



**BLACK BODY
TEMPERATURE SOURCE**
MODEL: BCAL 502
INSTRUCTION MANUAL



1. SAFETY INSTRUCTIONS

Use the BCAL 502series only as specified in this manual. Otherwise, the protection provided by the BCAL 502series may be impaired.

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 BCAL 502series being used.



Warnings

To avoid personal injury, follow these guidelines.

The BCAL 502series must not be used for any purposes other than those described in this manual. The BCAL 502series has been designed for interior use only and should not be used in hazardous areas, where vapor or gas leaks, etc. may constitute a danger of explosion.

The BCAL 502series must be kept free within an area of 20 cm on all sides and 1 meter above the calibrator.

Never use heat transfer fluids such as silicone, oil, paste, etc. in the BCAL 502series.

These fluids may penetrate the BCAL 502series and cause damage or create poisonous fumes.

The BCAL 502series must be switched off before any attempt to service the BCAL 1500 series is made.

When cleaning the well, REMEMBER to wear goggles when using compressed air in the BCAL 502series.

The BCAL 502series must not be used in wet areas.

Use heat shield when calibrating at high temperatures

Do not touch the grid plate, the well or the insertion tube when the BCAL 502series is heating up they may be hot.

Do not touch the tip of the sensor when it is removed from the insertion tube/well it may be very hot.



Cautions

To avoid possible damage to the BCAL 502series, follow these guidelines.

DO NOT try to change the Factory setting values of the BCAL 502series. The correct setting of these parameters is important to the safety and proper operation of the BCAL 502series.

Always operate this BCAL 502series at room temperature between 41°F and 104°F (5°C to 40°C). Allow sufficient air circulation by leaving at least 6 inches (15 cm) of clearance around the BCAL 502series.

The BCAL 502series is a precision instrument. Although it has been designed for optimum durability and trouble free operation, it must be handled with care.

2. SPECIFICATIONS

MODEL	BCAL 502
Temperature Range	50 to 500 °C
Accuracy	± 0.5 °C @ 100 °C & ± 1.8 °C @ 500 °C
Stability	± 0.2 °C
Resolution	0.1 °C
Unit	°C
Display	4 Digit 7 Segment LED Red and Green for Block and Setvalue
Heating time (mins)	40 (Amb. to 500°C)
cooling time (mins)	40 (upto 100°C)
Time to stabilize (mins)	10
Aperture Area	25 mm
Emissivity	0.950
Dimension (L*W*H)in mm	245 L x 197 W x 120 H(Approx.)
Weight (Approx.)	8.5 kg
Power Consumption	500 VA
Power Supply	230V AC 50/60 Hz

Note: Due to continuous product improvements, Published specifications may change without notice

Standard Delivery

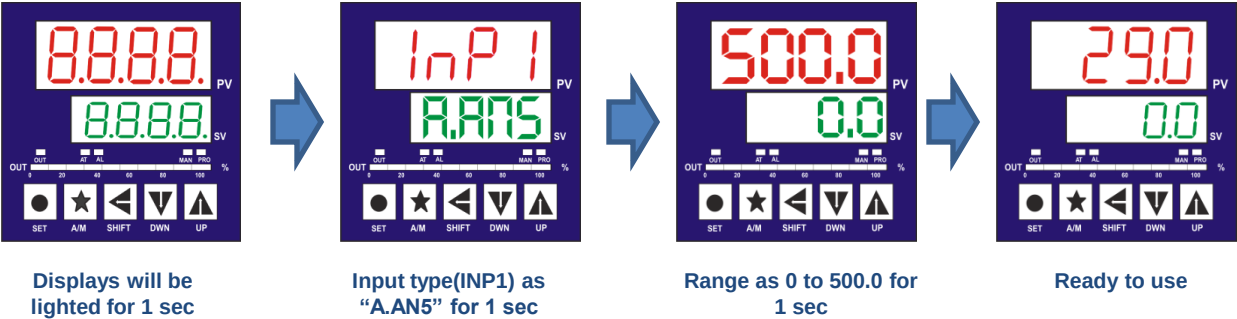
- 1. Basic Instrument
- 2. Spare Fuses
- 3. Instruction Manual
- 4. Test Certificate
- 5. Mains Card

Optional

- 1. Master Online Pyrometer
- 2. Stand for master pyrometer
- 3. Carrying case
- 4. NABL Calibration Certificate

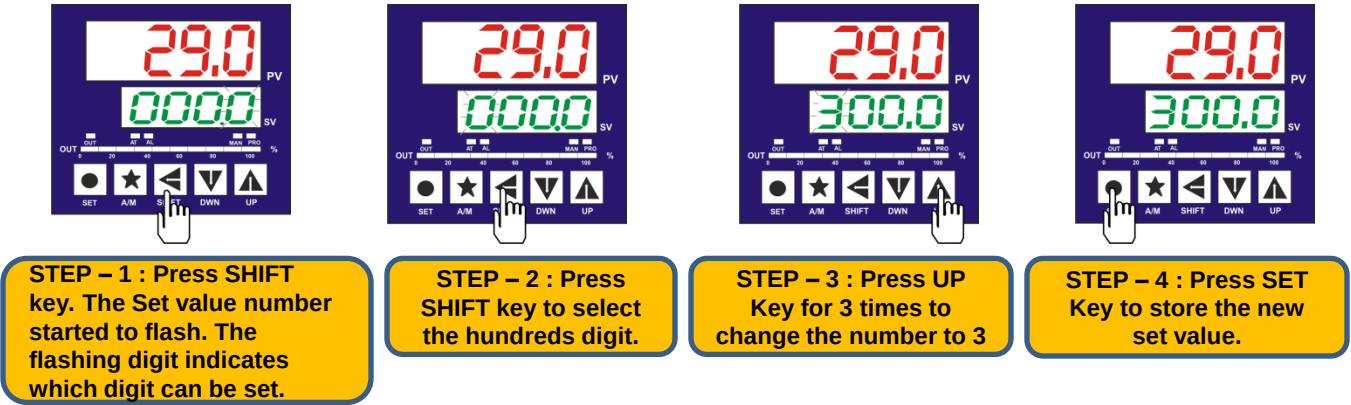
3. FRONT PANEL OPERATION

3.1. POWER ON



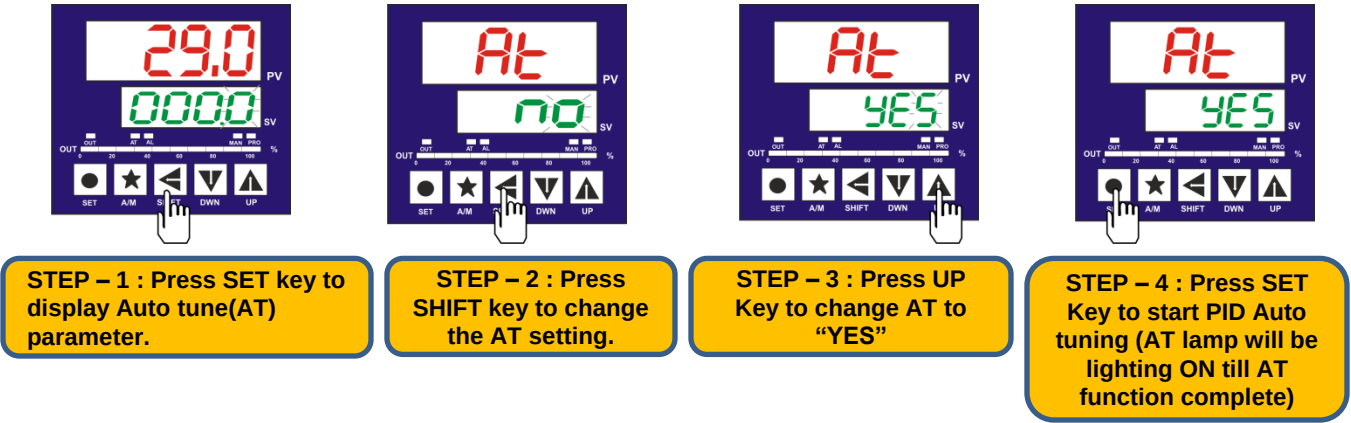
3.2. SET VALUE

Change Set value for 0.0 to 300.0



3.3. PID AUTO TUNING(AT)

Note : If feels poor stability in Block Value, Use AT function to automatically calculate and set the optimize PID value for BCAL 502



4. ERROR DISPLAYS

Symbol	Description
<i>in 1E</i>	IN1E : Input 1 Error
<i>CJCE</i>	CJCE : Cold Junction Compensation Failed
<i>UUUL</i>	UUUL : PV is above USPL
<i>NNNL</i>	NNNL : PV is below LSPL
<i>ADCF</i>	ADCF : A/D Convert Failed
<i>RAMF</i>	RAMF : RAM Failed

NOTE : Any one of the above error displays on Block display, the BCAL 502 needs to be repaired

5. CALIBRATION PROCEDURE

5.1. INFRA RED THERMOMETER

PRECAUTIONS

- ☐ Check the input power supply before switching on the BCAL 502.
- ☐ Don't touch the target aperture during power ON time
- ☐ Set the BCAL 502 to 30°C for cooling.
- ☐ Switch off after reaching the ambient.
- ☐ Do not use oil or glycol in BCAL 502.
- ☐ Give sufficient warm-up time for both Master Instrument and UUC as per the operation manual before proceeding calibration.



- a) The control setting will usually be the normal working temperature of the thermometer to be tested.
- b) For calibration checks that are traceable to National Standards the target temperature is that indicated by the standard ONLINE PYROMETER.
- c) If traceability is not required the source can be used without the standard ONLINE PYROMETER.
- d) From previous work the temperature as shown on the control indication has been found to agree with the radiance temperature to within Accuracy.
- e) To make the lining up of BCAL 502 fixed installation radiation thermometers simpler an optical bench assembly is offered as an optional extra.
- f) When the source is stood on the optional transportation case, the bench to mid target dimension equals that of the optical bench assembly.
- g) Portable radiation thermometers are usually hand held.
- h) When calibrating radiation thermometers, it is important to follow documented step by step procedures to ensure that specified calibration conditions, such as calibration distance, furnace temperature and aperture size are always met.

ACCEPTANCE CRITERIA: Calibrated instrument must be accepted as per Manufacturer specification or as per the customer criteria if given by customer.

6. CONTACT US

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