X10758

HVAC | HEATER BATTERY CONTROLLER

PR3-E SERIES

290kW (400A), 415V
ENCLOSED 3-PHASE BURST FIRE
AC POWER REGULATOR STACK

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KEY FEATURES:

- ✓ **Rated power:** 290kW (400A) at 415V AC
- ✓ Fast-pulse zero-voltage switching for minimal RFI and flicker
- ✓ **Control options:** 0–10V DC (default), 0–5V, 4–20mA, or 5K potentiometer
- ✓ Built-in fault diagnostics with LED indicators for overtemperature, phase loss, and sensor failure
- ✓ **Overtemperature protection:** automatic trip at 90°C, reset at 85°C
- ✓ Forced-air cooled for high-load reliability
- ✓ **NATO Stock Number:**
  - J250 99 1554088
- ✓ Robust terminal blocks with torque-optimised connections

APPLICATIONS:

The **PR3-E-290KW** power regulator is ideal for large-scale HVAC systems and other industrial applications that require precise and reliable thermal control, including:

- Air curtains
- Industrial furnaces
- Ovens
- Dryers
- Hot plates

Its capability to regulate high-capacity resistive loads makes it especially well-suited for demanding temperature control systems in commercial and industrial settings.

The **PR3-E-290KW** HVAC Controller is a high-performance, enclosed 3-phase burst fire **thyristor power regulator** designed to deliver seamless control of resistive loads up to 290kW. Engineered using the reliable two-thirds control technique, this power controller utilises zero-voltage switching burst fire technology to minimise electrical noise (RFI) and prevent flicker, ensuring smoother operation across HVAC and industrial applications.

This robust and efficient unit is equipped with **automatic temperature trip reset**, **high-speed semiconductor fuses**, and an integrated **heatsink with forced-air cooling**, all enclosed in a durable casing for reliable, high-temperature environments. Designed for fast and easy installation, it features clearly labelled terminal access for both signal and power connections.

TECHNICAL SPECIFICATIONS

Power Rating	**290kW (400A) @ 415V RMS (typical supply)**	
Input Voltage	400V RMS ±10%	
Frequency	50/60Hz	
Control Input Options	**Signal (using SW1):** 0 to 10V dc (set as standard) / 0 to 5V or 4-20mA **OR Manual:** using 5K Potentiometer	
Alarm Relay Circuit Rating	125V AC @ 2A	
Over temperature Protection	Trip in temperature @ 90ºC, +/- 1ºC (LED indicator **'flashes'** continuous fast pulsing) Trip out temperature @ 85ºC, +/- 1ºC **SW1 = OFF** - Relay is continuously energised (normally closed); trips in fault condition. **SW1 = ON** - Relay is de-energised (normally open); closes in fault condition.	
Phase Loss Detection	LED **'flashes'** continuously (slow pulsing)	
Sensor Loss Detection	LED **'flashes'** on/off (fast pulsing)	
Cable Terminations	**M8 (Phase power)**	M6 stud (Earth) – both c/w nut and washer.
	Remote supply Auxiliary alarm (relay)	2.5mm² rising clamp terminal block
	Control signal	2.5mm² rising clamp terminal block
Terminal Torque Settings	**M8** @ 12 to 15Nm, **M6** @ 4.5 to 5.5Nm for power and earth terminals only.	
Fusing (290kW Model)	450A High-Speed Semiconductor Fuse (450EDT)	
Working temperature	65°C (maximum operational)	
Unit Dimensions (D x W x H)	266mm x 357mm x 236mm	
Fixing Centres	4 x 5mm Ø holes at 362mm (W) x 160mm (L) centres	
Unit Weight	Approx. 15kg	

Note: SAFETY WARNING - *Metal parts, in particular the heatsink, may get very hot when the unit is fully operational.* It is essential that a load break switch and a contact breaker is installed in the load supply. The supply to the contactor coil should be interrupted by an over-temperature thermostat located in the heater battery and also upon detection of airflow loss.

PR3-E SERIES

290kW (400A), 415V | 3-Phase Burst Fire- Enclosed

INSTALLATION

Cooling Requirements

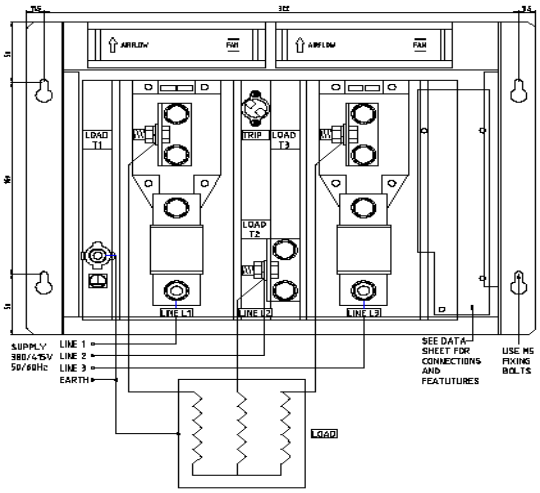
This robust stack assembly has an operational temperature of 65°C when naturally cooled and has a built-in 90°C over-temperature trip on the heatsink as a safety feature. The 230V AC Fan will always be on in normal working conditions. The unit should be mounted vertically, with heatsink fins running top to bottom, also with the fans at the top (so the airflow is upwards) and with sufficient surrounding air space to maximise natural convection cooling. If the unit is mounted in an enclosure or cabinet, adequate ventilation and/or additional forced air-cooling (a fan) should be considered for the cabinet.

Load Considerations

The PR3 series of power controllers are designed for resistive type loads, e.g. Heaters. Unusual heating loads such as Molybdenum, Platinum or Tungsten have a typical, 10:1, hot to cold, resistance ratio and therefore, when cold, draw larger currents than normal.

CONNECTIONS (Power Only – For Signal See Product Label)

This unit has simple clamp-type connectors for all auxiliary wiring requirements.



FUNCTIONS

Alarm relay

The alarm circuit has voltage-free relay contacts and is rated up to 2A @ 125V ac (RMS) load. The internal supply to the relay is obtained from the transformer via two 20mm 1A fuses. These are connected to the Yellow and Blue phases and therefore the relay and LED can only energise when there is an over-temperature condition, a sensor fault, or a phase loss, i.e. the Red phase only is missing.

Over-temperature protection

When heat sink temperature of above 90ºC is detected by the sensor, the alarms relay changes state and the LED pulses rapidly. The power to the load will be disconnected and will not return until the temperature drops to 85ºC.

Sensor loss

If the sensor fails, the LED will flash for ON/OFF bursts of 1 second.

Phase loss with auxiliary supply

When any one of the three phase inputs are missing, the relay is energised and the LED flashes with ON/OFF bursts of 1.5 seconds. This is only functional with a remote auxiliary supply (see below).

Fault condition

To allow for the monitoring of a fault condition whilst using the internal supply, the DIL switch SW1, should be in the OFF position and the relay continuously energised. The relay de-energises under a fault condition. The alarm relay status should be changed to the ON position for use with a remote supply.

Remote supply

The unit will be factory set for an internal supply. If there is a requirement for the alarm relay and LED to energise when a fault condition occurs, there is provision for an external "*floating*" i.e. isolated 24V ac or dc supply.

The 24V ac or dc supply **MUST NOT** be connected (commonly linked) to the CONTROL (+/- Signal) terminal.

RECOMMENDATIONS

FUSING & OVER TEMPERATURE

It is recommended that fast acting semiconductor type fuses (as supplied) be used for protection. See SRA Data sheet X10255 for further information.

CE Marking

This family carries a "CE" marking. These burst fire controllers do not normally require a remote filter. For more information see recommendations section and contact our sales desk. See Declaration of Conformity.

DOCUMENTS

Other documents available on request, which may be appropriate for your application:

Code	Identity	Description
X10213	ITA	Interaction: Uses for phase angle and for burst fire control
X10255	SRA	Safety Requirements: Addressing the Low Voltage Directive (LVD) including, Thermal Data/Cooling, Live Parts Warning, Earthing Requirements and Fusing Recommendations
P01.1	COS	UAL Conditions of Sale

It is recommended that installation and maintenance of this equipment should be carried out by suitably qualified/trained personnel with reference to the current edition of the I.E.E. wiring regulations (BS7671 The regulations contain important requirements regarding the safety of electrical equipment. For International Standards refer to I.E.C/ Directive IEC 950.

OPTIONAL EXTRAS

Product Code	Product Description
T30201	Auxiliary transformer for 'Failsafe' alarm (0/240/415 10-0-10V 2VA)
A403001	5KΩ 1W Potentiometer with 0.5m long leads for manual control option
Available on request	Spare fuses: (290kW) 450EDT SCR fuse.

PRODUCT CODE AND RELATED PRODUCT CODE

Product Code	Product Description
A447543-HV	PR3-E-290kW, 400A, 415V, 3-Phase Burst Fire- Enclosed

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