



CALsys 1200 L

Dry block Temperature Calibrator

USER MANUAL



TEMPSENS INSTRUMENT (I) PVT. LTD UNIT II

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1. General Instruction

1.1 Information on operating instruction

Congratulations on your purchase of high-quality and efficient CALsys 1200L temperature calibrator. Read this manual carefully to all instructions on safety, operation and maintenance. It serves as an important source of information and reference for installation and operation of the device. The general safety requirements must be strictly adhered to when operating the device. The fact contained especially safety are observed. If you experience any further questions, please contact our technical support by phone or mail to tech@tempsens.com

1.2 Liability and warranty

This instrument has been manufactured to exacting standards and is warranted for twelve months against electrical breakdown or mechanical failure caused through defective material or workmanship, provided the failure is not the result of misuse. In the event of failure covered by this warranty, the instrument must be returned, carriage paid, to the supplier for examination and will be replaced or repaired at our option.

INTERFERENCE WITH OR FAILURE TO PROPERLY MAINTAIN THIS INSTRUMENT MAY INVALID THIS WARRANTY.

1.3 Unpacking & Initial Inspection

Our packing department uses custom designed packaging to send out your unit, but as accidents can still happen in transit, you are advised, after unpacking the unit, to inspect it for any sign of damage, and confirm that your delivery is in accordance with the packing note. If you find any damage or find any part missing during delivery notify us and the carrier immediately. If the unit is damaged you should keep the packing for possible insurance assessment.

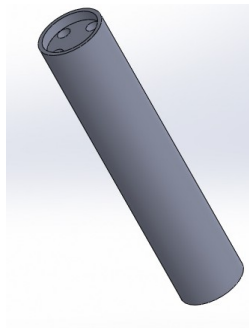
After unpacking you will find following items.



Calsys 1200 L



N type TC



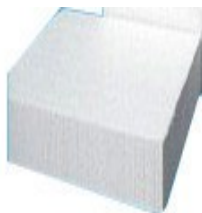
Inconel Block



Software CD



RS-232 cable



Insulation wool



Tongue Tool
(Block remover)



Power cable

2. Before you Start

2.1 Safety Information

Use the instrument only as specified in this manual. Otherwise, the protection provided by the instrument may be impaired. Refer to the safety information below and throughout the manual. The following definitions apply to the terms "Warning" and "Caution".

- "Warning" identifies conditions and actions that may pose hazards to the user.
- "Caution" identifies conditions and actions that may damage the instrument being used.

2.2 Warning

To avoid possible electric shock or personal injury, follow these guidelines.

- This equipment must be correctly earthed.
- A protective earth is used to ensure the conductive parts can not become live in the event of a failure of the insulation.
- The protective conductor of the flexible mains cable which is colored green/yellow MUST be connected to a suitable earth.
- Warning: Internal mains voltage hazard. Do not remove the panels.
- There are no user serviceable parts inside. Contact us for repair.
- Do not use the apparatus outside its recommended range i.e., + 300 to 1200° C.
- Ensure inflammable materials, are kept away from hot parts of the apparatus, to prevent fire risk.
- Before connecting to the electricity supply, please familiarize yourself with the parts of the calibrator with the help of operating manual.
- BURN HAZARD – Do not touch the target surface of the unit.
- Always replace the fuse with one of the same rating, voltage and type.
- Overhead clearance is required. Do not place unit under a cabinet or other structure.
- Do not use this unit for any application other than calibration work.
- Completely unattended high temperature operation is not recommended for safety reasons.
- CALIBRATION EQUIPEMENT should only be used by TRAINED PERSONNEL.
- Wear appropriate protective clothing.

2.3 Caution

To avoid possible damage to the instrument, follow these guidelines.

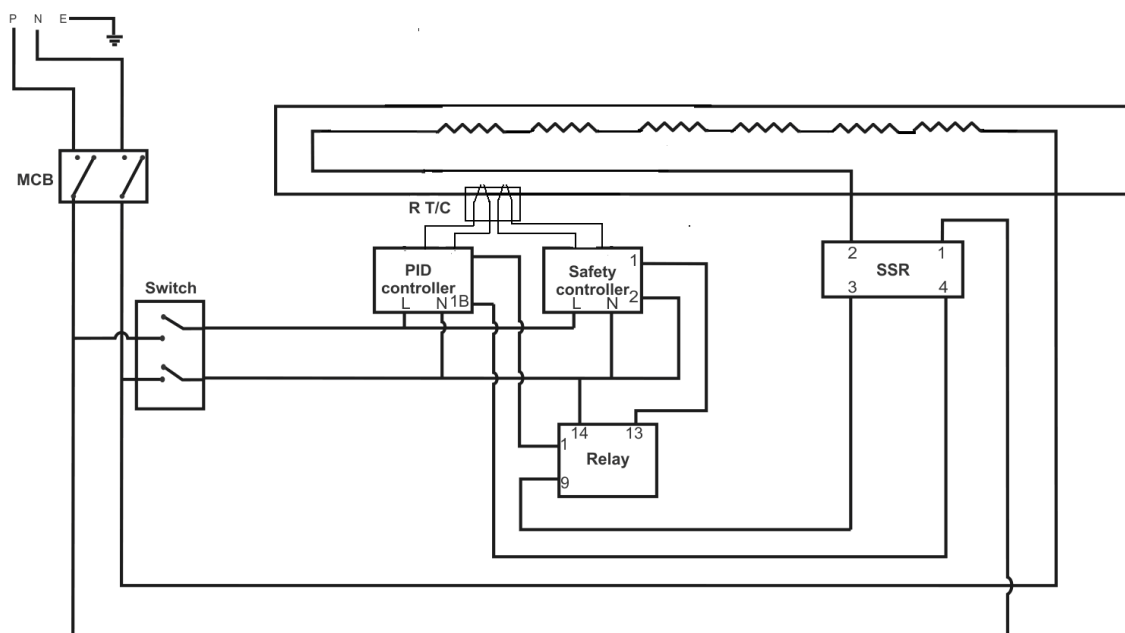
- Components and heater lifetime can be shortened by continuous high temperature operation.
- Do not change the values of the calibration constants from the factory set values. The correct setting of these parameters is important to the safety and proper operation of the calibrator.

3. Technical Data

3.1 Technical Specification

| | |
|--------------------------------|-------------------------------------|
| Voltage | 230 V AC |
| Power | 2.0 KW |
| Supply Frequency | 50/60 Hz |
| Temperature range | 300 to 1200°C |
| Resolution | 1.0 °C |
| Stability | ± 0.35 °C |
| Controlling sensor | R type T/C |
| Time to reach max. Temperature | 1.5 hrs |
| Operating Temperature | 20 to 45 °C |
| Controller Specifications | Eurotherm |
| Over temperature protection | Vertex controller with N Type T/C |
| Stabilization Time | 15 to 20 Min. |
| Dimensions | 590(H) x 450(W) x 530(D) mm |
| Block | 2X6.0 mm, 2x8.0 mm with 160mm depth |
| Weight, External Aperture | Approx 50 kg, |

3.2 Circuit Diagram



4. Overview

4.1 Introduction:

The 'CALsys 1200 L' has been designed to provide stable and accurate temperature to enable professionals to calibrate Temperature Sensing Devices by comparison method. The 'CALsys 1200 L' model has been designed to be rugged and easily maintained. This model provides an isothermal enclosure (Metal block) in which the thermocouple/RTD can be calibrated against the temperature of the calibrator. For traceable calibration a master calibration sensor should be placed into the metal block alongside the unit under calibration.

The method is widely accepted because the calibrator provides very stable temperature nearing to its controlled point, the Master Thermocouple / RTD, which is calibrated by independent Laboratory traceable to National standards, compares the sensor under calibration.

The 'CALsys' models are part of wide range of Laboratory calibrators designed and made by us. Please contact us in case you required more information about our other products.

4.2 Outline Description:

The calibrator controller uses a precision R type thermocouple as a controlling sensor and controls the well temperature with 6 Kanthal spiral heater. To obtain and maintain a required temperature the controller varies the power to the heater via solid-state relay. There is one electricity driven fan which is situated under the heating chamber for cooling the heater. The CALsys 1200 L dry block calibrator was designed for laboratory, moderate cost and ease of operation. With proper use the instrument should provide continued accurate calibration of temperature sensors and devices. The user should be familiar with the safety guidelines and operating procedures of the calibrator as described in the User's Manual.

5. Operating Instruction

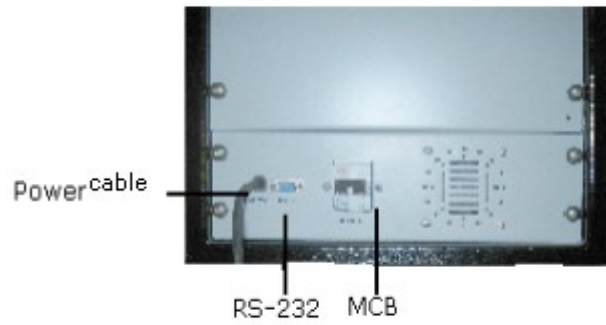
- (1) PID Controller
- (2) ON/OFF switch of controller



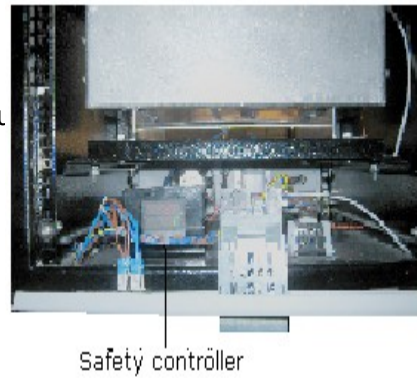
(3) Power cable

(4) RS-232

(5) MCB (for Heater)



(6) Safety controller for over heating temperature



(7) 1. "R" type thermocouple for controlling
2. "N" Type thermocouple for over temperature protection.



Inner chamber of calsys 1200L

5.1 Power

Place the calibrator on a flat surface with at least 20 inches of free space around the instrument. Overhead clearance is required. Do not place under a cabinet or structure. Insert equalizing block into the well with help of tong, after inserting remove the tong from equalizing block. Plug the power cord into mains outlet of the proper voltage, frequency Typically this will be (230 VAC \pm 10, 50/60 Hz). Turn the "Mains" (Heater) switch located on front panel. The controller display should illuminate after 3-4 sec . After a brief self test the controller should begin normal operation. If the unit fails to operate please check the power connection.

5.2 Setting the Temperature

Press "UP" or "DOWN" buttons to change the change the temperature set-point value. When the set-point temperature is changed the controller will switch the CALsys 1200 L ON or OFF to raise or lower the temperature. The displayed temperature will gradually change until it reaches the setpoint temperature. The temperature bath requires 15 to 20 minutes to reach the set-point depending on the span. Another 10 to 15 minutes is required to stabilize the temperature bath within \pm 0.5°C of the set-point.

Note:

All other controller parameters are company set and locked. It is recommended not to change them.

When the source is operated at any temperature above ambient, the front face and plate become hot.



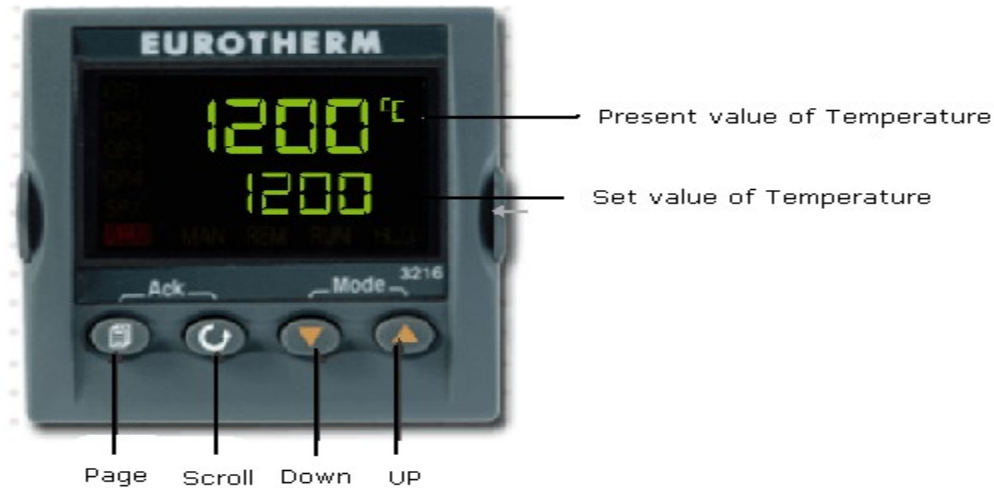
Down Key UP Key

5.3 Operating Instruction:-

1. Insert the inconel block into well of furnace.
2. Connect the 'CALsys 1200L' to a suitable power supply & Switch ON the Dry bath source and set the desire temperature value in PID by using UP & Down key.
3. Switch ON the MCB,back side of furnace.
4. Insert the reference (Master) temperature sensor and UUC (Unit under calibration) into the thermowell (inconel block).
5. PV (Present value) display in controller will gradually rise until it reaches the set point temperature. The controller takes some times to reach the set-point depending on the span. Furnace is stable when PV is equal to SV (Set Value).
6. Master sensor take some times to reach the setpoint temperature and stable at temperature near about controller set temperature.
7. When temperature of the master and UUC (Unit under calibration) are stable record the readings of master sensor.
8. Compare the UUC reading with the master's reading & find out the error by comparison method.
9. Reset the controller and / or repeat the calibration for another calibration point or for another sensor.
10. When the calibration is complete, reset the controller to 0°C & wait until the unit has cooled to below 100°C, before moving the 'CALsys 1200L' to new location.

6. Operation of Controller

FRONT PANEL LAYOUT



Operator Buttons

6.1 The Temperature Controller

The controller has a dual display, the upper display indicates the measured temperature, and the lower display indicates the desired temperature or set point.

6.2 Altering the Set point

To change the set point of the controller use the UP and DOWN keys to raise and lower the set point to the required value. The lower display changes to indicate the new set point.

6.3 Monitoring the Controller Status

A row indicate the controllers status as follows

OP1 Heat Output

OP2 Cool Output

REM This beacon indicates activity on the PC interface

ALM this indicates when PV (Present value) is more than 1200°C.

6.4 Units

Momentary pressing of the Scroll key will show the controller units °C or °F by using SCROLL key & UP & DOWN key unit can be change.

IMPORTANT NOTICE

The controller's function settings are preset and will not require adjustment. Use only up & down key.

7. Maintenance & Trouble shooting

7.1 Maintenance

- The calibration instrument has been designed with the utmost care. Ease of operation and simplicity of maintenance have been a central theme in the product development. Therefore, with proper care the instrument should require very little maintenance. Avoid operating the instrument in an oily, wet, dirty, or dusty environment.
- If the outside of the instrument becomes soiled, it may be wiped clean with a damp cloth and mild detergent. Do not use harsh chemicals on the surface which may damage the paint.
- Avoid knocking or dropping the calibrator.
- If the mains supply cord becomes damaged, replace it with a cord with the appropriate gauge wire for the current of the instrument.
- Depending on the environment in which it is used, periodic cleaning is recommended. Cleaning may be accomplished by the use of a small dry paint brush.

7.2 Trouble shooting

1. Unit fails to operate

Check fuse if it is tripped switch is ON. If not power ON of calsys 1200L consult us.

2. Unit unstable

Controller parameter has been interfered, consult us.

3. If the temperature of the calibrator is not rising

- (a) The heating element may be open.
- (b) The thermocouple may be open.
- (c) The SSR may be damaged.
- (d) The controller may not be giving output
- (e) The ambient temperature inside the chamber is raised and safety controller switched OFF the power

CAUTIONARY NOTE

TEMPSENS PRODUCTS ARE INTENDED FOR USE BY TECHNICALLY TRAINED AND COMPETENT PERSONNEL FAMILIAR WITH GOOD MEASUREMENT PRACTICES.

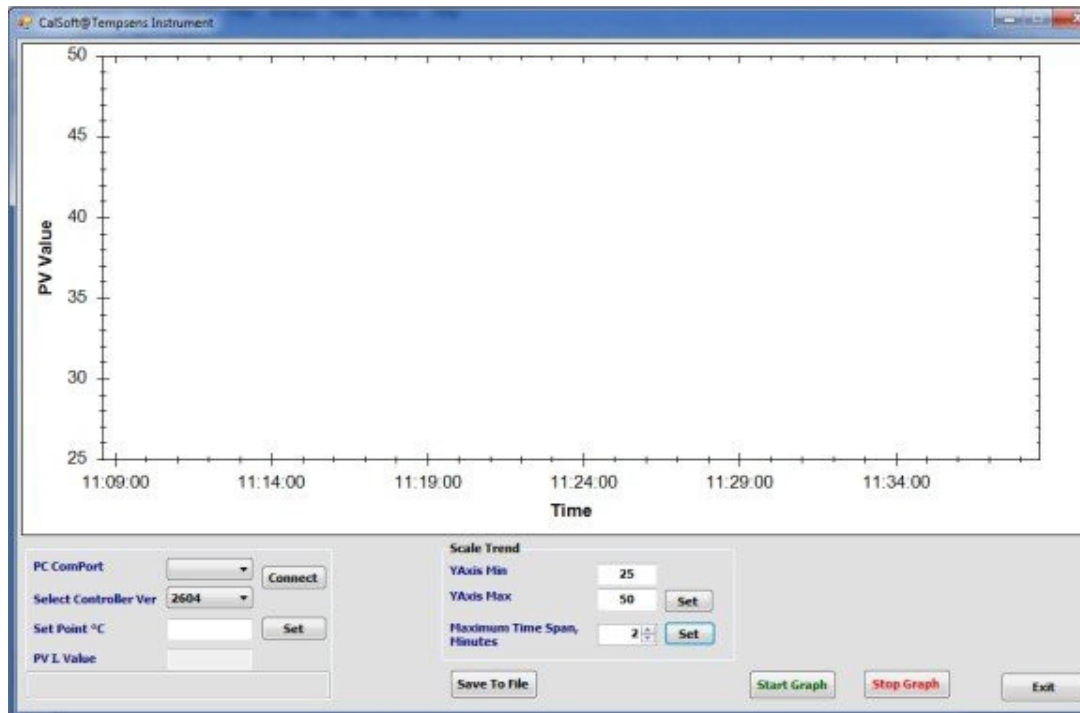
IT IS EXPECTED THAT PERSONNEL USING THIS EQUIPMENT WILL BE COMPETENT WITH THE MANAGEMENT OF APPARATUS WHICH MAY BE POWERED OR UNDER EXTREMES OF TEMPERATURE, AND ARE ABLE TO APPRECIATE THE HAZARDS WHICH MAY BE ASSOCIATED WITH, AND THE PRECAUTIONS TO BE TAKEN WITH, SUCH EQUIPMENT.

8. Software Installation

The provided Tempsens software offers possibilities to connect furnace temperature bath and change set point, maximum time span, view real time graph and evaluate measuring data.

1.1 Installation

Install the calibration software using the installation guide file on CD ROM. After installation of the software; Double click the application. It will open the screen of software.



1.2 Parameter in mainscreen

1.2.1 Communication

Communication between the furnace and the software is implemented via a RS-232 cable connected between the furnace and the PC serial port. This enables the acquisition and recording of data, as well as the transfer of commands from the software application to the tempsens furnace. Communication can be done by clicking on connect and select correct COM port address (fig. 1) where furnace is connected. Also user has to select type of controller version 3216 (fig. 2). Then click on CONNECT button. Shown com2 connected successfully.



Safety instructions:

Do's and don'ts -

- Keep switch off the power supply after switch off the furnace MCB.
- Don't touch surface chamber during furnace is ON causes over heating injury.
- Don't remove power plug during furnace is ON.
- Keep switch off red button at front of furnace after use.
- Keep down the furnace temperature at ambient after use then switch off the furnace.
- After open the furnace keep place block and furnace parts safely.
- Don't open the furnace chamber during furnace is ON.
- In case of any trouble please contact our contact person.

Information

Packing Instruction

To transport or store the instrument, please use the original box or a box padded with sufficient shock absorbing material. For storage in humid areas or shipment overseas, the device should be placed in welded foil (ideally along with silicon gel) to protect it from humidity.

Warranty

TEMPSENS CALsys 1200L instrument have a warranty of one year from the invoice date. This warranty covers manufacturing defects. User induced faults are not covered under this warranty.

Limit of Liability

TEMPSENS not liable for any damages that arise from the use of any examples or processes mentioned in this

Specifications are subject to change without notice

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