

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **37 months** from date of purchase. OMEGA's WARRANTY adds an additional **one (1) month** grace period to the normal **three (3) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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**CONDITIONS:** Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair or calibration,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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**Changing the Setpoint/Modify Key:** Press and hold to view current setpoint temperature. While held, press the decrease or increase key to change the setpoint.

**Decrease Key:** Press in conjunction with Modify Key in order to decrease setpoint.

**Increase Key:** Press in conjunction with Modify Key in order to increase setpoint.

## Changing the Controller Parameters

The BB703 operates at its optimum performance when left with the factory parameter settings. The only internal parameter that the operator may need to change is the engineering units (°C or °F) or display resolution (XXX, XXX.X or X.XX).

Menu 1		Menu 2		Menu 3	
TUNE	OFF	SP1.P	0	SP1.d	SSd1
BAND	A 58	hAnd	OFF	SP2.d	SSd2
int.t	A 1.2	PL.1	100	burn	uP.SC
der.t	A 8	PL.2	100	rEU.d	1r.2d
daC	A 2.0	sp2.A	none	rEU.L	1n.2n
CyC.t	A 5	sp2.b	none	SPAn	* 10
oFSt	0.0	diSp	0.1°	Zero	* -2.5
SP.LK	OFF	hi.SC	752	ChEK	OFF
SP.rr	0	Lo.SC	32	rEAd	Uar°
SPrn	OFF	ipPt	rtd	tECh	Ct A
SOAK	- -	unit	°F	Uer	392
SEt.2	0.0			rSEt	nonE
bnd.2	3.6				
CyC.2	on.oF				

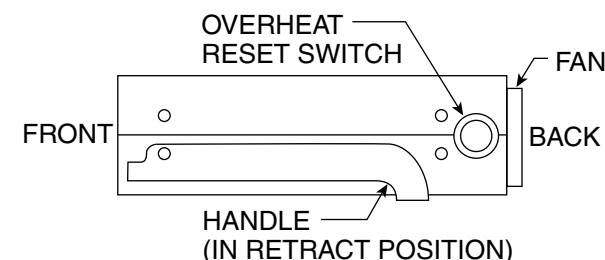
**Menu Hierarchy Showing Factory Default Settings**

1. To enter programming menu hold down the **▲** and **▼** keys, simultaneously, for 3 seconds. Upon entering the menu, the user is always located at the "tUnE" parameter. This is the first parameter of MENU1.
2. Use the **▲** and **▼** keys to scan through the various parameters on a given menu level.
3. Use the **✳** key together with the **▲** key or the **▼** key to change a given parameter.
4. To change menu levels, scan to the first parameter on a given menu level, using the **▼** key. Next, hold down the **✳** key in addition to the **▲** key or the **▼** key to go to a different menu level.
5. To leave the programming menu and return to the normal operation mode, hold down the **▲** and **▼** keys, simultaneously.
6. All parameters are saved, even when power is removed from the unit.

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## Overheat Reset Switch

If the unit is operated at high temperatures in elevated ambient temperatures, an overheat condition may occur. In an overheat situation a mechanical reset switch on the right side panel will pop and open the heater circuit. The controller will still have power. While the controller will be demanding heat from the heater, the process temperature will fall continuously until it equalizes with the room temperature. **If an overheat condition occurs, let the unit cool off for one hour (leave the unit on), then press the reset button, firmly.**



Overheat Reset Switch (Right Side Panel)

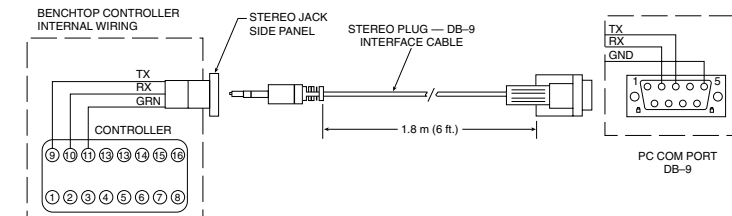
## SECTION 4: RS232 Communications

**NOTE:**

This section only applies to BB703 Series Calibrators purchased with optional RS-232 Communications (-C2) Option.

## Communication Port

The RS-232 communication port is located on the left side of the BB703 calibrator. An interface cable, Pt. No. OM-NOMAD-CP9, is included with your unit for easy connection between your BB703 calibrator and PC.



## Wiring Connections From Calibrator To PC

### CN9-SW Communication Software

Calibrators with the -C2 option come complete with communication software (CN9-SW). The software is designed to interface with your calibrator. Refer to the Software Communication Manual (M2896) for factory default settings and for making changes to the communications settings and programming.

## QUICK START

For complete product manual:  
[www.omega.com/Manuals/manualpdf/M3265.pdf](http://www.omega.com/Manuals/manualpdf/M3265.pdf)



**BB703**  
Blackbody Calibrator

**OMEGA™**

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**For Other Locations Visit [omega.com/worldwide](http://omega.com/worldwide)**

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**Using This Quick Start Manual**

Use this Quick Start Manual with your BB703 Blackbody Calibrator for quick installation and operation. For detailed information, refer to the User's Guide (Manual Number M3265).

- SECTION 1** .....General Information
- SECTION 2** ..... Installation
- SECTION 3** ..... Operation
- SECTION 4** .....RS232 Communication

**PRECAUTIONS:**

- Follow all safety precautions and operating instructions outlined in this manual.
- Never leave your calibrator unattended when in use.
- Keep out of reach of all children.
- Nothing should come in contact with the target plate. Even when the unit is off.
- Never place any object within 3 inches of the cavity opening when hot.
- Do not operate in flammable or explosive environments.
- Never operate with a power cord other than the one provided with your unit.
- Remove and or disconnect main power cord before attempting any maintenance or fuse replacement.
- Do not connect this unit to a non-grounded, non-polarized outlet or power source.
- This unit is intended for indoor use only. Avoid exposure to moisture.

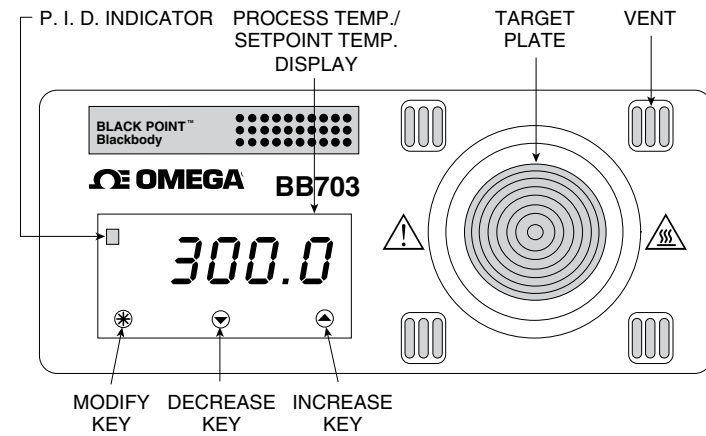
**NOTE:**

There are no user serviceable parts inside your unit. Attempting to repair or service your unit may void your warranty.

**SECTION 1: General Information**

The Model BB703 is a portable, rugged, bench-top, hot blackbody calibration source with a built-in precision PID digital controller. The calibrator is used to test and calibrate infrared pyrometers. The 28.6mm (1.125") diameter target plate has an emissivity of .95 and can be set to any temperature between ambient +11 to 400°C (ambient +20 to 752°F).

**Front/Back Panel Controls and Indicators**



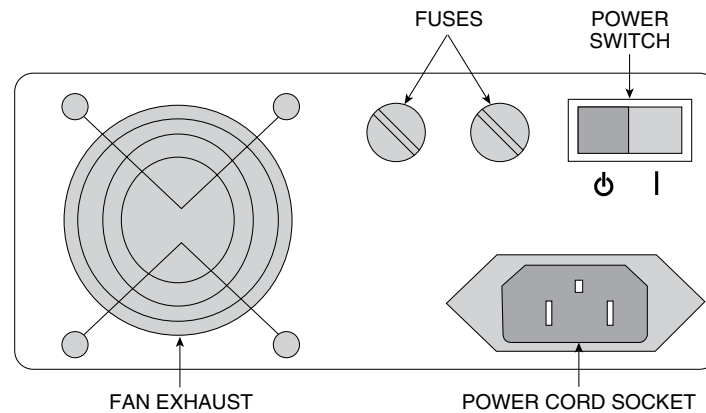
**Process Temperature/Setpoint Temperature Display**

In the default mode, the display will show the process temperature, i.e. the target plate temperature. When the modify key is held down, the setpoint temperature is displayed.

**P.I.D. Indicator:**

When this light is illuminated, the unit is heating up the target plate.

**Fuses**



Refer to User's Guide Section 5.3 for information on fuse replacement.

**Power Switch**

The power switch has two positions, "ON" and "STANDBY".



In the ON mode, the entire unit is powered up. The fan will only activate when the target plate is brought up to a high temperature for a period of about five minutes.

In the STANDBY mode, the unit is powered down except for the fan and fan thermostat. If the unit has been operated at high temperature and is then put into standby mode, the fan will still run until the target plate has cooled down to room temperature.

**SECTION 2: Installation**

**Power Connection**

Connect the power cord to the AC Power Input. If you have an International (230 VAC~, 50/60 Hz) model you must first connect the international style power cord to the proper connector used in your country or local area (connector not provided).

**CAUTION:**

Electrical connections and wiring should be performed only by suitably trained personnel.

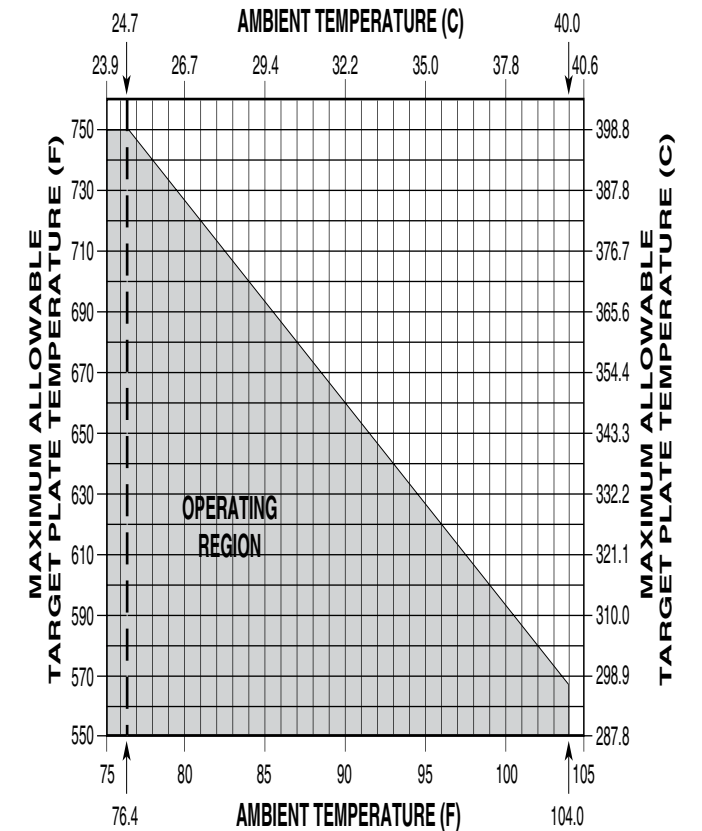
Be sure that the line voltage powering your unit does not go above or below 10% of the rated voltages specified above.

**Mounting**

Mount the unit on a bench, table top or shelf in a horizontal position and operate at least ten inches from any air obstructions to the front panel, rear panel, side or top of the unit. Operate the unit in an ambient environment between the specified 0 to 40°C (32 to 104°F).

**Ambient Temperature**

When operating the unit at ambient temperatures higher than 25°C (77°F), the user must not exceed the "Maximum Allowable Target Plate Temperature" shown along the y-axis in the following graph. Failure to adhere to these guidelines may cause a safety switch inside the unit to open the heater circuit. If the PID light is blinking or continuously on but there is no increase in target plate temperature, then the thermal safety switch has tripped. In this case refer to SECTION 3 - Overheat Reset Switch or Section 3.3 in the User's Guide.



Maximum Setpoint Temperature for Elevated Ambient Temperatures

**SECTION 3: Operation**

**Calibrating an IR Pyrometer**

In order to calibrate an IR Pyrometer, hold the pyrometer perpendicular to the target plate for optimal performance. The proper distance between the IR pyrometer and the target plate depends on the field of view of the pyrometer. If the pyrometer is too far away it will scan unwanted surfaces outside of the perimeter of the target plate. Holding the pyrometer too close could introduce undesirable heat to the IR detector of the pyrometer.

**WARNING:**

Target Plate Emissivity: 0.95\*

\*Reference to 8-14 microns wavelength bandwidth

The BB703's target plate can be set to very high temperatures. Exercise extreme caution when operating the unit. Keep hands and fingers away from the target plate area. Keep flammable products such as paper, plastics and clothing far from the BB703.