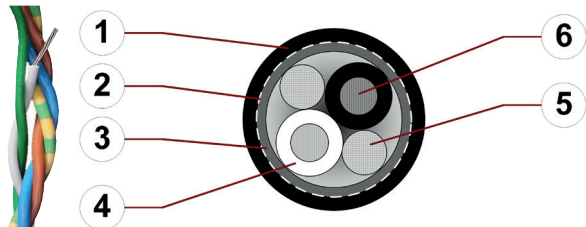


# Data sheet

## chainflex® CFTHERMO



Thermocouple cable (Class 5.4.3.1) ● For heavy duty applications ● PUR outer jacket  
 ● Oil-resistant and coolant-resistant ● PVC and halogen-free ● Notch-resistant  
 ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded PUR mixture
2. Banding: Plastic fleece
3. Overall shield: Extremely bending-resistant braiding made of tinned copper wires
4. Core insulation: Mechanically high-quality TPE mixture
5. Filler: Plastic yarn
6. Conductor: Conductor consisting of a flexible special alloy

Example image

For detailed overview please see design table

### Cable structure



Conductor

**Thermocouples:** Conductor consisting of a flexible special alloy.

**Power cores:** Fine-wire strand in bending-stable version consisting of bare copper wires.



Core insulation

Mechanically high-quality TPE mixture.



Core structure

The individual cores are wound in layers with a short pitch length.



Core identification

**Thermocouples:** According to IEC 584-3 colour code for thermocouples

► Product range table

**Power cores:** brown, blue & yellow-green



Intermediate layer

Fleece taping over the external layer.



Element shield

Bending-resistant braiding made of tinned copper wires.



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:** According to thermo specification ► Product range table

„00000 m“\* igus chainflex CFTHERMO.-...① -----② Thermocouple

Type - ③ CE RoHS-II conform

www.igus.eu

+++ 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 CFTHERMO.J.001 (2x0,23)C ... Th...

③ Printing according to thermocouple type

Example: ... chainflex CFTHERMO.J.001 Thermocouple Type - J CE ...



Example image

igus® chainflex® CFTHERMO

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### Dynamic information

|                                                                                   |                 |                                                                     |                                                |
|-----------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------|------------------------------------------------|
|  | Bend radius     | e-chain® linear                                                     | minimum 12.5 x d                               |
|                                                                                   |                 | flexible                                                            | minimum 10 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                                                         | 2m/s                                           |
|                                                                                   |                 | gliding                                                             | 1m/s                                           |
|  | a max.          |                                                                     | 20m/s <sup>2</sup>                             |
|  | Travel distance | Unsupported travels and up to 50m 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.

### Electrical information

|                                                                                     |                 |                                     |
|-------------------------------------------------------------------------------------|-----------------|-------------------------------------|
|  | Nominal voltage | 300/300V (following DIN VDE 0298-3) |
|  | Testing voltage | 1500V                               |

Example image



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Example image

### Properties and approvals

|                                                                                     |                |                                                                                                                                                           |
|-------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | UV resistance  | Medium                                                                                                                                                    |
|    | Oil resistance | Oil-resistant (following DIN EN 50363-10-2), Class 3                                                                                                      |
|    | Silicone-free  | Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)                                                                    |
|    | Halogen-free   | Following DIN EN 60754                                                                                                                                    |
|    | PTFE-free      | The design of these products does not contain PTFE                                                                                                        |
|    | 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 |
|  | CE             | Following 2014/35/EU                                                                                                                                      |



# Data sheet

## chainflex® CFTHERMO



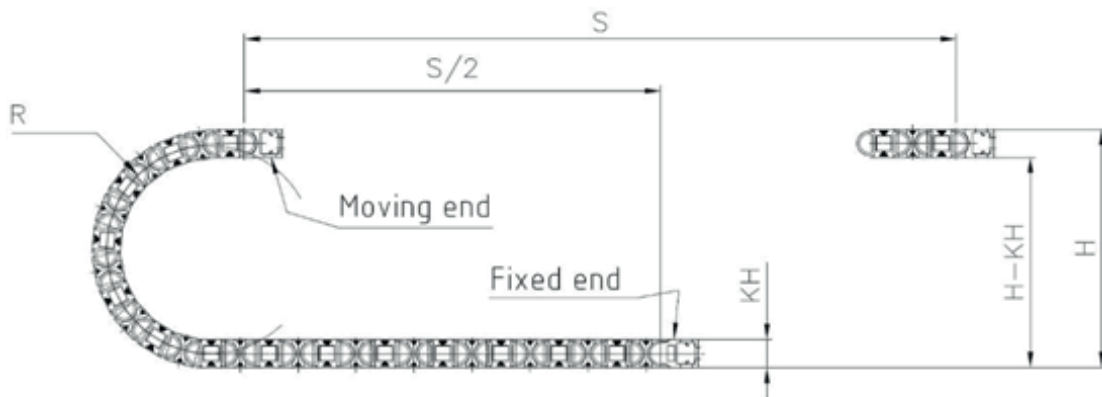
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Example image

### Typical lab test setup for this cable series

|                    |                                      |
|--------------------|--------------------------------------|
| Test bend radius R | approx. 63 - 75 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 <sup>2</sup>   |



### Typical mechanical application areas

- For heavy-duty applications, Class 5
- Unsupported travels and up to 50m for gliding applications, Class 4
- Almost unlimited resistance to oil, Class 3
- No torsion, Class 1
- Indoor and outdoor applications with average sun radiation
- Machining units/machine tools, storage and retrieval units for high-bay warehouses, packaging industry, quick handling, refrigerating sector



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### 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] |
|------------------------------|-----------------------------------------------------------|------------------------------|----------------------|----------------|
| CFTHERMO.J.001*              | (2x0.23)C                                                 | 5.5                          | 9                    | 36             |
| CFTHERMO.K.001               | (2x0.23)C                                                 | 5.5                          | 9                    | 37             |
| CFTHERMO.K.002 <sup>5)</sup> | (2x0.23)C+3G0.5                                           | 7.5                          | 24                   | 67             |
| CFTHERMO.N.001               | (2x0.23)C                                                 | 5.5                          | 14                   | 39             |

\* The cross-section of the copper conductor is equivalent to the electrically effective cross-section.

<sup>5)</sup> Manufactured without overall shield

**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 [mm²] | Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km] | Max. current rating at 30 °C [A] |
|---------------------------------------|---------------------------------------------------------------------------|----------------------------------|
| 0.23 (Fe)                             | 620                                                                       | –                                |
| 0.23 (CuNi)                           | 2,450                                                                     | –                                |
| 0.23 (NiCr)                           | 3,270                                                                     | –                                |
| 0.23 (Ni)                             | 1,230                                                                     | –                                |
| 0.23 (NiCrSi)                         | 4,426                                                                     | –                                |
| 0.23 (NiSi)                           | 1,677                                                                     | –                                |
| 0.5                                   | 40                                                                        | 10                               |

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

Example image



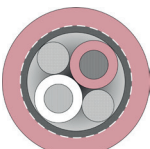
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Design table

| Part No.       | Thermocouple Type | Number of cores | Core design                                                                         | Outer jacket colour                | Terminal (IEC colour code)            |
|----------------|-------------------|-----------------|-------------------------------------------------------------------------------------|------------------------------------|---------------------------------------|
| CFTHERMO.J.001 | J                 | 2x0.23          |    | Jet black (similar to RAL 9005)    | + : black (Fe)<br>- : white (CuNi)    |
| CFTHERMO.K.001 | K                 | 2x0.23          |    | Yellow-green (similar to RAL 6018) | + : green (NiCr)<br>- : white (Ni)    |
| CFTHERMO.K.002 | K                 | (2x0.23)C+3G0.5 |   | Yellow-green (similar to RAL 6018) | + : green (NiCr)<br>- : white (Ni)    |
| CFTHERMO.N.001 | N                 | 2x0.23          |  | Light pink (similar to RAL 3015)   | + : pink (NiCrSi)<br>- : white (NiSi) |

Example image

