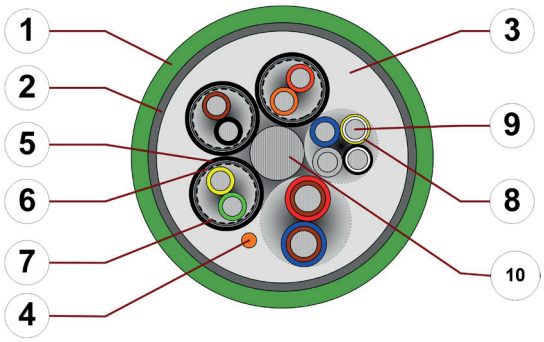
Data sheet
chainflex® CF113.D

Measuring system cable (Class 6.5.3.1) ● For extremely heavy 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



Example image
For detailed overview please see design table

1. Outer jacket: Pressure extruded PUR mixture
2. Banding: Plastic fleece
3. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
4. Inner jacket: Pressure extruded, gusset-filling TPE mixture
5. CFRIP: Tear strip for faster cable stripping
6. Element jacket: Mechanically high-quality TPE mixture
7. Element shield: Extremely bending-resistant braiding made of tinned copper wires
8. Banding: Plastic foil
9. Core insulation: Mechanically high-quality TPE mixture
10. Conductor: Fine-wire strand in especially bending-stable version consisting of tinned copper wires
11. Strain relief: Tensile stress-resistant centre element

Cable structure

Conductor	Stranded conductor in especially bending-resistant version consisting of tinned copper wires (following DIN EN 60228).
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 braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % optical
Element jacket	TPE mixture on pair shielding adapted to suit the requirements in e-chains®.
Inner jacket	TPE mixture adapted to suit the requirements in e-chains®.
Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage approx. 70 % linear, approx. 90 % 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
CFRIP®	Strip cables faster: a tear strip is moulded into the inner jacket Video ▶ www.igus.eu/CFRIP

„00000 m“** igus chainflex CF113.---.D① -----② E310776 cЯUus

AWM Style -----③ 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).
③ Printing of the UL style (see related chapter).
Example: ... chainflex **CF113.007.D (4x0.34)C E310776** ...

10/2021

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Example image

Dynamic information

Bend radius	e-chain® linear	minimum 7.5 x d
	flexible	minimum 6 x d
	fixed	minimum 4 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	10 m/s
	gliding	5 m/s
a max.		50 m/s²
Travel distance		Unsupported travels and up to 100 m for gliding applications, Class 5

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	10	11	12
-15/+70	7.5	8.5	9.5
+70/+80	10	11	12

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

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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 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 data sheet for details ▶ www.igus.eu/CF113.D
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

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]
CF113.001.D	10467	20233	300	80
CF113.002.D	10467	20233	300	80
CF113.003.D	10467	20233	300	80
CF113.004.D	10467	20233	300	80
CF113.005.D	10467	20233	300	80
CF113.006.D	10467	20233	300	80
CF113.007.D	10467	20233	300	80
CF113.008.D	10467	20233	300	80
CF113.009.D	10467	20233	300	80
CF113.010.D	10467	20233	300	80
CF113.011.D	10467	20233	300	80
CF113.013.D	10467	20233	300	80
CF113.014.D	10467	20233	300	80
CF113.015.D	10467	20233	300	80
CF113.016.D	10467	20233	300	80
CF113.017.D	10467	20233	300	80
CF113.018.D	10467	20233	300	80
CF113.019.D	10467	20233	300	80
CF113.022.D	10467	20233	300	80
CF113.025.D	10467	20233	300	80
CF113.027.D	10467	20233	300	80
CF113.028.D	11602	20233	300	80
CF113.029.D	10467	20233	300	80
CF113.031.D	10467	20233	300	80
CF113.032.D	10467	20233	300	80
CF113.033.D	10467	20233	300	80
CF113.036.D	10467	20233	300	80
CF113.037.D	10467	20233	300	80
CF113.038.D	10467	20233	300	80
CF113.040.D	10467	20233	300	80

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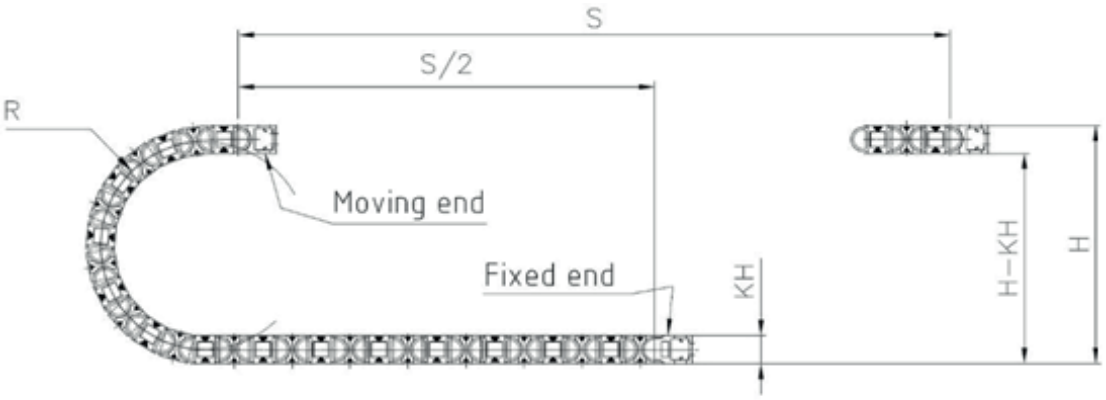
Example image

Typical lab test setup for this cable series

Test bend radius R	approx. 55 - 100 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 extremely heavy duty applications, Class 6
- Unsupported travel distances and up to 100 m for gliding applications, Class 5
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct solar radiation
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, indoor cranes, low temperature applications

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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]
CF113.001.D	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	10.0	71	137
CF113.002.D	(3x(2x0.14)C+2x(0.5)C)C	10.0	74	144
CF113.003.D	(3x(2x0.14)+2x1.0)C	8.0	56	103
CF113.004.D	(2x(2x(2x0.14))+(4x0.14)C+(4x0.5))C	11.0	78	152
CF113.005.D	(4x(2x0.14)+4x0.5)C	9.0	60	115
CF113.006.D	(3x(2x0.14)C+(4x0.14) +(4x0.25)+(2x0.5))C	11.0	85	158
CF113.007.D [2]	(4x0.34)C	6.5	31	54
CF113.008.D	(3x(2x0.25))C	7.5	36	76
CF113.009.D	(4x(2x0.25)+2x0.5)C	8.5	57	99
CF113.010.D	(4x(2x0.25)+2x1.0)C	9.0	68	122
CF113.011.D	(4x(2x0.34)+4x0.5)C	10.0	81	142
CF113.013.D	(3x(2x0.14)C+2x0.5)C	9.0	62	121
CF113.014.D	(4x(2x0.25)C+(2x0.5))C	11.0	86	163
CF113.015.D	(4x(2x0.14)+4x0.5)C	9.0	60	114
CF113.016.D	(3x(2x0.25)C)C	10.0	60	126
CF113.017.D [4]	(4x(2x0.14)+(4x0.14)C+4x1.0)C	10.0	100	150
CF113.018.D [4]	(2x(2x0.25)+2x0.5)C	6.5	41	65
CF113.019.D [4]	(3x(2x0.25)C+(3x0.25)+2x1.0)C	10.0	93	143
CF113.022.D	((2x0.25)+5x0.5)C	8.0	54	94
CF113.025.D	(3x(2x0.14)C+(2x0.5)C)C	10.0	72	141
CF113.027.D	(5x(2x0.14)+2x0.5)C	9.0	52	105
CF113.028.D [4]	(2x(2x0.20)+(2x0.38))C	7.5	44	69
CF113.029.D	(5x(2x0.25)C+(2x0.25+2x0.5))C	12.0	105	192
CF113.031.D	(2x(2x0.25)C+2x1.0)C	9.5	69	133
CF113.032.D [5]	3x(2x0.14)C+(3x0.14)C	8.5	35	82
CF113.033.D [5]	4x(2x0.14)C+2x(1.0)C	9.5	64	111
CF113.036.D	(5x(2x0.25))C	8.5	51	103
CF113.037.D	(6x(2x0.25))C	9.0	58	114
CF113.038.D	(3x(2x0.14)+(2x0.34))C	8.5	36	87
CF113.040.D	(3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C	10.0	88	155

[2] The chainflex® types marked with 2) are cables designed as a star-quad.
[4] Manufactured without inner jacket
[5] manufactured without overall shield

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

Guarantee igus chainflex 36 up to 36 months guarantee

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

CFRIP

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Example image

Technical tables:

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
0.2	94.0	3.5
0.25	90.0	5
0.34	63.0	7
0.38	54.0	7
0.5	42.0	10
1.0	23.0	17

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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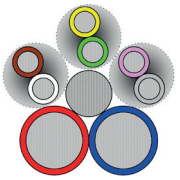
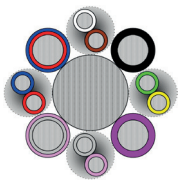
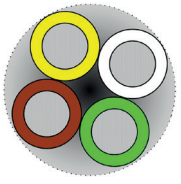
Example image

Design table

Part No.	Core group	Colour code	Core design
CF113.001.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	
CF113.002.D	3x(2x0.14)C	green/yellow, black/brown, red/orange	
	2x(0.5)C	black, red	
CF113.003.D	3x(2x0.14)	white/brown, green/yellow, grey/pink	
	2x1.0	blue, red	
CF113.004.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	
CF113.005.D	4x(2x0.14)	white/brown, green/yellow, grey/pink, blue/red	
	4x0.5	black, violet, grey-pink, red-blue	
CF113.006.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	
CF113.007.D	4x0.34	white, green, brown, yellow(Star-quad)	

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Example image

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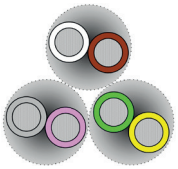
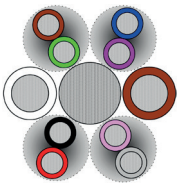
Part No.	Core group	Colour code	Core design
CF113.008.D	3x(2x0.25)	white/brown, green/yellow, grey/pink	
CF113.009.D	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black	
	2x0.5	white, brown	
CF113.010.D	4x(2x0.25)	brown/green, blue/violet, grey/pink, red/black	
	2x1.0	white, brown	
CF113.011.D	4x(2x0.34)	black/brown, red/orange, green/yellow, blue/violet	
	4x0.5	black-white, red-white, yellow-white, blue-white	
CF113.013.D	3x(2x0.14)C	white/brown, green/yellow, grey/pink	
	2x0.5	blue, red	
CF113.014.D	4x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red	
	(2x0.5)	black no. 1/black no. 2	
CF113.015.D	4x(2x0.14)	brown/green, yellow/violet, grey/pink, red/black	
	4x0.5	blue, white, brown-green, white-green	

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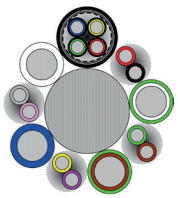
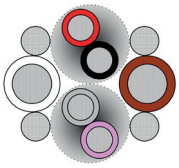
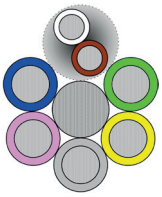
Example image

Design table

Part No.	Core group	Colour code	Core design
CF113.016.D	3x(2x0.25)C	white/brown, green/yellow, grey/pink	
CF113.017.D	4x(2x0.14)	red/black, brown/green, yellow/violet, grey/pink	
	(4x0.14)C	blue-black/yellow-black/red-black/green-black	
	4x1.0	white-green, brown-green, blue, white	
CF113.018.D	2x(2x0.25)	red/black, grey/pink	
	2x0.5	white, brown	
CF113.019.D	3x(2x0.25)C	brown/green, grey/pink, red/black	
	(3x0.25)	blue/violet/yellow	
	2x1.0	white, brown	
CF113.022.D	(2x0.25)	white/brown	
	5x0.5	green, yellow, grey, pink, blue	
CF113.025.D	3x(2x0.14)C	green/yellow, blue/red, grey/pink	
	(2x0.5)C	white/brown	
CF113.027.D	5x(2x0.14)	brown/green, yellow/grey, white/violet, red/black, pink/blue	
	2x0.5	white-green, white-red	

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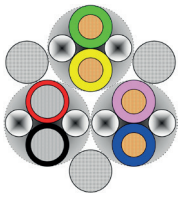
Textrahmen_

Part No.	Core group	Colour code	Core design
CF113.028.D	2x(2x0.20)	green/yellow, pink/blue	
	(2x0.38)	red/black	
CF113.029.D	5x(2x0.25)C	white/brown, green/yellow, grey/pink, blue/red, black/violet	
	(2x0.25+2x0.5)	grey-pink/brown-green/white-green/red-blue	
CF113.031.D	2x(2x0.25)C	white/brown, green/yellow	
	2x1.0	black no. 1, black no. 2	
CF113.032.D	3x(2x0.14)C	green/black, yellow/black, red/black	
	(3x0.14)C	grey/pink/black	
CF113.033.D	4x(2x0.14)C	yellow/black, red/black, blue/black, green/black	
	2x(1.0)C	white, brown	
CF113.036.D	5x(2x0.25)	white/brown, green/yellow, grey/pink, blue/red, black/violet	

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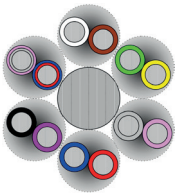
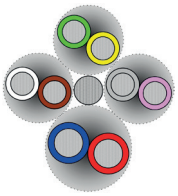
Textrahmen_

Part No.	Core group	Colour code	Core design
CF113.037.D	6x(2x0.25)	white/brown, green/yellow, grey/pink, blue/red, black/violet,grey-pink/red-blue	
CF113.038.D	3x(2x0.14)	white/brown, green/yellow, grey/pink	
	(2x0.34)	blue/red	
CF113.040.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	white-grey, grey	