TROUBLESHOOTING QUICK-GUIDE

COBREX® STEAM STORAGE WATER HEATERS

Models: (1200-7200) (L) (150-4500) A (TCX)

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1. HOW TO CHANGE THE TEMPTRAC OPERATING TEMPERATURE SET POINT

To change the temperature set point:

a. Press the **SET** button to display the current set point value. The parameter ST1 is shown along with its value.

a. Press the **SET** button again to change the value. As the value flashes use the **UP** or **Down** Arrow buttons to increase or decrease the temperature set point.

b. Press the SET button again to confirm the new value.

c. To exit and return to the home screen, press the **SET** and **UP** buttons together or wait 15 seconds without pressing any key.

2. TEMPTRAC ALARMS

Message	Probable Cause	Troubleshooting / Corrective Action
"P1"	TP1 probe failure.	Inspect Probe 1 installed in the top of the tank, for an open or short. Check wire connections at screw terminals 14 & 17.
"P2"	TP2 probe failure.	Inspect Probe 2 installed in the middle of the tank, for an open or short. Check wire connections at screw terminals 15 & 17.
"HA"	High-temperature alarm	Water temperature sensed at Probe 1 has exceeded the controls maximum **ALU** set point (215°F). Manual reset req'd.
"LA"	Low-temperature alarm	Water temperature sensed at Probe 1 has dropped below the controls minimum **ALL** set point (35°F). Manual reset required.
"AL3"	Alarm on Any Failure is activated	See **Troubleshooting an AL3 Alarm Instructions**.
"Mn1"	Maintenance alert for first stage	Control has exceeded the maximum working hour's set point of 9999 hrs. Set parameter **oP1** to "**0**" to disable.
"Mn2"	Maintenance alert for second stage	Control has exceeded the maximum working hour's set point of 9999 hrs. Set parameter **oP2** to "**0**" to disable.
"Mn3"	Maintenance alert for freeze protection	Control has exceeded the maximum working hour's set point of 9999 hrs. Set parameter **oP3** to "**0**" to disable.
"rtc"	The real time clock has lost its setting	Program the real time clock.
"rtF"	Real time clock failure	Replace TempTrac control.

3. TEMPTRAC LED ICONS

The LED Icons below display on Cobrex units when the TempTrac control is energized and in a call-for-heat condition:

LED	MODE	CONTROL CONDITION	RESULTS OF CONTROL CONDITION
	On	Output 1 relay is on. Primary call-for-heat operation. Terminals 4-5.	Circulating Pump and Condensate Control Valve is energized.
	On	Output 2 relay is on. Typically used for second stage operation. Terminals 6-7.	Circuit not used on Cobrex products.
	On	Output 3 relay is on. Typically used for circulation pump enable. Terminals 8-9.	Circuit not used on Cobrex products.

4. TROUBLESHOOTING A TEMPTRAC AL3 ALARM

During a call-for-heat, when any safety device or remote proving interlock prevents the burner from firing within three (3) minutes, the TempTrac will initiate an alarm notification. This notification is indicated in the following ways:

- A flashing “AL3” alarm message is displayed on the TempTrac screen.
- A high pitch beeping audible alarm.
- The dry contacts at terminals A1 & A2 will close.
- The alarm register, accessible through the Modbus RTU communication option, shows alarm.

An **AL3** alarm may be caused by one or more of the following fault conditions:

- A temperature limit condition is exceeded
- A field interlock remained open during call-for-heat demand.
- A low water control or low water condition exists
- The SPDT alarm relay is faulty.

Recommended Troubleshooting Steps:

To troubleshoot an AL3 alarm condition, reset the TempTrac control by pressing any button. If a call-for-heat is present, the Cobrex water heater should attempt to restart. If after 3 minutes the alarm activates, a fault condition must be cleared before the unit will operate properly.

Probable Cause	Troubleshooting / Corrective Action
A temperature limit condition is exceeded.	Check to confirm the high temperature limit thermostat is closed.
A field interlock remained open during call-for-heat demand.	Check the field interlock Terminals R1-R2 for continuity if remote wiring is attached.
A low water control or low water condition exists	Check to confirm the LWCO is energized. The LED should be ON.
The SPDT alarm relay is faulty.	Replace relay.

5. GENERAL TROUBLESHOOTING

Problem	Probable Cause	Troubleshooting / Corrective Action
Outlet water temperature not constant	Insufficient recovery	Check heater design capacity. Application demand may be exceeding heater recovery.
	Malfunctioning or misadjusted thermostat(s)	Measure the hot outlet temperature and compare to the thermostat set point. The TempTrac control should turn on and off within approximately 5°F of set point. Replace defective control if necessary.
Outlet temperature LED display is hotter than the lower LED display temperature	These temperatures result from the position of the upper and lower sensing probes in the tank.	Adjust the TempTrac set point as required to maintain the desired hot water outlet temperature
Heater recovery is slow or outlet temperature is below set point.	The domestic water circulating pump is not operating properly.	Check for proper operation. Replace if necessary.
	Clogged Y-Strainer in domestic water line near the recirculation pump or in the steam supply line.	Blow down or clean steam, condensate and potable water Y-Strainers.
	Condensate control valve is not fully opening.	Check for proper operation of condensate control valve and service if necessary.
	Heat exchanger is fouled.	Inspect the heat exchanger for excessive scaling or fouling on the water side and clean if needed.
	Abnormal operating conditions.	Check the TempTrac set point. Confirm the flow rate does not exceed recovery capacity. Check for proper steam pressure.
No hot water even at low flow.	Condensate control valve not opening.	Check for proper operation. Replace if necessary.
	The domestic water circulator pump is not operating properly.	Confirm pump is being energized during a call for heat. If so, replace the pump. If not, trace wiring problem.
	Malfunctioning or misadjusted thermostat(s).	Pump and condensate control valve should energize at 2 degrees below set point. Check if fixed hi-limit thermostat is open. Verify wiring and replace faulty components as necessary.
Outlet temperature is too high and above set point.	Malfunctioning or misadjusted thermostat(s).	Condensate control valve should deactivate when tank temperature reaches set point, and the pump after a 30 second delay. If the thermostat is properly

		adjusted and is not de-energizing the pump, verify wiring and replace the control if necessary.
	The pump is not deactivating.	The delay relay is malfunctioning. Replace defective components as required.
Heat exchanger leaking from weep-hole.	A continuous weep-hole leak indicates a breach in the double-wall tube(s).	Replace the heat exchanger.
Steam delivery pressure to heat exchanger is low or drops off.	Low inlet pressure	Fully open valve. Unclog strainer. Check for low boiler output or upstream blockage and make necessary corrections
	Steam regulating valve pilot misadjusted, undersized or malfunctioning.	Readjust to desired operating condition.
	Steam regulating valve or pilot valve is undersized or malfunctioning	Refer to the valve manual for sizing and repair instructions.
	Piping flow restricted.	Calculate the flow velocity and expected friction loss. If excessive, larger inlet and outlet piping are necessary.
Steam delivery pressure is high or overrides	Open valve on steam regulating valve by-pass line.	Close the valve
	Steam regulating valve or pilot valve is oversized or malfunctioning	Refer to the valve manual for sizing and repair instructions.
Steam delivery pressure erratic	Pressure drop limits exceeded. Recommended maximum single stage reduction is 100 psi (6.9 bar).	Reduce the pressure drop. If drop remains above 100 psi (6.9 bar), consult factory.
	Strainer clogged.	Clean strainer
	Steam regulating valve oversized	Check valve capacity against load. If excessive, install smaller trim or valve. Refer to the valve manual for instructions
	Steam regulating valve pilot lines or bleed orifice blocked	Remove, check and replace as required
	Sensing line poorly located. The feedback signal will be inconsistent if line is in a turbulent area	Relocate line to a non-turbulent area.
	Steam regulating valve or pilot malfunction	Refer to the valve manual for instructions on pilot and main valve repair