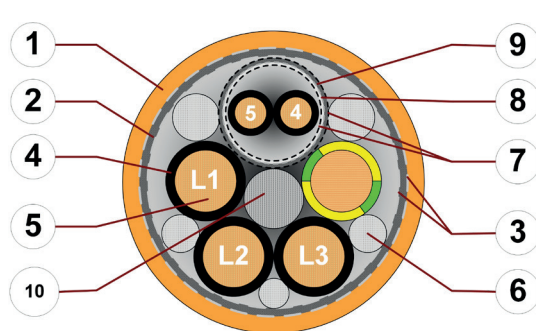


Data sheet

chainflex® CF270.UL.D



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



1. Outer jacket: Pressure extruded PUR mixture
2. Overall shield: Bending-resistant braiding made of tinned copper wires.
3. Banding: Plastic fleece
4. Core insulation: Mechanically high-quality, especially low-capacitance XLPE mixture
5. Conductor: Especially bending-resistant version consisting of bare copper wires
6. Filling: Plastic yarns
7. Element banding: Plastic foil
8. Shield foil: Aluminium-coated polyester foil
9. Element shield: Bending-resistant braiding made of tinned copper wires.
10. Strain relief: Tensile stress-resistant centre element

Example image

For detailed overview please see design table

Cable structure



Conductor

Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).



Core insulation

Mechanically high-quality, especially low-capacitance XLPE mixture.



Core structure

Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.



Core identification

Power cores: Black cores with white numbers, one green-yellow core.

1. Core: U / L1 / C / L+

2. Core: V / L2

3. Core: W / L3 / D / L-

1 Control pair: Black cores with white numbers.

1. Control core: 4 2. Control core: 5

2 Control pairs: Black cores with white numbers.

1. Control core: 5 2. Control core: 6

3. Control core: 7 4. Control core: 8



Element shield

Bending-resistant braiding made of tinned copper wires.



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: Pastel orange (similar to RAL 2003)

Printing: black

„00000 m** igus chainflex CF270.UL.-.-.-.D① ---② 600/1000V E310776

cRUus AWM Style 21223 VW-1 AWM I/II A/B 80°C 1000V FT1 EAC/CTP

CE DESINA RoHS-II conform www.igus.de +++ chainflex cable works +++

* **Length printing:** Not calibrated. Only intended as an orientation aid.

① / ② Cable identification according to Part No. (see technical table).

Example: ... chainflex CF270.UL.15.15.02.01.D (4G1.5+(2x1.5)C)C 600/1000V ...



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Dynamic information

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

These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

Guaranteed service life according to guarantee conditions

Double strokes	5 million	7.5 million	10 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	12.5	13.5	14.5
-15/+70	10	11	12
+70/+80	12.5	13.5	14.5

Minimum guaranteed service life of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Electrical information

	Nominal voltage	600/1000 V (following DIN VDE 0298-3) 1000 V (following UL)
	Testing voltage	4000 V (following DIN EN 50395)



igus 36-month
chainflex cable
guarantee and
service life
calculator based
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cycles per year



Example image

igus® chainflex® CF270.UL.D

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Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
	Offshore	MUD-resistant following NEK 606 - status 2009
	Flame retardant	According to IEC 60332-1-2, FT1, VW-1
	Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	Halogen-free	Following DIN EN 60754
	UL verified	Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
	UL/CSA AWM	See table UL/CSA AWM for details
	NFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.02324 (TR ZU)
	CTP	Certificate No. C-DE.PB49.B.00420 (Fire protection)
	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. UL05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
	DESINA	According to VDW, DESINA standardisation
	CE	Following 2014/35/EU



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Example image

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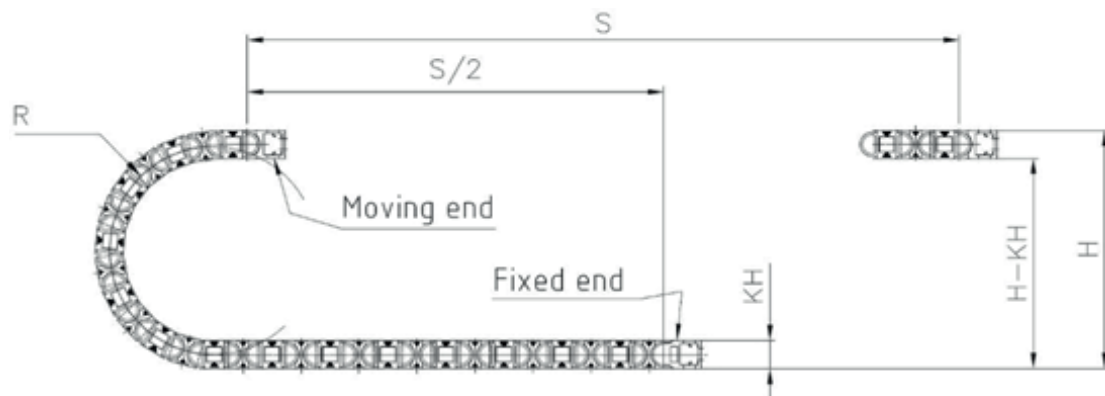
Properties and approvals

UL/CSA AWM Details

Conductor nominal cross section mm ²	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.34	10989	21223	1000	80
0.75	10989	21223	1000	80
1	10989	21223	1000	80
1.5	10989	21223	1000	80
2.5	10989	21223	1000	80
4	10989	21223	1000	80
6	10989	21223	1000	80
10	10989	21223	1000	80
16	10989	21223	1000	80
25	10989	21223	1000	80
35	10989	21223	1000	80

Typical lab test setup for this cable series

Test bend radius R	approx. 75 - 300 mm
Test travel S	approx. 1 - 15 m
Test duration	minimum 2 - 4 million double strokes
Test speed	approx. 0.5 - 2 m / s
Test acceleration	approx. 0.5 - 1.5 m / s ²



Typical application areas

- For medium duty applications, Class 4
- Unsupported travel distances and up to 10 m for gliding applications, Class 2
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct solar radiation
- Machining units/machine tools, low temperature applications



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



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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]
1 Control pair shielded				
CF270.UL.15.15.02.01.D	(4G1.5+(2x1.5)C)C	12.5	154	247
CF270.UL.25.15.02.01.D	(4G2.5+(2x1.5)C)C	14.0	210	301
CF270.UL.40.15.02.01.D	(4G4.0+(2x1.5)C)C	15.0	255	392
CF270.UL.60.15.02.01.D	(4G6.0+(2x1.5)C)C	16.5	343	491
CF270.UL.100.15.02.01.D	(4G10+(2x1.5)C)C	21.0	526	788
CF270.UL.160.15.02.01.D	(4G16+(2x1.5)C)C	24.0	771	1126
2 Control pairs shielded				
CF270.UL.07.03.02.02.D	(4G0.75+2x(2x0.34)C)C	12.0	105	192
CF270.UL.10.07.02.02.D	(4G1.0+2x(2x0.75)C)C	13.0	135	245
CF270.UL.15.07.02.02.D	(4G1.5+2x(2x0.75)C)C	13.5	161	280
CF270.UL.25.15.02.02.D	(4G2.5+2x(2x1.5)C)C	16.0	244	384
CF270.UL.40.15.02.02.D	(4G4.0+2x(2x1.5)C)C	17.0	309	477
CF270.UL.60.15.02.02.D	(4G6.0+2x(2x1.5)C)C	19.0	403	600
CF270.UL.100.15.02.02.D	(4G10+2x(2x1.5)C)C	22.5	576	887
CF270.UL.160.15.02.02.D	(4G16+2x(2x1.5)C)C	26.0	815	1206
CF270.UL.250.15.02.02.D ¹¹⁾	(4G25+2x(2x1.5)C)C	28.5	1223	1686
without control pair				
CF270.UL.07.04.D	(4G0.75)C	8.0	46	95
CF270.UL.15.04.D	(4G1.5)C	10.0	86	140
CF270.UL.25.04.D	(4G2.5)C	11.5	146	210
CF270.UL.40.04.D	(4G4.0)C	13.0	195	296
CF270.UL.60.04.D	(4G6.0)C	15.0	289	416
CF270.UL.100.04.D	(4G10)C	18.0	449	644
CF270.UL.160.04.D	(4G16)C	22.0	698	997
CF270.UL.250.04.D	(4G25)C	25.5	1045	1384
CF270.UL.350.04.D	(4G35)C	33.0	1520	2111
Spindle cable/Single core				
CF270.UL.60.01.D	(1x6.0)C	7.5	72	95
CF270.UL.100.01.D	(1x10)C	8.5	114	145
CF270.UL.160.01.D	(1x16)C	9.5	178	209
CF270.UL.250.01.D	(1x25)C	11.0	269	304
CF270.UL.350.01.D	(1x35)C	13.0	374	419
CF270.UL.500.01.D	(1x50)C	15.0	525	579
CF270.UL.700.01.D	(1x70)C	17.0	751	804

¹¹⁾ Phase-out model

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



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



Example image

igus® chainflex® CF270.UL.D

Data sheet

chainflex® CF270.UL.D



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Electrical information

Conductor nominal cross section [mm²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Max. current rating at 30 °C [A]
0.34	57	7
0.75	26	14
1	19.5	17
1.5	13.3	21
2.5	8	30
4	4.95	41
6	3.3	53
10	1.91	74
16	1.33	99
25	0.78	131

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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Capacity

Part No.	Power cores		Control cores	
	Core/Core Capacity [approx. pF / m]	Core/Shield Capacity [approx. pF / m]	Core/Core Capacity [approx. pF / m]	Core/Shield Capacity [approx. pF / m]
1 Control pair shielded				
CF270.UL.15.15.02.01.D	80	140	120	210
CF270.UL.25.15.02.01.D	105	185	120	210
CF270.UL.40.15.02.01.D	115	200	120	210
CF270.UL.60.15.02.01.D	120	210	120	210
CF270.UL.100.15.02.01.D	140	245	120	210
CF270.UL.160.15.02.01.D	140	245	120	210
CF270.UL.250.15.02.01.D	145	255	120	210
2 Control pairs shielded				
CF270.UL.07.03.02.02.D	60	105	75	130
CF270.UL.10.07.02.02.D	95	155	100	175
CF270.UL.15.07.02.02.D	80	140	100	175
CF270.UL.25.15.02.02.D	105	185	120	210
CF270.UL.40.15.02.02.D	115	200	120	210
CF270.UL.60.15.02.02.D	120	210	120	210
CF270.UL.100.15.02.02.D	140	245	120	210
CF270.UL.160.15.02.02.D	140	245	120	210
CF270.UL.250.15.02.02.D	145	255	120	210
without control pair				
CF270.UL.07.04.D	60	105	-	-
CF270.UL.15.04.D	80	140	-	-
CF270.UL.25.04.D	105	185	-	-
CF270.UL.40.04.D	115	200	-	-
CF270.UL.60.04.D	120	210	-	-
CF270.UL.100.04.D	140	245	-	-
CF270.UL.160.04.D	140	245	-	-
CF270.UL.250.04.D	145	255	-	-
CF270.UL.350.04.D	145	255	-	-
Spindle cable/Single core				
CF270.UL.60.01.D	-	430	-	-
CF270.UL.100.01.D	-	410	-	-
CF270.UL.160.01.D	-	565	-	-
CF270.UL.250.01.D	-	545	-	-
CF270.UL.350.01.D	-	610	-	-
CF270.UL.500.01.D	-	720	-	-
CF270.UL.700.01.D	-	790	-	-



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Design table

Art.-Nr.	Number of cores	Core design
CF270.UL.XX.XX.XX.01.D	4+1x2	
CF270.UL.XX.XX.02.02.D	4+2x2	
CF270.UL.XX.XX.04.D	4+1x4	
CF270.UL.XX.04.D	4	
CF270.UL.XX.01.D	1	

Example image



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