86kW and 105kW HVAC RANGE 3-PHASE BURST FIRE AC POWER REGULATOR STACKS

PR3-E SERIES

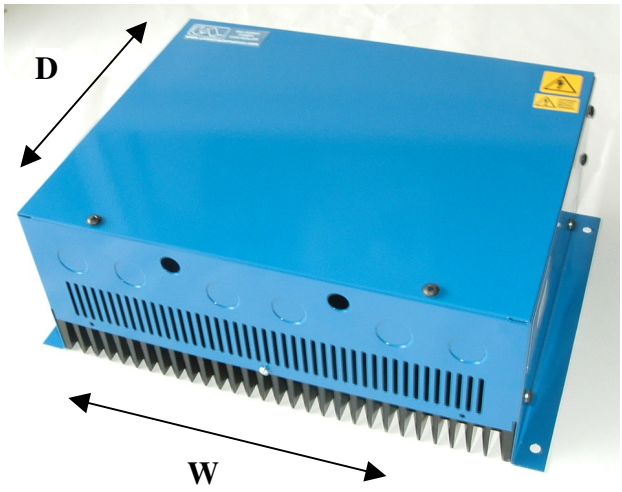
X10594

INTRODUCTION

The PR3 range of thyristor stacks provide full, seamless control of 86 and 105kW three phase resistive loads using two thirds control technique. Signal control is by a DC signal. These burst firing control stacks use fast pulse zero volts switching technology, to minimise flicker and eliminate RFI problems. They also incorporate an automatic resetting temperature trip, integral semiconductor fuses and heatsink. All are housed in a bespoke enclosure and have easy access to internal signal & power terminals for simple installation.

APPLICATIONS

Suitable for furnaces, ovens, dryers, air curtains, hot plates and many other heating and ventilation applications.



SPECIFICATIONS

Power/current Ratings:	86KW (120A); 105KW (146A) @ a typical supply of 415V RMS
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 Manual:** using 5K Potentiometer
Alarms relay circuit rating:	125V ac @ 2A
Over Temperature:	Trip in temperature @ 90ºC, +/- 1ºC (LED '**flashes'** in 0.5sec. pulse bursts) 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 indicator flashes for 1.5sec. pulse bursts
Sensor Loss Detection:	LED indicator flashes for 1sec. pulse bursts
Cable terminations: (all internal)	Phase power: M6 nut & washer stud terminal. Earth: M6 nut & clamp washer stud terminal. Remote supply Auxiliary alarm (relay) 2.5mm² rising clamp terminal blocks Control signal 2.5mm² rising clamp terminal blocks
Cable entry (power + signal)**:**	6 x 20mm Ø cable knock-outs + 2 x 12mm Ø holes – front side only. Cable glands NOT supplied.
Terminal torque settings:	4.5 to 5.5Nm - Power and earth terminals only.
Fusing	160A High-Speed Semiconductor type fuses for 86 and 105kW
Working temperature:	65°C (maximum operational)
Dimensions:	232mm (D) x 340mm (W) 124x mm (H) – length is viewed with heatsink fins going top to bottom (see photo)
Fixing centres:	4 x 6mm holes on centres 322mm (W) x 200mm (D)
Weight:	(all models) 5.2kg

RoHS Compliant Directive 2002/95/EC

Note: SAFETY WARNING - Metal parts, in particular the heatsink, may get very hot when the unit is fully operational.

FUNCTIONS

Alarm relay

The alarm relay is positioned midway along the control board and has three terminals marked C (common), NO (normally open) and NC (normally closed). These terminals are voltage free and can handle up to 2A @ 125v AC (RMS).
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

The relay is energised and the LED flashes for ON/OFF bursts of 0.5seconds when the sensor detects a heat-sink temperature of above 90ºC. If the heatsink should reach a temperature of 90ºC, 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 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

If there is a requirement for the alarm relay and LED to energise when a fault condition occurs, there is provision for an external 24v AC or DC supply to be connected.

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 unit should be mounted vertically, with heatsink fins top to bottom, 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 forced air-cooling should be fitted.

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

This unit has M6 bolt/stud terminals for all Power & Earth connections. This unit has simple clamp type connectors for all auxiliary wiring requirements. See inside lid for wiring details.

Fusing

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.

RECOMMENDATIONS

These supporting documents, which may be appropriate for your application, are available on request,

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, Earth requirements and fusing recommendations.
X10322	APC	AC Power Control – Three phase application circuits
X10617		Wiring connection details are attached to the inside of the lid.
X3-00-001	HVAC	Brochure - Heating Ventilation and Air Conditioning Power Controllers

NOTE:- 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.

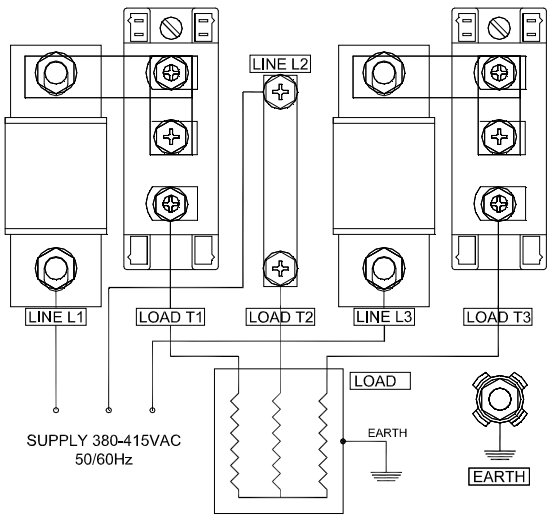
ORDERING

Product Reference	Description Ratings (RMS)
PR3-E-86kW	415V, 86kW, 120A
PR3-E-105kW	415V, 105kW, 146A

OPTIONAL EXTRAS

Code	*Description*
T30201	Auxiliary transformer for failsafe alarm.
F11606	160 EET SCR type fuse.

CONNECTIONS (Power only – for signal see product label)



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