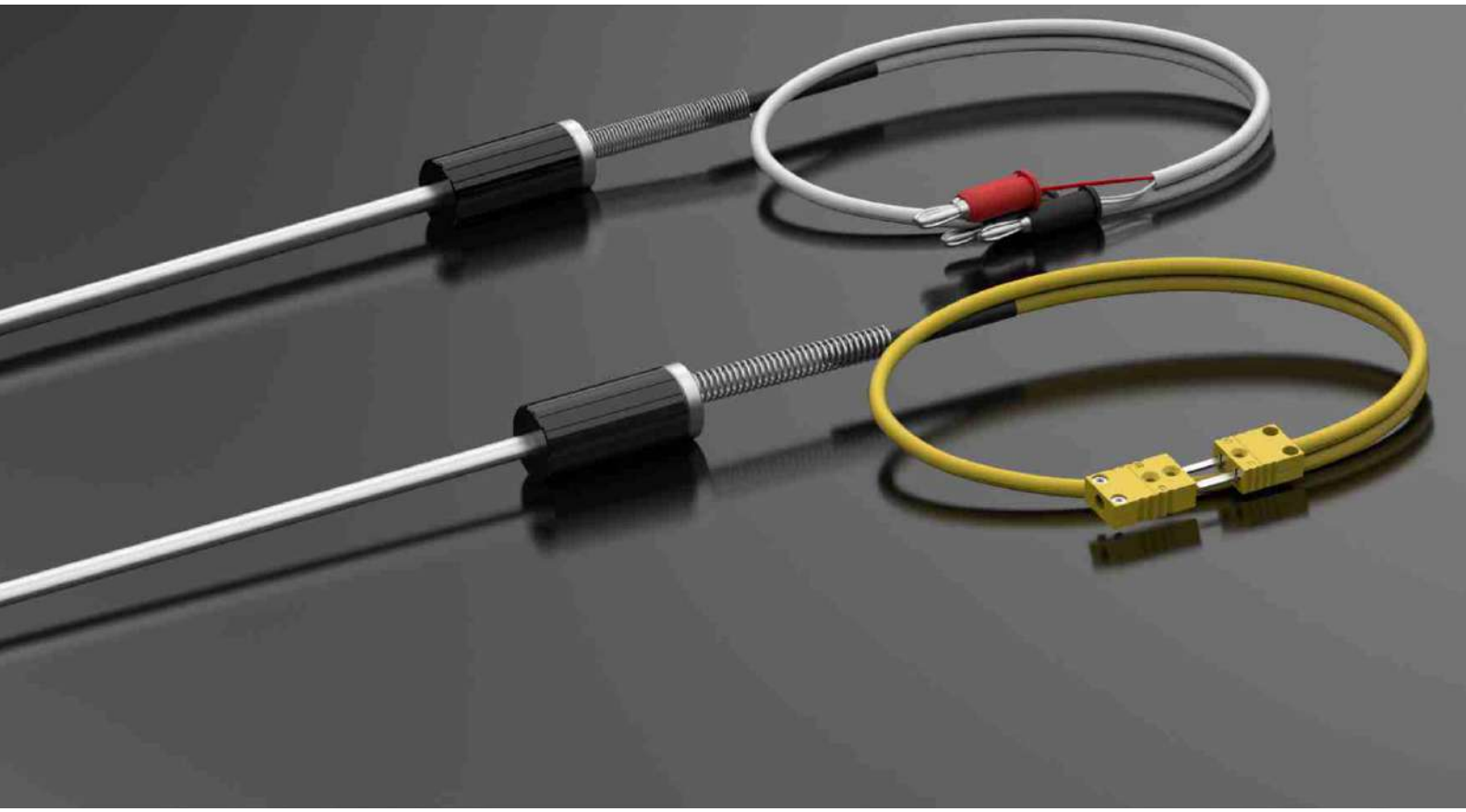
TEMPSENS

Thermal and Cable Solutions

Temperature Metrology



Master Sensors & Digital Thermometers

www.tempsens.com

About Us

Tempsens Instruments (I) Pvt. Ltd is India's only private sector Laboratory with NABL Accreditation up to 3000°C for Thermal calibration.

We ensure that our measurements are consistent with the International Standards. Tempsens was formed in 1976 by four Indian Technocrats at Udaipur, Rajasthan with its first product as Thermocouples and RTDs.

The company is involved into manufacturing of Thermocouples, RTDs, Thermowells, Cables, Non contact pyrometers, Heaters and Temperature Calibration Equipments, Industrial ovens etc.

What We Do

Tempsens a world renowned name in the field of Temperature sensors started their operation way back in 1976. We provide our clients “Thermal Engineering Solutions” with the most accurate calibration services for a wide temperature range. We carry out continuous efforts to improve our uncertainties and to solve measurement problems in industry and government. We play a key role ensuring international quality in product and services. We have presence in more than .....countries and production facility in India, Germany and China.

CALIBRATION

The comparison of a measuring against an accurate standard to deviation. The device with known assigned correctness is called the Standard. The second device is the Unit under Test (UUC).

Accurate Temperature Calibration

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.

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 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.

Tempsens offers a range of master temperature sensors comprising of SPRT's PRT's of thermocouple with accredited certificate.


NABL
National Accreditation Board for Testing and Calibration Laboratories
Department of Science & Technology, India
CERTIFICATE OF ACCREDITATION
TEMPSENS CALIBRATION CENTRE
has been assessed and accredited in accordance with the standard
ISO/IEC 17025:2005
"General Requirements for the Competence of Testing & Calibration Laboratories"
for its facilities at
A Division of Tempsens Instruments (I) Pvt. Limited, B-188A, M.I.A.,Road No. 5, Udaipur, Rajasthan
in the discipline of
THERMAL CALIBRATION
Certificate Number C-0321
Issue Date 12/11/2020
Valid Until 11/11/2022
This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the additional requirements of NABL.
Signed for and on behalf of NABL
Avijit Das
Program Manager
Amit Rekha
Director
Prof. K. Vijay Raghavan
Chairman

Master Semi Standards PRT

Wide Temperature Range

SSPRT offer a wide temperature range from -200°C to 670°C

Low Drift Rate

±30m°C at 0°C after 100 hours at 670°C

Accredited calibration

Each SSPRT is delivered with an accredited calibration certificate.

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.

Calibration

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.

SSPRT

Highly accurate reference sensors for laboratory use

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.

Ordering Code

Ex. Ordering Code :
Model - Dia - Length - Extension Cable Length

SSPRT - 6.0 - 450 - 1.5

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 670°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

Wide Temperature Range

PRT offer a wide temperature range from -80°C to 400°C

Calibration

It is recommended to calibrate this PRT annually over the full temperature range in between annual calibrations.

PRT

Highly accurate reference sensors for laboratory use

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.

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

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 Standard	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
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

Noble Metal Master Thermocouple

Wide Temperature Range

Thermocouple offer a wide temperature range from 0°C to 1500°C

Accuracy

Special Class (0.6 °C or 0.1 % of temperature whichever is greater)

Calibration

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

TTC

Highly accurate reference sensors for laboratory use

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.

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

Specifications

Make	Tempsens	
No. of Element	Simplex	
Temperature Range	0 to 1500 °C	
Sheath Material	Alumina (99.7 % pure Al2O3)	
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)

TEMPSENS
Thermal & Cable Solutions

Nobel Metal Master Thermocouple with Cold Junction Compensation

Wide Temperature Range

Thermocouple offer a wide temperature range from 0°C to 1500°C

Accuracy

Special Class (0.6 °C or 0.1 % of temperature whichever is greater)

Calibration

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

TTC with CJC

Highly accurate reference sensors for laboratory use

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.

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

Specifications

Make	Tempsens	
No. of Element	Simplex	
Temperature Range	0 to 1500 °C	
Sheath Material	Alumina (99.7 % pure Al2O3)	
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	TTCSCJC	TTCRCJC
Type	S(Pt10%Rh/Pt)	R(Pt13%Rh/Pt)

Secondary Thermocouples

Wide Temperature Range

Thermocouple offer a wide temperature range from 0°C to 1200°C

Accuracy

0.4% of reading at 1.1°C of temperature, whichever is higher

Calibration

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

Secondary Thermocouple

Reference sensors for laboratory use

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.

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 : TTCS-6.0-400-1.5

* Can be provided as per customer requirement

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 (0.6 °C or 0.1 % of temperature whichever is greater)	
Model	TTCK	TTCN
Type	CR/AL K Type	NI-CR-SI/N Type

Measuring Instruments

Features

- High stability
- High accuracy of RTD measurement 0.01°C
- High accuracy of T/C measurement 0.1°C
- High Resolution (0.01/0.001)
- 2 Measuring inputs
- 10 Thermocouples **B, C, D, E, J, K, N, R, S, T**
- 6 RTD's **PT-100, PT-10, PT-50, PT-500, PT-200, PT-1000**
- Thermocouple reference junction external, internal and off
- Units °C/ °F
- Data Logging 4000 values
- Suitable for 2/3/4 wire RTD.

Calsys C-4004

High Accuracy Temperature Indicator Suitable for 6 RTD's and 10 T/C Types

Calsys C-4004 is fully characterized for all major sensors (thermocouples such as B, C, D, E, J, K, N, R, S, T and RTD's like PT-100, PT-50, PT-10, PT-200, PT-500, PT-1000). The instrument can be used in industries where high accuracy temperature measurement is essential. Two channel input provides A, B & A-B measurement on LCD Display. The device is providing exceptionally stable cold junction compensation with choices for user like Automatic, Off and External.

Calsys C-4004 comes with front panel keys for easy operation like unit selection (°C/°F), Resolution (0.01/0.001) and Data Logging.

Overall stability is optimized by utilizing high quality components with high precision. There are four input ports, two for thermocouple and two for RTD.

In order to measure temperature suitable probe should be connected to TC & RTD input. The temperature measured by the device will be displayed in bigger fonts and the actual resistance (ohms) in case of RTD and voltage (mV) in case of Thermocouple will be displayed in smaller fonts. All channel details and configuration will be displayed on the LCD display.

Calsys C-4004 can accept two RTD's, or two Thermocouples or one RTD and one Thermocouple at a time. Measured temperature can be displayed from one of the inputs or Difference of both the input channels.

SPECIFICATIONS

Display	192 x 64 LCD Graphic Panel with back light
Inputs	2 Channels for RTD and Thermocouple via lemo 1-S series connector
Reference Junction	Reference Junction compensation may be selected for the following modes : **Automatic :** Internal reference junction range 0 to +100°C **External :** Via Pt 100 sensor connected to channel A and B range to 0 to +100°C **Off :** Turns the Reference Junction OFF = 0°C
Working Temp.	0..50°C rel. humidity Less than90% non condensing condition
Storage Temp.	-20 to +55°C
Mains Supply	85-264 VAC / 120-370 VDC, 47-63 Hz
Data Logging	Up to 4000 values can be stored along with date and time
Dimensions	244 x 350 x 114

TEMPMET 08

Input

Thermocouples : J, K, N, E, R, S, T, B, C, D

RTD : Pt100, Pt10, Pt1000, Pt50, Pt200, Pt500

Unit : °C, °F

Resolution : 0.01°C

Accuracy : 0.1% of full scale

Channel : Tempmet 08-02 : 1 T/C, 1 RTD

Tempmet 08-04 : 2 T/C, 2 RTD

TEMPMET 08

Specification

RTD + T/C Type	RTD + T/C Range	Accuracy
		Tempmet 08
Pt100	-200°C to 850°C	±1.05°C
Pt10	-200°C to 800°C	±1.0°C
Pt1000	-200°C to 800°C	±1.0°C
Pt 50	-200°C to 800°C	±1.0°C
Pt200	-200°C to 800°C	±1.0°C
Pt500	-200°C to 800°C	±1.0°C
J	-210°C to 1200°C	±1.41°C
K	-200°C to 1372°C	±1.57°C
N	-200°C to 1300°C	±1.50°C
E	-200°C to 1000°C	±1.20°C
R	0°C to 1768°C	±1.76°C
S	0°C to 1768°C	±1.76°C
T	-200°C to 400°C	±0.65°C
B	400°C to 1820°C	±1.42°C
C	0°C to 2315°C	±2.315°C
D	0°C to 2315°C	±2.315°C

TEMPMET 09

Input

Thermocouples : J, K, N, E, R, S, T, B, C, D

RTD : Pt100, Pt10, Pt1000, Pt50, Pt200, Pt500

Unit : °C, °F, Ohms, mV

Resolution : 0.001°C

Accuracy : 0.1% of full scale

Channel : Tempmet 09-02 : 1 T/C, 1 RTD

Tempmet 09-04 : 2 T/C, 2 RTD

TEMPMET 09

Specification

RTD + T/C Type	RTD + T/C Range	Accuracy
		Tempmet 09
Pt100	-200°C to 850°C	±0.5°C
Pt10	-200°C to 800°C	±0.5°C
Pt1000	-200°C to 800°C	±0.5°C
Pt 50	-200°C to 800°C	±0.5°C
Pt200	-200°C to 800°C	±0.5°C
Pt500	-200°C to 800°C	±0.5°C
J	-210°C to 1200°C	±0.5°C
K	-200°C to 1372°C	±0.5°C
N	-200°C to 1300°C	±0.5°C
E	-200°C to 1000°C	±0.40°C
R	0°C to 1768°C	±0.8°C
S	0°C to 1768°C	±0.8°C
T	-200°C to 400°C	±0.5°C
B	400°C to 1820°C	±0.6°C
C	0°C to 2315°C	±0.9°C
D	0°C to 2315°C	±0.9°C

THERMAL & CABLE SOLUTIONS

www.tempsens.com

INDIA

Tempsens Instruments (I) Pvt. Ltd.
B-188A, Road No. 5, M.I.A.,
Udaipur-313003 (Rajasthan) INDIA
Ph. : +91-294-3507700
Fax : +91-294-3507731
Email : info@tempsens.com

GERMANY

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

INDONESIA

Pt. Tempsens Asia Jaya
Jl. Jembatan III Komplex F.77 No. 6C
Jakarta Utara14450, INDONESIA
Hp. : (+62)877 8080 4433
Telp. : (+62) 21 666 04006
Fax : (+62) 21 661 6789
Email : support@tempsens-asia.com

TEMPSENS

Pyrotech Group Company
www.pyrotechindia.com