325kW and 450kW HVAC RANGE 3-PHASE BURST FIRE AC POWER REGULATOR STACKS

PR3-O SERIES

X10712

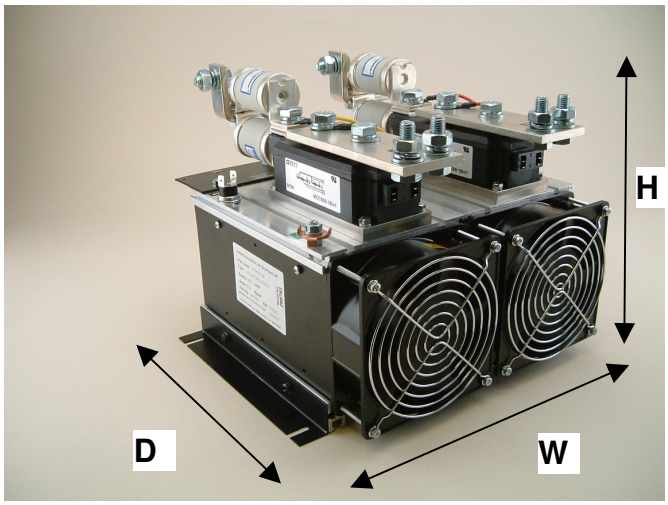
INTRODUCTION

The PR3 range of thyristor stacks provides full seamless control of three phase resistive loads for 325kW and 450kW, 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 forced-air cooled and have easy access to signal & power terminals for simple installation.

APPLICATIONS

Suitable for the Heating, Ventilating and Air Conditioning (HVAC) market for air curtain applications, but also for furnaces, ovens, dryers and hot plates.

(Photo: shows 450kW model)



SPECIFICATIONS

Power/current Ratings:	325kW (450A); 450kW (620A) @ 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 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 indicator '**flashes**' continuous slow pulsing.
Sensor loss detection:	LED indicator '**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:	12 to 15Nm for power and earth terminals only.
Fusing 325KW:	A High-Speed Semiconductor type fuse -500MMT
450KW:	A High-Speed Semiconductor type fuse - 710MMT
Working temperature:	65°C (maximum operational)
Dimensions (approx):	260mm (D) x 285mm (W) x 215mm (H) – viewed as above photo
Fixing centres:	4 x 5mm holes on centres 147 mm (W) x 276mm (L)
Weight:	(Max., all models) 12 kg

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 circuit has voltage free relay contacts and are 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.

INSTALLATION

Cooling Requirements
This robust stack assembly has an operational temperature of 65℃ when naturally cooled and has a built in 90℃ 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 fan at the bottom (so the airflow is upwards) and with sufficient surrounding air space to maximise natural convection cooling. **[Note: the unit can be mounted with the fan at the top, if the fan is removed and re-fitted so that the airflow is drawing air from the heatsink].** 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
This unit has simple clamp-type connectors for all auxiliary wiring requirements.

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
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 with reference to the current edition of the I.E.E. wiring regulations (BS7671) by suitably qualified/trained personnel The regulations contain important requirements regarding the safety of electrical equipment. For International Standards refer to I.E.C/ Directive IEC 950.

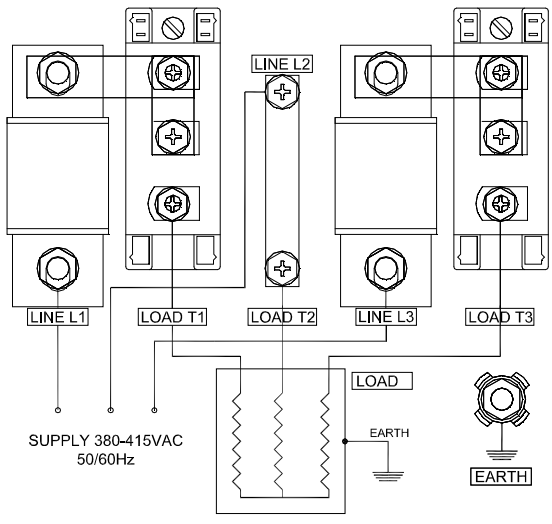
ORDERING

Product Reference	Description Ratings (RMS)
PR3-E-325kW	415v, 325kW, 450A
PR3-E-450kW	415v, 450kW, 620A

OPTIONAL EXTRAS

Code	D*escription*
T30201	Auxiliary transformer for failsafe alarm.
F11809	(325kW) 500MMT SCR type fuse.
F11812	(450kW) 710MMT SCR type fuse.
A403011	5K, 1W potentiometer with 0.5m long lead for manual control option.

CONNECTIONS (Power only – for signal see product label)



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