

COMPACT  
DESIGN

# PT100 MODBUS TEMPERATURE TRANSMITTER THM501

REF.: PA151700100



The Tekon Electronics In Head 2-Wire 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 the DIN Form B sensor connection head in place of traditional terminal blocks.

The THM501 is a temperature transmitter which accepts exclusively PT100 temperature sensors (Resistance thermometers with 2,3 or 4-wire configuration), and make it available in a Modbus RTU slave register.

Dimensions: 23 mm x 45 mm

Weight: Approx. 50g

Material: Nylon 66

Protection Index: IP40

## KEY FEATURES

### PT100 SENSOR INPUT

2W, 3W AND 4W

### MODBUS SERIAL RTU SLAVE PROTOCOL

### INSTALLATION IN THE CONNECTION HEAD TYPE DIN B

### CONFIGURABLE OVER PC

TEKON CONFIGURATOR FREE SOFTWARE

### CONTINUOUS OPERATING STATUS MONITORING AND SELF-DIAGNOSTIC

### HIGH PRECISION AND ACCURACY

### WIDE MEASUREMENT RANGE

PA151700100.OS.ENG.V01.2018

## 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 or °F
Sensor current	600uA (2 or 4 wires); 300uA (3 wires)
Sampling time	<100 ms
Open-circuit monitoring	Always active (cannot be disabled)
Short-circuit monitoring	Always active (cannot be disabled)
Measuring range	-200°C to 850°C (-328°F to 1562°F)

### MEASUREMENT ACCURACY

Reference conditions	
Power supply	24V DC ± 1%
Ambient temperature	23°C (73,4°F)
Warming-up time	>5min
Range	-200°C to 850°C (-328°F to 1562°F)
Digital Accuracy °C (°F)	0.1°C (0,18°F)
Error due to internal cold junction	<0.4°C (0,25°F)
Influence of ambient temperature	<0.006° C/°C

### OUTPUT MODBUS

Physical Layer	RS-485
Slave Address Range	From 1 to 100

### POWER SUPPLY

Power Supply	12 a 24 V DC ± 10%
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### OPERATING ENVIRONMENT

Ambient temperature range	-20 to 80°C (-4 a 176°F)
Storage temperature range	-20 to 80°C (-4 a 176°F)
Relative humidity	≤95%, without condensation

### HOUSING

Material	Nylon 66
Weight	Approx. 50g
Dimensions	See "Dimensional drawings"
Cross-section of cables	2.5 mm <sup>2</sup>
Protection type	IP40

**CERTIFICATES 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
IEC061000-4-5	Surge immunity test

**FACTORY SETTINGS**

Sensor	PT100 with 3-wire circuit
Measuring range	-200°C to 850°C [-328°F to 1562°F]
Temperature Format	Celsius [°C]
<b>Modbus Settings</b>	
Baudrate	9600 bps
Parity	None
Data Bits	8
Stop Bits	2
Slave Address (Node Index)	1
Register Description	Register Address
Acquisition Mode	15 [UINT16]
Temperature Format	18 [UINT16]
Temperature Value	23 [Double 32]

**MODBUS TABLE (HOLDING REGISTERS 0X03 AND 0X10)**

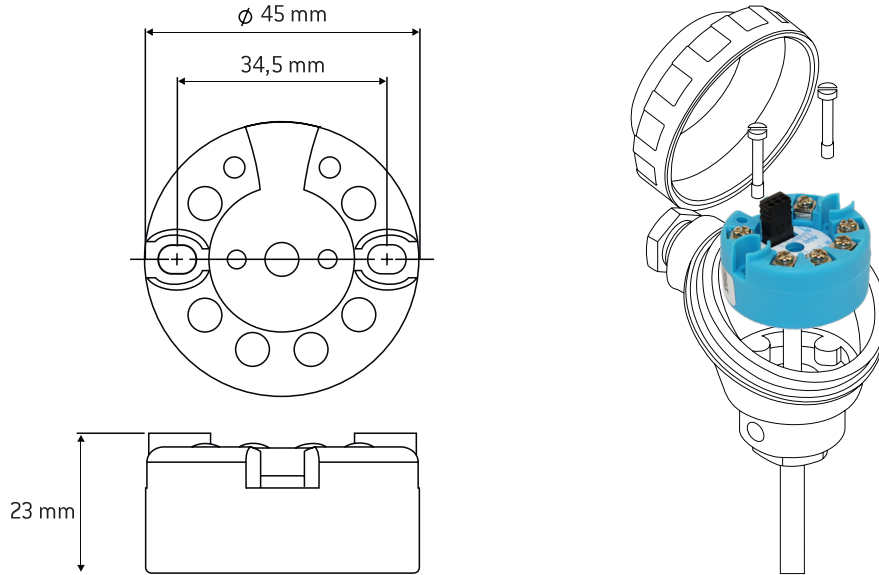
Description	Address	Type	Values
Acquisition Mode	15	UINT16	3 - PT100 2W 4 - PT100 3W 5 - PT100 4W
Temperature Format	18	UINT16	1 - °C 2 - °F 3 - K
Temperature Value	23	DOUBLE32	

**MODBUS CONFIGURATIONS**

Support baud rates	4800; 9600; 19200; 38400; 56000; 57600; 115200
Modbus address range	1 to 100
Supported parity	Odd/Even/None
Stop Bits (not configurable)	2 if parity NONE; 1 if parity ODD or EVEN
Response Time	<100ms
Time to start respond (after power ON) <sup>1</sup>	10s

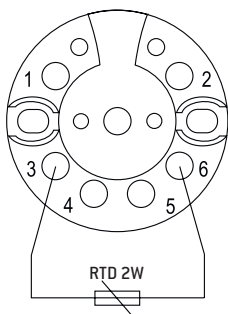
TECHNICAL DRAWINGS AND INFORMATION

DIMENSIONAL DRAWINGS & INSTALLATION DIAGRAM

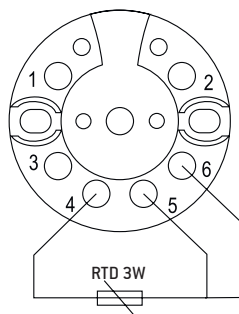


ELECTRICAL CONNECTIONS

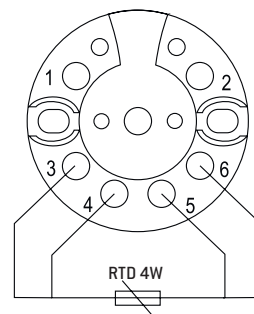
RESISTANCE THERMOMETER



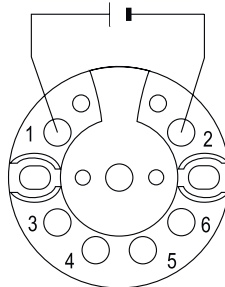
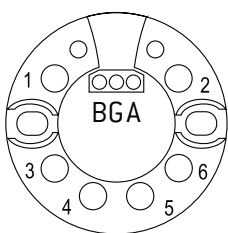
RS485



POWER SUPPLY

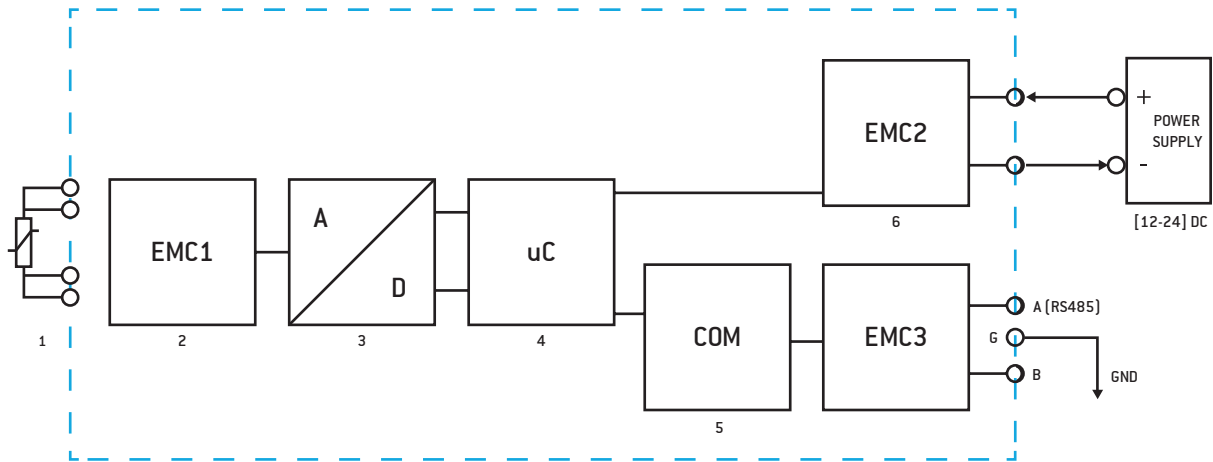


W = WIRES



A: - TxD-/RxD-  
B: + TxD/RxD+  
G: C common signal reference ground

**BLOCK DIAGRAM**



- 1 - Sensor (RTD)
- 2 - Sensor input protection module
- 3 - Analog-Digital converter (16 Bits)
- 4 - Microcontroller
- 5 - Communication module
- 6 - EMC protection module

**RELATED PRODUCTS**



**SARC1105 - USB CONFIGURATOR**

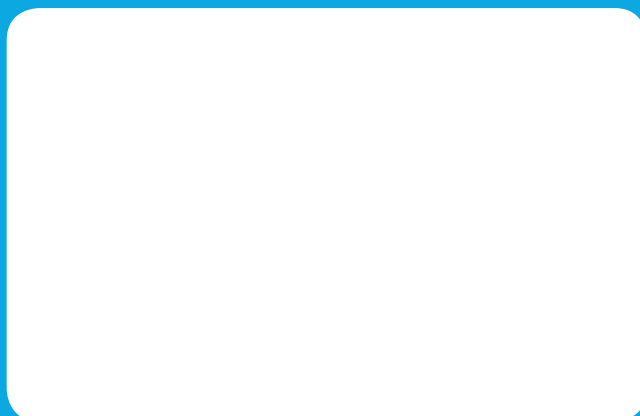
REF: PA110050100

Connection between a PC USB port and THM501 temperature head transmitter.  
USB powered for easy off-process configuration

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