

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) 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.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

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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CL1600 Programmer Software

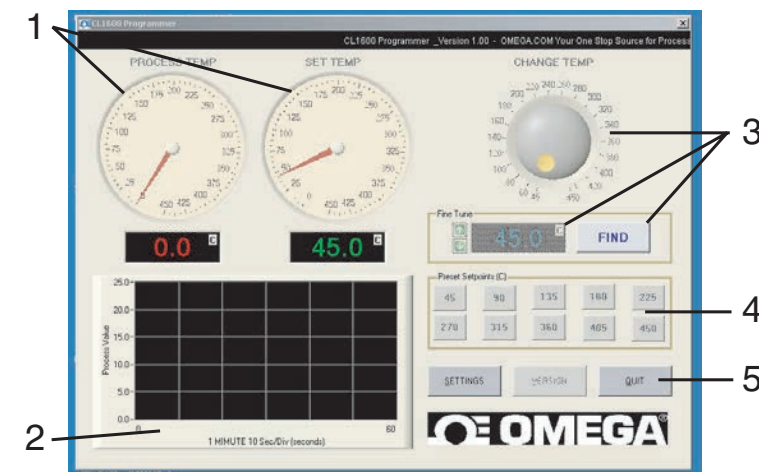
Overview

The CL1600 Surface Probe Tester ships from the factory with a copy of the Omega Programmer software. This is an easy to use software package, especially written for the CL1600. Only one instrument can run this software in one computer at a time.

Program Installation

It is advisable to have your IT Department install this software into your computer. Always back-up your system before attempting to install this or any other software package into your computer. Assuming you have backed up your computer files, run the install program. This program will run trouble free with Windows® 95, 98, ME, NT, 2000

Main Display



Main Screen

1. These are two analog gauges and corresponding digital display windows; one is red to indicate process temperature, the other is green to indicate set point temperature.
2. The graph tracks the set point and process values
3. The change temperature wheel will allow rough temperature setting between 45 to 450°C. Below it there is a fine tune up and down arrow that allows for fine tune setting in increments of 0.1 degrees. To the right there is the FIND button. Pressing this button will start tracking the set temperature on the controller.
4. The Preset Setpoint buttons allow you to change the setpoint temperature to pre-defined values ranging from 45 to 450°C.
5. The QUIT button to exit the application.

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Settings



Settings Screen

SOUND:

Will allow audible indications while monitoring.
Selections: ON, OFF

COM Port:

Selects the communication port to be used while monitoring.
Selections: COM1, COM2, COM3, or COM4
Default: COM1

DECIMAL POINT:

Selects the decimal point accuracy for the readouts.
Selections: ONE, NONE
Default: ONE

TEMPERATURE UNITS:

Selects units of temperature to display on readouts.
Selections: CELCIUS, FAHRENHEIT
Default: CELCIUS

SKIP LOGO INTRODUCTION:

Selecting this box will cancel the logo introduction when the program is activated from your desktop.

LOG TO FILE:

Selecting this box will allow data login. This command is inactive at this time.

CHART TIME BASE:

Allows user to set the horizontal time graph display.
Selections: 1 minute, 10 minutes, or 1 hour

AUTOMATIC SCALING:

Selecting this box will pre-select a vertical scale which varies according to temperature setting.
Un-selecting this box, will allow user to set up values to zoom-in closer to the desired temperature range.

QUICK START

For complete product manual:
www.omega.com/manuals/manualpdf/M4593.pdf



CL1600-120VAC CL1600-240VAC Surface Probe Tester

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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.
WARNING: These products are not designed for use in, and should not be used for, human applications.

Using This Quick Start Manual

Use this Quick Start Manual with your CL1600 Surface Probe Tester for easy installation and basic operation. For detailed information, refer to the User's Guide (Manual # M4593).

PRECAUTIONS:

To avoid personal injury please follow all safety precautions and operating instructions outlined in this section.

- Do not touch the hot plate or its surrounding components at any time; the temperature on the hot plate is the same as the temperature indicated on the controller display. Please be careful.
- The CL1600 can operate at very high temperatures, when testing and handling surface sensors, they too will get very hot at the tip end, so be sure to have a heat resistance plate to place the sensors after testing to allow them to cool down.
- Never turn the power off when the hot plate is set to temperatures higher than 100 degrees C. Damage to the electronic controller or to the heater could occur.
- Never leave your tester unattended when in use.
- Keep out of reach of all children.
- Never permanently place or attach any object within 6 inches of the plate.
- Do not operate in explosive environments.
- Never operate this unit with a power cord other than the one provided with this system.
- This instrument is intended for indoor use only.
- On initial use, or if this unit hasn't been powered for a period of 10 days, it is recommended to turn the unit on and allow to run at 50 degrees C for 1 hour, before using at higher settings.
- Components and heater lifetime can be shorted by continuous high temperature use.
- Never place any foreign materials on the surface of the hot plate, fluids can leak into the electronic cabinet and into the heater assembly causing risk of injury and permanent damage to the tester.

General Information

Omega's CL1600 Surface Probe Tester is a system designed to check and verify surface probe readings across a wide range in temperatures, 25 to 450°C (77 to 842°F). The CL1600 allows periodic in-house testing and provides preventive

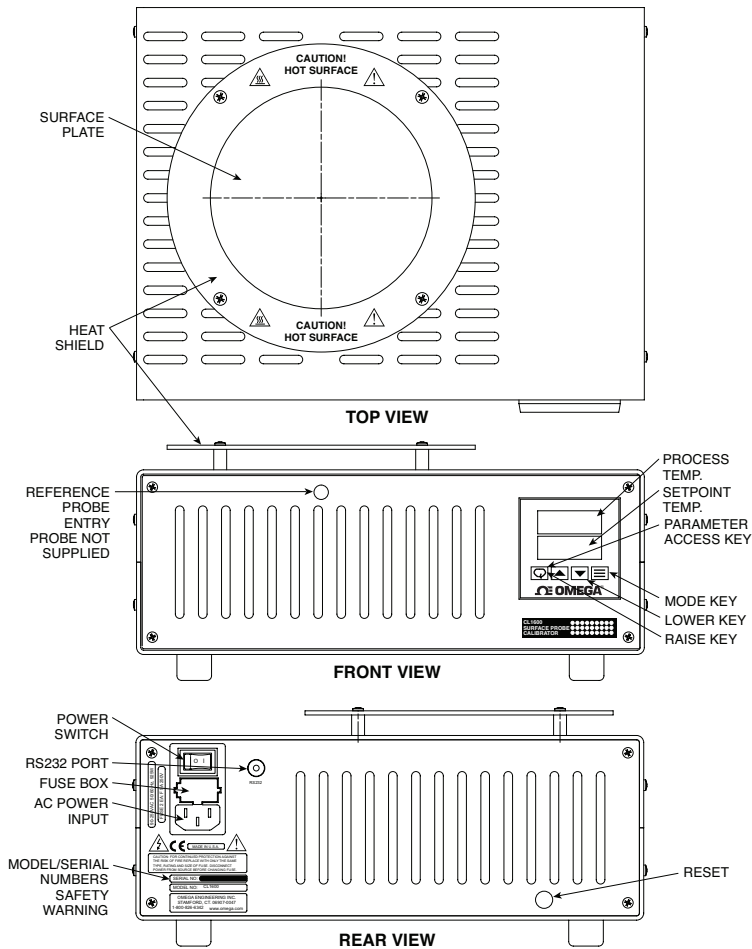
maintenance for all your surface sensors. A large diameter, mirror like, high grade Aluminum allow hotplate design, allows the most stability while maintaining quick, uniform heat-up on the entire system.

Mounting

Place this unit on a bench or table top in horizontal position. To operate, be sure to stay away from constantly open and close doors, air conditioning vents, adjacent computer fans, room air moving fans, open windows, etc.

Ambient Temperature

The CL1600 Probe Tester can generate any temperature within the specified temperature range when operated at ambient temperatures of 5 to 35°C (41 to 95°F).



Top, Front, & Rear Panel Controls and Indicators

Process Temperature

This field displays the current temperature of the target plate. (red display)

Setpoint Temperature

This field displays the desired calibration block temperature. Once the block reaches this desired temperature, both displays will read the same value. (green display).



Parameter/Access Key:

Press to scroll through menu parameters.



Raise Key: Used to increase values (hold for fast-step progression).



Lower Key: Used to decrease values (hold for fast-step progression).



Mode Key: This key is inactive.

Press to save settings and exit a menu level.

AC Power Input:

The customer connects the power cord to the AC Power Input. As a safety precaution, the power cord cannot be connected if the fuse compartment is open.

Reference Probe Port:

The reference probe port enables the user to monitor the target plate temperature with an external instrument.

Serial Port:

The female phone jack port allows the customer to make RS232 interface with the CL1600.

Changing the Temperature Setpoint

The internal parameters in the microprocessor have been set to be functional between 25 and 450°C (77 to 842°F).

Manual Temperature Change:

To change the temperature set point to any value within the allowable range, use the up or down arrow keys as needed, holding the corresponding key down will allow fast-step progression.

Automated Temperature Change

The CL1600 includes a user interface computer

program, which can be accessed and activated through the RS232 port. For a complete description of included features, please refer to section 2-5 in the User's Guide.

Process Temperature

This field displays the current temperature of the calibration block.

Setpoint Temperature

This field displays the desired calibration block temperature. Once the block reaches this desired temperature, both displays will read the same value.

Heat-Up/Cool-Down Cycle Transition Times

The following table shows the amount of time required to change the target plate temperature from one setpoint to another. The starting temperature is shown along the left side. The final temperature is shown along the top. All transition times are approximate.

FROM 25°C	TO					
	50°C	100°C	200°C	300°C	400°C	450°C
	2.0 min.	4.0 min.	2.0 min.	8.0 min.	11.0 min.	16.0 min.

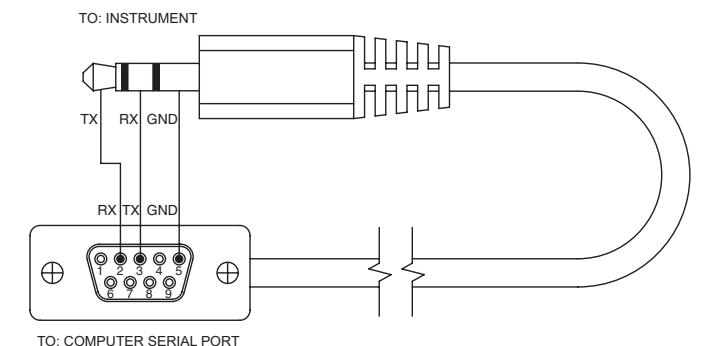
Cool Down Transition Time

Cool Down Transition Time

The CL1600 will take 90 minutes to cool down from 450°C. Be sure the unit has cooled down and it is safe to touch before handling the unit.

RS232 Communication

The RS232 communications port allows bi-directional data transfer via a three conductor cable consisting of signal ground, receive input, and transmit output. It is recommended that less than fifty feet of cable be used between the computer and this instrument. Note that multiple instruments cannot be tied to the same port in this configuration. The RS232 port is optically isolated to eliminate ground loop problems.



Pinout for A 9-pin PC Serial Port