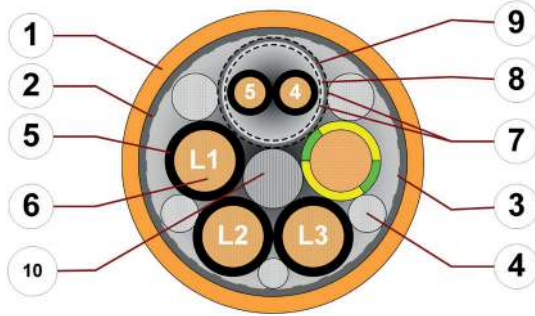


Data sheet

chainflex® CF210.UL



Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
● Oil-resistant ● Flame retardant



1. Outer jacket: Pressure extruded, oil-resistant PVC mixture
2. Overall shield: Bending-resistant braiding made of tinned copper wires.
3. Banding: Plastic fleece
4. Filling: Plastic yarns
5. Core insulation: Mechanically high-quality, especially low-capacitance XLPE mixture
6. Conductor: Especially bending-resistant version consisting of bare copper wires
7. Element banding: Plastic foil
8. Shield foil: Aluminium-coated polyester foil
9. Element shield: Bending-resistant braiding made of tinned copper wires.
10. Strain relief: Tensile stress-resistant centre element

Example image
For detailed overview please see design table

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 | <p>Power cores: Black cores with white numbers, one green-yellow core.</p> <p>1. Core: U / L1 / C / L+ 2. Core: V / L2 3. Core: W / L3 / D / L-</p> <p>1 Control pair: Black cores with white numbers. 1. Control core: 4 2. Control core: 5</p> <p>2 Control pairs: Black cores with white numbers. 1. Control core: 5 2. Control core: 6 3. Control core: 7 4. Control core: 8</p> |
| | 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 approx. 55 % linear, approx. 80 % optical |
| | 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) Printing: black |

„00000 m** igus chainflex CF210.UL.-.-.-.-① ---② 600/1000V E310776

cRUus AWM Style 2570 VW-1 AWM I/II A/B 80°C 1000V FT1 EAC/CTP

CE RoHS-II conform www.igus.de +++ chainflex cable works +++

* **Length printing:** Not calibrated. Only intended as an orientation aid.
① / ② Cable identification according to Part No. (see technical table).
Example: ... chainflex CF210.UL.15.15.02.01 (4G1.5+(2x1.5)C)C 600/1000V ...



Example image

Data sheet

chainflex® CF210.UL








Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
● Oil-resistant ● Flame retardant



Example image

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 gliding | 10 m/s 2 m/s |
|  | a max. | | 50 m/s ² |
|  | Travel distance | | Unsupported travels and up to 10 m for gliding applications, Class 2 |



These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

Guaranteed service life according to guarantee conditions

| Double strokes | 5 million | 7.5 million | 10 million |
|---------------------------|---------------------|---------------------|---------------------|
| Temperature, from/to [°C] | R min. [factor x d] | R min. [factor x d] | R min. [factor x d] |
| +5/+15 | 12.5 | 13.5 | 14.5 |
| +15/+60 | 10 | 11 | 12 |
| +60/+70 | 12.5 | 13.5 | 14.5 |

Minimum guaranteed service life of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Electrical information

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



Data sheet






chainflex® CF210.UL



Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
● Oil-resistant ● Flame retardant



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, FT1, VW-1
-  **Silicone-free** Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
-  **UL verified** Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
-  **UL/CSA AWM** See table UL/CSA AWM for details
-  **NFPA** Following NFPA 79-2018, chapter 12.9
-  **EAC** Certificate No. RU C-DE.ME77.B.02324 (TR ZU)
-  **CTP** Certificate No. C-DE.PB49.B.00420 (Fire protection)
-  **REACH** In accordance with regulation (EC) No. 1907/2006 (REACH)
-  **RoHS** Following 2011/65/EC (RoHS-II/RoHS-III)
-  **Cleanroom** According to ISO Class 2. The outer jacket material of this series complies with CF5.10.07 - tested by IPA according to standard DIN EN ISO 14644-1
-  **CE** Following 2014/35/EU



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



Properties and approvals

UL/CSA AWM Details

| Conductor nominal cross section [mm ²] | UL style core insulation | UL style outer jacket | UL Voltage Rating [V] | UL Temperature Rating [°C] |
|--|--------------------------|-----------------------|-----------------------|----------------------------|
| 0.75 | 10989 | 2570 | 1000 | 80 |
| 1.5 | 10989 | 2570 | 1000 | 80 |
| 2.5 | 10989 | 2570 | 1000 | 80 |
| 4 | 10989 | 2570 | 1000 | 80 |
| 6 | 10989 | 2570 | 1000 | 80 |

Example image

Data sheet

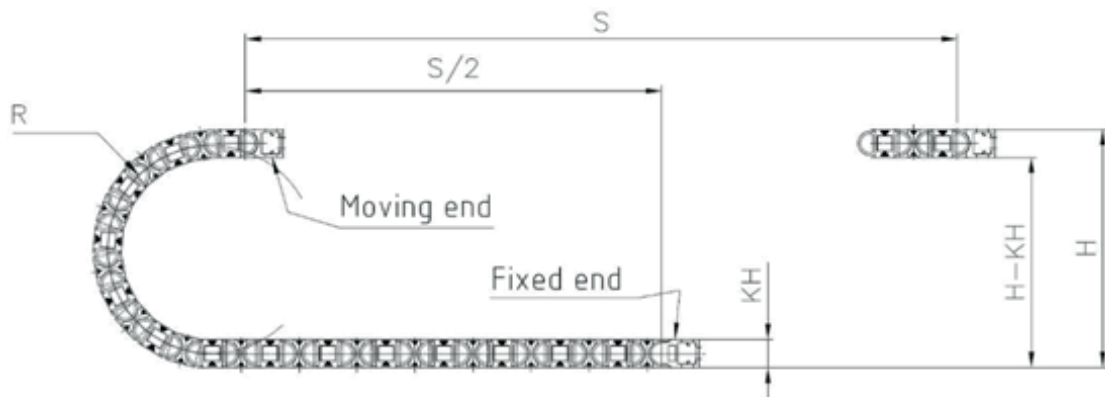
chainflex® CF210.UL



Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
 ● Oil-resistant ● Flame retardant

Typical lab test setup for this cable series

| | |
|--------------------|--------------------------------------|
| Test bend radius R | approx. 75 - 250 mm |
| Test travel S | approx. 1 - 15 m |
| Test duration | minimum 2 - 4 million double strokes |
| Test speed | approx. 0.5 - 2 m / s |
| Test acceleration | approx. 0.5 - 1.5 m / s ² |



Typical application areas

- For medium duty applications, Class 4
- Unsupported travel distances and up to 10 m 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, supply systems, Handling, adjusting equipment



Example image



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Data sheet

chainflex® CF210.UL



Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
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Technical tables:

Mechanical information

| Part No. | Number of cores and conductor nominal cross section [mm ²] | 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 | 12.5 | 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 | | | | |
| 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

Electrical information

| Conductor nominal cross section [mm ²] | Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km] | Max. current rating at 30 °C [A] |
|--|---|----------------------------------|
| 0.75 | 26 | 14 |
| 1.5 | 13.3 | 19 |
| 2.5 | 8 | 27 |
| 4 | 4.95 | 37 |
| 6 | 3.3 | 48 |

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



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



Example image

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Servo cable (Class 4.2.2.1) ● For medium duty applications ● PVC outer jacket ● Shielded
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Capacity

| Part No. | Power cores | | Control cores | |
|---------------------------------|---|---|---|---|
| | Core/Core Capacity [approx. pF / m] | Core/Shield Capacity [approx. pF / m] | Core/Core Capacity [approx. pF / m] | Core/Shield Capacity [approx. pF / m] |
| 1 Control pair shielded | | | | |
| CF210.UL.15.15.02.01 | 80 | 140 | 120 | 215 |
| CF210.UL.25.15.02.01 | 105 | 180 | 120 | 215 |
| CF210.UL.40.15.02.01 | 115 | 200 | 120 | 215 |
| CF210.UL.60.15.02.01 | 120 | 210 | 120 | 215 |
| 2 Control pairs shielded | | | | |
| CF210.UL.15.07.02.02 | 80 | 140 | 100 | 165 |
| CF210.UL.25.15.02.02 | 105 | 180 | 120 | 215 |
| CF210.UL.40.15.02.02 | 115 | 200 | 120 | 215 |
| CF210.UL.60.15.02.02 | 120 | 210 | 120 | 215 |
| without control pair | | | | |
| CF210.UL.15.04 | 80 | 140 | - | - |
| CF210.UL.25.04 | 105 | 180 | - | - |
| CF210.UL.40.04 | 115 | 200 | - | - |



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



Example image

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Design table

| Art.-Nr. | Number of cores | Core design |
|----------------------|-----------------|-------------|
| CF210.UL.XX.XX.02.01 | 4+1x2 | |
| CF210.UL.XX.XX.02.02 | 4+2x2 | |
| CF210.UL.XX.04 | 4 | |

Guarantee
igus chainflex
36
month guarantee

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



Example image

igus® chainflex® CF210.UL



09/2020

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