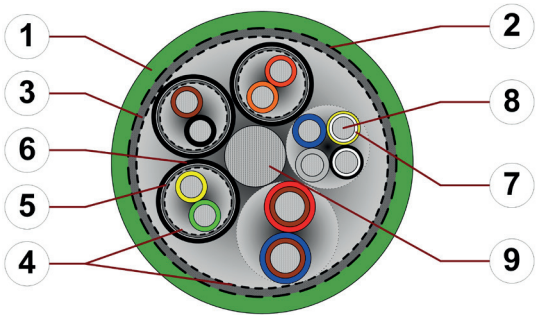
Data sheet
chainflex® CF111.D

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

Example image



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 cЯUus**

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

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year 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 ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

Dynamic information

Bend radius	**e-chain® linear**	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	**e-chain® linear**	-25 °C up to +80 °C
	flexible	-40 °C up to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C up to +80 °C (following DIN EN 50305)
v max.	**unsupported**	5 m/s
	gliding	3 m/s
a max.		30 m/s²
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. [x d]	R min. [x d]	R min. [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

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

Example image

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 2016
Flame retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
Halogen-free	Following DIN EN 60754
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. V293560: „igus 4-year 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	Type approval certificate No. TAE00003X4
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

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

Example image

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
CF111.023.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
CF111.041.D	10467	20233	300	80
CF111.042.D	10467	20233	300	80

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

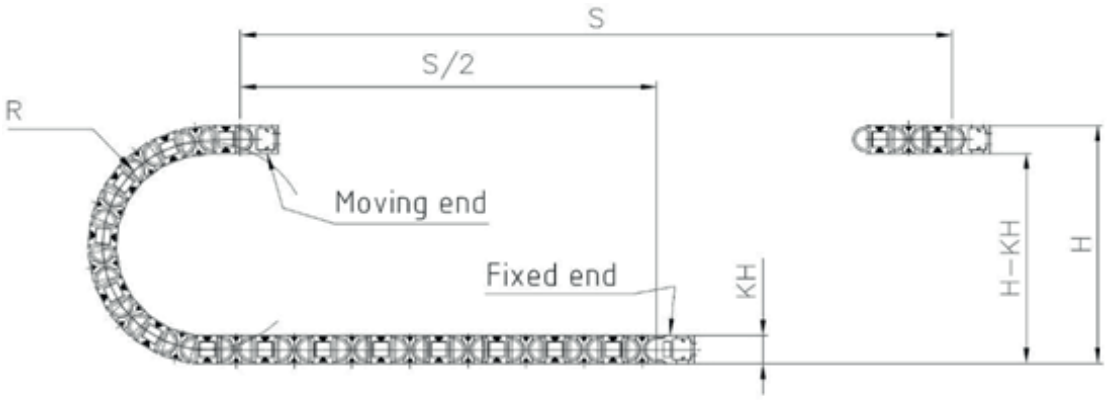
Data sheet
chainflex® CF111.D

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 ● Notch-resistant ● Hydrolysis and microbe-resistant

Example image

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 / s²



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

Guarantee igus chainflex 4 YEARS up to 4 years guarantee

igus 4-year 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 ● Notch-resistant ● Hydrolysis and microbe-resistant

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]
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
CF111.023.D	(2x(2x0.25)+(2x0.34))C	7.0	39	60
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
CF111.041.D	(2x(2x0.18)+5x0.5)C	7.5	49	80
CF111.042.D	(3x(2x0.18)+6x0.5)C	8.5	62	99

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]	Maximum current rating at 30 °C [A]
0.14	150.0	2.5
0.15	146.0	2.5
0.18	105.0	3
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

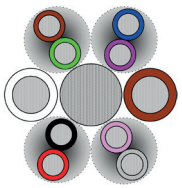
The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.

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

Example image

Design table

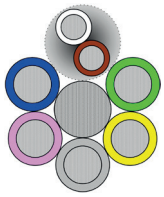
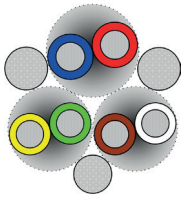
Part No.	Core group	Colour code	Core design
CF111.001.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	(4x0.14)	grey/blue/white-yellow/white-black	
	(2x0.5)	brown-red/brown-blue	
CF111.002.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	2x(0.5)C	black, red	
CF111.004.D	2x(2x(2x0.14))	(brown/green)/(yellow/violet),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

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

Example image

Design table

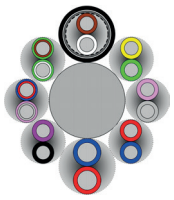
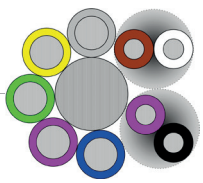
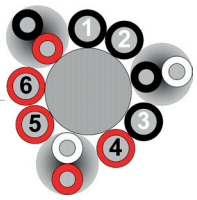
Part No.	Core group	Colour code	Core design
CF111.014.D	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red	
	(2x0.5)	black no. 1/black no. 2	
CF111.015.D	4x(2x0.14)	brown/green, yellow/violet, grey/pink, red/black	
	4x0.5	blue, white, brown-green, white-green	
CF111.020.D	3x(2x0.14)	blue/red, black/violet, grey-pink/red-blue	
	2x(4x0.14)	green/grey/yellow/pink, white-green/white-yellow/ brown-green/yellow-brown	
	(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	
CF111.023.D	2x(2x0.25)	white/brown, green/yellow	
	(2x0.34)	blue/red	
CF111.024.D	(4x0.14)	yellow/grey/violet/pink	
	2x(2x0.34)	white-green/white, brown-green/blue	

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

Textrahmen_

Design table

Part No.	Core group	Colour code	Core design
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	
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	
CF111.041.D	2x(2x0.18)	white/brown, black/violet	
	5x0.5	blue, violet, green, yellow, grey	
CF111.042.D	3x(2x0.18)	white/black, red/white, black/red	
	6x0.5	black no. 1, black no. 2, black no. 3, red no. 4, red no. 5, red no. 6	