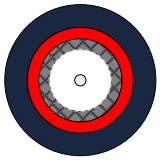
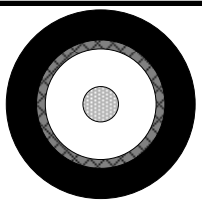
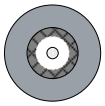
CFKoax

PE - e-chain® - Coax cable for maximum load requirements (class 6.6.4): 75 Ω (CFKoax1) / 50 Ω (CFKoax2/3), PVC-free, halogen-free (only CFKoax2), oil- and biooil-resistant, hydrolysis- and microbe-resistant and UV-resistant.

Overview

Coax element	HF75-0,3/1,6 RG179	HF50-0,9/2,95 RG58	HF50-0,3/0,84 RG178
Part. No.	CFKoax1	CFKoax2	CFKoax3
Example drawing	 (see the chapter belonging to the cable for details)	 (see the chapter belonging to the cable for details)	 (see the chapter belonging to the cable for details)

Core design:

Conductor: Especially bending-stable special conductor with optimized single wire diameter and pitch length, adapted to suit the requirements in e-chains®.

Conductor material:
CFKoax1: Silvered copper wires
CFKoax2: Tinned copper wires
CFKoax3: Silvered copper wires

Core insulation:
CFKoax1: Special FEP mixture
CFKoax2: Special PE mixture
CFKoax3: Special FEP mixture

Shield design:

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

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

Jacket design:

Element jacket:
CFKoax1: TPE mixture adapted to suit the requirements in e-chains®.
CFKoax2: none
CFKoax3: none

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-free
- halogen-free (following DIN EN 50267-2-1) **(only CFKoax2)**
- 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 (following DIN ISO 14644-1 tested by IPA)
- UV-resistance: Medium **(CFKoax3)** → High **(CFKoax1/2)**

Colour outer jacket:
CFKoax1: Steel blue (similar to RAL 5011)
CFKoax2: Jet Black (similar to RAL 9005)
CFKoax3: Window grey (similar to RAL 7040)

Cable marking (Black or White):

„00000 m“* igus chainflex CFKoax-.--① 500V -----② 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.: CFKoax1.01: ⇒ …x CFKoax1.01 500V HF75-0,3/1,6 RG179 CE…

Date	Author
15 May. 2014	D. Borsberg

CFKoax

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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.: CFKoax1.01 at 20°C: 10,0 x 4,5 mm ➔ Min. bending radius 45,0 mm)		
CFKoax1/CFKoax3				
-35 / -25	≤ 400 m	12,5	13,5	14,5
-25 / +90		10,0	11,0	12,0
+90 / +100		12,5	13,5	14,5
CFKoax2				
-35 / -25	≤ 400 m	12,5	13,5	14,5
-25 / +60		10,0	11,0	12,0
+60 / +70		12,5	13,5	14,5

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

Temperature range	**CFKoax1/CFKoax3**	**-40 °C ←**	**-35 °C ←**	**-25 °C ←→ +90 °C**	**→ +100 °C**
	CFKoax2	**-40 °C ←**	**-35 °C ←**	**-25 °C ←→ +60 °C**	**→ +70 °C**
Min. bending radius for fixed installation		10,0 x d	7,5 x d	5,0 x d	7,5 x d
Torsion (at 1 m cable length)		---	±0 °	±30 °	±0 °

General electrical values:

(for individual details see technical table and chapter belonging to the cable)

Nominal voltage: 500 V

Test voltage: 1,5 kV (following DIN EN 50289-1-3)

Guidelines: CE, EAC

+++ chainflex® cable works +++

igus® chainflex® CFKoax

Image exemplary

www.igus.de

CFKoax

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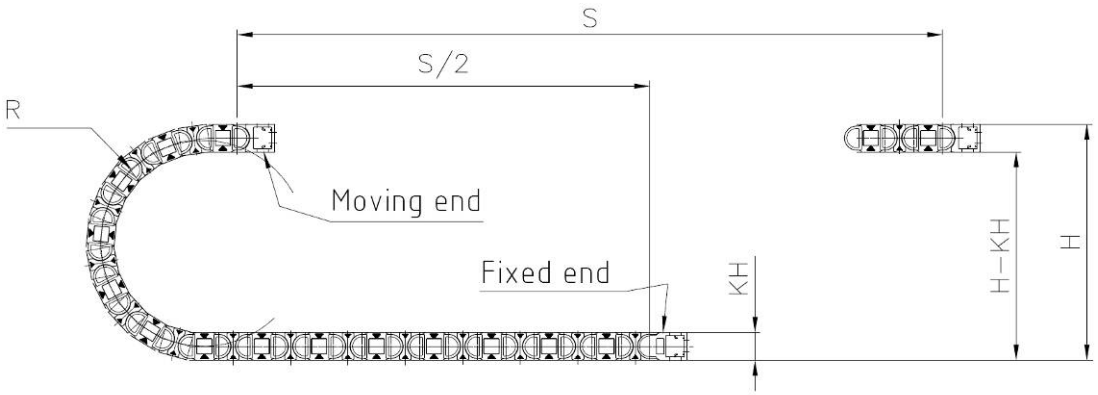
Dynamic values:

Max. speed for e-chain® use:**	**Unsupported:** v = 10 m / s **Gliding (up to 400 m):** v = 5 m / s
Max. acceleration for 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 lab test setup for this cable group:

Test bending radius R:	approx. 60 - 125 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® - Coax 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
- UV-resistant **(CFKoax1/3)**
- 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, clean room, semiconductor insertion, indoor cranes, low-temperature applications.

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Technical tables:

Mechanical values:

① Part no.	No. of elements	② Coax element	External diameter (d)*** [max. mm]	Conductor / core diameter**** [nom. mm]	Copper index [kg / km]	Weight [kg / km]
CFKoax1.01	1	HF75-0,3/1,6	4,5	0,3 / 1,6	7	23
CFKoax1.05	5	HF75-0,3/1,6	10,0	0,3 / 1,6	35	112
CFKoax2.01	1	HF50-0,9/2,95	5,5	0,9 / 2,95	20	37
CFKoax3.01	1	HF50-0,3/0,84	3,5	0,3 / 0,84	5	12

*** *External diameters are maximum values and may tend toward lower tolerance limits.*
**** *Info: The coax elements used in cables of the CF Koax1 series are comparable with a HF75-0,3/1,6 according to MIL-C-17/94-RG179 and thus fit in an RG179 plug!*
The coax elements used in cables of the CF Koax2 series are comparable with a HF50-0.9/2,95 according to MIL-C-17/28-RG58 and thus fit in an RG58 plug!
The coax elements used in cables of the CF Koax3 series are comparable with a HF50-0.3/0,84 according to MIL-C-17/93-RG178 and thus fit in an RG178 plug!

Electrical values:

Part no.	Conductor resistance [approx. Ω / km]	Characteristic wave impedance [Ω] at 200 MHz	Operating capacity [nF / km] at 800 Hz
(following)	DIN EN 50289-1-2	DIN EN 50289-1-11	DIN EN 50289-1-5
CFKoax1.01	800	75 ± 3 Ω	2,5
CFKoax1.05	800	75 ± 3 Ω	4
CFKoax2.01	44,7	50 ± 3 Ω	100
CFKoax3.01	800	50 ± 3 Ω	95

Part no.	Line attenuation [nom. db / 100 m] (following DIN EN 50289-1-8)					
(at)	50 MHz	100 MHz	200 MHz	400 MHz	800 MHz	1 GHz
CFKoax1.01	20	28	40	57	82	92
CFKoax1.05	20	28	40	57	82	92
CFKoax2.01	13	18	26	42	60	72
CFKoax3.01	36	50	72	110	160	180

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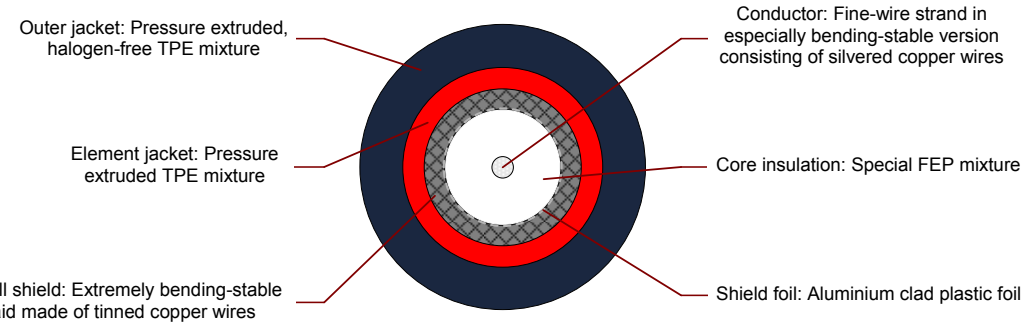
CFKoax1 (HF75-0,3/1,6 RG179)

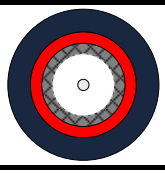
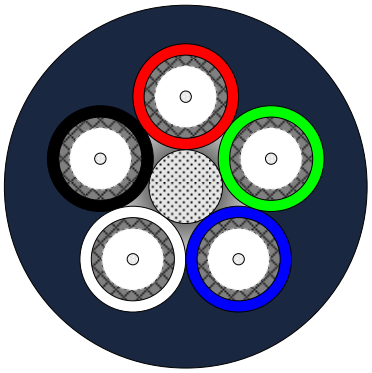


Electrical values:

Operating capacity: CFKoax1.01: approx. 2,5 pF / m
CFKoax1.05: approx. 4 pF / m
⇒ (at 800 Hz) following DIN EN 50289-1-5

Characteristic wave resistance: 75 ± 3 Ω (at 200 MHz) following DIN EN 50289-1-11

Construction table:

Part No.	Element identification	Cable construction
CFKoax1.01	red	
CFKoax1.05	red, green, blue, white & black	

(Back to overview)

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15 May. 2014	D. Borsberg

Image exemplary

chainflex® cable works. CFKoax

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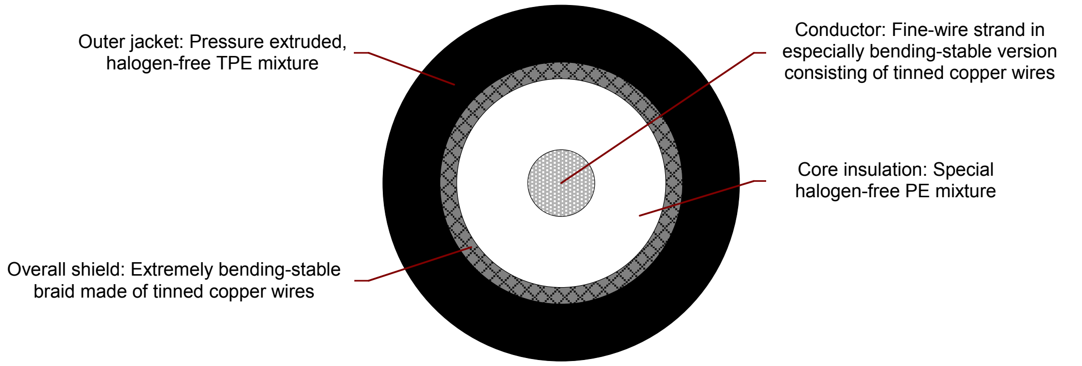
CFKoax2 (HF50-0,9/2,95 RG58)

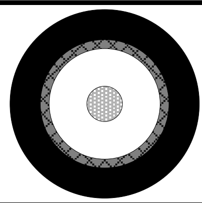


Electrical values:

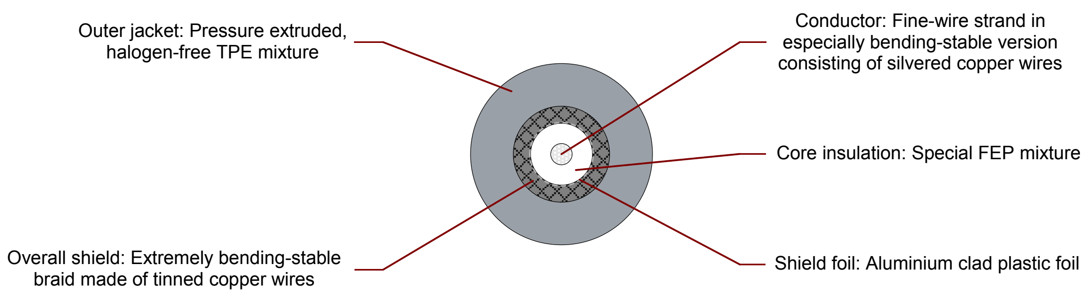
Operating capacity: CFKoax2.01: approx. 100 pF / m
⇒ (at 800 Hz) following DIN EN 50289-1-5

Characteristic wave resistance: 50 ± 3 Ω (at 200 MHz) following DIN EN 50289-1-11

Construction table:

Part No.	Element identification	Cable construction
CFKoax2.01	---	

CFKoax3 (HF50-0,3/0,84 RG178)

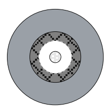


Electrical values:

Operating capacity: CFKoax3.01: approx. 95 pF / m
⇒ (at 800 Hz) following DIN EN 50289-1-5

Characteristic wave resistance: 50 ± 3 Ω (at 200 MHz) following DIN EN 50289-1-11

Construction table:

Part No.	Element identification	Cable construction
CFKoax3.01	---	

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