

# Distribution, Control and Alarm Systems

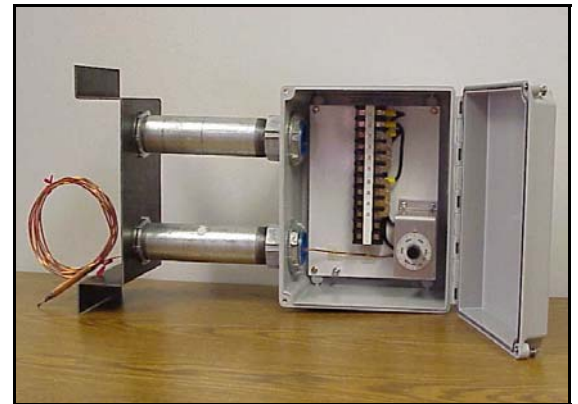
# HB Heating Module System Accessories

- ◆ *Local mounted thermostats*
- ◆ *Centralized contactor and circuit breaker panels*
- ◆ *All NEMA ratings, materials and styles are available*
- ◆ *Custom designed electronic, SCR or PLC based control, monitoring, alarm and energy management systems*

## **THERMOSTATS**

NEMA 4 and NEMA 4X mechanical thermostats, suitable for local mounting at each hopper. These items can be supplied as single instruments which may be wired back to a centrally located distribution panel that contains contactors, circuit breakers and alarm lights (see below). HTD can also customize a thermostat such that one enclosure, mounted directly at the hopper, can house all of the basic control, switching and alarm equipment for one system. This design approach is particularly useful on small installations of one to four hoppers.

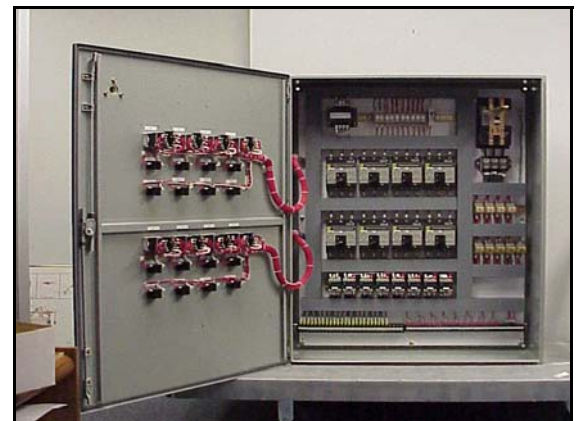
One thermostat provides the minimum level of temperature control for one hopper heating system. Two or more additional thermostats per hopper are frequently specified to provide high or low temperature alarms and/or control capabilities.



## **DISTRIBUTION AND ALARM PANELS**

These custom designed and built panels can provide centralized power distribution, switching, circuit protection and alarm functions for a group of hopper heating systems that are individually temperature controlled by local mounted thermostats or temperature controllers.

Distribution Panels are typically sized to handle from four to sixteen hopper heating systems. "Power On" plus low and high temperature indication lights are frequently included such that plant personnel can oversee the operation of all of the hopper heating systems from one location.



ELECTRIC HEAT TRACING PRODUCTS AND SYSTEMS

# Distribution, Control and Alarm Systems

## ***ELECTRONIC CONTROL SYSTEMS***

Custom designed and built Electronic Control Systems are available to provide individual temperature control, monitoring and alarm functions at one location. Systems can be sized to handle up to twenty hopper heating systems within one enclosure.

Electronic temperature controllers can provide proportional control and digital display of the operating temperatures for each hopper. Multiple alarm functions are easily built into this type of system. Main and branch circuit breakers are included to provide one, multi-functional, centralized control system.



## ***SCR AND PLC BASED CONTROL AND ENERGY MANAGEMENT SYSTEMS***

HTD offers a complete temperature control, monitoring, alarm and energy management system that can handle up to twenty individual hopper heating systems.

This design provides all of the instrumentation, distribution and protection equipment in one enclosure and the complete system can include remote alarm annunciation and PLC, DCS or PC based communication capabilities.

The custom designed panels and systems shown in this brochure can be completely tailored to meet your exact requirements. Enclosures, components and equipment preferences can be specified for uniformity with other plant systems. Design, manufacturing and testing are all completed at our Whitehouse, NJ facility and complete drawing packages, Operation and Maintenance Manuals are included with every system.



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## Junction Boxes and Custom Mounting Brackets

## HB Heating Module System Accessories

- ◆ *Low cost enclosures, installed outside of the hopper insulation for easy, convenient access*
- ◆ *All NEMA ratings, materials and styles are available*
- ◆ *Custom designed mounting hardware to simplify installation and provide protection for the system wiring that must pass through the hopper insulation and cladding to enter the enclosure*

**TYPE PJB** PJB enclosures are located outside of the hopper insulation and are designed and sized to provide a convenient and protected environment where the hopper heater cold leads can be terminated and connected to the system power supply. The use of PJB enclosures also greatly simplifies future routine maintenance checks and testing of the hopper heaters by providing access to all heater cold leads without the need to remove any hopper insulation or cladding.

PJB enclosures are supplied with factory installed terminal blocks and system wiring diagrams. All NEMA ratings, enclosure styles, enclosure materials and terminal block preferences can be offered.



*10 x 8 x 6" NEMA 4X, fiberglass example shown with pre-jumpered, 600 vac rated Marathon terminal blocks. This size and design of PJB enclosure is typically used on systems that involve twelve or fewer heating modules per hopper.*

**TYPE SJB** This enclosure is required when RTD or thermocouple type sensors are being used as part of the hopper heating control / monitoring system.

The SJB enclosure provides a convenient and protected environment where the sensor leads can be terminated and connected to the control system wiring.

Factory mounted terminal blocks are supplied and all NEMA ratings, materials and terminal block preferences can be specified.



*Standard 6 x 6 x 4" NEMA 4X, fiberglass example shown with Omega terminal blocks for connection of one sensor. SJB enclosures can be also designed and supplied with terminal block arrangements for dual or multiple sensor termination and connection.*

# Custom Mounting Brackets

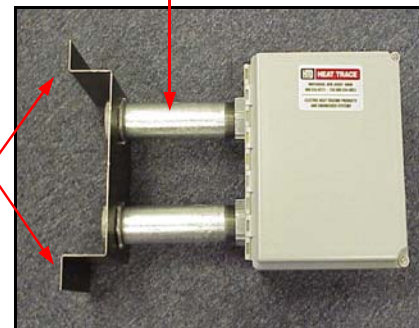
Heating system and control system components that are installed directly on the hopper surface *should never be terminated under the hopper insulation*. Heating module cold lead cables, temperature sensor leads and thermostat capillaries should all be terminated *outside* of the hopper insulation such that they can be easily accessed at all times. These items must, therefore, be protected and safely routed from the surface of the hopper through the hopper insulation and cladding and into the wiring enclosure being used.

The custom mounting brackets shown in the first two photographs provide structural support for the enclosure being mounted PLUS essential protection and safe routing for all of the cables and wiring associated with the heating and control system.

**TYPE EMB** Consists of a mild steel, top hat style base with one (or more) conduit protection tubes. The flanges on the base are welded to the hopper surface and the conduit tubes penetrate the hopper insulation and cladding to screw directly into a PJB Power Junction Box or SJB Sensor Junction Box. Fully protected cables / wires pass directly from the hopper surface through the conduit tubes and into the enclosure.

Conduit tubes to protect and route heater cold leads safely through the hopper insulation and cladding

Top hat bracket is welded to the hopper surface



EMB bracket with PJB Power Junction Box

**TYPE TMB** Mild steel angle bracket with single conduit tube for protection and routing of thermostat capillary tubing. This bracket is welded directly to a hopper stiffener.



TMB bracket with type E55 H thermostat

**TYPE SMC** Mild steel mounting clip to hold an RTD, thermocouple or thermostat sensing bulb in permanent contact with the hopper surface. Clip is held in position by using a 1/4" stud that is spot welded to the hopper surface.



SMC clip with RTD sensor



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