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).

Messumformer

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

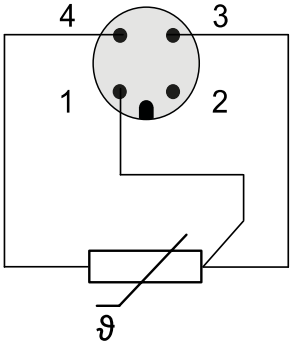
Further technical data see Ex Instructions XA_001 (ATEX) and XA_029 (CCCEx).

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

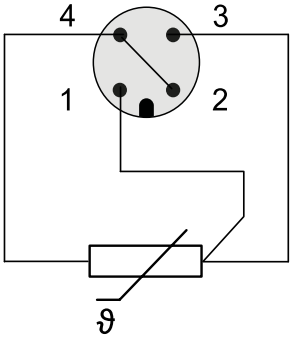
Connection diagram

Circular connector M12

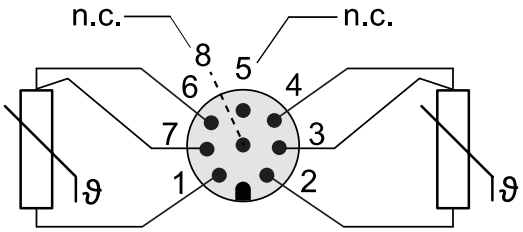
1 x Pt100, 3-wire



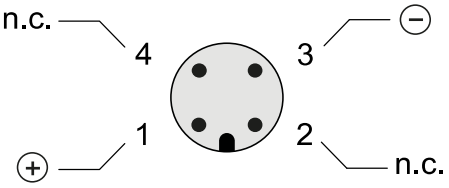
1 x Pt100, 4-wire
(3-wire bridged)



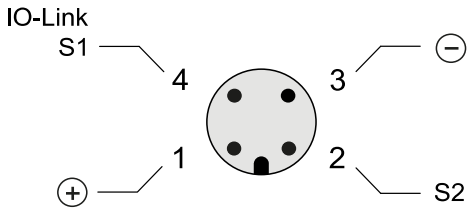
2 x Pt100, 3-wire



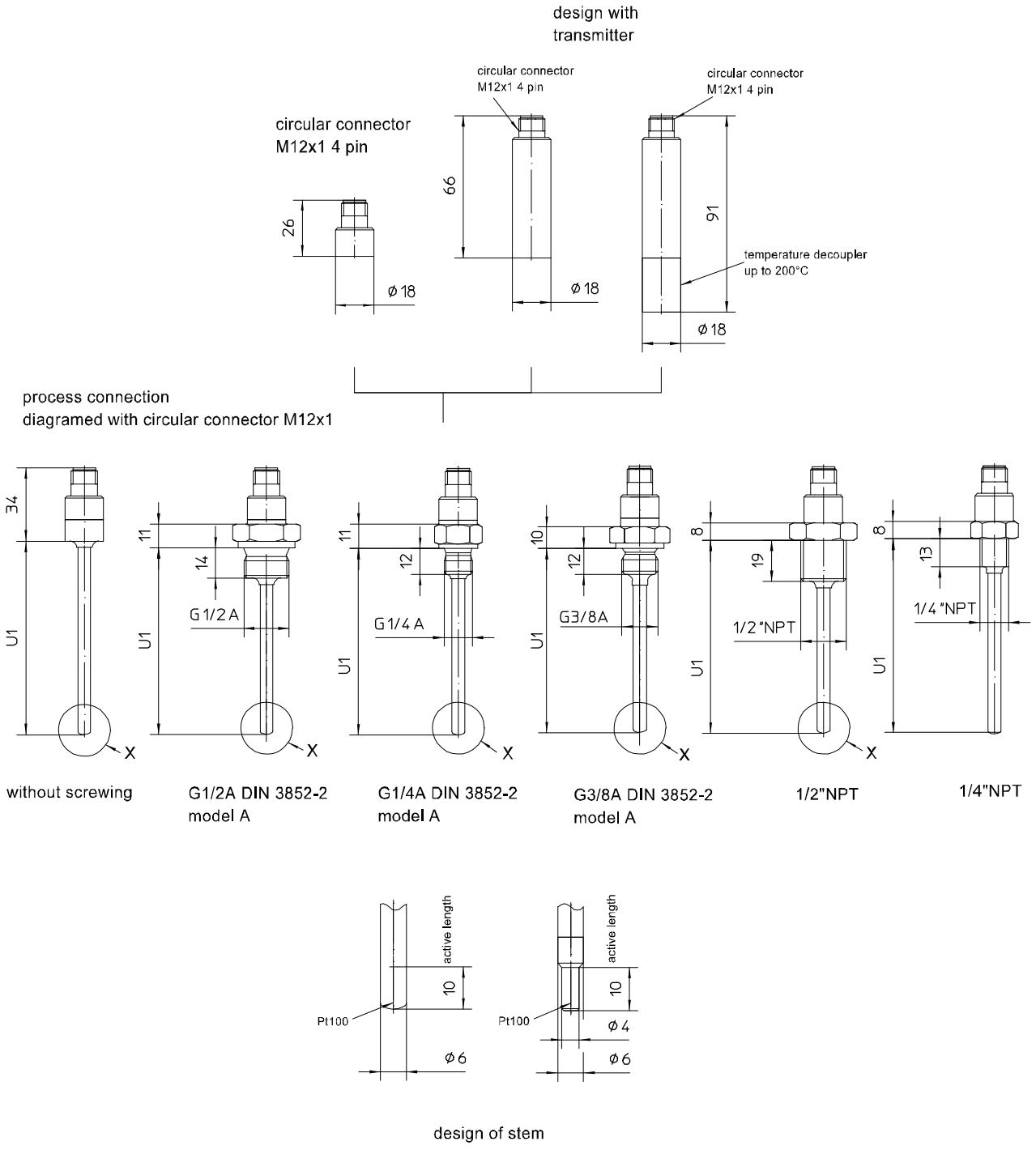
Transmitter
(type series PA2430)



Transmitter IO-Link
(type series PA2530)



Dimensions



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	
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).