

Transmitter for temperature, head mounting for Pt100

2 channel, HART®, SIEMENS Sitrans TH420

Type series PA2420



Application area

- all areas of the process industry

Features

- Digital, programmable temperature transmitter with two input channels
- Uninterruptible redundancy
- Drift detection of inputs
- Alarm currents for drift, open circuit and short-circuit individually programmable
- Galvanic isolation
- Digital communication via PDM/EDD and FDT/DTM
- Diagnostic LED
- Output signal: 4...20 mA, 2-wire technology, HART®
- Suitable for installation in connecting heads in accordance with DIN, form B

Options

- Approvals/Certificates
 - Explosion protection for gases and dust
 - SIL2 classification, SIL3 with redundant use of two PA2420

Application

The digital transmitter PA2420 is suitable for installation in connecting heads in accordance with DIN, form B and is configured via HART.

It enables the connection of two independent input circuits for redundant operation and drift detection of the inputs, making maintenance intervals easier to plan.

The temperature transmitter PA2420 is available for the following resistance thermometers of LABOM:

- Type series GA2200 (see data sheet T4-026)
- Type series GA25xx (see data sheets T4-024, T4-025-1, T4-025-2, T4-025-3)
- Type series GA2610 (see data sheet T4-028)
- Type series GA27xx (see data sheets T4-014, T4-015, T4-017)
- Type series GA3100 (see data sheet T4-025-45)

Technical data

Constructional design

Dimensions:	See dimensional drawing, Material: molded plastic
Degree of protection per EN 60529:	Case: IP 68 Terminals: IP 00
Vibration resistance per EN 60068-2-6:	2...25 Hz: 1.6 mm 25...100 Hz: 4 g
Weight:	50 g (0.11 lb)
Electrical connection:	Screw terminals, up to 1.5 mm ²

Input

Type of input:	Pt100 per EN 60751
Type of connection:	2 x 3-wire technology
Wire resistance per wire:	max. 50 Ω
Detection limit for short-circuit input:	15 Ω
Min/Max values:	For each sensor input, For each measuring mode: resettable
	For transmitter electronic temperature: not resettable
Measuring rate:	100 Hz
Resolution:	24 Bit

Output

Signal:	Current output, adjustable:	4...20 mA
	Lower limit:	3,5...4 mA
	Upper limit:	20...23 mA
	Current simulation:	3,5...23 mA
	Alarm current:	3,5...23 mA
	freely configurable for:	
	- sensor break	
	- sensor short circuit	
	- sensor drift	
	Digital communication:	HART®-protocol
	Device driver:	EDD for PDM 9.1

Function:	■ Linear ■ Inverse
Resolution:	≤ ± 1,6 µA (0,01 % of full output range)
Step response:	≤ 75 ms (typical 70 ms)

Accuracy

Basic accuracy:	≤ 0.04 °C (when using Pt100, class A)
Temperature influence ambient:	≤ 0.002 °C/°C
Influence of supply voltage change:	< 0.005 % of measuring span/V DC
Load influence:	< 0.01 % of measuring span/100 Ω
Long-term drift:	≤ 0.05 % of measuring span/year ≤ 0.18 % of measuring span/5 years

Supply voltage

Voltage:	7.5...48 V DC, protected against polarity reversal 7,5...30 V DC (Ex i), protected against polarity reversal
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Temperature ranges

Ambient:	-50...85 °C -40...80 °C (for SIL classification)
Storage:	-50...85 °C

Tests and certificates

Ex-approvals:

DEKRA 17 ATEX 0116 X
 Ex II 1G Ex ia IIC T6...T4 Ga
 Ex II 2(1)G Ex ib [ia Ga] IIC T6...T4 Gb
 Ex II 2D Ex ia IIIC Db

A5E43700604A-2018X
 Ex II 3G Ex nA IIC T6...T4 Gc
 Ex II 3G Ex ic IIC T6...T4 Gc
 Ex II 3D Ex ic IIIC Dc

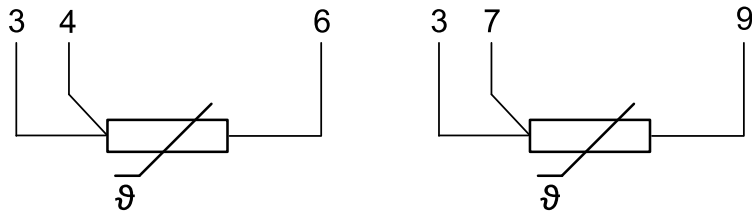
EMC:	Per EN 61326-1 / EN 61326-3-1
SIL:	Functional safety as per IEC 61508, SIL2 classification, SIL3 with redundant use of two PA2320

Parameterisation

Parameter	Values	Default setting
Input		
connectable sensors	2 x Pt100 3-wire	2 x Pt100 3-wire
input channels	2 channels	2 channels
wire resistance	0...50 Ω	0 Ω
drift detection mode	deactivated warning error	deactivated
damping	0...60 s	0 s
Output		
output function	linear, inverse	linear
lower range value	-200...850 °C	0 °C
upper range value	-200...850 °C (minimum span 10 °C)	150 °C
lower current limit	3.5...4.0 mA	3.8 mA
upper current limit	20.0...23 mA	20.5 mA
current output	3.5...23 mA	4...20 mA
4...20 mA	input 1 input 2 electronic temperature average input 1 and input 2 difference input 1 - input 2 difference input 2 - input 1 absolute difference input 1 - input 2 minimum input 1 - input 2 maximum input 1 - input 2 input 1 and input 2 as redundancy input 2 and input 1 as redundancy average input 1 and input 2, both redundant minimum input 1 and input 2, both redundant maximum input 1 and input 2, both redundant	input 1
Power frequency filter	50 Hz 60 Hz	50 Hz
Alarm current		
error detection mode	deactivated break short-circuit break and short-circuit	break and short-circuit
error sensor break	3.5...23 mA	22.8 mA
error sensor short-circuit	3.5...23 mA	22.4 mA
error sensor drift	3.5...23 mA	22 mA
review measuring range	deactivated input output input and output	deactivated
device error	< 3.6 mA or > 21 mA	< 3.6 mA
Safety		
functional safety	off / on	off
write protection	jumper software (user Pin)	off

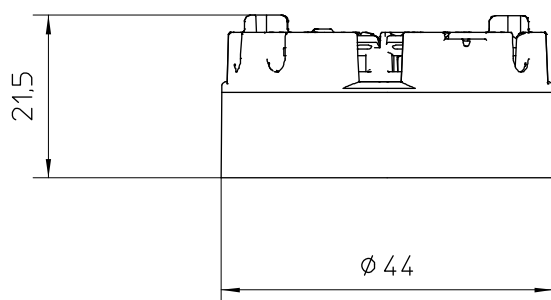
Parameter	Values	Default setting
HART®		
HART®-address	0...63	0
current mode	proportional, constant	proportional
HART® tag		device description
unit temperatur	°C, °F, °R, K	°C
PV (Primary Variable) SV (Secondary Variable) TV (Tertiary Variable) QV (Quarternary Variable)	input 1 input 2 electronic temperature average input 1 and input 2 difference input 1 - input 2 difference input 2 - input 1 absolute difference input 1 - input 2 minimum input 1 - input 2 maximum input 1 - input 2 input 1 and input 2 as redundancy input 2 and input 1 as redundancy average input 1 and input 2, both redundant minimum input 1 and input 2, both redundant maximum input 1 and input 2, both redundant	PV: input 1 SV: input 1 TV: input 1 QV: electronic temperature

Connection diagram



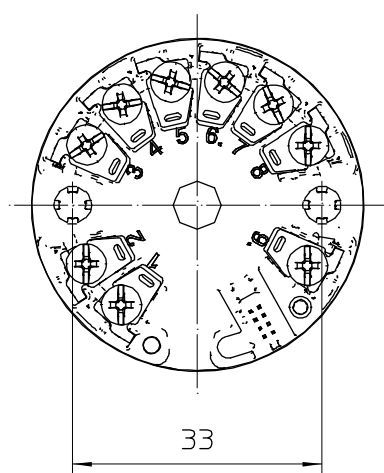
2 x 3-wire

Dimensions



Internal diameter
of center hole 6,2

Fixing screw
M4x32



For further details and descriptions, please refer to the SIEMENS data sheet of TH420.

Order details

Transmitter for temperature, head mounting for Pt100, 2 channel, HART®, SIEMENS Sitrans TH420		
PA2420	transmitter for temperature, head mounting for Pt100, 2 channel, HART®, SIEMENS Sitrans TH420	
F1	parameterisation	default settings (standard, see parameterisation table)
F9		as per customer's specification (pls. specify)
H21	output signal	4...20 mA, 2-wire, HART®

Additional features (to be indicated if required)		
S85.1	Ex marking (for SIEMENS Sitrans TH420)	DEKRA 17 ATEX 0116 X ⊕ II 1G Ex ia IIC T6...T4 Ga ⊕ II 2(1)G Ex ib [ia Ga] IIC T6...T4 Gb ⊕ II 2D Ex ia IIIC Db A5E43700604A-2018X ⊕ II 3G Ex na IIC T6...T4 Gc ⊕ II 3G Ex ic IIC T6...T4 Gc ⊕ II 3D Ex ic IIIC Dc
W2607	functional safety as per IEC 61508, SIL2 classification, SIL3 with redundant use of two PA2420	

Order code (example): **PA2420 - F1 - H21**