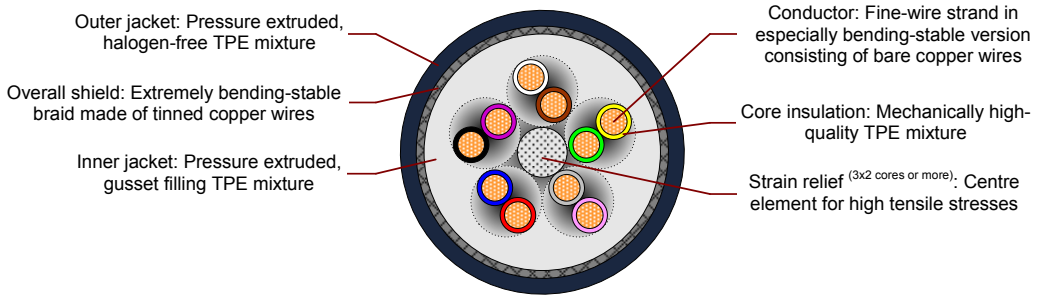
CF11

TPE - e-chain® - twisted pair data cable for maximum load requirements (class 6.6.4): shielded, oil- and biooil-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant as well as UV-resistant.



Example drawing
(For a detail overview see construction table)

Core design:

Conductor: Fine-wire strand in especially bending-stable version consisting of bare copper wires (following DIN EN 60228).

Core insulation: Mechanically high-quality TPE mixture.

Core identification:
≤ 0,75 mm²: Colour code in accordance with DIN 47100. (see colour code table)
≥ 1,0 mm²: Black cores with white numerals.

Shield design:

Material: Extremely bending-stable braid made of tinned copper wires.

Shield coverage: **Linear:** approx. 70 % **Optical**: approx. 90 %

Jacket design:

Inner jacket: TPE mixture adapted to suit the requirements in e-chains®.

Outer jacket: Low-adhesion mixture on the basis of TPE, especially abrasion-stable and highly bending-stable, adapted to suit the requirements in e-chains®.

- oil-resistant (following DIN EN 60811-2-1)
- biooil-resistant (following VDMA 24568 (tested by DEA with Plantocut 8 S-MB))
- PVC- and halogen-free (following DIN EN 50267-2-1)
- hydrolysis-resistant (following DIN VDE 0282 Part 10 - A)
- microbe-resistant (following DIN EN 50396)
- silicon-free (following PV 3.10.7 - status 1992)
- lead-free (following 2011/65/EU (RoHS-II))
- clean room ISO class 1 (according to DIN ISO 14644-1 tested by IPA)
- UV-resistance: High

Colour outer jacket: Steel blue (similar to RAL 5011)

Cable marking (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 for details).
Ex.: CF11.01.04.02: ⇒ …chainflex CF11.01.04.02 (4x(2x0,14))C CE…

General mechanical values:
(for individual details see technical table)

Guaranteed lifetime for this series according to the "chainflex® guarantee club" conditions (see chainflex® catalogue and www.igus.eu/chainflex-guarantee)				
Double strokes*		**5 million**	**7,5 million**	**10 million**
Temperature (from/to) [°C]	**Travel distance (TD)**	Min. bending radius for e-chain® use [Factor multiplied by outer diameter (d)] (Ex.: CF11.01.04.02 at 20°C: 6,8 x 7,5 mm ➔ Min. bending radius 51,0 mm)		
-35 / -25	≤ 400 m	7,5	8,5	9,5
-25 / +80		6,8	7,8	8,8
+80 / +90		7,5	8,5	9,5

✱: Minimum guarantee lifetime of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Temperature range	-40 °C ←	-35 °C ←	-25 °C ←→ +80 °C	→ +90 °C
Min. bending radius for fixed installation	7,5 x d	6,8 x d	5,0 x d	6,8 x d
Torsion (at 1 m cable length)	---	±0°	±30 °	±0 °

Date	Author
26 Feb. 2015	D. Borsberg

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igus® chainflex® CF11
Image exemplary
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General electrical values:

(For individual details see technical table)

Nominal voltage:	300 / 300 V
Test voltage:	1,5 kV
Guidelines:	CE, EAC

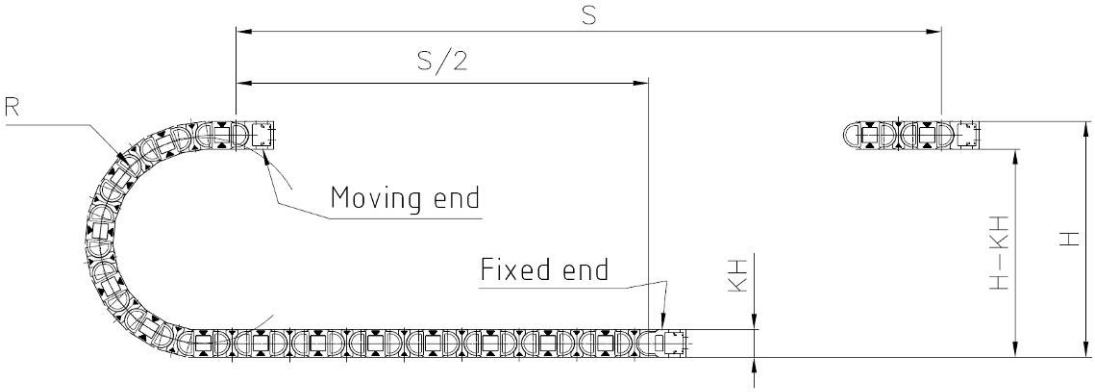
Dynamic values:

Max. speed in e-chain® use:**	**Unsupported:** v = 10 m / s **Gliding (up to 400 m):** v = 6 m / s
Max. acceleration in e-chain® use:**	a = 100 m / s^2

** *These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.*

Typical test setup for this cable group:

Test bending radius R:	approx. 38 - 115 mm
Test travel S:	approx. 1 - 15 m
Test period:	min. 2 - 4 million double strokes
Test speed:	approx. 0,5 - 2 m / s
Test acceleration:	approx. 0,5 - 1,5 m / s^2



e-chain® - data cable for maximum load requirements:

- especially abrasion-stable
- almost unlimited resistance to oil, also with biooils
- for unsupported travel distances and up to 400 m in gliding applications
- CE, RoHS-II, EAC

Typical application areas:
Indoor and outdoor applications.
Storage and retrieval units for high-bay warehouses, machining units/machine tools, quick handling, clean room, semiconductor insertion, indoor cranes, low-temperature applications.

Image exemplary

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TPE - e-chain® - twisted pair data cable for maximum load requirements (class 6.6.4): shielded, oil- and biooil-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant as well as UV-resistant.

Technical tables:

Mechanical values:

① Part no.	② Number of cores & nominal cross section [mm²]	External diameter (d)*** [max. mm]	Copper index [kg / km]	Weight [kg / km]
CF11.01.04.02	(4x(2x0,14))C	7,5	31	65
CF11.01.18.02	(18x(2x0,14))C	12,0	107	198
CF11.02.01.02	(2x0,25)C	6,0	18	39
CF11.02.02.02	(4x0,25)C****	6,5	28	51
CF11.02.03.02	(3x(2x0,25))C	8,0	37	80
CF11.02.04.02	(4x(2x0,25))C	8,5	44	91
CF11.02.05.02	(5x(2x0,25))C	9,0	52	107
CF11.02.06.02	(6x(2x0,25))C	10,0	73	134
CF11.02.09.02	(9x(2x0,25))C	12,5	102	208
CF11.02.10.02	(10x(2x0,25))C	13,0	109	223
CF11.02.14.02	(14x(2x0,25))C	13,5	132	232
CF11.03.08.02	(8x(2x0,34))C	13,0	113	227
CF11.05.04.02	(4x(2x0,5))C	9,5	82	138
CF11.05.06.02	(6x(2x0,5))C	12,0	110	205
CF11.05.08.02	(8x(2x0,5))C	14,0	145	271
CF11.07.03.02	(3x(2x0,75))C	10,0	87	159
CF11.10.04.02	(4x(2x1,0))C	12,0	134	237
CF11.15.06.02	(6x(2x1,5))C	17,0	263	427
CF11.25.03.02	(3x(2x2,5))C	15,5	226	393

*** *External diameters are maximum values and may tend toward lower tolerance limits.*
**** *Star quad design (see construction table for details).*

Electrical values:

Nominal cross section [mm²]	Conductor resistance [approx. Ω / km] at 20 °C	Max. current rating [A] at 30 °C♦
(following)	DIN EN 60228 - A	DIN VDE 0298-4
0,14	130,0	2,5
0,25	77,8	5
0,34	56,8	7
0,5	39,0	10
0,75	26,0	12
1,0	19,5	15
1,5	13,3	18
2,5	7,98	26

♦ *The max. current rating depends on factors such as the individual environmental conditions and the type of installation.*

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DIN 47100 colour code:

No.	Colour	No.	Colour	No.	Colour
01	white	22	brownblue	43	blueblack
02	brown	23	whitered	44	redblack
03	green	24	brownred	45	whitebrownblack
04	yellow	25	whiteblack	46	yellowgreenblack
05	grey	26	brownblack	47	greypinkblack
06	pink	27	greygreen	48	redblueblack
07	blue	28	yellowgrey	49	whitegreenblack
08	red	29	pinkgreen	50	browngreenblack
09	black	30	yellowpink	51	whiteyellowblack
10	violet	31	greenblue	52	yellowbrownblack
11	greypink	32	yellowblue	53	whitegreyblack
12	redblue	33	greenred	54	greybrownblack
13	whitegreen	34	yellowred	55	whitepinkblack
14	browngreen	35	greenblack	56	pinkbrownblack
15	whiteyellow	36	yellowblack	57	whiteblueblack
16	yellowbrown	37	greyblue	58	brownblueblack
17	whitegrey	38	pinkblue	59	whiteredblack
18	greybrown	39	greyred	60	brownredblack
19	whitepink	40	pinkred	61	blackwhite
20	pinkbrown	41	greyblack		
21	whiteblue	42	pinkblack		

Image exemplary

chainflex® cable works.

CF11

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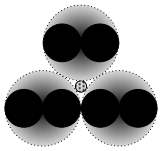
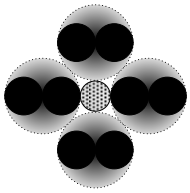
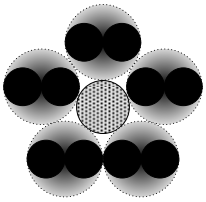
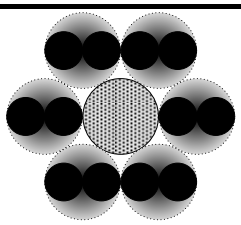
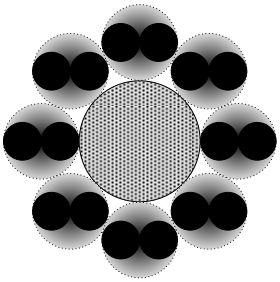
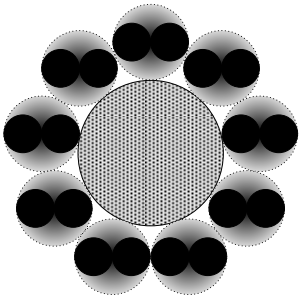
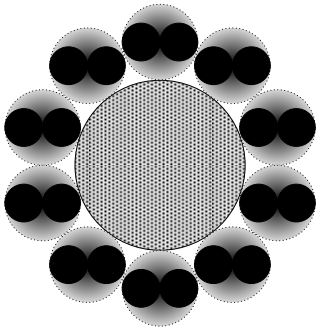
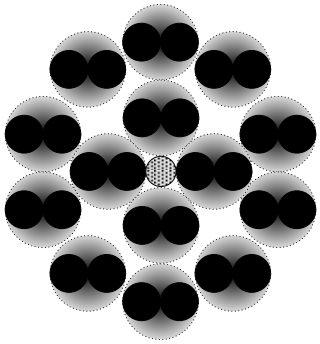
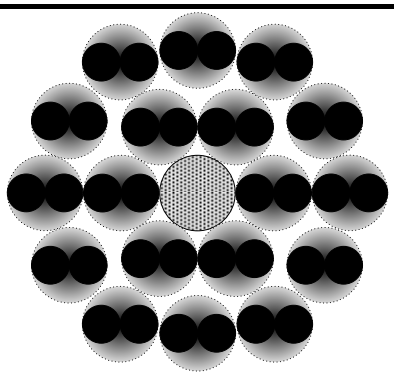
Construction table:

Part no. / No. of cores	Core stranding	Part no. / No. of cores	Core stranding
CF11.XX.01.02 / 2		CF11.XX.02.02 / 4	Star-quad design
CF11.XX.03.02 / 3x2		CF11.XX.04.02 / 4x2	
CF11.XX.05.02 / 5x2		CF11.XX.06.02 / 6x2	
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			

Subject to misprints and errors. Technical modifications are possible at any time.
Maybe older batches do not have all or other features.
Please refer regarding the availability of the items especially the information in the latest chainflex® catalogue.

Head of Business Unit chainflex® cables — Dr. Jan. 2015 — RR — igus checked

Head of R+D chainflex® cables — Dr. Jan. 2015 — MG — igus checked

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