



# FRP HEATING PANELS

## CONTROLS AND ACCESSORIES



**FREEZE-PROTECTION OF  
HOPPERS, CHUTES AND TRANSFER POINTS  
WITHIN COAL, CEMENT, POWDER AND  
OTHER TYPES OF MATERIAL  
HANDLING / CONVEYING SYSTEMS**

# FRP HEATING PANELS

## SYSTEM ACCESSORIES

FRP Heating Panels are factory fabricated heaters that are fully tested and supplied ready for immediate installation. This unique heater is custom sized and shaped to fit the exact area being heated. The FRP Heating Panel is attached and held in position by mounting clips that are located around its perimeter. FRP Heating Panels are supplied complete with mounting clips, mounting studs, nuts and washers.

This mounting clip attachment system provides a simple and quick, low cost method of installation that also permits removal and re-installation of the heating panel when maintenance needs to be performed on the conveying equipment.

Photograph 1



FRP Heating Panel

Mounting clips to clamp the edges of the FRP Heating Panel directly to the area being heated.

FRP Heating Panels can be supplied with a conduit hub and custom length cold leads that may be routed to a local mounted junction box. Alternatively, FRP Heating Panels can be supplied with hazardous rated junction boxes molded directly onto the heating panel.

As shown in the Photograph 2, local mounted junction boxes provide a convenient method and location for connecting several heating panels to the specified power supply.

Photograph 2



Local mounted junction box to accommodate the connection of all of the heating panels installed on two sides of a hopper

Incoming power supply in rigid metal conduit

Flexible conduit covered cold leads from each heating panel to the local junction box

1/2 inch conduit hub built directly into the FRP Heating Panel to accept flexible conduit

## CONTROLS

**Photograph 3**

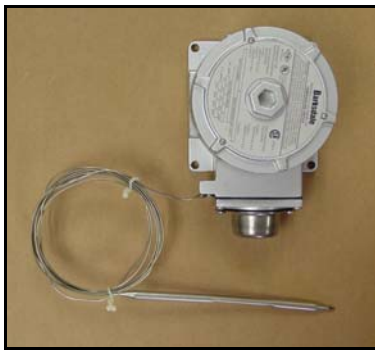
Type B 121  
ambient  
sensing  
thermostat



The FRP Heating Panel System is designed to maintain the inside surfaces of hoppers, transfer chutes and other parts of conveying systems above freezing during winter operation. Holding the inner surfaces above freezing will eliminate flash freezing of the frozen or wet coal as it moves through the conveying system. To ensure continuous protection, the heating system must be energized and operational at all times when the ambient air temperature falls below 40° F.

Control of this type of system is simple. The system is switched on and off by a thermostat that is set to monitor the rise and fall in ambient air temperature.

Photograph 3 shows the type B 121 ambient sensing thermostat. This is the standard thermostat used to energize FRP Heating Panel Systems in both hazardous and unclassified (non hazardous) areas.



**Photograph 4**

Type TXR 25 - 325°F  
over-temperature thermostat

All hazardous area applications also require the use of an over-temperature thermostat. This operational requirement is achieved with the use of a bulb and capillary style thermostat that senses the actual operating temperature of one of the FRP Heating Panels within the system.

Photograph 4 shows the TXR bulb and capillary style thermostat which has an adjustable range of 25-325°F. The sensing bulb of this thermostat fits into a phial pocket that is built into the heating panel selected to monitor over-temperature conditions.

**Photograph 5**



Indicator Panels are optional accessories available for use with the FRP Heating Panel System. This type of enclosure is normally mounted adjacent or near to the heating system to provide plant personnel with an immediate and continuous overview of the operating status of the heating system.

A "Power On" indicator light identifies that there is power available to the system. A "Power Required" indicator light identifies when the ambient thermostat is calling for power and the system should be energized and a "System On" indicator light confirms that the heating system is operational.

Photograph 5 shows a typical NEMA 4 Indicator Panel used in unclassified area installations (see next page for hazardous rated version). When required, this panel may also include contactors to switch the heating load, circuit breakers and alarms.

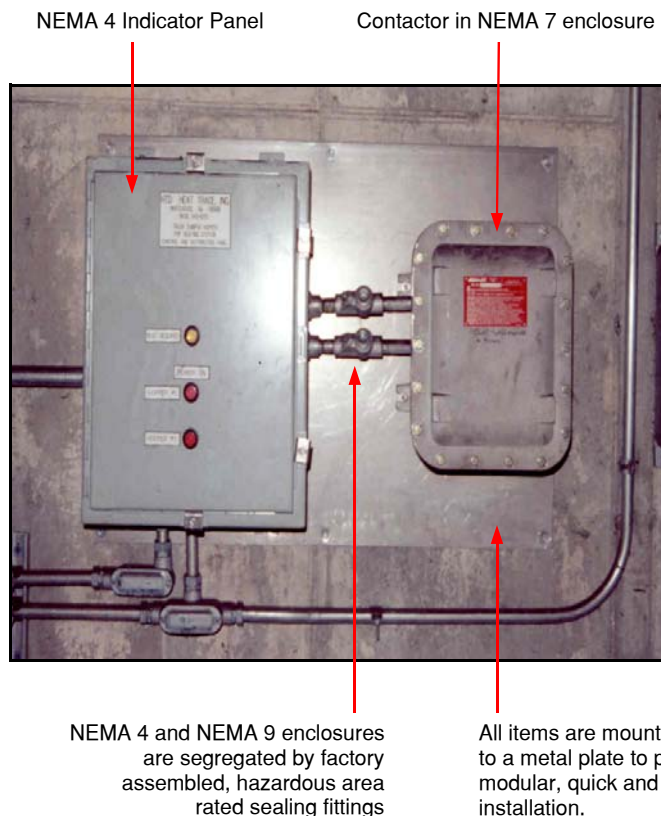
### CONTROLS (cont)

Hazardous area regulations require all *arcing and sparking devices* to be housed in a suitably rated explosion-proof and/or dust-ignition proof enclosure. These regulations apply to items such as thermostats and contactors.

The standard ambient sensing and over-temperature thermostats used with the FRP Heating Panel System are fully qualified for use in both hazardous and unclassified area installations. When the total size (amps) of the FRP Heating Panel System exceeds the switching capability of these thermostats, a contactor must be used to switch the total heating load.

To meet these system requirements in unclassified areas, the required contactor can be supplied as a separate item in a NEMA 4 enclosure or it can be included in the Indicator Panel that is shown in Photograph 5.

In hazardous area installations, the contactor can be supplied in a NEMA 9 enclosure as a separate item or, as shown in Photograph 6, it can be combined with an Indicator Panel into one modular, wall mounted package.



Photograph 6

This photograph shows a typical Indicator Panel and Contactor installed in a Class I Div 2 hazardous area application.

As required by the National Electric Code, the switching device (contactor) is sealed off from the non switching devices (Indicator Panel) by rigid conduit and sealing fittings.

All components are factory assembled, factory pre-wired and plate-mounted to form one modular easily installed unit.