



-ve Temperature Bath

Liquid Bath

Dry Block Furnaces

Black Body Sources

Reference Junction Box

Thermocouple and PRT
Thermometers

Reference Thermocouples and
PRTs

Cold Junction Probes

Lab Automation

NABL Accredited Temperature
Calibration

Onsite Temperature Calibration

Temperature calibrators



TEMPSENS
INSTRUMENTS

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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°C, water from 0 to 80°C and silicon oil for upto 250°C.



Black Body Source

Black bodies 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 black bodies 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.

Reference Unit

In case of accurate thermocouple measurement, it's a common practice to reference the cold junction temperature at ice point (0°C) so that copper leads may be connected to an EMF readout device. This procedure avoids the compensation 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)															
Calsys-80/50	✕		0.05	-80													50		
Calsys-40/50	✕		0.05	-40													50		
Calsys-35/50	✕		0.05	-35													50		
Calsys-35/200	✕		0.01	-35													200		
Calsys-15/110	●		0.1	-15													110		
Calsys120SP	✕/●		0.1	0													120		
Calsys250	✕		0.1	50													250		
Calsys300SP	✕		0.1	50													250		
Calsys650	●		0.1	50													650		
CalsysFB	●		1.0	50													650		
Calsys1200	●		0.5														1200		
Calsys1200L	●		0.5														1200		
Calsys1200 3Z	●		0.4														1200		
Calsys1500L	●		1.0														1500		
Calsys1700L	●		2.0														1700		
Calsys110BB		■	2.0	10													110		
Calsys500BB		■	1.0	50													500		
Calsys1200BB		■	1.0														1200		
Calsys1500BB		■	1.0														1500		
Calsys1700BB		■	2.0														1700		
Fast Cal 1200		■	1.0														1200		
Fast Cal 2600		■	3.0														2600		

✕ Bath

● Dry Block

■ Black Body

MASTER SENSOR

SENSOR	TYPE	RANGE(°C)	ACCURACY
RTD	PT 25.5 PT 100 PT 200	-80 to 400	Class A
		-80 to 250	1/3 DIN
		-80 to 250	1/5 DIN
		-80 to 250	1/10 DIN
Thermocouple	K/N Type	0 to 1200	± 1.1°C OR ± 0.4%
	R/S Type	0 to 1500	± 0.60°C OR ± 0.1%
SSPRT	—	upto 660	long term drift ≤ ±50mk/Yr.

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
-80/50



-80 to 50°C

HIGH STABILITY BATH

GENERAL

CALsys -80/50 is a Highly Stable Stirred Liquid Bath for Calibration RTD / Thermocouple and also for compensation of cold junction.

CALsys -80/50 offers the temperature range of -80 to 50°C. It has large tank which is filled with liquid Methanol. The liquid is heated or cooled to the desired temperature.

It has better stability & uniformity than dry block bath and as it uses of stirred liquid.

This CALsys -80/50 is built using CFC free refrigerants.

KEY FEATURES

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

STANDARD ACCESSORIES

- Reference Standard PRT...Part No. TPRT-A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Methanol10 Ltr. No.(3050-M)



SPECIFICATIONS

Temp. Range : -80 to 50°C

Stability : $\pm 0.04^{\circ}\text{C}$ at -80°C (Methanol)
 $\pm 0.07^{\circ}\text{C}$ at 0°C (Methanol)
 $\pm 0.05^{\circ}\text{C}$ at 50°C (Water)

Uniformity : $\pm 0.05^{\circ}\text{C}$ at -80°C
 $\pm 0.09^{\circ}\text{C}$ at 0°C
 $\pm 0.07^{\circ}\text{C}$ at 50°C

Temperature Resolution : 0.1°C

Time to Reach Min. Temp. : 2 Hrs

Medium : Methanol

Controlling Sensor : PT-100

Volume : 9 Ltr.

Access Opening : 100 x 130 mm

Depth : 200 mm

Method of control : Digital self tuned PID Controller

Computer Interface : RS - 232

Operating Temperature : 20 to 25°C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 750 x 850 x 650 mm

Weight : 80 Kgs.

(Large depth available on custom built model)



CALsys
-40/50



-40 to 50°C

HIGH STABILITY BATH

GENERAL

CALsys -40/50 is a Highly Stable Stirred Liquid Bath for Calibration RTD / Thermocouple and also for compensation of cold junction.

CALsys -40/50 offers the temperature range of -40 to 50°C. It has large tank which is filled with liquid Methanol. The liquid is heated or cooled to the desired temperature.

It has better stability & uniformity than dry block bath and as it uses of stirred liquid.

This CALsys -40/50 is built using CFC free refrigerants.



KEY FEATURES

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

STANDARD ACCESSORIES

- Reference Standard PRT...Part No. TPRT-A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Methanol5 Ltr. No.(3050-M)

SPECIFICATIONS

Temp. Range : -40 to 50°C

Stability : $\pm 0.04^{\circ}\text{C}$ at -40°C (Methanol)
 $\pm 0.07^{\circ}\text{C}$ at 0°C (Methanol)
 $\pm 0.05^{\circ}\text{C}$ at 50°C (Water)

Uniformity : $\pm 0.05^{\circ}\text{C}$ at -40°C
 $\pm 0.09^{\circ}\text{C}$ at 0°C
 $\pm 0.07^{\circ}\text{C}$ at 50°C

Temperature Resolution : 0.1°C

Time to Reach Min. Temp. : 1.5 Hrs

Medium : Methanol

Controlling Sensor : PT-100

Volume : 3 Ltr.

Access Opening : 90 x 90 mm

Depth : 150 mm

Method of control : Digital self tuned PID Controller

Computer Interface : RS - 232

Operating Temperature : 20 to 25°C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 500 x 350 x 450 mm (Approx.)

Weight : 40 Kgs.

(Large depth available on custom built model)



CALsys
-35/50



-35 to 50°C

HIGH STABILITY THERMOSTAT TESTING BATH GENERAL

CALsys -35/50 is a Highly Stable Stirred Liquid Bath for testing of multiple thermostats simultaneously.

Thermostats offers the temperature range of -35 to 50°C. It has large tank which is filled with liquid Methanol. The liquid is heated or cooled to the desired temperature.

It has continues stirrer liquid provides uniform temperature distribution.

This CALsys -35/50 is built using CFC free refrigerants.

It specially designed to test 50 numbers of thermostat at a time.

KEY FEATURES

- ✓ LED Light Indication for each thermostat
- ✓ Large Immersion Depths
- ✓ High Accuracy
- ✓ High Stability and Uniformity
- ✓ Wide Temperature Range
- ✓ PC Interface
- ✓ Simple to use and Cost effective

STANDARD ACCESSORIES

- Reference Standard PRT...Part No. TPRT-A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Methanol10 Ltr. No.(3050-M)



SPECIFICATIONS

Temp. Range : -35 to 50°C

Stability : $\pm 0.04^{\circ}\text{C}$ at -35°C (Methanol)
 $\pm 0.07^{\circ}\text{C}$ at 0°C (Methanol)
 $\pm 0.05^{\circ}\text{C}$ at 50°C (Water)

Uniformity : $\pm 0.05^{\circ}\text{C}$ at -35°C
 $\pm 0.09^{\circ}\text{C}$ at 0°C
 $\pm 0.07^{\circ}\text{C}$ at 50°C

Temperature Resolution : 0.1°C

Time to Reach Min. Temp. : 2 Hrs

Medium : Methanol

Controlling Sensor : PT-100

Access Opening : 220 x 180 mm

Depth : 250 mm

Method of control : Digital self tuned PID Controller

Computer Interface : RS - 232

Operating Temperature : 20 to 25°C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 750 x 850 x 650 mm

Weight : 80 Kgs.

(Large depth available on custom built model)

CALsys
-35/200



-35 to 200°C

HIGH STABILITY BATH

GENERAL

CALsys -35/200 is a Highly Stable Stirred Liquid Bath for calibrating RTD / Thermocouple and also for compensation of cold junction.

CALSys-35/200 offers the temperature range of -35 to 200°C. It has 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 stability & uniformity than dry block bath and as it uses of stirred liquid.

This CALsys -35/200 is built using CFC free refrigerants.

KEY FEATURES

- ✓ High Accuracy
- ✓ High Stability and Uniformity
- ✓ Wide Temperature Range
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ LCD screen controller
- ✓ Level Alarm

STANDARD ACCESSORIES

- Reference Standard PRT...Part No.TPRT-A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME.
- Operational Manual

OPTIONAL ACCESSORIES

Methanol.....10 Ltr. No.(3050-M)

Silicon Oil.....10L Part No.C200S-LB SO



SPECIFICATIONS

Temp Range : -35 to 200°C

Stability : ±0.01°C at -35°C (Methanol)
 ±0.05°C at 0°C (Methanol)
 ±0.04°C at 200°C (Silicon Oil)

Uniformity : ±0.03°C at -35°C
 ±0.07°C at 0°C
 ±0.07°C at 200°C

Temperature Resolution : 0.01°C

Time to Reach Max Temp : 1.5 Hrs

Medium Cooling : Methanol + Water

Medium Heating : Silicon Oil

Controlling Sensor : PT-100

Volume : 7 Ltr.

Access Opening : 157(L) x 142(W)

Depth : 127 mm

Method of Control : Digital self tuned PID Controller

Computer Interface : RS - 232

Operating Temperature : 20 to 25°C

Wetted Part : SS-304

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 540(L) x 220(W) x 620(H)mm

Weight : Approx 41 Kg



CALsys
-15/110



-15 to 110°C

PELTIER BASED TEMPERATURE CALIBRATOR GENERAL

CALsys -15 / 110 offers medium temperature range from -15 to 110°C. It is a highly stable standard temperature source for calibrating RTD / thermocouples. It has peltier elements to generate stable temperature in the well.

The comparison volume is a metallic block of aluminum, which has diameter of 24mm and 120mm length.

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

KEY FEATURES

- ✓ Wide Operating Range (-15 to 110°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

STANDARD ACCESSORIES

- Reference Standard PRT.....Part No.TPRT -A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Extra Equalizing Block



SPECIFICATIONS

Temperature Range : -15 to 110°C

Temperature Resolution : 0.1°C

Stability : $\pm 0.03^\circ\text{C}$ at -15°C

$\pm 0.05^\circ\text{C}$ at 0°C

$\pm 0.07^\circ\text{C}$ at 110°C

Uniformity : $\pm 0.05^\circ\text{C}$ at -15°C

$\pm 0.07^\circ\text{C}$ at 0°C

$\pm 0.09^\circ\text{C}$ at 110°C

Controlling Sensor : Precision PRT

Method of Control : Digital self tuned PID Controller

Removable Insert Construction : Dia 24 x 120 mm long, 3 x 6 mm hole with 115mm insertion depth

Time to Reach Max/Min Temp : 25 Mins

Operating Temperature : 20 to 25°C

Computer Interface : RS - 232

Power Requirement : 230 VAC, 500 W

Dimensions : 380(H) x 170(W) x 188(D) mm

Weight : Approx 14 Kg

**CALsys
120 SP**



0 to 120°C

DRY CUM LIQUID BATH Peltier Based Temperature Calibrator GENERAL

CALsys 120SP offers medium temperature range from 0 to 120°C. It is a highly stable standard temperature source for calibrating RTD / thermocouples. It has peltier elements to generate stable temperature in the well.

Use as a dry block & liquid bath using magnetic stirrer in one model.

The comparison volume is a metallic block of aluminum, which has diameter of 24mm and 100mm length.

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

KEY FEATURES

- ✓ Wide Operating Range (0 to 120°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

STANDARD ACCESSORIES

- Reference Standard PRT.....Part No.TPRT -A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Extra Equalizing Block



SPECIFICATIONS

Temperature Range : 0 to 120°C

Temperature Resolution : 0.1°C

Stability : ±0.03°C at 0°C
±0.05°C at 0°C
±0.07°C at 120°C

Uniformity : ±0.05°C at 0°C
±0.07°C at 0°C
±0.09°C at 120°C

Controlling Sensor : Precision PRT

Medium : Silicon Oil (for liquid bath)

Method of Control : Digital self tuned PID Controller

Removable Insert Construction : Dia 24 x 100 mm long, 3 x 6 mm hole

Time to Reach Max/Min Temp : 25 Mins

Operating Temperature : 20 to 25°C

Computer Interface : RS - 232

Power Requirement : 230 VAC, 500 W

Dimensions : 380(H) x 170(W) x 188(D) mm

Weight : Approx 14 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 unique 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°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
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Silicon Oil.....Part No C200S-LB-SO



SPECIFICATIONS

Temperature Range : 50 to 250°C

Temperature Resolution : 0.1°C

Stability : ±0.015°C at 50°C
 ±0.025°C at 150°C
 ±0.05°C at 250°C

Uniformity : ±0.02°C at 50°C
 ±0.04°C at 150°C
 ±0.08°C at 250°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 Mins

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 1.0 KW

Dimensions : 360(H) x 185(W) x 285(D) mm

Access Opening : 90 mm Dia

Depth : 140 mm

Removable Insert Construction : 6 holes of 15 mm Dia

Weight : Approx 12 Kg

Volume : 900 ml

Wetted Parts : Aluminium

(Large depth available on custom built model)

**CALsys
300 SP**



50 to 250°C

HIGH ACCURACY LIQUID CALIBRATION BATH GENERAL

CALsys 300SP 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 unique 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°C)
- ✓ High Stability and Uniformity
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- Silicon Oil..... Part No.C300S-LB-SO
- Reference Standard PRT.....Part No.TPRT-A-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Silicon Oil.....Part No C200S-LB-SO



SPECIFICATIONS

Temperature Range : 50 to 250°C

Temperature Resolution : 0.1°C

Stability : $\pm 0.01^\circ\text{C}$

Uniformity : $\pm 0.02^\circ\text{C}$

Controlling Sensor : Precision PRT (PT-100)

Method of Control : Digital self tuned PID Controller

Medium of Heating : Silicon Oil

Time to Reach Max Temp : 45 Mins

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 2.0 KW

Dimensions : 600(H) x 350(W) x 550(D) mm

Access Opening : 120 mm Dia

Depth : 300 mm

Weight : Approx 20 Kg



**CALsys
650**



50 to 650°C

PORTABLE CALIBRATOR GENERAL

CALsys 650 offers medium temperature range from 50 to 650°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 150mm long

The temperature of the calibrator 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°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- Reference Standard Thermocouple ('K' Type T/C)..... Part No. TTCK-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Customized Equalizing Block.....Part No. EQ1



SPECIFICATIONS

Temperature Range : 50 to 650°C

Temperature Resolution : 0.1°C

Stability : ±0.025°C at 50°C
±0.035°C at 350°C
±0.07°C at 650°C

Uniformity : ±0.04°C at 50°C
±0.07°C at 350°C
±0.09°C at 650°C

Controlling Sensor : T/C "N" TYPE

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 32 x 150 mm long with 4 holes of 6.5 x 120 mm insertion depth

Time to Reach Max Temp : 25 Mins

Time to Reach Max Temp to 100°C : 70 Mins

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 1 KW

Dimensions : 325(H) x 185(W) x 265(D) mm

Weight : Approx 10 Kg



Carrying Case



Interchangeable Inserts
(as per requirement)

CALsys FB 50 to 650°C

FLUIDIZED BATH GENERAL

CALsys FB offers medium temperature range from 50 to 650°C. It is a high stable fluidized bath for calibration thermocouple & RTD. It has been designed for medium temperature calibration with high stability and maximum uniform temperature zone. Alumina powder is used as medium.

Metallic probes are used with probe holder for calibration which is 280 mm long with 8mm diameter. Temperature of furnace is set and controlled by self tuned PID controller with automatic super fine adjustment.

KEY FEATURES

- ✓ High Uniform zone
- ✓ Wide Operating Range (50°C - 650°C)
- ✓ High Stability
- ✓ No. of Sensor Calibrated Simultaneously

STANDARD ACCESSORIES

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



SPECIFICATIONS

Temperature Range : 50 to 650°C
Ded Bed : 0.05°C
Stability : $\pm 1.0^\circ\text{C}$
Display Resolution : 0.1°C
Type of Control : Digital self Tuned PID Controller
Sensor Type : N type thermocouple
Heat up time 20°C to 650°C : 105 Minutes
Air pressure kPa (psi) : 420 (60)
Nominal Heater Power at 240V (W) : 3000
Weight of medium : 16 kg (35 lbs)
Working volume (diameter x Depth) : 150 x 385mm
Overall Size L x W x H : 870 x 515 x 600mm
Shipping weight : 84 kg (185 lbs)
Serial communication : RS 232
Power req. : 230VAC, 3 Kw
Operating temp. : 20 to 45°C



**CALsys
1200**



250 to 1200°C

PORTABLE THERMOCOUPLE CALIBRATOR GENERAL

CALsys 1200 offers high temperature range from 250 to 1200°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 calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment.

Version with 3 zone furnace is also available.

KEY FEATURES

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

STANDARD ACCESSORIES

- Reference Standard Thermocouple ('N' Type T/C)Part No. TTCN-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

OPTIONAL ACCESSORIES

Customized Equalizing Block....Part No. EQ2



SPECIFICATIONS

Temperature Range : 250 to 1200°C

Temperature Resolution : 1.0°C

Stability : ±0.1°C at 250°C
±0.2°C at 700°C
±0.4°C at 1200°C

Uniformity : ±0.20°C at 250°C
±0.24°C at 700°C
±0.26°C at 1200°C

Controlling Sensor : PT/RH-PTT/C

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 37 x 215 mm long
(2X6mm & 2X8 mm holes) of 160mm insertion depth

Time to Reach Max Temp : 1.5 Hrs

Cooling Time 1200°C to 250°C : 180 Mins

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 1.5 KW

Dimensions : 405(H) x 205(W) x 285(D) mm

Weight : Approx 14 Kg



Carrying Case



Interchangeable Inserts
(as per requirement)

**CALsys
1200L**



300 to 1200°C

HIGH STABILITY BLOCK FURNACE GENERAL

CALsys 1200L 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°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- Reference Standard Thermocouple ('N' Type T/C)Part No. TTCN-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

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



SPECIFICATIONS

Temperature Range : 300 to 1200°C

Temperature Resolution : 1.0°C

Stability : ±0.1°C at 300°C
 ±0.2°C at 700°C
 ±0.35°C at 1200°C

Uniformity : ±0.15°C at 300°C
 ±0.25°C at 700°C
 ±0.4°C at 1200°C

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

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 37 x 240 mm long
(2X6mm & 2X8 mm holes) of 160mm insertion depth

Time to Reach Max Temp : 1.5 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 2.0 KW

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

Weight : Approx 50 Kg



Optional Block

**CALsys
1200 3Z**



300 to 1200°C

HIGH STABILITY BLOCK FURNACE GENERAL

CALsys 1200 3Z calibration source is a highly stable standard furnace for calibrating thermocouples in the laboratory. The temperature of each zone of the furnace is set and controlled by a self tuned PID controller(master + Slave) 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.

KEY FEATURES

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

STANDARD ACCESSORIES

- Reference Standard Thermocouple ('N' Type T/C)Part No. TTCN-300
- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual



SPECIFICATIONS

Temperature Range : 300 to 1200°C

Temperature Resolution : 1.0°C

Stability : ±0.1°C at 300°C
 ±0.2°C at 700°C
 ±0.35°C at 1200°C

Radial Uniformity : ±0.35 at 1200°C

Axial Uniformity : ±1.0°C up to 80mm at 1200°C

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

No. of Zone : Three

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 37 x 240 mm long
(2X6mm & 2X8 mm holes) of 160mm insertion depth

Time to Reach Max Temp : 1.5 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 2.0 KW

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

Weight : Approx 50 Kg



Optional Block

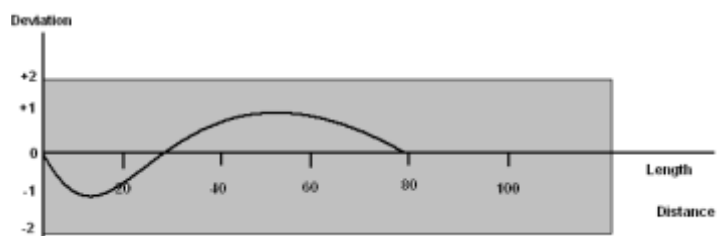


Fig. Typical gradient of TEMPSSENS 3 ZONE CALsys 3Z



**CALsys
1500L**



500 to 1500°C

HIGH STABILITY BLOCK FURNACE GENERAL

CALsys 1500L 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°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

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

Extra Equalizing Block.....Part No. Eq2



SPECIFICATIONS

Temperature Range : 500 to 1500°C

Temperature Resolution : 1.0°C

Stability : $\pm 0.4^{\circ}\text{C}$ at 500°C
 $\pm 0.7^{\circ}\text{C}$ at 1000°C
 $\pm 1.0^{\circ}\text{C}$ at 1500°C

Uniformity : $\pm 0.6^{\circ}\text{C}$ at 500°C
 $\pm 0.8^{\circ}\text{C}$ at 1000°C
 $\pm 0.9^{\circ}\text{C}$ at 1500°C

Controlling Sensor : PT-RH/PT T/C

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 37 x 245 mm long (2X6mm & 2X8 mm holes) of 140mm insertion depth

Heaters : Silicon Carbide Spiral Rod Heater

Time to Reach Max Temp : 2 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 3.0 KW

Dimensions : 570(H) x 450(W) x 520(D) mm

Weight : 55 Kg

**CALsys
1700L**



500 to 1700°C

HIGH TEMPERATURE BLOCK FURNACE GENERAL

CALsys 1700L 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 and 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_2)
- ✓ Large Immersion Depths
- ✓ Wide Operating Range (500 to 1700°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Reference Standard Thermocouple (PT-RH/PT 'B' Type T/C) Part No. TTCB-300
Extra Equalizing Block.....
Black Body Cavity.....Part No. Eq3



SPECIFICATIONS

Temperature Range : 500 to 1700°C

Temperature Resolution : 0.1°C

Stability : $\pm 0.5^\circ\text{C}$ at 500°C
 $\pm 1.0^\circ\text{C}$ at 1200°C
 $\pm 1.5^\circ\text{C}$ at 1700°C

Uniformity : $\pm 0.7^\circ\text{C}$ at 500°C
 $\pm 1.4^\circ\text{C}$ at 1200°C
 $\pm 1.9^\circ\text{C}$ at 1700°C

Controlling Sensor : Precision PT/RH-PTT/C

Heaters : MoSiO_2

Method of Control : Digital self tuned PID Controller

Insert Construction : Dia 37 x 240 mm long
(2x6mm & 2x8 mm holes) of 225mm insertion depth

Time to Reach Max Temp : 3 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 3 KW

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

Weight : 80 Kg

**CALsys
110BB**

10 to 110°C

PORTABLE BLACK BODY GENERAL

CALsys 110BB calibration source is a highly stable standard Portable Black Body Furnace for calibrating non contact IR thermometer for the temperature range of 10 to 110°C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a Size of 80x80 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
- ✓ Below Ambient Operating Range (10 to 110°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

STANDARD ACCESSORIES

Carry Case
Operational Manual

OPTIONAL ACCESSORIES

Master Pyrometer

SPECIFICATIONS

Temperature Range : 10 to 110°C

Temperature Resolution : 0.1°C

Stability : $\pm 0.1^\circ\text{C}$

Controlling Sensor : Precision PRT

Method of Control : Digital self tuned PID Controller

Emissivity : 0.95 ± 0.01

Time to Reach Max Temp : 25 Mins

Computer Interface : RS - 232

Operating Temperature : 20 to 25°C

Power Requirement : 230 VAC, 0.5 KW

Dimensions : 330(H) X 355(W) X 225(D) mm

Cavity : High Emissive Painted Aluminum Plate

Aperture : 80 x 80 mm

Weight : Approx 10 Kg

**CALsys
500BB**

50 to 500°C

PORTABLE BLACK BODY GENERAL

CALsys 500BB 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°C.

The unique feature of this Portable Black Body Furnace is large temperature controlled black body target with a diameter of 100 mm which offer large view area for IR Thermometer

The Emissivity of the target is $0.95(\pm 0.01)$. The temperature of the Calibrator 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°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Portability

STANDARD ACCESSORIES

- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual
- Carry Case

SPECIFICATIONS

Temperature Range : 50 to 500°C

Temperature Resolution : 0.1°C

Stability : $\pm 0.5^\circ\text{C}$ at 50°C
 $\pm 0.8^\circ\text{C}$ at 250°C
 $\pm 1.0^\circ\text{C}$ at 500°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°C

Power Requirement : 230 VAC, 1.0 KW

Dimensions : 320(H) X 355(W) X 255(D) mm

Target Size : Dia - 100 mm (Ridged Aluminum Plate)

Weight : Approx 10 Kg

OPTIONAL ACCESSORIES

Master Pyrometer

**CALsys
1200BB**

300 to 1200°C

HIGH STABILITY BLACK BODY FURNACE

GENERAL

CALsys 1200BB 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°C.

The unique feature of this Black Body Furnace is large temperature controlled black body target with a diameter of 50 mm and 300mm which offer large view area for IR Thermometer.

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

KEY FEATURES

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

STANDARD ACCESSORIES

- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Master Pyrometer

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



SPECIFICATIONS

Temperature Range : 300 to 1200°C

Temperature Resolution : 1.0°C

Stability : ±0.2°C at 500°C

±0.3°C at 800°C

±0.5°C at 1200°C

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

Method of Control : Digital self tuned PID Controller

Time to Reach Max Temp : 1.5 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 2.5KW

Dimensions : 580(H) x 500(W) x 675(D) mm

Radiation Cavity Type & Dimension : Silicon Carbide,
50 mm Dia x 300mm depth

Sighting Tube Dimension : 37±1mm dia & 140mm depth

Weight : Approx 65 Kg

**CALsys
1500BB**

500 to 1500°C

HIGH STABILITY BLACK BODY FURNACE GENERAL

CALsys 1500BB 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°C.

The unique feature of this Black Body Furnace is large temperature controlled black body target with a diameter of 50 mm and depth 300mm which offer large view area for IR Thermometer.

The Emissivity of the target is 0.99(±0.01). The temperature of the calibrator 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°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective
- ✓ Sighting tube

STANDARD ACCESSORIES

- **NABL** accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

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



SPECIFICATIONS

Temperature Range : 500 to 1500°C

Temperature Resolution : 1.0°C

Stability : ±0.4°C at 500°C
±0.7°C at 1000°C
±1.0°C at 1500°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 : 2.5 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 3.5 KW

Dimensions : 580(H) x 500(W) x 675(D) mm

Radiation Cavity Type & Dimension : Silicon Carbide,
50 mm Dia x 300mm depth

Sighting Tube Dimension : 37±1mm dia & 140mm depth

Weight : 65 Kg

**CALsys
1700BB**

500 to 1700°C

HIGH TEMPERATURE BLACK BODY FURNACE GENERAL

CALsys 1700BB 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°C.

The unique feature of this 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 calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment.

KEY FEATURES

- ✓ Use of Molybdenum Disilicide Heaters (MoSiO₂)
- ✓ Wide Operating Range (500 to 1700°C)
- ✓ High Stability
- ✓ PC interfacing
- ✓ Simple to use and cost effective

STANDARD ACCESSORIES

- NABL accredited calibration certificate - 3 point
- **Software** - Cal Soft including for setting bath temperature and monitoring the PV. Graphical representations of PV/TIME with 2 hours data logging.
- Operational Manual

OPTIONAL ACCESSORIES

Master Pyrometer
Black Body Cavity..... Part No. EQ3



SPECIFICATIONS

Temperature Range : 500 to 1700°C

Temperature Resolution : 0.1°C

Stability : ±0.7°C at 500°C
±1.4°C at 1200°C
±2.0°C at 1700°C

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

Heaters : MoSiO₂

Method of Control : Digital self tuned PID Controller

Time to Reach Max Temp : 3 Hrs

Computer Interface : RS - 232

Operating Temperature : 20 to 45°C

Power Requirement : 230 VAC, 3 KW

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

Black Body Cavity Aperture : 29 mm, End closed tube

Weight : 80 Kg

Fast Cal



Fast Cal 1200°C

Fast CAL is a time saving way to calibrate pyrometer with range upto 1200°C Now the pyrometer can be calibrated within few minutes using highly precise PID controller and a Controlling Pyrometer.

SPECIFICATIONS

Temperature Range : 300 to 1200°C
Temperature Resolution : 0.1°C
Stability : $\pm 1^\circ\text{C}$
Emissivity : 0.95 (± 0.01)
Controlling Sensor : Pyrometer
Method of control : Digital self tuned advanced PID controller
Time to Reach Max Temp. : 30 sec. (max.)
Computer Interface : RS - 232
Operating Temperature : 20 to 45°C
Power required : 230 V AC, 3 KW
Dimension : 900(L) x 600(W) x 440(H) mm
Weight : 70 Kg



Fast Cal 2600°C

The Fast cal 2600 is an ultra high temperature black body calibrator and capability to produce very high temperature, high emissivity emitters and at the same time stabilize at the required temperature with in minutes of switch on. All Safety features to protect equipment and operator are easily accessible.

The Target temperature is sensed by a rapid response infrared fiber optic pyrometer which drives a PID Controller to regulate the cavity temperature precisely to the desired set point.

SPECIFICATIONS

Temperature Range : 700 to 2600°C
Temperature Resolution : 0.1°C
Stability : $\pm 3^\circ\text{C}$
Emissivity : 0.99 (± 0.01)
Controlling Sensor : Pyrometer
Method of Control : Digital self tuned advanced PID Controller
Time to Reach Max Temp. : 2 Mins
Computer Interface : RS - 232
Heater Size : 100 x 15 x 3 mm
Power Required : 440 VAC, 12KW
Dimension : 900(L) x 600(W) x 440(H) mm
Insert Gas : Argon Gas
Mounting Arrangement For Fast Cal : SS Trolley with in Built water tank. pump and other accessories
Weight : Approx 85 Kg

★ Optional available upto 3000°C also.

CalREF

Reference Unit



CRCA BOX



FRP BOX

CalREF 0

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

CalREF 60

- ✓ 60°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°C (Standard)
Types of T/C : J, K, T, E, N, R, S, B
Accuracy : $\pm 0.1^{\circ}\text{C}$, Errors can be compensated by adjusting controller setting
Stability : $\pm 0.03^{\circ}\text{C}$
Stabilization Time : 15 Mins
Capacity : 20 No (User Defined)
Resolution : $\pm 0.01^{\circ}\text{C}$
Dimension : 315(H)x305(W)x332(D) mm
Weight : 13Kgs
Power Supply : 230 VAC, 50 Hz
Carry case : Aluminium modular box

★ As per customer requirement from -15 to +90°C

SPECIFICATIONS

Temperature Range : Ambient +10 to 90°C
Types of T/C : J, K, T, E, N, R, S, B
Accuracy : $\pm 0.5^{\circ}\text{C}$, Errors can be compensated by adjusting controller setting
Stability : $\pm 0.05^{\circ}\text{C}$
Stabilization Time : 10 Mins
Capacity : 6-24 Channel
(Max. Capacity : 48 Channel)
Resolution : $\pm 0.1^{\circ}\text{C}$
Dimension(CRCA) : 350(H) x 350(W) x 210(D) mm
Dimension(FRP) : 330(H)x330(W)x180(D) mm
Weight : 15Kg(CRCA), 10Kg(FRP)
Power Supply : 230 V AC, 50/60 Hz / 24 V DC



Product Index

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Metal Sheath Platinum Resistance Thermometers (SPRTs) - AM 1880

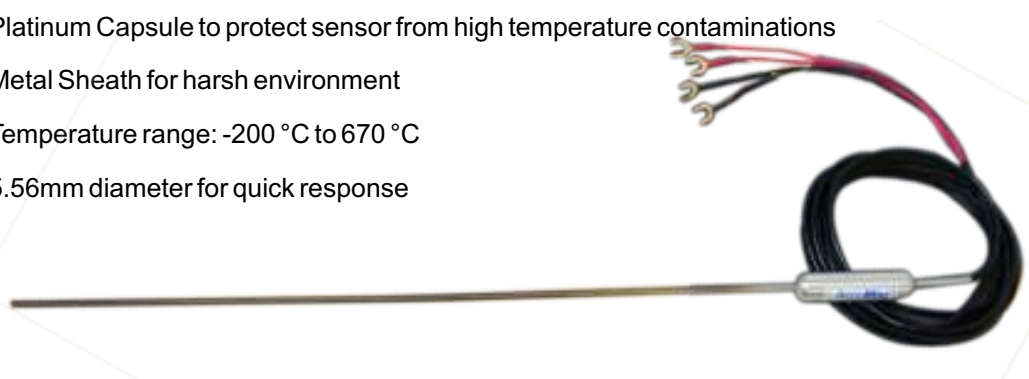
AccuMac
Corporation, USA

1.1 Main Application

Am1880 Standard Platinum Resistance Thermometers (SPRT) interpolates temperature in the range from -200°C to 670°C on the International Temperature Scale of 1990 (ITS-90). The sensing element and sensor support adopt a “Bird-Cage” design and they are protected inside a platinum capsule. Compared to the traditional coil winding method, the “Bird-Cage” handles mechanical shocks much better at the same time allows for high purity platinum wire to be wound strain-free. The platinum capsule protects the sensing element from contaminations at high temperature.

1.2 Main Features

- Bird-Cage design to make it mechanical shocks resistant
- Platinum Capsule to protect sensor from high temperature contaminations
- Metal Sheath for harsh environment
- Temperature range: -200 °C to 670 °C
- 5.56mm diameter for quick response



1.3 Specifications

Temperature Range	-200°C to 670°C
Rtpw	Nominal 25.5 Ω
Resistance Ratio	W(Ga)>=1.11807, W(Hg)<=0.844235
Drift at 0.01°C*	ΔR(0.01°C) <0.006 °C/year, 0.003°C/year typical
Repeatability	<0.001 °C
Thermal Shock	<0.001 °C after 10 times thermal cycles from minimum to maximum temperatures
Self-heating	<0.0015 °C at 1 mA current
Measurement Current	1 mA
Sensor Length	42 mm
Insulation Resistance	>1000 MΩ at room temperature
Sheath Material	Inconel
Dimension	5.56 mm (OD) X 500 mm (L)
External Leads	Insulated copper wire, 4 leads, 2.5 meters
Termination	Gold-plated Spade
Handle Dimension	21mm (OD) X 80 mm (L)
Carrying Case	Included

Quartz Sheath Standard Platinum Resistance Thermometers (SPRTs)

AccuMac
Corporation, USA

1.1 Main Application

SPRT are used to interpolate temperature in the range from $-189.3442^{\circ}\text{C}$ to 660.323°C on the International Temperature Scale of 1990 (ITS-90). They are widely used as standard or reference thermometers to calibrate other thermometers and to measure temperature precisely in primary and secondary laboratories. AM1950 and AM1960 SPRTs are the crown jewels of AccuMac temperature probes. It takes decades of scientific expertise and original craftsmanship to create these world class products. They feature a very low drift rate. AM1950 has a temperature range from -200°C to 500°C . AM1960 covers range from -200°C to 670°C .

1.2 Main Features

- Affordable Standard Platinum Resistance Thermometer (SPRT)
- Extremely low drift rate
- Temperature range : -200°C to 670°C



1.3 Specifications

Temperature Range	1950 : -200°C to 500°C , 1960 : -200°C to 670°C
Rtpw	Nominal $25\ \Omega$
Resistance Ratio	$W(\text{Ga}) \geq 1.11807$ $W(\text{Hg}) \leq 0.844235$
Drift at 0.01°C^*	1950 $\Delta R(0.01^{\circ}\text{C}) < 0.002^{\circ}\text{C}/100$ hours at 500°C $\Delta R(0.01^{\circ}\text{C}) < 0.004^{\circ}\text{C}/\text{year}$ 1960 $\Delta R(0.01^{\circ}\text{C}) < 0.003^{\circ}\text{C}/100$ hours at 670°C
Repeatability	$\pm 0.001^{\circ}\text{C}$
Thermal Shock	$\pm 0.001^{\circ}\text{C}$ after 10 times thermal cycles from minimum to maximum temperatures
Self-heating	0.0015°C at 1mA current
Measurement Current	1 mA
Sensor Length	42mm
Insulation Resistance	$> 1000\ \text{M}\Omega$ at room temperature
Sheath Material	Fused-Quartz
Dimension	1950 : 7 mm (OD) X 480 mm (L) 1960 : 7 mm (OD) X 500 mm (L)
External Leads	Insulated copper wire, 4 leads, 2.5 meters
Termination	Gold-Plated Spade
Handle Dimension	21mm (OD) X 80 mm (L)
Calibration (Optional)	5 Fixed Point Calibration at Tempsens NABL Accredited Lab with ITS 90 Constants and Resistance Vs Temperature Chart in 1°C increment

Metal Sheath Standard Platinum Resistance Thermometers (SPRTs)

AccuMac
Corporation, USA

1.1 Main Application

Standard Platinum Resistance Thermometers (SPRTs) are common used to interpolate temperature in the range from -189.3442°C to 660.323°C on the International Temperature Scale of 1990 (ITS-90). They are widely used as standard or reference thermometers to calibrate other thermometers and to measure temperature precisely in primary and secondary laboratories. AM1850 and AM1860 SPRTs are the crown jewels of AccuMac temperature probes. It takes decades of scientific expertise and original craftsmanship to create these world class products. They feature a very low drift rate. AM1850 has a temperature range from -200°C to 500°C. AM1860 covers range from -200°C to 670°C. They are widely used as reference thermometer at drywell block calibrator and temperature bath.

1.2 Key Features

- Metal sheathed
- Great reference thermometer for dry block calibrators
- Temperature range : -200°C to 670°



1.3 Specifications

Temperature Range	1850 : -200°C to 500°C, 1860 : -200°C to 670°C
Rtpw	Nominal 25 Ω or nominal 100 Ω
Resistance Ratio	W(Ga)>=1.11807 W(Hg)<=0.844235
Drift at 0.01°C*	1850 $\Delta R(0.01^\circ\text{C}) < 0.002^\circ\text{C}/100$ hours at 500°C $\Delta R(0.01^\circ\text{C}) < 0.008^\circ\text{C}/\text{year}$ 1860 $\Delta R(0.01^\circ\text{C}) < 0.003^\circ\text{C}/100$ hours at 670°C $\Delta R(0.01^\circ\text{C}) < 0.01^\circ\text{C}/\text{year}$
Repeatability	$\pm 0.0015^\circ\text{C}$
Thermal Shock	$\pm 0.0015^\circ\text{C}$ after 10 times thermal cycles from minimum to maximum temperatures
Self-heating	0.0015°C at 1mA current
Measurement Current	1 mA
Sensor Length	42 mm
Insulation Resistance	>1000 M Ω at room temperature
Sheath Material	Inconel
Dimension	1850 : 6.35 mm (OD) X 480 mm (L) 1860 : 6.35 mm (OD) X 500 mm (L)
External Leads	Insulated copper wire, 4 leads, 2.5 meters
Termination	Gold-plated Spade
Handle Dimension	21mm (OD) X 80 mm (L)
Calibration (Optional)	5 Fixed Point Calibration at Tempsens NABL Accredited Lab with ITS 90 Constants and Resistance Vs Temperature Chart in 1°C increment

Semi Standard PRT (SSPRT)

1.1 Main Application

SSPRT provides an affordable alternative for precision temperature measurement and calibration in labs & fields. Metal Sheathed Semi Standard Platinum Resistance Thermometer are widely used as a reference to calibrate various temperature probes, particularly in secondary calibration laboratories.

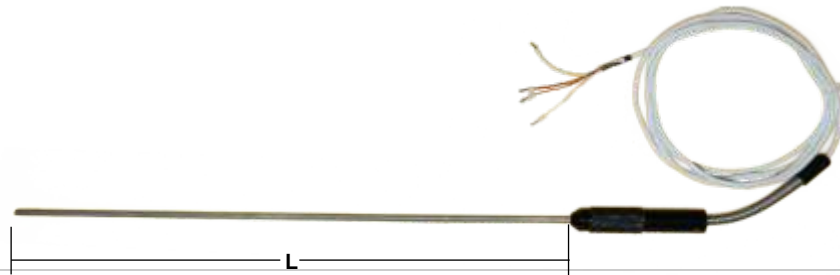
1.2 Main Features

- Low Drift
- Cost effective
- Temperature range :- 200°C to 670°C

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. The element is housed in a special protective Assembly to ensure minimum drift over long term use.



Ex. Ordering Code : Model - Dia - Length - Extension Cable Length
SSPRT - 6.0 - 450 - 1.5

1.3 Specifications

Model	SSPRT
Make	Tempsens
Resistance at 0°C	100 ±1Ω
Temperature Coefficient	0.00385 Ω/ Ω/°C
Temperature Range	-200 °C to 670°C
Sheath Material	Inconel 600
Drift	±30m°C at 0°C after 100 hours at 660°C
Dimension	(6.0 mm X 450 mm)
Extension leads	1.5 mtr. long teflon Insulated silver plated copper cable with gold plated spade
Short Term Stability	0.01°C
Handle Dimension	15 mm (OD) X 100 mm(L)
Calibration (Optional)	5 Fixed Point Calibration at Tempsens NABL Accredited Lab with ITS 90 Constants and Resistance Vs Temperature Chart in 1°C increment

High Accuracy PRT

1.1 Main Application

High accuracy Platinum Resistance Thermometer (PRT) is an interpolating instrument converting temperature to resistance. It works together with readout device to measure temperature or change of temperature. It has wide applications for dry-wells or temperature baths.

1.2 Main Features

- High accuracy : Refer specification
- Temperature range : Refer specification
- Durable and shock resistance

1.3 Calibrations

It is recommended to calibrate this PRT annually over the full temperature range in between annual calibrations, user can check the drift rate by comparing Rtpw against the last Calibration results. Refer to specifications section for normal drift rate.



1.4 Ordering Code

Model	Dia*	Length*	Extension cable length*
TPRT(XXX)	(X.X) mm	(XXX) mm	(XX) Mtr.
110 105 103 100	6.0 4.5	450	1.5

Example : TPRT110-6.0-450-1.5

* Can be provided as per customer requirement

1.5 Specifications

Make	Tempsens			
Resistance at 0°C	Nominal 100 Ω			
Temperature Coefficient	0.00385 Ω/ Ω/ °C			
Sheath Material	SS-316			
Dimension	(6.0 mm X 450 mm)			
Extension leads	1.5 mtr. long teflon Insulated silver plated copper cable with flying leads			
Handle Dimension	15 mm (OD) X 100 mm(L)			
Calibration Standatd	at 5 points at Tempsens NABL Accredited Lab			
Short Term Stability	0.01°C	0.01°C	0.02°C	0.02°C
Temperature Range	-38 to 250°C(1/10 Din)	-38 to 250°C(1/5 Din)	-80 to 300°C(1/3 Din)	-80 to 400°C(Class A)
Model	TPRT 110	TPRT 105	TPRT 103	TPRT 100
Drift	± 0.03°C at 0°C after 100 hours at 250°C	± 0.05°C at 0°C after 100 hours at 250°C	± 0.07°C at 0°C after 100 hours at 250°C	± 0.10°C at 0°C after 100 hours at 250°C
Accuracy	±0.04°C at -38°C ±0.03°C at -0°C ±0.08°C at 100°C ±0.13°C at 200°C ±0.155°C at 250°C	±0.10°C at - 38°C ±0.06°C at 0°C ±0.16°C at 100°C ±0.26°C at 200°C ±0.31°C at 250°C	±0.23°C at -80°C ±0.10°C at -0°C ±0.27°C at 100°C ±0.43°C at 200°C ±0.60°C at 300°C	±0.31°C at -80°C ±0.15°C at 0°C ±0.35°C at 100°C ±0.65°C at 250°C ±0.95°C at 400°C

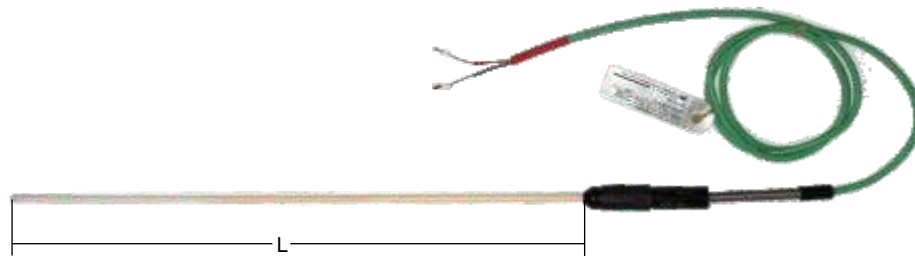
Nobel Metal Master Thermocouples

1.1 Main Application

Tempsens offers special Reference thermocouples for high temperatures upto 1500°C for highly accurate temperature measurement. These Thermocouples are offered in platinum / Rhodium (type R, S or B) elements with a high purity Alumina insulations and sheath materials.

Thermocouples employing platinum in combination with platinum-rhodium alloys have been found to be the most reproducible of all the various types. They are resistant to oxidation in air and, because of their high melting points, can be used at very high temperatures. The best-known member of this group is the Type S (Pt10Rh/Pt) or Type R (Pt13Rh/Pt). It was long considered more accurate and has probably been studied more than any other thermocouple.

The performance of Type R or Type S thermocouple depends strongly on the annealing process, materials used, and other construction techniques.



1.2 Ordering Code

Model	Dia*	Length*	Extension cable length*
TTC(X)	(X.X) mm	(XXX) mm	(XX) Mtr.
R S	6.0	450	1.5

Example : TTCS-6.0-450-1.5

* Can be provided as per customer requirement

1.3 Specifications

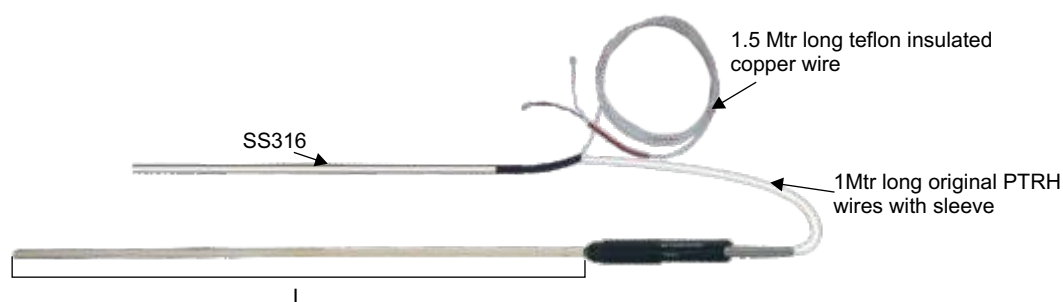
Make	Tempsens	
No. of Element	Simplex	
Temperature Range	0 to 1500 °C	
Sheath Material	Alumina (99.7 % pure Al ₂ O ₃)	
Sheath length	450 mm	
Extension Cable	1.5 mtr. Long Teflon insulated cable with male/female miniature connector	
Sheath Dia	06 mm	
Handle Dimension	15 mm (OD) X 100 mm(L)	
Calibration	at 5 points at Tempsens NABL Accredited Lab	
Accuracy	Special Class (0.6 °C or 0.1 % of temperature whichever is greater)	
Model	TTCS	TTCR
Type	S(Pt10%Rh/Pt)	R(Pt13%Rh/Pt)

PTRH Master Thermocouples with Cold Junction Compensation

1.1 Main Application

Tempsens offers special Reference thermocouples for high temperatures upto 1500°C for highly accurate temperature measurement. These Thermocouples are offered in platinum / Rhodium (type R, S or B) elements with a high purity Alumina insulations and sheath materials.

The Cold junction compensation probe provides much accurate temperature measurement possibilities. The cold junction probe is inserted into Ice water mixture. This is necessary for precision measurement.



1.2 Ordering Code

Model	Dia*	Length*	Extension cable length*
TTC(X)CJC	(X.X) mm	(XXX) mm	(XX) Mtr.
R S	6.0	450	1.5

Example : TTCSCJC-6.0-450-1.5

* Can be provided as per customer requirement

1.3 Specifications

Make	Tempsens	
No. of Element	Simplex	
Temperature Range	0 to 1500 °C	
Sheath Material	Alumina (99.7 % pure Al ₂ O ₃)	
Cold Junction Sheath	Stainless Steel Dia : 4.5 mm , Length : 250 mm	
Sheath length	450 mm	
Extension Cable	1.5 mtr. Long Teflon insulated cable with flying leads	
Sheath Dia	06 mm	
Handle Dimension	15 mm (OD) X 100 mm(L)	
Calibration	at 5 points at Tempsens NABL Accredited Lab	
Accuracy	Special Class (0.6 °C or 0.1% of temperature whichever is greater)	
Model	TTCRCJC	TTCSCJC
Type	R(Pt13%Rh/Pt)	R(Pt10%Rh/Pt)

Secondary Thermocouple

1.1 Main Application

K type and N type Thermocouple is mainly use in Industries as a secondary master sensor. It works together with readout device to measure Temperature or change of temperature.

It has wide applications for dry-wells or temperature baths.

1.2 Main Features

- Good accuracy : 0.4% of reading at 1.1°C of temperature, whichever is higher
- Temperature range : 0°C to 1200°C

1.3 Calibrations

It is recommended to calibrate this Thermocouple annually over the full temperature range.



1.4 Ordering Code

Model	Dia*	Length*	Extension cable length*
TTC(X)	(X.X) mm	(XXX) mm	(XX) Mtr.
K N	6.0	400	1.5

Example : TTCK-6.0-400-1.5

* Can be provided as per customer requirement

1.5 Specifications

Make	Tempsens	
No. of Element	Simplex	
Temperature Range	0 to 1200 °C	
Sheath Material	Inconel 600	
Sheath length	400 mm	
Extension Cable	1.5 mtr. Long Teflon insulated cable with male female miniature connector	
Sheath Dia	06 mm	
Handle Dimension	15 mm (OD) X 100 mm(L)	
Calibration	at 5 points at Tempsens NABL Accredited Lab	
Accuracy	Special Class (1.1°C or 0.4% of temperature whichever is greater)	
Model	TTCK	TTCN
Type	CR/AL K Type	NI-CR-SI/N Type

TEMPMET

GENERAL

Tempmet is a special high precision thermometer specially made for temperature calibration labs.
The unmatched resolution of 0.001°C and sturdy working makes it a laboratory workhouse.



TEMPMET 08 - RTD + THERMOCOUPLE

Specifications

RTD + T/C type	RTD + T/C range	Accuracy
Pt100	-200°C ~ +850°C	±0.05°C
K	-200°C ~ +1372°C	±1.50°C
S	0°C ~ 1768°C	±2.40°C
E	-200°C ~ +1000°C	±1.20°C
T	-200°C ~ +400°C	±1.20°C
J	-210°C ~ +1200°C	±1.20°C
R	0°C ~ +1768°C	±2.40°C
B	300°C ~ +1820°C	±2.40°C
N	-200°C ~ +1300°C	±1.80°C

Operation Temperature and Humidity : 0°C ~ 50°C, <80% RH

Storage Temperature and Humidity : -10°C ~ 60°C, <70% RH

Power Requirement : (AA Size) batteries, up to 1500 hours of continuous work time

Input Protection at Thermocouple Input : 24V AC/DC
Maximum

Dimension(Without holster) : 115 mm X 70 mm x 30 mm
(LxWxH)

Weight : Approx.0.25 Kg (Include Battery)

INPUT

Thermocouple : K, S, E, T, J, R, B, N

RTD : Pt100

Unit : °C, F, K

Resolution : 0.0°C/0.0°F



SPECIFICATIONS

Model No. : C 3001

Accuracy of RTD Measurement : 0.01°C

Accuracy of T/C Measurement : 0.1°C

Resolution of RTD : 0.001°C

Resolution of T/C : 0.01°C

Measuring Input : 2 Channel

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

RTD Input : PT 100

Units : °C, °F, Ohm

Data Logging : 6850 values

Digital Communication : RS - 232

Battery : Rechargeable Type

TEMPMET 09 - RTD + THERMOCOUPLE

Specifications

RTD + T/C type	RTD + T/C range	Accuracy
Pt100	-200°C ~ +850°C	±0.02% RDG +0.060°C
Pt1000	-140°C ~ +320°C	-
Cu50	-50°C ~ +150°C	±0.080°C
Cu100	-50°C ~ +150°C	±0.060°C
Ω	-0.000 ~ 2200 Ω	±0.02% RDG +50mΩ
mV	-100.0 ~ +200.0mV	±0.015% RDG +10μV
mA	-2.0 ~ +24.0mA	±0.03% RDG +3μA
K	-200°C ~ +1372°C	±0.50°C
S	-0.0 ~ 1768°C	±0.8°C
E	-200 ~ +1000°C	0.40°C
T	-200 ~ +400°C	±0.50°C
J	-210 ~ +1200°C	±0.50°C
R	0.0 ~ 1768°C	±0.8°C
B	300 ~ +1820°C	±0.9°C
N	-200 ~ +1300°C	±0.50°C

Operation Temperature and Humidity : 0°C ~ 50°C, <80% RH

Storage Temperature and Humidity : -10°C ~ 60°C, <70% RH

Power Requirement : (AA Size) batteries, up to 1500 hours of continuous work time

Input Protection at Thermocouple Input : 24V AC/DC
Maximum

Dimension(Without holster) : 115 mm X 70 mm x 30 mm
(LxWxH)

Weight : Approx.0.25 Kg (Include Battery)

INPUT

Thermocouple : K, S, E, T, J, R, B, N

RTD : Pt1000, Cu50, Cu10

mV : -100 to 200mV

mA : -2 to 24 mA

Resistance : 0 to 500 Ohms

Unit : Ohms, mA, mV, °C, F, K

Resolution : 0.000°C/0.000°F, 0.000 A/V/mA/mV



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 -196°C to 1600°C and Calibration of non contact type sensors can be made in temperature range 0°C to 1700°C . Further the laboratory offers both in house and on site temperature calibration.

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	Calibration & Measurement Capability
Contact Type RTD, Thermocouples Thermometers	-196°C	0.05°C
	-80 to -38°C	0.07°C
	-38°C to 0°C	0.03°C
	$>0^{\circ}\text{C}$ to 140°C	0.03°C
	$>140^{\circ}\text{C}$ to 250°C	0.04°C
	$>250^{\circ}\text{C}$ to 650°C	0.12°C
	$>650^{\circ}\text{C}$ to 1000°C	1.2°C
	$>1000^{\circ}\text{C}$ to 1200°C	1.6°C
	$>1200^{\circ}\text{C}$ to 1600°C	3.4°C
Non Contact Type Pyrometer	0°C to 250°C	1.5°C
	$>250^{\circ}\text{C}$ to 400°C	2.4°C
	$>400^{\circ}\text{C}$ to 500°C	1.0°C
	$>500^{\circ}\text{C}$ to 1500°C	2.0°C
	$>1500^{\circ}\text{C}$ to 1700°C	2.5°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

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 -80°C to 1600°C with NABL Certificate. (1700°C without NABL certificate is also possible.)



Quality Measured/Instruments	Temperature Range	Calibration & Measurement Capability
Calibration of SPRT/PRTS/ THERMOCOUPLES at	Triple Point of Water (0.01°C)	0.0040°C
	Melting Point of Gallium (29.7646°C)	0.0085°C
	Freezing Point of Tin (231.928°C)	0.0085°C
	Freezing Point of Zinc (419.527°C)	0.0090°C
	Freezing Point of Aluminum (660.323°C)	0.0090°C

Always one step ahead Committed to success

TEMPSENS 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
- Thermowells
- Furnace monitoring Camera
- RTDs
- Industrial Heaters
- Thermocouple Accessories
- Cables
- Non Contact Pyrometers
- Industrial Furnances



www.tempsens.com

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INDIA

Tempsens Instruments (I) Pvt. Ltd. U# I
B-188A, Road No.5, M.I.A.,
Udaipur-313003 (Rajasthan) INDIA
Ph.:+91-294-3057700 to 800
Fax.:+91-294-3057750
Email: info@tempsens.com

Tempsens Instruments (I) Pvt. Ltd. U# II
A-190, Road No.5, M.I.A.,
Udaipur-313003 (Rajasthan) INDIA
Ph.:+91-294-3052900
Fax.:+91-294-3052950
Email: info@compensatingcables.net
info@tempsens.com

GERMANY

Tempsens Instruments GmbH
Loehestrasse 37,
53773 Hennef, GERMANY
Ph.:+49-2242-8703-22
Fax.:+49-2242-8703-20
Email: hmueller@tempsens.de

CHINA

WUXI Tempsens Instruments Co. Ltd.
Rm 911, Shi Daijie Dou, No.655, Hubin Rd.,
Binhu District, Wuxi, Jiangsu, CHINA
Ph.:+86-510-385116563
Fax.:+86-510-385116563
Email: sophia@tempsens.com



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www.pyrotechindia.com