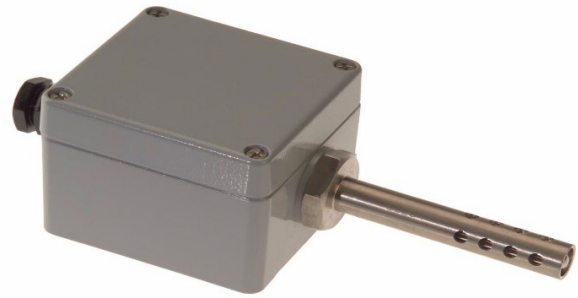# Platinum Resistance Thermometer Pt100 Outdoor/Cold Store Temperature Sensors

Features

• Weatherproof IP67 rated wall mounting Pt100 for accurate outdoor air temperature sensing
• Pt100 sensors offer exceptional accuracy and stability over a wide temperature range, making them ideal for applications in outdoor environments and cold storage facilities where temperature variations can be significant
• These sensors are typically designed with rugged and weather-resistant materials to withstand harsh outdoor conditions

RND 410-00291 single element:
Single 4 wire element, allowing connection to any Pt100 2, 3 or 4 wire instrument.

RND 410-00292 single element with 4-20mA output:
Includes integral transmitter which converts the Pt100 sensor output to a standard industrial 4 to 20mA output signal over pre-configured range of -50 to +150°C. It is also configurable by the user allowing range and burnout direction to be changed. It also allows the user to trim output current at either 4 or 20mA.

Specification

Sensor type:	Pt100 (100 Ohms @ 0°C) to IEC 751, Class B RND 410-00291: 4 wire single element RND 410-00292: 3 wire single element with transmitter, 4-20mA 2 wire current loop output, default range -50 to +150°C (other ranges can be scaled/configured by user, 25°C minimum span - further transmitter specifications below) *Note – transmitter device has an ambient operating range of -40 to +85°C
Construction:	Housing – Painted Die-Cast Aluminium Probe – 12.7mm diameter x 75mm long 316 stainless steel sheath.
Probe temperature range:	-50°C to +150°C
Cable entry:	M20 Polyamide cable entry gland

Order Codes

Sensor type	No. of elements	Pt100 connection	4-20mA output	Order code
Pt100	Single	4 wire	No	RND 410-00291
Pt100	Single	3 wire	Yes (2 wire)	RND 410-00292

TRANSMITTER SPECIFICATION @ 20 °C

INPUT

Sensor Type	PT100 100R @ 0°C 2 or 3 Wire
Sensor Range	(-200 to +850) °C (18 to 390) Ω
Sensor Connection	Screw terminal
Minimum span (*1)	25°C
Linearisation	BS EN 60751(IEC 751) standard /JISC 1604
Measurement Accuracy (*2)	0.2°C ± 0.05% of Reading
Thermal Drift	0.0025 % / °C
Excitation current	<200 uA
Lead Resistance effect	0.002 °C / Ohm
Maximum lead Resistance	20 Ohms per leg

OUTPUT

Output	Type 2 wire (4 to 20) mA current loop
Output range	(4.0 to 20.0) mA
Output Connection	Screw Terminal
Maximum output	21.5mA (in high burnout condition)
Minimum output	<3.9 mA (in low burnout condition)
Accuracy (Whichever is the greater)	(mA output /2000) or 5 uA
Loop Voltage effect	0.2 uA / V
Thermal drift	1 uA / °C
Maximum output load (Example: 700 Ohms @ 24V)	[(Vsupply-10)/21]K Ohms

GENERAL SPECIFICATION

Update time	500 ms
Response Time	1 second
Start-up time	4 seconds (I out < 4 mA during start up)
Warm-up time	1 minutes to full accuracy
Power Supply	(10 to 30) Volts dc

PUSH BUTTON CONFIGURATION
A single push button and LED indicator allows the user to navigate a three menus, allowing configuration of the transmitter. The menus are as follow: -
Menu 1 Configure range.
Menu 2 Configure burnout direction.
Menu 3 Trim output current @ either 4 mA or 20 mA

ENVIRONMENTAL

Ambient operating range	(-40 to +85) °C
Ambient storage temperature	(-50 to +90) °C
Ambient humidity range	(10 to 90) % RH non condensing

Note *1 Any span may be selected; full accuracy is only guaranteed for spans greater than the minimum recommended

Note *2 Basic measurement accuracy includes the effects of calibration, linearisation and repeatability

WIRING CONNECTIONS