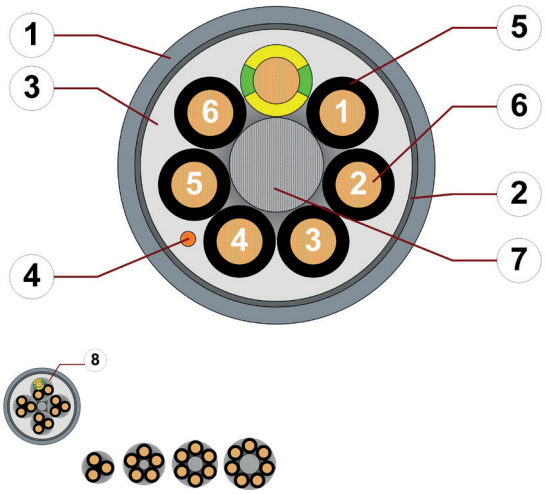
# Data sheet
# chainflex® CF140.UL

**Control cable (Class 4.4.1.1) ● For medium duty applications ● PVC outer jacket ● Shielded ● Flame retardant**

Example image




1. Outer jacket: Pressure extruded PVC mixture
2. Overall shield: Bending-resistant braiding made of tinned copper wires
3. Inner jacket: Pressure extruded, gusset-filling PVC mixture
4. CFRIP: Tear strip for faster cable stripping
5. Core insulation: Mechanically high-quality TPE mixture
6. Conductor: Fine-wire strand consisting of bare copper wires
7. Strain relief: Tensile stress-resistant centre element
8. 12 cores or more: Bundles with optimised pitch length and pitch direction

**Example image**
For detailed overview please see design table

## Cable structure

| | |
|---|---|
| **Conductor** | Finely stranded conductor consisting of bare copper wires (following DIN EN 60228). |
| **Core insulation** | Mechanically high-quality TPE mixture. |
| **Core structure** | **Number of cores < 12:** Cores wound in a layer with short pitch length.<br>**Number of cores ≥ 12:** Cores wound in bundles which are then wound around a high tensile strength centre element, all with optimised short pitch lengths and directions.<br>Especially low-torsion structure. |
| **Core identification** | **Cores < 0.5 mm²:** Colour code in accordance with DIN 47100.<br>**Cores ≥ 0.5 mm²:** Black cores with white numbers, one green-yellow core. |
| **Inner jacket** | PVC mixture adapted to suit the requirements in e-chains®. |
| **Overall shield** | Bending-resistant braiding made of tinned copper wires.<br>Coverage approx. 55 % linear, approx. 80 % optical |
| **Outer jacket** | Low-adhesion PVC mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-4-1).<br>Colour: Silver-grey (similar to RAL 7001)<br>Printing: black |
| **CFRIP®** | Strip cables faster: a tear strip is moulded into the inner jacket<br>Video ▶ www.igus.eu/CFRIP |

**„00000 m“** igus chainflex CF140.--.--.UL① -----② ---/---V③ E310776**

**cЯUus AWM Style 20200 VW-1 AWM I/II A/B 60°C 300V 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).
③ Printing of nominal voltage (see general electrical values).
Example: ... chainflex ... **CF140.02.12.UL** ... **(12x0.25)C** ... **300 V/500 V** ...

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Example image

## 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 | 3 m/s |
| | gliding | 2 m/s |
| a max. | | 20 m/s² |
| Travel distance | | Unsupported travels and up to 50 m for gliding applications, Class 4 |

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] | < 10 m R min. [factor x d] | ≥ 10 m R min. [factor x d] | < 10 m R min. [factor x d] | ≥ 10 m R min. [factor x d] | < 10 m R min. [factor x d] | ≥ 10 m R min. [factor x d] |
| +5/+15 | 10 | 12.5 | 11 | 13.5 | 12 | 14.5 |
| +15/+60 | 7.5 | 10 | 8.5 | 11 | 9.5 | 12 |
| +60/+70 | 10 | 12.5 | 11 | 13.5 | 12 | 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 | | 300/500 V (following DIN VDE 0298-3) |
| Testing voltage | | 2000 V (following DIN EN 50395) |

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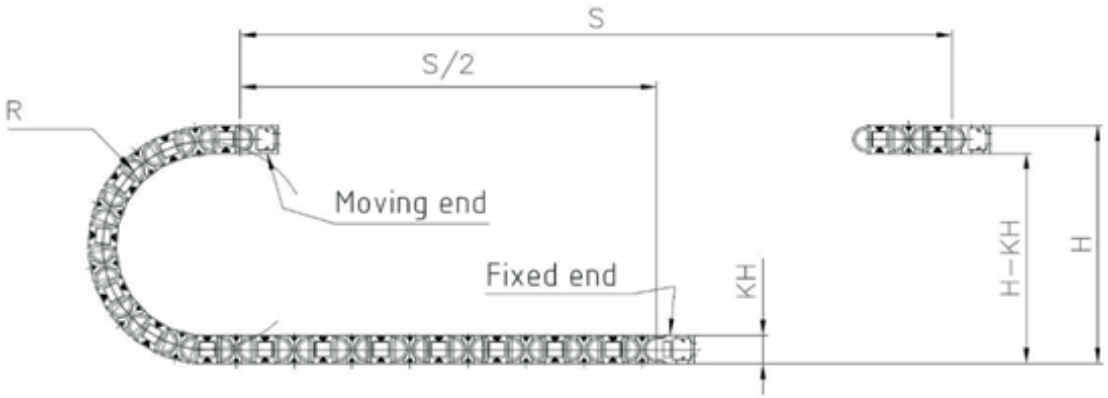
Example image

## Properties and approvals

| | |
|---|---|
| **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 10493 and 20200, 300 V, 60 °C |
| **NFPA** | Following NFPA 79-2012, chapter 12.9 |
| **EAC** | Certificate No. RU C-DE.ME77.B.01254 (TR ZU) |
| **CTP** | Certificate No. C-DE.PB49.B.00416 (Fire protection) |
| **CEI** | Following CEI 20-35 |
| **Lead-free** | Following 2011/65/EC (RoHS-II) |
| **Clean room** | According to ISO Class 1. The outer jacket material of this series complies with CF130.15.07 - tested by IPA according to standard DIN EN ISO 14644-1 |
| **CE** | Following 2014/35/EU |

## Typical lab test setup for this cable series

| | |
|---|---|
| **Test bend radius R** | approx. 48 - 300 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 / $s^2$ |



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Example image

## Typical application areas

- For medium duty applications, Class 4
- Unsupported travel distances and up to 50 m for gliding applications, Class 4
- Without influence of oil, Class 1
- No torsion, Class 1
- Preferably indoor applications
- Wood/stone processing, Packaging industry, supply systems, Handling, adjusting equipment

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Example image

## Technical tables:

Mechanical information

| Part No. | Number of cores and conductor nominal cross section [mm²] | Outer diameter (d) max. [mm] | Copper index [kg/km] | Weight [kg/km] |
|---|---|---|---|---|
| CF140.02.12.UL | (12x0.25)C | 10.5 | 72 | 114 |
| CF140.03.05.UL | (5x0.34)C | 7.5 | 35 | 72 |
| CF140.05.03.UL | (3G0.5)C | 7.0 | 32 | 72 |
| CF140.05.05.UL | (5G0.5)C | 8.0 | 45 | 91 |
| CF140.05.18.UL | (18G0.5)C | 14.5 | 146 | 247 |
| CF140.05.36.UL | (36G0.5)C | 18.5 | 257 | 468 |
| CF140.07.03.UL | (3G0.75)C | 8.0 | 42 | 85 |
| CF140.07.04.UL | (4G0.75)C | 8.5 | 51 | 101 |
| CF140.07.05.UL | (5G0.75)C | 9.0 | 61 | 115 |
| CF140.07.07.UL | (7G0.75)C | 10.0 | 83 | 152 |
| CF140.07.12.UL | (12G0.75)C | 13.0 | 136 | 263 |
| CF140.07.18.UL | (18G0.75)C | 15.5 | 193 | 359 |
| CF140.07.25.UL | (25G0.75)C | 18.0 | 260 | 479 |
| CF140.10.02.UL | (2x1.0)C | 8.0 | 35 | 86 |
| CF140.10.03.UL | (3G1.0)C | 8.5 | 51 | 100 |
| CF140.10.04.UL | (4G1.0)C | 9.0 | 62 | 111 |
| CF140.10.05.UL | (5G1.0)C | 9.5 | 74 | 127 |
| CF140.10.07.UL | (7G1.0)C | 10.5 | 104 | 176 |
| CF140.10.12.UL | (12G1.0)C | 14.0 | 166 | 295 |
| CF140.10.18.UL | (18G1.0)C | 17.5 | 240 | 413 |
| CF140.10.25.UL | (25G1.0)C | 19.5 | 325 | 562 |
| CF140.15.03.UL | (3G1.5)C | 9.0 | 68 | 120 |
| CF140.15.04.UL | (4G1.5)C | 9.5 | 85 | 141 |
| CF140.15.05.UL | (5G1.5)C | 10.5 | 109 | 169 |
| CF140.15.07.UL [17)] | (7G1.5)C | 12.0 | 144 | 226 |
| CF140.15.12.UL | (12G1.5)C | 16.0 | 233 | 387 |
| CF140.15.18.UL | (18G1.5)C | 19.0 | 345 | 463 |
| CF140.15.25.UL | (25G1.5)C | 22.5 | 463 | 737 |
| CF140.15.36.UL | (36G1.5)C | 26.5 | 663 | 1150 |
| CF140.25.03.UL | (3G2.5)C | 10.5 | 107 | 202 |
| CF140.25.04.UL | (4G2.5)C | 11.5 | 139 | 210 |

[17)] When using the cables with “7 G 1.5 mm²” and “7 G 2.5 mm²” minimum bend radius must be 17.5 x d with gliding travel distance ≥ 5 m.

**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

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Example image

### Electrical information

| Conductor nominal cross section [mm²] | Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km] | Maximum current rating at 30 °C (following DIN VDE 0298-4) [A] |
|---|---|---|
| 0.25 | 79.0 | 5 |
| 0.34 | 57.0 | 7 |
| 0.5 | 39.0 | 10 |
| 0.75 | 26.0 | 14 |
| 1 | 19.5 | 17 |
| 1.5 | 13.3 | 21 |
| 2.5 | 8.0 | 30 |

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

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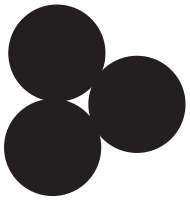
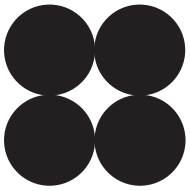
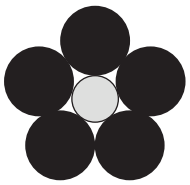
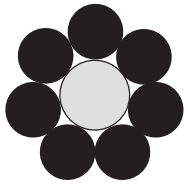
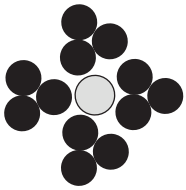
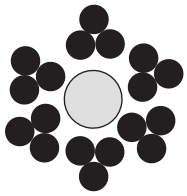
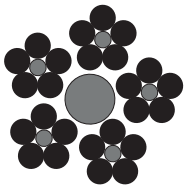
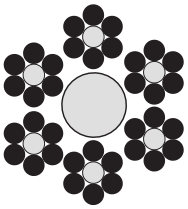
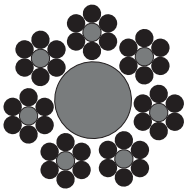
Example image

## Design table

| Part No. | Number of cores | Core design |
|---|---|---|
| CF140.XX.02.UL | 2 |  |
| CF140.XX.03.UL | 3 |  |
| CF140.XX.04.UL | 4 |  |
| CF140.XX.05.UL | 5 |  |
| CF140.XX.07.UL | 7 |  |

| Part No. | Number of cores | Core design |
|---|---|---|
| CF140.XX.12.UL | 4x3 |  |
| CF140.XX.18.UL | 6x3 |  |
| CF140.XX.25.UL | 5x5 |  |
| CF140.XX.36.UL | 6x6 |  |
| CF140.XX.42.UL | 7x6 |  |

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## Colour code in accordance with DIN 47100.

| Conductor no. | Colours according to DIN ISO 47100 |
|---|---|
| 1 | white |
| 2 | brown |
| 3 | green |
| 4 | yellow |
| 5 | grey |
| 6 | pink |
| 7 | blue |
| 8 | red |
| 9 | black |
| 10 | violet |
| 11 | grey-pink |
| 12 | red-blue |
| 13 | white-green |
| 14 | brown-green |
| 15 | white-yellow |
| 16 | brown-yellow |
| 17 | white-grey |
| 18 | brown-grey |
| 19 | white-pink |
| 20 | white-brown |
| 21 | white-blue |

| Conductor no. | Colours according to DIN ISO 47100 |
|---|---|
| 22 | brown-blue |
| 23 | white-red |
| 24 | brown-red |
| 25 | white-black |
| 26 | brown-black |
| 27 | grey-green |
| 28 | yellow-grey |
| 29 | pink-green |
| 30 | yellow-pink |
| 31 | green-blue |
| 32 | yellow-blue |
| 33 | green-red |
| 34 | yellow-red |
| 35 | green-black |
| 36 | yellow-black |
| 37 | grey-blue |
| 38 | pink-blue |
| 39 | grey-red |
| 40 | pink-red |
| 41 | grey-black |
| 42 | pink-black |

| Conductor no. | Colours according to DIN ISO 47100 |
|---|---|
| 43 | blue-black |
| 44 | red-black |
| 45 | white-brown-black |
| 46 | yellow-green-black |
| 47 | grey-pink-black |
| 48 | red-blue-black |
| 49 | white-green-black |
| 50 | brown-green-black |
| 51 | white-yellow-black |
| 52 | yellow-brown-black |
| 53 | white-grey-black |
| 54 | grey-brown-black |
| 55 | white-pink-black |
| 56 | pink-brown-black |
| 57 | white-blue-black |
| 58 | brown-blue-black |
| 59 | white-red-black |
| 60 | brown-red-black |
| 61 | black-white |