Data Sheet

T/PI

PRT Insertion Temperature Sensor

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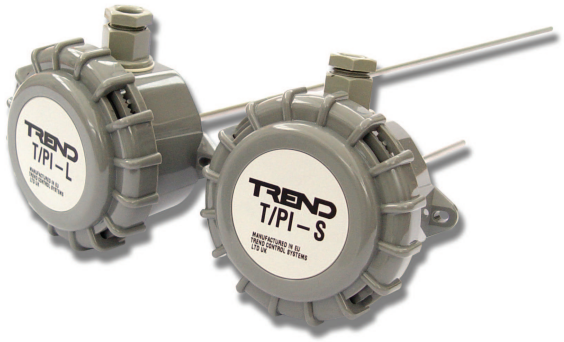


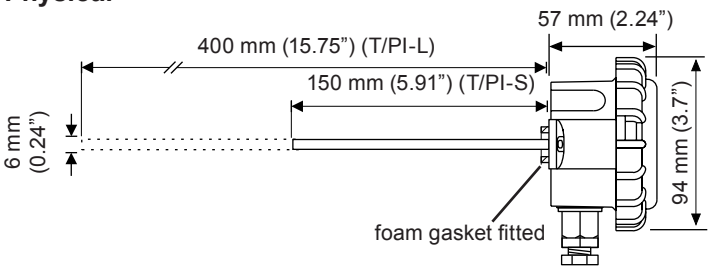
Description

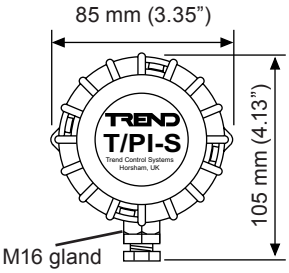
The T/PI PT100 Insertion temperature sensor is for accurate measurement of temperature and may be used for both duct or immersion purposes. It has a 6 mm diameter stainless steel probe which is suitable for retrofit immersion applications and will fit most existing pockets (universal fitting kit option). Brass and stainless steel pockets are available. A foam gasket is fitted, and an adjustable depth flange option is available for its use as a duct sensor, enabling the insertion depth to be adjusted. Head mounted electronics provide 4 to 20 mA output. IP67 rated housing has quick release lid and M20 conduit entry.

Features

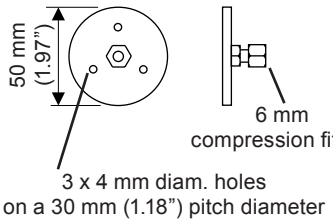
- PT100 accuracy
- Simple 2 wire connection
- 3 different temperature versions
- 4 to 20 mA output
- Stainless steel probes (short and long)
- IP67 housing
- Head mounted electronics
- M20 conduit entry with M16 cable gland
- Suitable for retrofit
- Universal fitting kit available

Physical

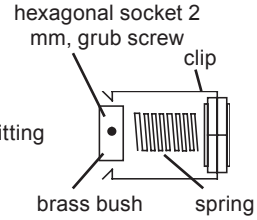




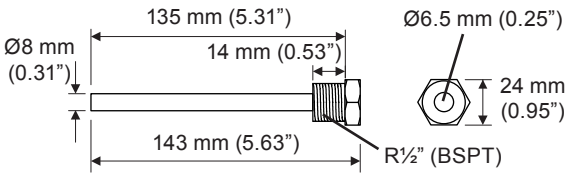
Adjustable Depth Flange (ACC/DF)
adjustable insertion depth for duct sensor use



Universal Fitting Kit (ACC/UF)
for immersion sensor use in existing pockets



Pockets
Brass (WB150), Stainless Steel (WS150)



INSTALLATION

MECHANICAL

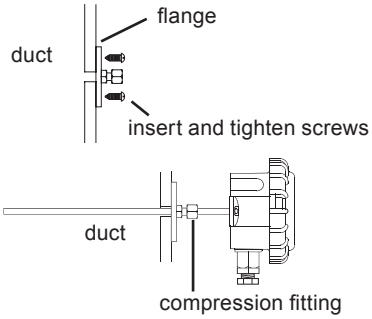
The probe temperature range is -40 °C to +110 °C (-40 °F to 230 °F)
The box temperature range is -40 °C to +50 °C (-40 °F to 122 °F)
The measuring ranges are: /110 -10 °C to +110 °C (+14 °F to +230 °F)
/40 -10 °C to +40 °C (+14 °F to +104 °F)
/-40 -40 °C to +50 °C (-40 °F to +122 °F)

Use as a Duct Sensor

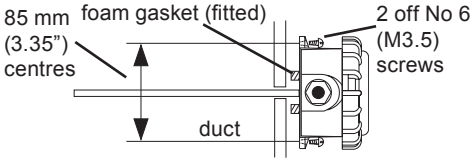
Choose a location where the sensor probe will lie in the airstream to be measured.

Sensor with optional flange
If the depth of the probe is to be adjusted, then the sensor must be mounted using the optional flange. Drill a 7 mm (0.28”) diameter hole in the duct and use the mounting flange to mark the position of the 3 mounting holes. Drill the 3 pilot holes and fit flange with 3 off No. 6 x 3/4 S/S screws.

Insert the sensor probe through the flange into the duct to desired depth and tighten the compression fitting.



Sensor direct onto the duct
If the depth of the probe is not to be adjusted then the sensor can be mounted directly on to the duct. Drill a 7 mm diameter hole in the duct and mark the position of the 2 mounting holes with 85 mm (3.35”) mounting centres. Drill 2 pilot holes in the positions marked. Insert the sensor probe into the duct , and screw to the duct with 2 off No. 6 x 3/4 S/S screws.

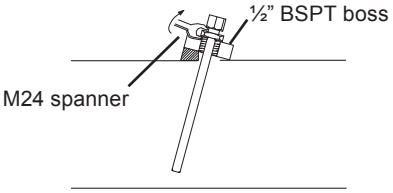


Use as an Immersion Sensor

New Pocket
Choose an accessible location for the sensor pocket where it will lie in the liquid to be measured. Ensure no stratification in the liquid flow being measured (e.g. downstream of mixing valves or junctions). If used for chilled water ensure pocket is sealed around probe or fill pocket with thermally conducting oil to avoid the build up of condensation in bottom of pocket.

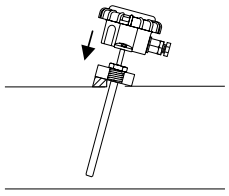
Note that the Brass (WB150) and Stainless Steel (WS150) pockets are not suitable for use in a chlorine rich environment.

Screw the pocket into a ½” BSPT threaded boss using M24 spanner. Apply sealant to boss thread. If the boss is threaded incorrectly, an adaptor should be used.



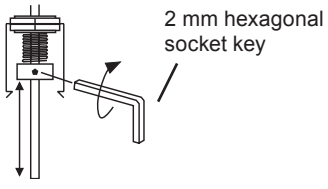
Slide sensor probe into pocket against spring compression with the cable entry at the desired angle.

Ensure that the end of the probe is hard against the end of the pocket.

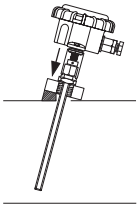


Retrofit to existing pocket
The Universal Fitting Kit enables sensor to be mounted in a number of different pocket types.

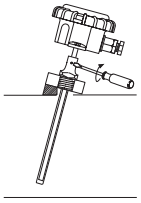
Adjust position of brass bush on probe so that probe inserts fully into pocket using 2 mm hexagonal socket key to adjust grub screw.



For pockets with a clip retaining groove simply insert probe into pocket and pull the metal clip over the over the top of the pocket to engage in the groove.



For pockets which hold sensor by a grub screw, tighten pocket grub screw onto brass bush. If necessary, spring and clip can be removed.



CONNECTIONS

Connect to the IQ controller as below:

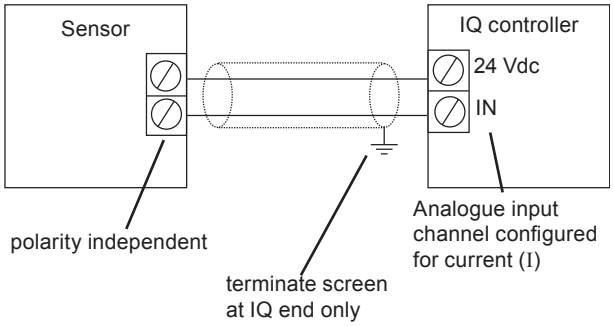
(1) Remove quarter-turn quick release lid and unplug 2 part connector.

(2) Insert cable through cable gland and connect signal wires as shown using either polarity.

(3) Plug in connector and replace lid.

(4) The cable screen should be terminated at the controller.

(5) Configure controller input channel for current (I).



Note: The IP67 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/PI installation instructions (TG200825).

PRODUCT CODES

T/PI-S/110	:PRT100 insertion sensor (for duct or immersion use) with 150 mm probe, -10 °C to 110 °C (14 °F to 230 °F)
T/PI-S/40	:PRT100 insertion sensor (for duct or immersion use) with 150 mm probe, -10 °C to 40 °C (14 °F to 104 °F)
T/PI-S/-40	:PRT100 insertion sensor (for duct or immersion use) with 150 mm probe, -40 °C to 50 °C (refrigeration) (-40 °F to 122 °F)
T/PI-L/40	:PRT100 insertion sensor (for duct use) with 400 mm probe, -10 °C to 40 °C (14 °F to 104 °F)
ACC/DF	:Adjustable depth flange for duct use
ACC/UF	:Universal Fitting Kit (retrofit to existing pocket, immersion use)
WS150	:6 mm stainless steel pocket (immersion use)
WB150	:6 mm brass pocket (immersion use)

DISPOSAL

WEEE Directive:

At the end of their useful life the packaging and product should be disposed of by a suitable recycling centre.
Do not dispose of with normal household waste.
Do not burn.

SPECIFICATIONS

Sensing Element	:Platinum RTD, 100 Ω @ 0 °C (32 °F) DIN EN60751 (according to IEC 751) Class A. dt= ±(0.15+0.002.|t|) °C
Measurement ranges	
/40	:-10 °C to +40 °C (+14 °F to +104 °F)
/110	:-10 °C to +110 °C (+14 °F to +230 °F)
/-40	:-40 °C to +50 °C (-40 °F to +122 °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 +110 °C (-40 °F to +230 °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 (20 to 14 AWG) cable.
Pockets	:Spring compression
WS150	:Maximum pressure 25 bar
WB150	:Maximum pressure 13 bar
Dimensions	
/S probe	:150 mm (5.91”) x 6 mm (0.24”)
/L probe	:400 mm (15.75”) x 6 mm (0.24”)
box	:57 mm (2.24”) x 105 mm (4.13”) max diameter
Material	
enclosure	:impact resistant ABS
probe	:316 stainless steel
WS150	:pocket, stainless steel
WB150	:pocket, brass
Environmental protection	:IP67

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 IQ3/4 series controller, one of the following SET Unique Sensor References should be used:

PRT I -10+40	(T/PI/40, °C)
PRT I +14+104 F	(T/PI/40, °F)
PRT I -10+110	(T/PI/110, °C)
PRT I +14+230 F	(T/PI/110, °F)
PRT I -40+50	(T/PI/-40, °C)
PRT I -40+122 F	(T/PI/-40, °F)

Alternatively set sensor scaling mode to 5 (characterise), and enter the scaling manually as defined in the appropriate table below. Note that for IQ3/4 the scaling mode and exponent (E) do not need to be set up.

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

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

Please send any comments about this or any other Trend technical publication to techpubs@trendcontrols.com

Trend Control Systems Limited

Albery House, Springfield Road, Horsham, West Sussex, RH12 2PQ, UK. Tel:+44 (0)1403 211888 Fax:+44 (0)1403 241608 www.trendcontrols.com