

Application

- Electric motors
- Generators

Features

- Single and double sensing element
- Measuring circuit 2-, 3-, 4-wire
- Sensing element:
Pt100, Pt500, Pt1000 (IEC751),
Ni100, Ni500, Ni1000 (DIN43760),
Cu50 (GOST 6651-2009)
- TOPE600 sensor dimensions
(measuring insert):
2.5 x 10 x 80 mm
(thickness x width x length)
- A wide range of designs
- Temperature class F (+155°C) or H (+180°C)
- Non-standard parameters available
upon request:
 - customized housing shape and dimensions
 - cables according to the customer's
specification
- Dielectrical strength 2.5 kVAC/60 sec.,
optionally 5.0 kVAC/60 sec.

Description

Insert these thin, laminated RTDs in winding slots to detect high temperatures before insulation damage occurs. Six sensors are recommended for each motor, two per phase. Locate sensors near the hottest point of the windings for best performance.

RTD (Stator Slot RTD) of TOPE600 series is installed and coated in additional housing, consisting of two parts (lower and upper). With the additional housing, complete thermometer can be precisely adapted to the dimensions of the generator groove/slot.

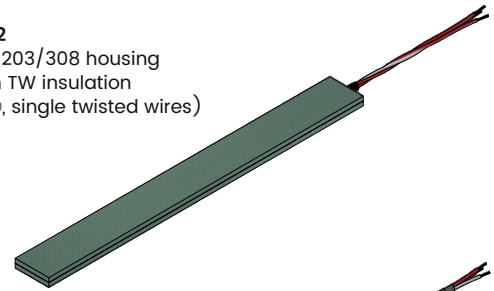
Dimensions of the housing, length and insulation of the connecting cable, as well as accuracy class, may be selected depending on the application needs/requirements.

Other versions

This data sheet contains only a small excerpt of our supply program of stator RTDs for temperature measurement in windings of generators and electric motors.

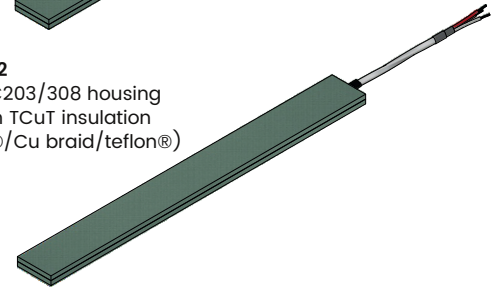
TOPE602

in EP GC203/308 housing
Cable in TW insulation
(teflon®, single twisted wires)



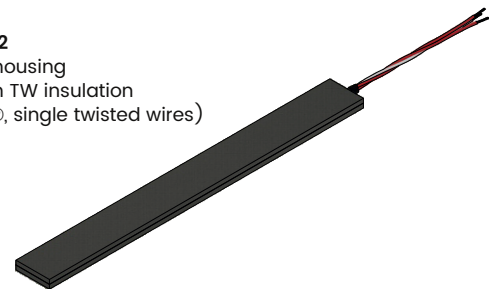
TOPE602

in EP GC203/308 housing
Cable in TCuT insulation
(teflon®/Cu braid/teflon®)



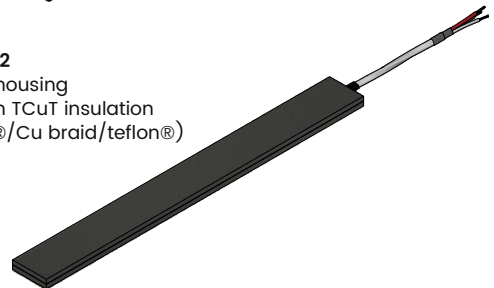
TOPE602

in EP01 housing
Cable in TW insulation
(teflon®, single twisted wires)



TOPE602

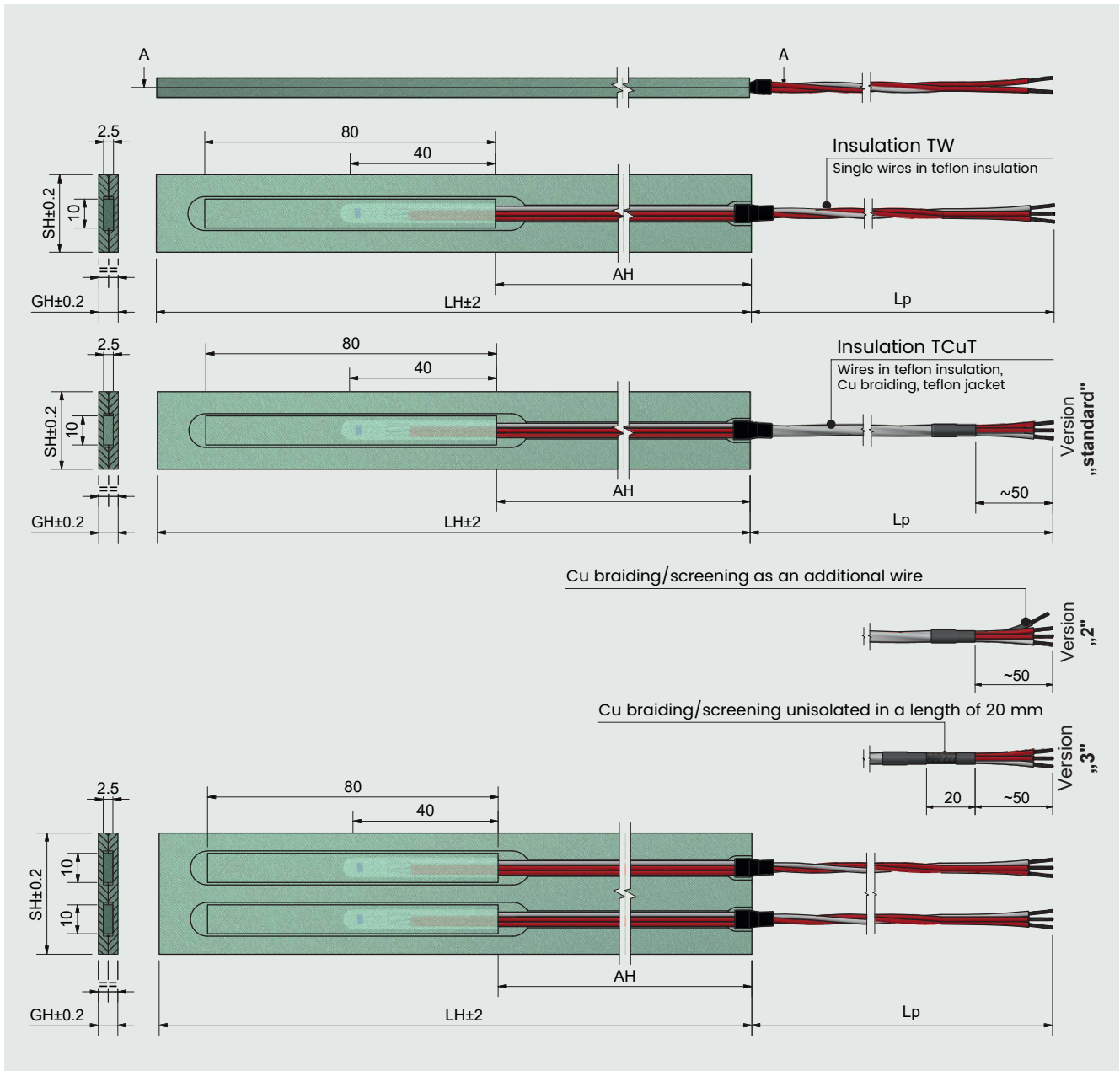
in EP01 housing
Cable in TCuT insulation
(teflon®/Cu braid/teflon®)



Advantages of our Stator RTDs:

- Low heat capacity, which guarantees an immediate response to temperature changes
- Excellent electrical insulation, high thermal conductivity, resistance to deformation occurring during long shifts
- Spot measurement by high class of resistance element
- Resistant to shock, pressure and vibration
- Resistant to common impregnating agents, curing and drying processes
- Supplied with factory test certificate in accordance with EN 10204

Design with EP GC 203/308 housing



EP GC 203/308 housing material

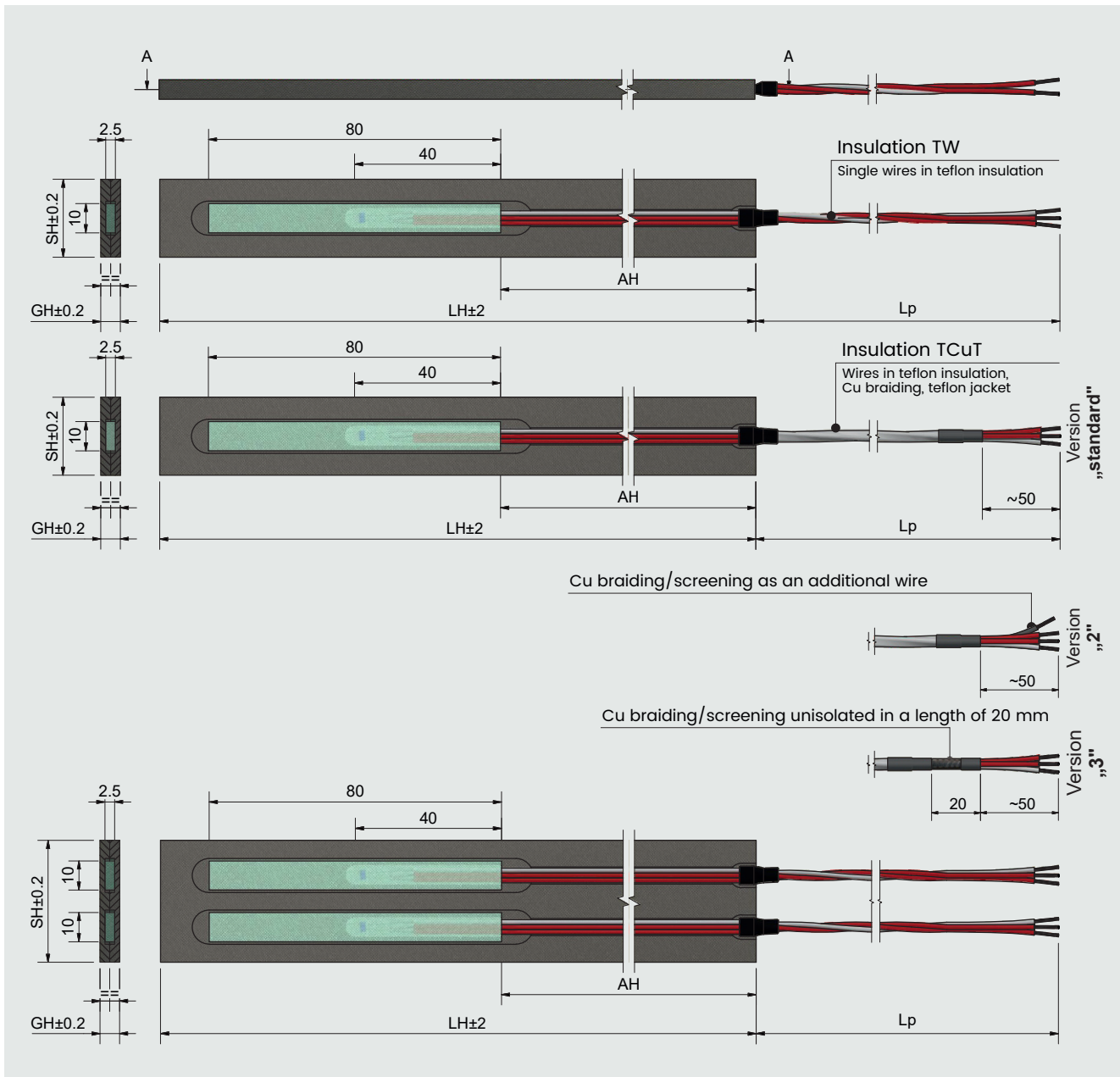
Epoxy glass laminate provides good mechanical strength at elevated temperatures and very good chemical resistance.

IEC 60893	EP GC 203
	EP GC 308
NEMA LI 1	G II
Density	2.0 g/cm ³

RESISTANCE THERMOMETER

SLOT RTD SINGLE POINT IN THE ADDITIONAL HOUSING, TYPE **TOPE602**

Design with EP01 conductive housing



EP01 housing material

Epoxy glass laminate with the addition of graphite is mostly used as a conductive material to fill the generator grooves.

EP01 has very good mechanical properties, has a conductivity parallel and perpendicular to the layers of glass fibres, has a high thermal resistance.

Density	1.7 - 1.9 g/cm ³
Glass fibre content	>50%
Spec. volume resistivity	50 - 1000 Ω x m (IEC 6093)

Measuring ranges

from -40°C to +155°C - temperature class F
from -40°C to +180°C - temperature class H

Sensing element

Single or double
Pt100, Pt500, Pt1000 (IEC 751, $\alpha = 0.00385$)
Option:
Ni100, Ni500, Ni1000 (DIN43760, $\alpha = 0.00618$)
Cu50, Cu100 (GOST 6651-94, $\alpha = 0.00426$)

Electrical parameters (TOPE600)

Measuring current nom. 0,1 mA to 1 mA
Isolation resistance >10 GΩ
Dielectrical strength 2.5 kVAC (50Hz/60 sec.)
5.0 kVAC (50Hz/60 sec.)


Tolerances

Platinum Class A ($\pm 0.15^\circ\text{C}$ in temp. 0°C)
Class B ($\pm 0.30^\circ\text{C}$ in temp. 0°C)
Nickel ($\pm 0.40^\circ\text{C}$ in 0°C)
Copper ($\pm 0.30^\circ\text{C}$ in 0°C)


Insulation types of connection cable

Cable insulation plays a crucial role in ensuring the durability of the stator slot temperature sensor. Among the many available insulation materials, several stand out for their versatility and ability to work across a wide range of applications, considering factors such as temperature resistance, chemical resistance, and mechanical properties. Below presented the most popular versions of cables.

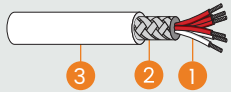
TW insulation

① Conductor	Teflon® PFA
	Teflon® PFA
	

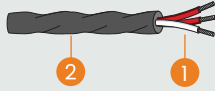
TT insulation

① Conductor	Teflon® PFA
② Sheath	Teflon® PFA
	


TCuT insulation

① Conductor	Teflon® PFA
② Screen	Copper braid
③ Sheath	Teflon® PFA
	


SLSL insulation

① Conductor	Silicone
② Sheath	Silicone
	

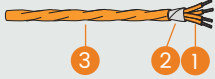
SLCuSL insulation

① Conductor	Silicone
② Screen	Copper braid
③ Sheath	Silicone
	

KK insulation

① Conductor	Kapton®
② Sheath	Kapton®
	

KFK insulation

① Conductor	Kapton®
② Screen	Alu-foil
③ Sheath	Kapton®
	

RESISTANCE THERMOMETER

SLOT RTD SINGLE POINT IN THE ADDITIONAL HOUSING, TYPE **TOPE602**



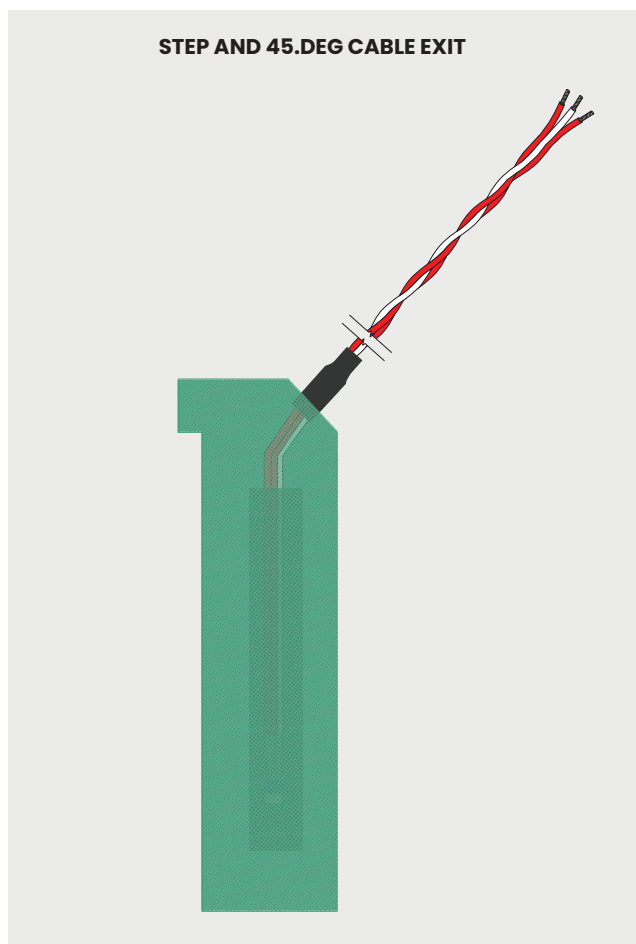
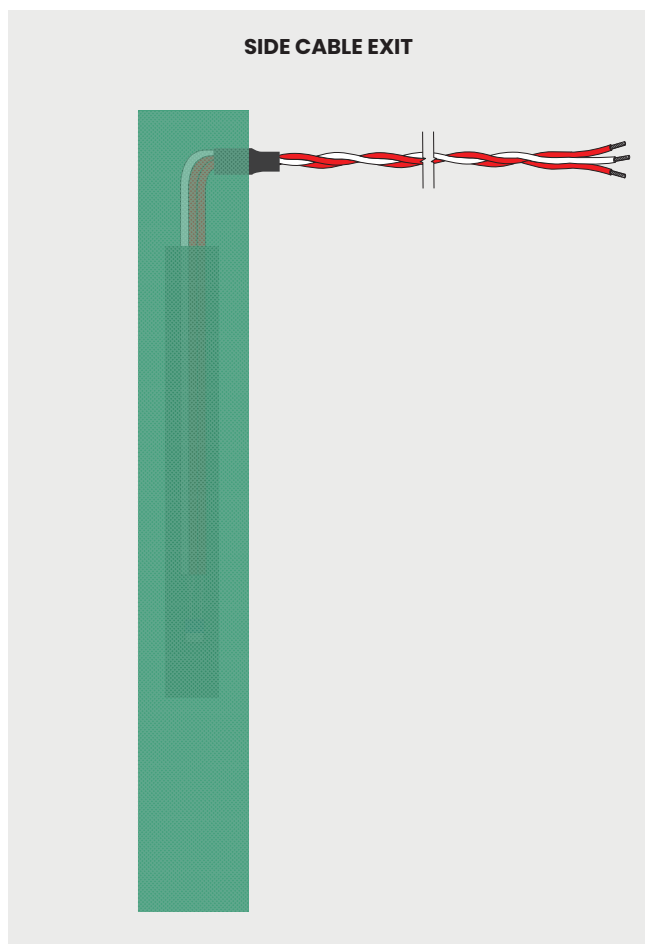
Data sheet TOPE602 | Edition 2023

Possible housing dimensions

Connecting Cable No. of wires x section	Insulation	Outer diameter	Housing thickness GH [mm] ±0.2	Housing width SH [mm] ±0.2	Housing length LH [mm] ±2
2 x 0.22 mm ²	TT	Ø 2.5	5.0 .. 20.0	13.0 .. 80.0 (single)	120 .. 6000
3 x 0.22 mm ²	TT	Ø 2.6			
	TCuT	Ø 3.1			
4 x 0.22 mm ²	TW	Ø 2.5			
	TT	Ø 2.6			
	TCuT	Ø 3.9			
6 x 0.22 mm ²	TT	Ø 4.1			
3 x 0.50 mm ²	TW	Ø 3.1			
	TCuT	Ø 4.2			
4 x 0.50 mm ²	TW	Ø 3.5			
	TCuT	Ø 4.5			
6 x 0.50 mm ²	TW	Ø 4.4			
	TCuT	Ø 5.4			
8 x 0.50 mm ²	TW	Ø 4.8			
	TCuT	Ø 6.0			

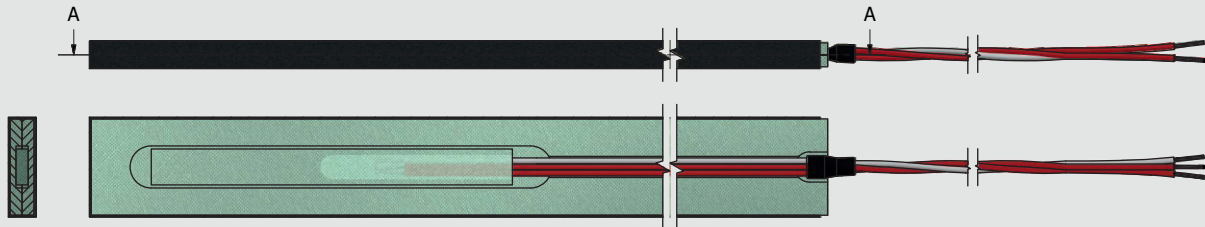
Non-standard sensor versions

This data sheet contains only a small portion of our program of supplying stator slot resistance thermometers. Other versions can be supplied upon customer's request. Below presented examples of customized versions.

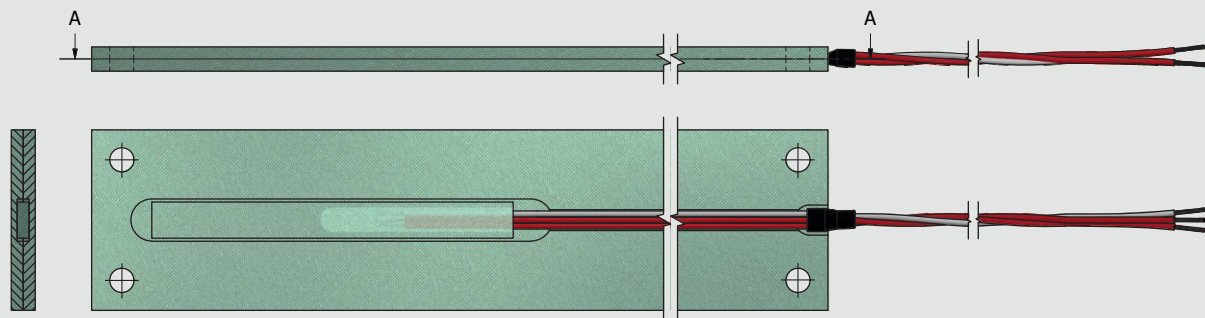


Non-standard sensor versions

STATOR SLOT RTD IN HOUSING PAINTED WITH CONDUCTIVE VARNISH



STATOR SLOT RTD IN HOUSING WITH MOUNTING HOLES



RESISTANCE THERMOMETER

SLOT RTD SINGLE POINT IN THE ADDITIONAL HOUSING, TYPE **TOPE602**



Data sheet TOPE602 | Edition 2023

Ordering code

TOPE602 - - - - - - - - - -

Order	Parameter	Code	<input type="checkbox"/>	Description		
1	Type of sensing element	1xPt100	<input type="checkbox"/>	Single Pt100 IEC 751, $\alpha = 0.00385$		
		2xPt100	<input type="checkbox"/>	Double Pt100 IEC 751, $\alpha = 0.00385$		
		1xNi100	<input type="checkbox"/>	Single Ni100 DIN43760, $\alpha = 0.00618$		
		2xNi100	<input type="checkbox"/>	Double Ni100 DIN43760, $\alpha = 0.00618$		
		xxx	<input type="checkbox"/>	Other, please specify		
2	Housing material	GC203/308	<input type="checkbox"/>	Epoxy-glass laminate EP GC 203/308		
		EP01	<input type="checkbox"/>	Epoxy-glass laminate with graphite EP01 (conductive)		
3	Housing thickness GH	5.0	<input type="checkbox"/>	5.0 mm		
		6.5	<input type="checkbox"/>	6.5 mm		
		8.0	<input type="checkbox"/>	8.0 mm		
		xxx	<input type="checkbox"/>	Other, please specify		
4	Housing width SH	18.0	<input type="checkbox"/>	18.0 mm		
		24.0	<input type="checkbox"/>	24.0 mm		
		xxx	<input type="checkbox"/>	Other, please specify		
5	Housing length LH	500	<input type="checkbox"/>	500 mm		
		1000	<input type="checkbox"/>	1000mm		
		2000	<input type="checkbox"/>	2000mm		
		xxx	<input type="checkbox"/>	Other, please specify		
6	Dimension AH	100	<input type="checkbox"/>	100 mm		
		500	<input type="checkbox"/>	500mm		
		xxx	<input type="checkbox"/>	Other, please specify		
7	Connecting cable length Lp	1000	<input type="checkbox"/>	1000mm		
		2000	<input type="checkbox"/>	2000mm		
		xxx	<input type="checkbox"/>	Other, please specify		
8	RTD class	A	<input type="checkbox"/>	Class A acc. to PN-EN 60751 / IEC 751 (only platinum sensing elements)		
		B	<input type="checkbox"/>	Class B acc. to PN-EN 60751 / IEC 751 / DIN43760 / GOST 6651-94		
9	Connection line	2	<input type="checkbox"/>	2-wire		
		3	<input type="checkbox"/>	3-wire		
		4	<input type="checkbox"/>	4-wire		
10	Connecting cable type			Conductor	Screen	Sheath
		2x0.22-TT	2x0.22 mm ²	Teflon® PFA		Teflon® PFA
		3x0.22-TT	3x0.22 mm ²	Teflon® PFA		Teflon® PFA
		3x0.22-TCuT	3x0.22 mm ²	Teflon® PFA	Cu Braid	Teflon® PFA
		4x0.22-TW	4x0.22 mm ²	Teflon® PFA		
		4x0.22-TT	4x0.22 mm ²	Teflon® PFA		Teflon® PFA
		4x0.22-TCuT	4x0.22 mm ²	Teflon® PFA	Cu Braid	Teflon® PFA
		6x0.22-TCuT	6x0.22 mm ²	Teflon® PFA	Cu Braid	Teflon® PFA
		3x0.50-TW	3x0.50 mm ²	Teflon® FEP		
		3x0.50-TCuT	3x0.50 mm ²	Teflon® FEP	Cu Braid	Teflon® FEP
		4x0.50-TW	4x0.50 mm ²	Teflon® FEP		
		4x0.50-TCuT	4x0.50 mm ²	Teflon® FEP	Cu Braid	Teflon® FEP
		6x0.50-TW	6x0.50 mm ²	Teflon® FEP		
		6x0.50-TCuT	6x0.50 mm ²	Teflon® FEP	Cu Braid	Teflon® FEP
		8x0.50-TW	8x0.50 mm ²	Teflon® FEP		
8x0.50-TCuT	8x0.50 mm ²	Teflon® FEP	Cu Braid	Teflon® FEP		

Example

TOPE602-1xPt100-GC203/308-5.3-19.8-1690-150-20000-B-3-3x0.50-TW

Slot RTD 1xPt100, housing material EP GC 203/308, thickness GH=5.3 mm, width SH=19.8 mm, length LH=1690 mm, dimension AH=150 mm, connecting cable length Lp=20000 mm, tolerance class B, 3-wire connection line, cable 3x0.50mm² in insulation TW.