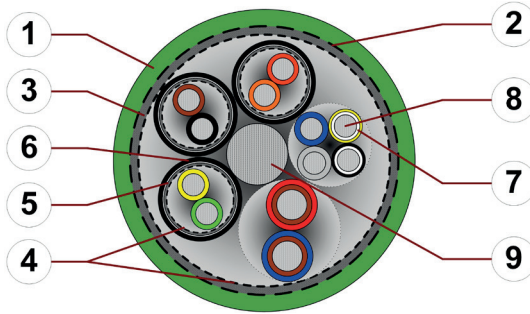


Data sheet

chainflex® CF111.D



Measuring system cable (Class 4.2.3.1) ● For medium duty applications ● PUR outer jacket
 ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free
 ● Notch-resistant ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded PUR mixture
2. Banding: Plastic fleece
3. Overall shield: Extremely bending-stable braid made of tinned copper wires
4. Banding: Plastic foil
5. Element shield: Extremely bending-stable wrapping made of tinned copper wires
6. Element jacket: Mechanically high-quality TPE mixture
7. Core insulation: Mechanically high-quality TPE mixture
8. Conductor: Fine-wire strand in highly bending-stable version consisting of tinned copper wires
9. Strain relief: Tensile stress-resistant centre element

Example image
 For detailed overview please see design table

Cable structure

	Conductor	Very finely stranded special cores of particularly high-flex design made of tinned copper wires.
	Core insulation	Mechanically high-quality TPE mixture.
	Core structure	According to measuring system specification.
	Core identification	According to measuring system specification. ► Product range table
	Element shield	Extremely bending-resistant, tinned copper cover. Coverage approx. 90 % optical
	Element jacket	TPE mixture on pair shielding adapted to suit the requirements in e-chains®.
	Intermediate layer	Foil taping over the outer layer.
	Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage approx. 55 % linear, approx. 80 % optical
	Outer jacket	Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2). Colour: Yellow-green (similar to RAL 6018) Printing: black

„00000 m^{***} igus chainflex CF111.----.D① -----② E310776 cRUus

AWM Style 20233 VW-1 AWM I/II A/B 80°C 300V FT1 DNV-GL TAE00003X4

EAC/CTP CE DESINA 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).
 Example: ... chainflex **CF111.001.D (3x(2x0.14)C+(4x0.14)+(2x0.5))C E310776 ...**



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








Data sheet

chainflex® CF111.D



Measuring system cable (Class 4.2.3.1) ● For medium duty applications ● PUR outer jacket
 ● Shielded ● Oil resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free
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Dynamic information

	Bend radius	e-chain® linear flexible fixed	minimum 10 x d minimum 8 x d minimum 5 x d
	Temperature	e-chain® linear flexible fixed	-25 °C up to +80 °C -40 °C up to +80 °C (following DIN EN 60811-504) -50 °C up to +80 °C (following DIN EN 50305)
	v max.	unsupported gliding	5 m/s 3 m/s
	a max.		30 m/s ²
	Travel distance		Unsupported travels and up to 10 m for gliding applications, Class 2



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]
-25/-15	12.5	13.5	14.5
-15/+70	10	11	12
+70/+80	12.5	13.5	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	50 V 300 V (following UL)
	Testing voltage	500 V



Example image

Data sheet




chainflex® CF111.D



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Properties and approvals



	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
	Offshore	MUD-resistant following NEK 606 - status 2009
	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)
	Halogen-free	Following DIN EN 60754
	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 AWM for details
	NFPA	Following NFPA 79-2018, chapter 12.9
	DNV-GL	Type approval certificate No. TAE00003X4
	EAC	Certificate No. RU C-DE.ME77.B.00295/19 (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 CF77. UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
	DESINA	According to VDW, DESINA standardisation
	CE	Following 2014/35/EU



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Example image

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Properties and approvals

UL/CSA AWM Details

Part No.	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
CF111.001.D	10467	20233	300	80
CF111.002.D	10467	20233	300	80
CF111.004.D	10467	20233	300	80
CF111.006.D	10467	20233	300	80
CF111.009.D	10467	20233	300	80
CF111.010.D	10467	20233	300	80
CF111.011.D	10467	20233	300	80
CF111.014.D	10467	20233	300	80
CF111.015.D	10467	20233	300	80
CF111.020.D	10467	20233	300	80
CF111.021.D	10467	20233	300	80
CF111.022.D	10467	20233	300	80
CF111.024.D	10467	20233	300	80
CF111.026.D	10467	20233	300	80
CF111.027.D	10467	20233	300	80
CF111.028.D	11602	20233	300	80
CF111.032.D	10467	20233	300	80
CF111.040.D	10467	20233	300	80



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



Example image

Data sheet

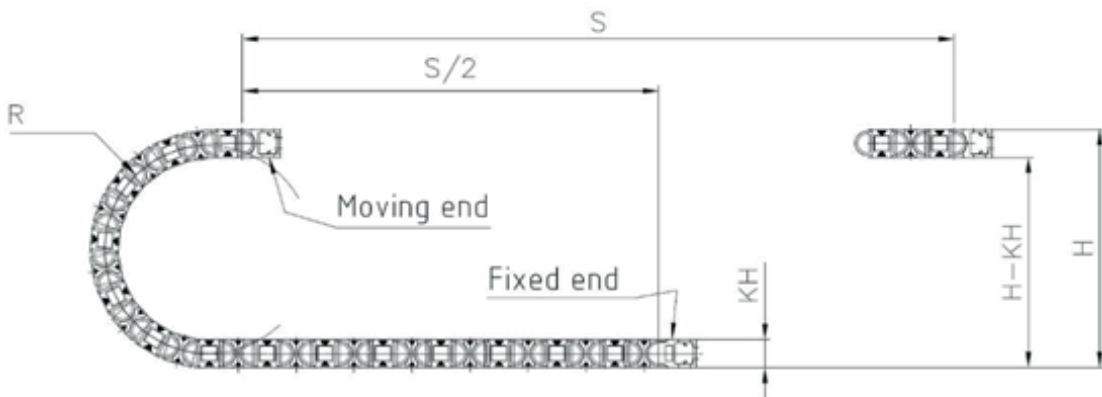
chainflex® CF111.D



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Typical lab test setup for this cable series

Test bend radius R	approx. 75 - 135 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 medium duty applications, Class 4
- Unsupported travel distances and up to 10 m for gliding applications, Class 2
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct solar radiation
- Machining units/machine tools, 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]
CF111.001.D	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	9.5	64	104
CF111.002.D	(3x(2x0.14)C+2x(0.5)C)C	9.5	66	109
CF111.004.D	(2x(2x(2x0.14))+(4x0.14)C+(4x0.5)C)	10.5	70	116
CF111.006.D	(3x(2x0.14)C+(4x0.14)+(4x0.25)+(2x0.5))C	10.0	76	122
CF111.009.D	(4x(2x0.25)+2x0.5)C	8.0	49	79
CF111.010.D	(4x(2x0.25)+2x1.0)C	8.5	61	94
CF111.011.D	(4x(2x0.34)+4x0.5)C	9.5	72	115
CF111.014.D	(4x(2x0.25)C+(2x0.5)C)	10.5	77	124
CF111.015.D	(4x(2x0.14)+4x0.5)C	8.5	54	87
CF111.020.D	(3x(2x0.14)+2x(4x0.14)+(2x0.5)C)	8.5	52	87
CF111.021.D	((4x0.25)+3x(2x0.25+2x0.5))C	9.5	80	117
CF111.022.D	((2x0.25)+5x0.5)C	7.0	46	75
CF111.024.D	((4x0.14)+2x(2x0.34))C	7.0	36	61
CF111.026.D	(6x(2x0.25)+(2x0.34)C+(2x0.5)C)	10.5	74	119
CF111.027.D	(5x(2x0.14)+2x0.5)C	8.0	45	76
CF111.028.D	(2x(2x0.15)+(2x0.38))C	7.5	40	73
CF111.032.D	3x(2x0.14)C+(3x0.14)C	8.5	35	82
CF111.040.D	(3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C	9.0	81	118

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 [mm ²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C [A]
0.14	150.0	2.5
0.15	146.0	2.5
0.25	90.0	5
0.34	63.0	7
0.38	60.0	7
0.5	42.0	10
1.0	21.0	17
1.5	16.0	21

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Example image



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Design table

Part No.	Core group	Colour code	Core design
CF111.001.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	(4x0.14)	grey/blue/white-yellow/white-black	
	(2x0.5)	brown-red/brown-blue	
CF111.002.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	2x(0.5)C	black, red	
CF111.004.D	2x(2x(2x0.14))	(brown/green)/(yellow/violet), (grey/pink)/(red/black)	
	(4x0.14)C	yellow-black/red-black/green-black/blue-black	
	(4x0.5)	brown-green/white-green/blue/white	
CF111.006.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	(4x0.14)	grey/blue/white-yellow/white-black	
	(4x0.25)	brown-yellow/brown-grey/green-black/green-red	
	(2x0.5)	brown-red/brown-blue	
CF111.009.D	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black	
	2x0.5	white, brown	
CF111.010.D	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black	
	2x1.0	white, brown	
CF111.011.D	4x(2x0.34)	black/brown, red/orange, green/yellow, blue/violet	
	4x0.5	black-white, red-white, yellow-white, blue-white	



Example image
igus® chainflex® CF111.D



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Design table

Part No.	Core group	Colour code	Core design
CF111.014.D	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red	
	(2x0.5)	black no. 1/black no. 2	
CF111.015.D	4x(2x0.14)	brown/green, yellow/violet, grey/pink, red/black	
	4x0.5	blue, white, brown-green, white-green	
CF111.020.D	3x(2x0.14)	blue/red, black/violet, grey-pink/red-blue	
	2x(4x0.14)	green/grey/yellow/pink, white-green/white-yellow/ brown-green/brown-yellow	
	(2x0.5)	white/brown	
CF111.021.D	(4x0.25)	white/brown/grey/black	
	3x2x0.25	white/yellow, white/grey, black/orange	
	3x2x0.5	black no. 1/black no. 2, black no. 3/black no. 4, black no. 5/black no. 6	
CF111.022.D	(2x0.25)	white/brown	
	5x0.5	green, yellow, grey, pink, blue	
CF111.024.D	(4x0.14)	yellow/grey/violet/pink	
	2x(2x0.34)	white-green/white, brown-green/blue	
CF111.026.D	6x(2x0.25)	green/yellow, grey/pink, blue/red, black/violet, grey-pink/red-blue, white-green/brown-green	
	(2x0.34)C	white/brown	
	2x0.5	blue/red	



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Design table

Part No.	Core group	Colour code	Core design
CF111.027.D	5x(2x0.14)	brown/green, yellow/grey, white/violet, red/black, pink/blue	
	2x0.5	white-green, white-red	
CF111.028.D	2x(2x0.15)	green/yellow, pink/blue	
	(2x0.38)	red/black	
CF111.032.D	3x(2x0.14)C	green/black, yellow/black, red/black	
	(3x0.14)C	grey/pink/black	
CF111.040.D	(3x(4x0.14)	black/red/white-black/white-red, green/blue/white-green/white-blue, yellow/brown/white-yellow/white-brown	
	(2x0.14+2x0.34)	violet/orange/white-violet/white-orange	
	2x1.5)C	white-grey, grey	



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igus® chainflex® CF111.D