

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
- 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
 - Classification per SIL2/3, test cycle 10 years

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, max. 1 x 1.5 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 |
|----------|---|

Temperature ranges

| | |
|----------|-------------------------------------|
| Ambient: | -50...85 °C -40...80 °C (SIL2/3) |
| Storage: | -50...85 °C |

Tests and certificates

Ex-approval for SIEMENS Sitrans TH420:

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

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

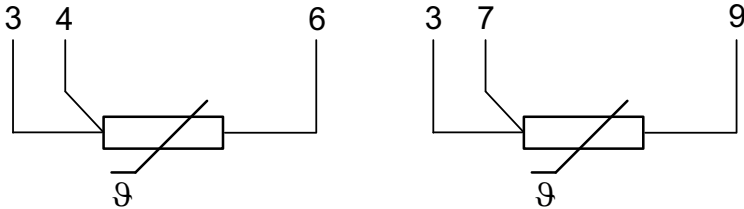
| | |
|---------|--|
| EMC: | Per EN 61326-1 / EN 61326-3-1 (SIL2/3) |
| SIL2/3: | Functional safety per IEC 61508, classification per SIL2/3 |

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 |

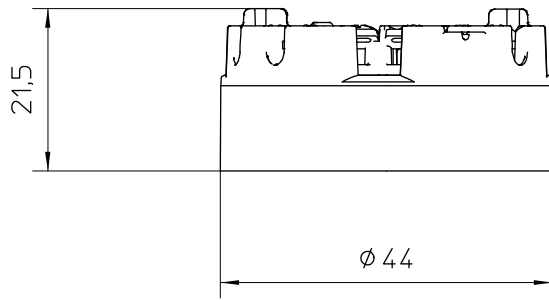
| Parameter | Values | Default setting |
|---|---|---|
| HART® | | |
| HART®-address | 0...63 | 0 |
| current mode | proportional, constant | proportional |
| HART® tag | | device description |
| unit temperatur | °C, °F, °R, K | °C |
| PV (Primary Variable) SV (Secondary Variable) TV (Tertiary Variable) 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



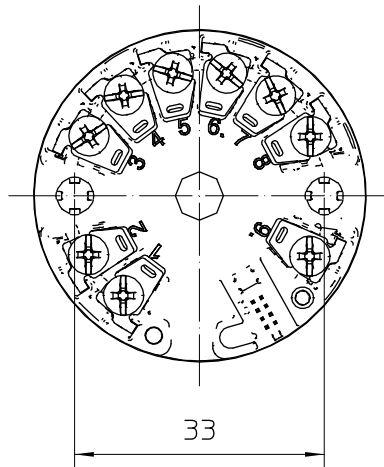
2 x 3-wire

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, Type series PA2420

Order details transmitter for temperature PA2420

| | | |
|---------------|---|---|
| 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 | Ex marking (for SIEMENS Sitrans TH420) | DEKRA 17 ATEX 0116X Ⓢ II 1G Ex ia IIC T6...T4 Ga Ⓢ II 2(1)G Ex ib [ia Ga] IIC T6...T4 Gb Ⓢ II 1D Ex ia IIIC Da 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 per IEC 61508, classification per SIL2/3 | |

Order code (example): PA2420 - F1 - H21