Thermo
SCIENTIFIC

SUPER-NUOVA Hot Plates

OPERATION MANUAL AND PARTS LIST SERIES 1317 and 1337

Model #	Voltage	Description
HP131720-33	220-240	7x7
HP131725	120	7x7
HP131724	100	7x7
HP133730-33	220-240	10x10
HP133735	120	10x10
HP133734	100	10x10

LT1317X1 • 26/04/10

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Safety Information

Alert Signals

Warning
Warnings alert you to a possibility of personal injury.

Caution
Cautions alert you to a possibility of damage to the equipment.

Note
Notes alert you to pertinent facts and conditions.

Hot Surface
Hot surfaces alert you to a possibility of personal injury if you come in contact with a surface during use or for a period of time after use.

Note
The SUPER-NUOVA hot plates are not explosion proof. If explosion proof models are required, contact Customer Service at 1-800-553-0039 for more information.

Warning
Refer servicing to qualified personnel.

Your Thermo Scientific SUPER-NUOVA Hot Plate has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert signals throughout the manual.

Warning: These products should be used only under the operating conditions specified in the Operating Manual. Always use safe laboratory practices and do not leave the hotplate in operation while unattended as product funcionality or laboratory practice failures could occur that might lead to uncontrolled or excessive heating of the top surface. Safety procedures (including, but not limited to, unplugging when not in use) and response plans should be put in place to address the worst case possibility. If an over-temperature failure occurs, the top surface temperature could rise to the maximum temperature (300-540°C depending on your model's specification) and remain at that temperature indefinitely. Under these conditions, the material being heated on the surface of the hotplate could reach levels in excess of the maximum temperature.

This manual contains important operating and safety information. The user must carefully read and understand the contents of this manual prior to the use of this equipment.

Warnings

To avoid electrical shock, always:

1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.

2. Disconnect from the power supply prior to maintenance and servicing.

To avoid personal injury:

1. Do not use in the presence of flammable or combustible materials — fire or explosion may result. This device contains components which may ignite such materials. Not rated for use in hazardous atmospheres.

2. Use caution when heating volatile materials; top surface and element can reach the "Flash Point Temperature" of many chemicals. These hot plates are not explosion proof. Fire or explosion may result. Unit contains components which may ignite such materials.

3. Keep top surface clean. Use a non-abrasive cleaner. Alkali spills, hydrofluoric acid spills or phosphoric acid spills may damage top and lead to thermal failure. Unplug unit and remove spills promptly. Do not immerse unit for cleaning.

4. Replace the top immediately if damaged by etching, scratching or chipping. A damaged top can break in use.

5. Do not use metal foil on hot plate which may block air flow. Overheating will result.

6. Do not remove or modify grounded power plug. Use only properly grounded outlets to avoid shock hazard.

7. Use appropriate hand and eye protection when handling hazardous chemicals.

8. Gross weight of items placed on top of hot plates should not exceed 35 lbs. (15.9 kg.) on the 10” x 10” models and 25 lbs. (11.3 kg) on the 7” x 7” models.

9. “Caution: Hot Top. Avoid Contact.” The top plate of the unit can remain hot for some time after use. A “CAUTION - HOT TOP” light will remain on until top plate temperature cools to below 50°C.

10. Do not leave an active probe out of the fluid. This may cause uncontrolled heating of the fluid on the hot plate and unintentional boiling or an explosion could occur.

11. Localized heater element temperature can be significantly higher than the temperature indicated on the display. If flammable concentrations reach internal element, a fire could result.

12. Note that the exterior housing will be hot during and for a period of time after use.

13. Refer servicing to qualified personnel.

General Specifications

7" X 7"			
Model Number	**HP131725**	**HP131720-33**	**HP131724**
		Overall Dimensions in. (cm)	
Width	8.2” (20.8 cm)	8.2” (20.8 cm)	8.2” (20.8 cm)
Height	3.8” (9.7 cm)	3.8” (9.7 cm)	3.8” (9.7 cm)
Depth	13.0” (33.0 cm)	13.0” (33.0 cm)	13.0” (33.0 cm)
Weight lbs (kg)	11.0 lbs (5.0 kg)	11.0 lbs (5.0 kg)	11.0 lbs (5.0 kg)
		Top Plate	
Width	7.25” (18.4 cm)	7.25” (18.4 cm)	7.25” (18.4 cm)
Height	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)
Depth	7.25” (18.4 cm)	7.25” (18.4 cm)	7.25” (18.4 cm)
		Electrical Ratings	
Volts	120	220-240	100
Amps	5.5	2.9	6.6
Watts	660	690	665
Freq.	60	50/60	50/60
Phase	1	1	1
Max. Temp. °F (°C)	698°F (370°C)	698°F (370°C)	698°F (370°C)

10" X 10"			
Model Number	**HP133735**	**HP133730-33**	**HP133734**
		Overall Dimensions in. (cm)	
Width	11.3” (28.7 cm)	11.3” (28.7 cm)	11.3” (28.7 cm)
Height	4.0” (10.1 cm)	4.0” (10.1 cm)	4.0” (10.1 cm)
Depth	16.25 lbs (41.2 kg)	16.25 lbs (41.2 kg)	16.25 lbs (41.2 kg)
Weight lbs (kg)	13.75 lbs (6.2 kg)	13.75 lbs (6.2 kg)	13.75 lbs (6.2 kg)
		Top Plate	
Width	10.5” (26.7 cm)	10.5” (26.7 cm)	10.5” (26.7 cm)
Height	1.0" (2.5 cm)	1.0" (2.5 cm)	1.0" (2.5 cm)
Depth	10.5” (26.7 cm)	10.5” (26.7 cm)	10.5” (26.7 cm)
		Electrical Ratings	
Volts	120	220-240	100
Amps	10.0	5.6	10.9
Watts	1200	1345	1095
Freq.	60	50/60	50/60
Phase	1	1	1
Max. Temp. °F (°C)	698°F (370°C)	698°F (370°C)	698°F (370°C)

Heating Specifications

Top Plate Surface - Solid Ceramic

Temperature range: 1°C - 370°C (34°F - 698°F)*
** This hot plate does not cool. The minimum temperature is 1°C if used in a cold room below 1°C.*

	7" x 7"	**10" x 10"**
Heat-up time to within 5°C of maximum temperature (unloaded top plate).	5 minutes	7 minutes
Accuracy of the temperature display vs. the actual average temperature of a 2" diameter of setting area at the center of the top plate (setpoint 100°C unloaded).	± 10.0°C	± 10.0°C
- Temperature stability at the center of the top plate surface (@ 100°C unloaded).	± 1.0°C	± 1.0°C
Accuracy of remote probe at user selected calibration temperature after calibration procedure.	±0.5 typical	±0.5 typical
- Temperature stability using remote probe (500 ml of water in a 1000 ml flask at 70°C)	±0.5°C	±0.5°C

Environmental Conditions

Operating:	0°C to 27°C; 20% to 80% relative humidity, non-condensing. Installation category II (overvoltage) in accordance with IEC 664. Pollution degree 2 in accordance with IEC 664. Altitude Limit: 2,000 meters.
Storage:	-25°C to 65°C 10% to 85% relative humidity

Declaration of Conformity

(for 220-240 volt, -33 CE models only)

We hereby declare under our sole responsibility that this product conforms with the technical requirements of the following standards:

EMC:	EN 61000-3-2	Limits for harmonic current emissions
	EN 61000-3-3	Limits for voltage fluctuations and flicker
	EN 61326-1	Electrical equipment for measurement, control, and laboratory use; Part I: General Requirements
Safety:	EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use; Part I: General Requirements
	EN 61010-2-010	Part II: Particular requirements for laboratory equipment for the heating of materials

per the provisions of the Electromagnetic Compatibility Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, and per the provisions of the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

The authorized representative located within the European Community is:

Thermo Fisher Scientific
Robert-Bosch-Straße 1
63505 Langenselbold
Germany

Copies of the Declaration of Conformity are available upon request.

Introduction

Super Nuova Hot Plate

Please read all the information in this manual before operating the unit.

Your SUPER-NUOVA hot plate is a heating plate designed for laboratory procedures requiring precise control of temperature. Each SUPER-NUOVA model includes a digital display for monitoring temperature. The hot plate is capable of producing accurately controlled top plate temperatures from 1°C through 370°C. The temperature is controlled at the plate surface by an internal Type K thermocouple sensor, or the solution temperature may be controlled by utilizing the included 6" PFA encapsulated ungrounded stainless steel Type K thermocouple probe. A 6" or 10" general purpose stainless steel immersion probe, or a chemical-resistant 7" solid Teflon® immersion probe may be ordered separately. The 7" x 7" or 10" x 10" top plate on the SUPER-NUOVA units are solid ceramic, and are suitable for use with glass or metal vessels and sand baths.

Other features of the SUPER-NUOVA include a timer that can be used to shut off heating. Specific temperature setpoints may be set using the PRESETS buttons on the SUPER-NUOVA. An over temperature protection (OTP) circuit can be set using the adjustment on the front face of the unit. The OTP can be displayed in the service menus. See “Service and Calibration.”

An RS232 port is available on the SUPER-NUOVA to output elapsed time and temperature data. The data is printed once every second when the unit is powered on (displays on). See “RS232 Output” in the Operation section of this manual.

Your SUPER-NUOVA hot plate may be used for general purpose heating applications including sample preparation, heating reagents, melting paraffin, warming resinous chemicals, content analysis, solvent evaporations, digestions, media preparation and sterilization, titrations, sand baths, and microscale chemistry applications.

General Usage

Do not use this product for anything other than its intended usage.

Unpacking and Installation

Warning
Use a properly grounded electrical outlet of correct voltage and current handling capacity.

Do not remove or modify grounded power plug. Use only properly grounded outlets to avoid shock hazard. Not rated for use in hazardous atmospheres.

Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.

If explosion proof models are required, contact Customer Service at 1-800-553-0039 for more information.

Do not use in highly corrosive atmospheres; corrosive fumes and spills may damage top and internal components, creating shock hazard.

Unpacking

Remove your SUPER-NUOVA hot plate from the carton. Inspect to ensure that the unit has not been damaged during shipment. If the unit appears to have sustained shipping damage contact the distributor from whom you purchased this product or Customer Service at

North America: USA/Canada +1 866 984 3766 (866-9-THERMO) www.thermo.com
Europe: Austria +43 1 801 40 0, Belgium +32 2 482 30 30, France +33 2 2803 2180, Germany national toll free 08001-536 376, Germany international +49 6184 90 6940, Italy +39 02 02 95059 434-254-375, Netherlands +31 76 571 4440, Nordic/Baltic countries +358 9 329 100, Russia/CIS +7 (812) 703 42 15, Spain/Portugal +34 93 223 09 18, Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203
Asia: China +86 21 6865 4588 or +86 10 8419 3588, India toll free 1800 22 8374, India +91 22 6716 2200, Japan +81 45 453 9220, Other Asian countries +852 2885 4613
Countries not listed: +49 6184 90 6940 or +33 2 2803 2180

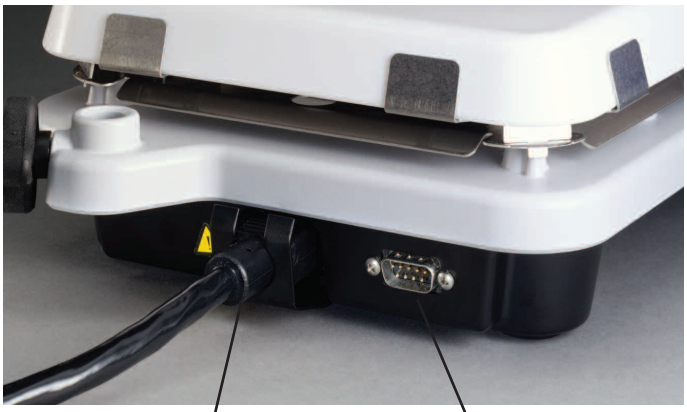
Check for remote probe and thumbscrew prior to discarding packaging.

The following items are included in the shipment:
SUPER-NUOVA hot plate
Remote Probe - TCX16
Knob - KBX106
Adapter (100V models only) - CEX42
Operator's Manual - LT1317X1

If any of these items are missing from the carton, contact Customer Service.

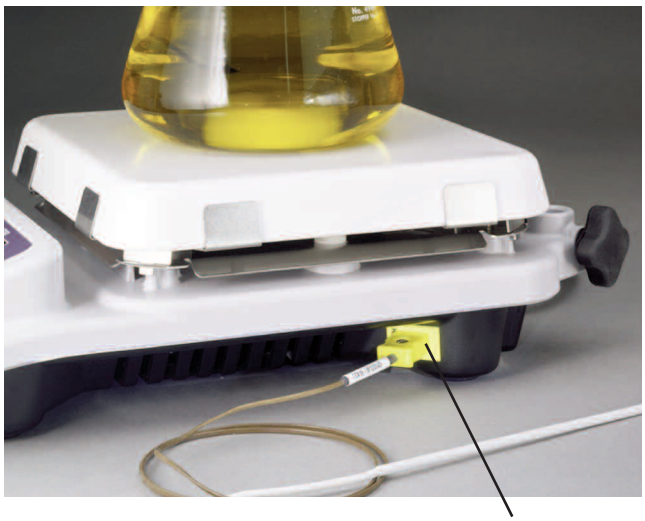
Installation

Set the unit on a flat stable surface at least 12" away from combustible materials, and plug the cordset into a properly grounded electrical outlet of correct voltage and current handling capacity.

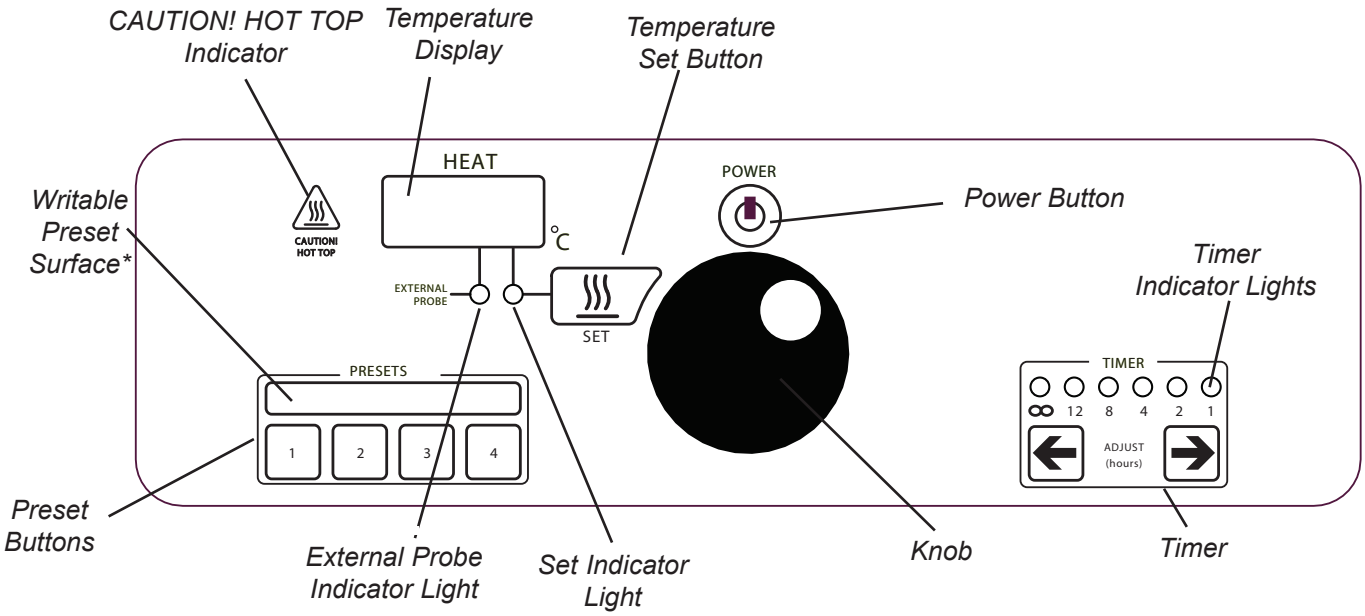


Cord retention clip

RS232 Port Connections



Remote Probe Connection



**Use only a No. 2 pencil to gently mark up writable preset surface.*

Principles of Operation

Each SUPER-NUOVA unit utilizes the latest microprocessor technology to deliver the most reliable, accurately controlled, ceramic top hot plate on the market.

Your SUPER-NUOVA hot plate has an electronic, closed-loop feedback control which will accurately maintain temperature setpoints from 1°C through 370°C.

Note
This hot plate does not cool. The minimum temperature is 1°C if used in a cold room at 1°C.

The SUPER-NUOVA units use a Type K thermocouple for measuring the top plate temperature, OTP and the external probe. Both top plate surface and OTP temperature are measured with independent analog circuits. This provides a significant increase in safety due to the redundancy of the circuits. It is possible to heat certain types of metal vessels and sandbaths on the SUPER-NUOVA without damaging the ceramic top.

The timer feature on the SUPER-NUOVA can be programmed to turn off the heating. See “Setting the Timer” section of this manual.

Operation

Warning
Use caution when heating volatile materials; top surface and element can reach the “Flash Point Temperature” of many chemicals. These hot plates are not explosion proof. Fire or explosion may result. Unit contains components which may ignite such materials.

Use appropriate hand and eye protection when handling hazardous chemicals.

“Caution: Hot Top. Avoid Contact.” The top plate of the unit can remain hot for some time after use. A “CAUTION - HOT TOP” light will remain on until top plate temperature cools to below 50°C.

Note
The knob does not function unless one of the “SET” buttons is pushed first to activate it.

Note
The temperature display will indicate the actual temperature of the top plate (1°-370°C). <u>This hot plate does not cool.</u> The minimum temperature is 1°C if used in a cold room at 1°C.

Note
Boiling times are dependent on solution volume and the surface area of the flask that is exposed to the hot plate. For example, when heating the same amount of solution in a 2L flask vs. a 1L flask, the solution will heat about 20% faster.

Power Button

The SUPER-NUOVA unit has a power button located on the front control panel. The unit may be powered on by pressing the power button or ANY button on the control panel. When the unit is turned on, there will be three beeps, the unit will initialize and then “OFF” will be displayed on the “HEAT” display screen until a temperature is entered. To turn off power to the unit, press the power button.

Setting the Temperature

The SUPER-NUOVA hot plate has an electronic closed-loop feedback control which will accurately maintain temperature setpoints from 1°C through 370°C. An unloaded hot plate will heat to maximum temperature in just 5 minutes. A “CAUTION HOT TOP” light on the front panel will illuminate whenever the top surface temperature exceeds 50°C. The temperature may be controlled either at the top plate by the internal Type K thermocouple sensor, or in the solution using an accessory ungrounded Type K thermocouple probe. If a probe is used, the “External Probe” light will be illuminated on the front panel. (A 6" or 10" stainless steel general purpose immersion probe [part numbers TC732X1 and TC732X2], or a chemical-resistant 7" Teflon immersion probe [part number TC727X2] are available by contacting Customer Service, 800-553-0039). The SUPER-NUOVA hot plate will accept any ungrounded Type K thermocouple probe, however the accuracy of probes other than those tested and specified may not reach the probe accuracy rating designated.

To set the temperature, press “SET” key located under the HEAT display. Use the knob in the center of the console to select a temperature. Turn the knob clockwise to increase the temperature or counterclockwise to decrease the temperature. When desired temperature has been reached, press the “SET” key under the HEAT display or wait a moment and the unit will beep indicating that it has been set. The SET indicator light will be lit when in SET mode.

Once the unit begins heating, the display will register ACTUAL temperature until the setpoint has been reached. To check your setpoint, press “SET” under the HEAT display and your setpoint will be displayed again for a few seconds. The display will automatically return to indicating actual temperature. Keep in mind, drafts and other temperature fluctuations will affect temperature accuracy.

Note
The top plate temperature will be higher than your solution temperature.

Note
The top plate temperature will not exceed the 370°C maximum.

Note
The display on the hot plate will indicated temperatures from 0 to 550°C when displaying temperature from a probe. If the actual temperature is below 0°, the display will still read 0. If the temperature is higher than 550°, the display will still read 550.

Controlling Solution Temperature Using External Probe

To control the solution temperature plug the included probe or an ungrounded Type K thermocouple probe into the probe receptacle located on the right side of the unit. Be careful to observe the correct polarity of the probe connector when inserting probe. Place the probe into the solution. The display will indicate the actual temperature of the solution as measured by the probe, and the probe indicator LED on the front panel will be illuminated. Keep in mind, drafts and other temperature fluctuations will affect temperature accuracy.

The external probe offers more exact temperature control than regulating the top plate by the internal sensor. If you need to maintain a precise setpoint it is recommend to use a probe to control the solution temperature instead of controlling by the top plate temperature.

When using a probe with the SUPER-NUOVA hot plate it is recommended that a clamp on a support rod be used to hold the probe in the solution.

To ensure accurate probe readings, as much of the probe sheath as possible should be immersed in the solution. Make sure the probe is immersed in the liquid and is not located in air or outside of the solution. If the probe is plugged into the hot plate, but is not in solution while the heat control is operating, the temperature display will continue to indicate an ambient temperature, and a probe out of solution error will occur. Because the set point cannot be reached the element will continue to supply heat to the top plate, and the maximum top plate temperature of 370°C may be reached. If the remote probe does not sense a temperature change in three minutes the unit will display a heating error and shut down. If more than three minutes is required, see “Service and Calibration/Probe Response.”

Using Preset Programs

The SUPER-NUOVA hot plate features the option of presetting 4 setpoints into its memory. To program a preset, adjust the heat features to your desired setpoints. Press and hold one of the presets and the unit will beep indicating those setpoints have been stored in memory. The presets will be held in memory, even if the unit is unplugged, until you choose to override it with another preset.

To activate one of the presets, quickly press the corresponding number and the heat feature will automatically adjust itself.

It may be helpful to set one of the presets at “OFF.” This way, the heating can be shut off quickly.

No. 2 pencil may be used to gently mark up writable preset surface.

Heating Metal Vessels and Sand Baths

Metal vessels and sand baths cannot be heated on most solid ceramic tops because of the tendency for the metal and the sand to reflect heat back into the top, eventually exceeding the maximum temperature rating for a ceramic top, which causes it to break. Because of its advanced electronic control, the SUPER-NUOVA is capable of precisely regulating the top plate temperature. Metal vessels and sand baths may be heated safely without the danger of the ceramic top breaking.

Setting the Timer

The timer function on the SUPER-NUOVA can be set to shut off heating. The timer can be set for a desired number of hours (1, 2, 4, 8 or 12) or for a non-specific period of time (Infinity symbol). To set the timer, use the right and left arrows until the light above the number corresponds to the desired time.

If at any time you wish to reset the timer, press the right or left arrow keys until the indicator light corresponds to your desired time. The unit will beep indicating it has been reset.

One minute before shutdown, the unit will beep three times and flash the 1 hour light. The unit will beep three more times to indicate it has timed out.

Power Interruption Protection

If an interruption in power supplied to the SUPER-NUOVA occurs, the unit will continue to operate normally, *as long as the interruption is no longer than 5 seconds.* If the interruption is longer than 5 seconds, the unit's power will be off once the facility power is restored.

RS232 Output

An RS232 port is available on the SUPER-NUOVA to output elapsed time and temperature data. The data is printed once every second when the unit is powered on (displays on). A comma separates each piece of data so that it may easily be imported into a spreadsheet as CSV (Comma Separated Values). The actual data stream sent every second consists of: Elapsed Time, Heating Setpoint, Actual Temperature. (Actual temperature refers to top plate temperature, or remote probe temperature if a probe is being used.)

Elapsed time is a 1 second counter that rolls over to zero again every 12 hours (43,200 seconds). The temperatures are given in degrees Celsius. When the unit is first powered on (displays turn on) a header will print indicating the columns.

In order to communicate with the SUPER-NUOVA, the computer connected to it needs to be set with the following parameters:

- BITS PER SECOND: 57,600
- DATA BITS: 8
- PARITY: NONE
- STOP BITS: 1
- FLOW CONTROL: NONE

Also, the first time a unit is plugged in, a paragraph of diagnostics information will be sent via RS232 and can be viewed with a terminal program. An example of the data that is sent is:

Software Version: 1.00
Stir Hours: 0
Heat Hours: 0
Calibration Set Point: 70
Calibration Offset: 0.0

Since there is no stirring feature on this unit, Stir Hours will remain at 0. Heat Hours are kept internally in 1 minute increments and displayed to the nearest hour. The Calibration Set Point is the temperature that the unit was calibrated at when calibration was performed. The Calibration Offset is the offset determined at the calibration temperature.

Using HyperTerminal w/RS232

With HyperTerminal you can store the RS232 output data of a SUPER-NUOVA on a PC. NOTE: Other terminal programs that capture RS232 data can be used as well.

In order to follow this procedure, you must have:

- Microsoft Windows 95, or greater with HyperTerminal installed (it is available from the Windows installation CD if not installed already).
- A PC that has an available 9 pin DB-9 RS232 connector.
- WHX18 (Accessory) – PC to hot plate communications cable – Connect it from the back of the hot plate to the communications port desired.

To Setup HyperTerminal:

1. From the START menu of Windows, select ACCESSORIES, COMMUNICATIONS, HYPERTERMINAL
2. Type in a name (example: SuperNuova) that you would like to refer to the connection by in the NAME box. You may also select an icon if you would like. Then select OK.
3. Select the RS232 port that you plan to use to connect to the hot plate (typically Com 1 or Com 2). Then select OK.
4. Under port settings, select the following:

   • BITS PER SECOND: 57,600

   • DATA BITS: 8

   • PARITY: NONE

   • STOP BITS: 1

   • FLOW CONTROL: NONE

Then Select OK.

5. Select FILE, SAVE AS, and save this setup wherever you would like it to be located (if you would like it on the Desktop, select Desktop) and select SAVE.

You will be able to run HyperTerminal with this setup in the future by just double-clicking the icon if you put it on the Desktop.

6. The setup of HyperTerminal is now complete, you can view the past data, but the program will only allow you to see the past 500 lines in its buffer. To capture data permanently follow the Capture with HyperTerminal Instructions below.

To Capture Data With HyperTerminal

1. Start HyperTerminal by double-clicking on the Icon created in the Setup Procedure above.

2. Select TRANSFER, CAPTURE TEXT. Select the Folder and File name you would like to use to refer back to this data (example: C:\SuperNuova\ Test1.txt). It is important to use the txt extension so that when you double-click on the file at a later date, it will automatically open in a text viewing program, or it use the csv extension and it can be opened in a spread-sheet such as Excel.

3. The hot plate can be operated and the data will be stored (it is still viewable on-screen) to the file that was setup in the previous step.

4. The data file must be closed at the end of the day (or the end of the capturing session) by selecting TRANSFER, CAPTURE TEXT, STOP. The data file must be closed before shutting down the computer also.

5. The program may be exited by selecting FILE, EXIT. Select YES to the question “ARE YOU SURE YOU WANT TO DISCONNECT NOW?”.

Service and Calibration

Service Menu

The Service Menu has many features that will allow a user to customize their unit.

A table of the features available in the Service Menu is given below. The features are given in order of their appearance in the Service Menu when rotating the center knob in a clockwise rotation. The Feature column is the name of the feature, the Display column is the designation of that feature as shown on the display of the unit, the Availability column gives which type of unit the feature is applicable (HP = hot plate, S = stirrer, and SP = stirring hot plate or stir plate), and the last column gives a brief description of the purpose of the feature.

Feature	Display	Availability	Brief Description
Over-temperature Set Point	OSP	HP, SP	Allow the user to see the setting of the Over Temperature Protection control.
Temperature Probe Calibration	CAL	HP, SP	Allows calibration of the temperature probe and associated circuitry.
Thermometer Mode	Prb	HP, SP	Allows the probe circuit to be used as a thermometer while still allowing independent use of the stirring control (if so equipped).
Timer Shutdown	End	HP, S, SP	When the timer elapses, a choice of what should turn off is selectable between heating, stirring, or both. Default is heating only on SP and HP; stirring only on S.
Probe Temperature Limit	PL	HP, SP	Allows the user to limit the maximum temperature of the heating set point when the probe is attached to 250° C or allow it to be unlimited. Default is 250° C.
Probe Response	Pr	HP, SP	Sets the minimum time required for the probe temperature to rise before signaling an error (E03). This is adjustable from 3 to 20 minutes in 1 minute increments. The default is 3 minutes.
Set Point Limit	SL	HP, SP	The maximum temperature can be limited to below the OSP, or can be unlimited. Unlimited can allow the OTP circuit to automatically disconnect relay power if the OSP setting is exceeded. The default is to be limited by the OSP.
Error Disable	Err	HP, S, SP	All errors except E12 (locked rotor) can be disabled if they are presenting problems with the operation of a unit. Care must be exercised when changing the default – All errors enabled.
Factory Defaults	dEF	HP, S, SP	All settings listed in this table will be reset to the default factory setting. Useful in troubleshooting.
Model Selection	SEL	HP, S, SP	Allows the unit to be configured as a hotplate, stirrer, or stirplate. Then size of unit is selectable – 7” or 10” unit. The default is 7” stirplate.
Flash Upgrade	FLS	HP, S, SP	If a new version of firmware is obtained, it can be loaded into the hotplate using this menu. All options will be set to factory defaults when complete.

Note
For most routines, the POWER key can be used to return to a previous menu if desired. Also, many of the options can be checked to see how the unit is configured by selecting the feature and observing which menu item is displayed. The unit will always display the current configuration first.

Over-temperature Set Point - OSP

This option is only available for units that have heating functionality. The Over-temperature Set Point is the set point of the independent temperature control. The purpose of the control is to limit the top temperature of the element independently of the standard heating control. This is helpful if there is a failure of the main control that would cause the top to heat excessively. The adjustment for this control is done at the front edge of the unit using a small straight blade screwdriver to make the adjustment. Typically the set point will be adjustable from 60 to 400°C in 10°C increments.

The Over-temperature Set Point can be viewed with this menu option. To do so, follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to OSP.

2. Press the SET key under the HEAT display to begin viewing the current setting. The set point may be changed with a screwdriver and the display will update accordingly.

3. When setting and/or viewing is complete, the POWER key can be pressed to return to the previous menu.

Temperature Probe Calibration - CAL

This section applies only to the calibration of the temperature probe system. The hot plate surface cannot be calibrated. This method is only applicable to units that have heating functionality.

There are two types of calibration available. The choice of which calibration to choose will depend on the equipment that is available. Calibration for either method is done at a single user selectable temperature. Therefore the calibration will be most accurate at that temperature. Note: The unit has not been calibrated at any temperature from the factory. If you wish to have your SUPER-NUOVA calibrated by the manufacturer, contact customer service at 1-800-553-0039 for further information.

The first and preferred method of calibration is **OiL**, also known as Oil Bath Method. It is preferred due to the relative ease and speed at which the procedure can be performed. This method will require the customer to have a precision bath with temperature readout. The bath could be oil, water, salt, or other fluid or material as long as the temperature is stable and the readout is accurate. A thermocouple simulator may also be used, but this will not correct for error in the probe.

The second type of calibration is **SyS**, also known as System Calibration. This method can be used when an independent temperature source such as a bath is not available. The hot plate itself is used to supply the bath. Although an independent and accurate method of determining temperature is still required. This measuring system could be as simple as an accurate thermometer. See the “Accessories” section for N.I.S.T. traceable thermometers available from Thermo Scientific. The bath chosen should be as similar to the user’s typical load as possible. For example, if the load is 150ml of aqueous solution in a 500ml Erlenmeyer flask, then the load during calibration should be the same.

Oil Bath Method of Calibration

1. With the probe connected to the unit, insert the probe connected to the unit to be calibrated into a bath that has stabilized at the desired calibration temperature. Allow sufficient time for the probe to stabilize.

2. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

3. Rotate the center knob dial one position clockwise and the display will read **CAL**. This is the calibration menu. Press the SET key under the HEAT display. The display will now read **OiL**. Press the SET key under the HEAT display again to accept, and the display will change to **no**. Rotate the center knob one position to change the display to **yES** and press the SET key under the HEAT display again.

4. The HEAT display will show the temperature that is currently measured at the probe. If the display shows "**---**" then the probe is not connected to the unit and must be connected before continuing. The SET indicator under the HEAT display will be flashing to let the user know that the display is ready to be adjusted using the center knob.

5. Adjust the HEAT display using the center knob until it matches the independent probe. When this is complete, press the SET key under the HEAT display. The unit will turn OFF automatically. Calibration of the probe system is now complete.

System Method of Calibration

1. Select an independent temperature probe to be placed in the load, along with the unit temperature probe before continuing with calibration. Select the load to be calibrated, and place on top of the hot plate. Make sure to have probe plugged into the unit and placed in the load. Also ensure that the OTP adjustment on the front edge of the unit is set high enough to allow the load to achieve the calibration temperature.

2. With the unit plugged into the appropriate power, but not turned on yet (display should be blank, unless the Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

3. Rotate the center knob dial one position clockwise and the display will read **CAL**. This is the calibration menu. Press the SET key under the HEAT display. The display will now read **OiL**. Rotate the center knob one position and the display will read **SyS**. Press the SET key under the HEAT display again to accept, and the display will change to no. Rotate the center knob one position to change the display to **yES** and press the SET key under the HEAT display again.

4. The SET indicator under the HEAT display will be lit, and the display will show the temperature at which the unit was last calibrated. The calibration temperature may be adjusted by using the center knob. Temperature can only be selected in whole degrees Celsius. The adjustable range is 1 – 370°C. When the adjustment is completed, press the SET key under the HEAT display to approve the selection.

5. If the unit undergoing calibration does not have stirring capability then skip to the next step. The SET indicator under the STIR display will be lit,

and the display(s) will show the stirring control set point. The speed may be adjusted by using the center knob. The adjustable range is 50 – 999, and also OFF (zero). When the adjustment is completed, press the SET key under the STIR display to approve the selection.

6. The HEAT display will now show the temperature that is currently measured at the probe. If the display shows "**---**" then the probe is not connected to the unit and must be connected before continuing. The unit will begin heating to the setpoint. The HEAT and STIR displays will flash until the temperature is within ±2°C of the chosen setpoint.

7. Once the temperature is within ±2°C of the set point, a beep will sound and the SET indicator under the HEAT display will begin flashing to let the user know that the display is ready to be adjusted using the center knob. Although it may be desirable to wait longer to allow the temperature of the unit and fluid to stabilize further.

8. Adjust the HEAT display using the center knob to make it match the independent probe. When this is complete, press the SET key under the HEAT display. The unit will turn OFF automatically. Calibration of the probe system is now complete.

Thermometer Mode - Prb

This option is only available for units with heating functionality. The Thermometer Mode can be used to display temperature using the probe without the heating control on. NOTE: Heating will suspend while in thermometer mode.

To enter Thermometer Mode follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may

remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads Prb. Press the SET key under the HEAT display to accept, and the display will change to OFF. Rotate the center knob one position to change the display to **On** and press the SET key under the HEAT display again.

3. The unit will re-start and when done initializing, will now be in Thermometer Mode. The SET key under the HEAT display will have no affect while in Thermometer Mode.

4. To return to normal operation, press the POWER key, and the unit will turn OFF. When the unit is turned back ON, it will be back to normal operation.

Timer Shutdown - End

This feature is available for all units, but not all sub-menu options will be applicable. The purpose of this feature is to control what is turned off when the timer elapses. The default is Heating off for hot plates and stir plates, and Stirring off for stirrers.

To modify/view the Timer Shutdown follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads **End**. Press the SET key under either display to accept, and the display will change to H (Heating off), H S (Heating and Stirring Off), or S (Stirring Off). Rotate the center knob to change

the display to the method of choice and press the SET key under either display again.

3. The unit will return to the previous menu. Select another feature to change, or press the POWER key again to return to the off mode.

Probe Temperature Limit - PL

This feature is available for units with heating functionality and is only applicable when using a probe. The purpose of this feature is to limit the heating set point to 250°C or allow it to be unlimited only when the probe is plugged in. The reason a user may want to limit the set point when using a probe is to protect the Teflon coated probes from the damage of over-heating. If that is not a concern or a different material of probe is chosen, then unlimited is a safe choice.

To modify/view the Probe Temperature Limit follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it ON (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads PL. Press the SET key under the HEAT display to accept, and the display will change to 250 (250°C limit), or UL (unlimited). Rotate the center knob to change the display to the method of choice and press the SET key under the HEAT display again.

3. The unit will return to the previous menu. Select another feature to change, or press the POWER key again to return to the off mode.

Probe Response - Pr

This feature is available for units with heating functionality and is only applicable when using a probe. The purpose of this feature is to select the minimum time required for a temperature change to be detected before signaling a Probe Out of Solution error (E03). A choice between 3 and 20 minutes in 1 minute increments is possible. The default is 3 minutes, but if a large load is placed on the top, the time may need to be extended to avoid nuisance E03 errors.

To modify/view the Probe Response follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads Pr. Press the SET key under the HEAT display to accept, and the display will change to the current time chosen. Rotate the center knob to change the display and press the SET key under the HEAT display again.

3. The unit will return to the previous menu. Select another feature to change, or press the POWER key again to return to the off mode.

Set Point Limit - SL

This feature is available for units with heating functionality. The purpose of this feature is to select whether the maximum set point will be limited based on the Over-temperature Set Point (**OSP**), or unlimited (**UL**). If it is limited by **OSP** then the maximum set point that can be chosen will be based on the setting of the OTP control on the front edge of the unit. If a heating set point of 250°C is desired, the OTP must be set at least 50°C higher.

Therefore the **OSP** setting would need to be at least 300°C. The probe circuit is also affected by the selection of OSP. Selection of **UL** would allow the set point to be unlimited and would not be affected by **OSP** setting.

To modify/view the Set Point Limit follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads **SL**. Press the SET key under the HEAT display to accept, and the display will change to either **OSP** or **UL**. Rotate the center knob to change the display and press the SET key under the HEAT display again.

3. The unit will return to the previous menu. Select another feature to change, or press the POWER key again to return to the off mode.

Error Disable - Err

This feature is available for all units, but not all sub-menu options will be applicable since some errors relate to heating or stirring only. The purpose of this feature is to enable or disable a particular error from being detected and displayed. All errors except E12 (locked rotor – stirring control) are able to be disabled. A general option is also available to re-enable all errors at once. When disabling errors though they must be done one at a time.

To modify/view the Error Disable menu follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds

a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads **Err**. Press the SET key under the display to accept, and the display will change to **CLr** (re-enable all disabled errors). Rotate the center knob to change the display to the error number of choice and press the SET key under either display again.

3. The display will now indicate either **On** (the error detection is enabled), or **OFF** (the error detection is disabled). Rotate the center knob to change the display if desired and press the SET key under the display.

4. The unit will return to the previous menu. Select another error to change, or press the POWER key to return to the root Service Menu. Pressing the POWER key one more time will turn the unit off.

Factory Defaults - deF

This feature is available for all units and is designed to restore the control to the default factory settings. NOTE: The Model Selection feature will need to be re-visited after resetting the factory defaults (see Model Selection below).

To reset to the Factory Defaults follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads **dEF**. Press the SET key to accept, and the display will change to **no**. Rotate the center knob

to change the display to **yES** and press the SET key.

3. The unit has now been returned to the factory default settings. The unit will return to the previous menu. Select another feature to change, or press the POWER key again to return to the off mode.

Model Selection - SEL

This feature is available for all units to select the type and size, but should only be used by the factory.

To modify/view the Model Selection follow the instructions given below:

1. Plug the unit into the appropriate power, but do not turn it on (display should be blank, unless Hot Top Warning System is indicating a hot surface), enter the Service Menu by pressing and holding the POWER key. After about 3 seconds a single beep will be heard and you may remove your finger from the POWER key. The display will change to **OSP**.

2. Rotate the center knob until the display reads **SEL**. Press the SET key under the display to accept, and the display will change to **SP** (Stir Plate), **HP** (Hot Plate), or **S** (Stirrer). Rotate the center knob to change the display to the type of unit required and press the SET key under the display again.

3. The display will now change to **7** (7” top), or **10** (10” top). Rotate the center knob to change the display to the size of unit required and press the SET key under the display again.

4. The unit will return to the root Service Menu. Select another feature to change, or press the POWER key again to return to the off mode.

Flash Upgrade - FLS

This feature is available for all units and is designed to allow a firmware upgrade via RS232 port to be applied without exchanging controls. NOTE: Special software and an RS232 cable are required to complete this procedure. Complete instruction will be included with the firmware upgrade.

General Cleaning Instructions

Keep top surface clean. Use a non-abrasive cleaner. Alkali spills, hydrofluoric acid spills or phosphoric acid spills may damage top and lead to thermal failure. Unplug unit and remove spills promptly. Do not immerse unit for cleaning. Wipe exterior housing with lightly dampened cloth containing mild soap solution.

Troubleshooting

Error Codes

Errors E01 through E07 are heating errors. Error Handler will lock out heating functions if heating error is detected. Stirring functionality is unaffected. If the condition that caused the error is no longer present, pressing the POWER button or unplugging the unit will clear Errors E01-E07.

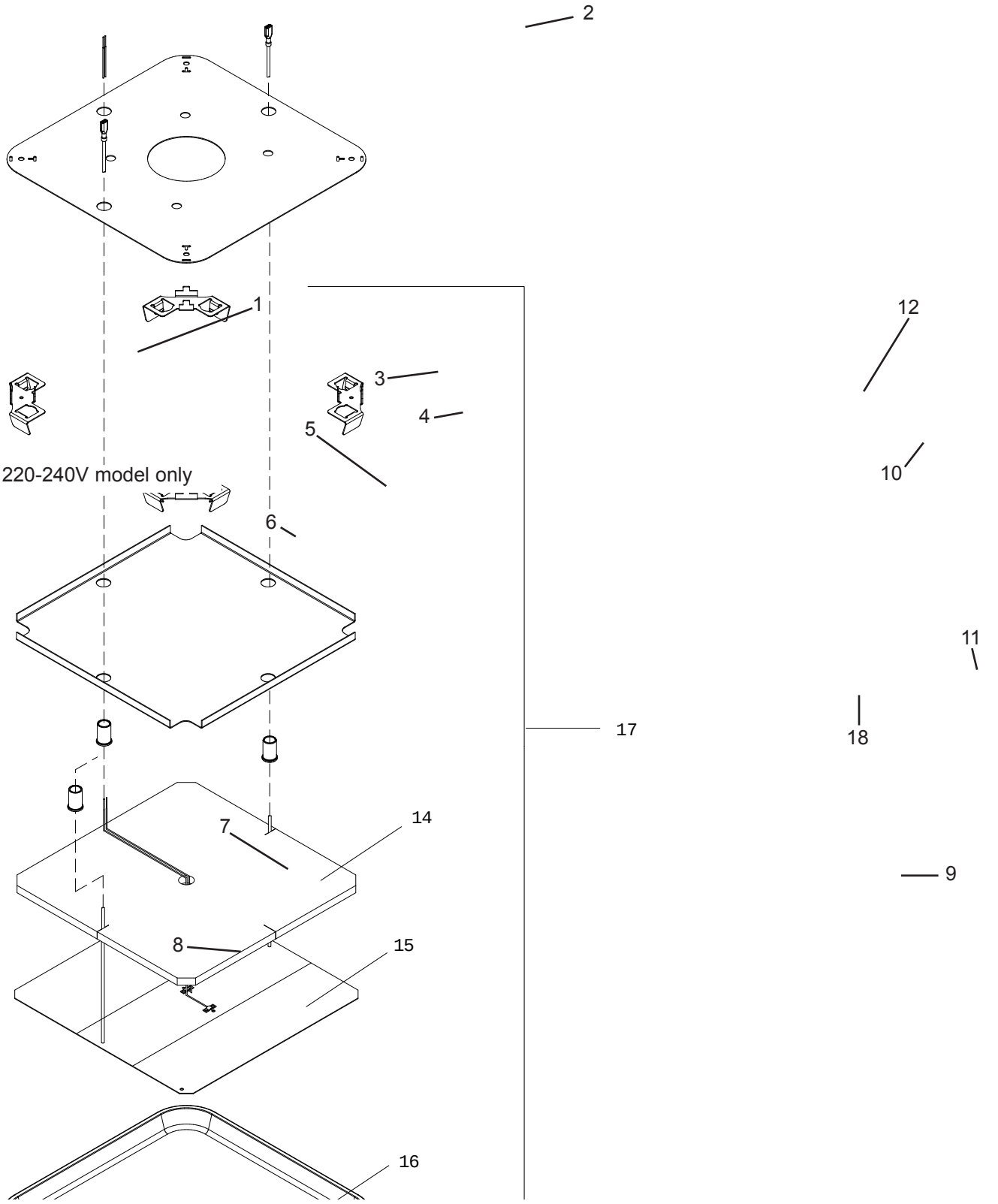
Displayed Message	Intended to Detect	Cause	Solution
E01	Internal thermocouple out of range.	Internal thermocouple not connected. Thermocouple open. Thermocouple connected backwards (reversed polarity).	Ensure proper connection and polarity of thermocouple. Replace thermocouple (attached to element). Ensure proper connection and polarity of thermocouple.
E02	Excessive top heat-up time.	Internal thermocouple short circuit. Failure in Internal thermocouple. Failure in Element. Failure in optocoupler/triac circuit.	Remove short. Replace thermocouple (attached to element). Replace Element. Replace Control Board.
E03	External Probe left out of solution.	External Probe left out of solution. OTP potentiometer set too low. User selected timeout (Probe Response) too short for current load. External probe connected backwards.	Place external probe into solution. Increase OTP setting. Increase external probe timeout (Probe Response). Correct orientation of external probe.
E04	OTP thermocouple out of range.	OTP Circuit failure.	Replace Control Board.
E05	OTP potentiometer out of range.	OTP Circuit failure.	Replace Control Board.

Displayed Message	Intended to Detect	Cause	Solution
E06	OTP detected over temperature condition, relay has opened, power to the element removed.	OTP thermocouple temperature is above the OTP potentiometer setting. OTP thermocouple temperature is above the OTP potentiometer setting. OTP thermocouple not connected.	Increase OTP potentiometer setting. Reduce Hotplate set point. Ensure proper connection and polarity of OTP thermocouple.
E07	Large difference between Internal thermocouple and OTP thermocouple.	Internal or OTP thermocouple not connected. Internal or OTP thermocouple short circuit. Internal or OTP thermocouple connected backwards (reversed polarity).	Ensure proper connection and polarity of affected thermocouple. Remove short of affected thermocouple. Ensure proper connection and polarity of affected thermocouple.
E21	Corrupted data flash memory.	Checksum failure during data flash recovery.	Contact Customer Service or see footnote below.
Blank Display with continuous beep.	Corrupted program memory.	Checksum failure during unit initialization.	Replace Control Board. Reprogram Control Board.

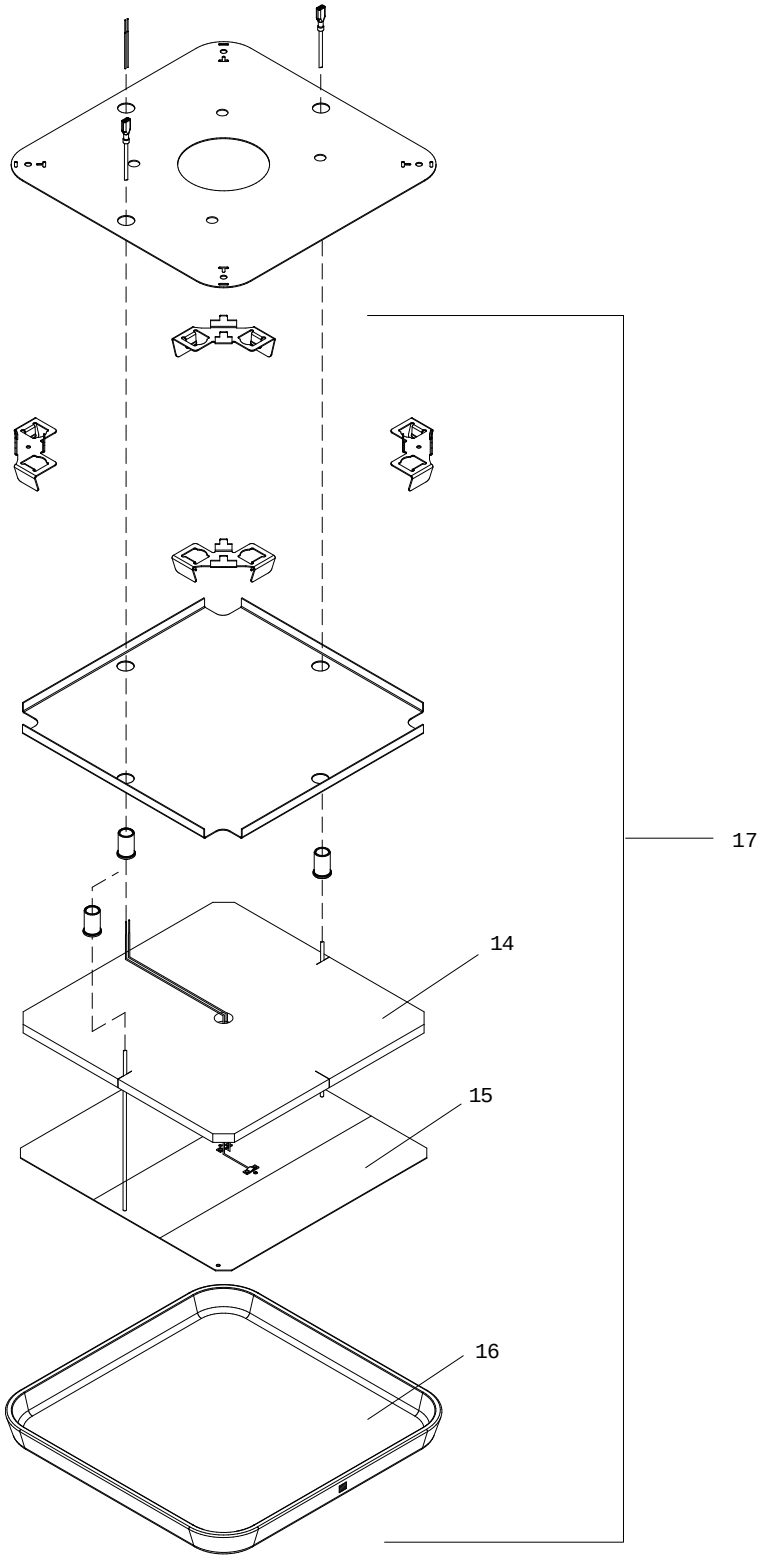
Error E21 is a data flash memory error and can be corrected by following the steps below:

- Press any key to clear the error, this re-initializes data flash memory.
- At the ‘SEL’ menu, press the SET HEAT or SET STIR key.
- Using the encoder knob, select your unit’s model type (if your unit model number starts with SP, select ‘ SP’, etc) and press either the SET HEAT or SET STIR key.
- Using the encoder knob, select your unit’s top size (either 7 or 10 inch) and press either the SET HEAT or SET STIR key.
- Press the POWER key to exit the special functions menu.
- Note that it may be necessary to recalibrate the unit and/or re-enter custom settings as the unit has been reset to factory default.
- The unit can now be started normally using the POWER key.

Exploded Views

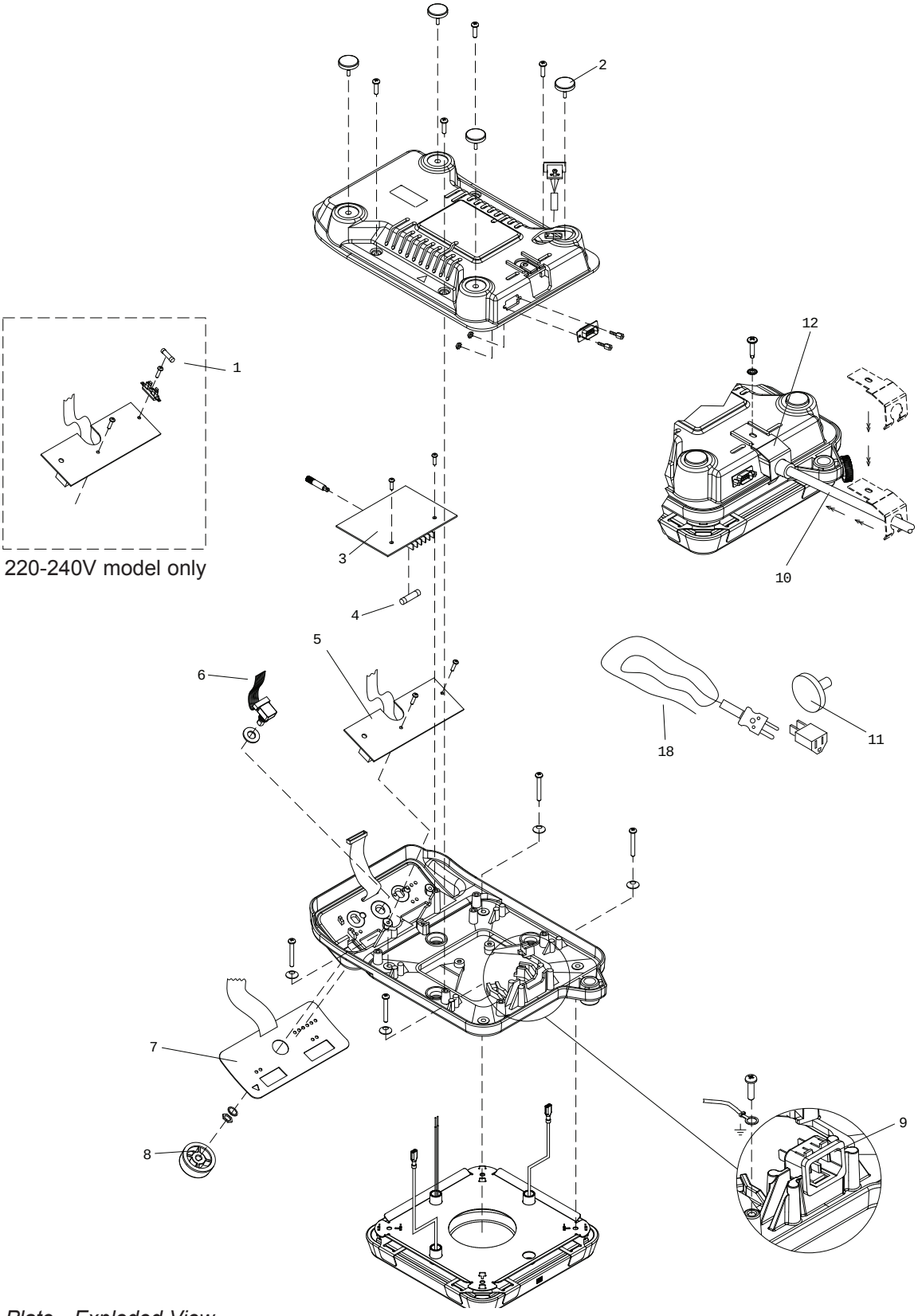


10x10 Hot Plate - Exploded View

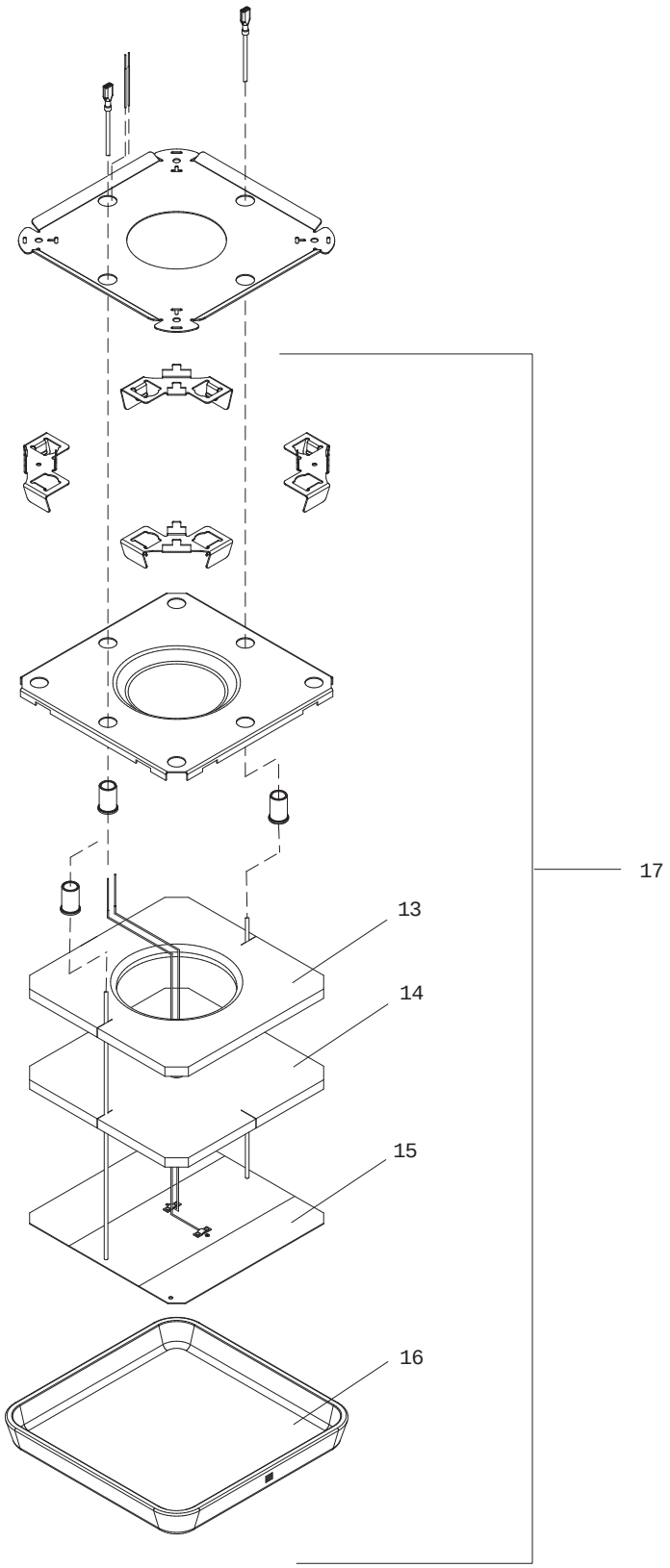


10x10 Hot Plate - Top Assembly

EXPLODED VIEWS



7x7 Hot Plate - Exploded View

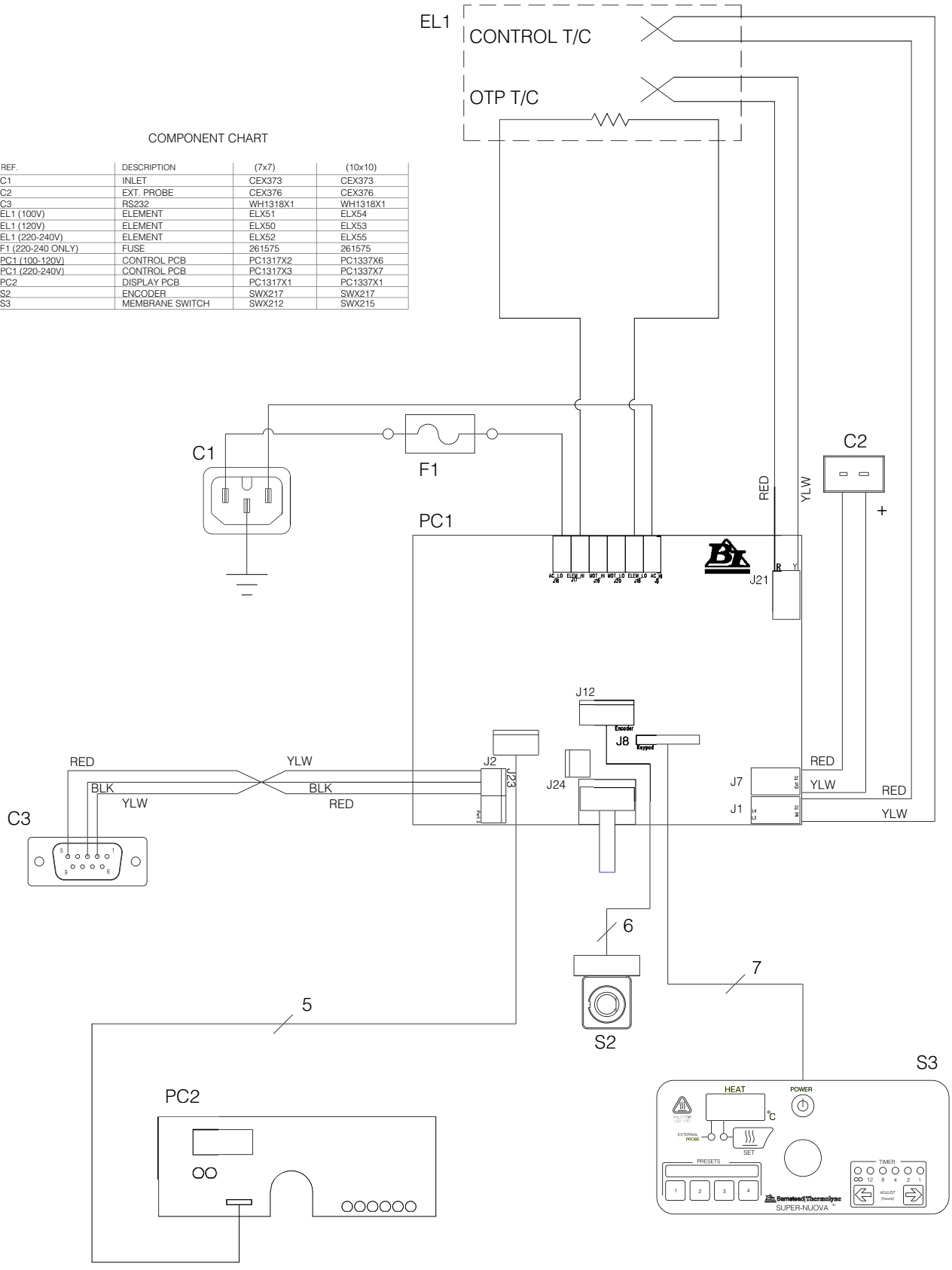


7x7 Hot Plate - Top Assembly

Wiring Diagram

COMPONENT CHART

REF.	DESCRIPTION	(7x7)	(10x10)
C1	INLET	CEX373	CEX373
C2	EXT. PROBE	CEX376	CEX376
C3	RS232	WH1318X1	WH1318X1
EL1 (100V)	ELEMENT	ELX51	ELX54
EL1 (120V)	ELEMENT	ELX50	ELX53
EL1 (220-240V)	ELEMENT	ELX52	ELX55
F1 (220-240 ONLY)	FUSE	261575	261575
PC1 (100-120V)	CONTROL PCB	PC1317X2	PC1337X6
PC1 (220-240V)	CONTROL PCB	PC1317X3	PC1337X7
PC2	DISPLAY PCB	PC1317X1	PC1337X1
S2	ENCODER	SWX217	SWX217
S3	MEMBRANE SWITCH	SWX212	SWX215



Replacement Parts List

To insure your safety and for proper operation, the ceramic top plates for hot plates and stir plates are only sold as complete assemblies. This assembly includes the ceramic top, element, thermocouple, insulation, baffle plate, and 2 ceramic top holders. **We recommend not replacing individual components of the top plate.**

Key	7x7 Part No.	10x10 Part No.	Description
1	261575	261575	PC Board Fuse - 220-240V
2	FTX34	FTX34	Foot (4)
3	PC1317X2	PC1337X2	Control Board - 100V, 120V
3	PC1317X3	PC1337X3	Control Board - 220-240V
4	266058	266058	PC Board Fuse - 100V, 120V
4	261575	261575	PC Board Fuse - 220-240V
5	PC1317X1	PC1337X1	Display Board
6	SWX217	SWX217	Encoder
7	SWX212	SWX215	Membrane Switch
8	KBX105	KBX105	Knob
9	CEX373	CEX373	Power Entry Module
10	CRX106	CRX106	Cord Set - 100 V, 120V
10	CRX104	CRX104	Cord Set - 220-240V
11	KBX106	KBX106	Knob
12	BC1313X1	BC1313X1	Retaining Clip - 100V, 120V
12	BC1313X2	BC1313X2	Retaining Clip - 220-240V
13	JNX35	------	Lower Insulation
14	JNX36	JNX36	Upper Insulation
15	ELX50	ELX53	Heating Element - 120V - w/thermocouple
15	ELX51	ELX54	Heating Element - 100V - w/thermocouple
15	ELX52	ELX55	Heating Element - 220-240V - w/thermocouple
16	710-0117	719-0073	Ceramic Top
17	EL1318X1	EL1338X1	Hot Plate Top Assembly - 120V
17	EL1318X2	EL1338X2	Hot Plate Top Assembly - 100V
17	EL1318X3	EL1338X3	Hot Plate Top Assembly - 220-240V
18	TCX16	TCX16	6” Chemically resistant stainless steel probe with 8” PFA encapsulation, LSA Type K

Accessories

Part No.	Description
TC732X1	General purpose immersion probe with 6” (15.24 cm) stainless steel sheath
TC732X2	General purpose immersion probe with 10” (25.40 cm) stainless steel sheath
TC727X2	Chemically-resistant immersion probe with 7” (17.78 cm) Teflon sheath
711S	Non-Mercury Thermometer 20 to 100°C Range - 76 mm immersion
647-1S	Non-Mercury Thermometer 0 to 110°C Range - 35 mm immersion
1007-3BLS	Non-Mercury Thermometer -1 to 201°C Range - 76 mm immersion
615-3SC	Mercury Teflon Coated Thermometer -10 to 200°C Range - 76 mm immersion
260CW-3BLS	Non-Mercury Thermometer -10°C to 260°C Range - 76 mm immersion
ERT605	Waterproof Digital Thermometer -50 to 280°C
7077	Thermometer Clamp
7068	90° Clamp Holder
1000-2	12” Aluminum Rod
7078	Large Clamp
7079	Small Clamp (up to 1/2”)
WHX18	RS232 Cable

NOTE: Thermometers are N.I.S.T. traceable, however, they do not come with N.I.S.T. certificates. To obtain a certificate before ordering, call Customer Service at 1-800-553-0039.

Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the Thermo Scientific dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at:

North America: USA/Canada +1 866 984 3766 (866-9-THERMO) www.thermo.com
Europe: Austria +43 1 801 40 0, Belgium +32 2 482 30 30, France +33 2 2803 2180, Germany national toll free 08001-536 376, Germany international +49 6184 90 6940, Italy +39 02 02 95059 434-254-375, Netherlands +31 76 571 4440, Nordic/Baltic countries +358 9 329 100, Russia/CIS +7 (812) 703 42 15, Spain/Portugal +34 93 223 09 18, Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203
Asia: China +86 21 6865 4588 or +86 10 8419 3588, India toll free 1800 22 8374, India +91 22 6716 2200, Japan +81 45 453 9220,
Other Asian countries +852 2885 4613 Countries not listed: +49 6184 90 6940 or +33 2 2803 2180

Prior to returning any materials, please contact our Customer Service Department for a “Return Materials Authorization” number (RMA). Material returned without an RMA number will be refused.

Two Year Limited Warranty

This Thermo Scientific product is warranted to be free of defects in materials and workmanship for two (2) years from the first to occur of (i) the date the product is sold by the manufacturer or (ii) the date the product is purchased by the original retail customer (the “Commencement Date”). Except as expressly stated above, the MANUFACTURER MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of the manufacturer must perform all warranty inspections. In the event of a defect covered by the warranty, we shall, as our sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold within the continental United States or Canada, the manufacturer shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

The warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than the manufacturer or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of Thermo Scientific products.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, the manufacturer will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to the factory, it shall be sent prepaid and a prior written authorization from the manufacturer assigning a Return Materials Number to the product or part shall be obtained.

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

For the name of the authorized Thermo Scientific product dealer nearest you or any additional information, contact us:
North America: USA/Canada +1 866 984 3766 (866-9-THERMO) www.thermo.com
Europe: Austria +43 1 801 40 0, Belgium +32 2 482 30 30, France +33 2 2803 2180, Germany national toll free 08001-536 376, Germany international +49 6184 90 6940, Italy +39 02 02 95059 434-254-375, Netherlands +31 76 571 4440, Nordic/Baltic countries +358 9 329 100, Russia/CIS +7 (812) 703 42 15, Spain/Portugal +34 93 223 09 18, Switzerland +41 44 454 12 12, UK/Ireland +44 870 609 9203
Asia: China +86 21 6865 4588 or +86 10 8419 3588, India toll free 1800 22 8374, India +91 22 6716 2200, Japan +81 45 453 9220,
Other Asian countries +852 2885 4613 **Countries not listed**: +49 6184 90 6940 or +33 2 2803 2180