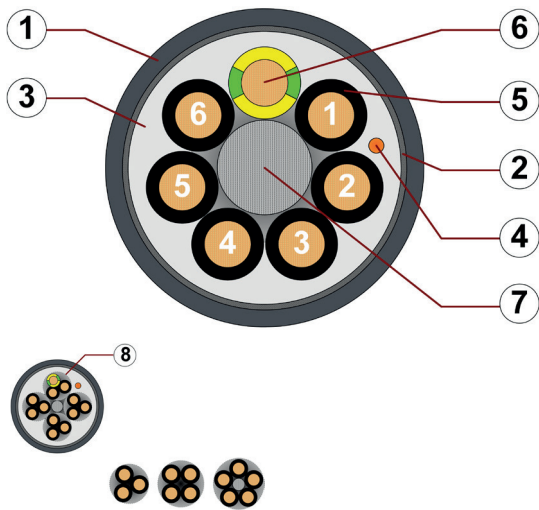


Data sheet

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-resistant braiding 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	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 FT-1 DNV-GL TAE00003X2

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



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








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

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. [factor x d]	R min. [factor x d]	R min. [factor 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)



Example image














Data sheet

chainflex® CF10.UL



Control cable (Class 6.6.4.1) ● For extremely heavy duty applications ● TPE outer jacket
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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 data sheet for details ► www.igus.eu/CF10.UL
-  **NFPA** Following NFPA 79-2018, chapter 12.9
-  **DNV-GL** Type approval certificate No. TAE00003X2
-  **EAC** Certificate No. RU C-DE.ME77.B.00300/19 (TR ZU)
-  **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



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



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	4-25	10479	21529	300	90
0.5	4-25	10258	21387	1000	90
0.75	4-25	10258	21387	1000	90
1	2-25	10258	21387	1000	90
1.5	4-18	10258	21387	1000	90
2.5	4-12	10258	21387	1000	90
4	4	10258	21387	1000	90

Example image



Data sheet

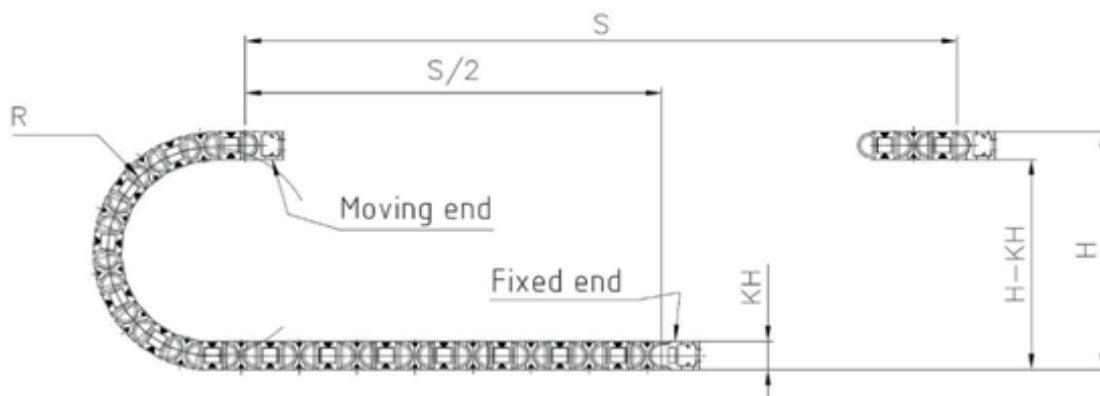
chainflex® CF10.UL



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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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Data sheet

chainflex® CF10.UL



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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	7.0	26	67
CF10.UL.02.08	(8x0.25)C	9.0	39	102
CF10.UL.02.12	(12x0.25)C	10.5	66	155
CF10.UL.02.25	(25x0.25)C	13.0	112	252
CF10.UL.05.04	(4x0.5)C	8.5	39	96
CF10.UL.05.05	(5x0.5)C	9.0	45	109
CF10.UL.05.12	(12x0.5)C	13.0	110	254
CF10.UL.05.25	(25x0.5)C	16.5	191	396
CF10.UL.07.04	(4G0.75)C	9.0	51	119
CF10.UL.07.05	(5G0.75)C	10.0	71	149
CF10.UL.07.07	(7G0.75)C	11.0	94	194
CF10.UL.07.12	(12G0.75)C	14.5	148	324
CF10.UL.07.20	(20G0.75)C	17.0	220	467
CF10.UL.07.25	(25G0.75)C	19.5	288	593
CF10.UL.10.02	(2x1.0)C	8.5	40	102
CF10.UL.10.03	(3G1.0)C	9.0	50	117
CF10.UL.10.04	(4G1.0)C	10.0	74	151
CF10.UL.10.05	(5G1.0)C	10.5	87	174
CF10.UL.10.07	(7G1.0)C	12.0	110	189
CF10.UL.10.18 ¹¹⁾	(18G1.0)C	19.0	283	554
CF10.UL.10.25 ¹¹⁾	(25G1.0)C	21.5	365	737
CF10.UL.15.04	(4G1.5)C	10.5	98	186
CF10.UL.15.05	(5G1.5)C	11.5	116	214
CF10.UL.15.07 ¹⁷⁾	(7G1.5)C	13.0	154	278
CF10.UL.15.12	(12G1.5)C	17.5	251	497
CF10.UL.15.18	(18G1.5)C	21.5	387	732
CF10.UL.25.04	(4G2.5)C	12.0	145	258
CF10.UL.25.07 ¹⁷⁾	(7G2.5)C	15.0	234	423
CF10.UL.25.12	(12G2.5)C	21.5	417	796
CF10.UL.40.04	(4G4.0)C	13.5	213	362

¹¹⁾ Phase-out model

¹⁷⁾ When using the cables with „7G1.5mm²“ and „G2.5mm²“ 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	



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



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	Conductor no.	Colours according to DIN ISO 47100
1	white	22	brown-blue	43	blue-black
2	brown	23	white-red	44	red-black
3	green	24	brown-red	45	white-brown-black
4	yellow	25	white-black	46	yellow-green-black
5	grey	26	brown-black	47	grey-pink-black
6	pink	27	grey-green	48	red-blue-black
7	blue	28	yellow-grey	49	white-green-black
8	red	29	pink-green	50	brown-green-black
9	black	30	yellow-pink	51	white-yellow-black
10	violet	31	green-blue	52	yellow-brown-black
11	grey-pink	32	yellow-blue	53	white-grey-black
12	red-blue	33	green-red	54	grey-brown-black
13	white-green	34	yellow-red	55	white-pink-black
14	brown-green	35	green-black	56	pink-brown-black
15	white-yellow	36	yellow-black	57	white-blue-black
16	brown-yellow	37	grey-blue	58	brown-blue-black
17	white-grey	38	pink-blue	59	white-red-black
18	brown-grey	39	grey-red	60	brown-red-black
19	white-pink	40	pink-red	61	black-white
20	white-brown	41	grey-black		
21	white-blue	42	pink-black		



Example image



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