

T/PC PRT Contact Temperature Sensor



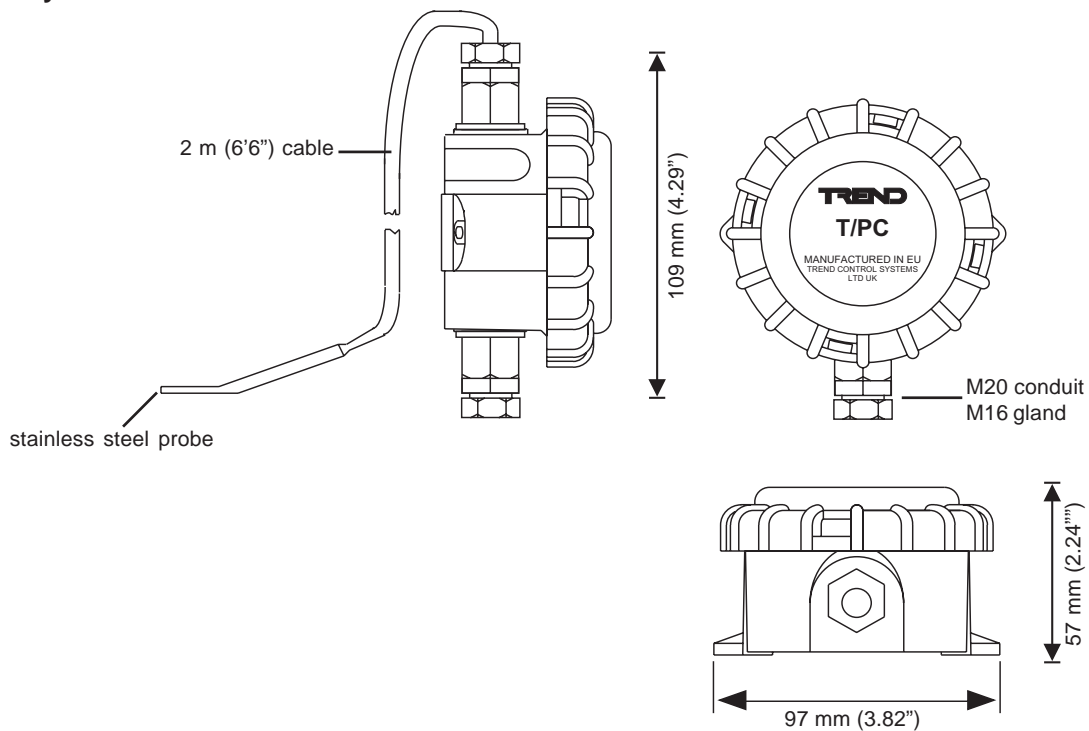
Description

PT100 temperature sensor for accurate measurement of surface temperatures. Suitable for use in exposed locations, the stainless steel element has a flat surface that can make good contact with a wide range of pipework from ½" diameter upwards. Junction box mounted electronics provide 4 to 20 mA output. IP67 rated housing with M20 conduit entry fitted with M16 cable gland. Supplied with strong, quick fit jubilee clip suitable for pipes up to 8" diameter.

Features

- PT100 accuracy
- Simple 2 wire connection
- 4 to 20 mA output
- Stainless steel probe
- IP67 (NEMA6) housing
- Junction box mounted electronics
- M20 conduit entry/M16 cable gland
- Suitable for retrofit
- Quick fit jubilee clip or cable ties

Physical



INSTALLATION

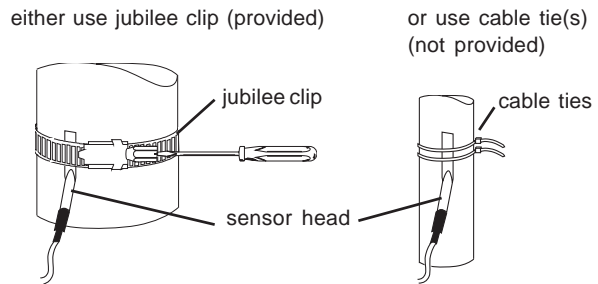
Sensor Head

Choose an accessible location for the sensor head, where the element will make good contact with the surface that is to be measured. The probe temperature range is $-40\text{ }^{\circ}\text{C}$ to $+160\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $+320\text{ }^{\circ}\text{F}$).

However the sensor's measurement ranges are:

T/PC/-40	$-40\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $+122\text{ }^{\circ}\text{F}$)
T/PC/40	$-10\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$ ($+14\text{ }^{\circ}\text{F}$ to $+104\text{ }^{\circ}\text{F}$)
T/PC/110	$-10\text{ }^{\circ}\text{C}$ to $+1100\text{ }^{\circ}\text{C}$ ($+14\text{ }^{\circ}\text{F}$ to $+230\text{ }^{\circ}\text{F}$)
T/PC/160	$-10\text{ }^{\circ}\text{C}$ to $+160\text{ }^{\circ}\text{C}$ ($+14\text{ }^{\circ}\text{F}$ to $+320\text{ }^{\circ}\text{F}$)

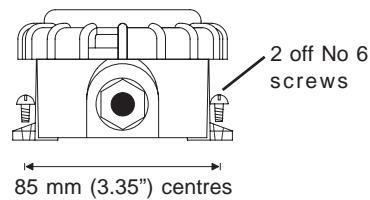
Strap the sensor head to the pipe using the jubilee clip provided or cable ties. If using the clip, wrap it around the pipe, pass the sensor head under the strap, and tighten the screw (as shown). Ensure that good contact is made between the sensor head and the surface. Where possible use a thermally conductive paste to ensure a good thermal contact and apply any insulation over both sensing element and pipe.



Junction Box

The junction box should be mounted on a flat surface. Choose a position which is a maximum of 2 m ($6\frac{1}{2}'$) away from the sensor head. The permitted ambient temperature range is $-40\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$ to $+122\text{ }^{\circ}\text{F}$). Avoid direct contact with steam.

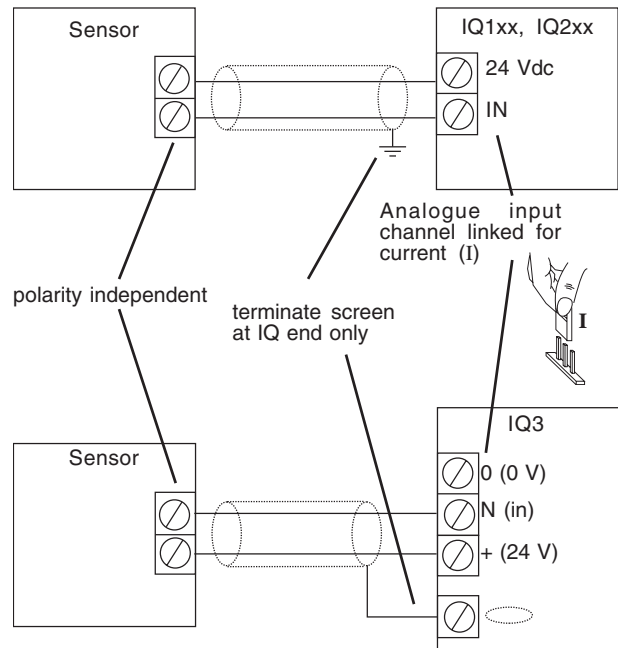
Mark the position of the 2 fixing holes with 85 mm (3.35") fixing centres. Drill holes in positions marked. Screw the junction box in position using suitable wall plugs (if required) and 2 No. 6 screws, (85 mm, 3.35" fixing centres).



CONNECTIONS

Connect to the IQ controller as below:

- (1) Remove cup by unscrewing retaining ring and unplug 2 part connector.
- (2) Insert cable through cable gland and connect signal wires as shown using either polarity.
- (3) The cable screen should be terminated at the controller.
- (4) Configure controller input channel for current (I).



Note: The IP67, NEMA6, rating is only achieved if correctly installed with cable gland, or conduit connection, fully tightened.

Note: If connecting to an IQ22x controller (including /ADL and /OC), do not connect to C (+24V), instead connect to AUX+ (+24V).

Full installation details are given in the T/PC installation instructions TG100508A.

ORDER CODES

T/PC/-40	PRT contact sensor with jubilee clip (-40 °C to +50 °C, -40 °F to +122 °F)
T/PC/40	PRT contact sensor with jubilee clip (-10 °C to +40 °C, +14 °F to +104 °F)
T/PC/110	PRT contact sensor with jubilee clip (-10 °C to +110 °C, +14 °F to +230 °F)
T/PC/160	PRT contact sensor with jubilee clip (-10 °C to +160 °C, +14 °F to +320 °F)

SPECIFICATIONS

Sensing Element	:PRT, 100Ω ± 0.1 % @ 0 °C BS1904-1980 Class B
Measurement ranges	
/-40	:-40 °C to +50 °C (-40 °F to +122 °F)
/40	:-10 °C to +40 °C (+14 °F to +104 °F)
/110	:-10 °C to +110 °C (+14 °F to +230 °F)
/160	:-10 °C to +160 °C (+14 °F to +320 °F)
Output Signal	:4 to 20 mA
Accuracy transmitter	:0.2 % span
Supply voltage	24 Vdc ±15 %
Ambient limits	
box	:-40 °C to +50 °C (-40 °F to +122 °F)
probe	:-40 °C to +160 °C (-40 °F to +320 °F)
Humidity (box)	:0 to 90 % RH non condensing
Cable entry	:M20 conduit (or M16 cable gland)
Connections	:2 part screw terminal for 0.5 to 2.5 mm ² cross section area (14 to 20 AWG) cable

Dimensions	
box	:57 mm (2.24") x 109 mm (4.29") max diameter
cable	:2 m (6'6")

Material	
enclosure	:impact resistant ABS
probe	:316 stainless steel

Environmental protection	:IP67, NEMA6
--------------------------	--------------

Input channels and sensor scaling

For IQ controllers link input channel for current, I, and set up the sensor type scaling; the recommended method of setting the sensor type scaling is to use SET.

For all IQ2 series controllers with firmware of version 2.1 or greater, or IQ3 series controller, one of the following SET Unique Sensor References should be used:

PRTI -40 +50	(T/PC/-40)
PRTI -10 +40	(T/PC/40)
PRTI -10 +110	(T/PC/110)
PRTI -10 +160	(T/PC/160)

Alternatively use sensor scaling mode 5, characterise, and enter the scaling manually as defined in the table below.

Note that the °F scaling is not set up in SET, so must be entered manually from the table below:

Unit		/-40		/40		/110		/160	
Y	input type	2 (current)		2 (current)		2 (current)		2 (current)	
E	Exponent	3		3		3		3	
	Units	°C	°F	°C	°F	°C	°F	°C	°F
U	Upper	50	122	40	104	110	230	160	320
L	Lower	-40	-40	-10	14	-10	14	-10	14
P	Points	2	2	2	2	2	2	2	2
x	lx	Ox	Ox	Ox	Ox	Ox	Ox	Ox	Ox
1	4	-40	-40	-10	14	-10	14	-10	14
2	20	50	122	40	104	110	230	160	320

System Accuracy (including controller)

/-40	:±0.4 °C, ±0.72 °F (-40 °C to + 50 °C, -40 °F to +122 °F)
/40	:±0.25 °C, ±0.45 °F (-10 °C to + 40 °C, +14 °F to +104 °F)
/110	:±0.6 °C, ±1.08 °F (-10 °C to + 110 °C, +14 °F to +230 °F)
/160	:±1 °C, ±1.8 °F (-10 °C to + 160 °C, +14 °F to +320 °F)

For all other IQ Controllers see the Sensor Scaling Reference Card, TB100521A.

Trend Control Systems Ltd reserves the right to revise this publication from time to time and make changes to the content hereof without obligation to notify any person of such revisions or changes.

TREND	P.O. Box 34, Horsham, West Sussex, RH12 2YF United Kingdom		Website www.trend-controls.com	
	Telephone +44 (0)1403 211888	Fax (International) +44 (0)1403 210982		Fax (UK) +44 (0)1403 241608
E-mail trendinfo@novar.com		Registered office. Novar House 24 Queens Road Weybridge Surrey KT13 9UX Registered in England No 1664519		