

Servo cables

Hybrid cables



chainflex [®] cable	Jacket	Shield	Bend radius e-chain [®] [factor x d]	Temperature e-chain [®] from/to [°C]	Approvals and standards	Oil-resistant	Torsion-resistant v max. [m/s] unsupported	v max. [m/s] gliding a max.	Page
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Servo cables

Information and selection chart for hybrid servo cables 270

CF887	PVC	✓	15	+5/+70		✓	3	20	272
CF210.UL	PVC	✓	10	+5/+70		✓	10	2	50 274 New
CF21.UL	PVC	✓	7.5	+5/+70		✓	10	5	80 278
CF897	iguPUR	✓	15	-20/+80		✓	3	20	282
CF270.UL.D	PUR	✓	10	-25/+80		✓	10	2	50 284 New
CF27.D	PUR	✓	7.5	-25/+80		✓	10	5	80 288
CF29.D	TPE	✓	6.8	-35/+100		✓	10	5	80 292 New

Hybrid cables

CF220.UL.H	PVC	✓	10	+5/+70		✓	10	2	50 294 New
CF280.UL.H	PUR	✓	10	-25/+80		✓	10	2	50 298 New

Twistable hybrid cable (twistable cables chapter ► Page 370)

CFROBOT9	PUR	✓	10	-25/+80		✓ ✓			406
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36-month chainflex[®] guarantee
Guaranteed service life for predictable reliability
► Selection table page 268

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.eu/chainflexlife

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

UL-verified chainflex[®] guarantee ... www.igus.eu/ul-verified

chainflex® guarantee

▶▶

Guaranteed service life ⁽¹⁾

chainflex® cables		Temperature, from/to [°C]	v max. [m/s]		a max. [m/s²]	Travel distance [m]	Minimum bend radius [factor x d]			Minimum bend radius [factor x d]			Minimum bend radius [factor x d]		Page
			unsupported	gliding			radius [factor x d]		radius [factor x d]		radius [factor x d]				
							< 10m	≥ 10m	< 10m	≥ 10m	< 10m	≥ 10m			
Servo cables						5 million (1 million) double strokes *		7.5 million (3 million) double strokes *		10 million (5 million) double strokes *					
	CF887	+5 / +15 +15 / +60 +60 / +70	3	-	20	≤ 10	17.5 15 17.5		18.5 16 18.5		19.5 17 19.5		272		
	CF210.UL New!	+5 / +15 +15 / +60 +60 / +70	10	2	50	≤ 10	12.5 10 12.5		13.5 11 13.5		14.5 12 14.5		274		
	CF21.UL	+5 / +15 +15 / +60 +60 / +70	10	5	80	≤ 100	10 7.5 10		11 8.5 11		12 9.5 12		278		
	CF897	-20 / -10 -10 / +70 +70 / +80	3	-	20	≤ 10	17.5 15 17.5		18.5 16 18.5		19.5 17 19.5		282		
	CF270.UL.D New!	-25 / -15 -15 / +70 +70 / +80	10	2	50	≤ 10	12.5 10 12.5		13.5 11 13.5		14.5 12 14.5		284		
	CF27.D	-25 / -15 -15 / +70 +70 / +80	10	5	80	≤ 100	10 7.5 10		11 8.5 11		12 9.5 12		288		
						5 million		7.5 million		12.5 million					
	CF29.D New!	-35 / -25 -25 / +90 +90 / +100	10	5	80	> 400	8.5 6.8 7.5	10 7.5 10	9.5 7.5 9.5	11 8.5 11	10.5 8.5 10.5	12 9.5 12	292		
Hybrid cables															
	CF220.UL.H New!	+5 / +15 +15 / +60 +60 / +70	10	2	50	≤ 10	12.5 10 12.5		13.5 11 13.5		14.5 12 14.5		294		
	CF280.UL.H New!	-25 / -15 -15 / +70 +70 / +80	10	2	50	≤ 10	12.5 10 12.5		13.5 11 13.5		14.5 12 14.5		298		

⁽¹⁾ Guaranteed service life for these series (details ▶ see page 28-29)

* Higher number of double strokes? Calculate service life online: ▶ www.igus.eu/chainflexlife
Figures in brackets refer to series CF887 and CF897



Guarantee
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36

up to 36 months guarantee

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





In chainflex® series **CF220.UL.H** and **CF280.UL.H**, you will see system cables for intelligent drive concepts for many well known system manufacturers.

To save installation space in e-chain systems® some manufacturers combine the servo cable for power with the measuring system cable for position data 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 combining these two cables into a hybrid cable, it is necessary to guarantee the data transmission properties and the EMC behavior of the cable for many millions of movement cycles.

High optical coverage shielding designs are used in igus® chainflex® servo hybrid cables because of the close proximity of the power cores carrying high interference square-wave signals to the bus cores.

A secure transmission of bus signals at maximum cable length and at maximum speed makes high demands on the insulating materials of the bus or data cores.

In the 3,800m² large igus® laboratory, electrical parameters such as capacitance, impedance, attenuation and crosstalk are measured over the entire test period of several million double strokes and monitored for compliance with the 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 double strokes for the servo hybrid cables and 5 million for chainflex® M.

In the chart on the opposite page you will find an overview of all currently available hybrid cables grouped by system manufacturer.

The companies listed are drive systems manufacturers or technology providers whose rotation sensors are commonly available.



Two become one: hybrid servo cables combine servo and measuring system cables.

Selection table hybrid servo cables		
Hybrid technology/ Manufacturer	CF220.UL.H PVC 10 x d Page 294	CF280.UL.H PUR 10 x d Page 298
Sick „Hiperface DSL“		
ABB	CF220.UL.H100-.H102	CF280.UL.H100-.H102
AMK		
B&R		
Baumüller		
BCB		
Beckhoff		
BMP		
CEDS		
Fertig		
Fine		
Han´s		
Harmonic Drive AG		
Heidrive		
Infranor		
IRT		
Jetter		
KEBA		
Kinavo		
Kollmorgen		
Lafert		
LTI DRIVES		
Mavilor		
Maxsine		
metronix		
NUM		
Parker		
PowerMotor		
ROBOX		
Selema		
Siboni		
Sigmatex		
STEP		
TG-Drives		
WEG		
SEW cable type A, B, C, D, E		
SEW	CF220.UL.H203	CF280.UL.H200-.H207
SINAMICS S210		
Siemens	CF220.UL.H300-.H301	CF280.UL.H300-.H304
IndraDrive		
Bosch-Rexroth	-	CF280.UL.H400
Heidenhain		
B&R	CF220.UL.H501	CF280.UL.H501-.H502
isH Servo		
ELAU/Schneider Electric	-	CF280.UL.H601

Servo cable | PVC | chainflex® CF887



36 5 million
Double strokes guaranteed



15 x d
Bend radius, e-chain®



10m
Travel distance, e-chain®

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

Dynamic information

	Bend radius	e-chain® linear	minimum 15 x d
		flexible	minimum 12 x d
		fixed	minimum 8 x d
	Temperature	e-chain® linear	+5°C up to +70°C
		flexible	-5°C up to +70°C (following DIN EN 60811-504)
		fixed	-15°C up to +70°C (following DIN EN 50305)
	v max.	unsupported	3m/s
	a max.		20m/s²
	Travel distance		Unsupported travels up to 10m, Class 1

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Core insulation	Mechanically high-quality, especially low-capacitance TPE mixture.
	Core structure	Power cores and control pair elements wound together in an optimised pitch length.
	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: 5 2. Control core: 6 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	Foil taping of optimised, bending-resistant foil shield.
	Overall shield	Braiding made of tinned copper wires. Coverage approx. 60% optical
	Outer jacket	Low-adhesion PVC mixture, adapted to suit the requirements in e-chains®. Colour: Pastel orange (similar to RAL 2003)

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

EPLAN download, configurators ► www.igus.eu/CF887

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges

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Class 3.1.1.1

Properties and approvals

	Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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	See data sheet for details ► www.igus.eu/CF887
	NFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00302/19
	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
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

Double strokes*	1 million	3 million	5 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
+5/+15	17.5	18.5	19.5
+15/+60	15	16	17
+60/+70	17.5	18.5	19.5

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

- For flexing applications, Class 3
- Especially for unsupported travels, Class 1
- Without influence of oil, Class 1
- No torsion, Class 1
- Preferably indoor applications
- Wood/stone processing, packaging industry, feeding, handling, adjusting devices

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				
CF887.07.05.02.01	(4G0.75+(2x0.5)C)C	10.0	69	119
CF887.15.15.02.01	(4G1.5+(2x1.5)C)C	12.5	124	200
CF887.25.15.02.01	(4G2.5+(2x1.5)C)C	13.5	182	254
CF887.40.15.02.01	(4G4.0+(2x1.5)C)C	14.5	236	340
2 control pairs shielded				
CF887.10.07.02.02	(4G1.0+2x(2x0.75)C)C	11.5	110	184
CF887.15.15.02.02	(4G1.5+2x(2x1.5)C)C	13.5	164	253
CF887.25.15.02.02	(4G2.5+2x(2x1.5)C)C	14.5	217	325

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

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

CF887
PVC
15 x d

273

Example image

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Servo cable | PVC | chainflex® CF210.UL

36

10 million

Double strokes guaranteed

10 x d

Bend radius, e-chain®

10m

Travel distance, e-chain®

- For medium duty applications
 - PVC outer jacket
 - Shielded
 - Oil-resistant
- Flame-retardant

Dynamic information

	Bend radius	e-chain® linear	minimum 10 x d
		flexible	minimum 8 x d
		fixed	minimum 5 x d
	Temperature	e-chain® linear	+5°C up to +70°C
		flexible	-5°C up to +70°C (following DIN EN 60811-504)
		fixed	-15°C up to +70°C (following DIN EN 50305)
	v max.	unsupported	10m/s
	a max.	gliding	2m/s
	Travel distance	Unsupported travels and up to 10m for gliding applications, Class 2	

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 linear approx. 55%, optical approx. 80%	
	Outer jacket	Low-adhesion, oil-resistant PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1). Colour: Pastel orange (similar to RAL 2003)	

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36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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

275

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

Class 4.2.2.1

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
	Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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	See data sheet for details ► www.igus.eu/CF210.UL
	NFFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00863/20
	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 Following 2014/35/EU
	CE	
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

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]
+5/+15	12.5	13.5	14.5
+15/+60	10	11	12
+60/+70	12.5	13.5	14.5

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

- For medium duty applications, Class 4
- Unsupported travels and up to 10m for gliding applications, Class 2
- Light oil influence, Class 2
- No torsion, Class 1
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Wood/stone processing, packaging industry, feeding, handling, adjusting devices

Guarantee
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up to 36 months guarantee

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chainflex cable
guarantee and
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calculator based
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cycles per year

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

Example image

igus® chainflex® CF210.UL

Example image

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				
CF210.UL.15.15.02.01	(4G1.5+(2x1.5)C)	12.5	154	245
CF210.UL.25.15.02.01	(4G2.5+(2x1.5)C)C	14.0	210	299
CF210.UL.40.15.02.01	(4G4.0+(2x1.5)C)C	15.0	255	383
CF210.UL.60.15.02.01	(4G6.0+(2x1.5)C)C	16.5	343	488
2 control pairs shielded				
CF210.UL.15.07.02.02	(4G1.5+2x(2x0.75)C)C	13.5	161	278
CF210.UL.25.15.02.02	(4G2.5+2x(2x1.5)C)C	16.0	244	381
CF210.UL.40.15.02.02	(4G4.0+2x(2x1.5)C)C	17.0	332	428
CF210.UL.60.15.02.02	(4G6.0+2x(2x1.5)C)C	19.0	403	598
without control pair				
New CF210.UL.05.04	(4G0.5)C	7.0	34	63
CF210.UL.15.04	(4G1.5)C	10.0	86	140
CF210.UL.25.04	(4G2.5)C	11.5	146	209
CF210.UL.40.04	(4G4.0)C	13.0	195	288

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



Order example: **CF210.UL.40.15.02.01** - to your desired length (0.5m steps)
CF210.UL chainflex® series **.40** Code nominal cross section **.15** Code nominal cross section signal pairs
.02 Identification pairs **.01** Number of pairs



Order online ► www.igus.eu/CF210.UL



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



Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

More on this on page 24/25 and online: www.igus.eu/cfcase



chainflex® servo cable in a vertical e-chain®

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



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up to 36 months guarantee

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276 36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges

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

277

Servo cable | PVC | chainflex® CF21.UL

36

10 million

Double strokes guaranteed

7.5 x d

Bend radius, e-chain®

100m

Travel distance, e-chain®

- For heavy duty applications
- PVC outer jacket
- Shielded
- Oil-resistant
- Flame-retardant

Dynamic information

	Bend radius	e-chain® linear	minimum 7.5 x d
		flexible	minimum 6 x d
		fixed	minimum 4 x d
	Temperature	e-chain® linear	+5°C up to +70°C
		flexible	-5°C up to +70°C (following DIN EN 60811-504)
		fixed	-15°C up to +70°C (following DIN EN 50305)
	v max.	unsupported	10m/s
	a max.	gliding	5m/s
	Travel distance	Unsupported travels and up to 100m for gliding applications, Class 5	

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	
	Element shield	Extremely bending-resistant braiding made of tinned copper wires.	
	Inner jacket	PVC 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, oil-resistant PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1). Colour: Moss green (similar to RAL 6005)	
	CFRIP®	Strip cables faster: a tear strip is moulded into the inner jacket Video ► www.igus.eu/CFRIP	

EPLAN download, configurators ► www.igus.eu/CF21.UL

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



EU2022

EU2022



Typical application areas

- For heavy-duty applications, Class 5
- Unsupported travels and up to 100m for gliding applications, Class 5
- Light oil influence, Class 2
- No torsion, Class 1
- Preferably indoor applications, but also outdoor ones at temperatures > 5°C
- Storage and retrieval units, machining units/packages machines, quick handling, indoor

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



279

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

Class 5.5.2.1

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
	Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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	See data sheet for details ► www.igus.eu/CF21.UL
	NFFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00863/20
	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 Following 2014/35/EU
	CE	
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

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]
+5/+15	10	11	12
+15/+60	7.5	8.5	9.5
+60/+70	10	11	12

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Guarantee

igus chainflex

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

CFRIP

UL

UL

nec

NFFPA

CUPA

DNV

EAC

REACH

RoHS

Cleanroom

CE

UKCA

Example image

Servo cable | PVC | chainflex® CF21.UL

Strip cables 50% faster with CFRIP® tear strip

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	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			



Example image

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				
CF21.07.05.02.01.UL	(4G0.75+(2x0.5)C)C	11.0	76	159
CF21.15.15.02.01.UL	(4G1.5+(2x1.5)C)	13.0	145	256
CF21.25.15.02.01.UL	(4G2.5+(2x1.5)C)C	14.5	199	330
CF21.40.15.02.01.UL	(4G4.0+(2x1.5)C)C	16.0	256	406
CF21.60.15.02.01.UL	(4G6.0+(2x1.5)C)C	18.0	343	546
CF21.100.15.02.01.UL	(4G10+(2x1.5)C)C	21.5	536	828
2 control pairs shielded				
CF21.07.03.02.02.UL	(4G0.75+2x(2x0.34)C)C	12.5	103	208
CF21.10.07.02.02.UL	(4G1.0+2x(2x0.75)C)	13.5	148	269
CF21.15.07.02.02.UL	(4G1.5+2x(2x0.75)C)C	14.5	167	309
CF21.25.15.02.02.UL	(4G2.5+2x(2x1.5)C)C	17.0	254	434
CF21.40.15.02.02.UL	(4G4.0+2x(2x1.5)C)C	18.0	308	515
CF21.60.15.02.02.UL	(4G6.0+2x(2x1.5)C)C	21.0	412	695
CF21.100.15.02.02.UL	(4G10+2x(2x1.5)C)C	23.0	592	925
CF21.160.15.02.02.UL	(4G16+2x(2x1.5)C)C	26.5	878	1287

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

Order example: **CF21.40.15.02.01.UL** - to your desired length (0.5m steps)
CF21.UL chainflex® series **.40** Code nominal cross section **.15** Code nominal cross section signal pairs
.02 Identification pairs **.01** Number of pairs

Order online ► www.igus.eu/CF21.UL

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



Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

More on this on page 24/25 and online: www.igus.eu/cfcase



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

Guarantee
igus chainflex
36

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

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



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Servo cable | iguPUR | chainflex® CF897

36

5 million

Double strokes guaranteed

15 x d

Bend radius, e-chain®

10m

Travel distance, e-chain®

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

Dynamic information

	Bend radius	e-chain® linear	minimum 15 x d
		flexible	minimum 12 x d
		fixed	minimum 8 x d
	Temperature	e-chain® linear	-20°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	3m/s
	a max.		20m/s²
	Travel distance		Unsupported travels up to 10m, Class 1

Cable structure

	Conductor	Conductor consisting of bare copper wires (according to DIN EN 60228).
	Core insulation	Mechanically high-quality, especially low-capacitance TPE mixture.
	Core structure	Power cores and control pair elements wound together in an optimised pitch length.
	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: 5 2. Control core: 6 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	Foil taping of optimised, bending-resistant foil shield.
	Overall shield	Braiding made of tinned copper wires. Coverage approx. 60% optical
	Outer jacket	Low-adhesion iguPUR mixture, adapted to suit the requirements in e-chains®. Colour: Pastel orange (similar to RAL 2003)

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

EPLAN download, configurators ► www.igus.eu/CF897

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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Class 3.1.3.1

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
	Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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	See data sheet for details ► www.igus.eu/CF897
	NFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00302/19
	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
	UK CA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

Double strokes*	1 million	3 million	5 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-20/-10	17.5	18.5	19.5
-10/+70	15	16	17
+70/+80	17.5	18.5	19.5

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

- For flexing applications, Class 3
- Especially for unsupported travels, Class 1
- With influence of oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications without direct sun radiation
- Machining units/machine tools, low temperature applications

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				
CF897.15.15.02.01	(4G1.5+(2x1.5)C)	12.5	124	201
CF897.25.15.02.01	(4G2.5+(2x1.5)C)C	13.5	182	248
CF897.40.15.02.01	(4G4.0+(2x1.5)C)C	14.5	236	329
2 control pairs shielded				
CF897.15.15.02.02	(4G1.5+2x(2x1.5)C)C	13.5	164	246

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

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

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	7	≥ 400m
none	1	2	3	4	5	6	7	highest
none	1	2	3	4	5	6	7	±360°



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



Example image

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

36

10 million

Double strokes guaranteed

10 x d

Bend radius, e-chain®

10m

Travel distance, e-chain®

- 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

Dynamic information

	Bend radius	e-chain® linear	minimum 10 x d
		flexible	minimum 8 x d
		fixed	minimum 5 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	10m/s
	a max.	gliding	2m/s
	Travel distance		50m/s²
			Unsupported travels and up to 10m for gliding applications, Class 2

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. Single core: Mechanically high-quality TPE 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 linear approx. 55%, optical approx. 80%
	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)

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

EPLAN download, configurators ► www.igus.eu/CF270.UL.D

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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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-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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 data sheet for details ► www.igus.eu/CF270.UL.D
	NFPA	Following NFPA 79-2018, chapter 12.9
	EAC	Certificate No. RU C-DE.ME77.B.00863/20
	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
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

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

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

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

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	7	≥ 400m
none	1	2	3	4	highest			
none	1	2	3	4	±360°			



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

285

Example image



Example image

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)	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
New CF270.UL.10.07.02.02.D	(4G1.0+2x(2x0.75)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	(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
New CF270.UL.10.06.D	(6G1.0)C	9.5	87	133
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

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



Order example: **CF270.UL.40.15.02.01.D** - to your desired length (0.5m steps)
CF270.UL.D chainflex® series .40 Code nominal cross section .15 Code nominal cross section signal pairs
.02 Identification pairs .01 Number of pairs



Order online ► www.igus.eu/CF270.UL.D



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



Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

More on this on page 24/25 and online: www.igus.eu/cfcase



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

EPLAN download, configurators ► www.igus.eu/CF270.UL.D

286 36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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

287



Servo cable | PUR | chainflex® CF27.D

36

Double strokes guaranteed

7.5 x d

Bend radius, e-chain®

100m

Travel distance, e-chain®

- 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

Dynamic information

	Bend radius	e-chain® linear	minimum 7.5 x d
		flexible	minimum 6 x d
		fixed	minimum 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	10m/s
	a max.	gliding	5m/s
	Travel distance	Unsupported travels and up to 100m for gliding applications, Class 5	

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)	
	CFRIP®	Strip cables faster: a tear strip is moulded into the inner jacket Video ► www.igus.eu/CFRIP	

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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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-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
	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 data sheet for details ► www.igus.eu/CF27.D
	NFPA	Following NFPA 79-2018, chapter 12.9
	DNV	Type Approval Certificate TAE00003XA
	EAC	Certificate No. RU C-DE.ME77.B.00863/20
	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
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

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

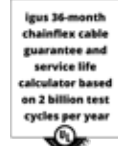
* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

- For heavy-duty applications, Class 6
- Unsupported travels and up to 100m 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

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			



Example image

Servo cable | PUR | chainflex® CF27.D

Strip cables 50% faster with CFRIP® tear strip

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	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			



Example image

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)	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)	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)	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



Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

More on this on page 24/25 and online: www.igus.eu/cfcase



Order example: **CF27.40.15.02.01.D** - to your desired length (0.5m steps)
CF27.D chainflex® series .40 Code nominal cross section .10 Code nominal cross section
.02 Identification pairs .01 Number of pairs

Order online ► www.igus.eu/CF27.D

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

cost down...



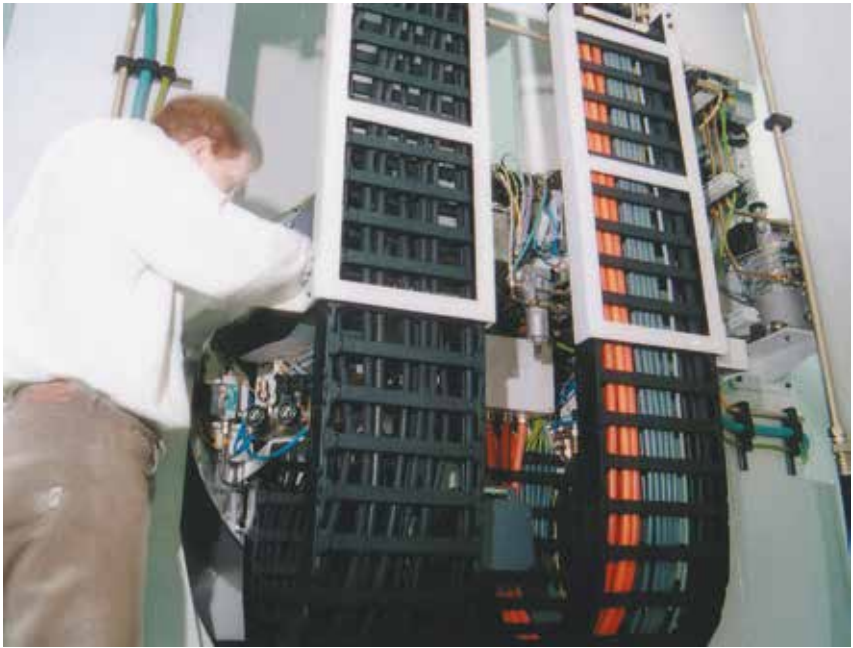
...life up

Reduce cost, improve technology, now!

Do the chainflex® price check ...

www.igus.eu/cf-price-check

... for example: reduce cost with CF21.UL ...



Modular design, easy to retrofit: igus® E4 e-chain® and chainflex® cables.



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Servo cable | TPE | chainflex® CF29.D

**12.5 million**
Double strokes guaranteed**6.8 x d**
Bend radius, e-chain®**400m**
Travel distance, e-chain®

- For heaviest duty applications
- TPE outer jacket
- Shielded
- Oil and bio-oil-resistant
- PVC and halogen-free
- UV-resistant
- Hydrolysis and microbe-resistant

Dynamic information

	Bend radius	e-chain® linear	minimum 6.8 x d
		flexible	minimum 5 x d
		fixed	minimum 4 x d
	Temperature	e-chain® linear	-35°C up to +100°C
		flexible	-50°C up to +100°C (following DIN EN 60811-504)
		fixed	-55°C up to +100°C (following DIN EN 50305)
	v max.	unsupported	10m/s
		gliding	5m/s
	a max.		80m/s²
	Travel distance		Unsupported travels and up to 400m and more for gliding applications, Class 6

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
	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, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. Colour: Pastel orange (similar to RAL 2003)

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL)
	Testing voltage	4,000V (following DIN EN 50395)

EPLAN download, configurators ► www.igus.eu/CF29.D

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges

Now available
with UL approval
& 25% longer
service life

igus

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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	≥ 400m	
none	1	2	3	4	highest			
none	1	2	3	4	±360°			

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"
	UL AWM	See data sheet for details ► www.igus.eu/CF29.D (from production date 01/2022)
	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 standardisation
	CE	Following 2014/35/EU
	UKCA	In accordance with the valid regulations of the United Kingdom (as at 08/2021)

Guaranteed service life (details see page 28-29)

Double strokes*	5 million		7.5 million		12.5 million	
Temperature, from/to [°C]	< 10m	≥ 10m	< 10m	≥ 10m	< 10m	≥ 10m
	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]
-35/-25	8.5	10	9.5	11	10.5	12
-25/+90	6.8	7.5	7.5	8.5	8.5	9.5
+90/+100	8.5	10	9.5	11	10.5	12

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

- For heavy-duty applications, Class 7
- Unsupported travels and up to 400m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils
- No torsion, Class 1
- 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.	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				
New CF29.15.15.02.01.D	(4G1.5+(2x1.5)C)	13.0	145	231
New CF29.25.15.02.01.D	(4G2.5+(2x1.5)C)C	14.0	199	291
New CF29.40.15.02.01.D	(4G4.0+(2x1.5)C)C	15.5	256	367

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core x = without earth coreigus 36-month
chainflex cable
guarantee and
service life
calculator based
on 2 billion test
cycles per year

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



36
10 million
Double strokes guaranteed



10 x d
Bend radius, e-chain®



10m
Travel distance, e-chain®

- For medium duty applications
- PVC outer jacket
- Shielded
- Oil-resistant
- Flame-retardant

New cables suitable
for SEW, Siemens
and B&R

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	+5°C up to +70°C -5°C up to +70°C (following DIN EN 60811-504) -15°C up to +70°C (following DIN EN 50305)
 v max.	unsupported	10m/s
 a max.	gliding	2m/s
 Travel distance	Unsupported travels and up to 10m for gliding applications, Class 2	

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	According to Servo-Hybrid specification. Current data sheet ► www.chainflex.eu/CF220ULH	
 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 linear approx. 55%, optical approx. 80%	
 Outer jacket	Low-adhesion, oil-resistant PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1). Colour: Pastel orange (similar to RAL 2003) Variants ► Product range table	

Electrical information

 Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL) Variants ► Product range table
 Testing voltage	4,000V (following DIN EN 50395)

EPLAN download, configurators ► www.igus.eu/CF220.UL.H

36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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Typical application areas

- For medium duty applications, Class 4
- Unsupported travels and up to 10m for gliding applications, Class 2
- Light oil influence, Class 2
- No torsion, Class 1
- Preferably indoor applications, but also outdoor ones at temperatures > 5°C
- Wood/stone processing, packaging industry, feeding, handling, adjusting devices



295

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	7	≥ 400m
none	1	2	3	4	5	6	7	highest
none	1	2	3	4	5	6	7	±360°

Class 4.2.2.1

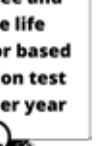
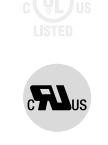
Properties and approvals

 UV resistance	Medium
 Oil resistance	Oil-resistant (following DIN EN 50363-4-1), Class 2
 Flame-retardant	According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame
 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	See data sheet for details ► www.igus.eu/CF220.UL.H
 NFPA	Following NFPA 79-2018, chapter 12.9
 EAC	Certificate No. RU C-DE.ME77.B.00863/20
 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 Following 2014/35/EU
 CE	In accordance with the valid regulations of the United Kingdom (as at 08/2021)
 UKCA	
 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 data sheet for the cable series.

Guaranteed service life (details see page 28-29)

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]
+5/+15	12.5	13.5	14.5
+15/+60	10	11	12
+60/+70	12.5	13.5	14.5

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife



Example image

igus® chainflex® CF220.UL.H

igus® chainflex® CF220.UL.H

Example image

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]	Part No.	Hybrid technology	Hybrid manufacturer
CF220.UL.H100.07.04	(4G0.75+(2x0.34)C+(2xAWG22)C)C	12.0	110	214	CF220.UL.H100.07.04	Sick (Hiperface DSL)	please see selection table on page 271
CF220.UL.H101.10.04	(4G1.0+(2x0.75)C+(2xAWG22)C)C	12.0	133	202	CF220.UL.H101.10.04	Sick (Hiperface DSL)	please see selection table on page 271
CF220.UL.H101.15.04	(4G1.5+(2x0.75)C+(2xAWG22)C)C	13.0	156	230	CF220.UL.H101.15.04	Sick (Hiperface DSL)	please see selection table on page 271
CF220.UL.H102.25.04	(4G2.5+(2x1.0)C+(2xAWG22)C)C	14.5	203	348	CF220.UL.H102.25.04	Sick (Hiperface DSL)	please see selection table on page 271
CF220.UL.H102.40.04 ¹¹⁾	(4G4.0+(2x1.0)C+(2xAWG22)C)C	16.5	281	434	CF220.UL.H102.40.04 ¹¹⁾	Sick (Hiperface DSL)	please see selection table on page 271
New CF220.UL.H203.15.04	(4G1.5+(3x1.0)C)C	11.5	133	219	CF220.UL.H203.15.04	SEW cable type E/1.5	SEW
New CF220.UL.H300.03.04	(4Gx0.34+(2x0.34)C+(4xAWG26)C)C	10.0	78	139	CF220.UL.H300.03.04	SINAMICS S210	Siemens
New CF220.UL.H301.07.04	(4Gx0.75+(2x0.5)C+(4xAWG26)C)C	11.0	100	168	CF220.UL.H301.07.04	SINAMICS S210	Siemens
New CF220.UL.H501.15.04	(4G1.5+(2x0.75)C+(2x2x0.14+2x0.25)C)C	13.5	170	239	CF220.UL.H501.15.04	Heidenhain	B&R

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



Drilling machine for wooden plates equipped with latest hybrid cable technology with Hiperface DSL

EPLAN download, configurators ► www.igus.eu/CF220.UL.H

-  **Order example: CF220.UL.H101.10.04 - to your desired length (0.5m steps)**
CF220.UL.H chainflex® series .101.10.04 Code hybrid bus element
-  Order online ► www.igus.eu/CF220.UL.H
-  Delivery time 24hrs or today.
Delivery time means time until goods are shipped.



Cables available in the chainflex® CASE

Simple savings on delivery, storage space and re-ordering with the chainflex® CASE - ship'n store by igus®.

More on this on page 24/25 and online: www.igus.eu/cfcase





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

36

10 million

Double strokes guaranteed

10 x d

Bend radius, e-chain®

10m

Travel distance, e-chain®

- For medium duty applications
 - PUR outer jacket
 - Shielded
 - Oil-resistant and coolant-resistant
- Flame-retardant
 - PVC and halogen-free
 - Notch-resistant
 - Hydrolysis and microbe-resistant

Dynamic information

	Bend radius	e-chain® linear	minimum 10 x d
		flexible	minimum 8 x d
		fixed	minimum 5 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	10m/s
	a max.	gliding	2m/s
	Travel distance		50m/s²
			Unsupported travels and up to 10m for gliding applications, Class 2

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	According to Servo-Hybrid specification. Current data sheet ► www.chainflex.eu/CF220ULH
	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 linear approx. 55%, optical approx. 80%
	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) Variants ► Product range table

Electrical information

	Nominal voltage	600/1,000V (following DIN VDE 0298-3) 1,000V (following UL) Variants ► Product range table
	Testing voltage	4,000V (following DIN EN 50395)

Properties and approvals

	UV resistance	Medium
	Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3

Class 4.2.3.1

Offshore

MUD-resistant following NEK 606 - status 2009

Flame-retardant

According to IEC 60332-1-2, Cable Flame, VW-1, FT1, FT2 / Horizontal Flame

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"
See data sheet for details ► www.igus.eu/CF280.UL.H

UL/CSA AWM

NFPA

Following NFPA 79-2018, chapter 12.9

EAC

Certificate No. RU C-DE.ME77.B.00863/20

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
According to VDW, DESINA standardisation

DESINA

CE

Following 2014/35/EU

UKCA

In accordance with the valid regulations of the United Kingdom (as at 08/2021)

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 data sheet for the cable series.

Guaranteed service life (details see page 28-29)

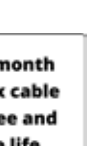
Double strokes*	5 million	7.5 million	10 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-25/-15	12.5	13.5	14.5
-15/+70	10	11	12
+70/+80	12.5	13.5	14.5

* Higher number of double strokes? Service life calculation online ► www.igus.eu/chainflexlife

Typical application areas

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

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



Example image



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299

igus® chainflex® CF280.UL.H

Example image

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]	Part No.	Hybrid technology	Hybrid manufacturer
Sick (Hiperface DSL)							
CF280.UL.H100.07.04.D	(4G0.75+(2x0.34)C+(2xAWG22)C)C	12.0	110	200	CF280.UL.H100.07.04.D	Sick (Hiperface DSL)	please see selection table on page 271
CF280.UL.H101.10.04.D	(4G1.0+(2x0.75)C+(2xAWG22)C)C	12.0	133	205	CF280.UL.H101.10.04.D	Sick (Hiperface DSL)	please see selection table on page 271
CF280.UL.H101.15.04.D	(4G1.5+(2x0.75)C+(2xAWG22)C)C	13.0	156	215	CF280.UL.H101.15.04.D	Sick (Hiperface DSL)	please see selection table on page 271
CF280.UL.H102.25.04.D	(4G2.5+(2x1.0)C+(2xAWG22)C)C	14.5	203	324	CF280.UL.H102.25.04.D	Sick (Hiperface DSL)	please see selection table on page 271
CF280.UL.H102.40.04.D ¹¹⁾	(4G4.0+(2x1.0)C+(2xAWG22)C)C	16.5	281	431	CF280.UL.H102.40.04.D ¹¹⁾	Sick (Hiperface DSL)	please see selection table on page 271
CF280.UL.H102.60.04.D	(4G6.0+(2x1.0)C+(2xAWG22)C)C	17.5	364	499	CF280.UL.H102.60.04.D	Sick (Hiperface DSL)	please see selection table on page 271
SEW							
CF280.UL.H200.15.07.D ¹⁵⁾	(7x1.5+(2x0.75)C)C	16.0	202	354	CF280.UL.H200.15.07.D ¹⁵⁾	SEW cable type A/1.5	SEW
CF280.UL.H200.25.07.D ^{11) 15)}	(7x2.5+(2x0.75)C)C	20.0	289	521	CF280.UL.H200.25.07.D ^{11) 15)}	SEW cable type A/2.5	SEW
CF280.UL.H201.15.04.D ¹⁵⁾	4G1.5+(2x0.75)C+(3x0.75)C	14.0	139	272	CF280.UL.H201.15.04.D ¹⁵⁾	SEW cable type B/1.5	SEW
CF280.UL.H201.25.04.D ¹⁵⁾	4G2.5+(2x0.75)C+(3x0.75)C	14.5	183	318	CF280.UL.H201.25.04.D ¹⁵⁾	SEW cable type B/2.5	SEW
CF280.UL.H203.15.04.D	(4G1.5+(3x1.0)C)C	12.0	158	253	CF280.UL.H203.15.04.D	SEW cable type E/1.5	SEW
CF280.UL.H203.25.04.D	(4G2.5+(3x1.0)C)C	13.5	197	277	CF280.UL.H203.25.04.D	SEW cable type E/2.5	SEW
CF280.UL.H204.15.04.D	(4G1.5+(2x0.75)C+(3x1.0)C)C	15.0	200	340	CF280.UL.H204.15.04.D	SEW cable type D/1.5	SEW
CF280.UL.H206.40.04.D	(4G4.0+(2x0.75)C+(3x1.5)C)C	17.5	339	482	CF280.UL.H206.40.04.D	SEW cable type D/4.0	SEW
CF280.UL.H206.60.04.D	(4G6.0+(2x0.75)C+(3x1.5)C)C	19.0	431	648	CF280.UL.H206.60.04.D	SEW cable type D/6.0	SEW
New CF280.UL.H207.15.04.D	(4G1.5+2x(2x1.0)C+HF50-0.9/2.95)C	15.5	191	303	CF280.UL.H207.15.04.D	MOVILINK DDI	SEW
New CF280.UL.H207.25.04.D	(4G2.5+2x(2x1.0)C+HF50-0.9/2.95)C	16.5	232	351	CF280.UL.H207.25.04.D	MOVILINK DDI	SEW

¹¹⁾ Phase-out model
¹⁵⁾ Colour outer jacket: Jet black (RAL 9005)

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

Further cable types ► Page 302

EPLAN download, configurators ► www.igus.eu/CF280.UL.H

300 36-month guarantee ... more than 1,350 cable types from stock ... no cutting charges



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

301



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



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



igus® chainflex® CF280.UL.H

Example image

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]	Part No.	Hybrid technology	Hybrid manufacturer
SINAMICS S210							
CF280.UL.H300.03.04.D	(4G0.34+(2x0.34)C +(4xAWG26)C)C	10.0	74	139	CF280.UL.H300.03.04.D	SINAMICS S210	Siemens
CF280.UL.H301.07.04.D	(4G0.75+(2x0.5)C +(4xAWG26)C)C	11.0	100	169	CF280.UL.H301.07.04.D	SINAMICS S210	Siemens
New CF280.UL.H304.15.04.D	(4G1.5+(2x1.5)C +(4xAWG26)C)C	13.0	170	240	CF280.UL.H304.15.04.D	SINAMICS S210	Siemens
New CF280.UL.H304.25.04.D	(4G2.5+(2x1.5)C +(2xAWG26)C)C	14.5	215	289	CF280.UL.H304.25.04.D	SINAMICS S210	Siemens
IndraDrive							
CF280.UL.H400.25.05.D	(5x2.5+(5x0.35) +(4x0.35)C)C	17.0	240	389	CF280.UL.H400.25.05.D	IndraDrive	Bosch Rexroth (IndraDrive)
Heidenhain							
CF280.UL.H501.15.04.D	(4G1.5+(2x0.75)C +(2x2x0.14+2x0.25)C)C	15.0	181	281	CF280.UL.H501.15.04.D	Heidenhain	B&R
CF280.UL.H502.40.04.D	(4G4.0+(2x1.0)C +(2x2x0.14+2x0.25)C)C	16.5	295	407	CF280.UL.H502.40.04.D	Heidenhain	B&R
isH Servo							
CF280.UL.H601.25.05 ^{11) 13)}	5G2.5+(4xAWG24)C +(2x0.25)C	14.5	158	289	CF280.UL.H601.25.05 ^{11) 13)}	isH Servo	ELAU/Schneider Electric (isH Servo)

¹¹⁾ Phase-out model
¹³⁾ Colour outer jacket: Yellow-green (RAL 6018)

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

Further cable types ► Page 300



Cables available in the chainflex® CASE

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More on this on page 24/25 and online: www.igus.eu/cfcase



- Order example: **CF280.UL.H101.10.04** – to your desired length (0.5m steps)
CF280.UL.H chainflex® series **.101.10.04** Code hybrid bus element
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