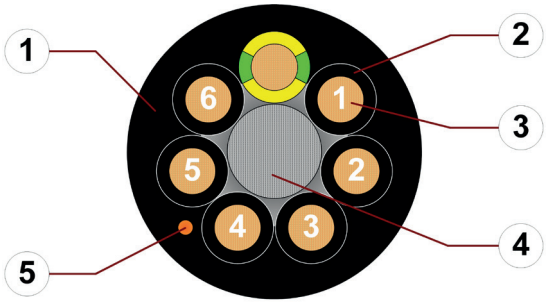
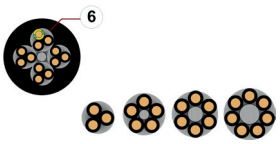
Data sheet
chainflex® CF150.UL

Control cable (Class 4.4.2.2) ● For medium duty applications ● PVC outer jacket ● Oil-resistant ● Flame-retardant ● TC-ER (Power and Control Tray Cable)

Example image





Example image
For detailed overview please see design table

1. Outer jacket: Pressure extruded, gusset-filling, oil-resistant PVC mixture
2. Core insulation: Mechanically high-quality PVC/PA mixture
3. Conductor: Finely stranded conductor consisting of bare copper wires
4. Strain relief: Tensile stress-resistant centre element
5. CFRIP: Tear strip for faster cable stripping
6. 12 cores or more: Bundles with optimised pitch length and pitch direction

Cable structure

Conductor	Finely stranded conductor consisting of bare copper wires (following DIN EN 60228).
Core insulation	Mechanically high-quality PVC/PA 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	Black cores with white numbers, one green-yellow core.
Outer jacket	Low-adhesion, oil-resistant PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1) Colour: jet black (similar to RAL 9005)
CFRIP®	Strip cables faster: a tear strip is moulded into the outer jacket Video ▶ www.igus.eu/CFRIP

„00000 m“*** igus chainflex CF150.--.--.UL① -----② 300/500V E522881 C (UL) TC-ER 600V

----------③ or WTTC 90°C 1000V or MTW 600V or c(UL) CONTROL CIC/TC

FT4 PVC/N or AWM Style 2587 90°C 600V - CE 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 **≤ 1.5mm²:** Type TFFN 90°C DRY OIL RES I
≥ 2.5mm²: Type THHN/THWN 90°C DRY 75° WET DIR BUR OIL RES I

Example: chainflex **CF150.10.03.UL 3G1,0 300/500 V E522881 C (UL) TC-ER 600V TFFN 90°C DRY OIL RES I** or WTTC

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Dynamic information

Bend radius	e-chain® linear	minimum 7.5 x d
	flexible	minimum 6 x d
	fixed	minimum 4 x d
Temperature	e-kette® linear	+5 °C up to +70 °C
	flexible	-5 °C up to +70 °C (following DIN EN 60811-504)
	fixed	-15 °C up to +70 °C (following DIN EN 50305)
v max.	unsupported	3 m/s
	gliding	2 m/s
a max.		20 m/s²
Travel distance		Unsupported travels and up to 50m for gliding applications, Class 4
Torsion		Torsion ±90°, with 1m cable length, Class 2

Guaranteed service life according to guarantee conditions

Double strokes	5 million		7.5 million		10 million	
Temperature. from/to [°C]	< 10 m R min. [factor x d]	≥ 10 m R min. [factor x d]	< 10 m R min. [factor x d]	≥ 10 m R min. [factor x d]	< 10 m R min. [factor x d]	≥ 10 m R min. [factor x d]
+5/+15	10	12.5	11	13.5	12	14.5
+15/+60	7.5	10	8.5	11	9.5	12
+60/+70	10	12.5	11	13.5	12	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	300/500 V (following DIN VDE 0298-3) 600 V TC-ER, 1000 V WTTC, 600 V MTW, 600 V AWM
Testing voltage	2000 V (followingDIN EN 50395)

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Example image

Properties and approvals

UV resistance	Medium
Oil resistance	Oil resistant (according to DIN EN 50363-4-1), UL Oil Res I, Class 2
Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame, FT4
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
PFAS-free	Use of PFAS-free materials according to the content of the REACH directive and its rules for the production and processing of chemical substances
UL verified	Certificate No. B129699: "igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year"
UL listed	TC-ER UL 1277, WTTC UL 2277, MTW UL W63
UL/CSA AWM	Details see table UL/CSA AWM
NEC	In accordance with Article 501 Part II 501.10(B) Class I Division 2 and Article 502 Part II 502.10(B), TC-ER cables may be used in Class I and Class II, Division 2 hazardous areas
NFPA	Following NFPA 79-2018, chapter 12.9
REACH	In accordance with regulation (EC) No. 1907/2006 (REACH)
Lead-free	Following 2011/65/EC (RoHS-II)
CE	Following 2014/35/EU

Properties and approvals

UL/CSA 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]
1	3-18	10493	2587	600	90
1.5	3-18	10493	2587	600	90
2.5	3-18	10493	2587	600	90

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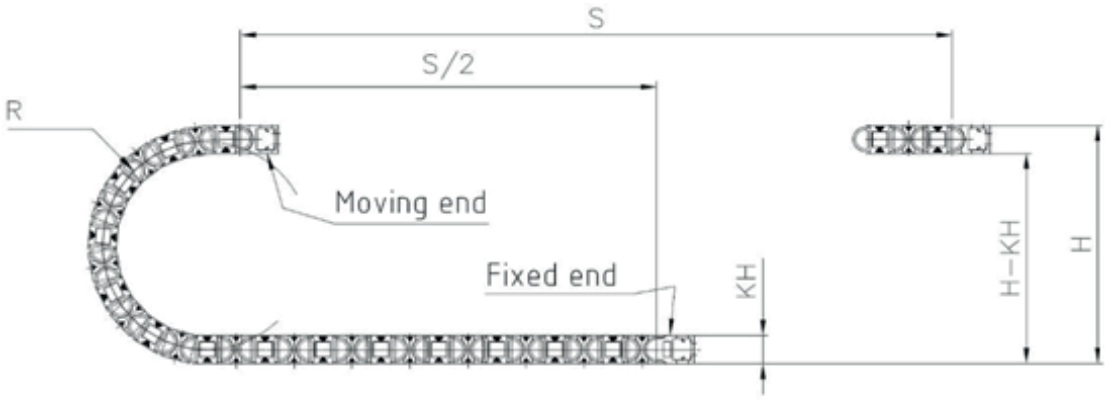
Example image

Typical lab test setup for this cable series

Test bend radius R	approx. 38 - 200 mm
Test travel S/S_2	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 medium duty applications, Class 4
- Unsupported travels and up to 50m for gliding applications, Class 4
- Light oil influence, Class 2
- Torsion ±90°, with 1m cable length, Class 2
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Unsupported travels and up to 50m for gliding applications
- Storage and retrieval units for high-bay warehouses, machining units/packaging machines, quick handling, indoor cranes, laying of cables on cable racks

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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]
CF150.UL.10.03	3G1.0	8.0	30	78
CF150.UL.10.04	4G1.0	8.5	40	94
CF150.UL.10.05	5G1.0	9.0	50	112
CF150.UL.10.07	7G1.0	10.5	70	155
CF150.UL.10.12	12G1.0	15.0	119	281
CF150.UL.10.18	18G1.0	19.0	178	425
CF150.UL.15.03	3G1.5	8.5	45	98
CF150.UL.15.04	4G1.5	9.0	60	122
CF150.UL.15.05	5G1.5	10.0	75	148
CF150.UL.15.07	7G1.5	12.0	104	205
CF150.UL.15.12	12G1.5	16.5	178	365
CF150.UL.15.18	18G1.5	21.0	267	529
CF150.UL.15.25	25G2.5	24.5	371	746
CF150.UL.25.03	3G2.5	9.5	75	133
CF150.UL.25.04	4G2.5	10.0	100	164
CF150.UL.25.05	5G2.5	11.0	124	200
CF150.UL.25.07	7G2.5	12.0	173	268
CF150.UL.25.12	12G2.5	18.5	297	502
CF150.UL.25.18	18G2.5	24.5	445	808

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]
1	19.5	15
1.5	13.3	18
2.5	8	26

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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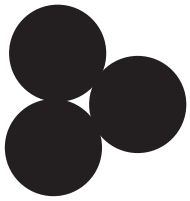
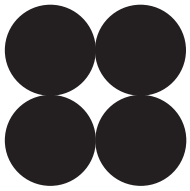
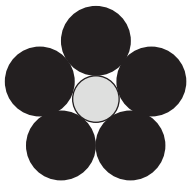
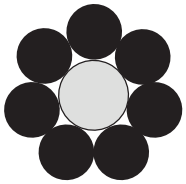
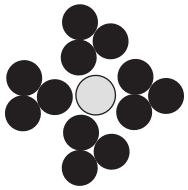
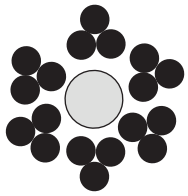
Example image

Design table

Part No.	Number of cores	Core design
CF150.UL.XX.03	3	
CF150.UL.XX.04	4	
CF150.UL.XX.05	5	
CF150.UL.XX.07	7	

Part No.	Number of cores	Core design
CF150.UL.XX.12	4x3	
CF150.UL.XX.18	6x3	
CF150.XX.25.UL	5x5