

-ve Temperature Bath

Oil Bath

Dry Block Furnaces

Black Body Sources

Thermocouple and PRT thermometers

Reference Thermocouples and PRTs

Cold Junction Probes

Lab Automation

NABL Accredited Temperature Calibration

Onsite Temperature Calibration

# Temperature

# calibrators



**TEMPSENS**  
INSTRUMENTS

[www.tempsens.com](http://www.tempsens.com)

## TOTAL SOLUTION FOR TEMPERATURE CALIBRATION

### What is Calibration

The comparison of a measuring instrument against an accurate standard to determine any deviation. The device with known assigned correctness is called the Standard. The second device is the Unit Under Test (UUT).

### Accurate Temperature Calibration

Temperature Calibration has many facets. It can be carried out thermally in the case of probes or electrically in the case of Instrument and it can be performed directly with certified equipment, or indirectly with traceable standards.

Thermal (Temperature) calibration is achieved by elevating (or depressing) the temperature sensor to a known, controlled temperature and measuring the corresponding change in its associated electrical parameter (voltage or resistance).

The accurately measured parameters compared with that of a certified reference probe; the absolute difference represents the calibration error. If the sensor is connected to a measuring instrument, the sensor and the instrument combination can be effectively calibrated by this technique.

A typical general purpose system comprises of a thermal reference (stable temperature source), a certified reference probe with its certificate, a precision electronic digital thermometer, bridge or digital voltmeter.

### Temperature Source

#### Dry Block Calibrator

Provides the most convenient, portable facilities for checking & calibrating industrial probes and they are usually reasonable rapid heating and cooling device. The unit consists of a special designed heating block which has located internal holes for the probes. Although the block temperature is accurately controlled, any indication provided should be used for guidance only.

As with any comparison technique a certified sensor and indicator should be used to measure the block temperature and used as a reference for the test probe. Two types of unit are available; portable units which can be taken on to plant for the on-site calibration and laboratory units to which industrial sensors are brought as required.



#### Stirred Liquid Bath

Provide superior thermal environment for probe immersion as no air gap exist between the probe and the medium Thermal coupling is therefore much better than the alternatives described, and the stirring results in very even heat distribution throughout the medium. Methanol is used for temperature below 0 Deg C, water from 0 to 80 Deg C and silicon oil for upto 250 Deg C



#### Black Body Source

Blackbodies are reference sources used for testing infrared systems. They are required in industry for calibration of pyrometers, infrared line scanners or cameras. In

laboratory, they are part of benches for characterization of complex optronic systems. Tempsens offers a wide range of blackbodies to cover all Customer's needs



### Cold Junction Compensation

By connecting any thermocouple to measurement device three dissimilar metal junction are created in the circuit: the thermocouple junction itself, or hot junction, and the junction between \ each lead and the measurement device, or cold junctions. These cold junction provide their own thermoelectric voltages that are proportional to the temperature at the device terminals.

A technology known as cold junction compensation is therefore used to remove this unwanted effect

### Refererence Unit

In case of accurate thermocouple measurement, it's a common practice to reference the cold junction temperature at ice point (0 Deg C) so that copper leads may be connected to an EMF readout device. This procedure avoids the compen-sation of cold junction temperature at the terminal of read out which may not be constant and the measurement may not be very accurate.



## TOTAL SOLUTION FOR TEMPERATURE CALIBRATION

### TEMPERATURE SOURCES

	Contact Type	Non Contact Type	Stability	Temperature Range (°C)	
				-100	0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700
Calsys-40/200	⊗		0.01	-40	200
Calsys-15/110	●		0.2	-15	110
Calsys250	⊗		0.1	50	250
Calsys500BB		##	1.0	50	500
Calsys650	●		0.1	50	650
Calsys1200	●		0.5	250	1200
Calsys1200L	●		0.5	300	1200
Calsys1200BB		##	0.5	300	1200
Calsys1500L	●		1.0	500	1500
Calsys1500BB		##	1.0	500	1500
Calsys1700L	●		2.0	500	1700
Calsys1700BB		##	2.0	500	1700

⊗ Bath   ● Dry Block   ## Black Body

### MASTER SENSOR

SENSOR	TYPE	RANGE (°C)	ACCURACY
RTD	PT 25.5	-38 to 400	Class A
	PT 100	-38 to 250	1/3 DIN
	PT 200	-38 to 250	1/5 DIN
		-38 to 250	1/10 DIN
Thermocouple	K/N Type	0 to 1200	± 1.1°C OR ± 0.4%
	R/S Type	0 to 1200	± 0.6 0C OR ± 0.1%

### STABLE REFERENCE UNIT

TYPE	CALref 0	CALref 60
Channel	20	24
Ref. temp.*	0°C	60°C
Type of Junction*	J,K,T,E,N,R,S,B	J,K,T,E,N,R,S,B
Wall Mounted Model	✓	✓
Portable Model	✓	✓

\* Reference temperature could be change according to customer requirement

★ To be specified at time of ordering



CALSys  
-40/200



-40 to 200

## HIGH STABILITY BATH

### GENERAL

CALSys -40/200 is a Highly Stable Stirred Liquid Bath for calibrating RTD/Thermocouple and also for compensation of cold junction.

CALSys -40/200 offers the temperature range of -40 to 200 Deg C. It has a large well which is filled with liquid (Water+Methanol /Silicon Oil). The liquid is heated or cooled to the desired temperature. Methanol+Water is used for Negative Temperature and Silicon Oil for Heating.

It has better accuracy than dry block bath due to lack of air gaps and the temperature uniformity of stirred liquid.

### KEY FEATURES

- ✓ Large Immersion Depths
- ✓ High Accuracy
- ✓ High Stability and Uniformity
- ✓ Wide Temperature Range
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Reference Standard PRT ... Part No. TPRT-A-300  
Operational Manual

### Optional Accessories

Software for Automated Calibration.....Part No. AC-24  
Methanol.....1L- No. (3050 - M)  
Silicon Oil..... 1L-Part No C200S-LB-SO



### SPECIFICATIONS

Temp Range : -40 to 200 Deg C

Stability : 0.01 Deg C

Temperature Resolution : 0.01 Deg C

Time to Reach Max Temp : 1.5 Hr

Medium Cooling : Methanol + Water

Medium Heating : Silicon Oil

Controlling Sensor :PT-100

Method of Control : Digital self tuned PID Controller

Computer Interface : RS 232

Operating Temperature : 20 to 25 Deg C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 430 x 394 x 629 mm

Tank Dia X Depth : 70 X 540 mm

Weight : Approx 54 Kg





CALSys  
250

⊗ 50 to 250 °C

## HIGH ACCURACY LIQUID CALIBRATION BATH

### General

CALSys 250 calibration bath is a highly stable standard stirred liquid bath for calibrating RTDs / Thermocouples and other temperature sensors in the laboratory. The temperature of the bath is set and controlled by a self tuned PID controller with automatic super fine adjustment.

The unit features is portability with very high stability and uniformity. The medium used in the bath is silicon oil.

### KEY FEATURES

- ✓ Large Immersion Depths
- ✓ Wide Operating Range (50 to 250 Deg C)
- ✓ High Stability and Uniformity
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

### Standard Accessories

Silicon Oil ..... Part No. C300S-LB-SO  
Reference Standard PRT .....Part No. TPRT-A-300  
Carry Case  
Operational Manual

### Optional Accessories

Software for Automated Calibration.....Part No. AC - 24  
Silicon Oil..... 1L-Part No C200S-LB-SO



### SPECIFICATIONS

Temperature Range : 50 to 250 Deg C  
Temperature resolution : 0.1 Deg C  
Stability :  $\pm 0.1$  Deg C  
Controlling Sensor : Precision PRT (PT-100)  
Method of Control : Digital self tuned PID Controller  
Medium of Heating: Silicon Oil  
Time to Reach Max Temp : 30 Min.  
Computer Interface: RS 232  
Operating Temperature : 20 to 45 Deg C  
Power Requirement : 230 VAC, 1.5 KW  
Dimensions : 360(H) x 185(W) x 285(D) mm  
Tank Dia X Depth : 90 X 140 mm  
Weight : Approx 12 Kg

**CALSys  
650**

 50 to 650 °C

**General**

CALSys 650 offers medium temperature range from 50 to 650 Deg C. It is a highly stable standard furnace for calibrating thermocouples/RTD . It has been designed for medium range temperature calibration and find application in the glass, electrical power, automotive & material processing industries.

The comparison volume is a metallic block of special material, which has diameter of 32mm and 165mm long

The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

**KEY FEATURES**

- ✓ Large Immersion Depths
- ✓ Wide Operating Range (50 to 650 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective



**SPECIFICATIONS**

- Temperature Range : 50 to 650 Deg C
- Temperature resolution : 0.1 Deg C
- Stability : ± 0.1 Deg C
- Controlling Sensor : T/C "N" TYPE
- Method of Control : Digital self tuned PID Controller
- Time to reach max Temp : 45 Mins
- Computer Interface: RS 232
- Operating Temperature: 20 to 45 Deg C
- Power Requirement : 230 VAC, 0.5 KW
- Dimensions : 325(H) x 185(W) x 265(D) mm
- Insert Construction : Dia 32 mm X 165 mm long  
with 5 holes of 6.5 x 120mm insertion depth
- Weight : Approx 8 Kg

**Standard Accessories**

- Reference Standard Thermocouple ( 'N' Type T/C)  
..... Part No. TTCN-300
- Carry Case
- Operational Manual

**Optional Accessories**

- Customized Equalizing Block.....Part No. EQ1
- Software for Automated Calibration.....Part No. AC-24



**Carrying Case**



**Interchangeable Inserts  
(as per requirement)**



CALSys  
1200

250 to 1200 °C

## PORTABLE THERMOCOUPLE CALIBRATOR

### General

CALSys 1200 offers high temperature range from 250 to 1200 Deg C. It is a highly stable standard furnace for calibrating Thermocouples/RTD . It has been designed for high temperature range calibration and find application in the glass, electrical power, automotive & material processing industries.

The comparison volume is a metallic block of special material, which is 37 mm in diameter with 215 mm long.

The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

Version with 2 zone furnace is also available

### KEY FEATURES

- ✓ Large Immersion Depths
- ✓ Wide Operating Range (250 to 1200 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Reference Standard Thermocouple ( 'N' Type T/C)  
..... Part No. TTCN-300  
Carry Case  
Operational Manual

### Optional Accessories

Software for Automated Calibration.....Part No. AC - 24  
Customized Equalizing Block.....Part No. EQ2



### SPECIFICATIONS

Temperature Range : 250 to 1200 Deg C  
 Temperature resolution : 1.0 Deg C  
 Stability :  $\pm 0.5$  Deg C  
 Controlling Sensor : PT/RH-PT T/C  
 Method of Control : Digital self tuned PID Controller  
 Time to Reach Max Temp : 1.5 Hr  
 Computer Interface: RS 232  
 Operating Temperature : 20 to 45 Deg C  
 Power Requirement : 230 VAC, 1.5 KW  
 Dimensions : 405(H) x 205(W) x 285(D) mm  
 Insert Construction : Dia 37mm x 215 mm long  
 (2X6 mm & 2X8 mm holes) x 160mm insertion depth  
 Weight : Approx 12 Kg



Carrying Case



Interchangeable Inserts  
(as per requirement)

CALSys  
1200 L

 300 to 1200 °C

## HIGH STABILITY DRY BLOCK FURNACE

### General

CALSys 1200 L calibration source is a highly stable standard furnace for calibrating thermocouples in the laboratory. The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

The standard insert is a metallic block of special material, which is 37mm in diameter with 240 mm long and can hold up to four thermocouples.

It has been designed for high temperature range calibration and find application in the glass, electrical power, automotive, material processing industries & laboratories.

Special Version with 3 zone furnaces are available

### KEY FEATURES

- ✓ Large Immersion Depths
- ✓ Wide Operating Range (300 to 1200 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Reference Standard Thermocouple ( 'N' Type T/C)  
..... Part No. TTCN-300  
Operational Manual.....

### Optional Accessories

Software for Automated Calibration .....Part No. AC-24  
Extra Equalizing Block.....Part No. EQ2



### SPECIFICATIONS

Temperature Range : 300 to 1200 Deg C

Temperature resolution : 1.0 Deg C

Stability :  $\pm 0.5$  Deg C

Controlling Sensor : Precision PT/RH-PTT/C

Method of Control : Digital self tuned PID Controller

Time to Reach Max Temp : 1.5 Hr

Computer Interface: RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 500(H) x 400(W) x 490(D) mm

Insert Construction : Dia 37mm x 240 mm long  
(2X6 mm & 2X8 mm holes) x 160mm insertion depth

Weight : Approx 30 Kg



**Optional Block**



CALSys  
1500 L

 500 to 1500 °C

## HIGH STABILITY DRY BLOCK FURNACE

### General

CALSys 1500 L calibration source is a highly stable standard furnace for calibrating thermocouples in the laboratory. The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

The standard insert is a Ceramic Tube, which is 37 mm in diameter with 245 mm long and can hold up to four thermocouples.

It has been designed for high temperature range calibration and find application in the glass, electrical power, automotive & material processing industries and laboratories.

### KEY FEATURES

- ✓ Use of Silicon Carbide Spiral Rod Heaters
- ✓ Large Immersion Depths
- ✓ Wide Operating Range (500 to 1500 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Operational Manual.....

### Optional Accessories

Reference Standard Thermocouple (PT-RH/PT 'R' Type T/C) ..... Part No. TTCR-300

Software for Automated Calibration ..... Part No. AC-24

Extra Equalizing Block.....Part No. EQ2



### SPECIFICATIONS

Temperature Range : 500 to 1500 Deg C

Temperature resolution : 1.0 Deg C

Stability :  $\pm 1.0$  Deg C

Controlling Sensor : PT-RH/PT T/C

Method of Control : Digital self tuned PID Controller

Heaters : Silicon Carbide Spiral Rod Heater

Time to Reach Max Temp : 2 Hr

Computer Interface: RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 4.0 KW

Dimensions : 565(H) x 450(W) x 520(D) mm

Insert Construction : Dia 37mm x 245 mm long  
(2X6 mm & 2X8mm holes) x 140mm insertion depth

Weight : 30 Kg

CALSys  
1700 L

 500 to 1700 °C

## HIGH TEMPERATURE DRY BLOCK FURNACE

### General

CALSys 1700 L calibration source is a highly stable standard furnace for calibrating thermocouples in the laboratory. The temperature of the furnace is set and controlled by a self tuned advanced PID controller with automatic super fine adjustment.

The standard insert is a Ceramic Tube, which is 37 mm in diameter with 240 mm long and can hold up to four thermocouples.

It has been designed for high temperature range calibration and find application in the glass, electrical power, automotive & material processing industries and laboratories.

### KEY FEATURES

- ✓ Use of Molybdenum Disilicate Heaters (MoSiO<sub>2</sub>)
- ✓ Large Immersion Depths
- ✓ Wide Operating Range (500 to 1700 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Operational Manual.....

### Optional Accessories

Reference Standard Thermocouple (PT-RH/PT 'B' Type T/C) ..... Part No. TTCB-300

Software for Automated Calibration ..... Part No. AC-24

Extra Equalizing Block.....

Black Body Cavity.....Part No. EQ3



### SPECIFICATIONS

Temperature Range : 500 to 1700 Deg C

Temperature resolution : 0.1 Deg C

Stability : ± 2.0 Deg C

Controlling Sensor : Precision PT/RH-PTT/C

Heaters : MoSiO<sub>2</sub>

Method of Control : Digital self tuned PID Controller

Time to Reach Max Temp : 2.5 Hr

Computer Interface: RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 4.0 KW

Dimensions : 640(H) x 500(W) x 550(D) mm

Insert Construction : Dia 37mm x 240mm long  
(2x6 mm & 2x2.8 mm holes) x 160mm insertion depth

Weight : 80 Kg



CALSys  
500 BB

## 50 to 500 °C

## PORTABLE BLACK BODY

### General

CALSys 500 BB calibration source is a highly stable standard Portable Black Body Furnace for calibrating non contact IR thermometer for the wide temperature range of 50 to 500 Deg C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a diameter of 60 mm which offer large view area for IR Thermometer

The Emissivity of the target is 0.95(±0.01). The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

### KEY FEATURES

- ✓ Large Aperture Area
- ✓ Wide Operating Range (50 to 500 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

### Standard Accessories

Reference Standard PRT .....Part No. TPRT-A-300  
Carry Case  
Operational Manual

### Optional Accessories

Software for Automated Calibration.....Part No. AC-24  
Master Pyrometer



### SPECIFICATIONS

Temperature Range : 50 to 500 Deg C  
Temperature resolution : 0.1 Deg C  
Stability : ± 1.0 Deg C  
Controlling Sensor : T/C "N" type  
Method of Control : Digital self tuned PID Controller  
Emissivity : 0.95 ±0.01  
Time to reach max Temp : 45 Mins  
Computer Interface : RS 232  
Operating Temperature : 20 to 45 Deg C  
Power Requirement : 230 VAC, 1.0 KW  
Dimensions : 270 X 220 X 170 mm  
Cavity : Anodized Aluminum Plate Dia - 55mm  
Aperture Dia : 60 mm  
Weight : Approx 7 Kg

CALSys  
1200 BB

## 300 to 1200 °C

## HIGH STABILITY BLACK BODY FURNACE

### General

CALSys 1200 BB calibration source is a highly stable standard Black Body Furnace for calibrating non contact IR thermometer for the wide temperature range of 300 to 1200 Deg C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a diameter of 56 mm which offer large view area for IR Thermometer.

The Emissivity of the target is 0.99(±0.01).The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

### KEY FEATURES

- ✓ Wide Operating Range (300 to 1200 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Operational Manual.....

### Optional Accessories

Master Pyrometer

Software for Automated Calibration ..... Part No. AC-24

Black Body Cavity.....Part No. EQ3



### SPECIFICATIONS

Temperature Range : 300 to 1200 Deg C

Temperature resolution : 1.0 Deg C

Stability : ± 0.5 Deg C

Controlling Sensor : Precision PT/RH-PT T/C

Method of Control : Digital self tuned PID Controller

Time to reach max Temp : 2 Hr

Computer Interface : RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 500(H) x 400(W) x 490(D) mm

Black Body Cavity Aperture: 56 mm, Conical Aperture

Weight : Approx 30 Kg

CALSys  
1500 BB

## 500 to 1500 °C

## HIGH STABILITY BLACK BODY FURNACE

### General

CALSys 1500 BB calibration source is a highly stable standard Black Body Furnace for calibrating non contact IR thermometer for the wide temperature range of 500 to 1500 Deg C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a diameter of 56 mm which offer large view area for IR Thermometer.

The Emissivity of the target is 0.99(±0.01). The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

### KEY FEATURES

- ✓ Use of Silicon Carbide Spiral Rod Heaters
- ✓ Wide Operating Range (500 to 1500 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Operational Manual.....

### Optional Accessories

Master Pyrometer

Software for Automated Calibration ..... Part No. AC-24

Black Body Cavity.....Part No. EQ3



### SPECIFICATIONS

Temperature Range : 500 to 1500 Deg C

Temperature resolution : 1.0 Deg C

Stability : ± 1.0 Deg C

Controlling Sensor : PT-RH/PT T/C

Method of Control : Digital self tuned PID Controller

Heaters : Silicon Carbide Spiral Rod Heater

Time to reach max Temp : 2 Hr

Computer Interface : RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 4.0 KW

Dimensions : 560(H) x 450(W) x 520(D) mm

Black Body Cavity Aperture : 56 mm Conical Aperture

Weight : 30 Kg

CALSys  
1700 BB

# 500 to 1700 °C

## HIGH TEMPERATURE BLACK BODY FURNACE

### General

CALSys 1700 BB calibration source is a highly stable standard Black Body Furnace for calibrating non contact IR thermometer for the wide temperature range of 500 to 1700 Deg C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a diameter of 29 mm which offer large view area for IR Thermometer.

The Emissivity of the target is 0.97(±0.01). The temperature of the furnace is set and controlled by a self tuned PID controller with automatic super fine adjustment.

### KEY FEATURES

- ✓ Use of Molybdenum Disilicate Heaters (MoSiO<sub>2</sub>)
- ✓ Wide Operating Range (500 to 1700 Deg C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

### Standard Accessories

Operational Manual.....

### Optional Accessories

Master Pyrometer

Software for Automated Calibration.....Part No. AC-24

Extra Equalizing Block.....

Black Body Cavity..... Part No. EQ3



### SPECIFICATIONS

Temperature Range : 500 to 1700 Deg C

Temperature resolution : 0.1 Deg C

Stability : ± 2.0 Deg C

Controlling Sensor : Precision PT/RH-PT T/C

Heaters : MoSiO<sub>2</sub>

Method of Control : Digital self tuned PID Controller

Time to reach max Temp : 2 Hr

Computer Interface : RS 232

Operating Temperature : 20 to 45 Deg C

Power Requirement : 230 VAC, 4.0 KW

Dimensions : 640(H) x 400(W) x 550(D) mm

Black Body Cavity Aperture: 29 mm, End closed tube

Weight : 80 Kg

## CaIREF

## Reference Unit



### CaIREF 0

- ✓ 0 deg C Thermoelectric reference unit
- ✓ Eliminates Old Fashioned "Ice Bath"
- ✓ Versatile use in industries, Laboratories, Instrument Shop
- ✓ NABL Traceable Calibration Available

### CaIREF 60

- ✓ 60 deg C Thermoelectric reference unit
- ✓ Versatile use in factory, Laboratory, Instrument Shop
- ✓ Rugged Outer case for safe Portability
- ✓ NABL Traceable Calibration Available

### SPECIFICATIONS

Reference Junction temperature : 0 Deg C (Standard)  
 Types of T/C : J, K, T, E, N, R, S, B  
 Accuracy :  $\pm 0.1$  Deg C, Errors can be compensated by adjusting controller setting  
 Stability :  $\pm 0.03$  Deg C  
 Stabilization time : 15 Min  
 Capacity : 20 No (User Defined)  
 Resolution :  $\pm 0.01$  Deg C  
 Dimension : 315mm(H)x305mm(W)x332mm(D)  
 Weight : 9Kgs  
 Power Supply : 230 VAC, 50 Hz  
 Carry case : Aluminium modular box

### SPECIFICATIONS

Temperature Range : Ambient +10 to 90 Deg C<sup>★</sup>  
 Types of T/C : J, K, T, E, N, R, S, B  
 Accuracy :  $\pm 0.5$  Deg C, Errors can be compensated by adjusting controller setting  
 Stability :  $\pm 0.05$  Deg C  
 Stabilization time : 10 Min  
 Capacity : 6-24 Channel  
 (Max. Capacity : 48 Channel)  
 Resolution :  $\pm 0.1$  Deg C  
 Dimension : 400mm(H)x500mm(W)x200mm(D)  
 Weight : 13Kg  
 Power Supply : 230 V AC, 50/60 Hz / 24 V DC  
 Electronic temperature control with Pt100

★ As per customer requirement

## SSPRT

### General

Metal Sheathed Semi Standard Platinum Resistance Thermometer are widely used as a reference to calibrate various temperature probes, particularly in secondary calibration laboratories.

SSPRT is constructed with a 6 mm outer diameter metal sheath of high durability . Inside the sheath, the sensing element is protected to shield the sensor from contamination by free floating metal ions found within metal environment at high temperatures.

The electrical configuration is a four wire current-potential hookup to eliminate effect of lead wire resistance.

A special powder mixture is filled into the sensor capsule to support the element wire to protect the element from mechanical shocks.

After all element parts and powder are assembled into the sensor protection capsule, a pure mixture of gases, including oxygen is filled into the sensor is hermetically sealed under pressure.

Fixed point calibration is provided as an option at TPW ( 0.01° C), Ga (29.7646°C), Su (231.928°C), Zn(419.527°C),Al(660.323°C)

### KEY FEATURES

- ✓ High Accuracy & stability
- ✓ Manufactured & Tested under strict quality control standards
- ✓ Cycled to Stability
- ✓ Fast Response



### SPECIFICATIONS

Temperature Range : Upto 660 Deg C

Outer Diameter : 6 mm

Outer Sheath : Inconel 600

Lead Wires : Platinum

RTPW : 100 (±1 )/25

Stability : ± 50 mk

Long term Drift : ± 50 mk

Termination : M-F gold plated 4 Pin Lemo Connector

Calibration Uncertainty :

< 15 mk at 0.01 Deg C

< 30 mk at 29.7646 Deg C

< 40 mk at 231.928 Deg C

< 40 mk at 419.527 Deg C

< 40 mk at 660.323 Deg C

Calibration : NABL Accredited Calibration Certificate with ITS 90 Constants and Resistance Vs Temperature Chart in 1 Deg C increment

RTD  
TPRT

General

TPRT-300 is highly accurate platinum resistance thermometer (pt100) offer the temperature range of -38 to 400 Deg C.

TPRT-300 gives the benefit of high accuracy and low drift in a solid metal case. Wire wound resistance element give good stability with low temperature coefficient and high accuracy

TPRT-300 is constructed with a 6 mm outer diameter of SS- 316 sheath of high durability .

TPRT is available in different accuracies and length.



KEY FEATURES

- ✓ High Accuracy & stability
- ✓ Manufactured & Tested under strict quality control standards
- ✓ Cycled to Stability
- ✓ Fast Response
- ✓ Low Drift

SPECIFICATIONS

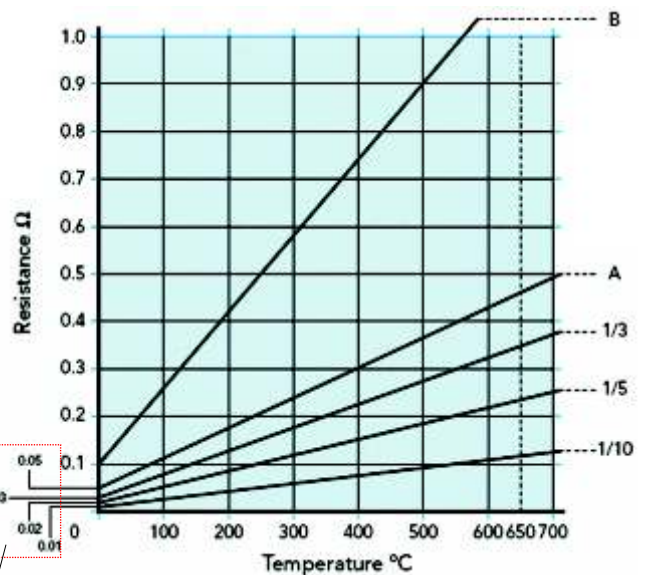
- Type : PT-100 (Four Wire)
- Temperature Range : -38 to 400 Deg C
- Element : PT-100
- Accuracy : Class A
- Sheath Diameter : 6 mm
- Sheath Length : 300 mm, 450mm, 600mm
- Cable Length : 1000 mm or as Required
- Outer Sheath : SS-316
- End Connection : Flying Lead

SENSOR	TYPE	RANGE (°C)	ACCURACY
RTD	PT 25.5	-38 to 400	Class A
	PT 100	-38 to 250	1/3 DIN
	PT 200	-38 to 250	1/5 DIN
		-38 to 250	1/10 DIN
Thermocouple	K/N Type	0 to 1200	± 1.1°C OR ± 0.4%
	R/S Type	0 to 1200	± 0.6 0C OR ± 0.1%

Accessories

- ✓ NABL Accredited 3 point Calibration Certificate
- ✓ Digital Temp Indicator (Optional)

Selection : Part No.  
Model No. - Accuracy-Length  
Ex. : TPRT-A-300



Deviation

## MASTER THERMOCOUPLE TTC

### General

These are Master Thermocouple Without Cold Junction. This range is based on popular Thermocouple Standards and available for different Temperature range, Sensitivity & length.

TTC are highly accurate and stable thermocouple with minimum uncertainties. It offer wide temperature range which is Ideal for all industrial applications. The size, length and thermocouple material are such that gives the best and most stable results. Options with built in cold junction compensation is also available.

### KEY FEATURES

- ✓ High Accuracy & stability
- ✓ Cycled to Stability
- ✓ Fast Response
- ✓ Manufactured & Tested under strict quality control standards
- ✓ NABL Accredited 3 point Calibration Certificate



Model No. Prefix	T/C Type	Material	Range (°C)	Accuracy	Sensitivity (µv/ °C)	Options in sheath length(mm)	Options in Cable length(mm)	Outer Sheath
TTCN/TTCK	N/ K	NiCrSi- NiSi/ NiCr-NiAl	Upto 1200	±1.1 °C or ± 0.4%	39-41	300,450 & 600	1000 & 1500	INCONEL
TTCR/TTCS	R/ S	Pt- 13RhPt/ Pt- 10RhPt	Upto 1500	±0.6 °C or ± 0.1%	6-12	300,450 & 600	1000 & 1500	CERAMIC

Selection : Part No.

Model No. type - Length

Ex. : TTCN-300

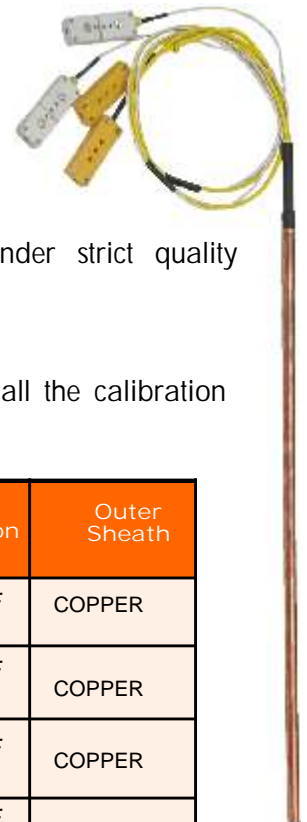
## COLD JUNCTION PROBE CTC

### General

These Probes are used with various temperature sensor for cold junction compensation. The selection of probe depends on type of thermocouple .Double junctions are most commonly supplied (four wire connections per junction). Single junctions (two wire connections per junction) can also be supplied. Probes are available for different type of Thermocouples like J, K, N, R, S, T, E.

### KEY FEATURES

- ✓ High Accuracy & stability
- ✓ Cost Effective solution
- ✓ Manufactured & Tested under strict quality control standards



This Probe is the best deal for all the calibration laboratory and test houses.

Model No. Prefix	Type Probe1, Probe2	Accuracy	Diameter (mm)	Options in sheath length(mm)	Options in Cable length(mm)	End Connection	Outer Sheath
CTC-N-N	N,N	± 1.1 °C or ± 0.4%	6/8 mm	400 & 600	1000 & 1500	Flying Lead/M/F Connector	COPPER
CTC-K-K	K,K	± 1.1 °C or ± 0.4%	6/8 mm	400 & 600	1000 & 1500	Flying Lead/M/F Connector	COPPER
CTC-R-R	R,R	± 0.6 °C or ± 0.1%	6/8 mm	400 & 600	1000 & 1500	Flying Lead/M/F Connector	COPPER
CTC-S-S	S,S	± 0.6 °C or ± 0.1%	6/8 mm	400 & 600	1000 & 1500	Flying Lead/M/F Connector	COPPER

Model No. Selection :

Cold Junction Probe-Probe1-Probe2-Length

Ex. : CTC-K-R-400



## TEMPMET

### General

Tempmet is a special high precision thermometer specially made for temperature calibration labs.

The unmatched resolution of 0.001 Deg C and sturdy working makes it a laboratory workhouse.



### SPECIFICATIONS

**Model No. :** C 3001

**Accuracy of RTD Measurement:** 0.01 Deg C

**Accuracy of T/C Measurement:** 0.1 Deg C

**Resolution of RTD :** 0.001 Deg C

**Resolution of T/C :** 0.01 Deg C

**Measuring Input :** 2 Channel

**T/C Input :** Type B,E,J,K,N,R,S,T

**RTD Input :** PT 100

**Units :** Deg C, Deg F, Ohm

**Data Logging :** 6850 values

**Digital Communication :** RS 232

**Battery:** Rechargeable Type

## TEMPMET 01 - RTD

### RTD THERMOMETER

#### Specifications

RTD Range	Pt 100 385 : -200°C ~ 800°C (-328°F ~ 1472°F) Pt 200 385 : -200°C ~ 600°C (-328°F ~ 1112°F) Pt 500 385 : -200°C ~ 600°C (-328°F ~ 1112°F) Pt 1000 385 : -200°C ~ 600°C (-328°F ~ 1112°F) Pt 100 3916 : -200°C ~ 600°C (-328°F ~ 1112°F) Pt 100 3926 : -200°C ~ 600°C (-328°F ~ 1112°F)
Accuracy: (18°C ~ 28°C ambient)	± (0.05% rdg + 0.3°C) ± (0.05% rdg + 0.6°F)
Operation temperature and humidity	0°C ~ 50°C ( 32°F ~122°F), <80% RH
Storage temperature and humidity	-10°C ~ 60°C(-4°F ~ 140°F), <70% RH
Power requirement	R03(AB) Size AAA / 1.5V1UM-4 x 4pcs
Input protection at thermocouple input	24V AC/DC Maximum
Dimension:(Without holster)	164 mm X 76 mm x 32 mm(LxWxH).
Weight	Approx.415g (Include Battery)



## TEMPMET 02 - TC

### TC THERMOMETER

#### Specifications

TC Thermocouple range

K Type:  $-210^{\circ}\text{C} \sim 1200^{\circ}\text{C}$ ( $-346^{\circ}\text{F} \sim 2192^{\circ}\text{F}$ )  
 T Type:K Type:  $-200^{\circ}\text{C} \sim 1372^{\circ}\text{C}$ ( $-328^{\circ}\text{F} \sim 2501^{\circ}\text{F}$ )  
 J  $-250^{\circ}\text{C} \sim 400^{\circ}\text{C}$ ( $-418^{\circ}\text{F} \sim 752^{\circ}\text{F}$ )  
 E Type:  $-210^{\circ}\text{C} \sim 100^{\circ}\text{C}$ ( $-346^{\circ}\text{F} \sim 1832^{\circ}\text{F}$ )  
 R/S Type:  $0^{\circ}\text{C} \sim 1767^{\circ}\text{C}$ ( $32^{\circ}\text{F} \sim 3212^{\circ}\text{F}$ )  
 N Type:  $-150^{\circ}\text{C} \sim 1300^{\circ}\text{C}$ ( $-238^{\circ}\text{F} \sim 2372^{\circ}\text{F}$ )

Accuracy: ( $18^{\circ}\text{C} \sim 28^{\circ}\text{C}$  ambient)

K/J/E/T Type:  
 $\pm (0.05\% \text{ rdg} + 0.3^{\circ}\text{C})$   $-200^{\circ}\text{C} \sim 1372^{\circ}\text{C}$   
 $\pm (0.05\% \text{ rdg} + 0.6^{\circ}\text{F})$   $-328^{\circ}\text{F} \sim 2501^{\circ}\text{F}$   
 R/S Type:  
 $\pm (0.05\% \text{ rdg} + 2^{\circ}\text{C})$   $0^{\circ}\text{C} \sim 1767^{\circ}\text{C}$   
 $\pm (0.05\% \text{ rdg} + 4^{\circ}\text{F})$   $32^{\circ}\text{F} \sim 3212^{\circ}\text{F}$   
 N Type:  
 $\pm (0.05\% \text{ rdg} + 1.5^{\circ}\text{C})$   $-150^{\circ}\text{C} \sim 1300^{\circ}\text{C}$   
 $\pm (0.05\% \text{ rdg} + 3^{\circ}\text{F})$   $-238^{\circ}\text{F} \sim 2372^{\circ}\text{F}$

Operation temperature and humidity  $0^{\circ}\text{C} \sim 50^{\circ}\text{C}$  ( $32^{\circ}\text{F} \sim 122^{\circ}\text{F}$ ) : <80% RH

Storage temperature and humidity  $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$ ( $-4^{\circ}\text{F} \sim 140^{\circ}\text{F}$ ), <70% RH

Power requirement R03(AB) SIZE AAA/1.5V/UM-4 x 4PCS

Input protection at thermocouple input 24V AC/DC Maximum

Dimension:(Without holster) 164 mm X 76 mm x 32 mm (LxWxH).

Weight : Approx.415g (Include Battery)



TEMPMET 04 - is available with same specification but for 4 channels

## TEMPMET 03 - RTD + TC

RTD + TC THERMOMETER with Data Logging

#### Specifications

Specifications- Same as Tempmet-1 & 2





## CALIBRATION SERVICES

Tempsens Calibration Centre is an independent unit of Tempsens instruments (I) Pvt. Ltd.

It is the only private sector company in the country with accredited Fixed Point Temperature calibration Laboratory. The lab has highly stable calibration furnaces, measuring instruments and accurate master sensors traceable to National and international Standards. The calibration center functions as per ISO17025/NABL standards. Calibration of contact type sensors can be made in temperature range of  $-38^{\circ}\text{C}$  to  $1600^{\circ}\text{C}$ . And Calibration of non contact type sensors can be made in temperature range  $50^{\circ}\text{C}$  to  $1600^{\circ}\text{C}$ . Further the laboratory offers both in house and on site temperature calibration.

### Unique Advantages

One of the best Labs in India equipped with various type of calibration furnaces and measuring instruments.

- ✓ Fixed point cells calibration.
- ✓ One of the best B.M.C.
- ✓ NABL Accreditation
- ✓ Provide on-site calibration
- ✓ Prompt and Fast Services
- ✓ Covers wide range  $-38$  to  $1600^{\circ}\text{C}$  with NABL Certificate. ( $1700^{\circ}\text{C}$  without NABL certificate is also possible.)



### In House Calibration Facility :

In house calibration facility for contact and non contact type sensor traceable to National and International standards. Best Measurement Capabilities and temperature range is as shown in table

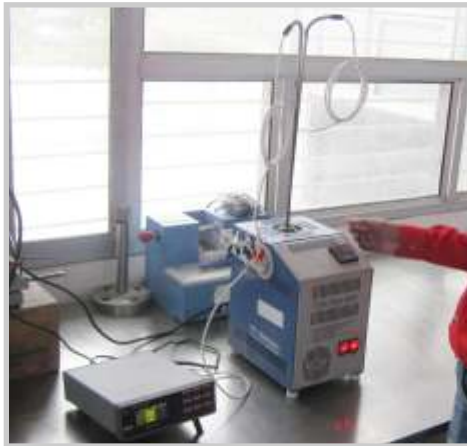


Quality Measured/Instruments	Temperature Range	Best Measurement Capability
Contact Type RTD, Thermocouples Thermometers	$-38^{\circ}\text{C}$ to $0^{\circ}\text{C}$	$0.06^{\circ}\text{C}$
	$>0^{\circ}\text{C}$ to $140^{\circ}\text{C}$	$0.05^{\circ}\text{C}$
	$>140^{\circ}\text{C}$ to $250^{\circ}\text{C}$	$0.10^{\circ}\text{C}$
	$>250^{\circ}\text{C}$ to $500^{\circ}\text{C}$	$0.18^{\circ}\text{C}$
	$>500^{\circ}\text{C}$ to $1000^{\circ}\text{C}$	$1.24^{\circ}\text{C}$
	$>1000^{\circ}\text{C}$ to $1200^{\circ}\text{C}$	$2.20^{\circ}\text{C}$
Non Contact Type Pyrometer	$50^{\circ}\text{C}$ to $250^{\circ}\text{C}$	$1.5^{\circ}\text{C}$
	$>250^{\circ}\text{C}$ to $400^{\circ}\text{C}$	$2.4^{\circ}\text{C}$
	$>400^{\circ}\text{C}$ to $500^{\circ}\text{C}$	$3.4^{\circ}\text{C}$
	$>500^{\circ}\text{C}$ to $800^{\circ}\text{C}$	$3.6^{\circ}\text{C}$
	$>800^{\circ}\text{C}$ to $1200^{\circ}\text{C}$	$4.1^{\circ}\text{C}$
	$>1200^{\circ}\text{C}$ to $1600^{\circ}\text{C}$	$5.9^{\circ}\text{C}$

### On Site Calibration Facility :

Our state-of-the-art labs provide cost effective calibration services at your location. You no longer need to disassemble your delicate equipment and send components across the country. Our experienced and trained Engineers go to the site to calibrate the instrumentation, usually without the time and expense of removing and reinstalling them. This saves time and money of customer.

Our engineers help customers to provide fast and accurate on-site calibration for contact temperature sensors in temperature range  $-25^{\circ}\text{C}$  to  $1200^{\circ}\text{C}$  and for non contact temperature sensors in temperature range  $50^{\circ}\text{C}$  to  $1200^{\circ}\text{C}$  with lowest down time. We can provide on-site service in other areas by special arrangement. On site Best Measuring Capability and Temperature Ranges as shown in following table



Quality Measured/Instruments	Temperature Range	Best Measurement Capability
Contact Type RTD, Thermocouples Thermometers	$-25^{\circ}\text{C}$ to $0^{\circ}\text{C}$	$0.062^{\circ}\text{C}$
	$>0^{\circ}\text{C}$ to $140^{\circ}\text{C}$	$0.05^{\circ}\text{C}$
	$>140^{\circ}\text{C}$ to $250^{\circ}\text{C}$	$0.10^{\circ}\text{C}$
	$>250^{\circ}\text{C}$ to $500^{\circ}\text{C}$	$0.18^{\circ}\text{C}$
	$>500^{\circ}\text{C}$ to $1000^{\circ}\text{C}$	$1.25^{\circ}\text{C}$
	$>1000^{\circ}\text{C}$ to $1200^{\circ}\text{C}$	$2.2^{\circ}\text{C}$
Non Contact Type Pyrometer	$50^{\circ}\text{C}$ to $250^{\circ}\text{C}$	$1.6^{\circ}\text{C}$
	$>250^{\circ}\text{C}$ to $400^{\circ}\text{C}$	$2.4^{\circ}\text{C}$
	$>400^{\circ}\text{C}$ to $500^{\circ}\text{C}$	$3.6^{\circ}\text{C}$
	$>500^{\circ}\text{C}$ to $800^{\circ}\text{C}$	$3.6^{\circ}\text{C}$
	$>800^{\circ}\text{C}$ to $1200^{\circ}\text{C}$	$4.1^{\circ}\text{C}$

### Fixed Point Calibration Facility :

We are first private company to provide fixed point temperature calibration for Triple point of water (Tpw), Gallium (Ga), Tin (Sn), Zinc (Zn) & Aluminum (Al) Cells.

Fixed points are most accurate devices available for defining a temperature scale. Fixed point cells are designed to realize the liquid-solid equilibrium temperatures of certain high purity metal elements, for calibration of thermometers at ITS-90 fixed points. The best measuring capability and Temperature range for fixed point calibration is shown in table



Quality Measured/Instruments	Temperature Range	Best Measurement Capability
Calibration of SPRT/PRTS/ THERMOCOUPLES at	Triple Point of Water ( $0.01^{\circ}\text{C}$ )	$0.015^{\circ}\text{C}$
	Melting Point of Gallium ( $29.7646^{\circ}\text{C}$ )	$0.029^{\circ}\text{C}$
	Freezing Point of Tin ( $231.928^{\circ}\text{C}$ )	$0.039^{\circ}\text{C}$
	Freezing Point of Zinc ( $419.527^{\circ}\text{C}$ )	$0.034^{\circ}\text{C}$
	Freezing Point of Aluminum ( $660.323^{\circ}\text{C}$ )	$0.040^{\circ}\text{C}$

Always one step ahead Committed to success

TEMPESENS Instruments (I) Pvt. Ltd is a part of Pyrotech group which was established by four technocrats in 1976 at Udaipur, with our first product as Thermocouples and RTDs. To enhance our customer's success we provide high quality products and services for "Temperature solution", tailored to their needs, and delivered to meet their schedule. We have tied up with world leaders in Temperature measuring technology for critical components, Non contact Temperature measurement and Thermal imaging solutions. We add value to these products and deliver complete engineered solutions, backed by efficient service and application support. Today we have strong sales and service network operating from important locations of India and abroad. Continuing our constant endeavor of delivering solutions for temperature technology to our large base of over two thousand satisfied customers.

- ✓ 35 years of experience.
- ✓ Large Customer base.
- ✓ Executed Major Projects in India and Abroad.
- ✓ Production Expertise- Specialized Team & Facility.



## Other Products

- Thermocouples
- RTDs
- Compensating Cables
- Thermowells
- Industrial Heaters
- Non Contact Pyrometers
- Kiln Shell Scanner
- Furnace monitoring Camera
- Ceramic Tubes
- Thermocouple Accessories

## TOTAL SOLUTION TO TEMPERATURE SENSOR TECHNOLOGY



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