



LHP-1200CAS

LHP-1200C21, LHP-1200C22, LHP-1200C31

Versatile Cold/Hot Plate

Product Manual

Volume 2.1



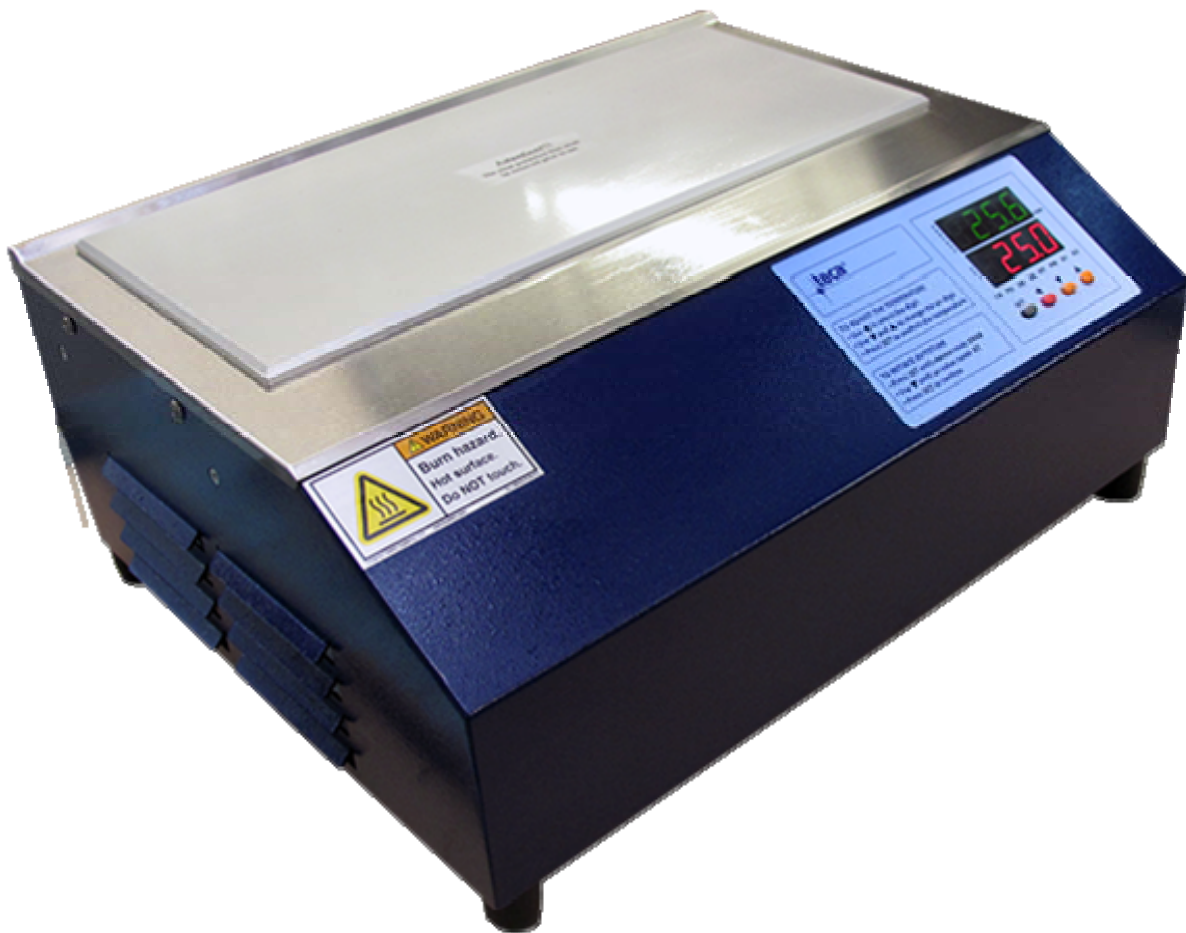
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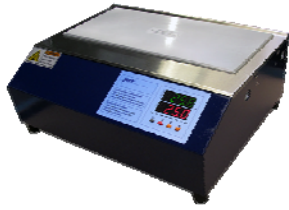
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LHP-1200CPV

Liquid Cooled Cooling and Heating Plate



What's in the Box ???



LHP-1200CPV
Versatile Cold/Warm Plate

Power Cord



Remote RTD Probe

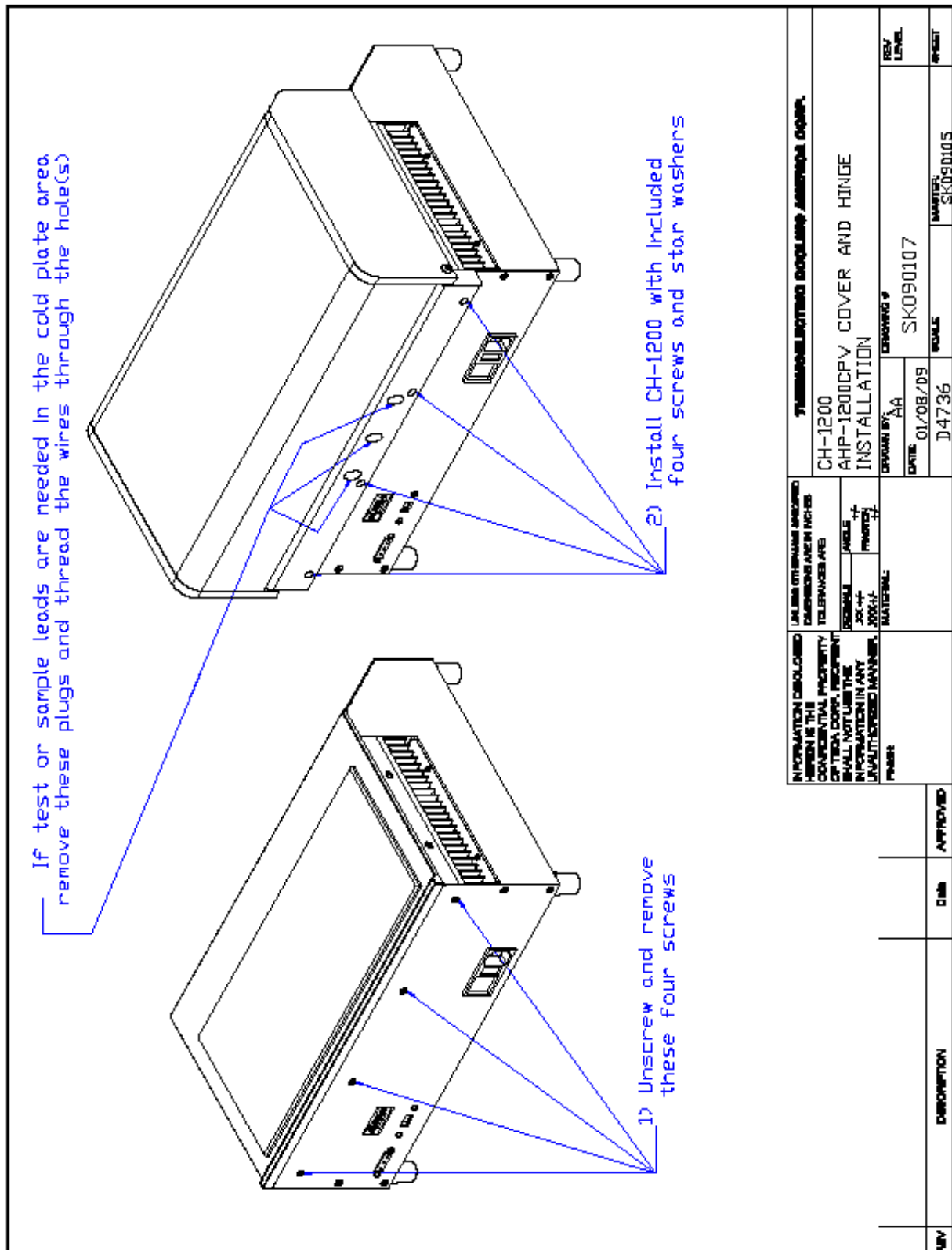
Hinged Cover



O-Ring Adapters



How do I install the cover ???



What are these other things ???

CCP-21
Small second stage



CCP-22
Large 2nd stage

CCP-31
2nd and 3rd stage



CC-1200
Cascade Control

Thermally Conductive
Interface Material

How do I set this up to use it?

General Information

Surfaces

Physical: The cascade and cold plate surfaces are critical to good performance. Don't scratch them. Set them down on clean soft surfaces. Do not drag them or ding them. Don't drop things on them or gouge them.

Thermal: Tests have shown that plain surface to surface contact provides the best performance. This is true only when the surfaces are in excellent condition. Thermal interface materials can be used to compensate for damages at the loss of a little delta T. Factory installed units use an interface material.

Surface Prep

Don't forget to remove the clear plastic protective layer before use. If you've received an assembled system only the top plate will have plastic on it otherwise all critical surfaces should be protected.



If the surfaces have become damaged use a thermally conductive transfer medium. A thermally conductive pad is shown. Thermal transfer greases applied in a thin uniform layer work well but can be messy.



Cascade Installation

Step 1: If you haven't already done so, install the cover as shown earlier.

Step 2: If the cascade was not factory installed you'll have to do it . The following two pages show the mechanics of how.

Step 3: Next the power and sensor leads need to be routed through the hole provided in the hinge of the cover. The connector will have to be removed from the sensor leads first. From the rear use a slotted screwdriver to remove the set screw that fills the hole. Then guide the power and sensor leads through the hole.

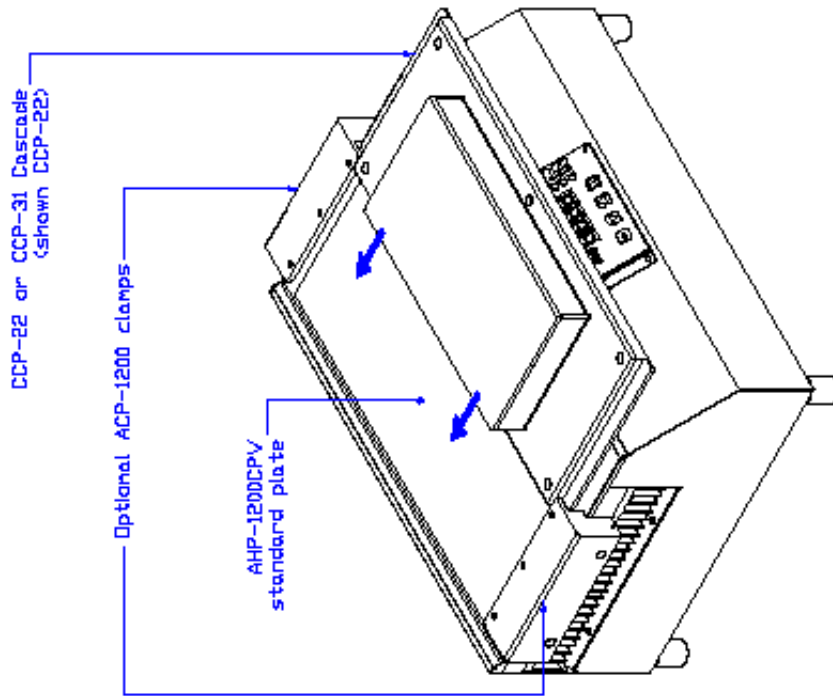
Step 4: Rewire the sensor connector and plug into the back of the cold plate. Adjust the switch to the EXT position. **IMPORTANT** The switch **MUST** be in the EXT position and the sensor from the cascade **MUST** be plugged in for safe operation. If you are using a different external sensor it must reflect the top plate temperature well enough to avoid extreme (very hot) conditions.

Step 5: Wire the cascade power leads to the terminal block on the back of the AHP-1200CPV. Red = Positive Black = Negative

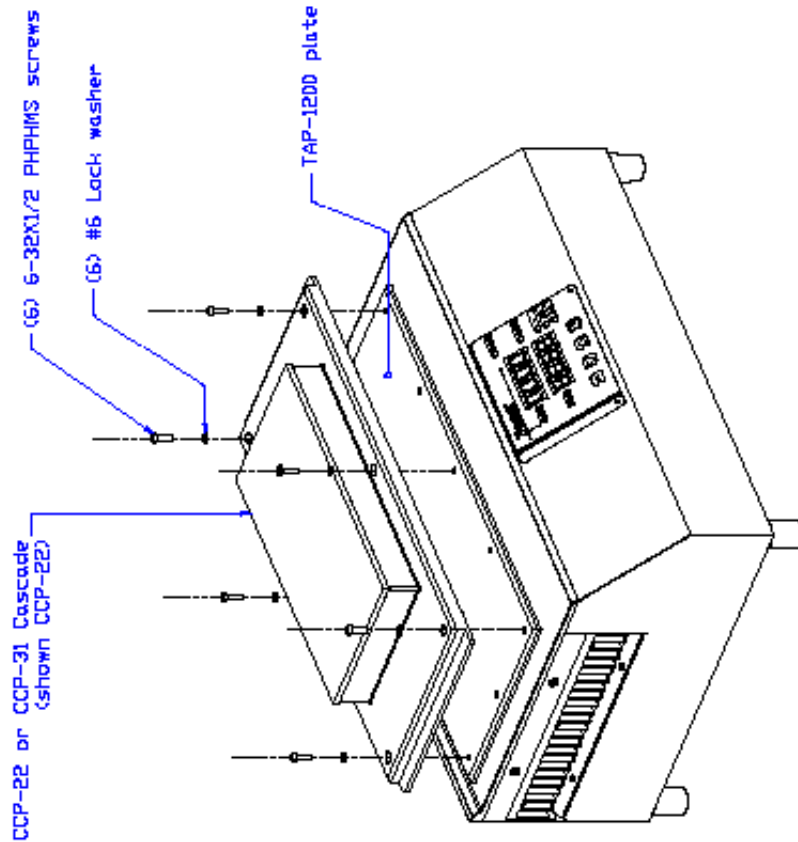
Step 6: Confirm steps 1-5

Caution:

The plate surfaces on AHP-1200CPV and CCP-22 cascade are precision machined flat surfaces. Do not damage or scratch these surfaces. Ensure they remain clean and free of dust and any other particles.



Installation of CCP-22 or CCP-31 via optional ACP-1200 clamps on AHP-1200CPV built with standard plate



Installation of CCP-22 or CCP-31 via screws on AHP-1200CPV built with TAP-1200 plate

REV	DESCRIPTION	DATE	APPROVED				
<div>INFORMATION DISCLOSED HEREIN IS THE CONFIDENTIAL PROPERTY OF TEGA CORP. RECEIPT SHALL NOT BE THE INFORMATION IN ANY UNAUTHORIZED MANNER.</div> <div>FINISH</div>							
<div>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ARE:</div> <table><tr><td>DRAWING</td><td>ANGLE</td></tr><tr><td>300 ±</td><td>FINISHED</td></tr></table> <div>MATERIALS</div>				DRAWING	ANGLE	300 ±	FINISHED
DRAWING	ANGLE						
300 ±	FINISHED						
<div>CCP-22 AND CCP-31 INSTALLATION ON AHP-1200CPV</div>							
<div>YOUNG & RUBICAM LLP 800 LINDEN AVENUE, CHICAGO, IL 60611</div>							
DRAWN BY: AA		CHECKING # SK080710					
DATE: 07/11/08		SCALE: 1/2"=1'					
		SHEET NUMBER: SK080312					

The plate surfaces on AHP-1200CPV and CCP-21 cascade are precision machined flat surfaces. Do not damage or scratch these surfaces. Ensure they remain clean and free of dust and any other particles.

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Safety Features

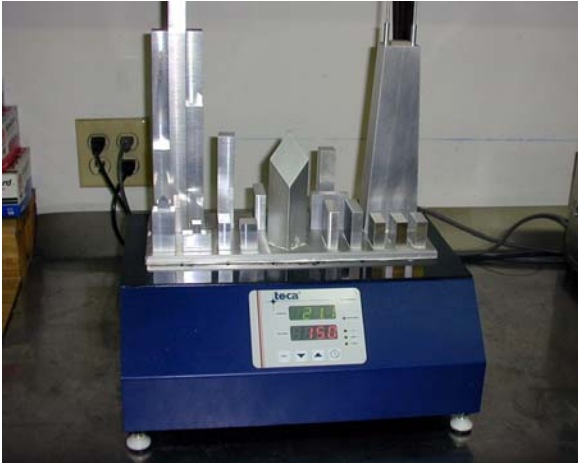
- Automatic recovery to set point after regain of power
- Program resume after regain of power
- Rear Condensate Guard
- Programmable over-temperature limits
- Hardwired safety overheat limits (95 C) will shut down everything and trip an alarm. System automatically recovers after cool down.
- System shut down upon sensor break, over and under range

Warnings

- Read and understand the manuals included with the product.
- This product must be operated with sufficient coolant flow. Operating this unit without coolant flow can damage the unit irreversibly and void the warranty.
- This product can get very COLD and very HOT. CAUTION should be used at all times. Do not touch any surface which may be at an extreme temperature range.
- This product should be serviced by a qualified technician.
- Caution: Risk of electrical shock. Always disconnect the power when performing any servicing.
- Exercise every possible caution if cooling any type of hazardous material. Follow all precautions necessary for the particular materials being cooled.
- Use the external sensor feature with caution. There may be a significant time delay between the cold plate temperature and the sensor temperature causing potentially dangerous overheat or freezing conditions.
- Do not operate this unit without coolant flow. Operating this unit without sufficient coolant flow could cause irreversible damage to the unit.

How do I use it? NOW!

Step 1: Locate the unit on a flat level surface like a bench. Make sure you have some room around it for good airflow.



DO
Give it room to “Breathe”



DON'T
Pile lots of stuff all around it.

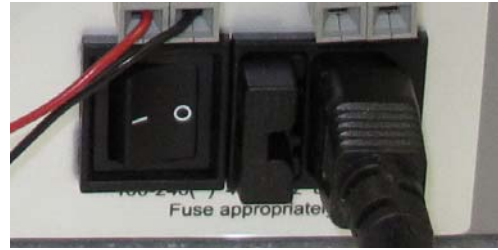
Step 2: Connect the fluid ports of the unit to a liquid chiller with sufficient cooling capacity or to tap water. Fluid ports are 9/16 SAE J19260-1, also included 1/4-18 NPT O-Ring adapters for the fluid ports.



Step 3: Plug the cord in the back of the unit, the other end in the wall outlet and turn the unit on. The temperature controller will turn on, the fan will start to spin and the plate will begin to approach the set temperature.



Step 4: Plug the cord in the back of the unit, the other end in the wall outlet and turn the unit on. The temperature controller will turn on, the fan will start to spin and the plate will begin to approach the set temperature.



Step 5: Closely observe the operation of the unit. Set the controller to -10. Carefully touch the plate or monitor it's temperature with a separate instrument to insure it's cooling.

If it feels as if it's getting cold continue watching as it approaches the set point. The fan should begin to quiet down as it slowly approaches the set point.

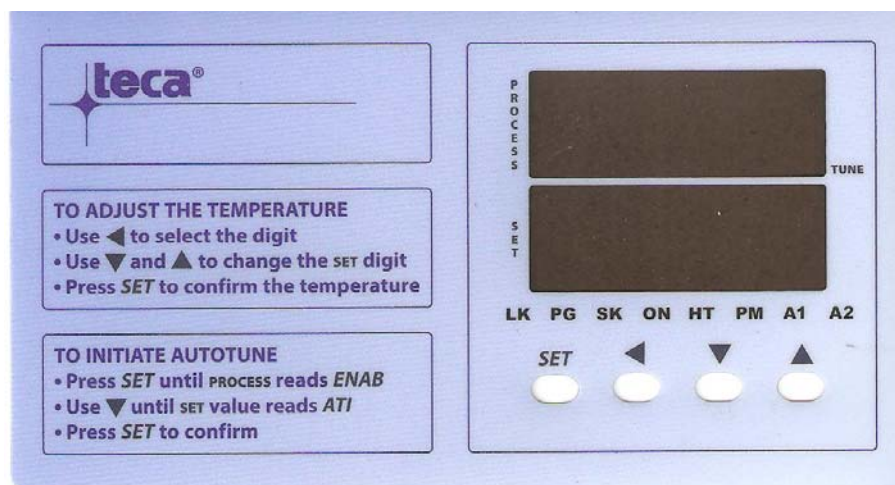
If it feels as if its getting cold but the process temperature is not changing the cascade sensor is not connected or is not installed properly.

If the sensor switch is on INT the unit will try to control the AHP-1200CPV plate and not the cascade top plate which will be uncontrolled and change in temperature erratically.

If it's feels like it's getting hot and the temperature on the display is rising the cascade is wired with the incorrect polarity.

If it's struggling to get to temperature seeming not to want to make it yet the fan keeps changing speeds you are likely close to the performance limit or the fan gain is set to low. Increase the fan gain or change it to continuous to get the most performance from your system

Front Panel Layout and Basic Operation



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 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.

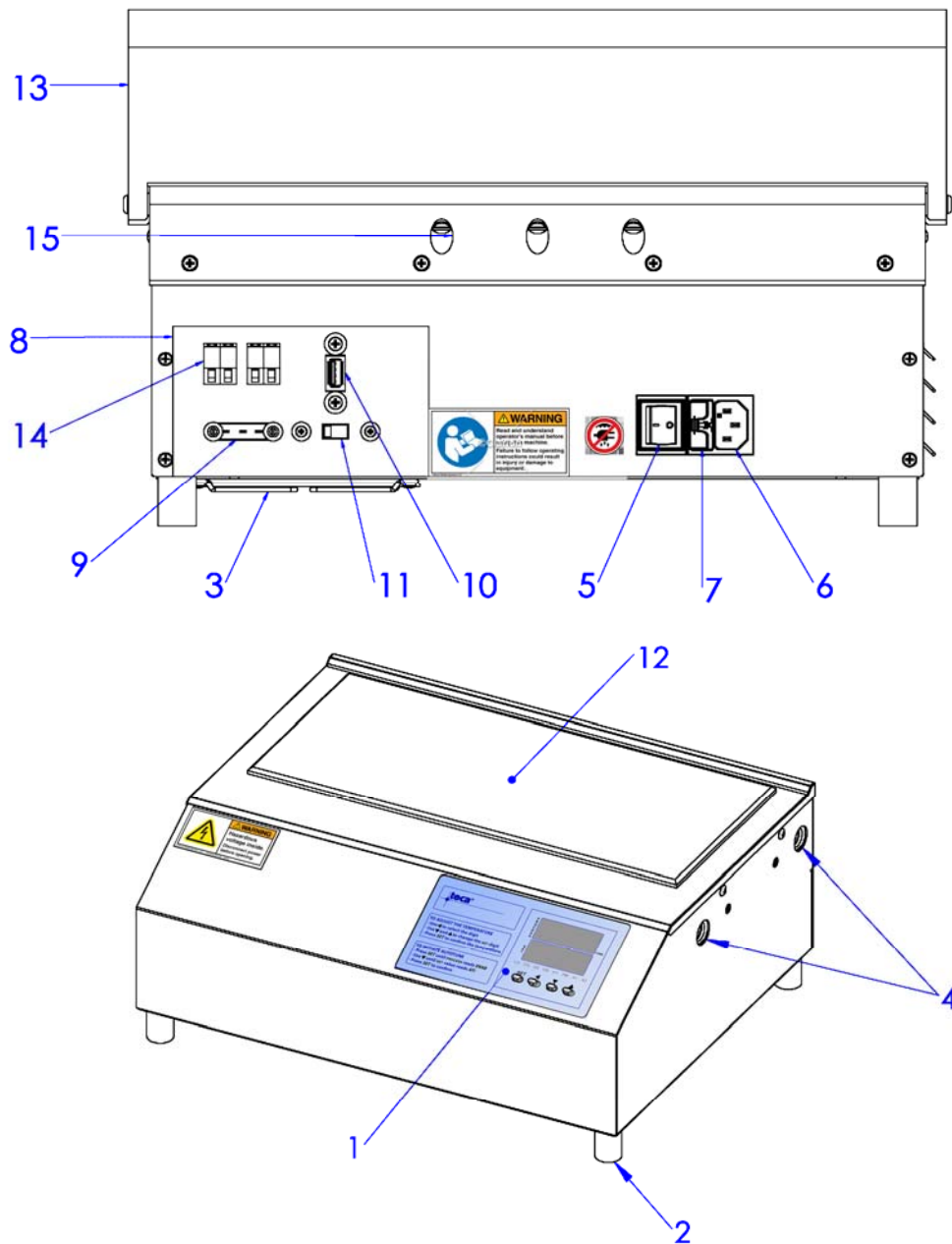
HT: LED indicator is on during the heating and off during the cooling.

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

Typical Physical Layout



- | | |
|-----------------|--------------------------------------|
| 1 Front Panel | 9 External RTD Connector |
| 2 Rubber Feet | 10 USB Comms Port |
| 3 Air Exhaust | 11 Internal-External Sensor Selector |
| 4 Fluid Ports | 12 Cold Plate Surface |
| 5 On-Off Switch | 13 Hinged Cover |
| 6 Fuse Drawer | 14 Cascade Power Input |
| 7 Power Input | 15 Cascade Lead Pass Through |
| 8 Name Plate | |

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 and under-cooling 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. The connector and switch directly behind the controller corresponds to its remote sensor.



Connect the sensor to the back of the chiller, slide the selector switch towards the connector, turn the unit on and verify the function and safety.

A faulty or disconnected RTD is signaled on the process display as oPEn

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

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 PROCESS VALUE display shows “ LEVEL”. and the SET display shows "CAbL".

3 - Press the "SET" key 7 times until the PROCESS VALUE display shows “ PtL”. and the SET display shows a low temperature value, typically "-50.0".

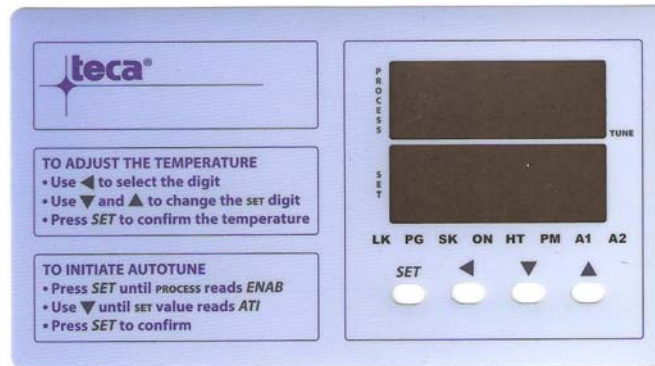
4 - Adjust your simulator to simulate your desired PtL, in this example -50.0 C. Allow everything to stabilize. Press and hold the SET key for 5 Seconds.

5 - Now the PROCESS VALUE display now should show “ PtH”. and the SET display a high temperature value, typically "150.0".

6 - Adjust your simulator to simulate your desired PtH, in this example 150 C. Allow everything to stabilize. Press and hold the SET key for 5 Seconds.

7 - The displays should now be as they were after Step two. To return to the operating menu press and hold the SET key and quickly press the up arrow key.

Complete Front Panel Operation AKA - Doing it the hard way



SET KEY: Press once to access the next programmable parameter.

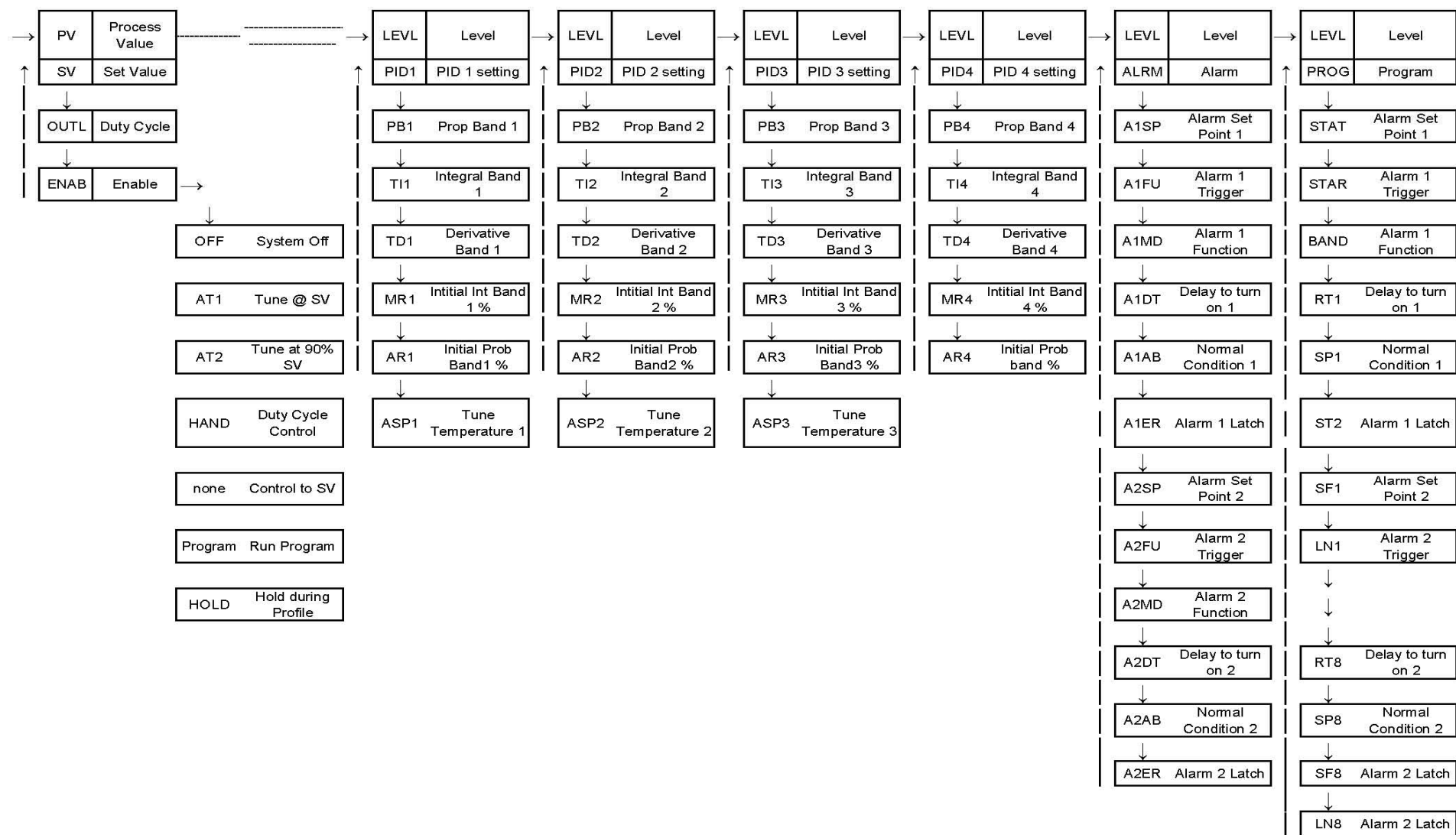
UP ARROW KEY: Press to increase the set point or parameter value.

DOWN ARROW KEY: Press to decrease the set point or parameter value.

LEFT ARROW KEY: Press once to select set point.

Press the SET and UP keys once to return the normal operation.

LEVEL KEY. Press the SET and SHIFT keys simultaneously for 5 seconds to select programming level, press SET key to the selected level.



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