

PRE-INSTALLATION

- ✓ Check to make sure that Control Panel received is the same as that ordered.
- ✓ Upon receipt of the panel crate inspect for damage caused during shipment. If damage is found, take appropriate action immediately.

SAFETY

Care should be taken to read and completely understand the Installation and Maintenance Guide before installing and wiring the Control Panel to the heater. Any installation and maintenance performed on the Control Panel shall be done by a qualified electrician, in accordance with the "National Electrical Code" and other electrical codes as they apply. It is the user's responsibility to ensure that the Control Panel is properly selected and installed in the application.



The Caution Symbol (exclamation point) alerts you to a "CAUTION", a safety or functional hazard which could affect your equipment or its performance.



The Warning Symbol (lightning bolt) alerts you to a "WARNING", a safety hazard which could affect you and the equipment.

INSTALLATION

WARNING: Make sure that all high temperature control protection devices (if provided) are connected to appropriate over temperature sensors. Failure to install over temperature control protection where a potential hazard exists could result in damage to equipment, property and injury to personnel.

DANGER: HAZARD OF FIRE. Extreme care should be taken to locate Control Panels in safe environments. Mounting panels in atmospheres containing combustible gases and vapors should be avoided. Care should also be taken to keep combustible materials far enough away to be free of the effects of high temperatures. Units with external heat sinks are capable of developing high temperatures and allowances should be made for personnel protection and clearances to combustibles.

1 Terminal Enclosures

Terminal enclosures should be selected to be compatible with the environment in which the Control Panel will be located. It is the user's responsibility to determine the need for correct rating of the electrical housing. This should be based on appropriate national and local electrical codes. Failure to use a compatible enclosure could result in property damage and personnel danger.

Terminal enclosures that house electronic controls are capable of environmental temperatures between 32°F and 95°F. Keeping the enclosure within the recommended ambient temperatures will ensure correct and efficient operation of the electronic components.

2 Orientation I Mounting

Ensure that the enclosure is securely anchored. The enclosure should be properly restrained during mounting to reduce the hazard to personnel and property.

The enclosure must also be mounted vertically to assure proper air flow through external heat sink fins of the solid state power switching device, for enclosure cooling.

Before permanently installing a Control Panel consideration should be given for the required clearance for door swing and any service clearances required by National or local codes. Consideration should also be given for ventilation. A clearance of 12" (6" minimum) is recommended for external heat sinks.

3 Wiring



WARNING: HAZARD OF ELECTRIC SHOCK. Any installation involving Control Panels must be grounded to earth to eliminate shock hazard. Ground connections are provided on the sub panel of all units to allow for grounding.

Consult wiring diagram supplied with the unit for correct supply and load connections. If wiring diagram is lost, contact Thermal Solutions Engineering Department for the appropriate wiring diagram. Supply and load conductors should be properly selected based on the maximum amperage, electrical power rating of the control panel circuit. Consideration should also be given to ambient temperature, quantity of conductors in conduit or wire way, voltage drop of conductors over long runs and type of environment per applicable Codes. Conductors should also be housed based on the same classification as the Control Panel enclosure. It is the user's responsibility to properly size and install the conductors. Avoid locating sensitive signal and thermocouple lead wires near high voltage cables. If high voltage cables must be crossed, do so at right (90°) angles. Be certain to observe polarity when connecting thermocouple leads and milliamp signal leads.

All wiring (signal and power) to the control panel should be made in accordance with the National Electrical Code NFPA 70, OSHA requirements, any state and local codes, and any other applicable job site specification requirements.

START-UP

Please read all instructions and all device literature before attempting start-up. Use caution in taking any voltage or current readings with power on. Insure that the environment is safe before conducting any tests with the enclosure open.

- 1 Verify electrical terminations are tight and wiring is per wiring diagram supplied with the panel.
- 2 Verify incoming voltage is equal to the design voltage and equal leg to leg on 3 phase units.
- 3 Check the setting of the temperature switch high (TSH) sheath limit control (if provided). Adjustment of the temperature set point will be necessary to suit the application requirements. The high limit controller should be adjusted with the control power selector switch in the SETUP position. Once the process has been started, additional adjustments may be required. Refer to the instruction manual on the provided CD for the high limit controller instructions for setting and adjusting the controller. The supplied high limit controller is designed to protect the element sheath from an over-temperature condition due to a low process flow or low liquid level. Removal of the limit function from controller functionality may result in permanent damage to the heater, wiring, electrical and electronic components as a result of an over-temperature condition. Consult drawings if there are any questions.
- 4 Check the setting of the process control. Adjustment of the temperature set point will be necessary to suit application requirements. Refer to the instruction manual on the provided CD for the process controller instructions for setting and adjusting the controller.
- 5 Apply power and observe operation of the system. Slowly increasing the temperature may be advisable to lessen any thermal shock to system.
- 6 After applying power to the system make sure that the system is being controlled properly before leaving it to run unattended. Failure to do this could result in overheating resulting in personnel danger and fire.

PREVENTATIVE MAINTENANCE



CAUTION: HAZARD OF ELECTRIC SHOCK. TURN ALL POWER TO CONTROL PANEL OFF BEFORE OPENING COVER, USE APPROPRIATE DISCONNECT LOCKOUTS. IT MAY BE NECESSARY TO DISCONNECT MORE THAN ONE POWER SOURCE. UNITS WITH SOLID STATE POWER CONTROLS SHOULD BE ALLOWED TO COOL BEFORE PERFORMING ANY MAINTENANCE.

Check all electrical connections for tightness on a regular basis (minimum 6 months). Any oxidized or corroded wire caused by loose connections need to be replaced. Internal devices will have recommended torque data attached to the device or printed on adhesive labels. It is also advisable to check for tightness after initial start-up.

Perform functional test of all temperature limiting devices on a regular interval.

Accumulation of dust and dirt should be cleaned off periodically since their accumulation will inhibit proper heat distribution required to insure a long, trouble-free life of electrical components. This is especially true with units having an internal or external heat sink. Exercise care to avoid damaging components.

A large dust accumulation within the box indicates a poorly sealed enclosure or conduit, or drafts within the conduit system. Correct as necessary.

Check for rodent damage to wiring or internal materials.

RETURN POLICY

- 1 Call Thermal Solutions of Texas at 866-351-4328, for a Return Material Authorization (RMA) number before returning any item for repair or replacement. The following information is needed to process a returned Control Panel:
 - a. Customer Name
 - b. Contact Name and Phone Number
 - c. Part number (from nameplate panel)
 - d. Purchase Order used to purchase the control panel
 - e. Application used
 - f. Quantity
 - g. Reason for return
- 2 Prior approval and an RMA number is needed when returning any products for credit, replacement or repair. Make sure the RMA number is on the outside of the carton, and on all paperwork. Return all material Freight Prepaid only.