

Servo cables

Hybrid servo cables



chainflex® cable	Jacket	Shield	Bending radius min., E-Chain® [factor x dj]	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
------------------	--------	--------	---	------------------------------------	-------------------------	---------------	---	----------------	------

Servo cables

Information and selection chart for Hybrid Servo cables

266

CF887	PVC	✓	15	+41/ +158			9.84	65.62	268	New
CF210-UL	PVC	✓	10	+41/ +158			32.81	6.56	164.05	270
CF21-UL	PVC	✓	7.5	+41/ +158			32.81	16.41	262.48	274
CF897	iguPUR	✓	15	-4/ +176			9.84	65.62	278	
CF270-UL-D	PUR	✓	10	-13/ +176			32.81	6.56	164.05	280
CF27-D	PUR	✓	7.5	-13/ +176			32.81	16.41	262.48	284
CF29-D	TPE	✓	6.8	-31/ +212			32.81	16.41	262.48	288

Hybrid servo cables

CF220-UL-H	PVC	✓	10	+41/ +158			32.81	6.56	164.05	290
CF280-UL-H	PUR	✓	10	-13/ +176			32.81	6.56	164.05	294

36 months chainflex® guarantee

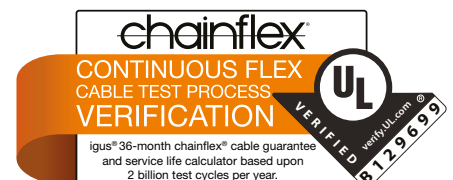
Guaranteed lifetime for predictable reliability

► Selection table page 264

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



chainflex® guarantee



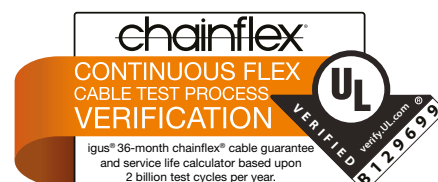
chainflex® cable	Temperature, from/to [°F]	v max. [ft/s]		a max. [ft/s²]	Travel distance [ft]
		unsupported	gliding		
Servo cables					
 CF887 New!	+41 / +59 +59 / +140 +140 / +158	9.84	-	65.6	≤ 32.81
 CF210-UL	+41 / +59 +59 / +140 +140 / +158	32.81	6.56	164.1	≤ 32.81
 CF21-UL	+41 / +59 +59 / +140 +140 / +158	32.81	16.41	262.5	≤ 328.1
 CF897	-4 / +14 +14 / +158 +158 / +176	9.84	-	65.6	≤ 32.81
 CF270-UL-D	-13 / +5 +5 / +158 +158 / +176	32.81	6.56	164.1	≤ 32.81
 CF27-D	-13 / +5 +5 / +158 +158 / +176	32.81	16.41	262.5	≤ 328.1
 CF29-D	-31 / -13 -13 / +194 +194 / +212	32.81	16.41	262.5	> 1,312
Hybrid servo cables					
 CF220-UL-H	+41 / +59 +59 / +140 +140 / +158	32.81	6.56	164.1	≤ 32.81
 CF280-UL-H	-13 / +5 +5 / +158 +158 / +176	32.81	6.56	164.1	≤ 32.81

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

Guaranteed lifetime ⁽¹⁾

Bending radius min. [factor x d]		Bending radius min. [factor x d]		Bending radius min. [factor x d]		Page
< 32.81 ft	≥ 32.81 ft	< 32.81 ft	≥ 32.81 ft	< 32.81 ft	≥ 32.81 ft	
5 million (1 million) cycles *		7.5 million (3 million) cycles *		10 million (5 million) cycles *		
17.5		18.5		19.5		268
15		16		17		
17.5		18.5		19.5		270
12.5		13.5		14.5		
10		11		12		
12.5		13.5		14.5		274
10		11		12		
7.5		8.5		9.5		
10		11		12		278
17.5		18.5		19.5		
15		16		17		
17.5		18.5		19.5		280
12.5		13.5		14.5		
10		11		12		
12.5		13.5		14.5		284
10		11		12		
7.5		8.5		9.5		
10		11		12		288
8.5	10	9.5	11	10.5	12	
6.8	7.5	7.5	8.5	8.5	9.5	
7.5	10	9.5	11	10.5	12	
	12.5		13.5		14.5	290
	10		11		12	
	12.5		13.5		14.5	294
	12.5		13.5		14.5	
	10		11		12	
	12.5		13.5		14.5	

* Higher number of cycles? Online lifetime calculation ► www.igus.com/chainflexlife
 Figures in brackets refer to chainflex® series CF887 and CF897



igus chainflex® System cables (Hybrid Servo cables) for single-cable solutions in drive technology

In the chainflex® series **CF220-UL-H** and **CF280-UL-H**, you will see system cables for intelligent drive concepts of renowned system manufacturers.

To save installation space in the E-Chain system® some manufacturers combine the servo cable for power transmission with the measuring system cable for position data transmission to make a so-called hybrid cable. The feedback of the position data to the servo controller is done frequently by various digital bus technologies.

When connecting these two cables into a hybrid cable, it is necessary to guarantee the necessary data transmission properties and the EMC behavior of the cable for many million cycles.

Due to the proximity to the power cores often operated with interference-intensive square-wave signals, in the igus® chainflex® servo hybrid cables, mechanically optimized shield concepts with a very high optical coverage are used.

A secure transmission of bus signals at maximum cable length at maximum speed makes special demands on the used insulating materials of the bus or data conductors.

In the 2,750m² large igus® laboratory, the electrical parameters such as capacitance, impedance, attenuation and crosstalk are measured over the entire test period of several million cycles and monitored for compliance with specifications.

igus® chainflex® servo hybrid cables are available in cost-effective PVC and oil-resistant, halogen-free PUR. As with all chainflex® cables, igus® also offers a guarantee of 36 months or 10 million cycles for the servo hybrid cables and 5 million for chainflex® M.

In the table on the right page you will find an overview of all currently available hybrid cables grouped by manufacturers.

The listed companies are drive systems manufacturers or technology providers whose rotation sensors are used in the most varied systems.



Two become one: Hybrid Servo cables combine Servo and Measuring system cables.

Selection table Hybrid Servo cables

Manufacturer	Hybrid technology	CF220-UL-H	CF280-UL-H
		PVC 10 x d UL page 290	PUR 10 x d oil-resistant page 294
ABB	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
AMK	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
B&R	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
B&R	Heidenhain	CF220-UL-H50x	CF280-UL-H50x
Baumüller	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
BCB	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Beckhoff	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
BMP	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Bosch-Rexroth	IndraDrive	-	CF280-UL-H40x
CEDS	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
ELAU/Schneider Electric	isH Servo	CF220-UL-H60x	CF280-UL-H60x
Fertig	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Fine	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Han's	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Harmonic Drive AG	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Heidrive	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Infranor	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
IRT	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Jetter	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
KEBA	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Kinavo	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Kollmorgen	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Lafert	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
LTI DRIVES	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Mavilor	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Maxsine	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
metronix	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
PowerMotor	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
NUM	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Parker	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
ROBOX	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Selema	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
SEW	SEW Cable type A, B, C, D, E	CF220-UL-H20x	CF280-UL-H20x
Siemens	SINAMICS S210	-	CF280-UL-H30x
Siboni	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Sigmatek	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
STEP	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
TG-Drives	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
WEG	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x
Witthur Drive	Sick "Hiperface DSL"	CF220-UL-H10x	CF280-UL-H10x

Servo cable | PVC | chainflex® CF887






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
- Variable Frequency Drives


Dynamic Information

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



Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance TPE mixture.
	Conductor construction	Power conductors and signal pairs cabled together with an optimized pitch length.
	Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 5 and 6 2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6, Control Pair 2: Printed 7 and 8
	Element shield	Foil taping of optimized, bending-resistant foil shield. Coverage approx. 100% optical
	Overall shield	aluminum/polyester tape and tinned cooper braid. 60 % optical coverage
	Outer jacket	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in E-Chains®. Color: Orange (similar to RAL 2003)

Electrical Information

	Nominal voltage	1000 V
	Test voltage	4000 V (following DIN EN 50395)

Properties and approvals

	Flame resistance	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)

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°			

CF887
PVC
15 x d

Class 3.1.1.1



Certificate No. B129699: igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year

1000 V, +80C

See data sheet for details ► www.igus.com/CF887

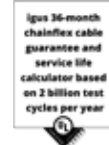
Complies to Electrical Standard for Industrial Machinery NFFPA 79 Section 12.9

Certificate No. RU C-DE.ME77.B.00302/19 (TR ZU)

In accordance with regulation (EC) No. 1907/2006 (REACH)

Following 2011/65/EC (RoHS-II/RoHS-III)

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

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

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index lbs/mft [kg/km]	Weight	
			[in.]	[mm]		lbs/mft	[kg/km]
1 Control pair shielded							
New CF887-07-05-02-01	18	4 G 0.75	0.39	10.0	46.4	69	80.0 119
	20	1 STP 0.5					
CF887-15-15-02-01	16	4 G 1.5	0.49	12.5	83.3	124	134.4 200
	16	1 STP x 1.5					
CF887-25-15-02-01	14	4 G 2.5	0.53	13.5	122.3	182	170.7 254
	16	1 STP x 1.5					
CF887-40-15-02-01	12	4 G 4.0	0.57	14.5	158.6	236	228.5 340
	16	1 STP x 1.5					
2 Control pairs shielded							
CF887-10-07-02-02	17	4 G 1.0	0.45	11.5	73.9	110	123.6 184
	18	2 STP x 0.75					
CF887-15-15-02-02	16	4 G 1.5	0.53	13.5	110.2	164	170.0 253
	16	2 STP x 1.5					
CF887-25-15-02-02	14	4 G 2.5	0.57	14.5	145.8	217	218.4 325
	16	2 STP x 1.5					

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



UL-verified chainflex® guarantee ... www.igus.com/ul-verified

Servo cable | PVC | chainflex® CF210-UL






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
- Variable Frequency Drives

Dynamic Information

 Bend radius	E-Chain® linear flexible	min. 10 x d min. 8 x d
	fixed	min. 5 x d
 Temperature	E-Chain® linear flexible	+41 °F to +158 °F (+5 °C to +70 °C) +23 °F to +158 °F (-5 °C to +70 °C)
	fixed	+5 °F to +158 °F (-15 °C to +70 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	6.56 ft/s (2 m/s)
 a max.		164.1 ft/s² (50 m/s²)
 Travel distance		Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2

Cable structure

 Conductor	Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).
 Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
 Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
 Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 4 and 5 2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6 Control Pair 2: Printed 7 and 8
 Element shield	Bending-resistant tinned copper braid. 80% optical coverage
 Intermediate layer	Polyester tape over external layer Barrier tape, 100% coverage
 Overall shield	Bending-resistant tinned copper braid. 80 % optical coverage
 Outer jacket	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: Orange (similar to RAL 2003)

Electrical Information

 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Configurators ► www.igus.com/CF210-UL














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

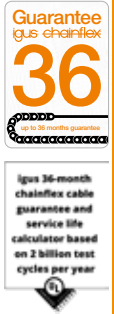
Basic requirements
Travel distance
Oil resistance
Torsion

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 4.2.2.1

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
	Flame resistance	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)
	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	1000 V, +80C See data sheet for details ► www.igus.com/CF210-UL
	NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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 2. The outer jacket material of this series complies with CF5.10.07 - tested by IPA according to standard DIN EN ISO 14644-1
	CE	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

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
- Wood/stone processing, Packaging industry, supply systems, Handling, adjusting equipment



Servo cable | PVC | chainflex® CF210-UL

igus® chainflex® CF210.UL

Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
1 Control pair shielded								
CF210-UL-15-15-02-01	16	4 G 1.5	0.49	12.5	103.5	154	164.6	245
	16	1 STP x 1.5						
CF210-UL-25-15-02-01	14	4 G 2.5	0.55	14.0	141.1	210	200.9	299
	16	1 STP x 1.5						
CF210-UL-40-15-02-01	12	4 G 4.0	0.59	15.0	171.4	255	257.4	383
	16	1 STP x 1.5						
CF210-UL-60-15-02-01	10	4 G 6.0	0.65	16.5	230.5	343	327.9	488
	16	1 STP x 1.5						
2 Control pairs shielded								
CF210-UL-15-07-02-02	16	4 G 1.5	0.53	13.5	108.2	161	186.8	278
	18	2 STP x 0.75						
CF210-UL-25-15-02-02	14	4 G 2.5	0.63	16.0	164.0	244	256.0	381
	16	2 STP x 1.5						
CF210-UL-40-15-02-02	12	4 G 4.0	0.67	17.0	223.1	332	287.6	428
	16	2 STP x 1.5						
CF210-UL-60-15-02-02	10	4 G 6.0	0.75	19.0	270.8	403	401.8	598
	16	2 STP x 1.5						
without control pair								
CF210-UL-15-04	16	4 G 1.5	0.39	10.0	57.8	86	94.1	140
CF210-UL-25-04	14	4 G 2.5	0.45	11.5	98.1	146	140.4	209
CF210-UL-40-04	12	4 G 4.0	0.51	13.0	131.0	195	193.5	288

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



Order example: CF210-UL-40-15-02-01 – To your desired length
CF210-UL chainflex® series -40 Code nominal cross section -15 Code nominal cross section
signal pairs -02 Identification pairs -01 Number of pairs



Online order ► www.chainflex.com/CF210-UL



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

... just one idea for you: Reduce bend radius with CF21.UL ...

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°			

CF210-UL
 PVC
 10 x d



chainflex® servo cable in a vertical E-Chain®

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

-
-
-
-
-
-
-
-
-
-
-

Configurators ► www.igus.com/CF210-UL



Guarantee
 igus chainflex
36
 up to 36 months guarantee

chainflex
 CONTINUOUS FLEX
 CABLE TEST PROCESS
 VERIFICATION
 UL
 www.igus.com ©
 B 129699

UL-verified chainflex® guarantee ... www.igus.com/ul-verified

Servo cable | PVC | chainflex® CF21-UL






36 10,000,000
Cycles guaranteed

7.5 x d
Bend radius E-Chain®










328.1 ft
Travel distance E-Chain®

- For high mechanical load requirements
- PVC outer jacket
- Shielded
- Oil-resistant
- Flame-retardant
- Variable Frequency Drives

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	+41 °F to +158 °F (+5 °C to +70 °C)
	flexible	+23 °F to +158 °F (-5 °C to +70 °C)
	fixed	+5 °F to +158 °F (-15 °C to +70 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	16.41 ft/s (5 m/s)
 a max.		262.5 ft/s ² (80 m/s ²)
 Travel distance		Unsupported travel distances and for gliding applications up to 328.1 ft (100 m), Class 5

Cable structure

 Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
 Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
 Conductor construction	Power conductors and Signal Pairs cabled with short pitch.
 Color code	<p>Power conductors: Black with white numbers, one conductor green-yellow.</p> <p>1. U / L1 / C / L+</p> <p>2. V / L2</p> <p>3. W / L3 / D / L-</p> <p>1 Control pair: Black with white numbers. Control Pair Printed 4 and 5</p> <p>2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6 Control Pair 2: Printed 7 and 8</p>
 Element shield	Extremely bending-resistant braiding made of tinned copper wires. 90% optical coverage
 Inner jacket	PVC mixture adapted to suit the requirements in E-Chains®.
 Overall shield	Extremely bending-resistant tinned copper braid. 90 % optical coverage
 Outer jacket	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 6005)
 CFRIP®	Strip 50% faster: a tear strip is molded into the inner jacket Video ► www.igus.com/CFRIP

Example image

Configurators ► www.igus.com/CF21-UL

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°			














CF21-UL
PVC
7.5 x d

Class 5.5.2.1

Electrical Information

 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Properties and approvals

 UV resistance	Medium
 Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
 Flame resistance	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)
 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	1000 V, +80C
 NFPA 79	See data sheet for details ► www.igus.com/CF21-UL Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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 2. The outer jacket material of this series complies with CF5.10.07 - tested by IPA according to standard DIN EN ISO 14644-1
 CE	Following 2014/35/EU

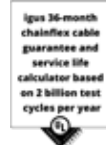
Guaranteed service life (details see page 26-27)

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	10	11	12
+59/+140	7.5	8.5	9.5
+140/+158	10	11	12

* Higher number of cycles? Online lifetime calculation ► 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
- 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, quick handling, indoor cranes



Servo cable | PVC | chainflex® CF21-UL

Strip cables 50 % faster

igus® chainflex® CF21.UL

Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
1 Control pair shielded								
CF21-07-05-02-01-UL	18	4 G 0.75	0.43	11.0	51.1	76	106.8	159
	20	1 STP x 0.5						
CF21-15-15-02-01-UL	16	4 G 1.5	0.51	13.0	97.4	145	172.0	256
	16	1 STP x 1.5						
CF21-25-15-02-01-UL	14	4 G 2.5	0.57	14.5	133.7	199	221.7	330
	16	1 STP x 1.5						
CF21-40-15-02-01-UL	12	4 G 4.0	0.63	16.0	172.0	256	272.8	406
	16	1 STP x 1.5						
CF21-60-15-02-01-UL	10	4 G 6.0	0.71	18.0	230.5	343	366.9	546
	16	1 STP x 1.5						
CF21-100-15-02-01-UL	8	4 G 10.0	0.85	21.5	360.2	536	556.4	828
	16	1 STP x 1.5						
2 Control pairs shielded								
CF21-07-03-02-02-UL	18	4 G 0.75	0.49	12.5	69.2	103	139.8	208
	22	2 STP x 0.34						
CF21-10-07-02-02-UL	17	4 G 1.0	0.53	13.5	99.5	148	180.8	269
	18	2 STP x 0.75						
CF21-15-07-02-02-UL	16	4 G 1.5	0.57	14.5	112.2	167	207.6	309
	18	2 STP x 0.75						
CF21-25-15-02-02-UL	14	4 G 2.5	0.67	17.0	170.7	254	291.6	434
	16	2 STP x 1.5						
CF21-40-15-02-02-UL	12	4 G 4.0	0.71	18.0	207.0	308	346.1	515
	16	2 STP x 1.5						
CF21-60-15-02-02-UL	10	4 G 6.0	0.83	21.0	276.9	412	467.0	695
	16	2 STP x 1.5						
CF21-100-15-02-02-UL	8	4 G 10.0	0.91	23.0	397.8	592	621.6	925
	16	2 STP x 1.5						
CF21-160-15-02-02-UL	6	4 G 16.0	1.04	26.5	590.0	878	864.8	1287
	16	2 STP x 1.5						

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

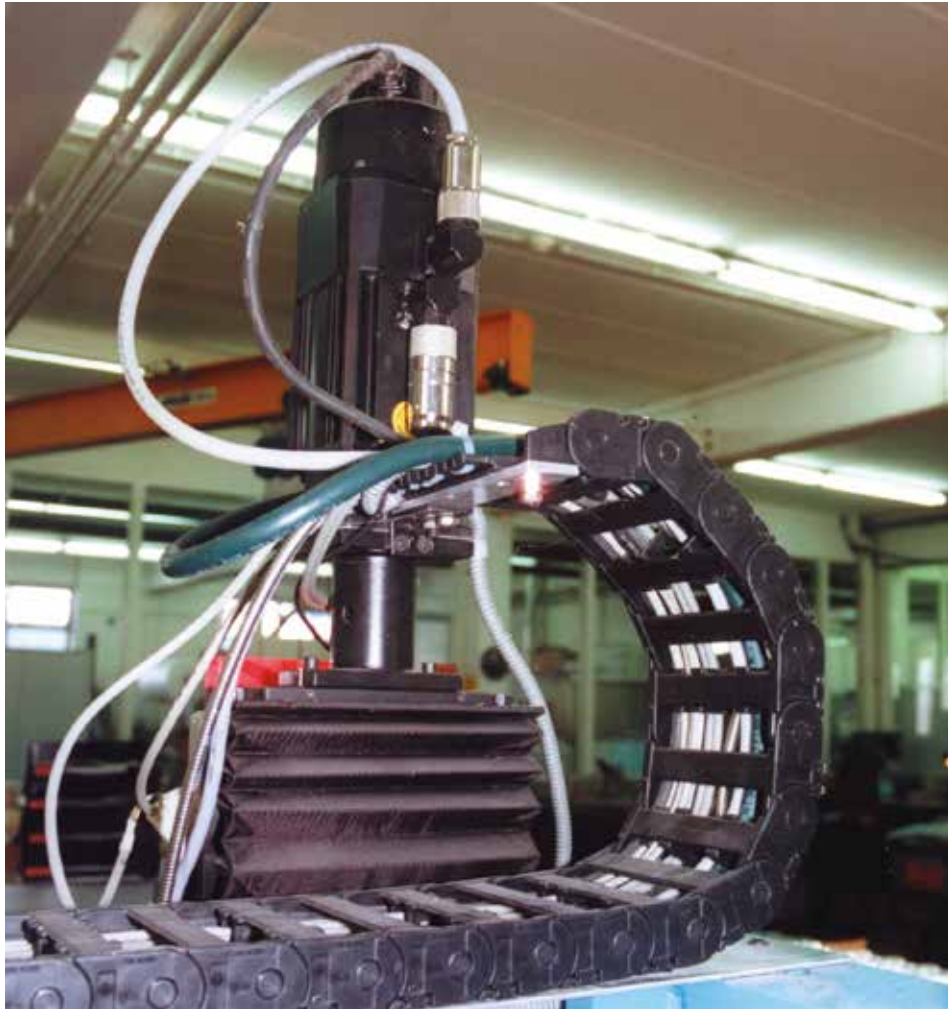
... just one idea for you: [Reduce bend radius with CF29.D ...](#)

Class 5.5.2.1

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°			

CF21-UL
 PVC
 7.5 x d



chainflex® CF21.UL: cables for energy supply systems in spinneret production. E-Chain®: E2/000

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



Order example: **CF21-40-15-02-01-UL** – To your desired length
 CF21-UL chainflex® series -40 Code nominal cross section -15 Code nominal cross section signal pairs
 -02 Identification pairs -01 Number of pairs



Online order ► www.chainflex.com/CF21-UL



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

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
 www.igus.com
 B129699



Servo cable | iguPUR | chainflex® CF897






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
- Variable Frequency Drives

Dynamic Information

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

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance TPE mixture.
	Conductor construction	Power conductors and signal pairs cabled together with an optimized pitch length.
	Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 5 and 6 2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6, Control Pair 2: Printed 7 and 8
	Element shield	Foil taping of optimized, bending-resistant foil shield. Coverage approx. 100% optical
	Overall shield	aluminum/polyester tape and tinned cooper braid. 60 % optical coverage
	Outer jacket	Low-adhesion mixture on the basis of iguPUR, adapted to suit the requirements in E-Chains®. Color: Orange (similar to RAL 2003)

Electrical Information

	Nominal voltage	1000 V
	Test voltage	4000 V (following DIN EN 50395)

Configurators ► www.igus.com/CF897

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°			

CF897
igusPUR
15 x d

Class 3.1.3.1

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
	Flame resistance	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)
	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	1000 V, +80C See data sheet for details ► www.igus.com/CF897
	NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00302/19 (TR ZU)
	REACH	In accordance with regulation (EC) No. 1907/2006 (REACH)
	Lead-free	Following 2011/65/EC (RoHS-II/RoHS-III)
	CE	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

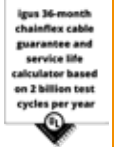
* Higher number of cycles? Online lifetime calculation ► www.chainflex.com/chainflexlife

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

Part No.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index	Weight	
			[in.]	[mm]		[lbs/mft]	[kg/km]
1 Control pair shielded							
CF897-15-15-02-01	16	4 G 1.5	0.49	12.5	83.3	124	135.1
	16	1 STP x 1.5					201
CF897-25-15-02-01	14	4 G 2.5	0.53	13.5	122.3	182	166.6
	16	1 STP x 1.5					248
CF897-40-15-02-01	12	4 G 4.0	0.57	14.5	158.6	236	221.1
	16	1 STP x 1.5					329
2 Control pairs shielded							
CF897-15-15-02-02	16	4 G 1.5	0.53	13.5	110.2	164	165.3
	16	2 STP x 1.5					246

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



Servo cable | PUR | chainflex® CF270-UL-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
- Notch-resistant
- Flame-retardant
- Hydrolysis and microbe-resistant
- PVC and halogen-free
- Variable Frequency Drives

Dynamic Information

 Bend radius	E-Chain® linear flexible	min. 10 x d
	flexible	min. 8 x d
	fixed	min. 5 x d
 Temperature	E-Chain® linear flexible	-13 °F to +176 °F (-25 °C to +80 °C)
	flexible	-40 °F to +176 °F (-40 °C to +80 °C)
	fixed	-58 °F to +176 °F (-50 °C to +80 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	6.56 ft/s (2 m/s)
 a max.		164.1 ft/s ² (50 m/s ²)
 Travel distance		Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2

Cable structure

 Conductor	Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).
 Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
 Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
 Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 4 and 5 2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6 Control Pair 2: Printed 7 and 8
 Element shield	Bending-resistant tinned copper braid. 80% optical coverage
 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: Orange (similar to RAL 2003)

Electrical Information

















 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Example image

Basic requirements	low	1	2	3	4	5	6	7	highest
Travel distance	unsupported	1	2	3	4	5	6	≥ 1312 ft	
Oil resistance	none	1	2	3	4	highest			
Torsion	none	1	2	3	4	±360°			

Class 4.2.3.1

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 resistance	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	1000 V, +80C See data sheet for details ► www.igus.com/CF270-UL-D
 NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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.UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
 DESINA	According to VDW, DESINA standardization.
 CE	Following 2014/35/EU

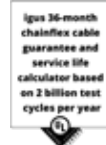
Guaranteed service life (details see page 26-27)

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

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



Servo cable | PUR | chainflex® CF270-UL-D

igus® chainflex® CF270.UL.D

Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
1 Control pair shielded								
CF270-UL-15-15-02-01-D	16	4 G 1.5	0.49	12.5	103.5	154	166.0	247
	16	1 STP 1.5						
CF270-UL-25-15-02-01-D	14	4 G 2.5	0.55	14.0	141.1	210	202.3	301
	16	1 STP 1.5						
CF270-UL-40-15-02-01-D	12	4 G 4.0	0.59	15.0	171.4	255	263.4	392
	16	1 STP 1.5						
CF270-UL-60-15-02-01-D	10	4 G 6.0	0.65	16.5	230.5	343	329.9	491
	16	1 STP 1.5						
CF270-UL-100-15-02-01-D	8	4 G 10.0	0.83	21.0	353.5	526	529.5	788
	16	1 STP 1.5						
CF270-UL-160-15-02-01-D	6	4 G 16.0	0.94	24.0	518.1	771	756.6	1126
	16	1 STP 1.5						
2 Control pairs shielded								
CF270-UL-07-03-02-02-D	18	4 G 0.75	0.47	12.0	70.6	105	129.0	192
	22	2 STP 0.34						
CF270-UL-10-07-02-02-D	17	4 G 1.0	0.51	13.0	90.7	135	164.6	245
	18	2 STP 0.75						
CF270-UL-15-07-02-02-D	16	4 G 1.5	0.53	13.5	108.2	161	188.2	280
	18	2 STP 0.75						
CF270-UL-25-15-02-02-D	14	4 G 2.5	0.63	16.0	164.0	244	258.0	384
	16	2 STP 1.5						
CF270-UL-40-15-02-02-D	12	4 G 4.0	0.67	17.0	207.6	309	320.5	477
	16	2 STP 1.5						
CF270-UL-60-15-02-02-D	10	4 G 6.0	0.75	19.0	270.8	403	403.2	600
	16	2 STP 1.5						
CF270-UL-100-15-02-02-D	8	4 G 10.0	0.89	22.5	387.1	576	596.0	887
	16	2 STP 1.5						
CF270-UL-160-15-02-02-D	6	4 G 16.0	1.02	26.0	547.7	815	810.4	1206
	16	2 STP 1.5						
CF270-UL-250-15-02-02-D ¹⁾	4	4 G 25.0	1.12	28.5	821.8	1223	1132.9	1686
	16	2 STP 1.5						
without control pair								
CF270-UL-07-04-D	18	4 G 0.75	0.31	8.0	30.9	46	63.8	95
CF270-UL-15-04-D	16	4 G 1.5	0.39	10.0	57.8	86	94.1	140
CF270-UL-25-04-D	14	4 G 2.5	0.45	11.5	98.1	146	141.1	210
CF270-UL-40-04-D	12	4 G 4.0	0.51	13.0	131.0	195	198.9	296
CF270-UL-60-04-D	10	4 G 6.0	0.59	15.0	194.2	289	279.5	416
CF270-UL-100-04-D	8	4 G 10.0	0.71	18.0	301.7	449	432.7	644
CF270-UL-160-04-D	6	4 G 16.0	0.87	22.0	469.0	698	670.0	997
CF270-UL-250-04-D	4	4 G 25.0	1.00	25.5	702.2	1045	930.0	1384
CF270-UL-350-04-D	2	4 G 35.0	1.30	33.0	1021.4	1520	1418.5	2111

¹⁾ Phase-out model

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	low	1	2	3	4	5	6	7	highest
Travel distance	unsupported	1	2	3	4	5	6	≥ 1312 ft	
Oil resistance	none	1	2	3	4	highest			
Torsion	none	1	2	3	4	±360°			

CF270-UL-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.	AWG	Number of Conductors and rated cross section	Outer diameter max.		Copper index		Weight	
			[mm ²]	[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft
Spindle cable/Single core								
CF270-UL-60-01-D	10	1 x 6.0	0.30	7.5	48.4	72	63.8	95
CF270-UL-100-01-D	8	1 x 10.0	0.33	8.5	76.6	114	97.4	145
CF270-UL-160-01-D	6	1 x 16.0	0.37	9.5	119.6	178	140.4	209
CF270-UL-250-01-D	4	1 x 25.0	0.43	11.0	180.8	269	204.3	304
CF270-UL-350-01-D	2	1 x 35.0	0.51	13.0	251.3	374	281.6	419
CF270-UL-500-01-D	1	1 x 50.0	0.59	15.0	352.8	525	389.1	579
CF270-UL-700-01-D	2/0	1 x 70.0	0.67	17.0	504.6	751	540.3	804

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

... just one idea for you: Reduce cost with CF210.UL ...



Linear robot with chainflex® servo and measuring system cables, short travel distance

- CFRIP
- UL US LISTED
- RUS
- NFPA
- CEPA
- ETL
- EAC
- TP
- RoHS
- Clean-Room
- DESINA
- CE

Servo cable | PUR | chainflex® CF27-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
- Notch-resistant
- Flame-retardant
- Hydrolysis and microbe-resistant
- PVC and halogen-free
- Variable Frequency Drives


Dynamic Information

	Bend radius	E-Chain® linear flexible	min. 7.5 x d min. 6 x d
		fixed	min. 4 x d
	Temperature	E-Chain® linear flexible	-13 °F to +176 °F (-25 °C to +80 °C) -40 °F to +176 °F (-40 °C to +80 °C)
		fixed	-58 °F to +176 °F (-50 °C to +80 °C)
	v max.	unsupported	32.81 ft/s (10 m/s)
		gliding	16.41 ft/s (5 m/s)
	a max.		262.5 ft/s ² (80 m/s ²)
	Travel distance		Unsupported travel distances and for gliding applications up to 328.1 ft (100 m), Class 5

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
	Conductor construction	Power conductors and Signal Pairs cabled with short pitch.
	Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 4 and 5 2 Control pairs: Black with white numbers. Control Pair 1: Printed 5 and 6, Control Pair 2: Printed 7 and 8 Star-Quad: yellow, black, red, white
	Element shield	Extremely bending-resistant braiding made of tinned copper wires. 90% optical coverage
	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, 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: Orange (similar to RAL 2003)
	CFRIP®	Strip 50% faster: a tear strip is molded into the inner jacket Video ► www.igus.com/CFRIP

Electrical Information

	Nominal voltage	1000 V
	Test voltage	4000 V (following DIN EN 50395)

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°			

CF27-D
PUR
7.5 x d

Class 6.5.3.1

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 resistance	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	1000 V, +80C See data sheet for details ► www.igus.com/CF27-D
	NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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 standardization.
	CE	Following 2014/35/EU

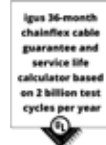
Guaranteed service life (details see page 26-27)

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

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, UV-resistant
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Cleanroom, semiconductor insertion, outdoor cranes, low temperature applications



Servo cable | PUR | chainflex® CF27-D

Strip cables 50 % faster

igus® chainflex® CF27.D

Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
1 Control pair shielded								
CF27-07-05-02-01-D	18	4 G 0.75	0.45	11.5	51.1	76	113.6	169
	20	1 STP x 0.5						
CF27-15-15-02-01-D	16	4 G 1.5	0.51	13.0	97.4	145	164.0	244
	16	1 STP x 1.5						
CF27-25-15-02-01-D	14	4 G 2.5	0.57	14.5	133.7	199	205.6	306
	16	1 STP x 1.5						
CF27-40-15-02-01-D	12	4 G 4.0	0.63	16.0	172.0	256	270.8	403
	16	1 STP x 1.5						
CF27-60-15-02-01-D	10	4 G 6.0	0.69	17.5	230.5	343	339.3	505
	16	1 STP x 1.5						
CF27-100-15-02-01-D	8	4 G 10.0	0.83	21.0	360.2	536	501.3	746
	16	1 STP x 1.5						
CF27-160-15-02-01-D	6	4 G 16.0	0.94	24.0	535.6	797	729.8	1086
	16	1 STP x 1.5						
CF27-250-15-02-01-D	4	4 G 25.0	1.10	28.0	788.2	1173	1026.8	1528
	16	1 STP x 1.5						
CF27-350-15-02-01-D	2	4 G 35.0	1.26	32.0	1087.2	1618	1342.6	1998
	16	1 STP x 1.5						
2 Control pairs shielded								
CF27-07-03-02-02-D	18	4 G 0.75	0.49	12.5	69.2	103	131.7	196
	22	2 STP x 0.34						
CF27-10-07-02-02-D	17	4 G 1.0	0.53	13.5	99.5	148	164.6	245
	18	2 STP x 0.75						
CF27-15-07-02-02-D	16	4 G 1.5	0.57	14.5	112.2	167	192.9	287
	18	2 STP x 0.75						
CF27-25-15-02-02-D	14	4 G 2.5	0.63	16.0	170.7	254	257.4	383
	16	2 STP x 1.5						
CF27-40-15-02-02-D	12	4 G 4.0	0.69	17.5	207.0	308	308.4	459
	16	2 STP x 1.5						
CF27-60-15-02-02-D	10	4 G 6.0	0.77	19.5	276.9	412	405.9	604
	16	2 STP x 1.5						
CF27-100-15-02-02-D	8	4 G 10.0	0.89	22.5	397.8	592	565.8	842
	16	2 STP x 1.5						
CF27-160-15-02-02-D	6	4 G 16.0	1.02	26.0	590.0	878	821.8	1223
	16	2 STP x 1.5						
CF27-250-15-02-02-D	4	4 G 25.0	1.22	31.0	840.0	1250	1141.7	1699
	16	2 STP x 1.5						

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

Configurators ► www.igus.com/CF27-D

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°			

CF27-D
PUR
7.5 x d



Part No.	AWG	Number of Conductors and rated cross section [mm ²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
1 Star-quad shielded								
CF27-15-05-04-D	16	4 G 1.5	0.49	12.5	88.0	131	155.2	231
	20	4 x 0.5 SHLD						
CF27-25-05-04-D	14	4 G 2.5	0.55	14.0	118.3	176	196.2	292
	20	4 x 0.5 SHLD						
CF27-40-05-04-D	12	4 G 4.0	0.63	16.0	164.0	244	252.7	376
	20	4 x 0.5 SHLD						
without control pair								
CF27-07-04-D	18	4 G 0.75	0.37	9.5	37.0	55	77.3	115
CF27-15-04-D	16	4 G 1.5	0.43	11.0	60.5	90	110.9	165
CF27-25-04-D	14	4 G 2.5	0.49	12.5	90.7	135	155.2	231
CF27-500-04-D	1	4 G 50.0	1.46	37.0	1507.9	2244	1892.9	2817

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

... just one idea for you: Reduce cost with CF21.UL ...



Modular design, easy to retrofit:
igus® E4 E-Chain® and chainflex® cables.



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

Servo cable | TPE | chainflex® CF29-D






36 10,000,000
Cycles guaranteed

6.8 x d
Bend radius E-Chain®









1312.4 ft
Travel distance E-Chain®

- For maximum mechanical load requirements
- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- PVC and halogen-free
- UV-resistant
- Hydrolysis and microbe-resistant
- Variable Frequency Drives


Dynamic Information

 Bend radius	E-Chain® linear flexible	min. 6.8 x d min. 5 x d
	fixed	min. 4 x d
 Temperature	E-Chain® linear flexible	-31 °F to +212 °F (-35 °C to +100 °C) -58 °F to +212 °F (-50 °C to +100 °C)
	fixed	-67 °F to +212 °F (-55 °C to +100 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	16.41 ft/s (5 m/s)
 a max.		262.5 ft/s ² (80 m/s ²)
 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, especially low-capacitance XLPE mixture.
 Conductor construction	Power conductors and Signal Pairs cabled with short pitch.
 Color code	Power conductors: Black with white numbers, one conductor green-yellow. 1. U / L1 / C / L+ 2. V / L2 3. W / L3 / D / L- 1 Control pair: Black with white numbers. Control Pair Printed 4 and 5
 Element shield	Extremely bending-resistant braiding made of tinned copper wires. 90% optical coverage
 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: Orange (similar to RAL 2003)

Electrical Information

 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Configurators ► www.igus.com/CF29-D

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












Class 7.6.4.1

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°			

CF29-D
TPE
6.8 x d

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 60811-404), bio-oil-resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
	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
	EAC	Certificate No. RU C-DE.ME77.B.02806 (TR ZU)
	REACH	In accordance with regulation (EC) No. 1907/2006 (REACH)
	Lead-free	Following 2011/65/EC (RoHS-II/RoHS-III)
	Cleanroom	According to ISO Class 1. The outer jacket material of this series complies with CF9.15.07 - tested by IPA according to standard DIN EN ISO 14644-1
	DESINA	According to VDW, DESINA standardization.
	CE	Following 2014/35/EU

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



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]
-31/-13	8.5	10	9.5	11	10.5	12
-13/+194	6.8	7.5	7.5	8.5	8.5	9.5
+194/+212	8.5	10	9.5	11	10.5	12

* Higher number of cycles? Online lifetime calculation ► www.chainflex.com/chainflexlife

Typical application areas

- For maximum mechanical load requirements, Class 7
- 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
- Indoor and outdoor applications, UV-resistant, Class 4
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Cleanroom, semiconductor insertion, outdoor cranes, low temperature applications

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]
1 Control pair shielded								
CF29-15-15-02-01-D	16	4 G 1.5	0.51	13.0	97.4	145	155.2	231
	16	1 STP 1.5						
CF29-25-15-02-01-D	14	4 G 2.5	0.55	14.0	133.7	199	195.5	291
	16	1 STP 1.5						
CF29-40-15-02-01-D	12	4 G 4.0	0.61	15.5	172.0	256	246.6	367
	16	1 STP 1.5						

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

Hybrid servo cable | PVC | chainflex® CF220-UL-H




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
- Variable Frequency Drives


Dynamic Information

 Bend radius	E-Chain® linear flexible	min. 10 x d min. 8 x d
	fixed	min. 5 x d
 Temperature	E-Chain® linear flexible	+41 °F to +158 °F (+5 °C to +70 °C) +23 °F to +158 °F (-5 °C to +70 °C)
	fixed	+5 °F to +158 °F (-15 °C to +70 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	6.56 ft/s (2 m/s)
 a max.		164.1 ft/s ² (50 m/s ²)
 Travel distance		Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2

Cable structure

 Conductor	Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).
 Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
 Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
 Color code	According to Servo-Hybrid specification. Latest data sheet ► www.chainflex.com/CF220ULH
 Element shield	Bending-resistant tinned copper braid. 80% optical coverag
 Intermediate layer	polyester tape over external layer
 Overall shield	Bending-resistant tinned copper braid. 80 % optical coverage
 Outer jacket	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: Orange (similar to RAL 2003) Variants ► See P/N Table

Electrical Information

 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Example image

Configurators ► www.igus.com/CF220-UL-H















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 4.2.2.1

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
	Flame resistance	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)
	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	1000 V, +80C See data sheet for details ► www.igus.com/CF220-UL-H
	NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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 2. The outer jacket material of this series complies with CF5.10.07 - tested by IPA according to standard DIN EN ISO 14644-1
	CE	Following 2014/35/EU
	Info	As hybrid cables are always designed for specific drive systems, additional electrotechnical data may need to be considered. You will find more information in the latest datasheet for the cable series.

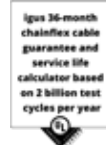
Guaranteed service life (details see page 26-27)

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

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
- Wood/stone processing, Packaging industry, supply systems, Handling, adjusting equipment



Hybrid servo cable | PVC | chainflex® CF220-UL-H

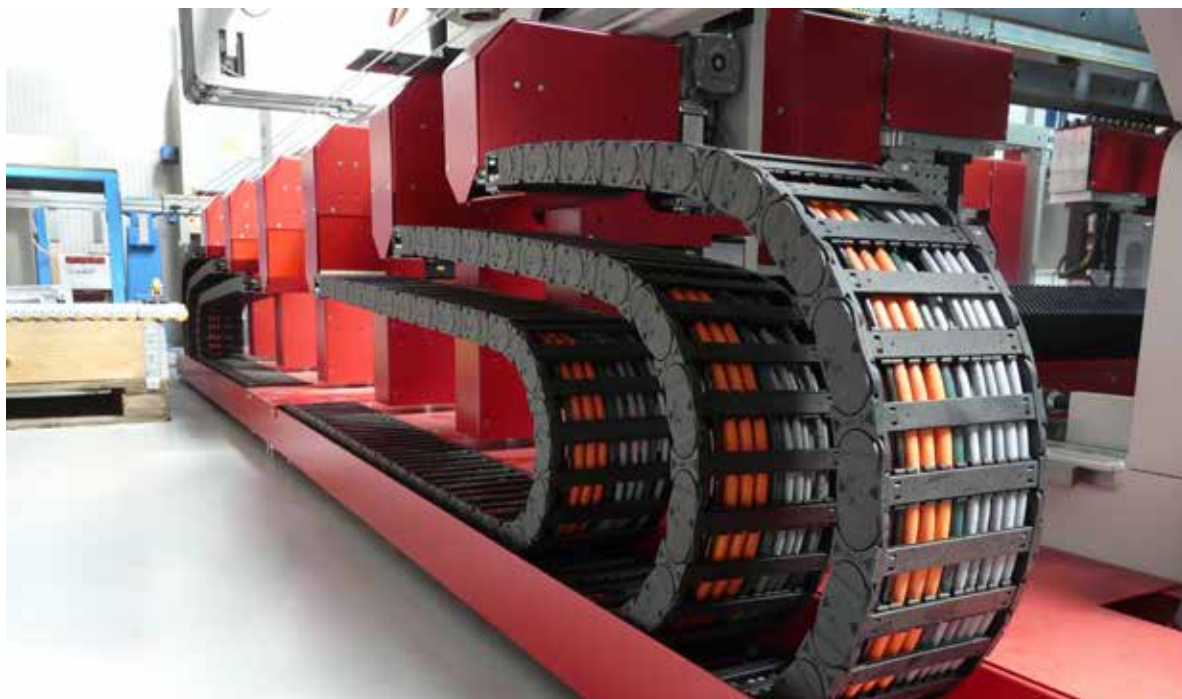
igus® chainflex® CF220.UL.H



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]
CF220-UL-H100-07-04	18	4 G 0.75	0.47	12.0	73.9	110	143.8	214
	22	1 STP x 0.34						
	22	1 STP x 22AWG						
CF220-UL-H101-10-04	17	4 G 1.0	0.47	12.0	89.4	133	135.7	202
	18	1 STP x 0.75						
	22	1 STP x 22AWG						
CF220-UL-H101-15-04	16	4 G 1.5	0.51	13.0	104.8	156	154.6	230
	18	1 STP x 0.75						
	22	1 STP x 22AWG						
CF220-UL-H102-25-04	14	4 G 2.5	0.57	14.5	136.4	203	233.8	348
	17	1 STP x 1.0						
	22	1 STP x 22AWG						
CF220-UL-H102-40-04	12	4 G 4.0	0.65	16.5	188.8	281	291.6	434
	17	1 STP x 1.0						
	22	1 STP x 22AWG						

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



Drilling machine for wooden plates equipped with latest Hybrid Cable Technology with Hiperface DSL

Configurators ► www.igus.com/CF220-UL-H

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°			

CF220-UL-H
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.	Hybrid technology	Manufacturer
CF220-UL-H100-07-04	Sick (Hiperface DSL)	please see selection table on page 267
CF220-UL-H101-10-04	Sick (Hiperface DSL)	please see selection table on page 267
CF220-UL-H101-15-04	Sick (Hiperface DSL)	please see selection table on page 267
CF220-UL-H102-25-04	Sick (Hiperface DSL)	please see selection table on page 267
CF220-UL-H102-40-04	Sick (Hiperface DSL)	please see selection table on page 267



Order example: **CF220-UL-H101-10-04** – To your desired length
CF220-UL-H chainflex® series -101-10-04 Code hybrid bus element



Online order ► www.chainflex.com/CF220-UL-H



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



Guarantee
igus chainflex
36
up to 36 months guarantee

chainflex
CONTINUOUS FLEX
CABLE TEST PROCESS
VERIFICATION
UL
igus® 36-month chainflex® cable guarantee
and service life calculator based upon
2 billion test cycles per year.
B 129699



Hybrid servo cable | PUR | chainflex® CF280-UL-H






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
- Variable Frequency Drives

Dynamic Information

 Bend radius	E-Chain® linear flexible	min. 10 x d
	flexible	min. 8 x d
	fixed	min. 5 x d
 Temperature	E-Chain® linear flexible	-13 °F to +176 °F (-25 °C to +80 °C)
	flexible	-40 °F to +176 °F (-40 °C to +80 °C)
	fixed	-58 °F to +176 °F (-50 °C to +80 °C)
 v max.	unsupported	32.81 ft/s (10 m/s)
	gliding	6.56 ft/s (2 m/s)
 a max.		164.1 ft/s ² (50 m/s ²)
 Travel distance		Unsupported travel distances and for gliding applications up to 32.8 ft (10 m), Class 2

Cable structure

 Conductor	Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).
 Conductor insulation	Mechanically high-quality, especially low-capacitance XLPE mixture.
 Conductor construction	Power cores and control pair elements wound with a short pitch length around a high tensile strength centre element.
 Color code	According to Servo-Hybrid specification. Latest data sheet ► www.chainflex.com/CF280ULH
 Element shield	Bending-resistant tinned copper braid. 80% optical coverage
 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: Orange (similar to RAL 2003) Variants ► See P/N Table

Electrical Information

 Nominal voltage	1000 V
 Test voltage	4000 V (following DIN EN 50395)

Configurators ► www.igus.com/CF280-UL-H














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 4.2.3.1

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 resistance	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	1000 V, +80C See data sheet for details ► www.igus.com/CF280-UL-H
	NFPA 79	Complies to Electrical Standard for Industrial Machinery NFPA 79 Section 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.UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
	DESINA	According to VDW, DESINA standardization.
	CE	Following 2014/35/EU
	Info	As hybrid cables are always designed for specific drive systems, additional electrotechnical data may need to be considered. You will find more information in the latest datasheet for the cable series.

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

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



Hybrid servo cable | PUR | chainflex® CF280-UL-H

igus® chainflex® CF280.UL.H



Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
Sick (Hiperface DSL)								
CF280-UL-H100-07-04-D	18	4 G 0.75	0.47	12.0	73.9	110	134.4	200
	22	2 x 0.34 SHLD						
	22	1 STP x 22 AWG						
CF280-UL-H101-10-04-D	17	4 G 1.0	0.47	12.0	89.4	133	137.8	205
	18	2 x 0.75 SHLD						
	22	1 STP x 22 AWG						
CF280-UL-H101-15-04-D	16	4 G 1.5	0.51	13.0	104.8	156	144.5	215
	18	2 x 0.75 SHLD						
	22	1 STP x 22 AWG						
CF280-UL-H102-25-04-D	14	4 G 2.5	0.57	14.5	136.4	203	217.7	324
	17	2 x 1.0 SHLD						
	22	1 STP x 22 AWG						
CF280-UL-H102-40-04-D	12	4 G 4.0	0.65	16.5	188.8	281	289.6	431
	17	2 x 1.0 SHLD						
	22	1 STP x 22 AWG						
CF280-UL-H102-60-04-D	10	4 G 6.0	0.69	17.5	244.6	364	335.3	499
	17	2 x 1.0 SHLD						
	22	1 STP x 22 AWG						
SEW								
CF280-UL-H200-15-07-D ¹⁵⁾	16	7 x 1.5	0.63	16.0	135.7	202	237.9	354
	18	2 x 0.75 SHLD						
CF280-UL-H200-25-07-D ¹⁵⁾	14	7 x 2.5	0.79	20.0	194.2	289	350.1	521
	18	2 x 0.75 SHLD						
CF280-UL-H201-15-04-D ¹⁵⁾	16	4 G 1.5	0.55	14.0	93.4	139	182.8	272
	18	2 x 0.75 SHLD						
	18	3 x 0.75 SHLD						
CF280-UL-H201-25-04-D ¹⁵⁾	14	4 G 2.5	0.57	14.5	123.0	183	213.7	318
	18	2 x 0.75 SHLD						
	18	3 x 0.75 SHLD						
CF280-UL-H203-15-04-D	16	4 G 1.5	0.47	12.0	106.2	158	170.0	253
	17	3 x 1.0 SHLD						
CF280-UL-H203-25-04-D	14	4 G 2.5	0.53	13.5	132.4	197	186.1	277
	17	3 x 1.0 SHLD						
CF280-UL-H204-15-04-D	16	4 G 1.5	0.59	15.0	134.4	200	228.5	340
	18	2 x 0.75 SHLD						
	17	3 x 1.0 SHLD						
CF280-UL-H206-40-04-D	12	4 G 4.0	0.69	17.5	227.8	339	323.9	482
	18	2 x 0.75 SHLD						
	16	3 x 1.5 SHLD						
CF280-UL-H206-60-04-D	10	4 G 6.0	0.75	19.0	289.6	431	435.4	648
	18	2 x 0.75 SHLD						
	16	3 x 1.5 SHLD						

¹⁵⁾ Color outer jacket: Black (similar to RAL 9005)
Note: The given outer diameters are maximum values.
G = with green-yellow earth core **x** = without earth core

Configurators ► www.igus.com/CF280-UL-H

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°			

CF280-UL-H
 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.	Hybrid technology	Manufacturer
CF280-UL-H100-07-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H101-10-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H101-15-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H102-25-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H102-40-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H102-60-04-D	Sick (Hiperface DSL)	please see selection table on page 267
CF280-UL-H200-15-07-D ¹⁵⁾	SEW Kabeltyp A/1,5	SEW
CF280-UL-H200-25-07-D ¹⁵⁾	SEW Kabeltyp A/2,5	SEW
CF280-UL-H201-15-04-D ¹⁵⁾	SEW Kabeltyp B/1,5	SEW
CF280-UL-H201-25-04-D ¹⁵⁾	SEW Kabeltyp B/2,5	SEW
CF280-UL-H203-15-04-D	SEW Kabeltyp E/1,5	SEW
CF280-UL-H203-25-04-D	SEW Kabeltyp E/2,5	SEW
CF280-UL-H204-15-04-D	SEW Kabeltyp D/1,5	SEW
CF280-UL-H206-40-04-D	SEW Kabeltyp D/4,0	SEW
CF280-UL-H206-60-04-D	SEW Kabeltyp D/6,0	SEW

CFRIP

UL US LISTED

RUUS

NFPA

CEPA

UL LISTED

EAC

TP

RoHS

Clean-Room

DESINA

CE

Other types ► page 298



Hybrid servo cable | PUR | chainflex® CF280-UL-H

igus® chainflex® CF280.UL.H



Example image

Part No.	AWG	Number of Conductors and rated cross section [mm²]	Outer diameter max.		Copper index		Weight	
			[in.]	[mm]	lbs/mft	[kg/km]	lbs/mft	[kg/km]
SINAMICS S210								
CF280-UL-H300-03-04-D	22	4 G 0.34	0.39	10.0	49.7	74	93.4	139
	22	2 x 0.34 SHLD						
	26	4 x 26 AWG SHLD						
CF280-UL-H301-07-04-D	18	4 G 0.75	0.43	11.0	67.2	100	113.6	169
	20	2 x 0.5 SHLD						
	26	4 x 26 AWG SHLD						
IndraDrive								
CF280-UL-H400-25-05-D	14	5 x 2.5	0.67	17.0	161.3	240	261.4	389
	22	5 x 0.35						
	22	4 x 0.35 SHLD						
Heidenhain								
CF280-UL-H501-15-04-D	16	4 G 1.5	0.59	15.0	121.6	181	188.8	281
	18	2 x 0.75 SHLD						
	26	(2x2x0,14)C						
	24	2 x 0.25 SHLD						
CF280-UL-H502-40-04-D	12	4 G 4.0	0.65	16.5	198.2	295	273.5	407
	17	(2x1,0)C						
	26	(2x2x0,14)C						
	24	2 x 0.25 SHLD						
isH Servo								
CF280-UL-H601-25-05 ¹³⁾	14	5 G 2.5	0.57	14.5	106.2	158	194.2	289
	24	(4G 24 AWG)C						
	24	2 x 0.25 SHLD						

¹³⁾ Color outer jacket: Yellow-green (similar to RAL 6018)

Note: The mentioned outer diameters are maximum values.

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

Other types ► [page 296](#)

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°			

CF280-UL-H
 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.	Hybrid technology	Manufacturer
CF280-UL-H300-03-04-D	SINAMICS S210	Siemens
CF280-UL-H301-07-04-D	SINAMICS S210	Siemens
CF280-UL-H400-25-05-D	IndraDrive	Bosch Rexroth
CF280-UL-H501-15-04-D	Heidenhain	B&R
CF280-UL-H502-40-04-D	Heidenhain	B&R
CF280-UL-H601-25-05 ¹³⁾	isH Servo	ELAU/Schneider Electric

-
-
-
-
-
-
-
-
-
-
-
-

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.