LAB SOCIETY™

Digital Temperature Controller & Monitor
(LS-TCM-1, LS-TCM-1EU)

720.684.6857
WWW.LABSOCIETY.COM

4699 Nautilus CT. #503
Boulder, CO 80301

Service

LAB SOCIETY maintains its own service facility and technical staff to service all parts of the controller. For service, contact:

LAB SOCIETY, Inc.

4699 Nautilus CT. #503

Boulder, Colorado, 80301, USA

Phone # (720) 684-6857

Web site: www.LabSociety.com

E-Mail: Help@LabSociety.com

You've purchased the most versatile monitor available to the research community. (Be aware that we manufacture a 120v and 240v-EU model, make sure you have the correct model for you location and power needs.) We're confident it can monitor ANY heating situation you'll ever encounter. If the information in this User's Manual isn't adequate to make your application work, call our technical support department for assistance.

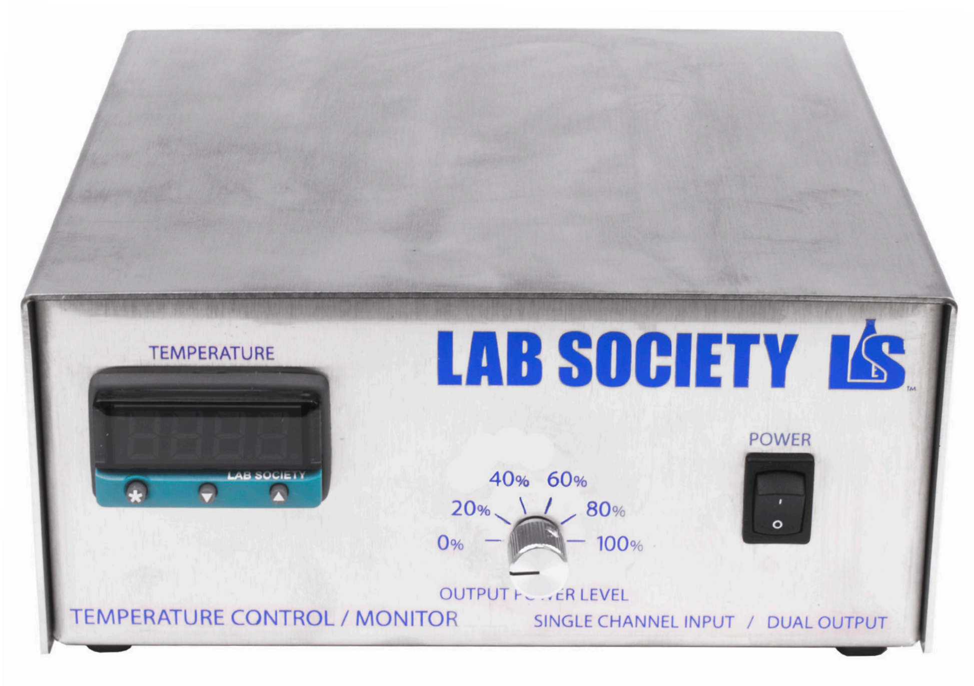
Whats Included:

LS-TCM-1, LS-TCM-1EU

Temperature Control Monitor

USB/PC cord
Quantity - 1

Power Cord
Quantity - 1



TCM Unit
Quantity - 1

Table of Contents

1. QUICK OPERATING INSTRUCTIONS 1-2

2. ADJUSTING THE CONTROLLER FOR STABLE CONTROL WITH VARIOUS HEATERS 2
   - 2.1 Sensor Placement 2

3. OPERATIONS GUIDE 2-8
   - 3.1 Front Panel Description 2-3
   - 3.2 Heater Restrictions 4
   - 3.3 Temperature Sensor Input 4
   - 3.4 Power Reduction Circuit 4-5
   - 3.5 Affect of Power Setting on Heating Profile. 6
   - 3.6 Do's and Don'ts When Using Your Controller 7
   - 3.7 Fusing 7
   - 3.8 Troubleshooting 8

4. APPLICATION NOTES 9
   - 4.1 Theory of How the Controller Works – Simply 9
   - 4.2 How to Set Up a Reaction With Your Temperature Controller. 10-13
   - 4.3 Safety Considerations and Accurate Temperature Control 13-14

RETURN POLICY AND WARRANTY INFORMATION 15

Product Returns 16

Lab Society Limited Warranty 17

Limited Warranty Conditions and Exclusions 17

Non-Lab Society Brand Products. 17

WARNING: Adhere to the restrictions of SECTION 3.2. Failure to do so may create a significant safety hazard and will void the warranty.

Section 1: Quick Operating Instructions

The three steps below are the basics of using your temperature controller. The User's Manual is a reference that explains the controller more fully as well as some of its more sophisticated features. It's recommended that new users unfamiliar with process controllers read the entire manual carefully. The controller is preprogrammed for use with heating mantles fitted to round bottomed flasks running "typical" organic reactions (i.e., non-polymeric reactions in solvents such as THF, toluene, DMF, etc.). If the controller is used with this type of reaction, the three steps below will help you get started.

For a primer on how to set up a reaction with your temperature controller: See Section 4.2

To adjust the controller for heating: See Section 2.

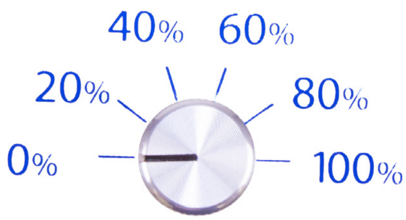
Do not use the controller to heat oil baths: See Section 3.2

1)

Place the thermocouple in the solution being heated. Place at least the first 1/4" of the thermocouple directly in the solution being heated. Thermocouples can be bent without harming them. If you're heating a corrosive liquid, use Teflon coated thermocouples.

2)

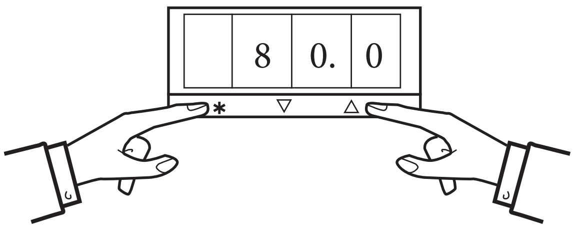
Set the power level switch to the lowest actual power setting of 20%. Depending on flask size, the user may have to increase the power incrementally as the efficiency of heating tapers off. The power level switch can be thought of as a solid state variac. Power percentages are printed above this switch as a guide to select the correct power level. '0%' turns off the heater so the controller displays temperature only. All new users should read Section 3.6.



Start Power	2L	5L	12L
20%	<200mL	<500mL	<1000mL
40%	100-300mL	500-1200mL	1000-2000mL
60%	300-500mL	1200-1700mL	2000-3500mL
80%	500-800mL	1700-2300mL	3500-5000mL
100%	>1000mL	>2500mL	>6000mL

TIP: Because the power switch acts like a variac, if the reaction is heating too slowly or you need more power (e.g., heating to high temperatures), give the heater more power by turning the power level up one setting. If the reaction needs less power than normal(e.g., heating to low temperatures (<60 °C) or the temperature overshoots the set point excessively, turn the power down one setting. **DO NOT set the power switch on a setting too high initially to heat the reaction quickly and then lower it to the correct setting, this degrades heating performance.**

3.)
Enter the setpoint (i.e., the desired temperature). Hold in the "*" button and simultaneously press the ▴ key to increase or the ▾ key to decrease the setpoint. The setpoint can be seen at any time by holding in the "*" button, the setpoint appears as a blinking number in the display.



Section 2: Adjusting The Controller For Stable Control With Various Heaters or Heating Mantles

2.1 Sensor Placement.

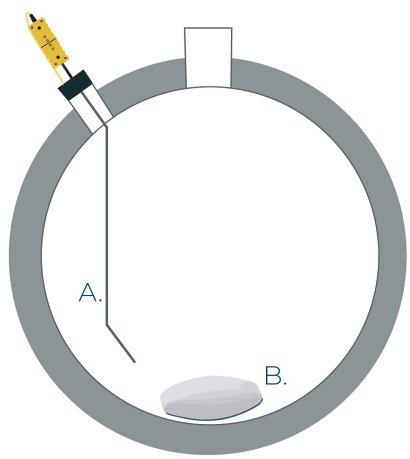
The sensor should be positioned to sense the average temperature of the medium being heated. That means the thermocouple should be shielded from direct exposure to the heater but not so distant that a rise in temperature isn't sensed by the controller within a reasonable period of time. The example below shows the type of consideration that should be given to sensor placement.

Use With:

Solutions Place the sensor in the solution. Stir vigorously so that heat is homogeneously mixed throughout the solution.

A. Thermocouple probes may be bent only after insertion into thermocouple adapter. Probe must be straightened before the probe can be removed from the adapter. (Note: Thermocouple probe should not touch glassware or stir bar)

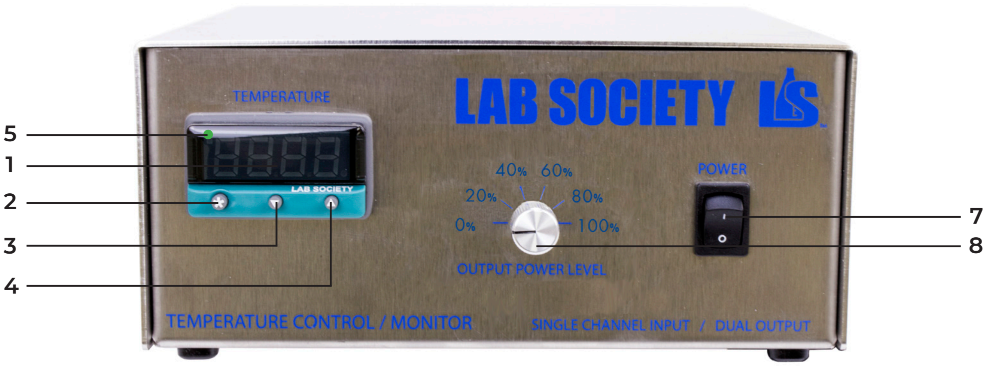
B. Hold the boiling flask on an angle and gently insert the stir bar into the lowest resting neck. Tilt flask back upright slowly so stir bar sits gently on the bottom.



Section 3: Operations Guide

3.1 Front Panel Description.

LAB SOCIETY highly recommends that all users read Section 4.2 - How to Set Up a Reaction with LAB SOCIETYS Digital Temperature Controller & Monitor prior to using the controller for the first time.



1. Temperature Display. Shows temperature of the process as the default display. Shows set point temperature (i.e. desired temperature) when the '*' button is pressed.
2. Control Key. When pressed, the display shows the set point temperature. To decrease or increase the set point, press the ▾ key (3) or ▴ key (4), while simultaneously depressing the control key. The set point appears as a blinking number in the display.
3. Lowers set point when '*' button (3) is simultaneously pressed.
4. Raises set point when '*' button (4) is simultaneously pressed.
5. Indicates that power is applied to the heater when lit.
6. Temperature Sensor Input. Use the same type of sensor probe as the sensor plug installed on the controller (see Section 3.3). The correct sensor type will have the same color plug as the thermocouple input (6) on the back of the controller.
7. Controller On/Off switch. For maximum display accuracy, turn on the controller 30 minutes prior to use. WARNING: Due to the nature of solid-state relays, a small amount of output power (7.5 mA @ 120 VAC; 0.9 watts) is present at outlets 10 even when the controller is turned off. Take appropriate precautions to avoid electrical shock.
8. Power Reduction Circuit. Controls the computer that limits the maximum power delivered to the heater. See Sections 3.4 and 4.1.
9. Detachable Power outlet
10. Power output plug for heating mantles
11. Serial Port Input/Output. For controllers equipped for serial communications, this RS232 port connects to a PC for remote control and data acquisition. Call LAB SOCIETY for any questions.

3.2 Heater Restrictions. The heating outlets (10) deliver 15 amps of current at 120 VAC and the EU model, delivers 8 amps at 240 VAC into resistive loads (heating mantles, hot plates, ovens, etc.). Use only resistive loads that are safely operated at 120 VAC/240 VAC, respectively, and require less than 15 amps/8 amps or damage to the controller and a safety hazard may result.

- Do not plug oil baths into your controller. Oil baths are not 120 VAC or 240 Vac devices and will become a fire hazard (to use oil baths, request application note AN1 or from LAB SOCIETY).

- Devices other than resistive loads can be plugged into the heating outlets but certain restrictions apply.

Device Type	Restrictions	Comments
Incandescent lamps Infrared heaters	≤ 1200 watts	Set the power reduction circuit to the 100% position
Inductive loads: *solenoids *transformers *motors	≤ 6 amps; 720 watts ≤ 1/3 horsepower	The controller must be programmed for this use.

3.3 Temperature Sensor Input. Every controller is fitted with a specific type of thermocouple input and can only be used with a thermocouple of the same type. For the correct temperature to be displayed, the thermocouple type must match the receptacle type on the front of the controller (Figure 1; # 6). All thermocouples are color coded to show their type (Yellow = type K). The color of the thermocouple plug must match the color of the receptacle on the front of the controller. If the thermocouple is broken or becomes unplugged, the error message "inPt" "FAiL" blinks in the temperature meter display and the controller stops heating.

3.4 Power Reduction Circuit. This circuit (8) is the interface to LAB SOCIETY's power control computer which limits the maximum output power delivered by the controller. It determines whether the controller heats at a very low (20% = 1-10 mL), low (40% = 10 - 100 mL), intermediate (60% = 50 - 500 mL), medium (80% = 300 mL - 2 L), or high (100% >2 L) power level. The power reduction circuit acts as a solid state variac. This circuit has an additional setting: "Heat Off or 0%" which, when selected, turns heating off and allows the controller to act as a digital thermometer. The table on the next page shows the maximum output power from the controller to the heater depending on the position of the power switch. **The correct setting for this switch is the setting that supplies adequate power for the heater to heat to the set point in a reasonable period of time while at the same time not overpowering it.** See Section 4.2 for a detailed explanation of how to correctly set up a reaction using your LAB SOCIETY controller.

Heating Liquids.

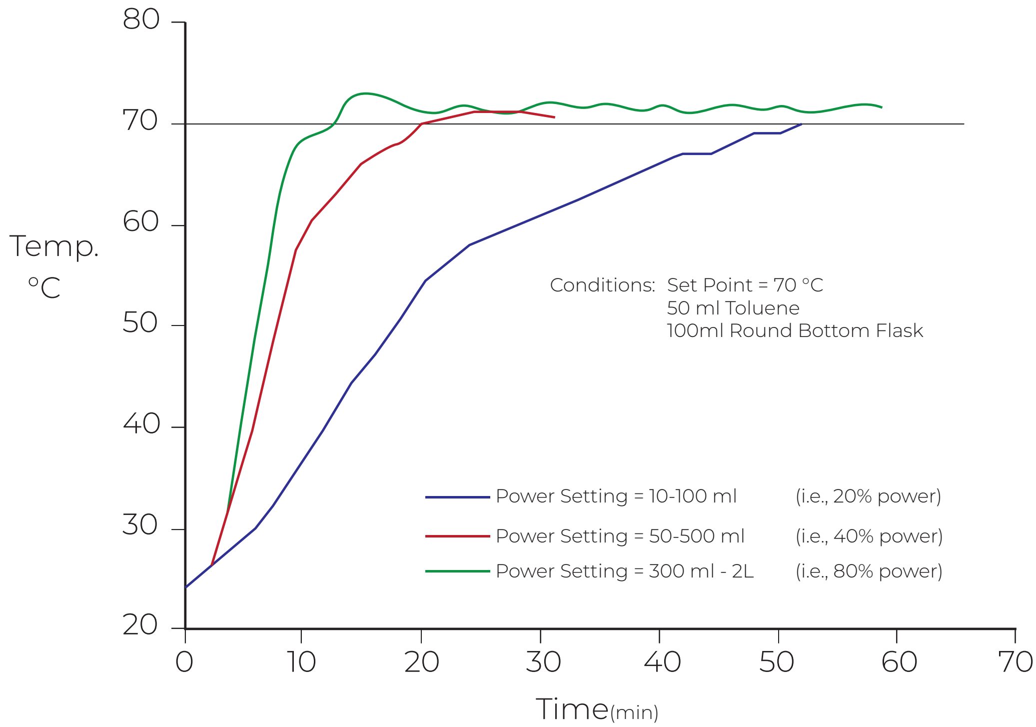
Each power level is associated with a volume range, which acts as a guide when heating solutions with heating mantles. When solutions are heated with heating mantles set the power switch to the power "%" that includes the volume of solution being heated. For example, to heat 250 ml of toluene to 80 °C in a 1 L round bottomed flask start at the lowest setting and work up to the required power level 60%, as heating tapers off increase to next power level. There may be situations when a power level other than that indicated on the front panel should be used:

Start Power	2L	5L	12L
20%	<200mL	<500mL	<1000mL
40%	100-300mL	500-1200mL	1000-2000mL
60%	300-500mL	1200-1700mL	2000-3500mL
80%	500-800mL	1700-2300mL	3500-5000mL
100%	>1000mL	>2500mL	>6000mL

Avoid switching between power levels while the controller is heating. <u>Specifically, do not initially set the controller on a high-power level to rapidly heat the solution, then decrease the power level to the correct setting as the solution approaches the set point.</u> Changing power levels doesn't damage the controller, but it will reduce its heating performance.

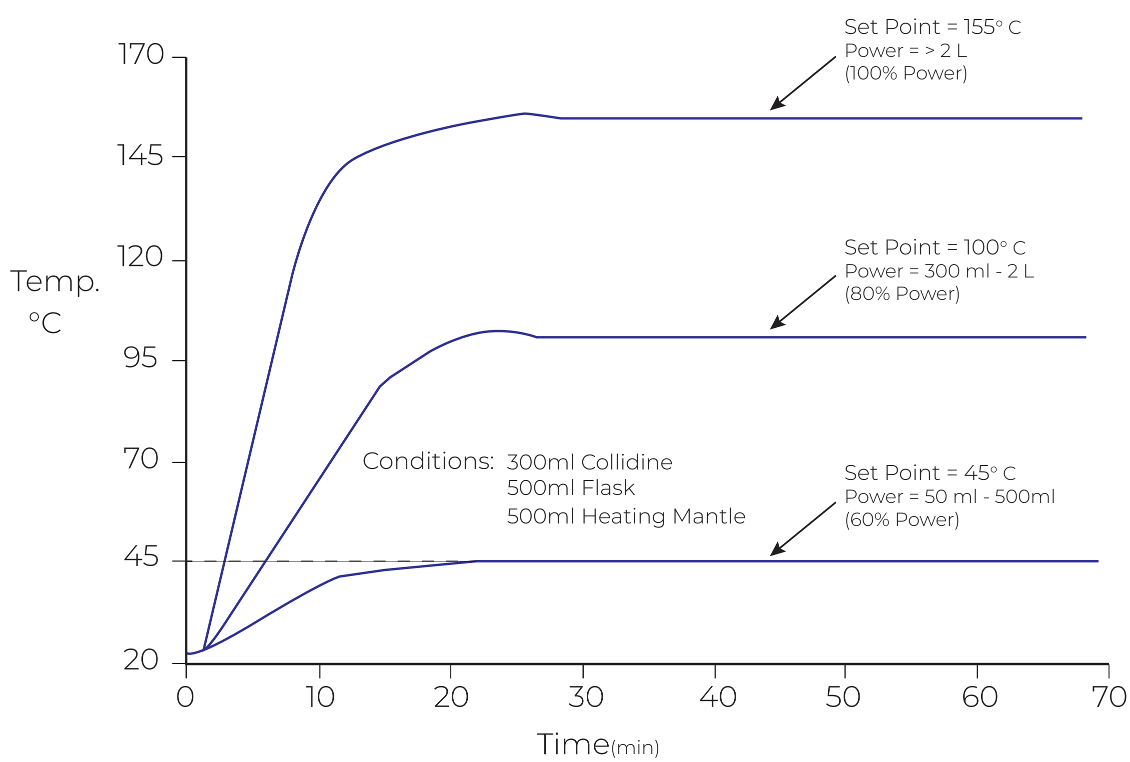
Heating Equipment. Two factors need to be considered when heating equipment; (1) placement of the temperature sensor (Section 2.1) and, (2) the appropriate power setting. The best guide to the correct power setting for various pieces of equipment is the researcher's experience. If your best guess is that the equipment needs 20% full power to heat to the set point, set the power switch on the 40% power, it's sometimes better to have too much power rather than too little . If the heater heats too slow, increase the power (to the next power level), if it heats too fast or has excessive overshoot, decrease the power (to one power level lower). If the amount of power seems to be adequate, but the heater doesn't heat with stability, the controller may need to be tuned, call LAB SOCIETY (see Section 2). Section 3.5 shows the type of performance you should expect from the controller with different pieces of equipment.

3.5 Effect of Power Setting on Heating Profile. The following graphs show the effect of selected power levels on heating performance in a variety of situations. Each example contains 1 optimal and 1 or 2 less optimal settings demonstrating use of the power reduction circuit.



Graph 1

This graph shows the effect of different power settings when heating liquids with heating mantles. The 10-100 ml setting (40% Power) is under powered and results in slow heating. The 300 ml - 2 L setting (80% Power) is too much power and results in sporadic control. The controller adapts to a wide range of power settings. In this example the power is varied by a factor of 5x, nevertheless, reasonable control is maintained in each case.



Graph 2

Another factor affecting the choice of power setting is the set point temperature. For set points near room temperature a low power level is adequate. For *average temperatures* (50 - 100 °C) the volumes printed on the front of the controller is a good guide. For high temperatures, the next higher power setting might be needed to supply the heater with additional power.

The power reduction circuit limits the total amount of power delivered to the heater. In this sense it works like a variac and can be used like one. If the heater isn't getting enough power, turn the power level up one notch, if it's getting too much power, turn it down.

3.6 Proper Procedure

When Using Your Controller. The controller, heater and thermocouple form a closed loop feed-back system (see Fig. 2 in Section 4.1). When the controller is connected to a heater, the feedback loop should not be broken at any point.

Don't remove either the thermocouple or heater from the solution without setting the power level to the "Heat Off". With the thermocouple or heater separated from the solution, as the thermocouple cools the controller turns the heater on. Since this heat is never fed back to the controller it heats continuously.

Don't use the controller to regulate an exothermic process. The controller has no capacity for cooling. If an exotherm is expected, it must be controlled in another way.

Do use an appropriate size flask and heater for the volume being heated. Use the smallest flask and heating mantle that accommodates the reaction. This ensures that the heating power of the heating mantle closely matches the volume being heated. This also allows the solution to radiate excess heat to minimize temperature over-shoots.

Do place the thermocouple directly in the solution. Place at least the first 1/4" of the thermocouple directly into the solution. If a corrosive mixture is heated, use a Teflon-coated thermocouple (or use the external thermocouple method; Section 4).

Do avoid exposure of the controller to corrosive gases and liquids. The atmosphere of a research hood is corrosive to all electronics. Place the controller outside the hood away from corrosive gases.

3.7 Fusing

The controller is protected by a fast-acting fuse designed specifically to protect solid state relays. If this fuse is replaced IT MUST BE REPLACED BY AN EXACT EQUIVALENT, a Tron KAA-15 or Bussman KAX-15. One of these fuses, or an exact equivalent, must be used or a significant safety hazard will be created and will void the warranty.

3.8 Troubleshooting

Problem	Cause	Corrective Action
Large over shoot of the set point (> 3) during initial warm-up or unstable temperature control.	Output power level is set too high.	Set the output power level to a lower setting (see Section 3.4).
	Controller is not tuned for process being heated.	Tune the controller as outlined in Section 2.
The process heats to slowly.	Output power level is set too low.	Increase the output power level to the next higher setting (Section 3.4).
	The heater doesn’t have enough power.	Replace with a more powerful heater. For assistance contact LAB SOCIETY.
The Controller does not come on	Internal 2 amp fuse has blown.	Not user serviceable. Have qualified electrician replace.
	Fuse on back has blown	Replace with appropriate fuse. See Section 3.8.
The controller comes on, but does not heat.	The heater is broken.	To verify that the controller is functioning properly, place the power level switch on the >100% setting and enter a set point of 100 °C. Plug a light into the outlet of the controller, then wait 1 minute. If the light comes on the controller is working properly.
Controller blinks: “inPt” “FAiL”	The temperature sensor is unplugged, excessively corroded or broken.	Clean or replace broken sensor.
“-AL-”	The process temperature is hotter than the alarm temperature.	Correct the over temperature condition.
“PArk”	Controller has been placed in “Park” mode.	1. Hold in both the ▲ and ▼ keys on the front of the LAB SOCIETY temperature meter until ”tunE” appears in the display. 2. First hold in the “*” key, then while holding in the “*” key press the ▼ key until “oFF” appears. 3. Hold in the ▲ and ▼ keys until the temperature appears in the display.
“tunE” “FAiL”	Fuse on back has blown	Replace with appropriate fuse. See Section 3.8.
Displayed temperature is incorrect. [Note: Type ‘J’ thermocouples display negative temperatures, but are not calibrated for them]	The controller has not warmed-up.	The display temperature reads low when the controller is first turned on, but will self-correct as it warms up. The controller can be used immediately since it will warm up during the initial stages of heating.
	Wrong type of thermocouple is plugged into controller.	Thermocouples are color-coded. Thermocouple plug and thermocouple receptacle must be the same color (see Section 3.3).
	Corroded thermocouple connections.	Clean plug on thermocouple and receptacle on controller with sandpaper or steel wool.
	Corroded thermocouple	If the temperature measuring end of the thermocouple is corroded, discard thermocouple.

Section 4: Application Notes

4.1 A Theory of How the Controller Works. For the purpose of explaining how the controller works, the example of a solution heated with a heating mantle is used. The principles are the same for all heater types.

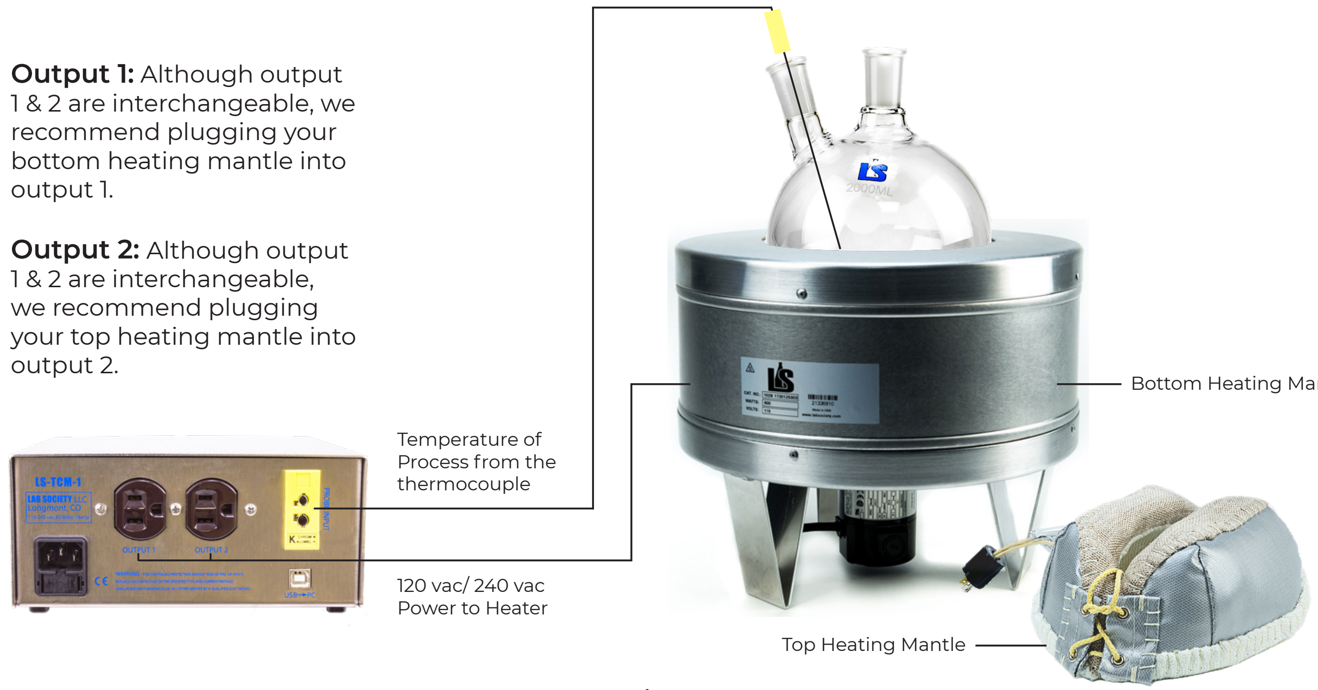


Figure 2

The controller, the heating mantle and the thermocouple form a closed loop feedback system. If the process temperature is below the set point, the controller turns the heating mantle on and then monitors the temperature rise of the solution. If a small rise results (indicating a large volume is being heated) the controller sets internal parameters appropriate for heating large volumes. If a large rise in temperature results, the controller responds by loading a set of parameters appropriate for heating small volumes. For the controller to work ideally, information needs to travel instantaneously around the feedback loop. That means that any power the controller applies to the heating mantle must reflect itself in an instantaneous temperature rise of the solution and the thermocouple. Unfortunately, this type of instantaneous heat transfer from the heating mantle to the solution to the thermocouple just doesn't occur. The delay time between when power is applied to the heating mantle and when the solution rises in temperature; and also the converse, when power is removed from the heating mantle and the solution temperature stops rising is the source of most controller errors. The reason for this can be seen in a simple example.

Imagine heating a gallon of water to 80 °C in a 5-quart pan on an electric range. Placing the pan on the range and turning the heat to 'high' you'd observe a delay in heating while the range coil warmed-up. This delay might be a little annoying, but it's really no problem. The real problem comes as the water temperature approaches 80 °C. If you turned the range off just as the water reached 80 °C the temperature would continue to rise – even though all power had been disconnected – until the range coil cooled down. This problem of overshooting the set point during initial warm-up is the major difficulty with process controllers. Overshooting the set point is minimized in two ways by your LAB SOCIETY controller – but first let's finish the range analogy. If you had turned the range off just as the water temperature reached 80 °C, the final temperature probably would not exceed 82 °C by the time the range coil cooled down, because the volume of water is so large. In most situations a 2 °C overshoot is acceptable. But what if you were heating 3 tablespoons (45 mL) of water and turned the stove off just as the temperature reached 80 °C. In this case, the final temperature would probably approach 100 °C before the range cooled down. A 20 °C overshoot is no longer acceptable. Unfortunately, this is the situation in most research heating applications. That is, small volumes (< 2 L) heated by very high efficiency heating mantles that contain large amounts of heat even after the power is turned off.

Your controller handles the problem of 'latent heat' in the heating mantle in two ways:

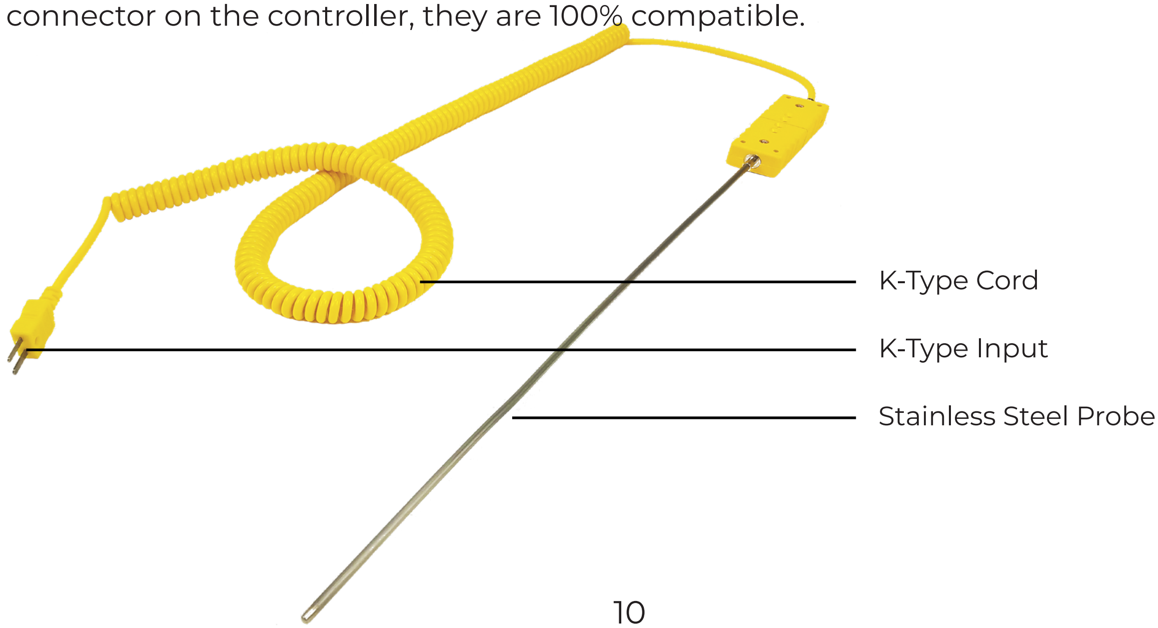
1) The controller measures the rate of temperature rise during the initial stages of heating. It then uses this information to determine the temperature, at which the heating should be stopped to avoid exceeding the set point. Using the range analogy, this might mean turning the power off when the water temperature reached 60 °C and allowing the latent heat of the burner to raise the water temperature from 60 to 80 °C. This calculation is done by the controller and is independent of the operator. The next feature of the controller is directly under operator control and has a major impact on the amount of overshoot on initial warm-up.

2) Again referring to the range analogy, you'd obtain better control when heating small volumes if the range had more than two power settings; Off and High. LAB SOCIETY's power reduction circuit (8) serves just this function. It allows the researcher to reduce the power of the controller depending on the amount of heat needed. This circuit can be thought of as determining whether the heating power is Off (0%), Very low (20%), Low (40%), Intermediate (60%), Medium (80%), or High (100%). The proper power setting becomes instinctive after you've used your controller for a while. For additional information see Section 3.4.

4.2. How to Set Up a Reaction with LAB SOCIETY'S Digital Temperature Controller & Monitor

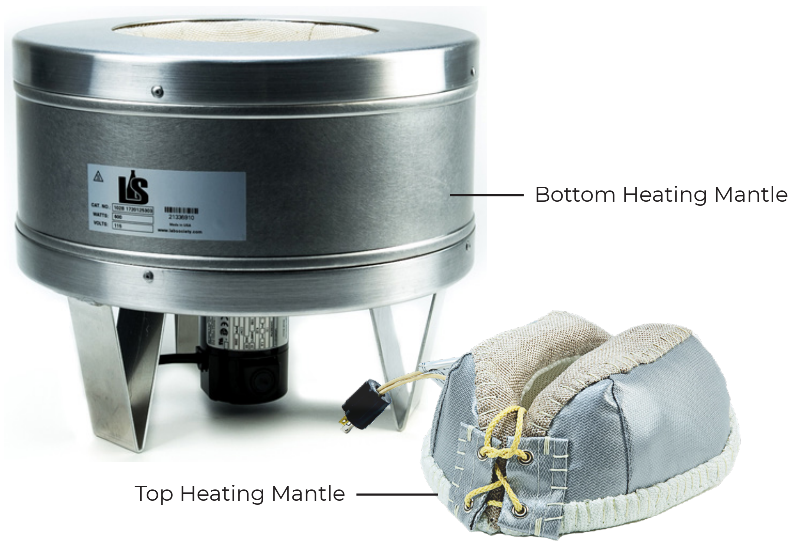
This application note shows how to set up a typical heated reaction using LAB SOCIETY digital temperature controller. For this example, a temperature controller is used. If you have questions about any safety related question, please feel free to contact us. This application note does not supersede any information in the Controllers actual User manual. The User manual for each model is always the reference for that model.

Thermocouples – Thermocouples are color coded. When the plastic connector on the end of the thermocouple is yellow it is a type K. The color of the thermocouple, the thermocouple extension cord, and the thermocouple receptacle on the face of the controller must all be the same color (i.e., thermocouple type) or the controller will not read the correct temperature. Thermocouples are available in many different styles. As long as the thermocouple has the same color connector as the connector on the controller, they are 100% compatible.



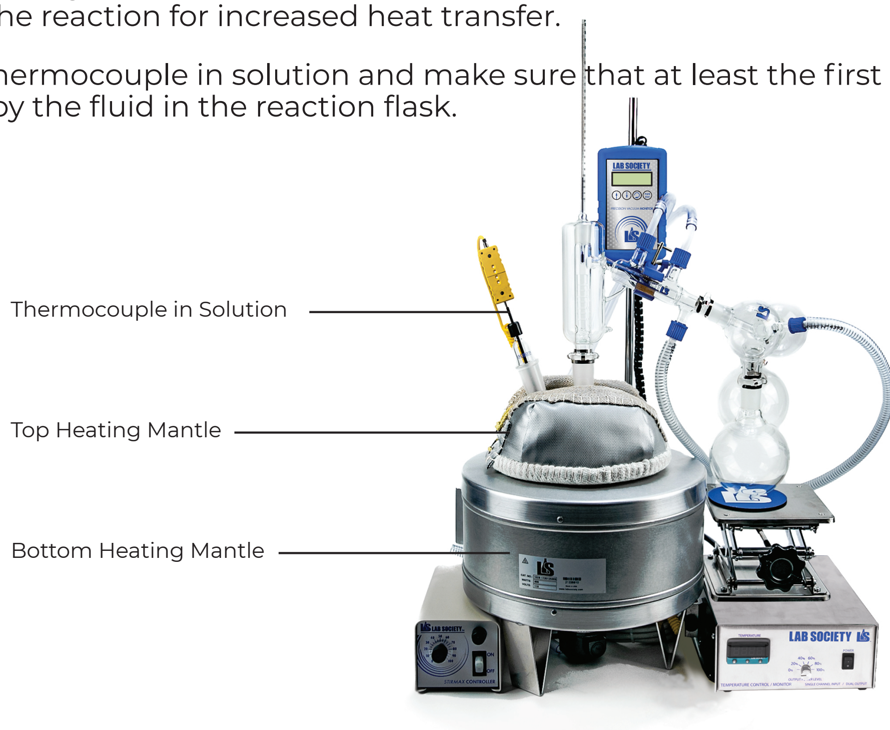
When a thermocouple is placed in solution, often it is desirable to bend the thermocouple slightly so that more of the tip extends into the solution.   It does not hurt a thermocouple to be bent slightly. The temperature sensitive portion of a thermocouple is the first ¼" of the tip.   It's good for the first ½" to be in solution, but the first ¼" must be in solution to read the temperature correctly.

Heaters – Your LAB SOCIETY controller works with virtually any 120-volt (or 240 volt heaters outside of the USA depending on model chosen) heater. If you have questions about the compatibility of specific heaters, please contact LAB SOCIETY.



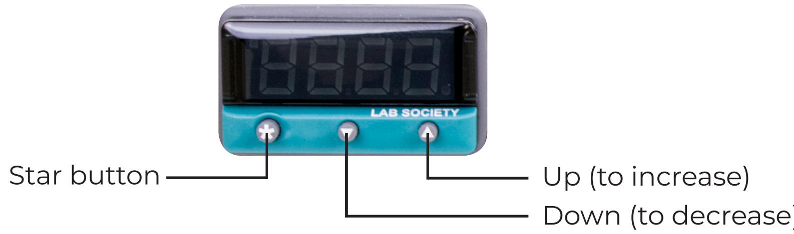
Shown Below is a typical set up for a Short Path Distillation reaction.

1. Place the reaction flask in the appropriate size heating mantle., then plug the power cord from the mantle directly into the power outlet of the temperature controller.
2. Place a stirring bar inside of the flask, in the solution.   Place the flask on a magnetic stirrer and stir the reaction for increased heat transfer.
3. Place a thermocouple in solution and make sure that at least the first ¼" (1/2" is better) is covered by the fluid in the reaction flask.



4. Enter the temperature that you want to heat the reaction to (i.e., the Setpoint) into the digital meter.

To enter the setpoint temperature (i.e., the temperature to heat to) into the controller:

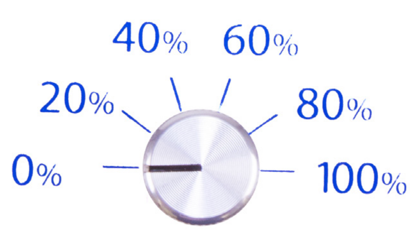


1. Hold in the Star button on the face of the digital meter.

2. While holding in the Star button, press the Up arrow to increase, and the Down arrow to decrease the setpoint temperature. When the desired setpoint temperature is showing in the display, release the star button to load the setpoint. When no buttons are pressed on the controller, the controller shows the temperature sensed by the thermocouple. When the Star button is pressed, the setpoint appears as a blinking number.

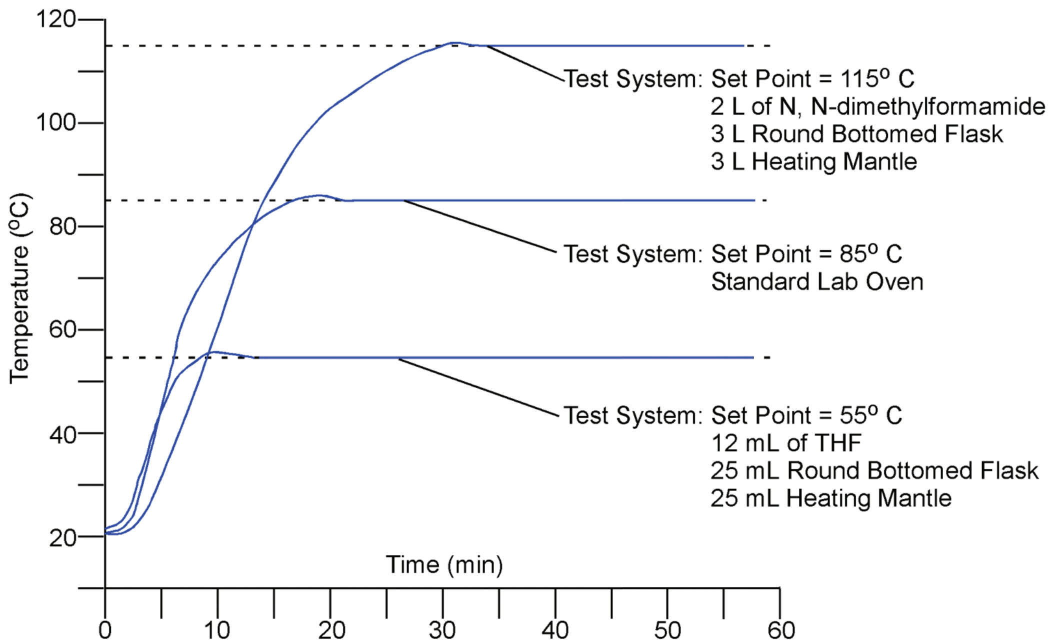
5. Set the correct Power Control Level. Your LAB SOCIETY controller has a built in Power Control Computer (PCC) that precisely regulates power to the heater. For the computer to work correctly, it must know the percentage heat to set it to.

If the flask above is placed in a 2L heating mantle, the power control input should be set to the "20%" setting, and raised if needed.



The power control computer is always set to the Percent power, not the size of the flask or heater.

If the flask above is placed in a 5L, 12L heating mantle, the power control input should be set to the "40%-60%" setting and increased when heating slows.



When the power control computer is set to the correct power level, your controller can regulate virtually any heater to +-0.1 °C with less than 1 °C overshoot on initial warming.

For a detailed explanation of the Power Control Computer, see Section 2 in the controller's User manual.

4.3 Safety Considerations and Accurate Temperature Control

For safety critical and non-typical organic reactions (especially polymeric reactions) or for use with heaters other than heating mantles the user must either 1) monitor the reaction closely to verify the tuning parameters are appropriate for the current application, or 2) autotune the controller for the application. For any safety critical or high value reaction, call LAB SOCIETY to discuss your application with a technician prior to beginning.

Your LAB SOCIETY controller is capable of regulating virtually any application to ± 0.1 °C if the controller is tuned to the application being heated. Since it's possible that the tuning parameters are not set correctly for your application, the user must monitor a new reaction to verify the controllers operation. A short summery on tuning is presented below.

Tuning is the process that matches the control characteristics of the controller to the heating characteristics of the process being controlled. The controller uses a PID (Proportional, Integral, Derivative) algorithm to regulate heating. Each of the terms in the PID equation has a constant that scales the equation to the process being heating. These constants (plus two other related terms) are collectively known as the 'tuning constants' and for the most part they are expressed in units of time, since they represent delay times, rate of heat transfer times, and rate of error accumulation. The relative value of each constant depends on the physical characteristics of the process being heated. For example, for the same amount of input power, the rate of heat transfer is twice as high for hexane as compared to water, since the coefficient of heat for hexane is 0.54 calories/g/ °C and water is 1.0 calorie/gram/ °C. That means that 1000 watt-seconds of input power will raise the temperature of 10 g of hexane 44 °C while the same amount of power causes a 24 °C rise in water. In theory, the tuning constants needed to heat hexane are different from those to heat water. Fortunately, your LAB SOCIETY controller is self-adaptive and is able to adapt its heating characteristics for different solvents such as hexane and water. Even with the controller's self-adaptive algorithms, the tuning constants have to be reasonably close to a proper set or the controller will not produce stable temperature control (see Section 2).

When a controller is shipped, the default set of tuning constants loaded into the controller are those appropriate for heating typical organic reactions (i.e., small molecule chemistry in low boiling (< 250 °C) organic reactions) using heating mantles, since this is the most common application for LAB SOCIETY controllers. Since it's impossible for LAB SOCIETY to predict the application the controller will be used for, the researcher must be aware of the possibility that the tuning constants loaded into the controller may not be a set that results in stable temperature control. It's the researcher's responsibility to monitor the temperature regulation of a reaction. If you encounter a process that your LAB SOCIETY controller does not heat with stability, follow the directions below.

LAB SOCIETY Technical Assistance. If you have an application you wish to discuss, call us, we're always anxious to help our users. For an additional description of the PID algorithm and the concept of tuning, call LAB SOCIETY.

RETURN POLICY AND WARRANTY INFORMATION

PRODUCT RETURNS

Return of Non-Defective Products: A non-defective product may be returned to Lab Society within thirty (30) days of the invoice date for a refund of the original purchase price, regardless of brand, with the following amendments/fees:

1. Lab Society will refund neither the original shipping cost nor the shipping and han dling fees incurred from the product's return.
2. Any non-defective returns are subject to a 20% restocking fee, which percentage is taken from the final purchase price less any shipping or handling charges.
3. Quantity purchases of 5 systems or more are not eligible for return, unless defective.
4. Opened software, parts, and special order merchandise are not eligible for return.
5. Lab Society maintains full discretion in decisions regarding a product's fitness for return.
6. For glassware returns, please see specific policies below.

Return of Defective Products: A defective Non-Lab Society brand product may be returned to Lab Society within thirty (30) days of the invoice date for a refund of the original purchase price, and defective Lab Society brand products may be returned for up to one (1) year, with the following amendments/fees:

1. Any items purchased that are broken upon delivery, not working, defective, or incor rect may be returned, with return shipping paid by Lab Society.
2. Additional fees may be incurred under special circumstances, such as for shipping, damages or negligence.
3. Lab Society maintains full discretion in decisions regarding a product's defectiveness and fitness for return.
4. For glassware returns, please see specific policies below.

Return of Glassware: Glass products are shipped with extra care; however, accidents do sometimes happen during shipment. In the case of broken glassware upon delivery, please contact us within ten (10) days of receiving the product for a return or replacement. If return shipping is required, Lab Society will cover the shipping costs. If glassware is broken post delivery, during usage, or due to poor storage, any standard warranty is void.

Return Instructions for all Products: To return a product, please contact our Help Desk via help@ labsociety.com for a Return Merchandise Authorization (RMA) number and follow the instructions below. In your email, please include your name, address, phone number, and order number or proof of purchase. If returning a defective or broken product, please also include a description and pictures of the problem(s).

The RMA is valid for 10 days from date of issuance. Returns will not be accepted without an RMA, and Lab Society will not offer warranty service without this number. Please keep the RMA number and reference it when calling back to check on the status of your return. .

All equipment should be packed in its original box or a well-protected box. Specific packing instructions apply to certain items and proper packaging is crucial, so please contact the help desk via help@labsociety.com to ensure proper packaging and shipment of products. Fees may apply for products damaged during shipment due to improper return packaging. Lab Society will not be responsible for damage or loss of any product during return shipment, and it is recommended that you self-insure your return. It is very important that you write the RMA number clearly on the outside of the package. Ship the equipment with a copy of your bill of sale or other proof of purchase, your name, address, phone number, description of the problem(s), and the RMA number you have obtained to:

LAB SOCIETY

RMA#____________

ADDRESS: 4699 Nautilus CT. South, #503, Boulder CO 80301

Once received, Lab Society will inspect the returned products to determine whether a refund is due, at which time the client/customer will be notified. Any refunds will be issued in the same form as payment was originally received. Please note that some manufacturers have different return procedures and restrictions on returns.

LAB SOCIETY LIMITED WARRANTY

The warranty available to you depends on whether the product is a Lab Society brand product or is subject to a third party manufacturer's warranty. Regardless of the brand or manufacturer, Lab Society stands behind the products it sells, and is here to assist you with any warranty claims. Should you encounter a concern with a product, we want to know about it, and we will work with the manufacturer to make it right. Please note that any warranty services or questions must be accompanied by the order number from the transaction through which the warranted product was purchased. For assistance, please contact the Help Desk at help@labsociety.com, or reach us via phone at:

Technical Support: 1-720-684-6857 x 7

Customer Service: 1-720-684-6857 x 4

Lab Society Brand Products: Lab Society branded products carry a manufacturer's warranty and are covered against defects in materials and workmanship for up to one year from the date of purchase. If you find that our products do not function as warranted during the warranty period, please obtain warranty service by contacting Lab Society Customer Service at the phone number below. Lab Society will work with you to either replace, repair or refund any Lab Society branded product.

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1. This warranty extends only to products distributed and/or sold by Lab Society. It is effective only if the products are purchased and operated within the United States.

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3. This warranty covers only normal use of the equipment. Lab Society shall not be liable under this warranty for (i) misuse, abuse, neglect, improper shipping or installation; (ii) acts of God, including disasters such as fire, flood, or lightning; (iii) service or alteration by anyone other than an authorized Lab Society representative; or (iv) negligent or improper use, including but not limited to explosion, implosion, fires, overheating, over tightening, improper electrical current, or other non-recommended practices or operations not within manufacturer specifications.

4. You must retain your bill of sale or other proof of purchase to receive warranty ser vice.

5. No warranty extension will be granted for any replacement part(s) furnished to the purchaser in fulfillment of this warranty.

6. Lab Society accepts no liability for problems caused by after-market software or hardware modifications or additions.

7. Although Lab Society makes every effort to make sure all information provided to you is correct, Lab Society will not be held responsible for typographical errors on sales receipts, repair tickets, or on our website.

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