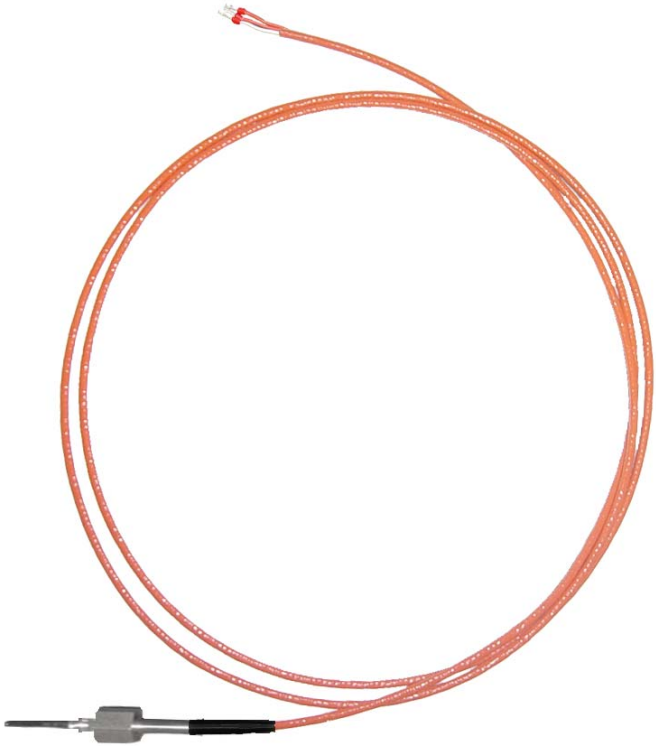
Product Technical Information
IT-0103-TRC 33B-01-2006IN

Temperature Probe HIGItemp TRC 33B

RTD Assembly with Hygienic Process Connection and Connection Cable
Fast Response



TRC 33B

Features and Areas of Application

Model TRC 33B is manufactured with sensing element RTD Pt100 and connection cable.
The sensing element is embedded in mineral insulation and PTFE.

The process connection is by G1/8" female in SS 316L, to thread male connection, welded accessory, on process side.
With this mechanical construction, is granted a fast response, due to its reduced shape of the tip.
Standard application in small diameter pipelines.

High reliability, roughed and customised construction, HIGItemp TRC 33B has high quality/price ratio.
Ideal for temperature measurement in food and beverages production machinery, pharmaceutical industry, cosmetics, among other branches where temperature measurement is required with high demands of functionality, performance and aseptically CIP/SIP compliance.

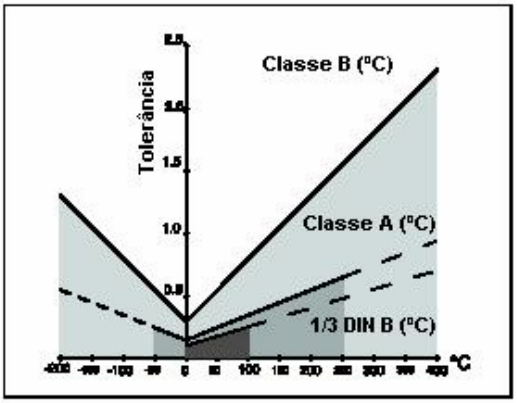
RTD's General Information

The measuring principle of a RTD (*Resistance Temperature Detector*) is based on a sensor with electric resistance variable according to temperature changes. Considering a Pt100, this sensor has a resistance of 100Ω at 0ºC, increasing the resistance with temperature increase, due to it's platinum coefficient, used in this type of sensor. With excellent linearity, allows the temperature probes based in this type of sensor the most common in industry, ruled by DIN EN 60751 for a coefficient α= $3.85*10^{-3}$ $°C^{-1}$, calculated between 0 and 100°C.
The sensor element is available in two versions - Thin-film (TF) or ceramic (Wire Wound), this last one with a wide measuring range, higher long term stability and better accuracy. The thin-film elements have faster response. Regarding accuracy, Delta Sensor has available as standard, sensors class A, or with better accuracy, sensors class 1/3 DIN B e 1/10 DIN B, having the last two a reduced measuring range (refer table at page bottom).

Thin-film Type

- Class A
  3 α = 0.15+0.0020|t| -50…250°C
  3 α = 0.30+0.0050|t| 250…400°C

- Class 1/3 DIN B
  3 α = 0.10+0.0017|t| 0…100°C
  3 α = 0.15+0.0020|t| -50...0 / 100...250°C
  3 α = 0.30+0.0050|t| 250…400°C

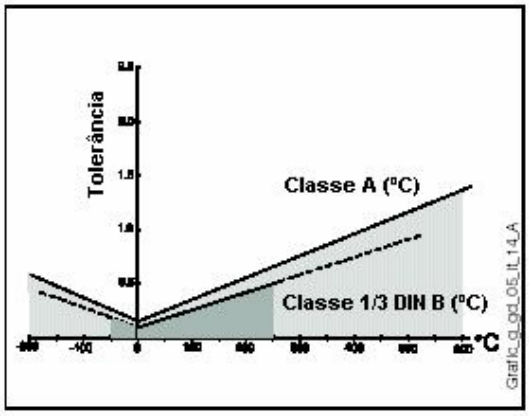


Ceramic Type

- Class A
  3α = 0.15+0.0020|t| -200…600°C

- Class 1/3 DIN B
  3 α = 0.10+0.0017|t| -50…250°C
  3 α = 0.15+0.0020|t| -200...-50 / 250…500°C

(|t|= Absolute temperature value in °C)



In case of vibrations, the Thin-film (TF) sensor may offer advantages, but it's behaviour depends of intensity, direction and vibration main harmonic.
The most common configurations are for simplex elements, 2, 3 and 4 wires and with redundancy, duplex elements with 4 or 6 wires. The 4 wires configuration for simplex elements is the one that grants higher accuracy, because the errors caused by cores for signal transmission, are completed compensated. With 3 wires for simplex configuration or 6 wires duplex, the associated error is almost null. When using 3 or 4 wires simplex or duplex, the EN 60751 sensor specifications will be complied by temperature thermometer assembly.

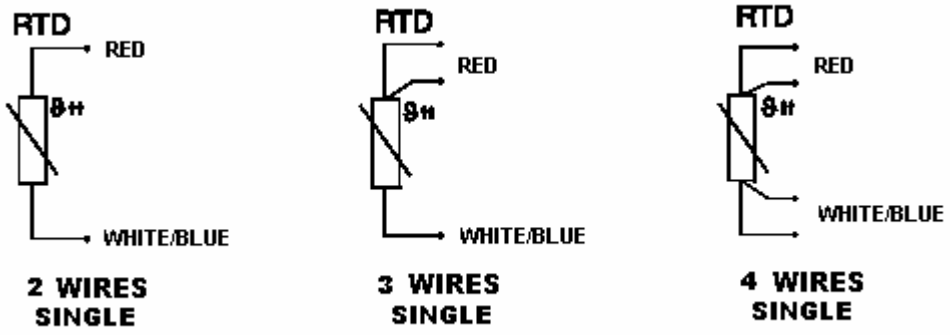
Temp	Classe B		Classe A		1/3 DIN B		1/10 DIN B	
Deg C	± Deg C	± Ohms	± Deg C	± Ohms	± Deg C	± Ohms	± Deg C	± Ohms
-200	1.30	0.56	0.55	0.24	0.44	0.19	0.13	0.06
-100	0.80	0.32	0.35	0.14	0.27	0.11	0.08	0.03
0	0.30	0.12	0.15	0.06	0.10	0.04	0.03	0.01
100	0.80	0.30	0.35	0.13	0.27	0.10	0.08	0.03
200	1.30	0.48	0.55	0.20	0.44	0.18	0.13	0.05
300	1.80	0.64	0.75	0.27	0.60	0.21	0.18	0.07
400	2.30	0.79	0.95	0.33	0.77	0.28	---	---
500	2.80	0.93	1.15	0.38	0.93	0.31	---	---
600	3.30	1.08	1.35	0.43	---	---	---	---
650	3.60	1.13	1.45	0.46	---	---	---	---
700	3.80	1.17	---	---	---	---	---	---
800	4.30	1.28	---	---	---	---	---	---
850	4.80	1.34	---	---	---	---		

Technical Data

Sensor Element	Pt100 Thin-film class A and 1/3 DIN B, DIN EN 60751. Configuration 2, 3 and 4 wires.
Temperature Range	From –50º to +150ºC.
Materials	Wetted parts in SS 316L/1.4404, Connection cable with outer insulation in PVC or PFA.
Dimensions	Immersion: 15mm or 25mm, with diameter 3mm. Process connection length: 20mm, with diameter 6mm, retaining block 8mm. Neck length: 30mm. Cable Length: Customized from 500mm to 200 000mm. Special versions available according customer application.
Process Connection	Standard with threaded G 1/8” F in SS 316L to connect on male accessory, welded on process side.
Insulation Resistance	Greater than 1000Mohm, at 500Vdc room temperature.
Additional Options	Standard without any additional options.

Electrical Connections

Is shown bellow most common electrical connections used on temperature probe HIGItemp TRC 33B.



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Additional Information

Maintenance	The HIGItemp RTD assemblies don't require specific maintenance.
Factory Quality Protocol	This factory quality protocol is supplied with every unit. This acts as an inspection report that shows compliance with DIN EN60751 essential points. One measurement point is issued for the effect.
Calibration Certificate	If required, can be issued a calibration certificate, ordered in a separate position and conducted by an independent and accredited entity.
Delivery Time	For small quantities (less then 20 pieces) with standard options, the delivery time is from 5 up to 8 working days, or express manufacturing (72h) with feasibility according configuration and required quantities.

How to Order

Order Code	Description
TRC 33B-	**Temperature probe HIGItemp Model TRC 33B**
010	**Type of Sensor RTD**
K4	Sensor Pt100 single, fast response, 2 wires
A5	Sensor Pt100 single, fast response, Class A, 3 wires
B5	Sensor Pt100 single, fast response, Classe A, 4 wires
D3	Sensor Pt100 single, 1/3 DIN B, 3 wires
D4	Sensor Pt100 single, 1/3 DIN B, 4 wires
Y9	RTD sensor special version on request
020	**Diameter, Material and thermowell immersion length**
0	Immersion length of 15mm, diam. 3mm, adaptation length of 20mm diam. 6mm and retaining block 8mm, neck length with 30mm, diam. 6mm, in SS316L
1	Immersion length of 25mm, diam. 3mm, adaptation length of 20mm diam. 6mm and retaining block 8mm, neck length with 30mm, diam. 6mm, in SS316L
030	**Process Connection**
P8	Threaded G 1/8" F in SS316L (weld on accessory, process side not supplied as standard)
Y9	Hygienic process connection special version on request
040	**Cable Length LC (500mm – 100 000mm)**
0	1 000mm
1	1 500mm
2	2 000mm
3	2 500mm
4	3 000mm
5	5 000mm
6	10 000mm
7	15 000mm
8	20 000mm
X	Cable length customer specification
050	**Cable Length Type (Price per 500mm)**
C1	PVC, max. 105ºC, 2/3/4 wires with metallic screening
P1	PFA, max. 250ºC, 2/3/4 with metallic screening
Y9	Cable type special version on request
060	**Additional Options**
A	Not selected
Y	Customer extra specifications

Selection Example:

Temperature probe for application range from 0 to 100ºC, fast response required, 3 wires configuration, hygienic process connection suitable for pipeline DN50, to connect to remote display Pt100 input at 5000mm, standard cable material (PVC).

Order Code: TRC 33B-A51P85C1A

Delta Sensor

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