EPIC® SENSORS T-RO / W-RO
Pipe surface temperature sensor

Features

- temperature range –200...+550 °C
- fitting for pipes or other cylindrical shapes
- on request, the fitting can be welded on the sensor element at the factory
- sensor without welded fitting will meet the ATEX, IECEx and EAC Ex (Ex e) requirements
- fitting can be supplied as separate item
- Pt100 or thermocouple as sensing element
- Pt100 accuracy class A as standard delivery
- thermocouple accuracy class 1 as standard delivery
- AISI 316L as standard delivery material, other materials on request
- MI cable structured sensor element
- bendable
- vibration proof
- tailored solutions according to customer specific needs
- ATEX and IECEx compatible Ex i versions available
- 3D step models available on request.

Typical applications

- energy and power plant technology
- process industry
- chemical industry
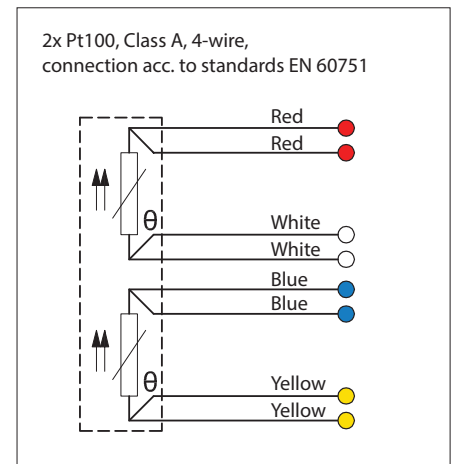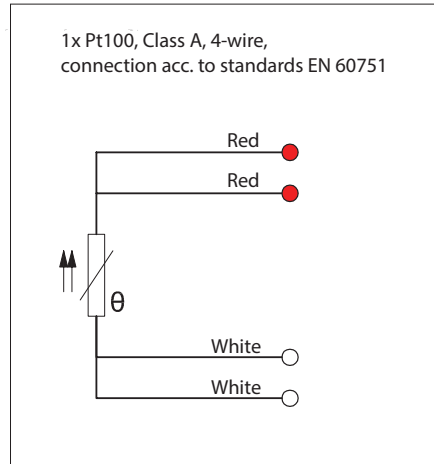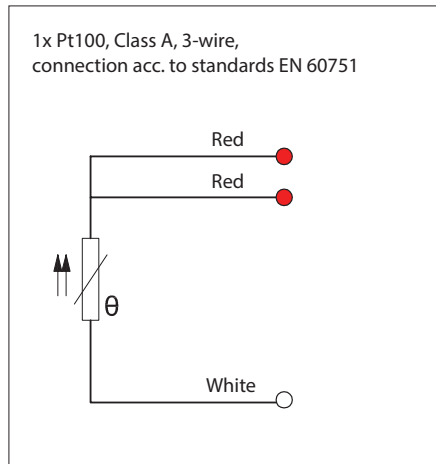- machinery and vessel construction
- manufacturing industry.

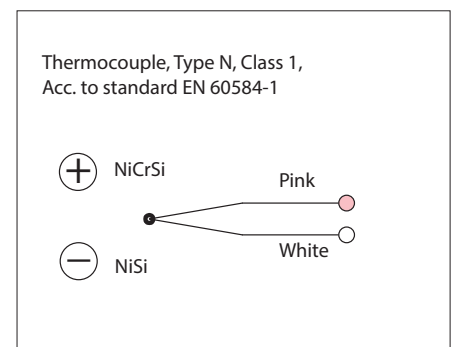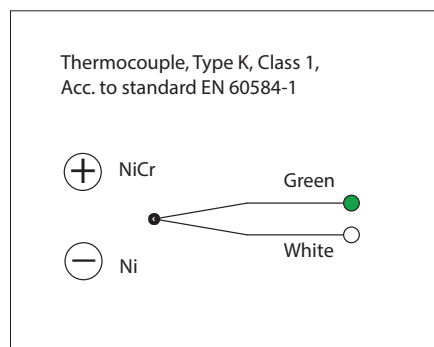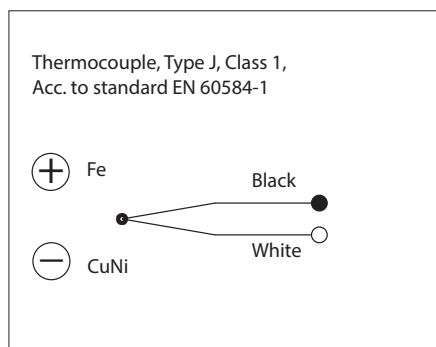## Technical data

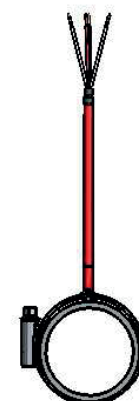|	
Materials	AISI 316L, max. temperature +550 °C, temporarily +600 °C, other materials on request (Note. max. safe temperature +100 °C for the sealant tube in cable to sensor element transition)
Fittings available for pipe sizes	0...1000 mm, other sizes on request
Cable material	SIL = silicone, max. +180 °C FEP = fluoropolymer, max. +205 °C GGD = glass silk cable/metal braid jacket, max. +350 °C FDF = FEP wire insulation/braid shield/FEP jacket, max.+205 °C SDS = silicone wire insulation/braid shield/silicone jacket, only available as 2 wire cable, max. +180 °C TDT = fluoropolymer wire insulation/braid shield/fluoropolymer jacket, max. +205 °C FDS = FEP wire insulation/braid shield/silicone jacket, max. +180 °C FS = FEP wire insulation/silicone jacket, max. +180 °C (Note. max. safe temperature +100 °C for the sealant tube in cable to sensor element transition)
Tolerances Pt100 (IEC 60751)	A tolerance ±0.15 + 0.002 x t, operating temperature –100...+450 °C B tolerance ±0.3 + 0.005 x t, operating temperature –196...+600 °C B 1/3 DIN, tolerance ±1/3 x (0.3 + 0.005 x t), operating temperature –196...+600 °C B 1/10 DIN, tolerance ±1/10 x (0.3 + 0.005 x t), operating temperature –196...+600 °C
Tolerances thermocouple (IEC 60584)	Type J tolerance class 1 = –40...375 °C±1.5 °C, 375...750 °C ±0.004 x t Type K and N tolerance class 1 = –40...375 °C ±1.5 °C, 375...1000 °C ±0.004 x t
Temperature range Pt100	Model W-RO: –200...+350 °C, depending on materials and sensor element length, Model W-RO-M: –200...+550 °C, depending on materials and MI element length. (Note. max. safe temperature +100 °C for the sealant tube in cable to sensor element transition)
Temperature range thermocouple	Model T-RO: –200...+350 °C, depending on thermocouple type, materials and sensor element length, Model T-RO-M: –200...+550 °C, depending on thermocouple type, materials and MI element length. (Note. max. safe temperature +100 °C for the sealant tube in cable to sensor element transition)
Approvals	ATEX, IECEx and EAC Ex (Ex e) with remarks (see features), METROLOGICAL PATTERN APPROVAL
Quality certificate	ISO 9001:2015 and ISO 14001:2015 issued by DNV

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Pt100 connections

1x Pt100, Class A, 3-wire,
connection acc. to standards EN 60751

Red
Red
θ
White

1x Pt100, Class A, 4-wire,
connection acc. to standards EN 60751

Red
Red
θ
White
White

2x Pt100, Class A, 4-wire,
connection acc. to standards EN 60751

Red
Red
θ
White
White
Blue
Blue
θ
Yellow
Yellow

Thermoelement connections

Thermocouple, Type J, Class 1,
Acc. to standard EN 60584-1

+ Fe
Black
White
– CuNi

Thermocouple, Type K, Class 1,
Acc. to standard EN 60584-1

+ NiCr
Green
White
– Ni

Thermocouple, Type N, Class 1,
Acc. to standard EN 60584-1

+ NiCrSi
Pink
White
– NiSi

Installation examples
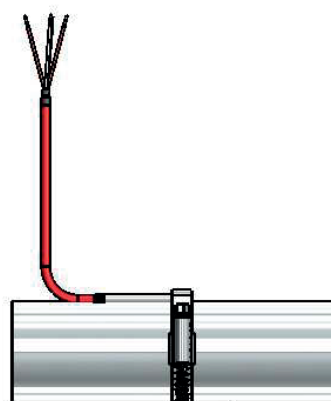
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Drawing

Model W-RO

ØOD typically 6 mm

tinned wires

sensor element

compression

cable

heat shrink tubing

D

L

CL

50

Model W-RO-M

ØOD typically 3 mm

tinned wires

sealant tube (steel)

bendable MI cable

heat shrink tubing

cable

D

L

40

CL

50
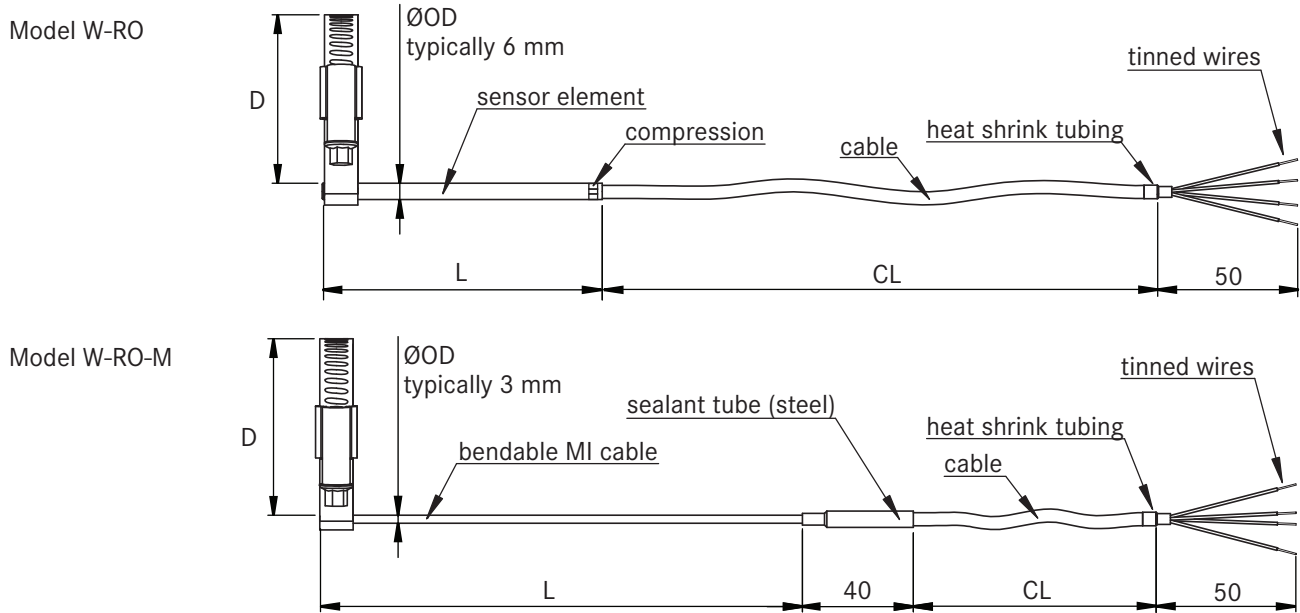
Product code key

Example code: W — RO — M — 3 / 500 — 5000 / SIL — 4 — A — D=25 — X

Code	Description
W	= Pt100 resistance thermometer
2xW	= 2 x Pt100 resistance thermometer
T	= thermocouple
2xT	= 2 x thermocouple
RO	= sensor with pipe fitting (constant in code)
empty	= non-bendable sensor element
M	= bendable MI cable as sensor element
3, 6, 8	= outer diameter of sensor element (ØOD) [mm]
500	= immersion length, L [mm]
5000	= cable length, CL [mm]
SIL, FEP, GGD, FDF, TDT, SDS, FDS, FS,	= cable material (for more information, look technical data on first page of the datasheet)
4,3,2	= Pt100 wire count
K,N,J	= thermocouple type
A,B	= Pt100 accuracy class, (class A as standard delivery)
1,2,3	= thermocouple accuracy class, (class 1 as standard delivery)
D=25	= inner diameter of pipe fitting [mm] (= external diameter of process pipe)
EXI	= Ex i certified sensor
X	= additional details on the text line