

PT100 TEMPERATURE HEAD TRANSMITTER THP101



The TekOn Electronics In Head Temperature Transmitters are specifically designed to meet the most rigorous requirements of operation in the industrial process environments. Due to their reduced dimensions they can be installed in the DIN Form B sensor connection head in place of traditional terminal blocks.

The operating parameters like the sensor type, connection method, measuring range, output signal range or fault value can be configured using the THP101 user friendly free software "TekOn Configurator".

Dimensions 45Ø x 23 mm

Weight: Approx. 50g

Material: Nylon 66

Protection Index: IP40

KEY FEATURES

PT100 SENSOR INPUT

2, 3 AND 4 WIRES

4 TO 20 MA ANALOG OUTPUT

INSTALLATION IN THE CONNECTION HEAD TYPE DIN B

CONTINUOUS OPERATING STATUS MONITORING

HIGH PRECISION AND ACCURACY

WIDE MEASUREMENT RANGE

NAMUR NE 43 FAULT DETECTION

CONFIGURABLE OVER PC TEKON CONFIGURATOR SOFTWARE

DS_INHD_THP101_E01B

TECHNICAL SPECIFICATIONS

INPUT RESISTANCE THERMOMETER (RTD)

| | |
|--------------------------|---|
| Measured variable | Temperature |
| Sensor type | PT100 |
| Connection | 1 Resistance thermometer (RTD) in 2-wire, 3-wire or 4-wire system |
| Units | °C |
| Sensor current | 600uA (2 or 4 wires); 300uA (3 wires) |
| Response time | <500 ms |
| Open-circuit monitoring | Always active (cannot be disabled) |
| Short-circuit monitoring | Always active (cannot be disabled) |
| Measuring range | Configurable (see "Measurement Accuracy" table) |
| Minimum measure span | 50°C |
| Characteristic curve | Temperature-linear |

OUTPUT

| | |
|--|--|
| Output signal | 4 to 20 mA |
| Power supply (Uaux) | 9 to 30 V DC |
| Max. load | (Uaux-9)/0,022 A |
| Overrange | 3 to 22 mA |
| Error signal (e.g. following sensor fault) [conforming to NE 43] | Software configurable ≤ 3,6 mA or ≥21 mA |
| Sample cycle | <1 s |
| Protection | Against reversed polarity - Surge protection |

MEASUREMENT ACCURACY

| | |
|-------------------------------------|--|
| Reference conditions | |
| Power supply | 24V DC ± 1% |
| Ambient temperature | 23°C |
| Warm-up time | >5min |
| Input span | [0; 100]°C |
| Accuracy (according to IEC 61298-2) | |
| Inaccuracy | -0,093% ; 0,317% |
| Max. error | 0,292% |
| Hysteresis | -0,051% |
| Non-repeatability | 0,054% |
| Basic accuracy | < +/- 0,4°C in full span [-200; 850]°C |
| Influence of ambient temperature | < 0,3 uA / °C |
| EMC - immunity influence | < +/- 0,55% of span |

POWER SUPPLY

| | |
|--------------|-------------------|
| Power Supply | 12 to 24 V DC ±1% |
|--------------|-------------------|

OPERATING ENVIRONMENT

| | |
|---------------------------|----------------------------|
| Ambient temperature range | -20 to 80°C |
| Storage temperature range | -20 to 80°C |
| Relative humidity | ≤95%, without condensation |

CASING

| | |
|-----------------|----------------------------|
| Material | Nylon 66 |
| Weight | Approx. 50g |
| Dimensions | See "Dimensional drawings" |
| Cross section | 2.5 mm ² |
| Protection type | IP40 |

CERTIFICATIONS AND APPROVALS

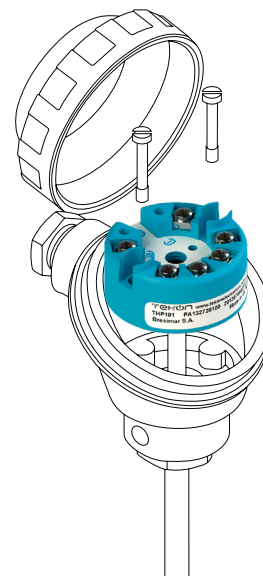
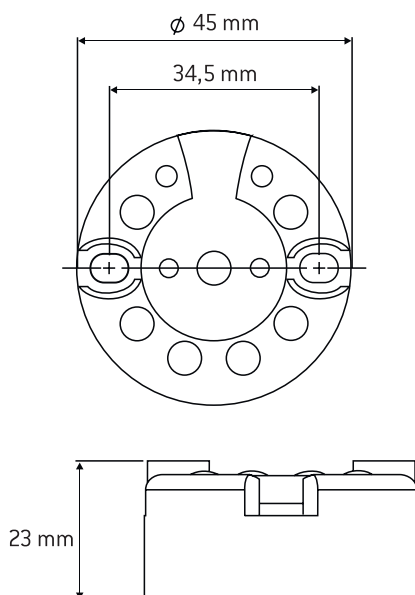
| | |
|---------------|---|
| EN 61326 | Electrical equipment for measurement, control and laboratory use. EMC requirements. |
| IEC 61000-4-2 | Electrostatic discharge immunity test |
| IEC 61000-4-3 | Radiated, radio-frequency, electromagnetic field immunity test |
| IEC 61000-4-4 | Electrical fast transient/burst/immunity test |
| IEC61000-4-5 | Surge immunity test |

FACTORY DEFAULT SETTINGS

| | |
|-----------------|---------------------------|
| Sensor | PT100 with 3-wire circuit |
| Measuring range | 0°C to 100°C |
| Fault current | NAMUR NE 43 |
| Sensor offset | 0°C |
| Sampling | 0,2 s |

TECHNICAL DRAWINGS AND INFORMATION

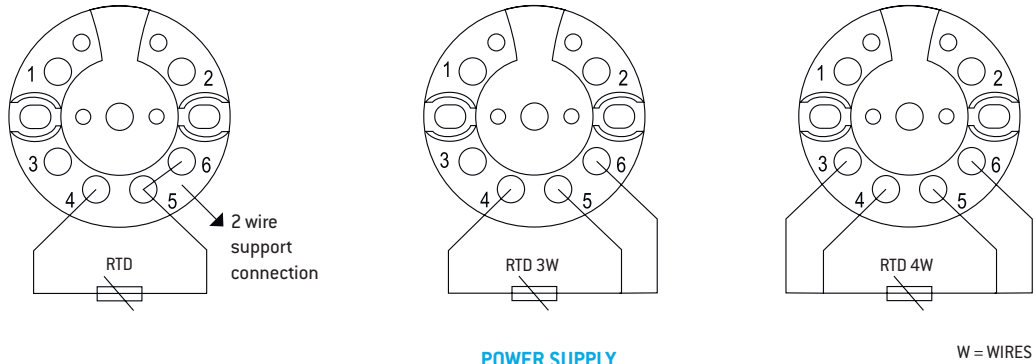
DIMENSIONAL DRAWINGS & INSTALLATION DIAGRAM



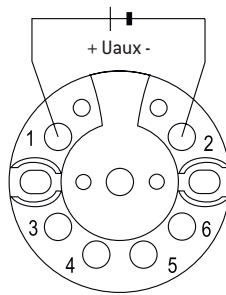
TECHNICAL DRAWINGS AND INFORMATION

ELECTRICAL CONNECTIONS

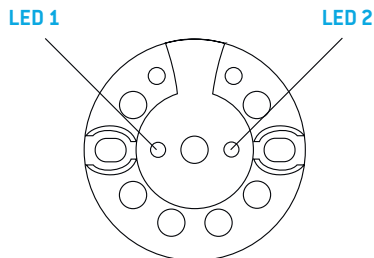
RESISTANCE THERMOMETER



POWER SUPPLY



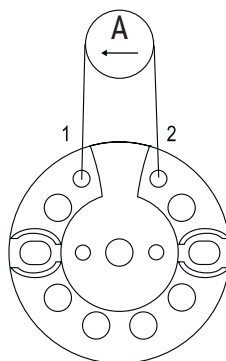
STATUS LED



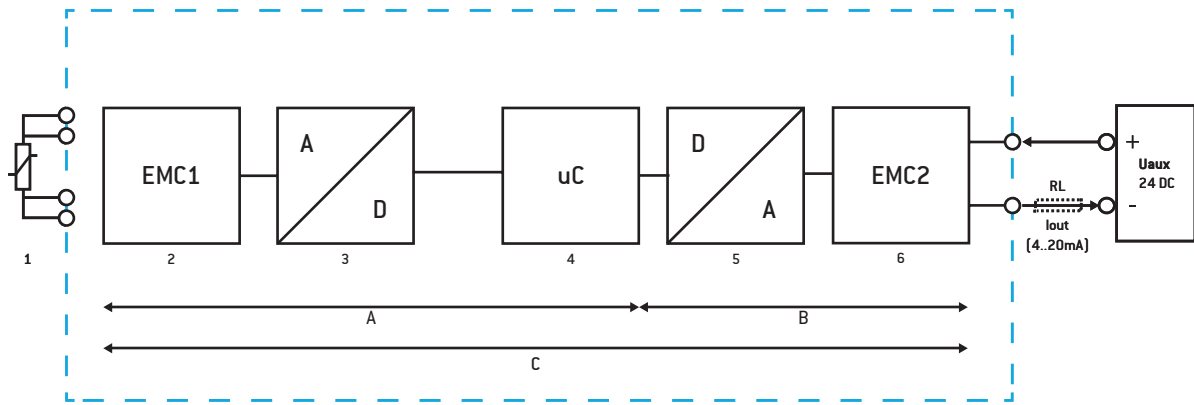
| LED 1 (RED) | LED 2 (BLUE) | |
|-------------|--------------|--------------------|
| OFF | ON | NORMAL MODE |
| BLINK | ON | SENSOR ERROR |
| OFF | BLINK | CONFIGURATION MODE |

TEST POINTS

The test points may be used to measure the transmitter current consumption. Please connect the test probes of multimeter with the DC current measurement option to the test points according to the following image.



BLOCK DIAGRAM



- 1 - Sensor (RTD, PT100)
- 2 - Sensor input protection module
- 3 - Analog-Digital converter (16 Bits)
- 4 - Microcontroller
- 5 - Digital-Analog converter (16 bits)
- 6 - Output protection module

- RL - Loop load
- Uaux - Power supply
- Iout - Output current
- A - Digital measure accuracy
- B - Digital / Analog conversion accuracy
- C - Total measure accuracy

RELATED PRODUCTS



SARC2 - USB CONFIGURATOR

REF.: PA132720310

Connection between a PC USB port and THP101 temperature head transmitter. USB powered for easy off-process configuration

REVISION HISTORY

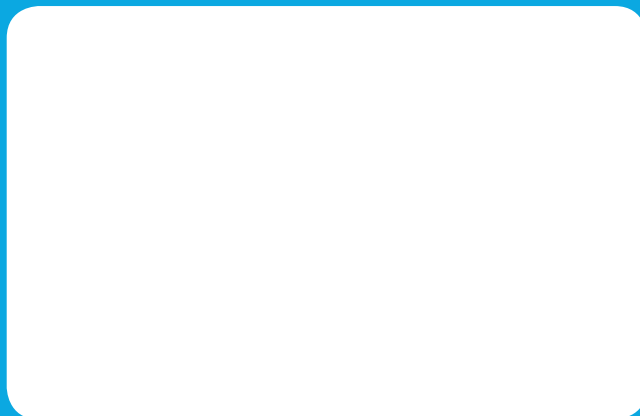
VERSION

| | |
|------|---|
| E01B | In "Measurement Accuracy" table, the "Accuracy", "Basic accuracy" and "Influence of ambiente temperature" information was added. "Housing" table renamed to "Casing". "Factory Settings" renamed to "Factory Default Settings". |
|------|---|

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