

TLC/RLC Series
Liquid Chiller/Heater
Product Manual
Volume 4.2



tecca

The logo for Teca, featuring the word "teca" in a bold, lowercase, sans-serif font. A vertical line is positioned to the left of the text, and a decorative four-pointed starburst graphic is located at the bottom left corner of the logo area.

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TLC-900

Liquid Chiller/Heater



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What's in the Box ???

TLC-900 Liquid
Chiller/Heater



90 degree elbow
Quick Connects
3/8 Barb

Power Cord and USB
Male type A/Male Type A



Software and Manuals

12 feet of 3/8" ID Tubing
and 12 feet of Insulation
and two hose clamps



Remote RTD Connector

Safety Features and Standards

- Automatic recovery to set point after regain of power
- Program resume after regain of power
- No Fluid Flow system shut down with manual reset
- Programmable over-temperature limits
- Hardwired safety overheat limits will shut down everything and trip an alarm. System automatically recovers after cool down.
- Hardwired liquid level indication
- Hard wired liquid flow indication
- System shut down upon sensor break, over and under range

Warnings

- Read and understand the manuals included with the product.
- This product should be serviced by a qualified technician.
- Caution: Risk of electrical shock. Always disconnect the power when performing any servicing.
- Use distilled water or a mix of 25% Ethylene Glycol and 75% distilled water to cool below 0C.
- NEVER introduce flammable or explosive materials.
- Read and understand the MSDS for any coolant used
- The unit has an un-vented cap. You may locate the unit above or below your load if the cap is tight.
- Always empty all fluids from the unit prior to shipping.
- Use the external sensor feature with caution. There may be a significant time delay between the fluid temperature and the sensor temperature causing potentially dangerous overheat or freezing conditions.
- Do not fill the unit with de-ionized water, flammable fluids, corrosive fluids, hazardous fluids, explosive fluids or similar fluids.

How do I use it? NOW!

Step 1: Fill the reservoir with distilled water (NOT de-ionized) or just clean tap water. Use a 75% water 25% ethylene glycol if cooling close to freezing.



DO



Step 2: Locate the unit on a flat level surface like the floor or a bench. Make sure you have some room around it for good airflow.

DON'T



Step 3:
Attach both fittings to one hose and then to the TLC-900, forming a closed loop.



Step 4: Plug the cord in the back of the unit, the other end in the wall outlet and on. The temperature controller will turn on, the fan will start to spin and the pump will energize, prime and begin to move fluid.



It works. Green lights all around. On to step 6

Uh oh! It stopped ! Step 5: The pump hasn't primed. Press the Reset button to restart the system. Repeat as needed up to 3 times.



Step 6: Now what? Now to attach what you're cooling

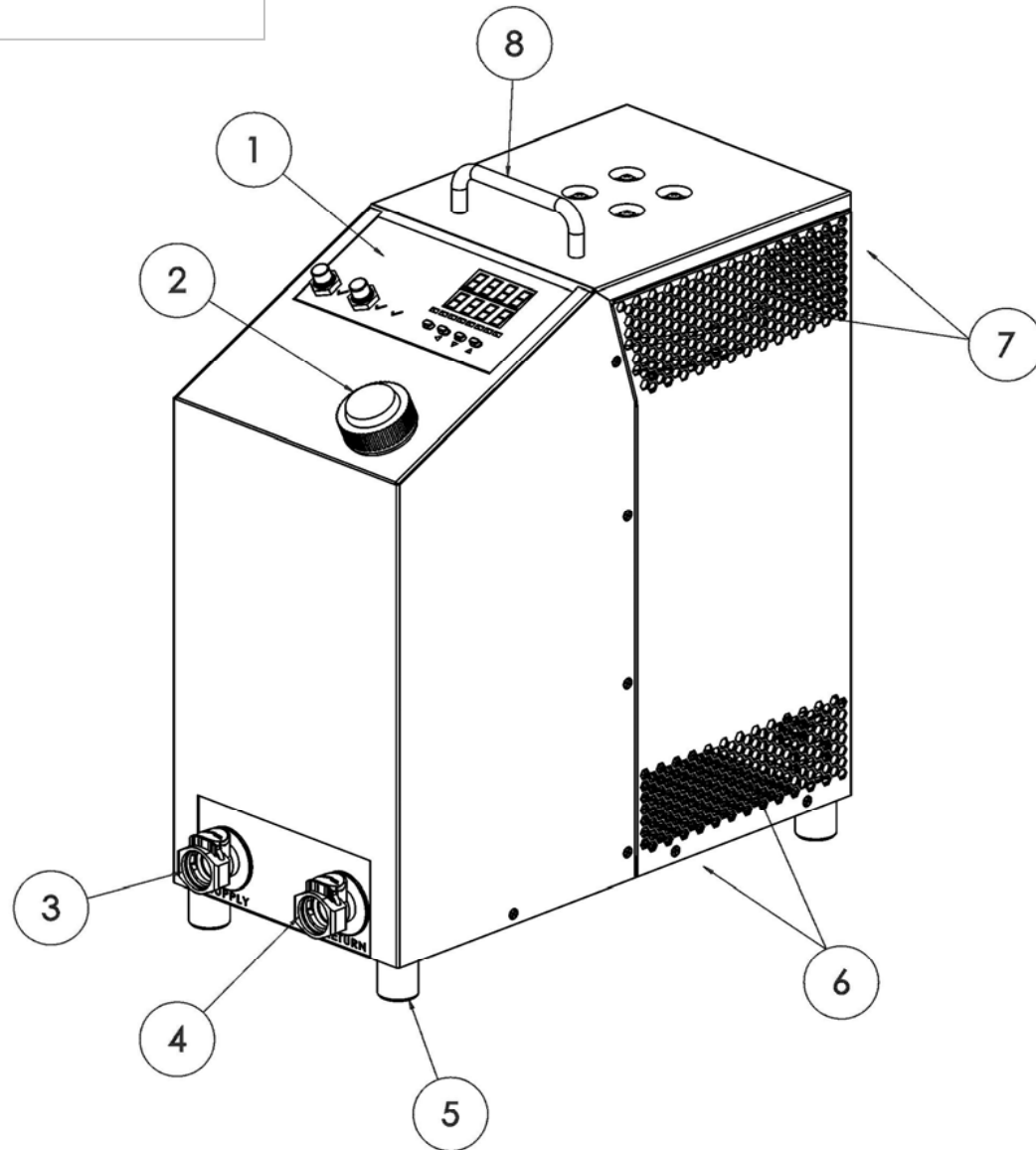
Splice your load into the existing tubing.

Or attach your load and options your own way.

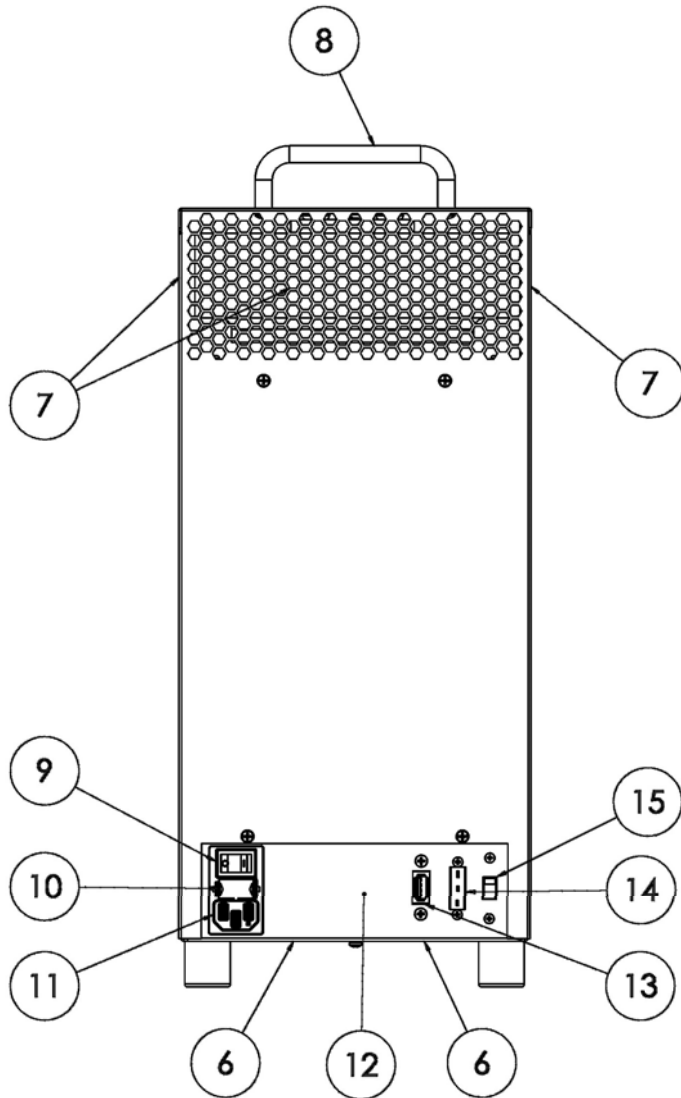
Select digit to change with the left arrow, change with up/down and confirm with set.



TLC-900 Liquid Chiller

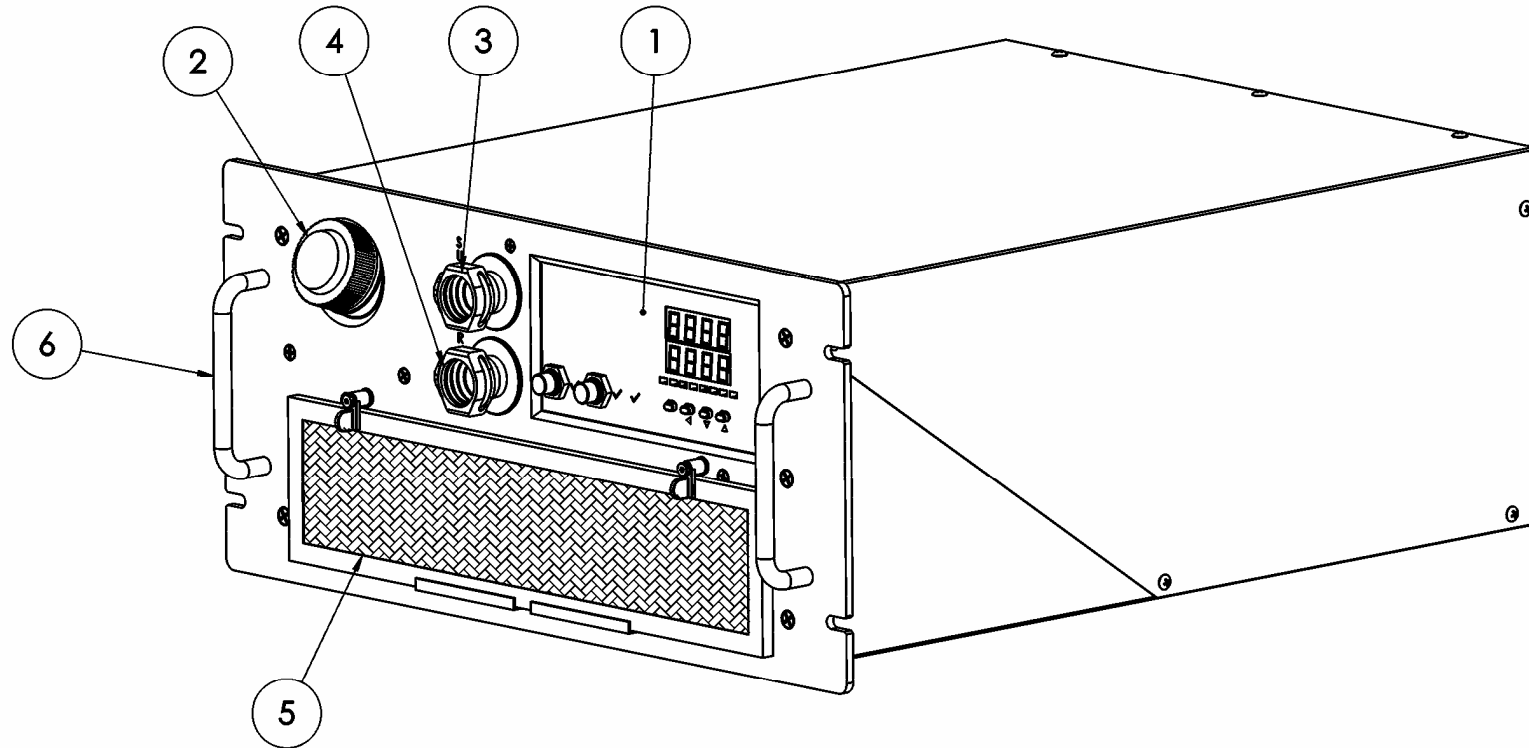


TLC-900 Liquid Chiller

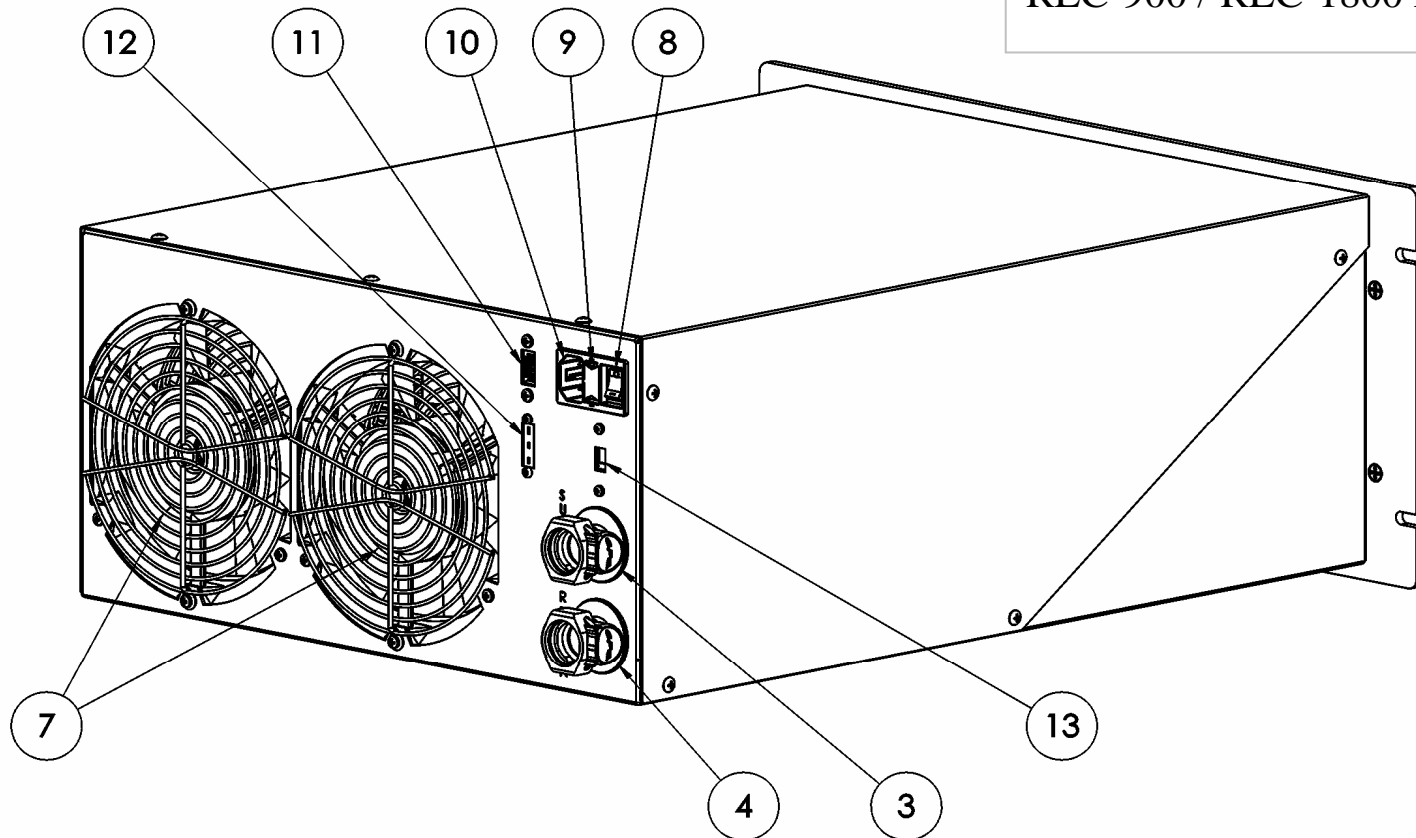


- 1 Temperature Control Front Panel
- 2 Liquid Reservoir Fill Cap
- 3 Fluid Supply (OUT)
- 4 Fluid Return (IN)
- 5 Feet
- 6 Air Intake
- 7 Air Exhaust
- 8 Handle
- 9 Power Switch
- 10 Fuse (5 x 20 mm, slow blow, 5 amp)
- 11 AC Input
- 12 Nameplate
- 13 RS-232 port
- 14 External RTD sensor connector
- 15 Internal/external RTD switch

RLC-900 / RLC-1800 Liquid Chillers

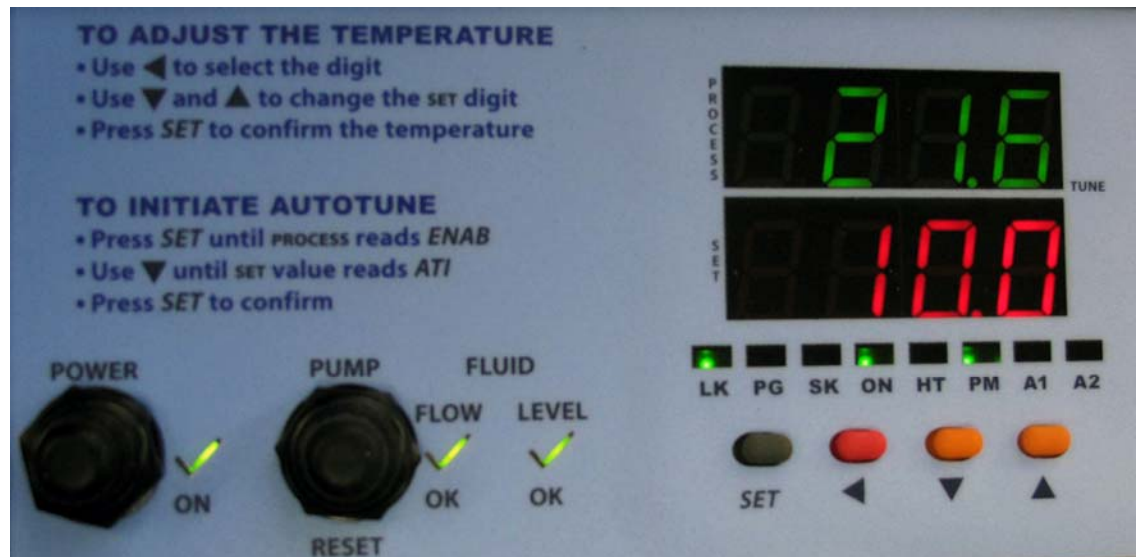


RLC-900 / RLC-1800 Liquid Chillers



- 1 Temperature Control Front panel
- 2 Liquid Reservoir Fill Cap
- 3 Fluid Supply (OUT)
- 4 Fluid Return (IN)
- 5 Air Intake (Air Filter)
- 6 Handle
- 7 Air Exhaust (Fans)

- 8 Power Switch
- 9 Fuse (5 x 20 mm, slow blow)
- 10 AC Input
- 11 USB Port
- 12 External RTD sensor connector
- 13 Internal/External RTD selector switch



TURNING THE UNIT ON

To turn the unit on first turn the main power on in back. Then press the power switch in front. The on lite and the level OK light indicating fluid should become lit. Press the Pump Reset button to initiate flow whereupon the FLOW OK light should stay lit if flow is established. More detailed priming instructions can be found in following sections

SETTING TEMPERATURE

Left Arrow: To set temperature press to select and highlight the digit being changed.

Up Arrow KEY: Press to increase the digit (set point or parameter value).

Down Arrow KEY: Press to decrease the digit (set point or parameter value.).

Left Arrow: Press once to select set point.

SET KEY: Press to confirm new SET temperature.

OPERATING MODE

SET KEY: Press twice to bring up the following operation parameters, using the up and down arrow keys to scroll among them

oFF - Shuts down cooling and heating functions

At1 - Manual Autotune PID values to set point (USE TO TUNE)

At2 - Manual Autotune to 90% of set point

HAnd - Fixed % control, press again to bring up selection, negative % is cooling, positive % is heating.

none - Normal Temperature control Operation

Prog - Run stored Ramp Soak profile

Filling the reservoir

Fill it with distilled water or tap water (watch out for hard water deposits) or a mix of water (down to 75%) and ethylene glycol (up to 25 %)

Don't fill it with de-ionized water, flammable fluids, corrosive fluids, hazardous fluids, or similar fluids.

How? Pour it in.



Priming Instructions

Step 1: Usually the system will self prime, establish flow and bleed excess air back into the reservoir without intervention. During this process the low flow light may flash on and off. Long tubes and high pressure drops can inhibit self priming.

Step 2: If there is insufficient (less than .05 GPM or .2 LPM) or no flow for 10 seconds all functions are disabled and only the low level light will remain on. The priming sequence can be reinitiated by pressing pump reset button. Repeat this step 3 to 5 times if needed. If the flow can not be established proceed to step 3.

Step 3: If flow can not be established on the entire system, time replace the system tubing with a short loop and repeat step 2 to establish the flow. Then reintroduce the system tubing and load and repeat step 2. If there is still no flow go to step 4.

Step 4: If flow can't be established with a small loop then there is something wrong. Check the reservoir capacity and quick connects. No luck? In the USA Call 773-342-4900. If it works with a small loop but not your system let's look there. Could the needed pump head (capacity) be there? Is there gunk in the lines somewhere? Should there be a filter? Is the filter clogged? Are all the lines connected? Is there a kink somewhere? Did it work for awhile and then stop? Repeat step 3.

Priming Instructions for pump options #3 and #4

For pump options #3 and 4 follow steps one through four above. These pumps have flows so fast the air streams past the bleed block and remains entrained in the flow. Slow the flow down using a valve or by pinching the hose. Observe the bubbles in the flow. This isn't as easy as it sounds so take your time. When the bubbles disappear the pump should be fully primed. As an alternative connect the provided connector and let the liquid return to another vessel while continuing to fill the units reservoir. Un-restrict the flow. Observe the flow for some time. Repeat as needed.

Make Sure the Unit is in the correct mode

Many different events will make the controller go into an "off" mode and you won't know it except it doesn't work. To check this press the set button twice, It should say EnAb in the top process screen and nonE in the bottom SET screen. If it doesn't press the up or down arrows until it does, then press the set key and it will begin to control



Adjusting the Set Point Temperature

To set temperature press to select and highlight the digit being changed, adjust using the up or down keys, press set to confirm.

Manually Initiating the Auto Tune function

To set the Auto Tune Press the set button twice to bring up the operating parameters, using the up and down keys, scroll among them until you see At1, then press the set button again. An indicator light will flash on the front panel near where it says "TUNE" and the temperature will rise and fall around the set point. The light will stop and the unit will begin to control to set point.



Using the external RTD sensor

Caution!! Use the external sensor feature with caution. There may be a large time delay between the fluid and the sensor temperatures causing overheating (boiling) and under-cooling (freezing) conditions. Fully evaluate the system conditions prior to and during the use of this feature. The RTD is a three wire, 100 ohm, single element, Class A.

Identify where and how you wish to use the external sensor. Take special consideration and thought with respect to system safety. An example of a sensor without insulation is shown to the right.



Connect the sensor to the back of the chiller, change the position of the selector switch to “external sensor”, turn the unit on and verify the function and safety.

A faulty or disconnected RTD is signaled on the display as "Open"

Adaptive Fan Control

Adaptive Fan Control is a special feature designed to improve overall temperature control and user comfort while maintaining maximum performance when needed. The most evident characteristic is the reduced fan noise as the system approaches set point. The fan speed is directly related to the amount of cooling required.

Draining the system

To drain the system put a quick connect with hose onto the return. Put the end of the hose into a vessel to collect the fluid. Loosen the cap. Tilt the unit forward to about 30 degrees. To completely empty the system put another connector and clean hose in the supply. Apply a slight pressure into the end of the hose to force the remaining fluid out.



Over Temperature Safety

When an over temperature condition occurs the following will happen:

- System heating and cooling will be disabled
- Under extreme overheat conditions power will be interrupted

Two Point Calibration

The Calibration Procedures for the AHP-301CPV

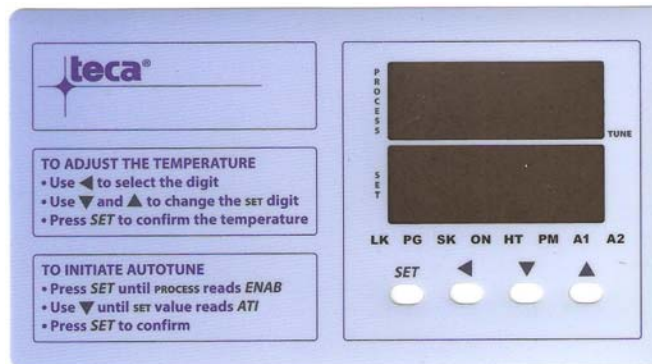
Thermistor Calibration

- (1) Connect the standard RTD simulator to the remote sensor input terminals and adjust the slide switch to external.
- (2) Press both “Up” and “Down” keys simultaneously for 5 seconds until PV display show “ type”.
- (3) Use “Up” or “Down” key to select “DPT” type (100 ohm RTD)
- (4) Press “Set” key once and PV display will show “tr1L”.
- (5) Set the standard thermistor simulator to low scale signal(default 10°C)
- (6) Use “Up” or “Down” key to change its value until this value coincide with the low scale signal.
- (7) Press “Set” key for 5 seconds (press firm and do not release) until PV display show “tr1H”.
- (8) Set the standard RTD sensor simulator to high scale signal (default 50°C)
- (9) Use “Up” or “Down” key to change its value until this value coincide with the high scale signal.
- (10) Press “Set” key for 5 seconds (press firm and do not release).
- (11) Press both “Set” and “Up” keys simultaneously to return normal operation.

Note:

Note: ● For 2 points calibration of the thermistor, “tr1L” is the low side temperature of the calibration, “tr1H” is the high side temperature of the calibration. The defaults are 10°C for the low point and 50°C for the high point. However, users can specify their low or high side temperature for proper calibration range.

Complete Front Panel Operation AKA - Doing it the hard way



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Down Arrow KEY: Press to decrease the digit (set point or parameter value.).

Left Arrow: Press once to select set point.

SET KEY: Press to confirm new SET temperature.

OPERATING MODE

SET KEY: Press twice to bring up the following operation parameters, using the up and down arrow keys to scroll among them

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At1 - Manual Autotune PID values to set point (USE THIS ONE)

At2 - Manual Autotune to 90% of set point

HAnd - Fixed % control, press again to bring up selection,
negative % is cooling, positive % is heating. USE WITH

CAUTION

none - Normal Temperature Control Operation

Prog - Run stored Ramp Soak profile

LK: keypad Lock: LED lights on when keypad is enable.

PG: Program Ramp: LED lights on when temperature is ramping up/down.

SK: Program Soak: LED lights on when temperature is at soaking stage.

ON: Controller Enable: LED lights on when controller sends the Enable signal to the amplifier.

HT: LED indicator is on during the heating and off during the cooling.

PM: Pulse Width Modulation Signal: LED signal lighted when PWM signal is sent from controller to amplifier. During low duty cycle, the LED might not be bright enough to be seen.

A1: Alarm #1 indicator: LED on when Alarm #1 is triggered.

A2: Alarm #2 indicator: LED on when Alarm #2 is triggered

