

# Control cable | PUR | chainflex® CF77-UL-D







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

**6.8 x d**  
Bend radius E-Chain®






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

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



### Dynamic Information

	<b>Bend radius</b>	<b>E-Chain® linear flexible</b>	min. 6.8 x d min. 5 x d
		<b>fixed</b>	min. 4 x d
	<b>Temperature</b>	<b>E-Chain® linear flexible</b>	-13 °F to +176 °F (-25 °C to +80 °C) -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>		262.5 ft/s <sup>2</sup> (80 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
	<b>Torsion</b>		Torsion ±180°, with 3.281ft (1m) cable length, Class 3 (except for 5-conductor types ≥ 4.0 mm <sup>2</sup> ▶ Product range table)

### 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>	<b>Number of conductors &lt; 12:</b> Conductors cabled in a layer with short pitch length. <b>Number of conductors ≥ 12:</b> Conductors combined in bundles and stranded together around a high-tensile strength core, using short pitch directions for a low-torsion cable structure.
	<b>Color code</b>	<b>24-22 AWG:</b> Color code in accordance with DIN 47100. <b>20-10 AWG:</b> Black with white numbers, one conductor green-yellow. <b>CF77-UL-03-04-INI:</b> brown, blue, black, white
	<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: Gray (similar to RAL 7040) Variants ▶ See P/N Table

### Electrical Information

	<b>Nominal voltage</b>	<b>Number of conductors &lt; 12:</b> <b>24-22 AWG:</b> 300 V <b>20-10 AWG:</b> 1000 V <b>Number of conductors ≥ 12:</b> 1000 V
	<b>Test voltage</b>	2000 V (following DIN EN 50395)

Configurators ▶ [www.igus.com/CF77-UL-D](http://www.igus.com/CF77-UL-D)

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






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 5.5.3.3

### 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>	<b>24-22 AWG:</b> 300 V, +80 °C <b>20-10 AWG:</b> 1000 V, +80 °C See data sheet for details ▶ <a href="http://www.igus.com/CF77-UL-D">www.igus.com/CF77-UL-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. TAE00003X1
	<b>EAC</b>	Certificate No. RU C-DE.ME77.B.00300/19 (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, material/cable tested by IPA according to DIN EN ISO standard 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	
	< 10 m	≥ 10 m	< 10 m	≥ 10 m	< 10 m	≥ 10 m
Temperature, from/to [°F]	R min. [factor x d]R min.	[factor x d]R min. [factor x d]R min.	[factor x d]R min. [factor x d]R min.	[factor x d]R min. [factor x d]R min.	[factor x d]R min. [factor x d]R min.	[factor x d]R min. [factor x d]R min.
-13/+5	8.5	10	9.5	11	10.5	12
+5/+158	6.8	7.5	7.5	8.5	8.5	9.5
+158/+176	8.5	10	9.5	11	10.5	12

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

### Typical application areas

- For high mechanical load requirements, Class 5
- Unsupported travel distances and for gliding applications up to 328 ft (100 m), Class 5
- Almost unlimited resistance to oil, Class 3
- Torsion ±180°, with 3.281ft (1m) cable length, Class 3
- Indoor and outdoor applications with average sun radiation
- Machining units/machine tools, Storage and retrieval units for high-bay warehouses, Packaging industry, quick handling, refrigerating sector



UL-verified chainflex® guarantee ... [www.igus.com/ul-verified](http://www.igus.com/ul-verified)



# Control cable | PUR | chainflex® CF77-UL-D

# Class 5.5.3.3

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°			



igus® chainflex® CF77.UL.D

Example image

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[mm²]	[in.] [mm]	[lbs/mft] [kg/km]	[lbs/mft] [kg/km]		
CF77-UL-02-03-INI <sup>12)</sup>	24	3 x 0.25	0.20	5.0	6.0	9	19.5	29
CF77-UL-02-04-D	24	4 x 0.25	0.22	5.5	7.4	11	23.5	35
CF77-UL-02-05-D	24	5 x 0.25	0.24	6.0	8.7	13	26.2	39
CF77-UL-02-07-D	24	7 x 0.25	0.26	6.5	12.1	18	34.3	51
CF77-UL-02-12-D	24	12 x 0.25	0.35	9.0	21.5	32	52.4	78
CF77-UL-02-18-D	24	18 x 0.25	0.41	10.5	31.6	47	85.3	127
CF77-UL-02-25-D	24	25 x 0.25	0.45	11.5	42.3	63	104.2	155
CF77-UL-03-04-INI <sup>12)</sup>	22	4 x 0.34	0.24	6.0	9.4	14	24.9	37
CF77-UL-05-04-D	20	4 G 0.5	0.24	6.0	14.1	21	30.9	46
CF77-UL-05-05-D	20	5 G 0.5	0.26	6.5	17.5	26	35.6	53
CF77-UL-05-07-D	20	7 G 0.5	0.30	7.5	26.2	39	52.4	78
CF77-UL-05-12-D	20	12 G 0.5	0.39	10.0	42.3	63	87.4	130
CF77-UL-05-18-D	20	18 G 0.5	0.47	12.0	63.2	94	123.6	184
CF77-UL-05-25-D	20	25 G 0.5	0.55	14.0	86.7	129	163.3	243
CF77-UL-05-30-D	20	30 G 0.5	0.59	15.0	104.2	155	211.7	315
CF77-UL-07-03-D	18	3 G 0.75	0.26	6.5	15.5	23	34.9	52
CF77-UL-07-04-D	18	4 G 0.75	0.28	7.0	20.8	31	39.6	59
CF77-UL-07-05-D	18	5 G 0.75	0.30	7.5	25.5	38	47.7	71
CF77-UL-07-07-D	18	7 G 0.75	0.33	8.5	36.3	54	67.2	100
CF77-UL-07-12-D	18	12 G 0.75	0.47	12.0	61.1	91	121.0	180
CF77-UL-07-18-D	18	18 G 0.75	0.53	13.5	90.0	134	160.6	239
CF77-UL-07-20-D	18	20 G 0.75	0.57	14.5	100.1	149	180.8	269
CF77-UL-07-25-D	18	25 G 0.75	0.63	16.0	125.0	186	225.8	336
CF77-UL-07-36-D	18	36 G 0.75	0.75	19.0	187.5	279	340.0	506
CF77-UL-07-42-D	18	42 G 0.75	0.83	21.0	229.1	341	389.7	580
CF77-UL-10-02-D	17	2 x 1.0	0.26	6.5	14.1	21	34.3	51
CF77-UL-10-03-D	17	3 G 1.0	0.26	6.5	20.8	31	39.0	58
CF77-UL-10-04-D	17	4 G 1.0	0.28	7.0	27.6	41	49.1	73
CF77-UL-10-05-D	17	5 G 1.0	0.31	8.0	33.6	50	60.5	90
CF77-UL-10-07-D	17	7 G 1.0	0.35	9.0	47.7	71	80.6	120
CF77-UL-10-12-D	17	12 G 1.0	0.49	12.5	80.6	120	147.8	220
CF77-UL-10-18-D	17	18 G 1.0	0.59	15.0	120.3	179	211.0	314
CF77-UL-10-25-D	17	25 G 1.0	0.69	17.5	166.6	248	289.6	431
CF77-UL-10-42-D	17	42 G 1.0	0.89	22.5	291.0	433	469.7	699

<sup>12)</sup> Color outer jacket: Yellow (similar to RAL 1021)  
Note: The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[mm²]	[in.] [mm]	[lbs/mft] [kg/km]	[lbs/mft] [kg/km]		
CF77-UL-15-03-D	16	3 G 1.5	0.28	7.0	30.9	46	47.7	71
CF77-UL-15-04-D	16	4 G 1.5	0.30	7.5	41.0	61	59.1	88
CF77-UL-15-05-D	16	5 G 1.5	0.31	8.0	50.4	75	70.6	105
CF77-UL-15-07-D <sup>17)</sup>	16	7 G 1.5	0.37	9.5	70.6	105	102.1	152
CF77-UL-15-12-D	16	12 G 1.5	0.51	13.0	120.3	179	199.6	297
CF77-UL-15-18-D	16	18 G 1.5	0.67	17.0	180.1	268	272.1	405
CF77-UL-15-25-D	16	25 G 1.5	0.77	19.5	199.6	297	379.0	564
CF77-UL-15-36-D	16	36 G 1.5	0.93	23.5	370.3	551	569.8	848
CF77-UL-25-03-D	14	3 G 2.5	0.33	8.5	50.4	75	88.7	132
CF77-UL-25-04-D	14	4 G 2.5	0.37	9.5	63.8	95	112.2	167
CF77-UL-25-05-D	14	5 G 2.5	0.39	10.0	83.3	124	131.7	196
CF77-UL-25-07-D <sup>17)</sup>	14	7 G 2.5	0.47	12.0	116.9	174	181.4	270
CF77-UL-25-12-D	14	12 G 2.5	0.67	17.0	199.6	297	321.9	479
CF77-UL-40-04-D <sup>90)</sup>	12	4 G 4.0	0.45	11.5	110.9	165	164.6	245
CF77-UL-40-05-D <sup>90)</sup>	12	5 G 4.0	0.47	12.0	133.0	198	190.8	284
CF77-UL-60-05-D <sup>90)</sup>	10	5 G 6.0	0.53	13.5	199.6	297	276.9	412

<sup>17)</sup> When using the cables with "7G1.5mm²" and "G2.5mm²" minimum bend radius must be 17.5xd with gliding travel distance ≥ 5m.  
<sup>90)</sup> Torsion ±90°  
Note: The given outer diameters are maximum values.  
G = with green-yellow earth core x = without earth core

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 CF5

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

UL LISTED

UL US

NFPA

CE

DNV-GL

EAC

REACH

RoHS

Clean Room

DESMA

CE

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

chainflex®  
CONTINUOUS FLEX  
CABLE TEST PROCESS  
VERIFICATION

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

UL VERIFIED  
www.igus.com  
B129699