WIRELESS SENSORS TECHNOLOGY

PT100 ISOLATED TEMPERATURE HEAD TRANSMITTER THP102-I

The Tekon Electronics PT100 Isolated Temperature In Head Transmitters are specifically designed to meet the most rigorous requirements of operation in the industrial process environments.

The THP102-I is a temperature transmitter which accepts exclusively PT100 temperature sensors (Resistance thermometers with 3-wire configuration) and generates a linear 4 to 20mA current signal with high stability as output.

Dimensions	45ø x 23 mm
Weight:	Approx. 50g
Material:	Nylon 66
Protection Index:	IP40

KEY FEATURES

PT100 SENSOR INPUT
3 WIRES

WIDE MEASUREMENT RANGE

1,5 kV AC GALVANIC ISOLATION

4 TO 20 mA ANALOG OUTPUT

2 STATUS LEDS

HIGH MEASUREMENT ACCURACY

HIGH EMC PERFORMANCE

NAMUR NE 43 FAULT COMPLIANT

CONFIGURABLE OVER PC
TEKON CONFIGURATOR SOFTWARE

DS_INHD_THP102-I_E01B

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TECHNICAL SPECIFICATIONS

INPUT RESISTANCE THERMOMETER (RTD)	
Measured variable	Temperature
Sensor type	PT100
Connection	1 Resistance thermometer (RTD) in 3-wire system
Units	ºC
Sensor current	200 μA
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Always active (cannot be disabled)
Measuring range	Configurable (see "Digital measuring accuracy" table)
Minimum measured span	50ºC
Characteristic curve	Temperature-linear
Cable resistance per wire (max.)	50 Ω
Effect of sensor cable resistance (3 wires)	< 0,0015 Ω / Ω

OUTPUT	
Output signal	4 to 20 mA
Power supply (Uaux)	12 to 24V DC
Max. load	(Uaux - 12) / 0,021 A
Error signal (e.g. following sensor fault) (conforming to NAMUR NE43)	Software configurable 3,2mA or 21mA
Sample cycle	< 200ms
Protection	Against reversed polarity Surge protection

COMMON SPECIFICATIONS	
Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
Internal power dissipation	40 mW to 0,5 W
Voltage drop	12V DC
Effect of supply voltage variation	< 0,003% of span/ V DC
Response time 90%	< 1s
Power-up time	< 1s

MEASUREMENT ACCURACY	
Reference conditions	
Auxiliary power	24V DC ± 1%
Ambient temperature	23ºC
Warm-up time	2min
Error in the analog output (digital / analog converter)	≤ ± 0,01% of span
Digital measuring errors	See "Digital measuring accuracy" table
Influence of ambient temperature	
On RTD measurement	≤ ± 0,0042º C/ºC
On the analog output	< ± 0,002% of span / ºC

EMC - immunity influence (IEC 61326-1)	< ± 0,0891% of span
Extended EMC immunity (NAMUR NE 21, A criterion, burst)	< ± 0,63% of span

OPERATING ENVIRONMENT	
Ambient temperature range	-40 to 80ºC
Storage temperature range	-40 to 80ºC
Relative humidity	≤95%, without condensation

FACTORY DEFAULT SETTINGS	
Sensor	PT100 with 3-wire circuit
Measuring range	-200ºC to 850ºC
Temperature Format	Celsius (ºC)
Sensor fault signaling	3,2 mA
Current offset	0 μA

CASING	
Material	Nylon 66
Weight	Approx. 50g
Dimensions	See “Dimensional drawings”
Cross section of cables	2.5 mm^2
Protection type	IP40

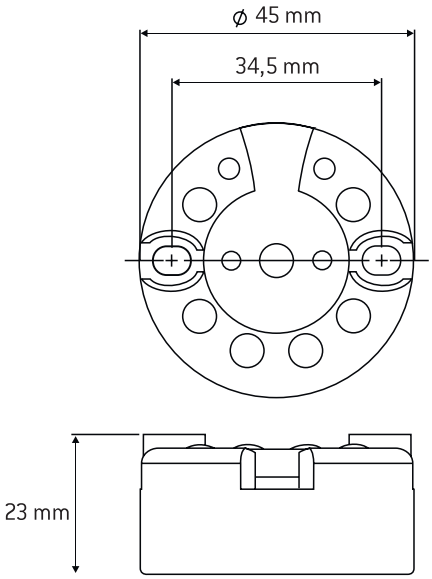
CERTIFICATES AND APPROVALS
EN 61326-1 - Class B - Industrial Requirements
IEC 61000-4-2
IEC 61000-4-3
IEC 61000-4-4
IEC 61000-4-5
IEC 61000-4-6
IEC 61000-4-8

DIGITAL MEASURING ACCURACY

RESISTANCE THERMOMETER (RTD)		
SENSOR	RANGE ºC	DIGITAL ACCURACY ºC
PT100	-200 to 850	< ± 0,2

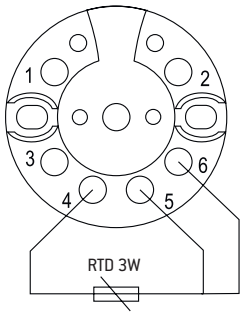
TECHNICAL DRAWINGS AND INFORMATION

DIMENSIONAL DRAWINGS & INSTALLATION DIAGRAM

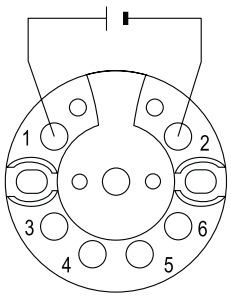


ELECTRICAL CONNECTIONS

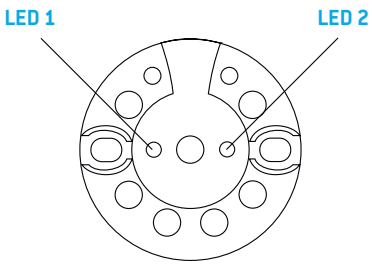
RESISTANCE THERMOMETER



POWER SUPPLY

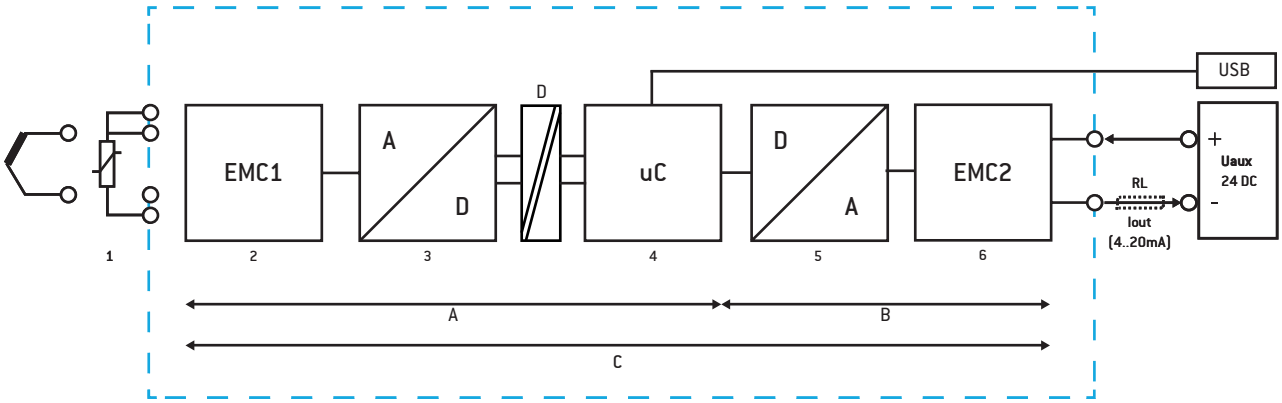


STATUS LED



LED 1 (RED)	LED 2 (BLUE)	
OFF	BLINK	No sensor error Configuration mode
FLASH	BLINK	Sensor error Configuration mode
BLINK	BLINK	Temperature out of range Configuration mode
OFF	ON	No sensor error Normal mode
FLASH	ON	Sensor error Normal mode
BLINK	ON	Temperature out of range Normal mode

BLOCK DIAGRAM



1 - Sensor (RTD)
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
D - Electrical isolation

REVISION HISTORY

VERSION	
E01B	Revision of “Isolation voltage” values.

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