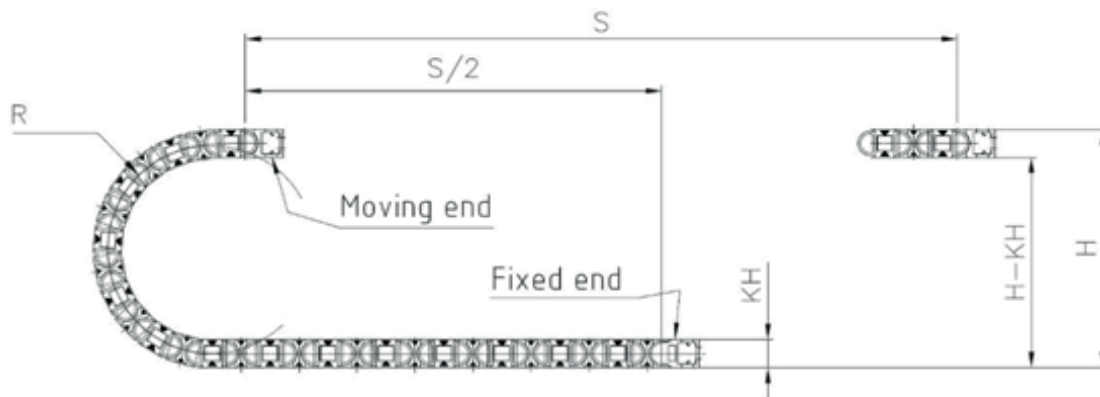
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Typical lab test setup for this cable series

Test bend radius R	approx. 32 - 100 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 / s ²



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
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, Ship to shore, outdoor cranes, low temperature applications



Example image



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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]
CF10.UL.02.04	(4x0.25)C	6.5	24	61
CF10.UL.02.08	(8x0.25)C	8.5	40	94
CF10.UL.02.12	(12x0.25)C	9.5	64	138
CF10.UL.02.25	(25x0.25)C	12.5	109	239
CF10.UL.05.04	(4x0.5)C	7.5	37	84
CF10.UL.05.05	(5x0.5)C	8.0	44	96
CF10.UL.05.12	(12x0.5)C	11.5	103	211
CF10.UL.05.25	(25x0.5)C	15.5	186	377
CF10.UL.07.04	(4G0.75)C	8.0	49	102
CF10.UL.07.05	(5G0.75)C	8.5	58	119
CF10.UL.07.07	(7G0.75)C	10.0	89	172
CF10.UL.07.12	(12G0.75)C	12.5	135	274
CF10.UL.07.20	(20G0.75)C	15.5	210	395
CF10.UL.07.25	(25G0.75)C	17.0	255	492
CF10.UL.10.02	(2x1.0)C	7.5	38	88
CF10.UL.10.03	(3G1.0)C	8.0	48	99
CF10.UL.10.04	(4G1.0)C	8.5	61	118
CF10.UL.10.05	(5G1.0)C	9.0	72	137
CF10.UL.10.07	(7G1.0)C	11.0	110	204
CF10.UL.10.25 ¹¹⁾	(25G1.0)C	18.5	348	608
CF10.UL.15.04	(4G1.5)C	9.0	83	144
CF10.UL.15.05	(5G1.5)C	10.0	111	182
CF10.UL.15.07 ¹⁷⁾	(7G1.5)C	12.0	148	246
CF10.UL.15.12	(12G1.5)C	14.5	236	408
CF10.UL.15.18	(18G1.5)C	18.5	363	608
CF10.UL.25.04	(4G2.5)C	11.0	140	237
CF10.UL.25.07 ¹⁷⁾	(7G2.5)C	14.0	226	381
CF10.UL.25.12	(12G2.5)C	18.5	395	684
CF10.UL.40.04	(4G4.0)C	12.5	205	315

¹¹⁾ Phase-out model

¹⁷⁾ When using the cables with „7G1.5mm²“ and „7G2.5mm²“ minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.

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



Example image



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Example image

Electrical information

Conductor nominal cross section [mm ²]	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
0.75	26	14
1	19.5	17
1.5	13.3	21
2.5	8	30
4	4.95	41

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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Design table

Part No.	Number of cores	Core design	Part No.	Number of cores	Core design
CF10.UL.XX.02	2		CF10.UL.XX.08	8	
CF10.UL.XX.03	3		CF10.UL.XX.12	4x3	
CF10.UL.XX.04	4		CF10.UL.XX.18	6x3	
CF10.UL.XX.05	5		CF10.UL.XX.20	5x4	
CF10.UL.XX.07	7		CF10.UL.XX.25	5x5	



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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

