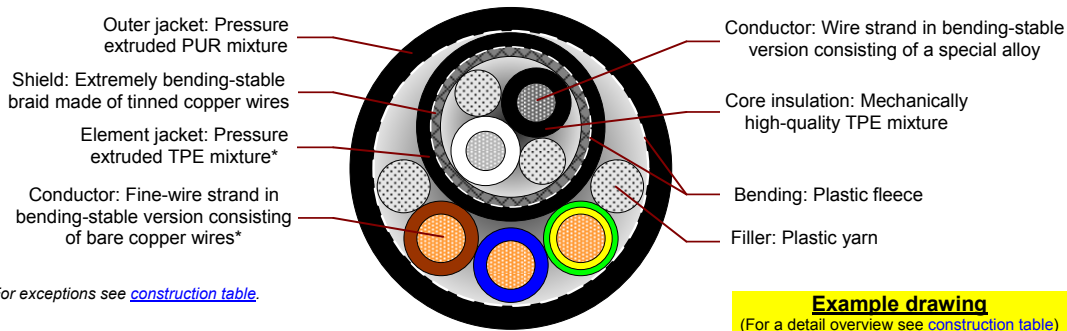


**PUR - e-chain<sup>®</sup> - thermocouple cable for high load requirements (class 5.4.3): shielded, oil- and coolant-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant as well as notch-resistant.**



\* For exceptions see [construction table](#).

## Core design:

<b>Conductor:</b>	<b>Thermocouples:</b> Wire strand in bending-stable version consisting of a special alloy.
	<b>Energy cores:</b> Fine-wire strand in bending-stable version consisting of bare copper wires.
<b>Core insulation:</b>	Mechanically high-quality TPE mixture.
<b>Core identification:</b>	<b>Thermocouples:</b> In accordance with the IEC 584-3 colour code for thermocouples. (see <a href="#">colour code table</a> )
	<b>Energy cores:</b> brown, blue & yellowgreen

## Shield design:

<b>Material:</b>	Extremely bending-stable braid made of tinned copper wires.
<b>Shield coverage:</b>	<b>Linear:</b> approx. 70 % <b>Optical:</b> approx. 90 %

## Jacket design:

<b>Element jacket:</b>	TPE mixture adapted to suit the requirements in e-chains <sup>®</sup> .
<b>Outer jacket:</b>	Low-adhesion mixture on the basis of PUR (following DIN VDE 0281-10), highly abrasion- and bending-stable, adapted to suit the requirements in e-chains <sup>®</sup> . <ul style="list-style-type: none"> <li>• oil-resistant (following DIN EN 50363-10-2)</li> <li>• coolant-resistant</li> <li>• PVC- and halogen-free (following DIN EN 50267-2-1)</li> <li>• hydrolysis- and microbe-resistant</li> <li>• MUD-resistant (following NEK 606 - status 2009)</li> <li>• silicon-free (following PV 3.10.7 - status 1992)</li> <li>• lead-free (following 2011/65/EU (RoHS-II))</li> <li>• clean room ISO class 1 (following DIN ISO 14644-1 tested by IPA)</li> <li>• UV-resistance: Medium</li> </ul>

<b>Colour outer jacket:</b>	In accordance with the IEC 584-3 colour code for thermocouples. (see <a href="#">colour code table</a> )
-----------------------------	--

**Cable marking (Black or White):**

„00000 m\*\*\* igus chainflex CFTHERMO.-...<sup>⓪</sup> -...<sup>⓪</sup> Thermocouple

Type -<sup>⓪</sup> CE RoHS-II conform [www.igus.de](http://www.igus.de)

+++ chainflex cable works +++

\*\* **Length printing:** Not calibrated. Only intended as an orientation aid.

⓪ / Ⓢ: Cable identification according to part no. (see [technical table](#) for details).

Ex.: CFTHERMO.J.001: ⇒ ...chainflex CFTHERMO.J.001 (2x0,23)C Th...

Ⓢ: Printing according to thermocouple type.

Ex.: CFTHERMO.J.001: ⇒ ...Thermocouple Type - J CE...

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### General mechanical values:

(for individual details see [technical table](#))

Double strokes *		5 million	
Temperature (from/to) [°C]	Travel distance (TD)	Min. bending radius for e-chain <sup>®</sup> use [Factor multiplied by outer diameter (d)]	
		TD < 10 m	TD ≥ 10 m
-20 / -10	≤ 50 m	15,0	17,5
-10 / +70		12,5	15,0
+70 / +80		15,0	17,5

\*: Minimum guarantee lifetime of the cable under the specified conditions.  
The installation of the cable is recommended within the middle temperature range.

Temperature range	-40 °C ←	-20 °C ←	-10 °C ↔ +70 °C	→ +80 °C
Min. bending radius for fixed installation	12,5 x d	10,0 x d	7,5 x d	10,0 x d
Torsion (at 1 m cable length)	---	±0 °	±30 °	±0 °

### General electrical values:

(For individual details see [technical table](#))

**Nominal voltage:** Energy cores: 300 / 300 V (following DIN VDE 0245)  
**Test voltage:** 1,5 kV  
**Guidelines:** CE, EAC & TR (CTP)

### Dynamic values:

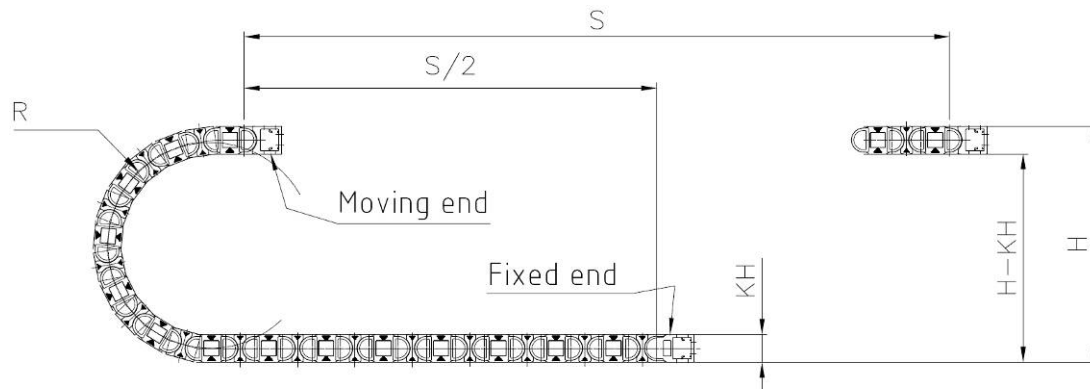
**Max. speed in e-chain<sup>®</sup> use:\*\*\*** Unsupported: v = 2 m / s    Gliding (up to 50 m): v = 1 m / s

**Max. acceleration in e-chain<sup>®</sup> use:\*\*\*** a = 20 m / s<sup>2</sup>

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

### Typical test setup for this cable group:

**Test bending radius R:** approx. 63 - 75 mm  
**Test travel S:** approx. 1 - 15 m  
**Test period:** min. 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>



### e-chain<sup>®</sup> - thermocouple cable for high load requirements:

- highly abrasion-stable
- almost unlimited resistance to oil
- for unsupported travel distances and up to 50 m in gliding applications
- CE, RoHS-II, EAC & TR (CTP)

### Typical application areas:

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.

Subject to misprints and errors.  
Technical modifications are possible at any time.

Please refer regarding the availability of the items also the information in the latest chainflex<sup>®</sup> catalogue.

Date	Author
26 Jun. 2014	D. Borsberg

PUR - e-chain<sup>®</sup> - thermocouple cable for high load requirements (class 5.4.3): shielded, oil- and coolant-resistant, PVC- and halogen-free, hydrolysis- and microbe-resistant as well as notch-resistant.

### Technical tables:

#### Mechanical values:

① Part no.	② Number of cores & geometrical cross section [mm <sup>2</sup> ]	External diameter (d) <sup>****</sup> [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	36
CFTHERMO.K.002	(2x0,23)C+3x0,5 <sup>*****</sup>	7,5	26	67
CFTHERMO.T.002	(2x0,23)C+3x0,5 <sup>*****</sup>	7,5	26	66

\*\*\*\* External diameters are maximum values and may tend toward lower tolerance limits.

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

#### Electrical values:

Nominal cross section [mm <sup>2</sup> ] (following)	Conductor resistance [approx. Ω / km] at 20 °C		Max. current rating [A] at 30 °C*
	DIN EN 50289-1-2		
0,23 (Fe)	620		
0,23 (CuNi)	2450		
0,23 (NiCr)	3270		
0,23 (Ni)	1230		
0,23 (Cu)	89		
0,5	40		

\* The max. current rating depends on factors such as the individual environmental conditions and the type of installation.

#### IEC colour code for thermocouples:

Part No.	Thermocouple Type	Outer jacket colour	Terminal
CFTHERMO.J.00X	J	Jet Black (similar to RAL 9005)	+ : black (Fe)
			- : white (CuNi)
CFTHERMO.K.00X	K	Yellow green (similar to RAL 6018)	+ : green (NiCr)
			- : white (Ni)
CFTHERMO.T.00X	T	Clay brown (similar to RAL 8003)	+ : brown (Cu)
			- : white (CuNi)

#### Construction table:

Part no.	Cable construction	Part no.	Cable construction	Part no.	Cable construction
CFTHERMO.J.001		CFTHERMO.K.001			
		CFTHERMO.K.002		CFTHERMO.T.002	

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