

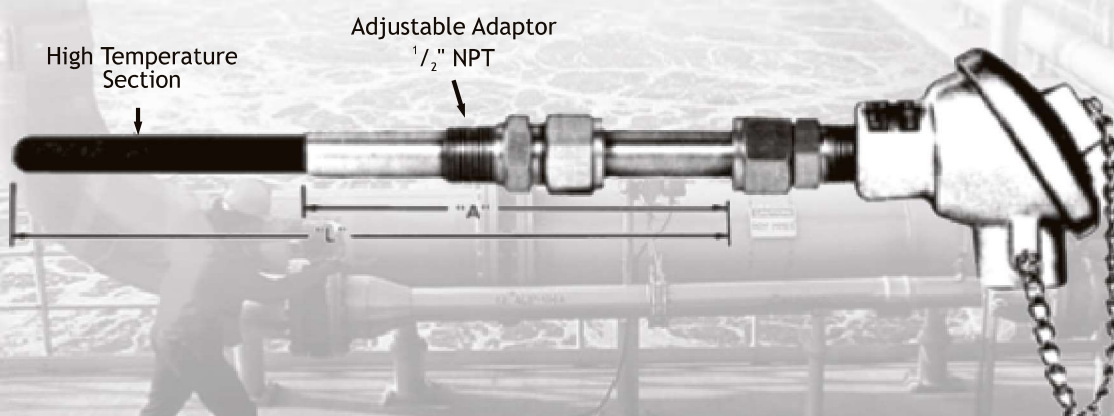
Thermocouple / RTD

A Thermocouple is a sensor used to measure temperature. Thermocouples consist of two wire legs made from different metals. The wires legs are welded together at one end, creating a junction. This junction is where the temperature is measured. When the junction experiences a change in temperature, a voltage is created.

There are many types of thermocouples, each with its own unique characteristics in terms of temperature range, durability, vibration resistance, chemical resistance, and application compatibility. Type J, K, T, & E are “Base Metal” thermocouples, the most common types of thermocouples. Type R, S, and B thermocouples are “Noble Metal” thermocouples, which are used in high temperature applications.

- ◆ Limits of error for Type J, K & B are as per ANSI MC 96.1 and for S & R as per IS
- ◆ Elements with special limits of error, other diameters and ANSI types e.g. T, E & N also available.
- ◆ Calibration report for each thermocouple with traceability to NPL is optionally available to meet ISO 9000 requirements.
- ◆ Protecting Sheath is available in mild steal, stainless steel 304, 310, 315, 446, inconel 600, incolly 800, wrought iron, impervious ceramic, sintered-Alumina, silicon carbide
- ◆ Response Time Is 6sec (63.2%) for 6mm OD sheath.

LIMITS OF ERROR FOR THERMOCOUPLE (Thermocouple)					LIMITS OF ERROR FOR RTD Pt 100 (RTD)				
Element	Type	Temp. Range °C	Standard	Special	Temp. °C	Class 'B' ± °C ± Ω		Class 'A' ± °C ± Ω	
Fe/Const.	J	0...700	±2.2 °C/0.75%	±1.1 °C/0.4%	0	0.3	0.12	0.15	0.06
NiCr/Ni(Cr/AlO)	K	0...1200	±2.2 °C/0.75%	±1.1 °C/0.4%	100	0.8	0.30	0.35	0.13
Cu/Const.	T	0....350	±1.0 °C/0.75%	±0.5 °C/0.4%	200	1.3	0.48	0.55	0.20
Cr/Const.	E	0....900	±1.7 °C/0.50%	±1.1 °C/0.4%	300	1.8	0.64	0.75	0.27
Nicrosil/Nisil	N	0....1280	±2.5 °C/0.75%	±1.5 °C/0.4%-	400	2.3	0.79	0.95	0.33
Pt10%Rh/Pt	S	0....1600	±1.2 °C/0.25%	-	500	2.8	0.93	1.15	0.38
Pt13%Rh/Pt	R	0....1600	±1.2 °C/0.25%	-	Note: (1) C=±(0.3+0.005*[t]) (2) C=±(0.15+0.002*[t])				



Thermowell



Thermowell are tubular fittings used to protect temperature sensors installed in industrial processes. A temperature sensor such as thermometer, thermocouple or Resistance Temperature Detector is inserted in the open end of the tube, Thermodynamically, the process fluid transfers heat to the thermowell wall, which in turn transfers heat to the sensor, The Sensor is typically Spring - Loaded to ensure that the outside tip of temperature sensor is metal to metal contact with the inside tip of thermowell.

We manufactures Design to meet ASME 19.3 TW Standard.

Thermowell is typically machined from solid bar stock and gun-drilled to ensure a long straight bore that closely approximates the diameter of the installed sensor. A thermowell is typically mounted into the process stream by way of a threaded, welded, sanitary cap or flanged process connection.

Level Measurements

Float & Board level Gauge



Float and Board type Tank Level Indicator that can be used for continuous Level Measurement of all kinds of Liquids such as Petroleum Products, Food Stuffs, Edible Oil, Acid & Alkaline Solutions, Paints & Varnishes, and Liquids of high viscosity.

- ◆ **Measuring Range** : As per Tank Height
- ◆ **Accuracy** : $\pm 10\text{mm}$ Minimum Reading 10mm
- ◆ **Working Temperature** : Maximum 200°C
- ◆ **Working Pressure** : Atmospheric
- ◆ **Indication** : Aluminium Scale Graduated in centimetres & meters
- ◆ **Scale Location** : Tank Side

Oil Level Indicator



Oil level must be carefully monitored to ensure oil additive has been depleted due to exposure to high temperature through joints continuous movements, oil pick out with component on movement. A Lubricator is used one or more of the purpose to reduce friction, to prevent ware & tare to prevent adhesion, to aid in distributing the load to cool the moving elements & to prevent corrosion.

Knobe type oil indicator can be used in Compressors, Gear Boxes, Pharma Machinery, SPM etc...

L-Shape indicators are easy to install and dismantled and require no maintenance in addition to this products are higher on performance and robust & durable in nature thread connection $1/8''$ to $1/2''$, Length up to 300mm.

Capacitance Level Transmitter



A capacitor is formed when a level sensing electrode is installed in a vessel. The metal rod of the electrode acts as one plate of the capacitor and the tank wall (or reference electrode in a non-metallic vessel) acts as the other plate. As level rises, the air or gas normally surrounding the electrode is displaced by material having a different dielectric constant. A change in the value of the capacitor takes place because the dielectric between the plates has changed. RF (radio frequency) capacitance instruments detect this change and convert it into a relay actuation or a proportional output signal.

The device is independent of the dielectric constant (dc) as of a liquid conductivity of $100\mu\text{S}/\text{cm}$ and allows measurement of various liquids without the need for recalibration.

- ◆ **Process connections**: Flanges and threads
- ◆ **Process pressure**: Vacuum to +100bar (vacuum to +1,450psi)
- ◆ **Measuring range**: 0.1 to 4.0m (0.3 to 13ft)
- ◆ **Temperature**: -80 to $+200^\circ\text{C}$ (-112 to $+392^\circ\text{F}$)