

# Measuring system cables



chainflex® cable	Jacket	Shield	Bending radius min., E-Chain® [factor x d]	Temperature, E-Chain® from/to [°F]	Approvals and standards	Oil-resistant	Torsion resistant v max. [ft/s] unsupported	v max. [ft/s] gliding	a max. [ft/s²]	Page
<b>Measuring system cables</b>										
<b>Selection chart for chainflex® measuring system cables</b> <span style="float: right;">228</span>										
CF884	PVC	✓	15	+41/ +158			9.84		65.62	230
CF211	PVC	✓	10	+41/ +158			16.41	9.84	98.43	234
CF894	iguPUR	✓	15	-4/ +176			9.84		65.62	240
CF111-D	PUR	✓	10	-13/ +176			16.41	9.84	98.43	244
CF113-D	PUR	✓	7.5	-13/ +176			32.81	16.41	164.05	250 <span style="color: orange;">New</span>
CF11-D	TPE	✓	7.5	-31/ +194			32.81	19.69	328.1	256
<b>Torsion Measuring system cables (Chapter Torsion cables) ▶ Page 366</b>										
CFROBOT4	PUR	✓	10	-13/ +176						380

**Measuring System Cable:** A cable that provides signal, feedback, and low voltage power between a drive or controller and a motor. This cable will combine multiple numbers of conductor sizes and components to control encoder, resolver or other means of position feedback loop. The respective motor manufacturers will each have their own cable configuration for this cable function. See Selection chart for Chainflex measuring system cables on page 228-229.

**36 months chainflex® guarantee**  
**Guaranteed lifetime for predictable reliability**  
 ▶ Selection table page 226

With the help of the chainflex® service life calculator, you can quickly and easily calculate the expected service life of chainflex® cables specifically for your application:






[www.igus.com/chainflexlife](http://www.igus.com/chainflexlife)



# chainflex® guarantee



chainflex® cable	Temperature, from/to [°F]	v max. [ft/s]		a max. [ft/s²]	Travel distance [ft]
		unsupported	gliding		
<b>Measuring system cables</b>					
 CF884	+41 / +59 +59 / +140 +140 / +158	9.84	-	65.62	≤ 32.81
 CF211	+41 / +59 +59 / +140 +140 / +158	16.41	9.84	98.43	≤ 32.81
 CF894	-4 / +14 +14 / +158 +158 / +176	9.84	-	65.62	≤ 32.81
 CF111-D	-13 / +5 +5 / +158 +158 / +176	16.41	9.84	98.43	≤ 32.81
 CF113-D <b>New!</b>	-13 / +5 +5 / +158 +158 / +176	32.81	16.41	164.05	≤ 328.1
 CF11-D	-31 / -13 -13 / +176 +176 / +194	32.81	19.69	328.1	≤ 1,312

<sup>(1)</sup> **Exclusive!** Guaranteed lifetime for this series according to the guarantee conditions ► Page 26-27

# Guaranteed lifetime <sup>(1)</sup>

Bending radius min. [factor x d]	Bending radius min. [factor x d]	Bending radius min. [factor x d]	Page
5 million (1 million) cycles *	7.5 million (3 million) cycles *	10 million (5 million) cycles *	
17.5	18.5	19.5	230
15	16	17	
17.5	18.5	19.5	
12.5	13.5	14.5	234
10	11	12	
12.5	13.5	14.5	
17.5	18.5	19.5	240
15	16	17	
17.5	18.5	19.5	
12.5	13.5	14.5	244
10	11	12	
12.5	13.5	14.5	
10	11	12	250
7.5	8.5	9.5	
10	11	12	
10	11	12	256
7.5	8.5	9.5	
10	11	12	

\* Higher number of cycles? Online lifetime calculation ► [www.igus.com/chainflexlife](http://www.igus.com/chainflexlife)

Figures in brackets refer to chainflex® series CF884 and CF894



# Selection chart for chainflex® measuring system cables

Drive Technology System	chainflex® series Class Jacket Page  Number of cores and conductor nominal cross section [mm²]	CF884-yyy	CF211-yyy	CF894-yyy	CF111-yyy-D	CF113-yyy-D	CF11-yyy-D
		3.1.1.1 PVC 230	4.2.2.1 PVC 234	3.1.3.1 PUR 240	4.2.3.1 PUR 244	6.5.3.1 PUR 250	6.6.4.1 TPE 256
<b>Allen Bradley</b>							
	CFxxx-040-D (3x(4x0.14)+(2x0.14+2x0.34)+2x1.5)C					✓	✓
<b>B&amp;R</b>							
	CFxxx-024-D ((4x0.14)+2x(2x0.34))C		✓		✓		
	CFxxx-027-D (5x(2x0.14)+2x0.5)C		✓		✓	✓	✓
<b>Baumüller</b>							
	CFxxx-027-D (5x(2x0.14)+2x0.5)C		✓		✓	✓	✓
<b>Beckhoff</b>							
	CFxxx-007-D (4x0.34)C						✓
<b>Berger Lahr</b>							
	CFxxx-011-D (4x(2x0.34)+4x0.5)C	✓	✓	✓		✓	✓
<b>Control Techniques</b>							
	CFxxx-001-D (3x(2x0.14)C+(4x0.14)+(2x0.5))C	✓	✓		✓	✓	✓
	CFxxx-011-D (4x(2x0.34)+4x0.5)C	✓	✓	✓		✓	✓
	CFxxx-026-D (6x(2x0.25)+(2x0.34)C+2x0.5)C				✓		
<b>ELAU</b>							
	CFxxx-009-D (4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
<b>Fagor</b>							
	CFxxx-002-D (3x(2x0.14)C+2x(0.5)C)C					✓	
	CFxxx-004-D (2x(2x2x0.14)+(4x0.14)C+(4x0.5))C				✓	✓	✓
	CFxxx-015-D (4x(2x0.14)+4x0.5)C	✓		✓	✓	✓	✓
<b>FANUC</b>							
	CFxxx-021-D ((4x0.25)+3x(2x0.25+2x0.5))C				✓		✓
	CFxxx-022-D ((2x0.25)+5x0.5)C	✓		✓	✓	✓	✓
<b>Festo</b>							
	CFxxx-002-D (3x(2x0.14)C+2x(0.5)C)C				✓		✓
<b>Heidenhain</b>							
	CFxxx-002-D (3x(2x0.14)C+2x(0.5)C)C		✓			✓	✓
	CFxxx-004-D (2x(2x2x0.14)+(4x0.14)C+(4x0.5))C				✓	✓	✓
	CFxxx-005-D (4x(2x0.14)+4x0.5)C					✓	✓
	CFxxx-015-D (4x(2x0.14)+4x0.5)C	✓		✓	✓	✓	✓
	CFxxx-017-D (4x(2x0.14)+(4x0.14)C+4x1.0)C		✓			✓	✓
	CFxxx-025-D (3x(2x0.14)C+(2x0.5)C)C					✓	✓
<b>Jetter</b>							
	CFxxx-025-D (3x(2x0.14)C+(2x0.5)C)C					✓	✓
<b>Lenze</b>							
	CFxxx-002-D (3x(2x0.14)C+2x(0.5)C)C		✓				
	CFxxx-010-D (4x(2x0.25)+2x1.0)C		✓			✓	✓
	CFxxx-025-D (3x(2x0.14)C+(2x0.5)C)C					✓	✓
	CFxxx-032-D 3x(2x0.14)C+(3x0.14)C		✓			✓	✓
	CFxxx-033-D 4x(2x0.14)C+2x(1.0)C		✓			✓	✓
	CFxxx-034-D 3x(2x0.14)C+(4x0.14)C+2x(2x0.5)C					✓	✓

Drive Technology System	chainflex® series Class Jacket Page  Number of cores and conductor nominal cross section [mm²]	CF884-yyy	CF211-yyy	CF894-yyy	CF111-yyy-D	CF113-yyy-D	CF11-yyy-D
		3.1.1.1 PVC 230	4.2.2.1 PVC 234	3.1.3.1 PUR 240	4.2.3.1 PUR 244	6.5.3.1 PUR 250	6.6.4.1 TPE 256
<b>LTi DRIVES</b>							
CFxxx-004-D	(2x(2x2x0.14)+(4x0.14)C+(4x0.5))C				✓	✓	✓
CFxxx-009-D	(4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
CFxxx-010-D	(4x(2x0.25)+2x1.0)C		✓				✓
<b>NUM</b>							
CFxxx-001-D	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	✓	✓	✓			✓
<b>Omron</b>							
CFxxx-008-D	(3x(2x0.25))C					✓	✓
CFxxx-009-D	(4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
CFxxx-010-D	(4x(2x0.25)+2x1.0)C		✓			✓	✓
CFxxx-018-D	(2x(2x0.25)+2x0.5)C		✓			✓	✓
<b>Rexroth</b>							
CFxxx-009-D	(4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
CFxxx-010-D	(4x(2x0.25)+2x1.0)C		✓			✓	✓
CFxxx-017-D	(4x(2x0.14)+(4x0.14)C+4x1.0)C		✓			✓	✓
CFxxx-018-D	(2x(2x0.25)+2x0.5)C		✓			✓	✓
CFxxx-019-D	(3x(2x0.25)C+(3x0.25)+2x1.0)C		✓			✓	✓
<b>Schneider Electric</b>							
CFxxx-009-D	(4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
<b>SEW</b>							
CFxxx-008-D	(3x(2x0.25))C					✓	
CFxxx-036-D	(5x(2x0.25))C		✓			✓	
CFxxx-037-D	(6x(2x0.25))C		✓			✓	
<b>Siemens</b>							
CFxxx-001-D	(3x(2x0.14)C+(4x0.14)+(2x0.5))C	✓	✓	✓		✓	✓
CFxxx-002-D	(3x(2x0.14)C+2x(0.5)C)C		✓			✓	✓
CFxxx-006-D	(3x(2x0.14)C+2x0.5+4x0.14+4x0.23)C	✓	✓	✓		✓	✓
CFxxx-011-D	(4x(2x0.34)+4x0.5)C	✓	✓	✓		✓	✓
CFxxx-028-D	(2x(2x0.15)+(2x0.38))C	✓	✓	✓	✓	✓	✓
<b>Stöber</b>							
CFxxx-008-D	(3x(2x0.25))C					✓	✓
CFxxx-009-D	(4x(2x0.25)+2x0.5)C	✓	✓	✓		✓	✓
CFxxx-011-D	(4x(2x0.34)+4x0.5)C	✓	✓	✓	✓	✓	✓
CFxxx-016-D	(3x(2x0.25)C)C		✓				
CFxxx-021-D	(3x(2x0.5+2x0.25)+(4x0.25))C				✓		✓



# Measuring system cable | PVC | chainflex® CF884






**36** 5,000,000  
Cycles guaranteed

**15 x d**  
Bend radius E-Chain®








**32.8 ft**  
Travel distance E-Chain®

- For low duty flexing applications
- PVC outer jacket
- Shielded
- Flame-retardant



## Dynamic Information

	<b>Bend radius</b>	<b>E-Chain® linear</b>	min. 15 x d
		<b>flexible</b>	min. 12 x d
		<b>fixed</b>	min. 8 x d
	<b>Temperature</b>	<b>E-Chain® linear</b>	+41 °F to +158 °F (+5 °C to +70 °C)
		<b>flexible</b>	+23 °F to +158 °F (-5 °C to +70 °C)
		<b>fixed</b>	+5 °F to +158 °F (-15 °C to +70 °C)
	<b>v max.</b>	<b>unsupported</b>	9.84 ft/s (3 m/s)
	<b>a max.</b>		65.6 ft/s <sup>2</sup> (20 m/s <sup>2</sup> )
	<b>Travel distance</b>		Unsupported travel distances up to 32.8 ft (10 m), Class 1

## Cable structure

	<b>Conductor</b>	Conductor consisting of bare copper wires (according to DIN EN 60228).
	<b>Conductor insulation</b>	Mechanically high-quality TPE mixture.
	<b>Conductor construction</b>	According to measuring system specification.
	<b>Color code</b>	According to measuring system specification. ▶ See P/N Table
	<b>Element shield</b>	Foil taping of optimized, bending-resistant foil shield. 100 % optical coverage
	<b>Overall shield</b>	Aluminum/polyester tape and tinned cooper braid. 60 % optical coverage
	<b>Outer jacket</b>	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in E-Chains®. Color: Green (similar to RAL 6018)

## Electrical Information

	<b>Nominal voltage</b>	30 V
	<b>Test voltage</b>	500 V



Example image

igus® chainflex® CF884

Configurators ▶ [www.igus.com/CF884](http://www.igus.com/CF884)

36 month guarantee ... 1,354 types from stock ... no cutting charges










# Class 3.1.1.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF884  
PVC  
15 x d

## Properties and approvals

	<b>Flame resistance</b>	According to IEC 60332-1-2, FT1, VW-1
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
	<b>UL/CSA AWM</b>	30 V, +60 °C See data sheet for details ► <a href="http://www.igus.com/CF884">www.igus.com/CF884</a>
	<b>NFFPA 79</b>	Complies to Electrical Standard for Industrial Machinery NFFPA 79 Section 12.9
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>CE</b>	Following 2014/35/EU

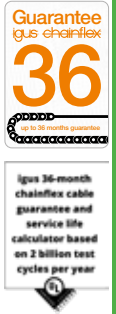
## Guaranteed service life (details see page 26-27)

Cycles*	1 million	3 million	5 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+41/+59	17.5	18.5	19.5
+59/+140	15	16	17
+140/+158	17.5	18.5	19.5

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

## Typical application areas

- For low duty flexing applications, Class 3
- Especially for unsupported travels, Class 1
- Without influence of oil, Class 1
- Preferably indoor applications
- Wood/stone processing, Packaging industry, supply systems, Handling, adjusting equipment



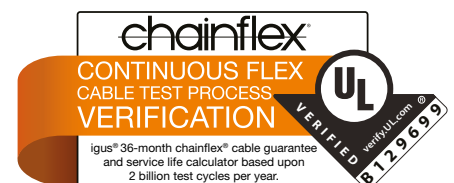












# Measuring system cable | PVC | chainflex® CF884

igus® chainflex® CF884

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF884-001	26	3 STP x 0.14	0.33	8.5	27.6	41	61.1	91
	26	4 x 0.14						
	20	2 x 0.5						
CF884-006	26	3 STP x 0.14	0.35	9.0	33.6	50	67.9	101
	26	4 x 0.14						
	24	4 x 0.22						
	20	2 x 0.5						
CF884-009	24	4 PR x 0.25	0.31	8.0	29.6	44	61.1	91
	20	2 x 0.5						
CF884-011	22	4 PR x 0.34	0.37	9.5	43.0	64	78.6	117
	20	4 x 0.5						
CF884-015	26	4 PR x 0.14	0.33	8.5	29.6	44	61.8	92
	20	4 x 0.5						
CF884-022	24	1 PR x 0.25	0.31	8.0	29.6	44	53.1	79
	20	5 x 0.5						
CF884-028	26	2 PR x 0.15	0.30	7.5	27.6	41	39.0	58
	22	2 x 0.38						

**Note:** The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core



**Order example: CF884.015 – To your desired length**  
CF884 chainflex® series -015 Code measuring system type



Online order ► [www.chainflex.com/CF884](http://www.chainflex.com/CF884)



Delivery time 24hrs or today.  
Delivery time means time until goods are shipped.

Configurators ► [www.igus.com/CF884](http://www.igus.com/CF884)

# Class 3.1.1.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF884  
PVC  
15 x d



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

Part No.	Core group	Color code
CF884-001	3x(2x0.14)C 4x0.14 2x0.5	green/yellow, black/brown, red/orange gray, blue, white-yellow, white-black brown-red, brown-blue
CF884-006	3x(2x0.14)C 4x0.14 4x0.22 2x0.5	green/yellow, black/brown, red/orange gray, blue, white-yellow, white-black yellow-brown, gray-brown, green-black, green-red brown-red, brown-blue
CF884-009	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white, brown
CF884-011	4x(2x0.34) 4x0.5	black/brown, red/orange, yellow/green, blue/violet blue-white, black-white, red-white, yellow-white
CF884-015	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF884-022	2x0.25 5x0.5	white, brown green, yellow, gray, pink, blue
CF884-028	2x(2x0.15) 2x0.38	green/yellow, pink/blue red/black



cost down...



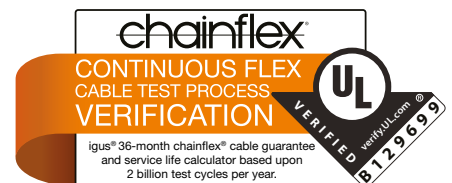
...life up

**Reduce cost, improve technology, now!**

Do the chainflex® price check now ...

[www.igus.com/info/cable-price-check](http://www.igus.com/info/cable-price-check)

... just one idea for you: [Reduce bend radius with CF113.D](#) ...



# Measuring system cable | PVC | chainflex® CF211






**36** 10,000,000  
Cycles guaranteed

**10 x d**  
Bend radius E-Chain®










**32.8 ft**  
Travel distance E-Chain®

- For medium mechanical load requirements
- PVC outer jacket
- Shielded
- Oil-resistant
- Flame-retardant



## Dynamic Information

 <b>Bend radius</b>	<b>E-Chain® linear</b>	min. 10 x d
	<b>flexible</b>	min. 8 x d
	<b>fixed</b>	min. 5 x d
 <b>Temperature</b>	<b>E-Chain® linear</b>	+41 °F to +158 °F (+5 °C to +70 °C)
	<b>flexible</b>	+23 °F to +158 °F (-5 °C to +70 °C)
	<b>fixed</b>	+5 °F to +158 °F (-15 °C to +70 °C)
 <b>v max.</b>	<b>unsupported</b>	16.41 ft/s (5 m/s)
	<b>gliding</b>	9.84 ft/s (3 m/s)
 <b>a max.</b>		98.4 ft/s <sup>2</sup> (30 m/s <sup>2</sup> )
 <b>Travel distance</b>	Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2	

## Cable structure

 <b>Conductor</b>	Conductor consisting of bare copper wires (according to DIN EN 60228).
 <b>Conductor insulation</b>	Mechanically high-quality TPE mixture.
 <b>Conductor construction</b>	According to measuring system specification.
 <b>Color code</b>	According to measuring system specification. ▶ See P/N Table
 <b>Element shield</b>	Extremely bending-resistant, tinned copper. 85 % optical coverage
 <b>Element jacket</b>	TPE mixture on pair shielding adapted to suit the requirements in E-Chains®.
 <b>Intermediate layer</b>	Polyester tape over external layer
 <b>Overall shield</b>	Extremely bending-resistant tinned copper braid. 80 % optical coverage
 <b>Outer jacket</b>	Low-adhesion, oil-resistant mixture on the basis of PVC, adapted to suit the requirements in E-Chains® (following DIN EN 50363-4-1). Color: Green (similar to RAL 6018)

## Electrical Information

 <b>Nominal voltage</b>	300 V
 <b>Test voltage</b>	500 V

Configurators ▶ [www.igus.com/CF211](http://www.igus.com/CF211)

36 month guarantee ... 1,354 types from stock ... no cutting charges



Example image












# Class 4.2.2.1

Basic requirements  
 Travel distance  
 Oil resistance  
 Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF211  
 PVC  
 10 x d

## Properties and approvals

 <b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-4-1), Class 2
 <b>Flame resistance</b>	According to IEC 60332-1-2, FT1, VW-1
 <b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
 <b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
 <b>UL/CSA AWM</b>	300 V, +60 °C See data sheet for details ► <a href="http://www.igus.com/CF211">www.igus.com/CF211</a>
 <b>NFPA 79</b>	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 12.9
 <b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
 <b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
 <b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
 <b>Cleanroom</b>	According to ISO Class 2. The outer jacket material of this series complies with CF5.10.07 - tested by IPA according to standard DIN EN ISO 14644-1
 <b>CE</b>	Following 2014/35/EU

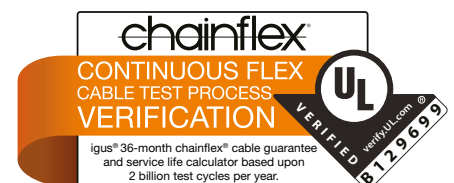
## Guaranteed service life (details see page 26-27)

Cycles*	5 million	7.5 million	10 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+41/+59	12.5	13.5	14.5
+59/+140	10	11	12
+140/+158	12.5	13.5	14.5

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

## Typical application areas

- For medium mechanical load requirements, Class 4
- Unsupported travel distances and for gliding applications up to 33 ft (10 m), Class 2
- Light oil influence, Class 2
- Preferably indoor applications, can be used in outdoor applications with temperatures > 41°F
- Storage and retrieval units for high-bay warehouses, machining units/packaging machines, Handling, indoor cranes, Wood/stone processing



# Measuring system cable | PVC | chainflex® CF211

igus® chainflex® CF211

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF211-001	26	3 STP x 0.14	0.35	9.0	43.0	64	67.2	100
	26	4 x 0.14						
	20	2 x 0.5						
CF211-002	26	3 STP x 0.14	0.37	9.5	44.3	66	71.2	106
	20	2 SC x 0.5						
CF211-004	26	4 PR x 0.14	0.39	10.0	47.0	70	77.3	115
	26	4 C x 0.14 SHLD						
	20	4 x 0.5						
CF211-006	26	3 STP x 0.14	0.39	10.0	51.1	76	82.0	122
	26	4 x 0.14						
	24	4 x 0.25						
	20	2 x 0.5						
CF211-009	24	4 PR x 0.25	0.31	8.0	32.9	49	53.1	79
	20	2 x 0.5						
CF211-010	24	4 PR x 0.25	0.33	8.5	41.0	61	61.8	92
	17	2 x 1.0						
CF211-011	22	4 PR x 0.34	0.37	9.5	48.4	72	73.2	109
	20	4 x 0.5						
CF211-014	24	4 STP x 0.25	0.41	10.5	51.7	77	83.3	124
	20	2 x 0.5						
CF211-015	26	4 PR x 0.14	0.33	8.5	36.3	54	57.8	86
	20	4 x 0.5						
CF211-016	24	3 STP x 0.25	0.35	9.0	34.3	51	59.8	89
CF211-017	26	4 PR x 0.14	0.39	10.0	61.8	92	90.0	134
	26	4 x 0.14 SHLD						
	17	4 x 1.0						
CF211-018	24	2 PR x 0.25	0.26	6.5	22.8	34	36.3	54
	20	2 x 0.5						
CF211-019	24	3 STP x 0.25	0.39	10.0	57.8	86	84.0	125
	24	3 x 0.25						
	17	2 x 1.0						
CF211-022	24	1 PR x 0.25	0.28	7.0	30.9	46	47.7	71
	20	5 x 0.5						
CF211-024	26	4 x 0.14	0.28	7.0	24.2	36	41.0	61
	22	2 PR x 0.34						
CF211-027	26	5 PR x 0.14	0.31	8.0	30.2	45	50.4	75
	20	1 PR x 0.5						

Note: The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Configurators ► [www.igus.com/CF211](http://www.igus.com/CF211)

# Class 4.2.2.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF211  
PVC  
10 x d



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

Part No.	Core group	Color code
CF211-001	3x(2x0.14)C (4x0.14) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black brown-red, brown-blue
CF211-002	3x(2x0.14)C 2x(0.5)C	green/yellow, black/brown, red/orange black, red
CF211-004	2x(2x(2x0.14)) (4x0.14)C (4x0.5)	(brown/green)/(yellow/violet), (gray/pink)/(red/black) yellow-black/red-black/green-black/blue-black brown-green/white-green/blue/white
CF211-006	3x(2x0.14)C (4x0.14) (4x0.25) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black yellow-brown/gray-brown/green-black/green-red brown-red, brown-blue
CF211-009	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white, brown
CF211-010	4x(2x0.25) 2x1.0	brown/green, blue/violet, gray/pink, red/black white, brown
CF211-011	4x(2x0.34) 4x0.5	black/brown, red/orange, green/yellow, blue/violet black-white, red-white, yellow-white, blue-white
CF211-014	4x(2x0.25)C (2x0.5)	white/brown, green/yellow, gray/pink, blue/red black no. 1/black no. 2
CF211-015	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF211-016	3x(2x0.25)C	white/brown, green/yellow, gray/pink
CF211-017	4x(2x0.14) (4x0.14)C 4x1.0	red/black, brown/green, yellow/violet, gray/pink blue-black/yellow-black/red-black/green-black white-green, brown-green, blue, white
CF211-018	2x(2x0.25) 2x0.5	red/black, gray/pink white, brown
CF211-019	3x(2x0.25)C (3x0.25) 2x1.0	brown/green, gray/pink, red/black blue/violet/yellow white, brown
CF211-022	(2x0.25) 5x0.5	white/brown green, yellow, gray, pink, blue
CF211-024	(4x0.14) 2x(2x0.34)	yellow/gray/violet/pink white-green/white, brown-green/blue
CF211-027	5x(2x0.14) 2x0.5	brown/green, yellow/gray, white/violet, red/black, pink/blue white-green, white-red



Other types ► page 238



## Measuring system cable | PVC | chainflex® CF211

igus® chainflex® CF211

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF211-028	26	2 PR x 0.15	0.30	7.5	26.9	40	51.7	77
	22	2 x 0.38						
CF211-032	26	3 STP x 0.14	0.31	8.0	23.5	35	53.1	79
	26	3 x 0.14 SHLD						
CF211-033	26	4 STP x 0.14	0.37	9.5	43.0	64	75.3	112
	17	2 x 1.0						
CF211-036	24	5 PR x 0.25	0.31	8.0	28.2	42	46.4	69
CF211-037	24	6 PR x 0.25	0.33	8.5	34.3	51	55.8	83
CF211-038	26	3 PR x 0.14	0.30	7.5	22.2	33	41.7	62
	22	1 PR x 0.34						
CF211-039	26	4 STP x 0.14	0.39	10.0	51.7	77	84.0	125
	20	2 x 0.5 SC						

**Note:** The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Other types ► [page 236](#)

# Class 4.2.2.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF211  
PVC  
10 x d



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

Part No.	Core group	Color code
CF211-028	2x(2x0.15) (2x0.38)	green/yellow, pink/blue red/black
CF211-032	3x(2x0.14)C (3x0.14)C	green/black, yellow/black, red/black gray/pink/black
CF211-033	4x(2x0.14)C 2x(1.0)C	yellow/black, red/black, blue/black, green/black white, brown
CF211-036	5x(2x0.25)	white/brown, green/yellow, gray/pink, blue/red, black/violet
CF211-037	6x(2x0.25)	white/brown, green/yellow, gray/pink, blue/ red, black/violet, gray-pink/red-blue
CF211-038	3x(2x0.14) (2x0.34)	white/brown, green/yellow, gray/pink blue/red
CF211-039	(4x(2x0.14)C 2x(0.5)C)C	green/yellow, gray/pink, blue/red, black/violet white, brown

CFRIP

UL US LISTED

RULS

NFPA

CIPA

UL

RoHS

Clean-Room

CE

cost down...



...life up

**Reduce cost, improve technology, now!**

Do the chainflex® price check now ...

[www.igus.com/info/cable-price-check](http://www.igus.com/info/cable-price-check)

... just one idea for you: Reduce cost with CF884 ...

Guarantee  
igus chainflex  
**36**  
up to 36 months guarantee

chainflex  
CONTINUOUS FLEX  
CABLE TEST PROCESS  
VERIFICATION

UL  
www.igus.com  
B 129699

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



# Measuring system cable | iguPUR | chainflex® CF894






**36** 5,000,000  
Cycles guaranteed

**15 x d**  
Bend radius E-Chain®








**32.8 ft**  
Travel distance E-Chain®

- For low duty flexing applications
- iguPUR outer jacket
- Oil-resistant
- Shielded
- Flame-retardant



## Dynamic Information

 <b>Bend radius</b>	<b>E-Chain® linear</b>	min. 15 x d
	<b>flexible</b>	min. 12 x d
	<b>fixed</b>	min. 8 x d
 <b>Temperature</b>	<b>E-Chain® linear</b>	-4 °F to +176 °F (-20 °C to +80 °C)
	<b>flexible</b>	-40 °F to +176 °F (-40 °C to +80 °C)
	<b>fixed</b>	-58 °F to +176 °F (-50 °C to +80 °C)
 <b>v max.</b>	<b>unsupported</b>	9.84 ft/s (3 m/s)
 <b>a max.</b>		65.6 ft/s <sup>2</sup> (20 m/s <sup>2</sup> )
 <b>Travel distance</b>		Unsupported travel distances up to 32.8 ft (10 m), Class 1

## Cable structure

 <b>Conductor</b>	Conductor consisting of bare copper wires (according to DIN EN 60228).
 <b>Conductor insulation</b>	Mechanically high-quality TPE mixture.
 <b>Conductor construction</b>	According to measuring system specification.
 <b>Color code</b>	According to measuring system specification. ▶ See P/N Table
 <b>Element shield</b>	Foil taping of optimized, bending-resistant foil shield. 100 % optical coverage
 <b>Overall shield</b>	Aluminum/polyester tape and tinned cooper braid. 60 % optical coverage
 <b>Outer jacket</b>	Low-adhesion mixture on the basis of iguPUR, adapted to suit the requirements in E-Chains®. Color: Green (similar to RAL 6018)

## Electrical Information

 <b>Nominal voltage</b>	30 V
 <b>Test voltage</b>	500 V



Example image

igu® chainflex® CF894

Configurators ▶ [www.igus.com/CF894](http://www.igus.com/CF894)

36 month guarantee ... 1,354 types from stock ... no cutting charges












# Class 3.1.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF894  
igusPUR  
15 x d

## Properties and approvals

	<b>UV resistance</b>	Medium
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-10-2), Class 3
	<b>Flame resistance</b>	According to IEC 60332-1-2, FT1, VW-1
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
	<b>UL/CSA AWM</b>	30 V, +80C See data sheet for details ► <a href="http://www.igus.com/CF894">www.igus.com/CF894</a>
	<b>NFPA 79</b>	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 12.9
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>CE</b>	Following 2014/35/EU

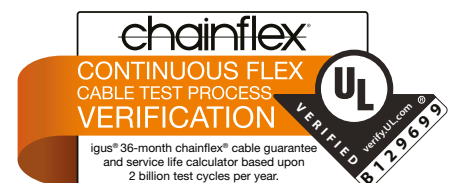
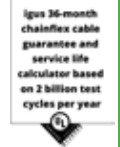
## Guaranteed service life (details see page 26-27)

Cycles*	1 million	3 million	5 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-4/+14	17.5	18.5	19.5
+14/+158	15	16	17
+158/+176	17.5	18.5	19.5

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

## Typical application areas

- For low duty flexing applications, Class 3
- Especially for unsupported travels, Class 1
- With influence of oil, Class 3
- Indoor and outdoor applications without direct sun radiation
- Machining units/machine tools, low temperature applications



# Measuring system cable | iguPUR | chainflex® CF894

igus® chainflex® CF894

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF894-001	26	3 STP x 0.14	0.33	8.5	27.6	41	53.8	80
	26	4 x 0.14						
	20	2 x 0.5						
CF894-006	26	3 STP x 0.14	0.35	9.0	33.6	50	70.6	105
	26	4 x 0.14						
	24	4 x 0.22						
	20	2 x 0.5						
CF894-009	24	4 PR x 0.25	0.31	8.0	29.6	44	53.8	80
	20	2 x 0.5						
CF894-011	22	4 PR x 0.34	0.37	9.5	43.0	64	84.7	126
	20	4 x 0.5						
CF894-015	26	4 PR x 0.14	0.33	8.5	29.6	44	56.4	84
	20	4 x 0.5						
CF894-022	24	1 PR x 0.25	0.31	8.0	29.6	44	52.4	78
	20	5 x 0.5						
CF894-028	26	2 PR x 0.15	0.30	7.5	27.6	41	38.3	57
	22	2 x 0.38						

**Note:** The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core



**Order example: CF894.011 – To your desired length**  
CF894 chainflex® series -011 Code measuring system type



Online order ► [www.chainflex.com/CF894](http://www.chainflex.com/CF894)



Delivery time 24hrs or today.  
Delivery time means time until goods are shipped.

Configurators ► [www.igus.com/CF894](http://www.igus.com/CF894)

# Class 3.1.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF894  
igusPUR  
15 x d



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

Part No.	Core group	Color code
CF894-001	3x(2x0.14)C 4x0.14 2x0.5	green/yellow, black/brown, red/orange gray, blue, white-yellow, white-black brown-red, brown-blue
CF894-006	3x(2x0.14)C 4x0.14 4 x 0.22 2x0.5	green/yellow, black/brown, red/orange gray, blue, white-yellow, white-black yellow-brown, gray-brown, green-black, green-red brown-red, brown-blue
CF894-009	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white/brown
CF894-011	4x(2x0.34) 4x0.5	black/brown, red/orange, yellow/green, blue/violet blue-white, black-white, red-white, yellow-white
CF894-015	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF894-022	2x0.25 5x0.5	white, brown green, yellow, gray, pink, blue
CF894-028	2x(2x0.15) 2x0.38	green/yellow, pink/blue red/black



cost down...



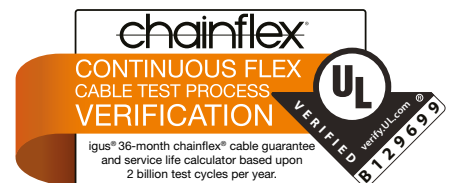
...life up

**Reduce cost, improve technology, now!**

Do the chainflex® price check now ...

[www.igus.com/info/cable-price-check](http://www.igus.com/info/cable-price-check)

... just one idea for you: [Reduce bend radius with CF113.D](#) ...



# Measuring system cable | PUR | chainflex® CF111-D






**36** 10,000,000  
Cycles guaranteed

**10 x d**  
Bend radius E-Chain®










**32.8 ft**  
Travel distance E-Chain®

- For medium mechanical load requirements
- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant



## Dynamic Information

 Bend radius	<b>E-Chain® linear</b>	min. 10 x d
	<b>flexible</b>	min. 8 x d
	<b>fixed</b>	min. 5 x d
 Temperature	<b>E-Chain® linear</b>	-13 °F to +176 °F (-25 °C to +80 °C)
	<b>flexible</b>	-40 °F to +176 °F (-40 °C to +80 °C)
	<b>fixed</b>	-58 °F to +176 °F (-50 °C to +80 °C)
 v max.	<b>unsupported</b>	16.41 ft/s (5 m/s)
	<b>gliding</b>	9.84 ft/s (3 m/s)
 a max.		98.4 ft/s <sup>2</sup> (30 m/s <sup>2</sup> )
 Travel distance		Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2

## Cable structure

 Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
 Conductor insulation	Mechanically high-quality TPE mixture.
 Conductor construction	According to measuring system specification.
 Color code	According to measuring system specification. ▶ See P/N Table
 Element shield	Extremely bending-resistant, tinned copper. 95 % optical coverage
 Element jacket	TPE mixture on pair shielding adapted to suit the requirements in E-Chains®.
 Intermediate layer	Polyester tape over external layer
 Overall shield	Bending-resistant tinned copper braid. 80 % optical coverage
 Outer jacket	Low-adhesion, halogen-free, highly abrasion-resistant mixture on the basis of PUR, adapted to suit the requirements in E-Chains® (following DIN EN 50363-10-2). Color: Green (similar to RAL 6018)

## Electrical Information

 Nominal voltage	300 V
 Test voltage	500 V

Configurators ▶ [www.igus.com/CF111-D](http://www.igus.com/CF111-D)

36 month guarantee ... 1,354 types from stock ... no cutting charges



















Example image

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

## Class 4.2.3.1

### Properties and approvals

	<b>UV resistance</b>	Medium
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-10-2), Class 3
	<b>Offshore</b>	MUD-resistant following NEK 606 - status 2009
	<b>Flame resistance</b>	According to IEC 60332-1-2, FT1, VW-1
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>Halogen-free</b>	Following DIN EN 60754
	<b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
	<b>UL/CSA AWM</b>	300 V, +80C See data sheet for details ► <a href="http://www.igus.com/CF111-D">www.igus.com/CF111-D</a>
	<b>NFPA 79</b>	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 12.9
	<b>DNV-GL</b>	Type approval certificate No. TAE00003X4
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>Cleanroom</b>	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
	<b>DESINA</b>	According to VDW, DESINA standardization.
	<b>CE</b>	Following 2014/35/EU

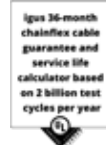
### Guaranteed service life (details see page 26-27)

Cycles*	5 million	7.5 million	10 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-13/+5	12.5	13.5	14.5
+5/+158	10	11	12
+158/+176	12.5	13.5	14.5

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

### Typical application areas

- For medium mechanical load requirements, Class 4
- Unsupported travel distances and for gliding applications up to 33 ft (10 m), Class 2
- Almost unlimited resistance to oil, Class 3
- Indoor and outdoor applications without direct sun radiation
- Machining units/machine tools, low temperature applications



# Measuring system cable | PUR | chainflex® CF111-D

igus® chainflex® CF111.D

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF111-001-D	26	3 STP x 0.14	0.37	9.5	43.0	64	69.9	104
	26	4 x 0.14						
	20	2 x 0.5						
CF111-002-D	26	3 STP x 0.14	0.37	9.5	44.3	66	73.2	109
	20	2 SC x 0.5						
CF111-004-D	26	4 PR x 0.14	0.41	10.5	47.0	70	77.9	116
	26	4 x 0.14 SHLD						
	20	4 x 0.5						
CF111-006-D	26	3 STP x 0.14	0.39	10.0	51.1	76	82.0	122
	26	4 x 0.14						
	24	4 x 0.25						
	20	2 x 0.5						
CF111-009-D	24	4 PR x 0.25	0.31	8.0	32.9	49	53.1	79
	20	2 x 0.5						
CF111-010-D	24	4 PR x 0.25	0.33	8.5	41.0	61	63.2	94
	17	2 x 1.0						
CF111-011-D	22	4 PR x 0.34	0.37	9.5	48.4	72	77.3	115
	20	4 x 0.5						
CF111-014-D	24	4 STP x 0.25	0.41	10.5	51.7	77	83.3	124
	20	2 x 0.5						
CF111-015-D	26	4 PR x 0.14	0.33	8.5	36.3	54	58.5	87
	20	4 x 0.5						
CF111-020-D	26	3 PR x 0.14	0.33	8.5	34.9	52	58.5	87
	26	4 PR x 0.14						
	20	2 x 0.5						
CF111-021-D	24	6 x 0.50	0.37	9.5	53.8	80	78.6	117
	24	3 PR x 0.25						
	20	3 PR x 0.5						
CF111-022-D	24	1 PR x 0.25	0.28	7.0	30.9	46	50.4	75
	20	5 x 0.5						
CF111-024-D	26	4 x 0.14	0.28	7.0	24.2	36	41.0	61
	22	2 PR x 0.34						
CF111-026-D	24	6 PR x 0.25	0.41	10.5	49.7	74	80.0	119
	22	1 STP x 0.34						
	20	2 x 0.5						

Note: The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

# Class 4.2.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF111-D  
PUR  
10 x d



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

Part No.	Core group	Color code
CF111-001-D	3x(2x0.14)C (4x0.14) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black brown-red/brown-blue
CF111-002-D	3x(2x0.14)C 2x(0.5)C	green/yellow, black/brown, red/orange black, red
CF111-004-D	2x(2x(2x0.14)) (4x0.14)C (4x0.5)	(brown/green)/(yellow/violet), (gray/pink)/(red/black) yellow-black/red-black/green-black/blue-black brown-green/white-green/blue/white
CF111-006-D	3x(2x0.14)C (4x0.14) (4x0.25) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black yellow-brown/gray-brown/green-black/green-red brown-red/brown-blue
CF111-009-D	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white, brown
CF111-010-D	4x(2x0.25) 2x1.0	brown/green, blue/violet, gray/pink, red/black white, brown
CF111-011-D	4x(2x0.34) 4x0.5	black/brown, red/orange, green/yellow, blue/violet black-white, red-white, yellow-white, blue-white
CF111-014-D	4x(2x0.25)C (2x0.5)	white/brown, green/yellow, gray/pink, blue/red black no. 1/black no. 2
CF111-015-D	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF111-020-D	3x(2x0.14) 2x(4x0.14) (2x0.5)	blue/red, black/violet, gray-pink/red-blue green/gray/yellow/pink, white-green/white-yellow/brown-green/yellow-brown white/brown
CF111-021-D	(4x0.25) 3x2x0.25 3x2x0.5	white/brown/gray/black white/yellow, white/gray, black/orange black no. 1/black no. 2, black no. 3/black no. 4, black no. 5/black no. 6
CF111-022-D	(2x0.25) 5x0.5	white/brown green, yellow, gray, pink, blue
CF111-024-D	(4x0.14) 2x(2x0.34)	yellow/gray/violet/pink white-green/white, brown-green/blue
CF111-026-D	6x(2x0.25) (2x0.34)C (2x0.5)	green/yellow, gray/pink, blue/red, black/violet, gray- pink/red-blue, white-green/brown-green white/brown blue/red

CFRIP

UL US LISTED

RUS

NFPA

CIPA

DNV-GL

EAC

RoHS

Clean-Room

DESINA

CE

Other types ► page 248



# Measuring system cable | PUR | chainflex® CF111-D

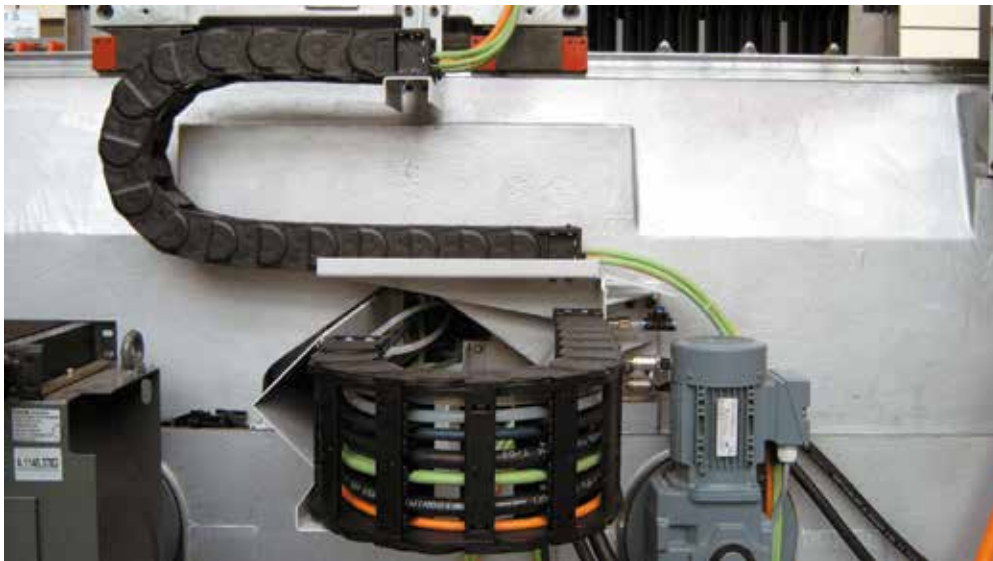
igus® chainflex® CF111.D

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF111-027-D	26	5 PR x 0.14	0.31	8.0	30.2	45	51.1	76
	20	1 PR x 0.5						
CF111-028-D	26	2 PR x 0.15	0.30	7.5	26.9	40	49.1	73
	22	2 x 0.38						
CF111-032-D	26	3 STP x 0.14	0.33	8.5	23.5	35	55.1	82
	26	3 x 0.14 SHLD						
CF111-040-D	26	14 x 0.14	0.35	9.0	54.4	81	79.3	118
	22	2 x 0.34						
	16	2 x 1.5						

**Note:** The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Other types ► [page 246](#)



readychain® systems from igus® are completely pre-harnessed with chainflex® cables, hoses, metal parts etc.

Configurators ► [www.igus.com/CF111-D](http://www.igus.com/CF111-D)

# Class 4.2.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF111-D  
PUR  
10 x d



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

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

CFRIP

UL LISTED

RUS

NFPA

CEPA

DNV-GL

EAC

RoHS

Clean-Room

DESINA

CE

- Order example: **CF111.021.D** – To your desired length  
CF111-D chainflex® series -021 Code measuring system type
- Online order ► [www.chainflex.com/CF111-D](http://www.chainflex.com/CF111-D)
- Delivery time 24hrs or today.  
Delivery time means time until goods are shipped.

## cost down...

...life up

**Reduce cost, improve technology, now!**  
Do the chainflex® price check now ...  
[www.igus.com/info/cable-price-check](http://www.igus.com/info/cable-price-check)  
... just one idea for you: Reduce cost with CF211 ...

Guarantee  
igus chainflex  
**36**  
up to 36 months guarantee

chainflex  
CONTINUOUS FLEX  
CABLE TEST PROCESS  
VERIFICATION

UL  
verified  
B129699

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

# Measuring system cable | PUR | CF113-D

**36** 10,000,000  
Cycles guaranteed






**7.5 x d**  
Bend radius E-Chain®

**328.1 ft**  
Travel distance E-Chain®











- For very high mechanical load requirements
- PUR outer jacket
- Shielded
- Oil-resistant and coolant-resistant
- Flame-retardant
- PVC and halogen-free
- Notch-resistant
- Hydrolysis and microbe-resistant

DriveCliq with  
300V UL approval



## Dynamic Information

	<b>Bend radius</b>	<b>E-Chain® linear</b>	min. 7.5 x d
		<b>flexible</b>	min. 6 x d
		<b>fixed</b>	min. 4 x d
	<b>Temperature</b>	<b>E-Chain® linear</b>	-13 °F to +176 °F (-25 °C to +80 °C)
		<b>flexible</b>	-40 °F to +176 °F (-40 °C to +80 °C)
		<b>fixed</b>	-58 °F to +176 °F (-50 °C to +80 °C)
	<b>v max.</b>	<b>unsupported</b>	32.81 ft/s (10 m/s)
		<b>gliding</b>	16.41 ft/s (5 m/s)
	<b>a max.</b>		164.1 ft/s <sup>2</sup> (50 m/s <sup>2</sup> )
	<b>Travel distance</b>		Unsupported travel distances and for gliding applications up to 328.1 ft (100 m), Class 5

## Cable structure

	<b>Conductor</b>	Stranded conductor in especially bending-resistant version consisting of tinned copper wires (following DIN EN 60228).
	<b>Conductor insulation</b>	Mechanically high-quality TPE mixture.
	<b>Conductor construction</b>	According to measuring system specification.
	<b>Color code</b>	According to measuring system specification. ▶ See P/N Table
	<b>Element shield</b>	Extremely bending-resistant tinned copper braid. 95 % optical coverage
	<b>Element jacket</b>	TPE mixture on pair shielding adapted to suit the requirements in E-Chains®.
	<b>Inner jacket</b>	TPE mixture adapted to suit the requirements in E-Chains®.
	<b>Overall shield</b>	Extremely bending-resistant tinned copper braid. 90 % optical coverage
	<b>Outer jacket</b>	Low-adhesion, halogen-free, highly abrasion-resistant mixture on the basis of PUR, adapted to suit the requirements in E-Chains® (following DIN EN 50363-10-2). Color: Green (similar to RAL 6018)
	<b>CFRIP®</b>	Strip 50% faster: a tear strip is molded into the inner jacket Video ▶ <a href="http://www.igus.com/CFRIP">www.igus.com/CFRIP</a>

## Electrical Information

	<b>Nominal voltage</b>	300 V
	<b>Test voltage</b>	500 V

Example image













# Class 6.5.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF113-D  
PUR  
7.5 x d

## Properties and approvals

	<b>UV resistance</b>	Medium
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 50363-10-2), Class 3
	<b>Offshore</b>	MUD-resistant following NEK 606 - status 2009
	<b>Flame resistance</b>	According to IEC 60332-1-2, FT1, VW-1
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>Halogen-free</b>	Following DIN EN 60754
	<b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
	<b>UL/CSA AWM</b>	300 V, +80C See data sheet for details ► <a href="http://www.igus.com/CF113-D">www.igus.com/CF113-D</a>
	<b>NFPA 79</b>	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 12.9
	<b>DNV-GL</b>	Type approval certificate No. TAE00003X4
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>Cleanroom</b>	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
	<b>DESINA</b>	According to VDW, DESINA standardization.
	<b>CE</b>	Following 2014/35/EU

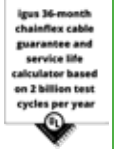
## Guaranteed service life (details see page 26-27)

Cycles*	5 million	7.5 million	10 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-13/+5	10	11	12
+5/+158	7.5	8.5	9.5
+158/+176	10	11	12

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

## Typical application areas

- For very high mechanical load requirements, Class 6
- Unsupported travel distances and for gliding applications up to 328 ft (100 m), Class 5
- Almost unlimited resistance to oil, Class 3
- Indoor and outdoor applications without direct sun radiation
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Cleanroom, semiconductor insertion, indoor cranes, low temperature applications



# Measuring system cable | PUR | chainflex® CF113-D

Strip cables 50 % faster

igus® chainflex® CF113.D



Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF113-001-D	26	3 STP x 0.14	0.39	10.0	47.7	71	92.1	137
	26	4 x 0.14						
	20	2 x 0.5						
CF113-002-D	26	3 STP x 0.14	0.39	10.0	49.7	74	96.8	144
	20	2 SC x 0.5						
CF113-003-D	26	3 PR x 0.14	0.31	8.0	37.6	56	69.2	103
	17	2 x 1.0						
CF113-004-D	26	4 PR x 0.14	0.43	11.0	52.4	78	102.1	152
	26	4 x 0.14 SHLD						
	20	4 x 0.5						
CF113-005-D	26	4 PR x 0.14	0.35	9.0	40.3	60	77.3	115
	20	4 x 0.5						
CF113-006-D	26	3 STP x 0.14	0.43	11.0	57.1	85	106.2	158
	26	4 x 0.14						
	24	4 x 0.25						
	20	2 x 0.5						
CF113-007-D <sup>2)</sup>	22	2 PR x 0.34	0.26	6.5	20.8	31	36.3	54
CF113-008-D	24	3 PR x 0.25	0.30	7.5	24.2	36	51.1	76
CF113-009-D	24	4 PR x 0.25	0.33	8.5	38.3	57	66.5	99
	20	2 x 0.5						
CF113-010-D	24	4 PR x 0.25	0.35	9.0	45.7	68	82.0	122
	17	2 x 1.0						
CF113-011-D	22	4 PR x 0.34	0.39	10.0	54.4	81	95.4	142
	20	4 x 0.5						
CF113-013-D	26	3 STP x 0.14	0.35	9.0	41.7	62	81.3	121
	20	2 x 0.5						
CF113-014-D	24	4 STP x 0.25	0.43	11.0	57.8	86	109.5	163
	20	2 x 0.5						
CF113-015-D	26	4 PR x 0.14	0.35	9.0	40.3	60	76.6	114
	20	4 x 0.5						
CF113-016-D	24	3 STP x 0.25	0.39	10.0	40.3	60	84.7	126
CF113-017-D <sup>4)</sup>	26	4 PR x 0.14	0.39	10.0	67.2	100	100.8	150
	26	4 x 0.14 SHLD						
	17	4 x 1.0						
CF113-018-D <sup>4)</sup>	24	2 PR 0.25	0.26	6.5	27.6	41	43.7	65
	20	2 x 0.5						
CF113-019-D <sup>4)</sup>	24	3 STP x 0.25	0.39	10.0	62.5	93	96.1	143
	24	3 x 0.25						
	17	2 x 1.0						

The chainflex® types marked with <sup>2)</sup> are cables designed as a star-quad.

<sup>4)</sup> Manufactured without inner jacket

Note: The given outer diameters are maximum values.

G = with green-yellow earth core x = without earth core

# Class 6.5.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF113-D  
PUR  
7.5 x d



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  
iF  
DESIGN  
AWARD  
2016

UL  
US  
LISTED

UL  
US

NFPA

CIPA

DNV-GL  
DNVGL.COM/AF

EAC

CFRIP

RoHS

Clean-Room

DESINA

CE

Part No.	Core group	Color code
CF113-001-D	3x(2x0.14)C (4x0.14) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black brown-red/brown-blue
CF113-002-D	3x(2x0.14)C 2x(0.5)C	green/yellow, black/brown, red/orange black, red
CF113-003-D	3x(2x0.14) 2x1.0	white/brown, green/yellow, gray/pink blue, red
CF113-004-D	2x(2x(2x0.14)) (4x0.14)C (4x0.5)	(brown/green)/(yellow/violet), (gray/pink)/(red/black) yellow-black/red-black/green-black/blue-black brown-green/white-green/blue/white
CF113-005-D	4x(2x0.14) 4x0.5	white/brown, green/yellow, gray/pink, blue/red black, violet, gray-pink, red-blue
CF113-006-D	3x(2x0.14)C (4x0.14) (4x0.25) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black yellow-brown/gray-brown/green-black/green-red brown-red/brown-blue
CF113-007-D <sup>2)</sup>	4x0.34	white, green, brown, yellow(Star-quad)
CF113-008-D	3x(2x0.25)	white/brown, green/yellow, gray/pink
CF113-009-D	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white, brown
CF113-010-D	4x(2x0.25) 2x1.0	brown/green, blue/violet, gray/pink, red/black white, brown
CF113-011-D	4x(2x0.34) 4x0.5	black/brown, red/orange, green/yellow, blue/violet black-white, red-white, yellow-white, blue-white
CF113-013-D	3x(2x0.14)C 2x0.5	white/brown, green/yellow, gray/pink blue, red
CF113-014-D	4x(2x0.25)C (2x0.5)	white/brown, green/yellow, gray/pink, blue/red black no. 1/black no. 2
CF113-015-D	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF113-016-D	3x(2x0.25)C	white/brown, green/yellow, gray/pink
CF113-017-D <sup>4)</sup>	4x(2x0.14) (4x0.14)C 4x1.0	red/black, brown/green, yellow/violet, gray/pink blue-black/yellow-black/red-black/green-black white-green, brown-green, blue, white
CF113-018-D <sup>4)</sup>	2x(2x0.25) 2x0.5	red/black, gray/pink white, brown
CF113-019-D <sup>4)</sup>	3x(2x0.25)C (3x0.25) 2x1.0	brown/green, gray/pink, red/black blue/violet/yellow white, brown

Other types ► page 254



# Measuring system cable | PUR | CF113-D

Strip cables 50 % faster

igus® chainflex® CF113.D



Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF113-022-D	24	1 PR x 0.25	0.31	8.0	36.3	54	63.2	94
	20	5 x 0.5						
CF113-025-D	26	3 STP x 0.14	0.39	10.0	48.4	72	94.7	141
	20	1 STP x 0.5						
CF113-027-D	26	5 PR x 0.14	0.35	9.0	34.9	52	70.6	105
	20	1 PR x 0.5						
New CF113-028-D <sup>4)</sup>	24	2 PR x 0.20	0.30	7.5	29.6	44	46.4	69
	22	2 x 0.38						
CF113-029-D	24	5 STP x 0.25	0.47	12.0	70.6	105	129.0	192
	24	2 x 0.25						
CF113-031-D	24	2 STP x 0.25	0.37	9.5	46.4	69	89.4	133
	17	2 x 1.0						
CF113-032-D <sup>5)</sup>	26	3 STP x 0.14	0.33	8.5	23.5	35	55.1	82
	26	3 x 0.14 SHLD						
CF113-033-D <sup>5)</sup>	26	4 STP x 0.14	0.37	9.5	43.0	64	74.6	111
	17	2 x 1.0						
CF113-036-D	24	5 PR x 0.25	0.33	8.5	34.3	51	69.2	103
CF113-037-D	24	6 PR x 0.25	0.35	9.0	39.0	58	76.6	114
CF113-038-D	26	3 PR x 0.14	0.33	8.5	24.2	36	58.5	87
	22	1 PR x 0.34						
CF113-040-D	26	14 x 0.14	0.39	10.0	59.1	88	104.2	155
	22	2 x 0.34						
	16	2 x 1.5						

<sup>4)</sup> Manufactured without inner jacket

<sup>5)</sup> Manufactured without overall shield

**Note:** The given outer diameters are maximum values.

**G** = with green-yellow earth core **x** = without earth core

Other types ► page 252

# Class 6.5.3.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF113-D  
PUR  
7.5 x d



Part No.	Core group	Color code
CF113-022-D	(2x0.25) 5x0.5	white/brown green, yellow, gray, pink, blue
CF113-025-D	3x(2x0.14)C (2x0.5)C	green/yellow, blue/red, gray/pink white/brown
CF113-027-D	5x(2x0.14) 2x0.5	brown/green, yellow/gray, white/violet, red/black, pink/blue white-green, white-red
CF113-028-D <sup>4)</sup>	2x(2x0.20) (2x0.38)	green/yellow, pink/blue red/black
CF113-029-D	5x(2x0.25)C (2x0.25+2x0.5)	white/brown, green/yellow, gray/pink, blue/red, black/violet gray-pink/brown-green/white-green/red-blue
CF113-031-D	2x(2x0.25)C 2x1.0	white/brown, green/yellow black no. 1, black no. 2
CF113-032-D <sup>5)</sup>	3x(2x0.14)C (3x0.14)C	green/black, yellow/black, red/black gray/pink/black
CF113-033-D <sup>5)</sup>	4x(2x0.14)C 2x(1.0)C	yellow/black, red/black, blue/black, green/black white, brown
CF113-036-D	5x(2x0.25)	white/brown, green/yellow, gray/pink, blue/red, black/violet
CF113-037-D	6x(2x0.25)	white/brown, green/yellow, gray/pink, blue/red, black/violet, gray-pink/red-blue
CF113-038-D	3x(2x0.14) (2x0.34)	white/brown, green/yellow, gray/pink blue/red
CF113-040-D	3x(4x0.14) (2x0.14+2x0.34) 2x1.5	black/red/white-black/white-red, green/blue/white-green/ white-blue, yellow/brown/white-yellow/white-brown violet/orange/white-violet/white-orange white-gray, gray

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



chainflex® measuring system cables in a double-spindle horizontal machining centre.

Guarantee  
igus chainflex  
**36**  
up to 36 months guarantee

chainflex  
CONTINUOUS FLEX  
CABLE TEST PROCESS  
VERIFICATION  
UL  
verifiedUL.com  
B129699  
igus® 36-month chainflex® cable guarantee and service life calculator based upon 2 billion test cycles per year.





# Measuring system cable | TPE | chainflex® CF11-D






**36** 10,000,000  
Cycles guaranteed

**7.5 x d**  
Bend radius E-Chain®











**1312.4 ft**  
Travel distance E-Chain®

- For very high mechanical load requirements
- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- PVC and halogen-free
- Hydrolysis and microbe-resistant



## Dynamic Information

 Bend radius	<b>E-Chain® linear flexible</b>	min. 7.5 x d min. 6 x d
	<b>fixed</b>	min. 4 x d
 Temperature	<b>E-Chain® linear flexible</b>	-31 °F to +194 °F (-35 °C to +90 °C) -58 °F to +194 °F (-50 °C to +90 °C)
	<b>fixed</b>	-67 °F to +194 °F (-55 °C to +90 °C)
 v max.	<b>unsupported</b>	32.81 ft/s (10 m/s)
	<b>gliding</b>	19.69 ft/s (6 m/s)
 a max.		328.1 ft/s <sup>2</sup> (100 m/s <sup>2</sup> )
 Travel distance		Unsupported travel distances and for gliding applications up to 1312 ft (400 m) and more, Class 6

## Cable structure

 Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228)
 Conductor insulation	Mechanically high-quality TPE mixture.
 Conductor construction	According to measuring system specification.
 Color code	According to measuring system specification. ▶ See P/N Table
 Element shield	Extremely bending-resistant tinned copper braid. 95 % optical coverage
 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 tinned copper braid. 90 % optical coverage
 Outer jacket	Low-adhesion mixture on the basis of TPE, especially abrasion-resistant and highly flexible, adapted to suit the requirements in E-Chains®. Color: Green (similar to RAL 6018)
 CFRIP®	Strip 50% faster: a tear strip is molded into the inner jacket Video ▶ <a href="http://www.igus.com/CFRIP">www.igus.com/CFRIP</a>

## Electrical Information

 Nominal voltage	50 V
 Test voltage	500 V

Configurators ▶ [www.igus.com/CF11-D](http://www.igus.com/CF11-D)

36 month guarantee ... 1,354 types from stock ... no cutting charges














# Class 6.6.4.1

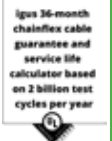
Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF11-D  
TPE  
7.5 x d

## Properties and approvals

	<b>UV resistance</b>	Medium
	<b>Oil resistance</b>	Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
	<b>Silicone-free</b>	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	<b>Halogen-free</b>	Following DIN EN 60754
	<b>UL verified</b>	Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00295/19 (TR ZU)
	<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
	<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
	<b>Cleanroom</b>	According to ISO Class 1. The outer jacket material of this series complies with CF9.15.07 - tested by IPA according to standard DIN EN ISO 14644-1
	<b>DESINA</b>	According to VDW, DESINA standardization.
	<b>CE</b>	Following 2014/35/EU



## Guaranteed service life (details see page 26-27)

Cycles*	5 million	7.5 million	10 million
Temperature, from/to [°F]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-31/-13	10	11	12
-13/+176	7.5	8.5	9.5
+176/+194	10	11	12

\* Higher number of cycles? Online lifetime calculation ► [www.chainflex.com/chainflexlife](http://www.chainflex.com/chainflexlife)

## Typical application areas

- For very high mechanical load requirements, Class 6
- Unsupported travel distances and for gliding applications up to 1312 ft (400 m) and more, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- Indoor and outdoor applications without direct sun radiation
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Cleanroom, semiconductor insertion, indoor cranes, low temperature applications



Pre-harnessed igus® energy supply systems for machine tool manufacture. E-Chain®: System E4/4



# Measuring system cable | TPE | chainflex® CF11-D

Strip cables 50 % faster

igus® chainflex® CF11.D



Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF11-001-D	26	3 STP x 0.14	0.39	10.0	47.7	71	80.0	119
	26	4 x 0.14						
	20	2 x 0.5						
CF11-002-D	26	3 STP x 0.14	0.39	10.0	49.7	74	84.0	125
	20	2 SC x 0.5						
CF11-003-D	26	3 PR x 0.14	0.31	8.0	37.6	56	57.8	86
	17	2 x 1.0						
CF11-004-D	26	4 PR x 0.14	0.43	11.0	52.4	78	85.3	127
	26	4 x 0.14 SHLD						
	20	4 x 0.5						
CF11-005-D	26	4 PR x 0.14	0.35	9.0	40.3	60	65.2	97
	20	4 x 0.5						
CF11-006-D	26	3 STP x 0.14	0.41	10.5	57.1	85	93.4	139
	26	4 x 0.14						
	24	4 x 0.25						
	20	2 x 0.5						
CF11-007-D <sup>2)</sup>	22	2 PR x 0.34	0.24	6.0	20.8	31	32.3	48
CF11-008-D	24	3 PR x 0.25	0.30	7.5	24.2	36	40.3	60
CF11-009-D	24	4 PR x 0.25	0.33	8.5	38.3	57	61.1	91
	20	2 x 0.5						
CF11-010-D	24	4 PR x 0.25	0.35	9.0	45.7	68	70.6	105
	17	2 x 1.0						
CF11-011-D	22	4 PR x 0.34	0.39	10.0	54.4	81	83.3	124
	20	4 x 0.5						
CF11-012-D	26	3 STP x 0.14	0.43	11.0	59.8	89	94.1	140
	26	3 x 0.14 SHLD						
	26	6 x 0.14						
	20	2 x 0.5						
CF11-013-D	26	3 STP x 0.14	0.35	9.0	41.7	62	69.9	104
	20	2 x 0.5						
CF11-014-D	24	4 STP x 0.25	0.43	11.0	57.8	86	92.7	138
	20	2 x 0.5						
CF11-015-D	26	4 PR x 0.14	0.35	9.0	40.3	60	65.2	97
	20	4 x 0.5						
CF11-016-D	24	3 STP x 0.25	0.37	9.5	40.3	60	72.6	108
CF11-017-D <sup>4)</sup>	26	4 PR x 0.14	0.39	10.0	67.2	100	84.7	126
	26	4 x 0.14 SHLD						
	17	4 x 1.0						

The chainflex® types marked with <sup>2)</sup> are cables designed as a star-quad.

<sup>4)</sup> Manufactured without inner jacket

**Note:** The given outer diameters are maximum values.

G = with green-yellow earth core x = without earth core

# Class 6.6.4.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF11-D  
TPE  
7.5 x d



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  
iF  
DESIGN  
AWARD  
2016

UL  
US  
LISTED

UL  
US

NFPA

CIPPA

UL  
US  
EQUIV  
CLASSIFIED

EAC

TP

RoHS

Clean-Room

DESINA

CE

Part No.	Core group	Color code
CF11-001-D	3x(2x0.14)C (4x0.14) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black brown-red/brown-blue
CF11-002-D	3x(2x0.14)C 2x(0.5)C	green/yellow, black/brown, red/orange black, red
CF11-003-D	3x(2x0.14) 2x1.0	white/brown, green/yellow, gray/pink blue, red
CF11-004-D	2x(2x(2x0.14)) (4x0.14)C (4x0.5)	(brown/green)/(yellow/violet), (gray/pink)/(red/black) yellow-black/red-black/green-black/blue-black brown-green/white-green/blue/white
CF11-005-D	4x(2x0.14) 4x0.5	white/brown, green/yellow, gray/pink, blue/red black, violet, gray-pink, red-blue
CF11-006-D	3x(2x0.14)C (4x0.14) (4x0.25) (2x0.5)	green/yellow, black/brown, red/orange gray/blue/white-yellow/white-black yellow-brown/gray-brown/green-black/green-red brown-red/brown-blue
CF11-007-D <sup>2)</sup>	4x0.34	white, green, brown, yellow (Star-quad)
CF11-008-D	3x(2x0.25)	white/brown, green/yellow, gray/pink
CF11-009-D	4x(2x0.25) 2x0.5	brown/green, blue/violet, gray/pink, red/black white, brown
CF11-010-D	4x(2x0.25) 2x1.0	brown/green, blue/violet, gray/pink, red/black white, brown
CF11-011-D	4x(2x0.34) 4x0.5	black/brown, red/orange, green/yellow, blue/violet black-white, red-white, yellow-white, blue-white
CF11-012-D	3x(2x0.14)C (3x0.14)C (4x0.14) (2x0.14+2x0.5)	green/yellow, white/gray, blue/red red/green/brown gray/yellow/pink/violet blue/brown-blue/gray/brown-red
CF11-013-D	3x(2x0.14)C 2x0.5	white/brown, green/yellow, gray/pink blue, red
CF11-014-D	4x(2x0.25)C (2x0.5)	white/brown, green/yellow, gray/pink, blue/red black no. 1/black no. 2
CF11-015-D	4x(2x0.14) 4x0.5	brown/green, yellow/violet, gray/pink, red/black blue, white, brown-green, white-green
CF11-016-D	3x(2x0.25)C	white/brown, green/yellow, gray/pink
CF11-017-D <sup>4)</sup>	4x(2x0.14) (4x0.14)C 4x1.0	red/black, brown/green, yellow/violet, gray/pink blue-black/yellow-black/red-black/green-black white-green, brown-green, blue, white

Other types ► page 260



# Measuring system cable | TPE | chainflex® CF11-D

Strip cables 50 % faster

igus® chainflex® CF11.D



Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
CF11-018-D <sup>4)</sup>	24	2 PR x 0.25	0.26	6.5	27.6	41	34.3	51
	20	2 x 0.5						
CF11-019-D <sup>4)</sup>	24	3 STP x 0.25	0.39	10.0	62.5	93	80.6	120
	24	3 x 0.25						
	17	2 x 1.0						
CF11-021-D	24	6 x 0.5	0.39	10.0	59.1	88	87.4	130
	24	5 PR x 0.25						
	20	5 PR x 0.5						
CF11-022-D	24	1 PR x 0.25	0.30	7.5	36.3	54	53.1	79
	20	5 x 0.5						
CF11-025-D	26	3 STP x 0.14	0.39	10.0	48.4	72	82.7	123
	20	1 STP x 0.5						
CF11-027-D	26	5 PR x 0.14	0.33	8.5	34.9	52	59.1	88
	20	1 PR x 0.5						
CF11-028-D	24	2 PR x 0.20	0.30	7.5	29.6	44	42.3	63
	22	2 x 0.38						
CF11-031-D	24	2 STP x 0.25	0.37	9.5	46.4	69	77.9	116
	17	2 x 1.0						
CF11-032-D <sup>5)</sup>	26	3 STP x 0.14	0.31	8.0	23.5	35	47.7	71
	26	3 x 0.14 SHLD						
CF11-033-D <sup>5)</sup>	26	4 STP x 0.14	0.37	9.5	43.0	64	69.9	104
	17	2 x 1.0						
CF11-034-D <sup>5) 11)</sup>	26	3 STP x 0.14	0.43	11.0	47.7	71	80.0	119
	26	4 x 0.14 SHLD						
	20	2 STP x 0.5						
CF11-035-D <sup>11)</sup>	24	4 STP x 0.25	0.47	12.0	66.5	99	103.5	154
	20	2 PR x 0.5						
CF11-038-D	26	3 PR x 0.14	0.31	8.0	24.2	36	47.7	71
	22	1 PR x 0.34						
CF11-040-D	26	14 x 0.14	0.39	10.0	59.1	88	87.4	130
	22	2 x 0.34						
	16	2 x 1.5						

<sup>4)</sup> Manufactured without inner jacket

<sup>5)</sup> Manufactured without overall shield

<sup>11)</sup> Phase-out model

**Note:** The given outer diameters are maximum values.

**G** = with green-yellow earth core **x** = without earth core

Other types ► [page 258](#)

Configurators ► [www.igus.com/CF11-D](http://www.igus.com/CF11-D)

# Class 6.6.4.1

Basic requirements  
Travel distance  
Oil resistance  
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 1312 ft	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

CF11-D  
TPE  
7.5 x d



Part No.	Core group	Color code
CF11-018-D <sup>4)</sup>	2x(2x0.25) 2x0.5	red/black, gray/pink white, brown
CF11-019-D <sup>4)</sup>	3x(2x0.25)C (3x0.25) 2x1.0	brown/green, gray/pink, red/black blue/violet/yellow white, brown
CF11-021-D	(4x0.25) 3x2x0.25 3x2x0.5	white/brown/gray/black white/yellow, white/gray, black/orange black no. 1/black no. 2, black no. 3/black no. 4, black no. 5/black no. 6
CF11-022-D	(2x0.25) 5x0.5	white/brown green, yellow, gray, pink, blue
CF11-025-D	3x(2x0.14)C (2x0.5)	green/yellow, blue/red, gray/pink white/brown
CF11-027-D	5x(2x0.14) 2x0.5	brown/green, yellow/gray, white/violet, red/black, pink/blue white-green, white-red
CF11-028-D	2x(2x0.20) (2x0.38)	green/yellow, pink/blue red/black
CF11-031-D	2x(2x0.25)C 2x1.0	white/brown, green/yellow black no. 1, black no. 2
CF11-032-D <sup>5)</sup>	3x(2x0.14)C (3x0.14)C	green/black, yellow/black, red/black gray/pink/black
CF11-033-D <sup>5)</sup>	4x(2x0.14)C 2x(1.0)C	yellow/black, red/black, blue/black, green/black white, brown
CF11-034-D <sup>5) 11)</sup>	3x(2x0.14)C (4x0.14)C 2x(2x0.5)C	green/black, violet/black, blue/black red/yellow/black-red/black-yellow black/white, black/brown
CF11-035-D <sup>11)</sup>	4x(2x0.25)C 2x(2x0.5)	white/brown, green/yellow, gray/pink, blue/red black no. 1/black no. 2, black no. 3/black no. 4
CF11-038-D	3x(2x0.14) (2x0.34)	white/brown, green/yellow, gray/pink blue/red
CF11-040-D	3x(4x0.14) (2x0.14+ 2x0.34) 2x1.5	black/red/white-black/white-red, green/blue/white-green/ white-blue, yellow/brown/white-yellow/white-brown violet/orange/white-violet/white-orange white-gray, gray

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



Guarantee  
igus chainflex  
**36**  
up to 36 months guarantee

chainflex  
CONTINUOUS FLEX  
CABLE TEST PROCESS  
VERIFICATION

UL  
verified  
B129699

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