Resistance thermometer MiniTherm

with threaded connection

Type series GA270.

Application area

- Water / wastewater
- General process technology
- Plant and mechanical engineering

Features

- Resistance thermometer for invasive temperature measurement in tanks and pipes
- Pt100 directly integrated into a sensor tube
- Compact design
- High measurement accuracy
- Fast response
- Measuring resistor 1 x Pt100 or 2 x Pt100, class A
- Circular connector M12

Options

- Approvals / Certificates
  - Ex-Schutz (ATEX/CCCEx)
  - Classification per SIL2
  - Material certificate per EN 10204-3.1
  - Calibration certificate per EN 10204-3.1
- As per UKCA regulations
- Output signal 4...20 mA via transmitter PA2430
- Output signal IO-Link V1.1 via transmitter PA2530
- Sensor tube with reduced tip Ø 4 mm

Application

The resistance thermometer MiniTherm is suited for temperature measuring in tanks and pipes. Because of its compact design and high accuracy MiniTherm is suitable for use in a great number of technological processes.

Technical data

Constructional design

Design:	Pt100 directly integrated into a sensor tube, various types of process connections are available
Electrical connection:	Circular connector M12 (4-pin) Option: Circular connector M12 (8-pin) for 2 x Pt100 Further electrical connections upon request.
Working pressure:	Max. 40 bar

Measuring insert

Design:	Sensor tube Ø 6 mm Option: Sensor tube with reduced tip Ø 4 mm Length see order code.
Measuring resistor:	■ Pt100 per EN 60751, class A 3-wire ■ Pt100 per EN 60751, class A 4-wire (3-wire bridged) ■ 2 x Pt100 per EN 60751, class A 3-wire
Degree of protection:	IP 67 per EN 60529

Output signal transmitter

Output signal 4...20 mA :

Detailed informations about transmitter type PA2430 see product page on www.labom.com.

Output signal IO-Link V1.1:

Detailed informations about transmitter type PA2530 see product page on www.labom.com.

Process connection

Design:	See order code

Material wetted parts

Material:	Stainless steel mat.-no. 1.4404 (316L)

Accuracy

Pt100:	per EN 60751, class A
Response time:	Per EN 60751, test procedure with flowing water (without transmitter) Sensor tube Ø 6 mm: T_{90} = 5.5 s Sensor tube with reduced tip Ø 4 mm: T_{90} = 4.5 s

Temperature ranges

Ambient:[1]	-40…85 °C
Media:	-50…200 °C
Storage:[1]	-40…85 °C

[1] Different temperature ranges for devices with transmitter (see data sheets for the types PA2430 or PA2530).

Transmitter

Installation variants:	■ Transmitter, Type PA2430, for circular connector M12 ■ Transmitter, Type PA2530 IO-Link, for circular connector M12

Tests and certificates

Ex approval

ATEX:	TÜV 08 ATEX 554093 X Ⓔx II 1G Ex ia IIC T6/T5/T4 Ⓔx II 2G Ex ib IIC T6/T5/T4 Ⓔx II 1D Ex iaD 20 T89 °C Ⓔx II 2D Ex ibD 21 T129 °C U_i ≤ 30 V P_i ≤ 200 mW Ci and Li are negligible small (not for devices with transmitter)
CCCEx:	CCCEx No. 2022322315004603 Ex ia IIC T6...T4 Ga Ex ib IIC T6...T4 Gb Ex ia IIIC T89 °C Da Ex ib IIIC T129 °C Db
UK:	Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus

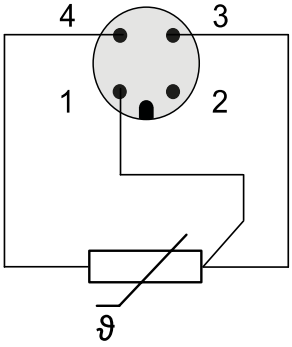
Further technical data see Ex Instructions XA_001 (ATEX) and XA_029 (CCCEx).

SIL2:	Functional safety: per EN 61508, classification of Pt100 sensor per SIL2, suitable transmitter upon request

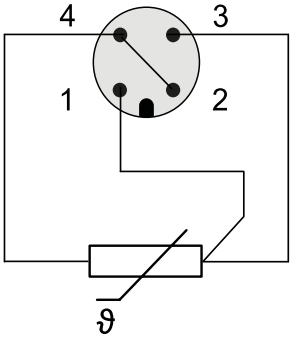
Connection diagram

Circular connector M12

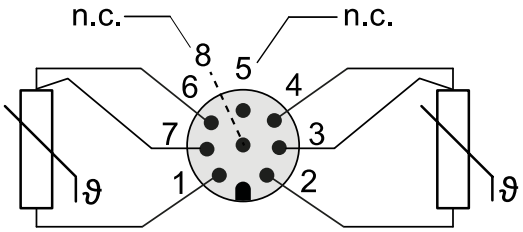
1 x Pt100, 3-wire



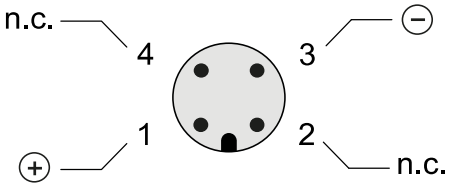
1 x Pt100, 4-wire
(3-wire bridged)



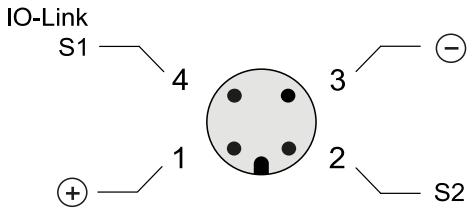
2 x Pt100, 3-wire



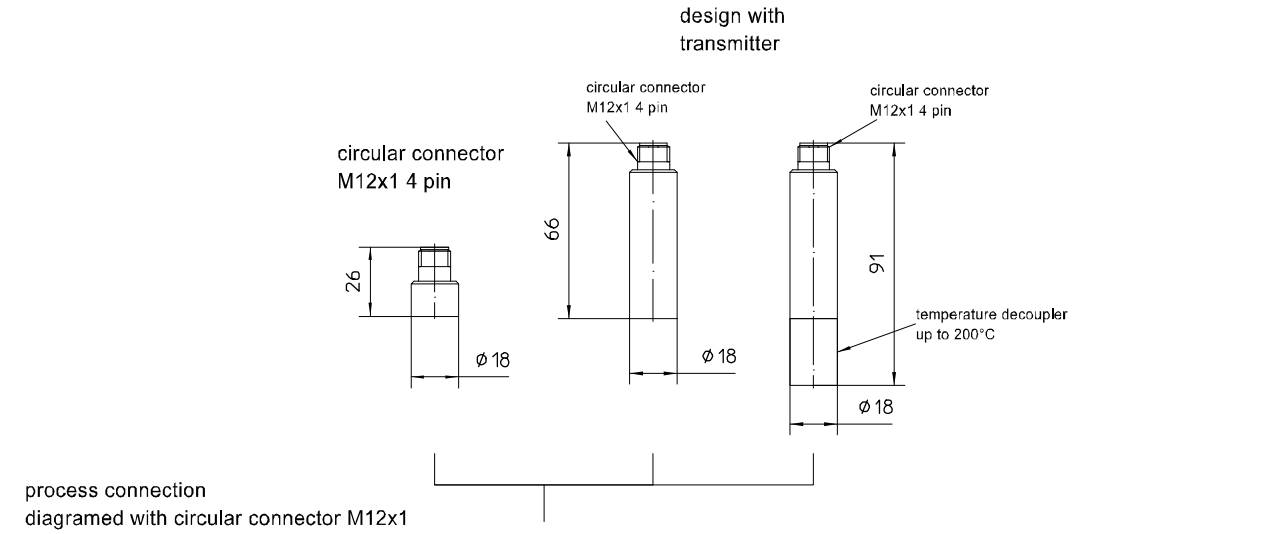
Transmitter
(type series PA2430)

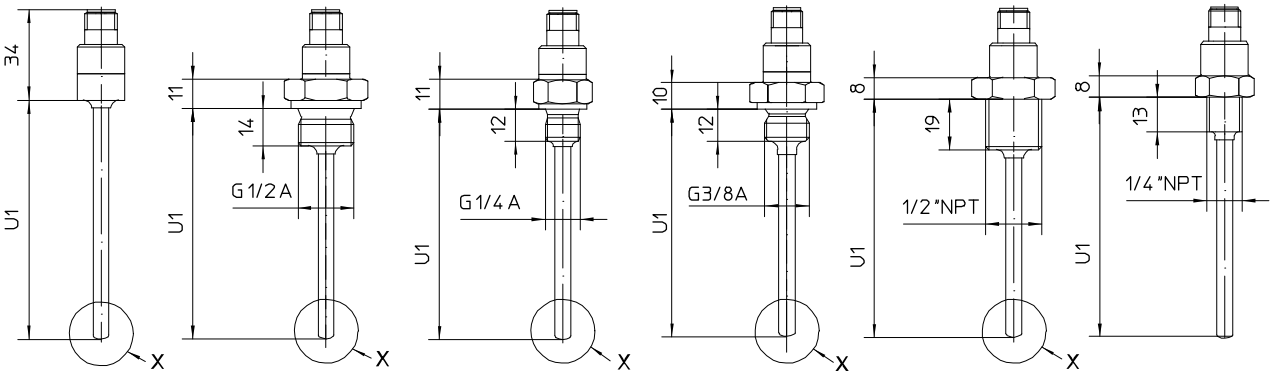


Transmitter IO-Link
(type series PA2530)

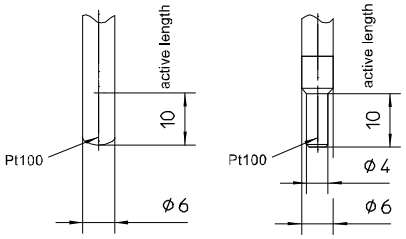


Dimensions





without screwing | G1/2A DIN 3852-2 model A | G1/4A DIN 3852-2 model A | G3/8A DIN 3852-2 model A | 1/2"NPT | 1/4"NPT



design of stem

Minimum insertion length U1

Measuring insert	for threated connection	without screw thread
Ø 6 mm	U1 min = screw thread + 15 mm	U1 min = 15 mm
Ø 6 mm, tapered to Ø 4 mm	U1 min = screw thread + 17 mm	U1 min = 20 mm

Order details

Resistance thermometer MiniTherm with threaded connection			
GA270 .	Resistor thermometer MiniTherm with threaded connection		
0	Ex-design	without	
1		explosion protection, design see below	
A3000	process connection	without screwing	
A1006		threaded connection	G1/4 A per DIN 3852-2 Form A
A1008			G3/8 A per DIN 3852-2 Form A
A1010			G1/2 A per DIN 3852-2 Form A
A1020			1/4" NPT
A1022			1/2" NPT
C1 . . .	measuring insert	Ø 6 mm	
C4 . . .		Ø 6 mm, reduced design to Ø 4 mm [1]	
025	insertion length U1	25 mm [8]	
030		30 mm	
035		35 mm	
050		50 mm	
100		100 mm	
150		150 mm	
200		200 mm	
990		as in writing	
G11	material	wetted parts stainless steel mat.-no 1.4404 (316L)	
N2	measuring resistor	Pt100, 3-wire	
N3		Pt100, 4-wire (3-wire bridged) [2]	
N5		2 x Pt100, 3-wire [1, 3]	
T150	electrical connection	circular connector M12x1 (4-pin), IP 67	
T151		circular connector M12x1 (8-pin), IP 67 [4]	

Additional features (to be indicated in case of need, only)			
S71	Ex-marking	ATEX	Ⓔx II 1G Ex ia IIC T6 /T5/T4 Ga
S72			Ⓔx II 2G Ex ib IIC T6 /T5/T4 Gb
S73			Ⓔx II 1D Ex ia IIIC T89 °C Da
S74			Ⓔx II 2D Ex ib IIIC T129 °C Db
S100		CCCEx	Ex ia IIC T6...T4 Ga
S101			Ex ib IIC T6...T4 Gb
S102			Ex ia IIIC T89 °C Da
S103			Ex ib IIIC T129 °C Db
S52		Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK)	
W1020	material certificate	per EN 10204-3.1, wetted parts	
W1201	calibration certificate	per EN 10204-3.1, 5 measuring points	
W2604	functional safety per EN 61508, classification per SIL2		
W2660	as per UKCA regulations [5]		
Z52	transmitter with output signal 4...20 mA [3,6,7]	for media temperatures up to 160 °C, transmitter type PA2430	
Z53		with temperature decoupler for media temperatures up to 200 °C, transmitter type PA2430	
Z54	transmitter with output signal IO-Link V1.1 [3,6,7]	for media temperatures up to 160 °C, transmitter type PA2530	
Z55		with temperature decoupler for media temperatures up to 200 °C, transmitter type PA2530	

Order code (example): GA2700 - A1010 - C1050 - G11 - N2 - T150 ...

[1] When selecting 2 x Pt100 in 3-L in combination with tapered tip and insertion lengths U1 < 40 mm (without thread) or U1< 54 mm (G1/2 A, G1/4 A, G3/8 A, 1/4" NPT) or U1 < 59 mm (1/2" NPT), higher measuring deviations than class A are to be expected.

[2] Not possible in combination with transmitter type PA2430 (order code Z52 and Z53).

[3] Not for devices with Ex-protection.

[4] Necessary for measuring resistor 2 x Pt100 (order code N5).

[5] Not possible with thermowell systems with inside pipe diameter > 25 mm.

[6] Not for devices with classification per SIL2.

[7] Not possible with circular connector M12x1, 8-pin (order code T151).

[8] Insertion length 25 mm only possible without screwing (order code A3000), see table “Minimum insertion length U1”.