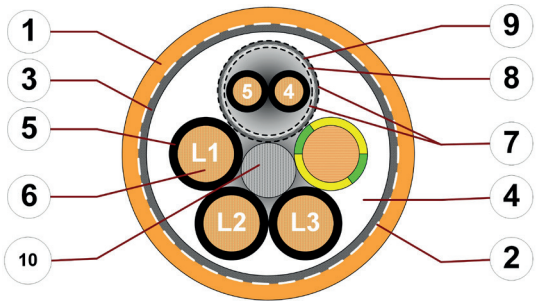
Data sheet
chainflex® CF27.D

Servo cable (Class 6.5.3.1) ● For extremely heavy duty applications ● PUR outer jacket ● Shielded ● Oil-resistant and coolant-resistant ● Notch-resistant ● Flame retardant ● Hydrolysis and microbe-resistant ● PVC and halogen-free

Example image



Example image
For detailed overview please see design table

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

Cable structure

Conductor	Stranded conductor in especially 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 with control pair elements wound with elements for high tensile stresses.
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 **Star quad:** yellow, black, red, white
Element shield	Extremely bending-resistant braiding made of tinned copper wires.
Inner jacket	TPE mixture adapted to suit the requirements in e-chains®.
Overall shield	Extremely bending-resistant braiding made of tinned copper wires. Coverage linear approx. 70 %, optical approx. 90 %
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
CFRIP®	Strip cables faster: a tear strip is moulded into the inner jacket Video ▶ www.igus.eu/CFRIP

„00000 m“* igus chainflex CF27.-.-.-.-.D① -----② 600/1000V E310776

cЯUus AWM Style 21209 VW-1 AWM I/II A/B 90°C 1000V FT1 DNV-GL TAE00003XA

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 **CF27.15.15.02.01.D (4G1.5+(2x1.5)C)C 600/1000V** ...

Guarantee igus chainflex 36 month guarantee

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

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Example image

Dynamic information

Bend radius	e-chain® linear	min. 7.5 x d
	flexible	min. 6 x d
	fixed	min. 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.		80 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	600/1000 V (following DIN VDE 0298-3) 1000 V (following UL)
Testing voltage	4000 V (following DIN EN 50395)

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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 table UL/CSA AWM for details
NFPA	Following NFPA 79-2018, chapter 12.9
DNV-GL	Type approval certificate No. TAE00003XA
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. 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

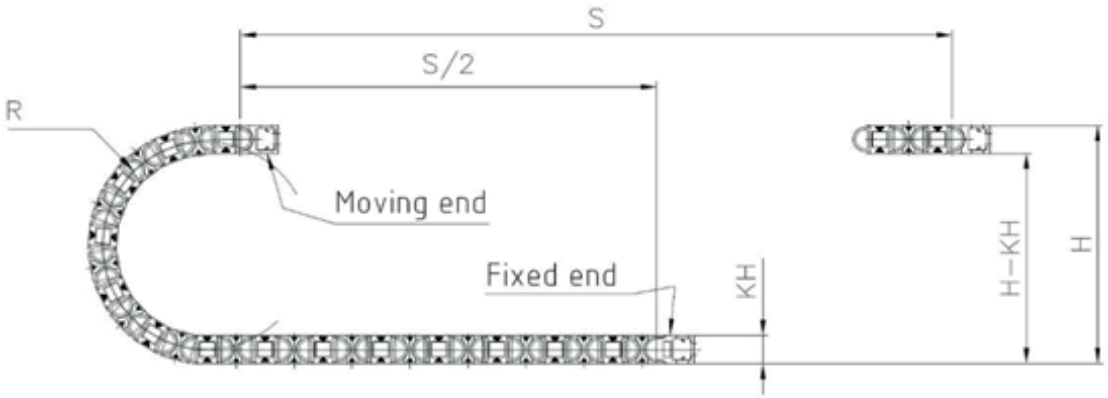
Properties and approvals

UL/CSA AWM Details

Conductor nominal cross section [mm²]	UL style core insultation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.34	30052	21209	1000	90
0.5	30052	21209	1000	90
0.75	30052	21209	1000	90
1	30052	21209	1000	90
1.5	30052	21209	1000	90
2.5	30052	21209	1000	90
4	30052	21209	1000	90
6	30052	21209	1000	90
10	30052	21209	1000	90
16	30052	21209	1000	90
25	30052	21209	1000	90
35	30052	21209	1000	90
50	30052	21209	1000	90

Typical lab test setup for this cable series

Test bend radius R	approx. 63 - 250 mm
Test travel S/S_2	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 extremely heavy duty applications, Class 6
- Unsupported travels 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, UV-resistant
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Cleanroom, semiconductor insertion, outdoor 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]
1 Control pair shielded				
CF27.07.05.02.01.D	(4G0.75+(2x0.5)C)C	11.5	76	169
CF27.15.15.02.01.D	(4G1.5+(2x1.5)C)C	13.0	145	244
CF27.25.15.02.01.D	(4G2.5+(2x1.5)C)C	14.5	199	306
CF27.40.15.02.01.D	(4G4.0+(2x1.5)C)C	16.0	256	403
CF27.60.15.02.01.D	(4G6.0+(2x1.5)C)C	17.5	343	505
CF27.100.15.02.01.D	(4G10+(2x1.5)C)C	21.0	536	746
CF27.160.15.02.01.D	(4G16+(2x1.5)C)C	24.0	797	1086
CF27.250.15.02.01.D	(4G25+(2x1.5)C)C	28.0	1173	1528
CF27.350.15.02.01.D	(4G35+(2x1.5)C)C	32.0	1618	1998
2 Control pairs shielded				
CF27.07.03.02.02.D	(4G0.75+2x(2x0.34)C)C	12.5	103	196
CF27.10.07.02.02.D	(4G1.0+2x(2x0.75)C)C	13.5	148	245
CF27.15.07.02.02.D	(4G1.5+2x(2x0.75)C)C	14.5	167	287
CF27.25.15.02.02.D	(4G2.5+2x(2x1.5)C)C	16.0	254	383
CF27.40.15.02.02.D	(4G4.0+2x(2x1.5)C)C	17.5	308	459
CF27.60.15.02.02.D	(4G6.0+2x(2x1.5)C)C	19.5	412	604
CF27.100.15.02.02.D	(4G10+2x(2x1.5)C)C	22.5	592	842
CF27.160.15.02.02.D	(4G16+2x(2x1.5)C)C	26.0	878	1223
CF27.250.15.02.02.D	(4G25+2x(2x1.5)C)C	31.0	1250	1699
1 Star-quad shielded				
CF27.15.05.04.D	(4G1.5+(4x0.5)C)C	12.5	131	231
CF27.25.05.04.D	(4G2.5+(4x0.5)C)C	14.0	176	292
CF27.40.05.04.D	(4G4.0+(4x0.5)C)C	16.0	244	376
without control pair				
CF27.07.04.D	(4G0.75)C	9.5	55	115
CF27.15.04.D	(4G1.5)C	11.0	90	165
CF27.25.04.D	(4G2.5)C	12.5	135	231
CF27.500.04.D	(4G50)C	37.0	2244	2817

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

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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
0.5	39	11
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	1.21	99
25	0.78	131
35	0.554	162

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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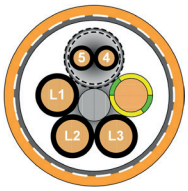
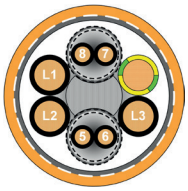
Example image

Design table

Part No.	Number of cores	Core design
CF27.XX.XX.XX.01.D	4+1x2	
CF27.XX.XX.02.02.D	4+2x2	
CF27.XX.XX.04.D	4+1x4	
CF27.XX.04.D	4	

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