





# Head-Mount Temperature Transmitter RTM5000



-  4 - 20mA and HART output options
-  Accuracy: 0.1% FS
-  Cold junction compensation
-  Compact Size

**Product  
Datasheet**

# ROCKSENSOR AT A GLANCE (ABOUT US)

Rocksensor is one of the global leaders specializing in Process Instrumentation, Research and Development and Designing of Industrial Automation Equipment. We provide highly precise pressure sensors and transmitters, flow metres, level transmitters and temperature transmitters with a prime focus to help our clients efficiently, safely and economically run complex industrial processes.

Rocksensor, headquartered in Switzerland, has its footprint in various geographical regions such as the US, Russia, South Korea, Italy, Germany, Singapore, Malaysia, Morocco, China, Taiwan, Australia, UAE, Brazil and India. Our clients come from some of the major industries such as Oil and Gas, Petrochemicals, Pharmaceuticals, FMCG, Automobiles, Water, Cement, Metal & Mining, and mainly from the Power Industry like Nuclear, Thermal, Hydro, and Solar.

Rocksensor deals in a wide range of highly accurate industrial automation instruments ensuring that even the complex industrial processes happen efficiently.

To fulfill the needs of our clients we make sure that our instruments work in even the harsh environmental conditions offering accurate recordings and communication.

We, at Rocksensor, believe in creating bonds that last a lifetime and create a success story for each and every client. Rocksensor aims to achieve a perfect fit in the global market landscape and establish our footprints across the globe.



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## 1. Introduction

Isolated intelligent temperature transmitter suitable for measurement of temperature with Thermocouple or Resistance Temperature Detector.

Intelligent head mount temperature transmitter (RTM5000) is used for signal input of resistance temperature sensor (RTD) and Thermocouple (TC), linear resistance input, and 2- wire 4-20mA analog output. It is installed inside the sensor (From B).

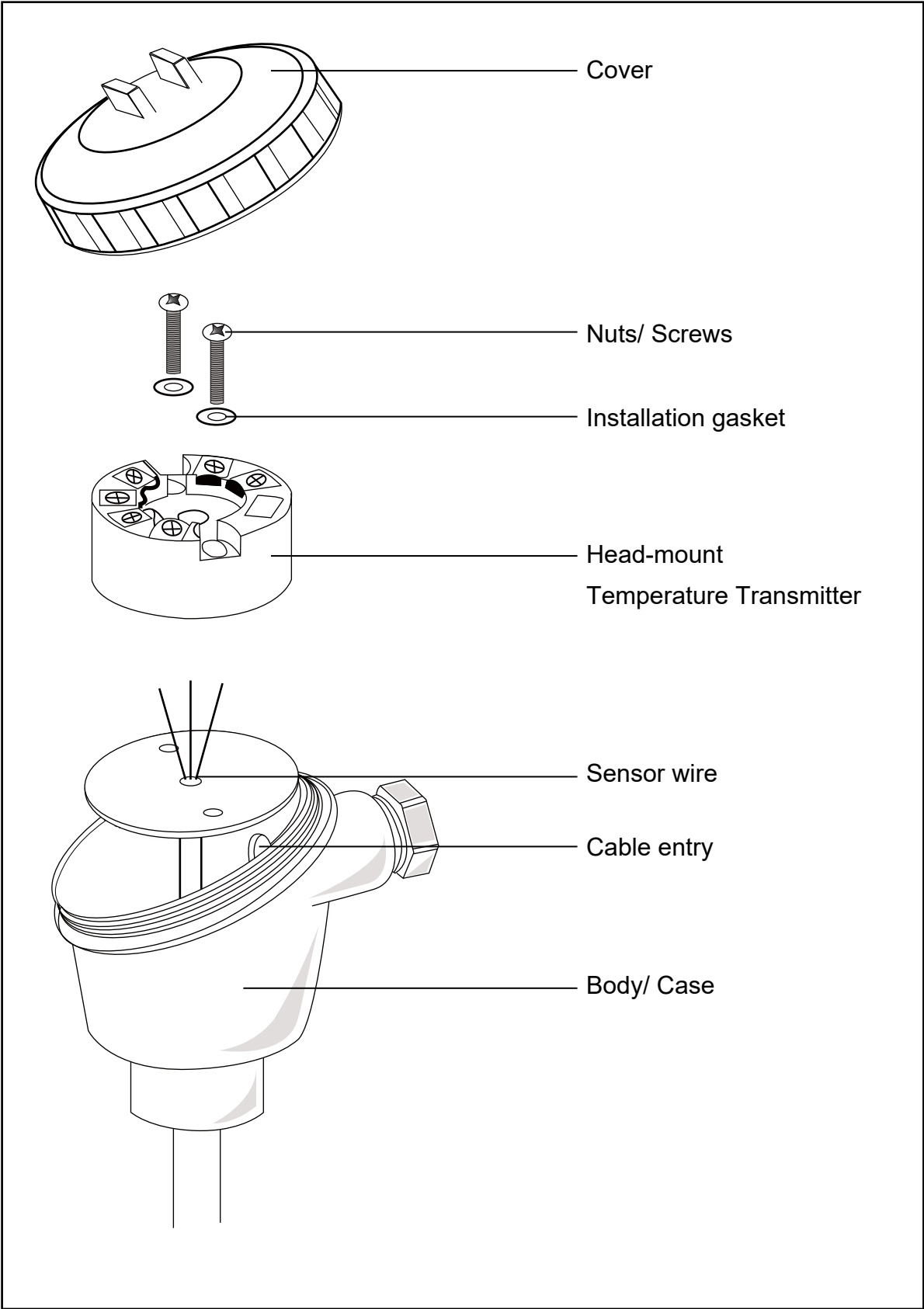
## 2. Salient Features

- Electrical isolation: 1500VAC (Input/output)
- Universal temperature input, programmable flexibly
- Input signal: 8 types of thermocouples, 2 types of RTD
- Built-in cold junction compensation for thermocouple input
- Input type can be programmable flexibly by PC software
- Serial port with serial-USB cable communication for software
- Hart communicator configurable with software
- Output: 4-20mA, 2 wire
- Power supply: 24VDC standard (12 - 40 VDC)

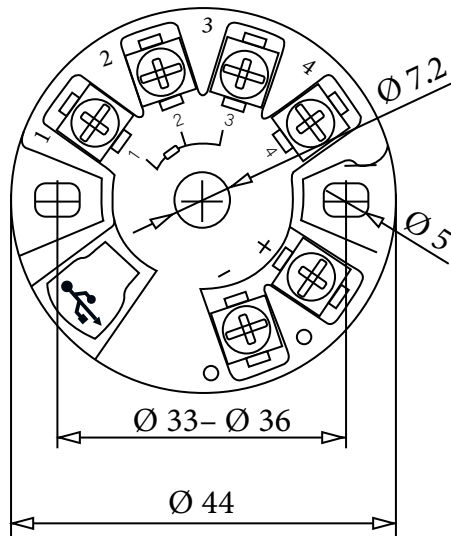
## Key Application Industries

- Cement
- Metal
- Pulp and Paper
- Textiles
- Chemicals
- Power
- Pharmaceutical
- Fertilizer
- Plastics and HVAC

### 3. Components



#### 4. Appearance and Structure



Unit: mm



(With HART)

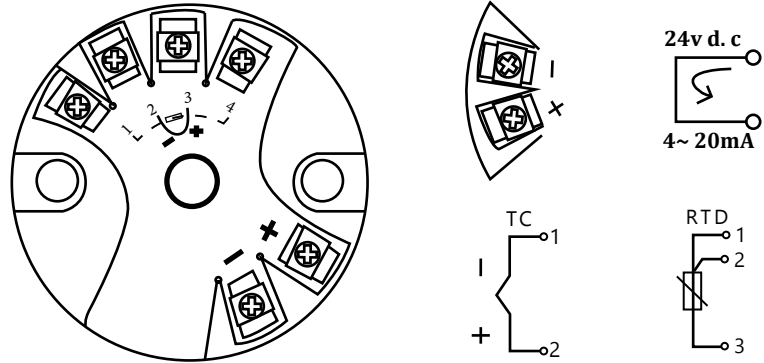


(Without HART)

The output of the RTD and thermocouple temperature sensors is a 2 wire, 4 - 20 mA analog signal, and the signal input is an isolated head mount temperature transmitter (RTM5000). The device may alarm for low battery, temperature, output mV, data sampling, etc. It is lightweight, portable, easy to carry, and simple to install. The instrument is straight forward to install, has isolation, and has a wide range of applications.

It may be put directly in the sensor junction box and features precise signal, remote transmission up to 1000 meters away, high precision, interference resistance, long-term stability, and maintenance-free operation. Numerous industrial fields have made extensive use of this line of goods.

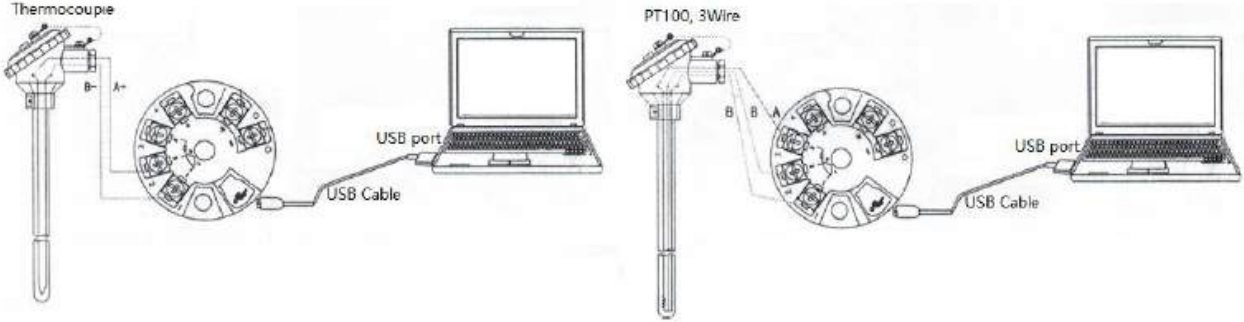
### 5. Electrical Connections



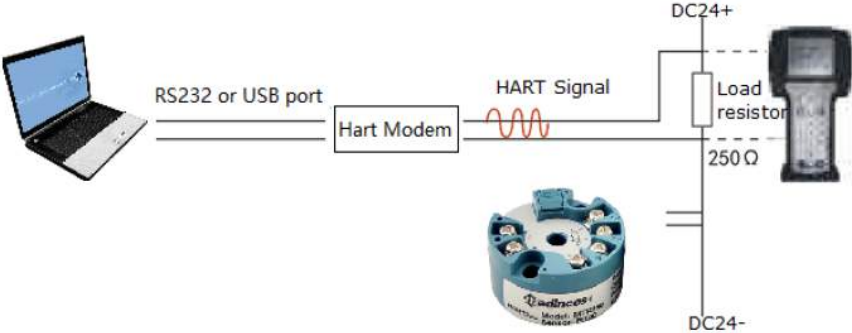
**Notes:**

1. When it is 2-wire RTD input, the terminals 1 & 2 should be connected in short.
2. When it is 3-wire RTD input, the resistance vales of 3 wires should be not same and the resistance of each wire should exceed 10Ω.
3. When it is thermocouple input, the compensation wire should be directly connected to the input terminals of transmitter. Please do connect wires of other materials in the middle in order tothe measured error.

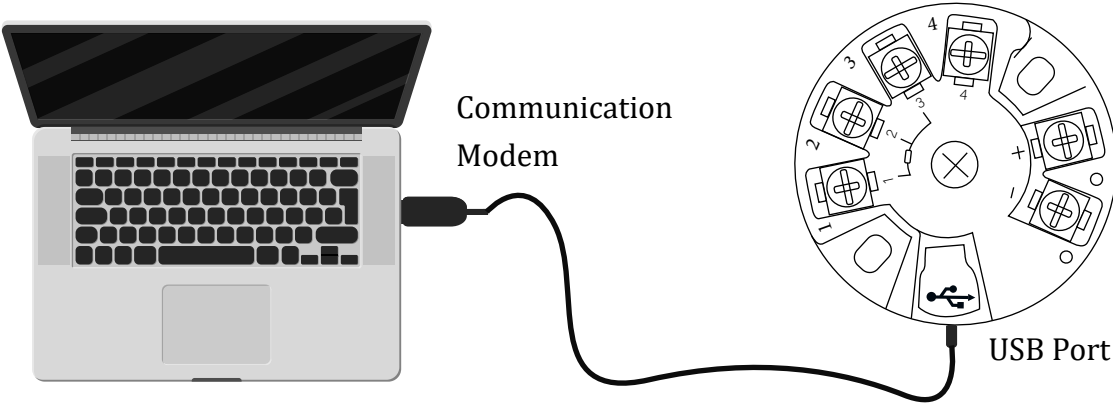
### 6. Configuration



**Notes:** USB cables is used for PC software configuration, the external 24VDC power supply is not required when configuration



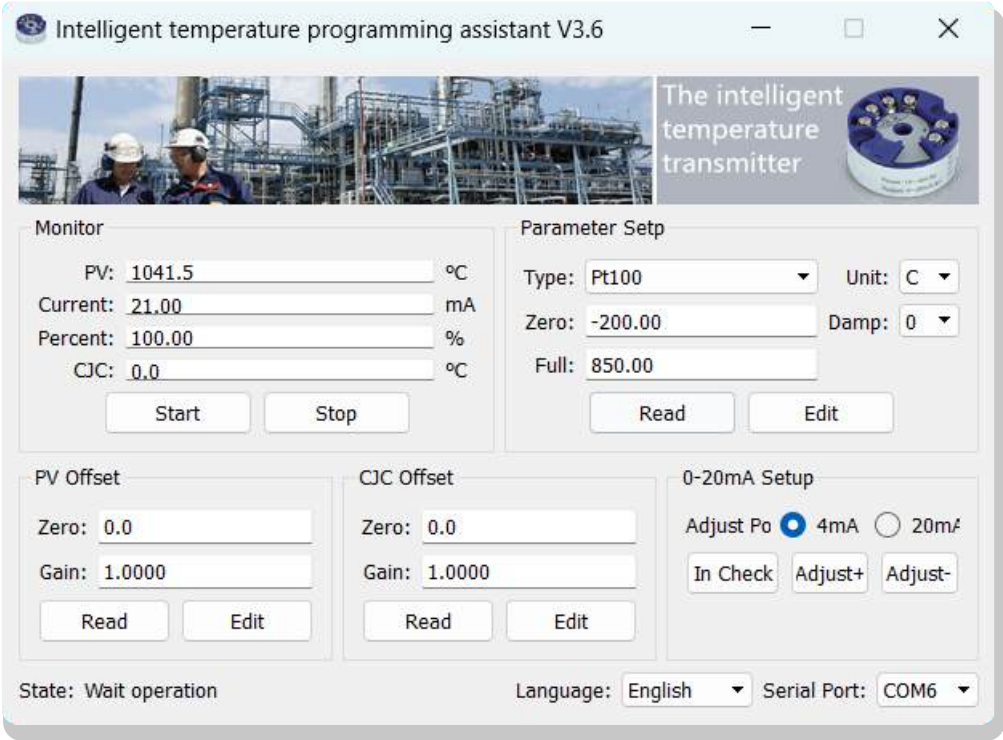




USB Programming Cable



\* Please contact Rocksensor team for more details on the software.





## 7. Technical Parameters

Parameters	Details
Accuracy	0.1%FS
Electrical isolation	1500VAC
Response time	1second / 700ms (with HART)
Input type	Thermocouple, RTD, Universal
Cold junction compensation	-20 ~ 60°C
Compensation Accuracy	± 1°C
Temperature shift	0.01%FS/ °C / 0.0075%FS/ °C (with HART)
Output	4 ~ 20mA, 2 wire
Load resistor	$RL \leq (U_e - 12) / 0.021$
Current output	$I_H = 21\text{mA}$ , $I_L = 3.8\text{mA}$ (when high-low alarming limiting over)
Current when alarming	21mA (when input is in open circuit)
Earthquake resistance	4g, 2 ~ 150Hz
Max Load	Max. (V power supply-7.5V)/ 0.022A (current output)
Installation	Head of B type box
IP protection	P00; IP66 (mounted)
Isolation (input/output)	1500V <sub>rm</sub> (1min)
Isolation resistance (Input/output)	≥ 100MΩ (when 500VDC)
Power supply	U = 12V ~ 40VDC
Working temperature	(-) 40 ~ 85°C
Storage temperature	(-) 40 ~ 100°C

**8. Input type and transmission accuracy:**

Model	Type	Measurement Range	Mini Range	Accuracy
RTD	Pt100	-200 ~ 850°C	20°C	±0.1%range or ±0.2°C
	Cu50	-50 ~ 180°C	20°C	±0.1%range or ±0.2°C
Thermocouple	B	100 ~ 1820°C	500°C	±0.1%range or ±0.2°C
	E	-100 ~ 1000°C	50°C	±0.1%range or ±0.2°C
	J	-100 ~ 1200°C	50°C	±0.1%range or ±0.2°C
	K	-180 ~ 1372°C	50°C	±0.1%range or ±0.2°C
	N	-180 ~ 1300°C	50°C	±0.1%range or ±0.2°C
	R	-50 ~ 1768°C	500°C	±0.1%range or ±0.2°C
	S	-50 ~ 1768°C	500°C	±0.1%range or ±0.2°C
	T	-200 ~ 400°C	50°C	±0.1%range or ±0.2°C
	Wre3-25	0 ~ 2315°C	500°C	±0.1%range or ±0.2°C
	Wre5-26	0 ~ 2310°C	500°C	±0.1%range or ±0.2°C

**Notes:**

1. The above accuracy data was obtained by testing at an ambient temperature of 20°C ± 2°C.
2. The output precision “%” is relative to the set range.
3. The cold junction compensation error needs to be added to the thermocouple measurement, and the internal cold junction compensation error is ≤ ± 1°C.

## 9. Ordering Table

RTM5000: Head Mount Temperature Transmitter				
<b>Input</b>	T			Thermocouple
	R			RTD
	U			Universal
	V			Others (mV, Ohms)
<b>Isolation</b>		I		<b>With</b>
		N		None
<b>Output</b>			A	<b>4-20mA (default)</b>
			H	4-20mA + HART

### Example

Model No. RTM5000-TNH

Head Mount Temperature Transmitter

Input : Thermocouple

Isolation : None

Output : 4-20mA+HART

## Field Instrumentation Range



### Pressure Measurement

- Smart Differential Pressure Transmitter
- Smart Gauge Pressure Transmitter
- Smart Absolute Pressure Transmitter
- Miniature Pressure Transducer without display
- Sanitary Gauge/ Absolute Pressure Transmitter

- Submersible Pressure Transmitter
- Remote Seal Differential P.T. with capillary
- Remote Seal Differential P.T. Direct Mount
- Remote Seal Gauge/Absolute P.T. with capillary
- Remote Seal Gauge/Absolute P.T. Direct Mount



### Flow Measurement

- Coriolis Mass Flowmeter
- Thermal Gas Mass Flowmeter
- Positive Displacement Flowmeter
- Electromagnetic Flowmeter
- Vortex Flowmeter

- Turbine Flowmeter
- Variable Area Flowmeter
- Clamp On Ultrasonic Flowmeter
- Inline Ultrasonic Flowmeter
- Portable Ultrasonic Flowmeter



### Level Measurement

- RADAR Level Transmitter Horn Antenna
- Compact RADAR Level Transmitter
- RADAR Level Transmitter Sanitary
- RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- Guided Wave RADAR Level Transmitter
- RADAR Level Transmitter Lens Antenna

- RADAR Level Transmitter Rod Antenna
- Ultrasonic Level Transmitter
- Microwave Barrier Level Switch
- Admittance Level Switch Series
- Vibrating Rod Level Switch Series
- Tuning Fork Level Switch Series



### Temperature Measurement

- Head Mount Temperature Transmitter
- Temperature Transmitter for Sanitary Applications

- DIN Rail Temperature Transmitter
- Field Mount Temperature Transmitter

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