АКТАКОМ

USER`S MANUAL

IR CALIBRATOR

ATE-2450

www.tmatlantic.com

1. Safety Information

Use this instrument only as specified in this manual.
Otherwise, the protection provided by the instrument may be impaired.
Refer to the safety information in Warnings and Cautions.

1.1 Warnings

BURN HAZARD – DO NOT touch the IR target surface of the unit.
The temperature of the IR target surface is the same as the actual temperature shown on the display. If the unit is set at 500°C and the display reads 500°C, the target surface is 500°C.The top sheet metal of the instrument may exhibit extreme temperatures for areas close to the IR target surface.
DO NOT turn off the unit at temperatures higher than 100°C. This could create a hazardous situation. Turning of the instrument less than 60°C is recommended.
DO NOT connect and operate this unit without a properly grounded, properly polarized power cord.
HIGH VOLTAGE is used in the operation of this equipment. Severe injury or death may result if personnel fail to observe safety precautions. Before working inside the equipment, turn the power off and disconnect the power cord.
Overhead clearance is required.
DO NOT place this instrument under a cabinet or other structure.
DO NOT use this unit in environments other than those listed in the user's guide.
DO NOT operate near flammable materials.
Use of this instrument at **HIGH TEMPERATURES** for extended periods of time requires caution.
Completely unattended high temperature operation is not recommended for safety reasons.

1.2. Cautions

To avoid possible damage to the instrument, follow these guidelines.
DO NOT plug the unit into 220V if the heater switches and fuse holder read 110V. This action will cause the fuses to blow and may damage the instrument.
DO NOT use fluids to clean the target surface.
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.

2. Introduction

The Mini Infrared Calibrator is mainly structured by 58mm diameter target assembly and dry-well temperature system controlled by microcomputer. External reference thermometer is a metal cone with good heat-conducting ability, on the surface of thermometer there is a oxide film with emissivity 0.95.

The Calibrator is applied a class-A PT100 as a sensor with a temperature control system and wind-cold device. The calibrator has rapid heating and cooling function and is switch able °C/°F which can be used in different temperature unit calibration.

The calibrations can be done over a range of 50°C to 500°C .

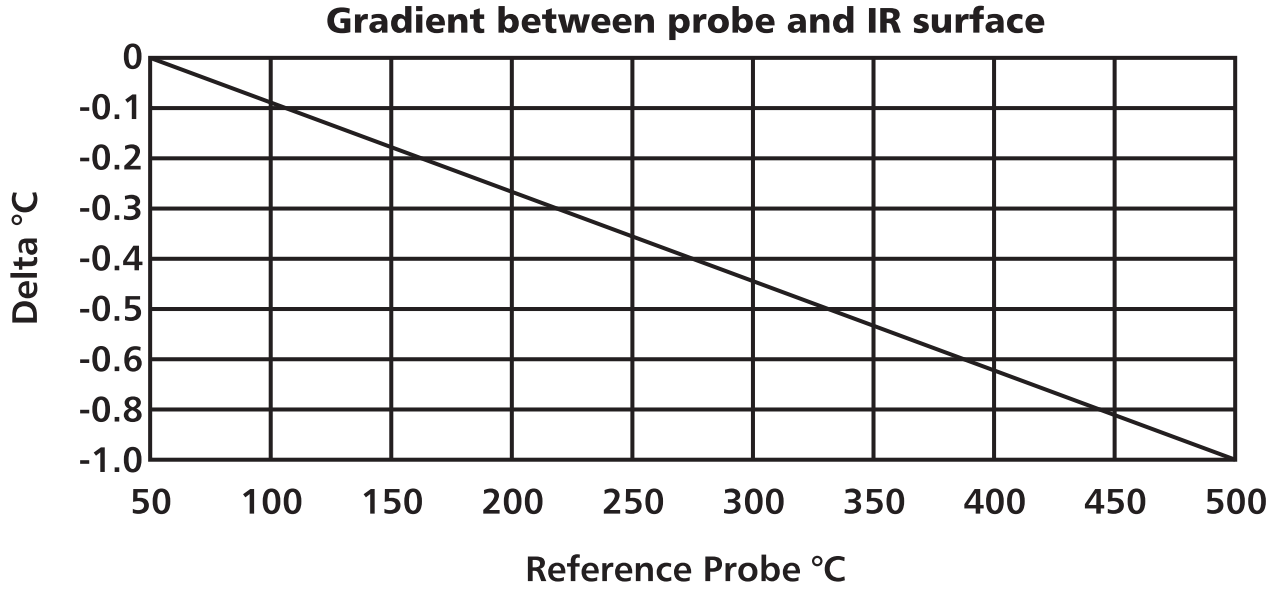
Temperature display and stability resolution is 0.1 degree.

3. General Specifications

Range	50°C to 500°C (122°C to 932°F)
Accuracy	±0.8°C at Temp≤100°C(±1.6°F at Temp≤212°F) ±1.6°C at 100°C<Temp≤200°C(±3.2°F at 212°F<Temp≤392°F) ±2.8°C at 200°C<Temp≤500°C(±5.6°F at 392°F<Temp≤932°F)
Stability	±0.1°C at Temp≤100°C(±0.2°F at Temp≤212°F) ±0.2°C at 100°C<Temp≤350°C(±0.4°F at 212°F<Temp≤662°F) ±0.4°C at 200°C<Temp≤500°C(±0.8°F at 392°F<Temp≤932°F)
Target Emissivity	0.95
Resolution	0.1°C/0.1°F
Heating Time	30 minutes to max
Cooling Time	30 minutes to 100°C (122°F)
Aperture Diameter	58mm
Power	220VAC(±10%),1.25A / 110VAC(±10%),2.5A
Size	180 x 114 x 233mm
Weight	3kg

4. Environmental Conditions

Although the instrument has been designed for optimum durability and trouble-free operation, it must be handled with care.
The instrument should not be operated in an excessively dusty or dirty environment.
Maintenance and cleaning recommendations can be found in the Maintenance section of this manual.
The instrument operates safely under the following conditions:



Temperature range: 5-35°C (41-95°F)
Ambient relative humidity: 15-80%
Pressure: 75kPa – 106kPa
Mains voltage within ±10% of nominal
Vibrations in the calibration environment should be minimized

5. Quick Start

5.1 Unpacking

Unpack the calibrator carefully and inspect it for any damage that may have occurred during shipment. If there is shipping damage, notify the carrier immediately.

Verify that the following components are present:
Calibrator
Power Cord
User's Guide

5.2 Set Up

Place the calibrator on a flat surface with at least 8 inches of free space around the instrument. The prop may be swung down to raise the front of the instrument from a horizontal position. Plug the power cord into a grounded mains out let (Note: this calibrator has two power specification of one model NO: 220V/AC and 110V/AC, please make sure if the power value is suitable for the instrument before operation.)

Turn on the power to the calibrator by toggling the power switch on. The fan should begin quietly blowing air through the instrument and the controller display should illuminate after 3 seconds. After a brief self-test the controller should begin normal operation. If the unit fails to operate please check the power connection.

The heater will start operating to bring the temperature of the calibrator to the set-point temperature and the display will begin to show the actual target temperature.

5.3 Setting the Temperature

1.Press "UP" or "DOWN" to change the set-point value.
2.Then press "SET", the calibrator will automatically control the target assembly temperature to reach the set temperature in the stated time.
The red LED display will indicate the temperature of the target assembly.
When the set-point temperature is changed the controller switches the well heater on or off to raise or lower the temperature.
The displayed well temperature gradually changes until it reaches the set-point temperature. The well may require 5 to 10 minutes to reach the set-point depending on the span. Another 5 to 10 minutes is required to stabilize within ±0.1°C of the set-point. Ultimate stability may take 15 to 20 minutes more of stabilization time.

6 . Parts and Controls

The user should become familiar with the calibrator and its parts.

6.1 Back Panel

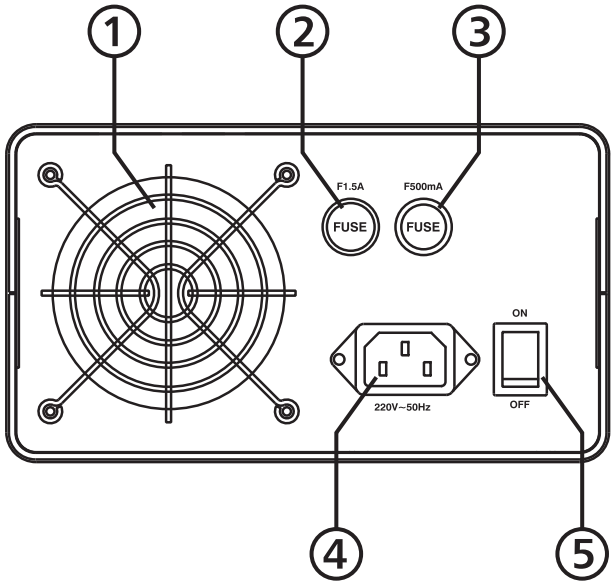


Fig 1. Back Panel Description

The back panel (Figure 1) consists of the power cord inlet, power switch, heater voltage switch, and fan.

1 – Wind input
2 – Fuse of heater
3 – Fuse of temperature control system
4 – Power Input
5 – Power switch

Power Inlet – At the rear of the calibrator is the removable power cord inlet that plugs into an IEC grounded socket.
Caution: Do not plug the unit into 220V if the heater read 110V. This action will cause the fuses to blow and may damage the instrument.
Fan – The fan inside the calibrator has two speeds and runs continuously when the unit is being operated to provide cooling for the instrument. The fan runs slow for heating and maintaining operation and runs fast for rapid cooling. Slots are provided for airflow. The area around the calibrator must be kept clear to allow adequate ventilation. The airflow is directed out the front and can be extremely hot

6.2 Front Panel

The front panel (Figure 2) consists of the controller display, controller keypad, and target assembly.

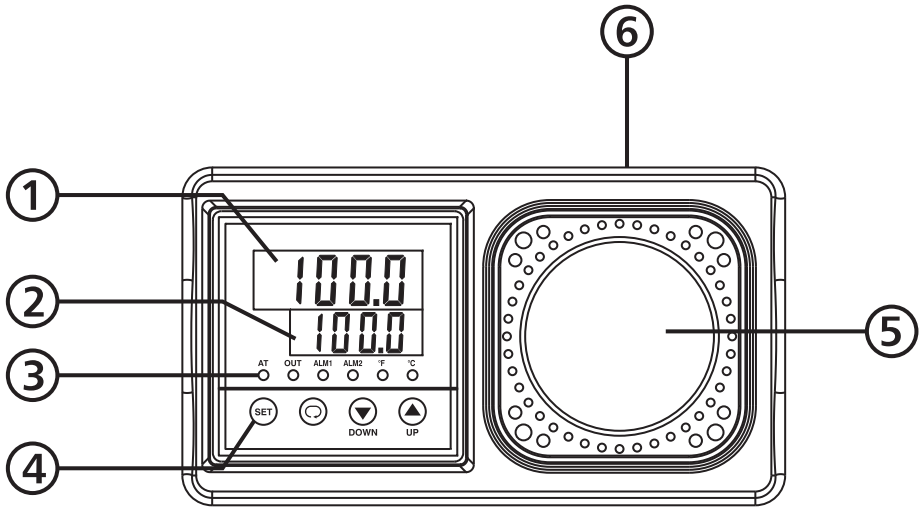


Fig 2.Front Panel Description

Controller Display

1 – The red LED (the first line display) displays actual temperatures and settings for selected scale °C or °F.

2 – The green LED (the second line) displays the set-point value and shows temperatures in units according to selected scale °C or °F.

3 – The indicator of the operation state

- **AT-Automotive parameter adjustment.(only used to factory for adjusted)**
- **OUT-The indicator of heat output with indication of the heating state of the target assembly**
- **ALM1-Overload alarm when the target assembly temperature 4°C higher than the set temperature, indicates the heating power off**
- **ALM2-Overload alarm. when the target assembly temperature 4°C higher than the set temperature, indicates the cooling with strong wind**
- **°F-°F temperature indicator**
- **°C-°C temperature indicator**

Controller Keypad – The four button keypad allows easy setting of the set-point temperature. The control buttons (SET, ↻ , DOWN, UP)are used to set the calibrator temperature set-point, Setting the control temperature is done directly in degrees of the current scale. The control temperature can be set to one-tenth of a degree Celsius or Fahrenheit.

4 – The keypad

SET - The set button. Which is used to confine setting temperature and select ℃ or ℉ .

↻ - The enter button .Which is used to select ℃ or ℉

DOWN-The down button .Which is used to down setting temperature and change the unit ℃ to ℉

UP - The up button. Which is used to up setting temperature and change the unit ℃ to ℉

5 – Target assembly, The target assembly is 58mm in diameter and has an emisivity at 0.95

6 – The test hole for temperature sensor of a good thermometer.

7 General Operation

Place the calibrator on a flat surface with at least 8 inches of free space around the instruments. The front of the instrument is towards to user.

7.1 Connect the calibrator to the power supply, input proper voltage (110V or 220V).

7.2 Turn on the instrument to “ON“ button.

7.3 Changing Display Units

The calibrator can display temperature in Celsius or Fahrenheit.
The temperature units are shipped from the factory set to Celsius and locked. the unlock way is: Press the button of “SET“ and “↻” at the same time .

After unlock, first press “SET“ button for three seconds , the first line red LED will display “InPt“, the second line green LED will display “pt2“;

Release “SET“ and press “↻“,the second line green LED will indicate the present temperature unit;

press “DOWN”to °F, press “UP“ again to choose °C,the temperature unit letter will be flashing in the process of choosing the temperature unit. Then press“SET” to confirm,green LED stop flashing,press “SET” again the calibrator return to operation.

In order to keep good operation, please lock the values after the temperature unit changed. The way is : Press “↻” button three times, the first line red LED display“LoC”,the second line green LED display “OFF”, then press “UP” button two times,green LED will display “LoC2”,at last press “SET” to complete the temperature unit change.

8. Controller Operation

This chapter discusses in detail how to operate the instrument temperature controller using the front control panel. Using the front panel key-switches and LED display the user may monitor the well temperature, and the heater output power and adjust the controller proportional band. The control buttons (SET, DOWN, UP) are used to set the calibrator temperature set-point

8.1 Well Temperature

The digital LED display on the front panel allows direct viewing of the actual well temperature. This temperature value is normally shown on the display. The units, C or F, of the temperature value are displayed at the right.
For example, 100.0°C Well temperature in 100.0 degree Celsius

8.2 Temperature Set-point

The temperature set-point can be set to any value within the range and with resolution as given in the specifications. Be careful not to exceed the safe upper temperature limit of any device inserted into the well.

Press “UP“ to setup the higher temperature, or press “DOWN“ to setup the lower temperature.

Press the button every time the temperature will be changed 0.1°C or °F, Press the button constantly the temperature will be changed 1°C or °F every time. The front panel green LED display will indicate the actual set temperature.

When the set temperature changes, the value are flashing.Release “UP“ or “DOWN“ and then press “SET“, the calibrator will automatically control the target assembly. temperature to reach the set temperature in the stated time. The red LED display will indicate the temperature of the target assembly.

8.3 Reduce the temperature below 100°C after measurement , when the temperature is reduced below 100°C the user can turn off the power. (warning: turning off the power at high temperature will be easy to destroy the calibrator , which should be cooled off by fan.)

9. 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 dirty or dusty environments.

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.

The calibrator should be handled with care. Avoid knocking or dropping the calibrator.

If the instrument is used in a manner not in accordance with the equipment design, the operation of the instrument may be impaired or safety hazards may arise.