Servo cables

chainflex® types

Servo cables

Exclusive! chainflex® guarantee – guaranteed lifetime

▶ Selection table page 268

chainflex® cable	Jacket	Shield	Bend radius min., 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. [m/s²]	Page	
Information and selection table Hybrid Servo cables											270	
CF887	PVC	✓	15	+5/ +70				3		20	272	New
CF210.UL	PVC	✓	10	+5/ +70		✓		10	2	50	274	
CF220.UL.H	PVC	✓	10	+5/ +70		✓		10	2	50	278	New
CF21.UL	PVC	✓	7.5	+5/ +70		✓		10	5	80	282	
CF897	iguPUR	✓	15	-20/ +80		✓		3		20	286	New
CF270.UL.D	PUR	✓	10	-25/ +80		✓		10	2	50	288	New
CF280.UL.H	PUR	✓	10	-25/ +80		✓		10	2	50	292	New
CF27.D	PUR	✓	7.5	-25/ +80		✓		10	5	80	296	

chainflex® guarantee ▶▶ Guaranteed lifetime [1]

	chainflex® cable	Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	Bend radius min. [factor x d]	Bend radius min. [factor x d]	Bend radius min. [factor x d]	Page
Servo cables							5 million (1 million) double strokes *	7.5 million (3 million) double strokes *	10 million (5 million) double strokes *	
	CF887 New!	+5 / +15	3		20	≤ 10	17.5	18.5	19.5	272
		+15 / +60					15	16	17	
		+60 / +70					17.5	18.5	19.5	
	CF210.UL	+5 / +15	10	2	50	≤ 10	12.5	13.5	14.5	274
		+15 / +60					10	11	12	
		+60 / +70					12.5	13.5	14.5	
	CF220.UL.H New!	+5 / +15	10	2	50	≤ 10	12.5	13.5	14.5	278
		+15 / +60					10	11	12	
		+60 / +70					12.5	13.5	14.5	
	CF21.UL	+5 / +15	10	5	80	≤ 100	10	11	12	282
		+15 / +60					7.5	8.5	9.5	
		+60 / +70					10	11	12	
	CF897 New!	-20 / -10	3		20	≤ 10	17.5	18.5	19.5	286
		-10 / +70					15	16	17	
		+70 / +80					17.5	18.5	19.5	
	CF270.UL.D New!	-25 / -15	10	2	50	≤ 10	12.5	13.5	14.5	288
		-15 / +70					10	11	12	
		+70 / +80					12.5	13.5	14.5	
	CF280.UL.H New!	-25 / -15	10	2	50	≤ 10	12.5	13.5	14.5	292
		-15 / +70					10	11	12	
		+70 / +80					12.5	13.5	14.5	
	CF27.D	-25 / -15	10	5	80	≤ 100	10	11	12	296
		-15 / +70					7.5	8.5	9.5	
		+70 / +80					10	11	12	

[1] Exclusive! Guaranteed lifetime for this series according to the guarantee conditions ▶ Page 22-25

* Guaranteed lifetime, higher number of double strokes possible.
Figures in brackets refer to chainflex® M cables

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-chainsystem® 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 optimised shield concepts with a very high optical cover 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 cores. 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 double strokes 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 double strokes for the servo hybrid cables and 5 million for chainflex® M.

In the table below 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 technolgy	CF220.UL.H PVC 10 x d UL page 278	CF280.UL.H PUR 10 x d oil-resistant page 292
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
Beckhoff	**Sick „Hiperface DSL“**	CF220.UL.H10x	CF280.UL.H10x
BMP	**Sick „Hiperface DSL“**	CF220.UL.H10x	CF280.UL.H10x
BCB	**Sick „Hiperface DSL“**	CF220.UL.H10x	CF280.UL.H10x
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
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

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

New!

PVC Servo cable | CF887

Image exemplary.

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

Dynamic Information

Bend radius	**e-chain®**	minimum 15 x d
	flexible	minimum 12 x d
	fixed	minimum 8 x d
Temperature	**e-chain®**	+5 °C to +70 °C
	flexible	-5 °C to +70 °C (following DIN EN 60811-504)
	fixed	-15 °C to +70 °C (following DIN EN 50305)
v max.	**unsupported**	3 m/s
a max.		20 m/s²
Travel distance		Unsupported travel distances up to 10 m, 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 stranding	Power cores and control pair elements stranded together in an optimized pitch length.
Core identification	**Power cores:** Cores black with white numerals, one core green-yellow. 1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L- **1 Control pair:** Cores black with white numerals. 1. Control core: 5 2. Control core: 6 **2 Control pairs:** Cores black with white numerals. 1. Control core: 5 2. Control core: 6 3. Control core: 7 4. Control core: 8
Element shield	Foil taping of optimized, bending-resistant foil shield. Cover approx. 100 % visual.
Overall shield	Braiding made of tinned copper wires. Coverage optical approx. 60 %
Outer jacket	Low-adhesion mixture on the basis of PVC, adapted to suit the requirements in e-chains®. Colour: Pastel orange (similar to RAL 2003)

Electrical Information

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

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

Class 3.1.1.1

Requirements	low	1 2 **3** 4 5 6 7 highest
Travel distance	unsupported	**1** 2 3 4 5 6 400 m +
Oil resistance	none	**1** 2 3 4 highest
Torsion	none	**1** 2 3 ±180°

Properties and approvals

Flame retardant	According to IEC 60332-1-2, CEI 20-35, VW-1, FT-1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
UL/CSA	Style 10492 and 2570, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01561
CTP	Certified according to no. C-DE.PB49.B.00450
Lead-free	Following 2011/65/EC (RoHS-II)
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*				1 million	3 million	5 million
Temperature, from/to [°C]	v max. [m/s] unsupported	a max. [m/s²]	Travel distance [m]	*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	3	20	≤ 10	15	16	17
+70 / +70				17.5	18.5	19.5

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For flexing applications
- Without influence of oil
- Preferably indoor applications
- Especially for unsupported travels
- Wood/stone processing, packaging industry, supply systems, handling, adjusting equipment

	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				
	CF887.15.15.02.01	(4G1.5+(2x1.5)C)C	12.5	132	212
	CF887.25.15.02.01	(4G2.5+(2x1.5)C)C	13.5	194	281
	CF887.40.15.02.01	(4G4.0+(2x1.5)C)C	14.5	252	368
	2 Control pairs shielded				
	CF887.10.07.02.02	(4G1.0+2x(2x0.75)C)C	11.5	117	192
New	**CF887.15.15.02.02**	(4G1.5+2x(2x1.5)C)C	13.5	175	269
	CF887.25.15.02.02	(4G2.5+2x(2x1.5)C)C	14.5	231	339

Other types available on request.
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

PVC Servo cable | CF210.UL

Requirements	low	1	2	3	**4**	5	6	7 highest
Travel distance	unsupported	1	**2**	3	4	5	6	400 m +
Oil resistance	none	1	**2**	3	4	highest		
Torsion	none	**1**	2	3	±180°			

Class 4.2.2.1

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

Image exemplary.

Dynamic Information

Bend radius	**e-chain®**	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	**e-chain®**	+5 °C to +70 °C
	flexible	-5 °C to +70 °C (following DIN EN 60811-504)
	fixed	-15 °C to +70 °C (following DIN EN 50305)
v max.	**unsupported**	10 m/s
	gliding	2 m/s
a max.	50 m/s²	
Travel distance	Unsupported travel distances and up to 10 m 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 TPE mixture.
Core stranding	Power cores with control pair elements stranded with elements for high tensile stresses.
Core identification	**Power cores:** Cores black with white numerals, one core green-yellow. 1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L- **1 Control pair:** Cores black with white numerals. 1. Control core: 4 2. Control core: 5 **2 Control pairs:** Cores black with white numerals. 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 external layer
Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55 %, optical approx. 80 %
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). Colour: Pastel orange (similar to RAL 2003)

EPLAN download, configurators ▶ www.igus.eu/CF210UL

Electrical Information

Nominal voltage	600/1000 V (following DIN VDE 0298-3)
Testing 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 retardant	According to IEC 60332-1-2, CEI 20-35, FT1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
UL/CSA	Style 10989 and 2570, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 2. Outer jacket material complies with CF5.10.07, tested by IPA according to standard 14644-1
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*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	2	50	≤ 10	10	11	12
+60 / +70					12.5	13.5	14.5

* higher number of double strokes possible

Typical application areas

- For medium duty applications
- Light oil influence
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Unsupported travel distances and up to 10 m for gliding applications
- Wood/stone processing, packaging industry, supply systems, handling, adjusting equipment

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

PVC Servo cable | CF210.UL

Class 4.2.2.1

Requirements	low	1	2	3	**4**	5	6	7	highest
Travel distance	unsupported	1	**2**	3	4	5	6	400 m +	
Oil resistance	none	1	**2**	3	4	highest			
Torsion	none	**1**	2	3	±180°				

CF210.UL
PVC
10 x d

Image exemplary.

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)C	12.0	164	263
CF210.UL.25.15.02.01	(4G2.5+(2x1.5)C)C	13.5	223	340
CF210.UL.40.15.02.01	(4G4.0+(2x1.5)C)C	15.0	300	448
CF210.UL.60.15.02.01	(4G6.0+(2x1.5)C)C	16.5	401	557
2 Control pairs shielded				
CF210.UL.15.07.02.02	(4G1.5+2x(2x0.75)C)C	13.5	185	309
CF210.UL.25.15.02.02	(4G2.5+2x(2x1.5)C)C	16.0	286	439
CF210.UL.40.15.02.02	(4G4.0+2x(2x1.5)C)C	17.0	363	543
CF210.UL.60.15.02.02	(4G6.0+2x(2x1.5)C)C	18.5	468	674

Note: The mentioned 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.25.15.02.01 – In your desired length (0.5 m steps)
CF210.UL chainflex® series .25 Code nominal cross section .15 Code nominal cross section signal pairs
.02 Identification pairs .01 Number of pairs

Online order ► www.chainflex.eu/CF210UL

Delivery time 24h or today.
Delivery time means time until shipping of goods.

EPLAN download, configurators ► www.igus.eu/CF210UL

New!

PVC Hybrid servo cable | CF220.UL.H

Image exemplary.

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

Dynamic Information

Bend radius	e-chain®	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	e-chain®	+5 °C to +70 °C
	flexible	-5 °C to +70 °C (following DIN EN 60811-504)
	fixed	-15 °C to +70 °C (following DIN EN 50305)
v max.	unsupported	10 m/s
	gliding	2 m/s
a max.	50 m/s²	
Travel distance	Unsupported travel distances and up to 10 m 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 TPE mixture.
Core stranding	Power cores with control pair elements stranded with elements for high tensile stresses.
Core identification	According to Servo Hybrid specifications. Latest datasheet ▶ www.chainflex.eu/CF220ULH
Element shield	Bending-resistant braiding made of tinned copper wires.
Intermediate layer	Foil taping over the external layer
Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55 %, optical approx. 80 %
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). Colour: Pastel orange (similar to RAL 2003)

Electrical Information

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

EPLAN download, configurators ▶ www.igus.eu/CF220ULH

Class 4.2.2.1

Requirements	low	1 2 3 **4** 5 6 7 highest
Travel distance	unsupported	1 **2** 3 4 5 6 400 m +
Oil resistance	none	1 **2** 3 4 highest
Torsion	none	**1** 2 3 ±180°

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, CEI 20-35, FT1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
UL/CSA	Style 10989 and 2570, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 2. Outer jacket material complies with CF5.10.07, tested by IPA according to standard 14644-1
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*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	2	50	≤ 10	10	11	12
+60 / +70					12.5	13.5	14.5

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For medium duty applications
- Light oil influence
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Unsupported travel distances and up to 10 m for gliding applications
- Wood/stone processing, packaging industry, supply systems, handling, adjusting equipment

PVC Hybrid servo cable | CF220.UL.H

New!

Class 4.2.2.1

Requirements	low	1	2	3	**4**	5	6	7	highest
Travel distance	unsupported	1	**2**	3	4	5	6	400 m +	
Oil resistance	none	1	**2**	3	4	highest			
Torsion	none	**1**	2	3	±180°				

CF220.UL.H
PVC
10 x d

Image exemplary.

	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	Manufacturer
	CF220.UL.H100.07.04	(4G0.75+(2x0.34)C +(2xAWG22)C)C	12.0	117	221	**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	12.5	139	257	**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	13.5	159	294	**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	15.0	217	362	**CF220.UL.H102.25.04**	Sick „Hiperface DSL“	please see selection table on page 271
New	**CF220.UL.H200.25.07** [1.8)]	(7G2.5+(2x0.75)C)C	20.0	308	537	**CF220.UL.H200.25.07** [1.8)]	SEW Cable type A/2,5	SEW
New	**CF220.UL.H501.15.04** [1.8)]	(4G1.5+(2x0.75)C +(2x2x0.14+2x0.25)C)C	15.0	193	291	**CF220.UL.H501.15.04** [1.8)]	Heidenhain	B&R
New	**CF220.UL.H502.40.04** [1.8)]	(4G4.0+(2x1.0)C +(2x2x0.14+2x0.25)C)C	17.0	315	425	**CF220.UL.H502.40.04** [1.8)]	Heidenhain	B&R
New	**CF220.UL.H601.25.05** [1.8) 16)]	5G2.5+(4xAWG24)C +(2x0.25)C	14.5	169	306	**CF220.UL.H601.25.05** [1.8) 16)]	isH Servo	ELAU/Schneider Electric

[1.8)] Delivery time: 8 weeks
[16)] Colour outer jacket: Yellow-green (RAL 6018)
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Order example: CF220.UL.H101.10.04 **– In your desired length (0.5 m steps)**
CF220.UL.H **chainflex® series** .101.10.04 **Code Hybridsystem-Typ**

Online order ► www.chainflex.eu/CF220ULH

Delivery time 24h or today.
Delivery time means time until shipping of goods.

EPLAN download, configurators ► www.igus.eu/CF220ULH

PVC Servo cable | CF21.UL

Image exemplary.

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

CFRIP® Strip cables 50 % faster

iF DESIGN AWARD 2016

Dynamic Information

Bend radius	**e-chain®**	minimum 7.5 x d
	flexible	minimum 6 x d
	fixed	minimum 4 x d
Temperature	**e-chain®**	+5 °C to +70 °C
	flexible	-5 °C to +70 °C (following DIN EN 60811-504)
	fixed	-15 °C to +70 °C (following DIN EN 50305)
v max.	**unsupported**	10 m/s
	gliding	5 m/s
a max.	80 m/s²	
Travel distance	Unsupported travel distances and up to 100 m 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 TPE mixture.
Core stranding	Power cores with control pair elements stranded with elements for high tensile stresses.
Core identification	**Power cores:** Cores black with white numerals, one core green-yellow. 1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L- **1 Control pair:** Cores black with white numerals. 1. Control core: 4 2. Control core: 5 **2 Control pairs:** Cores black with white numerals. 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 mixture on the basis of PVC, 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: The tear strip is in the outer jacket Video ▶ www.igus.eu/CFRIP

Class 5.5.2.1

Requirements	low	1 2 3 4 **5** 6 7 highest
Travel distance	unsupported	1 2 3 4 **5** 6 400 m +
Oil resistance	none	1 **2** 3 4 highest
Torsion	none	**1** 2 3 ±180°

Electrical Information

Nominal voltage	600/1000 V (following DIN VDE 0298-3)
Testing 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 retardant	According to IEC 60332-1-2, CEI 20-35, FT1, VW-1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
UL/CSA	Style 10492 and 2570, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 2. Outer jacket material complies with CF5.10.07, tested by IPA according to standard 14644-1
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*R* min. [factor x d]	*R* min. [factor x d]	*R* min. [factor x d]
+5 / +15					10	11	12
+15 / +60	10	5	80	≤ 100	7.5	8.5	9.5
+60 / +70					10	11	12

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For heavy duty applications
- Light oil influence
- Preferably indoor applications, but also outdoor ones at temperatures > 5 °C
- Unsupported travel distances and up to 100 m for gliding applications
- Storage and retrieval units for high-bay warehouses, machining units/packaging machines, quick handling, indoor cranes

Test data ▶ page 56

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

PVC | iguPUR | PUR | TPE

PVC Servo cable | CF21.UL

Class 5.5.2.1

Requirements	low	1 2 3 4 **5** 6 7 highest
Travel distance	unsupported	1 2 3 4 **5** 6 400 m +
Oil resistance	none	1 **2** 3 4 highest
Torsion	none	**1** 2 3 ±180°

CF21.UL
PVC
7.5 x d

Strip cables 50% faster!

Image exemplary.

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	11.5	87	189
CF21.15.15.02.01.UL	(4G1.5+(2x1.5)C)C	13.0	159	281
CF21.25.15.02.01.UL	(4G2.5+(2x1.5)C)C	14.5	217	348
CF21.40.15.02.01.UL	(4G4.0+(2x1.5)C)C	16.0	282	440
CF21.60.15.02.01.UL	(4G6.0+(2x1.5)C)C	18.0	368	581
CF21.100.15.02.01.UL	(4G10.0+(2x1.5)C)C	22.5	586	910
CF21.160.15.02.01.UL [1.6)]	(4G16.0+(2x1.5)C)C	25.0	842	1208
CF21.250.15.02.01.UL [1.6)]	(4G25.0+(2x1.5)C)C	30.0	1282	1802
CF21.350.15.02.01.UL [1.6)]	(4G35.0+(2x1.5)C)C	33.5	1749	2379
2 Control pairs shielded				
CF21.07.03.02.02.UL	(4G0.75+2x(2x0.34)C)C	12.5	116	230
CF21.10.07.02.02.UL	(4G1.0+2x(2x0.75)C)C	13.5	168	293
CF21.15.07.02.02.UL	(4G1.5+2x(2x0.75)C)C	14.5	192	340
CF21.25.15.02.02.UL	(4G2.5+2x(2x1.5)C)C	17.0	285	476
CF21.40.15.02.02.UL	(4G4.0+2x(2x1.5)C)C	18.5	346	560
CF21.60.15.02.02.UL	(4G6.0+2x(2x1.5)C)C	21.5	450	754
CF21.100.15.02.02.UL	(4G10.0+2x(2x1.5)C)C	24.0	654	1016
CF21.160.15.02.02.UL	(4G16.0+2x(2x1.5)C)C	27.5	959	1393
CF21.250.15.02.02.UL	(4G25.0+2x(2x1.5)C)C	31.0	1359	1919
CF21.350.15.02.02.UL	(4G35.0+2x(2x1.5)C)C	34.0	1810	2442

[1.6)] Delivery time: 6 weeks
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Order example: CF21.15.15.02.01.UL – In your desired length (0.5 m steps)
CF21.UL chainflex® series .15 Code nominal cross section .15 Code nominal cross section signal pairs
.02 Identification pairs .01 Number of pairs

Online order ► www.chainflex.eu/CF21UL

Delivery time 24h or today.
Delivery time means time until shipping of goods.

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

EPLAN download, configurators ► www.igus.eu/CF21UL

New!

iguPUR Servo cable | CF897

Image exemplary.

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

Dynamic Information

Bend radius	**e-chain®**	minimum 15 x d
	flexible	minimum 12 x d
	fixed	minimum 8 x d
Temperature	**e-chain®**	-20 °C to +80 °C
	flexible	-40 °C to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C to +80 °C (following DIN EN 50305)
v max.	**unsupported**	3 m/s
a max.	20 m/s²	
Travel distance	Unsupported travel distances up to 10 m, 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 stranding	Power cores and control pair elements stranded together in an optimized pitch length.
Core identification	**Power cores:** Cores black with white numerals, one core green-yellow. 1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L- **1 Control pair:** Cores black with white numerals. 1. Control core: 5 2. Control core: 6 **2 Control pairs:** Cores black with white numerals. 1. Control core: 5 2. Control core: 6 3. Control core: 7 4. Control core: 8
Element shield	Foil taping of optimized, bending-resistant foil shield. Cover approx. 100 % visual.
Overall shield	Braiding made of tinned copper wires. Coverage optical approx. 60 %
Outer jacket	Low-adhesion mixture on the basis of iguPUR, adapted to suit the requirements in e-chains®. Colour: Pastel orange (similar to RAL 2003)

Electrical Information

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

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

Class 3.1.3.1

Requirements	low	1 2 **3** 4 5 6 7 highest
Travel distance	unsupported	**1** 2 3 4 5 6 400 m +
Oil resistance	none	1 2 **3** 4 highest
Torsion	none	**1** 2 3 ±180°

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, CEI 20-35, VW-1, FT-1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
UL/CSA	Style 10492 and 21223, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01561
CTP	Certified according to no. C-DE.PB49.B.00450
Lead-free	Following 2011/65/EC (RoHS-II)
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*				1 million	3 million	5 million
Temperature, from/to [°C]	v max. [m/s] unsupported	a max. [m/s²]	Travel distance [m]	*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	3	20	≤ 10	15	16	17
+70 / +80				17.5	18.5	19.5

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For flexing applications
- With influence of oil
- Indoor and outdoor applications without direct solar radiation
- Especially for unsupported travels
- 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)C	12.5	132	202
	CF897.25.15.02.01	(4G2.5+(2x1.5)C)C	13.5	194	271
	CF897.40.15.02.01	(4G4.0+(2x1.5)C)C	14.5	252	353
	2 Control pairs shielded				
New	**CF897.15.15.02.02**	(4G1.5+2x(2x1.5)C)C	13.5	175	262

Other types available on request.
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x** = without earth core

PVC | iguPUR | PUR | TPE

New!

PUR Servo cable | CF270.UL.D

Image exemplary.

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

Dynamic Information

Bend radius	**e-chain®**	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	**e-chain®**	-25 °C to +80 °C
	flexible	-40 °C to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C to +80 °C (following DIN EN 50305)
v max.	**unsupported**	10 m/s
	gliding	2 m/s
a max.	50 m/s²	
Travel distance	Unsupported travel distances and up to 10 m for gliding applications, Class 2	

Cable structure

Conductor
Stranded conductor in bending-resistant version consisting of bare copper wires (following DIN EN 60228).
Single core: Conductor cable consisting of pre-leads (following DIN EN 60228).

Core insulation
Mechanically high-quality, especially low-capacitance TPE mixture.

Core stranding
Power cores with control pair elements stranded with elements for high tensile stresses.

Core identification
Power cores: Cores black with white numerals, one core green-yellow.
1. Core: U / L1 / C / L+
2. Core: V / L2
3. Core: W / L3 / D / L-
1 Control pair: Cores black with white numerals.
1. Control core: 4 2. Control core: 5
2 Control pairs: Cores black with white numerals.
1. Control core: 5 2. Control core: 6
3. Control core: 7 4. Control core: 8
1 Control triple: Cores black with white numerals.
1. Control core: 1 2. Control core: 2
3. Control core: 3
Star quad: yellow, black, red, white

Element shield
Bending-resistant braiding made of tinned copper wires.

Intermediate layer
Foil taping over the external layer

Overall shield
Bending-resistant braiding made of tinned copper wires.
Coverage linear approx. 55 %, optical approx. 80 %

Outer jacket
Low-adhesion mixture on the basis of PUR, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2).
Colour: Pastel orange (similar to RAL 2003)

Class 4.2.3.1

Requirements	low	1	2	3	**4**	5	6	7	highest
Travel distance	unsupported	1	**2**	3	4	5	6	400 m +	
Oil resistance	none	1	2	**3**	4	highest			
Torsion	none	**1**	2	3	±180°				

CF270.UL.D
PUR
10 x d

Electrical Information

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

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, CEI 20-35, 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/CSA	Style 10989 and 21223, 1000 V, 80 °C Spindle cable/Single core: Style 10492 and 10973, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 1. Outer jacket material complies with CF27.07.05.02.01.D, tested by IPA according to standard 14644-1
DESINA	According to VDW, DESINA standardisation
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*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	2	50	≤ 10	10	11	12
+70 / +80					12.5	13.5	14.5

* higher number of double strokes possible

Typical application areas

- For medium duty applications
- Almost unlimited resistance to oil
- Indoor and outdoor applications without direct solar radiation
- Unsupported travel distances and up to 10 m for gliding applications
- Machining units/machine tools, low temperature applications

PVC | iguPUR | PUR | TPE

PUR Servo cable | CF270.UL.D

New!

Class 4.2.3.1

Requirements	low	1	2	3	**4**	5	6	7	highest
Travel distance	unsupported	1	**2**	3	4	5	6	400 m +	
Oil resistance	none	1	2	**3**	4	highest			
Torsion	none	**1**	2	3	±180°				

CF270.UL.D
PUR
10 x d

Image exemplary.

	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	(4 G 1.5+(2x1.5)C)C	12.0	164	263
	CF270.UL.25.15.02.01.D	(4 G 2.5+(2x1.5)C)C	14.0	223	306
	CF270.UL.40.15.02.01.D	(4 G 4.0+(2x1.5)C)C	15.0	300	448
	CF270.UL.60.15.02.01.D	(4 G 6.0+(2x1.5)C)C	16.5	401	557
	CF270.UL.100.15.02.01.D	(4 G 10.0+(2x1.5)C)C	20.5	640	899
	CF270.UL.160.15.02.01.D	(4 G 16.0+(2x1.5)C)C	24.0	941	1311
New	**CF270.UL.250.15.02.01.D**	(4 G 25.0+(2x1.5)C)C	28.5	1445	1704
	2 control pairs shielded				
	CF270.UL.07.03.02.02.D	(4 G 0.75+2x(2x0.34)C)C	11.5	117	208
	CF270.UL.10.07.02.02.D	(4 G 1.0+2x(2x0.75)C)C	13.0	157	266
	CF270.UL.15.07.02.02.D	(4 G 1.5+2x(2x0.75)C)C	13.5	185	309
	CF270.UL.25.15.02.02.D	(4 G 2.5+2x(2x1.5)C)C	16.0	286	439
	CF270.UL.40.15.02.02.D	(4 G 4.0+2x(2x1.5)C)C	17.0	363	543
	CF270.UL.60.15.02.02.D	(4 G 6.0+2x(2x1.5)C)C	18.5	468	674
	CF270.UL.100.15.02.02.D	(4 G 10.0+2x(2x1.5)C)C	22.5	696	1011
	CF270.UL.160.15.02.02.D	(4 G 16.0+2x(2x1.5)C)C	26.0	992	1405
	CF270.UL.250.15.02.02.D	(4 G 25.0+2x(2x1.5)C)C	28.5	1502	1983
	CF270.UL.350.15.02.02.D [1.6)]	(4 G 35.0+2x(2x1.5)C)C	35.0	1984	2696
	1 control triple shielded				
	CF270.UL.15.10.03.01.D [9)]	(4 G 1.5+(3x1.0)C)C	14.0	176	303
	CF270.UL.25.10.03.01.D [10)]	(4 G 2.5+(3x1.0)C)C	14.0	224	348
	1 star-quad shielded				
	CF270.UL.25.05.04.D	(4 G 2.5+(4x0.5)C)C	13.5	209	297
	CF270.UL.60.05.04.D	(4 G 6.0+(4x0.5)C)C	16.5	384	546
	without control pair				
	CF270.UL.15.04.D	(4 G 1.5)C	9.5	90	156
	CF270.UL.25.04.D	(4 G 2.5)C	11.5	154	240
	CF270.UL.40.04.D	(4 G 4.0)C	12.5	231	337
	CF270.UL.60.04.D	(4 G 6.0)C	14.5	337	465
	CF270.UL.100.04.D	(4 G 10.0)C	18.0	545	747
	CF270.UL.160.04.D	(4 G 16.0)C	22.0	861	1130
	CF270.UL.250.04.D	(4 G 25.0)C	25.5	1316	1691
	CF270.UL.350.04.D	(4 G 35.0)C	33.0	1864	2483

[1.6)] Delivery time: 6 weeks
[9)] Core/Core: 50 pF/m, Corer/Shield: 95 pF/m
[10)] Core/Core: 70 pF/m, Core/Shield: 115 pF/m
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

EPLAN download, configurators ▶ www.igus.eu/CF270ULD

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
Spindle cable/Single core				
CF270.UL.100.01.D	(1 x 10.0)C	8.5	110	141
CF270.UL.160.01.D	(1 x 16.0)C	9.5	170	201
CF270.UL.250.01.D	(1 x 25.0)C	11.0	261	296
CF270.UL.350.01.D	(1 x 35.0)C	13.0	363	405
CF270.UL.500.01.D	(1 x 50.0)C	15.0	514	567
CF270.UL.700.01.D	(1 x 70.0)C	17.5	736	788

Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Detailed information about „Spindle cable/Single core“ ▶ page 350

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

PVC | iguPUR | PUR | TPE

New!

PUR Hybrid servo cable | CF280.UL.H

Image exemplary.

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

Dynamic Information

Bend radius	**e-chain®**	minimum 10 x d
	flexible	minimum 8 x d
	fixed	minimum 5 x d
Temperature	**e-chain®**	-25 °C to +80 °C
	flexible	-40 °C to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C to +80 °C (following DIN EN 50305)
v max.	**unsupported**	10 m/s
	gliding	2 m/s
a max.	50 m/s²	
Travel distance	Unsupported travel distances and up to 10 m 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 TPE mixture.
Core stranding	Power cores with control pair elements stranded with elements for high tensile stresses.
Core identification	According to Servo Hybrid specifications. Latest datasheet ▶ www.chainflex.eu/CF280ULH
Element shield	Bending-resistant braiding made of tinned copper wires.
Intermediate layer	Foil taping over the external layer
Overall shield	Bending-resistant braiding made of tinned copper wires. Coverage linear approx. 55 %, optical approx. 80 %
Outer jacket	Low-adhesion mixture on the basis of PUR, 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	600/1000 V (following DIN VDE 0298-3)
Testing voltage	4000 V (following DIN EN 50395)

Class 4.2.3.1

Requirements	low	1 2 3 **4** 5 6 7 highest
Travel distance	unsupported	1 **2** 3 4 5 6 400 m +
Oil resistance	none	1 2 **3** 4 highest
Torsion	none	**1** 2 3 ±180°

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, CEI 20-35, 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/CSA	Style 10989 and 21223, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 1. Outer jacket material complies with CF27.07.05.02.01.D, tested by IPA according to standard 14644-1
DESINA	According to VDW, DESINA standardisation
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*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	2	50	≤ 10	10	11	12
+70 / +80					12.5	13.5	14.5

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For medium duty applications
- Almost unlimited resistance to oil
- Indoor and outdoor applications without direct solar radiation
- Unsupported travel distances and up to 10 m for gliding applications
- Machining units/machine tools, low temperature applications

CF280.UL.H
PUR
10 x d

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

PVC | iguPUR | PUR | TPE

PUR Hybrid servo cable | CF280.UL.H

New!

Class 4.2.3.1

Requirements	low	1 2 3 **4** 5 6 7 highest
Travel distance	unsupported	1 **2** 3 4 5 6 400 m +
Oil resistance	none	1 2 **3** 4 highest
Torsion	none	**1** 2 3 ±180°

CF280.UL.H
PUR
10 x d

Image exemplary.

	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	Manufacturer
	CF280.UL.H100.07.04.D [1.8]	(4G0.75+(2x0.34)C +(2xAWG22)C)C	12.0	117	207	**CF280.UL.H100.07.04.D** [1.8]	Sick (Hiperface DSL)	please see selection table on page 271
	CF280.UL.H101.10.04.D	(4G1.0+(2x0.75)C +(2xAWG22)C)C	12.5	139	233	**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	13.5	159	278	**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	15.0	217	338	**CF280.UL.H102.25.04.D**	Sick (Hiperface DSL)	please see selection table on page 271
New	**CF280.UL.H102.60.04.D**	(4G6.0+(2x1.0)C +(2xAWG22)C)C	18.0	394	589	**CF280.UL.H102.60.04.D**	Sick (Hiperface DSL)	please see selection table on page 271
	CF280.UL.H200.15.07.D	(7x1.5+(2x0.75)C)C	16.5	216	368	**CF280.UL.H200.15.07.D**	SEW Cable type A/1,5	SEW
New	**CF280.UL.H200.25.07.D** [1.8]	(7x2.5+(2x0.75)C)C	20.0	308	540	**CF280.UL.H200.25.07.D** [1.8]	SEW Cable type A/2,5	SEW
	CF280.UL.H201.15.04.D	4G1.5+(2x0.75)C +(3x0.75)C	14.0	148	281	**CF280.UL.H201.15.04.D**	SEW Cable type B/1,5	SEW
	CF280.UL.H201.25.04.D [1.8]	4G2.5+(2x0.75)C +(3x0.75)C	15.0	195	330	**CF280.UL.H201.25.04.D** [1.8]	SEW Cable type B/2,5	SEW
	CF280.UL.H203.15.04.D	(4G1.5+(3x1.0)C)C	12.0	169	264	**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	14.0	206	323	**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	214	354	**CF280.UL.H204.15.04.D**	SEW Cable type D/1,5	SEW
	CF280.UL.H206.60.04.D	(4G6.0+(2x0.75)C +(3x1.5)C)C	19.5	460	677	**CF280.UL.H206.60.04.D**	SEW Cable type D/6,0	SEW
New	**CF280.UL.H501.15.04.D**	(4G1.5+(2x0.75)C +(2x(2x0.14)+(2x0.25))C)C	15.0	193	293	**CF280.UL.H501.15.04.D**	Heidenhain	B&R
New	**CF280.UL.H502.40.04.D**	(4G4.0+(2x1.0)C +(2x(2x0.14)+(2x0.25))C)C	17.0	315	427	**CF280.UL.H502.40.04.D**	Heidenhain	B&R
New	**CF280.UL.H601.25.05** [16]	5G2.5+(4xAWG24)C +(2x0.25)C	14.5	169	300	**CF280.UL.H601.25.05** [16]	isH Servo	ELAU/Schneider Electric

[1.8] Delivery time: 8 weeks
[16] Colour outer jacket: Yellow-green (RAL 6018)
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

EPLAN download, configurators ▶ www.igus.eu/CF280ULH

1,244 types from stock ... no cutting costs*
... no minimum order quantity ... *(up to 10 cuts of the same type)

36 month guarantee on every chainflex® cable ...
... up to 10 mio. double strokes guaranteed ...

PUR Servo cable | CF27.D

Image exemplary.

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

CFRIP® Strip cables 50 % faster

iF DESIGN AWARD 2016

Dynamic Information

Bend radius	**e-chain®**	minimum 7.5 x d
	flexible	minimum 6 x d
	fixed	minimum 4 x d
Temperature	**e-chain®**	-25 °C to +80 °C
	flexible	-40 °C to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C to +80 °C (following DIN EN 50305)
v max.	**unsupported**	10 m/s
	gliding	5 m/s
a max.	80 m/s²	
Travel distance	Unsupported travel distances and up to 100 m 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 TPE mixture.
Core stranding	Power cores with control pair elements stranded with elements for high tensile stresses.
Core identification	**Power cores:** Cores black with white numerals, one core green-yellow. 1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L- **1 Control pair:** Cores black with white numerals. 1. Control core: 4 2. Control core: 5 **2 Control pairs:** Cores black with white numerals. 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, highly abrasion-resistant mixture on the basis of PUR, 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: The tear strip is in the outer jacket Video ▶ www.igus.eu/CFRIP

Class 6.5.3.1

Requirements	low	1 2 3 4 5 **6** 7 highest
Travel distance	unsupported	1 2 3 4 **5** 6 400 m +
Oil resistance	none	1 2 **3** 4 highest
Torsion	none	**1** 2 3 ±180°

Electrical Information

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

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, CEI 20-35, 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/CSA	Style 10492 and 20234, 1000 V, 80 °C
NFPA	Following NFPA 79-2012 chapter 12.9
DNV-GL	Certified according to GL type testing – Certificate no.: 61 938-14 HH
EAC	Certified according to no. TC RU C-DE.ME77.B.01255
CTP	Certified according to no. C-DE.PB49.B.00420
CEI	Following CEI 20-35
Lead-free	Following 2011/65/EC (RoHS-II)
Clean room	According to ISO Class 1. Outer jacket material complies with CF27.07.05.02.01.D, tested by IPA according to standard 14644-
DESINA	According to VDW, DESINA standardisation
CE	Following 2014/35/EU

Guaranteed lifetime according to guarantee conditions (Page 22-25)

Double strokes*					5 million	7.5 million	10 million
Temperature, from/to [°C]	v max. [m/s] unsupported	v max. [m/s] gliding	a max. [m/s²]	Travel distance [m]	*R* min. [factor x d]	*R* min. [factor x d]	*R* min. [factor x d]
-25 / -15					10	11	12
-15 / +70	10	5	80	≤ 100	7.5	8.5	8.5
+70 / +80					10	11	12

* Higher number of double strokes possible - please ask for your individual calculation.

Typical application areas

- For extremely heavy duty applications
- Almost unlimited resistance to oil
- Indoor and outdoor applications, UV resistant
- Unsupported travel distances and up to 100 m for gliding applications
- Storage and retrieval units for high-bay warehouses, machining units/machine tools, quick handling, clean room, semiconductor insertion, outdoor cranes, low temperature applications

CF27.D
PUR
7.5 x d

PVC | iguPUR | PUR | TPE

PUR Servo cable | CF27.D

Class 6.5.3.1

Requirements	low	1 2 3 4 5 **6** 7 highest
Travel distance	unsupported	1 2 3 4 **5** 6 400 m +
Oil resistance	none	1 2 **3** 4 highest
Torsion	none	**1** 2 3 ±180°

CF27.D
PUR
7,5 x d

Strip cables 50% faster!

Image exemplary.

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	94	183
CF27.15.15.02.01.D	(4G1.5+(2x1.5)C)C	13.0	159	264
CF27.25.15.02.01.D	(4G2.5+(2x1.5)C)C	14.5	219	339
CF27.40.15.02.01.D	(4G4.0+(2x1.5)C)C	16.0	283	433
CF27.60.15.02.01.D	(4G6.0+(2x1.5)C)C	18.0	367	554
CF27.100.15.02.01.D	(4G10.0+(2x1.5)C)C	21.0	585	805
CF27.160.15.02.01.D	(4G16.0+(2x1.5)C)C	24.5	860	1137
CF27.250.15.02.01.D	(4G25.0+(2x1.5)C)C	28.5	1254	1630
CF27.350.15.02.01.D	(4G35.0+(2x1.5)C)C	32.5	1716	2228
2 Control pairs shielded				
CF27.07.03.02.02.D	(4G0.75+2x(2x0.34)C)C	12.5	116	212
CF27.10.07.02.02.D	(4G1.0+2x(2x0.75)C)C	13.5	168	274
CF27.15.07.02.02.D	(4G1.5+2x(2x0.75)C)C	14.0	190	309
CF27.25.15.02.02.D	(4G2.5+2x(2x1.5)C)C	17.0	284	439
CF27.40.15.02.02.D	(4G4.0+2x(2x1.5)C)C	18.0	346	512
CF27.60.15.02.02.D	(4G6.0+2x(2x1.5)C)C	20.0	448	662
CF27.100.15.02.02.D	(4G10.0+2x(2x1.5)C)C	23.5	654	930
CF27.160.15.02.02.D	(4G16.0+2x(2x1.5)C)C	26.5	959	1272
CF27.250.15.02.02.D	(4G25.0+2x(2x1.5)C)C	31.0	1320	1797
CF27.350.15.02.02.D [1.6)]	(4G35.0+2x(2x1.5)C)C	34.0	1815	2312
1 Star-quad shielded				
CF27.15.05.04.D	(4G1.5+(4x0.5)C)C	13.0	146	250
CF27.25.05.04.D	(4G2.5+(4x0.5)C)C	14.5	197	314
CF27.40.05.04.D	(4G4.0+(4x0.5)C)C	16.0	270	412
CF27.60.05.04.D	(4G6.0+(4x0.5)C)C	17.5	354	530

[1.6)] Delivery time: 6 weeks
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max.[mm]	Copper index [kg/km]	Weight [kg/km]
without control pair				
CF27.07.04.D [1.6)]	(4G0.75)C	9.0	58	114
CF27.10.04.D [1.6)]	(4G1.0)C	9.5	69	133
CF27.15.04.D	(4G1.5)C	10.5	94	168
CF27.25.04.D	(4G2.5)C	12.5	142	236
CF27.500.04.D	(4G50.0)C	37.0	2420	3008

[1.6)] Delivery time: 6 weeks
Note: The mentioned outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core **x =** without earth core

Order example: CF27.40.10.02.01.D – In your desired length (0.5 m steps)
CF27 chainflex® series .40 Code nominal cross section .10 Code nominal cross section signal pairs
.02 Identification pairs .01 Number of pairs

Online order ► www.chainflex.eu/CF27D

Delivery time 24h or today.
Delivery time means time until shipping of goods.

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

EPLAN download, configurators ► www.igus.eu/CF27D