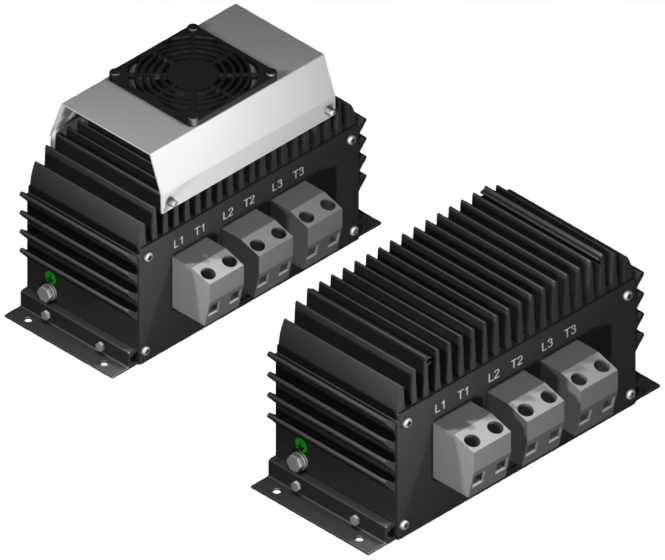
AX-PPR3VI-27,36,54

Panel Mount Three Phase Power Regulators For Heaters

Product Overview

The AX-PPR3VI Series is an upgraded version of the industry-proven AX-PPR3 heater power regulator range. Featuring a more compact, modern design, the AX-PPR3VI Series delivers improved performance along with enhanced functionality.

The regulators accept control signals of either 4–20 mA or 0–10 V, enabling seamless integration with BMS controllers or similar control systems. Burst-fire operation combined with Zero-crossing switching minimizes RFI, while built-in over-temperature protection, alarm output, and LED status indication ensure safe and reliable operation. The AX-PPR3VI -54 models includes automatic cooling, eliminating the need for external heatsinks or fans. For short-circuit protection, versions with integrated semiconductor fuses are available.



Products Features

- Burst-fire with zero crossing switching
- 24V ac/dc and self powered models
- Auto-reset over temperature protection
- Built-in semiconductor fuses (option)
- LED indication of operation
- 0-10VDC or 4-20mA control signal

Product Specifications

	PPR3VI-27	PPR3VI-36	PPR3VI-54
Control supply voltage (non -S):	24Vac ±10% (22-40Vdc)		
Control supply current (non -S):	50mA max(30mA max)		185mA max (110mA max)
Control input:	0-10Vdc (>15KOhms), 4-20mA(500Ohms)		
Alarm output:	Normally open VFC. Contacts closed when over temperature alarm is active or on removal of control power supply		
LED Indication:	LED ON when output is active		
Rated supply:	380 - 440 Vac / 50-60Hz		
Maximum heater duty:	27 KW	36 KW	54 KW
Maximum load current (per phase):	37.5 A	52.5 A	78.2 A
Maximum dissipated heat:	70 W	105 W	155 W
Fuse Amperage (-F versions)	80A		120A
Terminals: Control	Two part pluggable with rising clamp connection suitable for 1.0 - 2.5 sq.mm conductors		
Power	Rising Clamp for 0.5-16mm² stranded or 0.5-25mm² solid core		
Ambient temperature range:	-20°C to 55°C (Note: The units are rated at 40˚C. If using at higher ambient temperature derate the units by 10% for every 5˚C above 40˚C)		
Over temperature:	Load is disconnected when heatsink temperature exceeds 90˚C and reconnected when temperature falls below 85°C		
Dimensions:	137 x 248 x 125 mm		137 x 248 x 156 mm
Weight:	TBD		TBD
Conformity:	CE, UKCA, RoHS		
Country of origin:	United Kingdom		

Product Order Codes

AX - PPR3VI - ☐ ☐ ☐

Max heater duty in KW
27, 36, 54

Control supply	
	24Vac/dc
S	Self powered

Semiconductor fuses	
	No fitted
F	Fitted to the two controlled legs

E.g. Order AX-PPR3VI-54SF for 54KW heater power regulator , self powered with built-in semiconductor fuses

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Dimensions

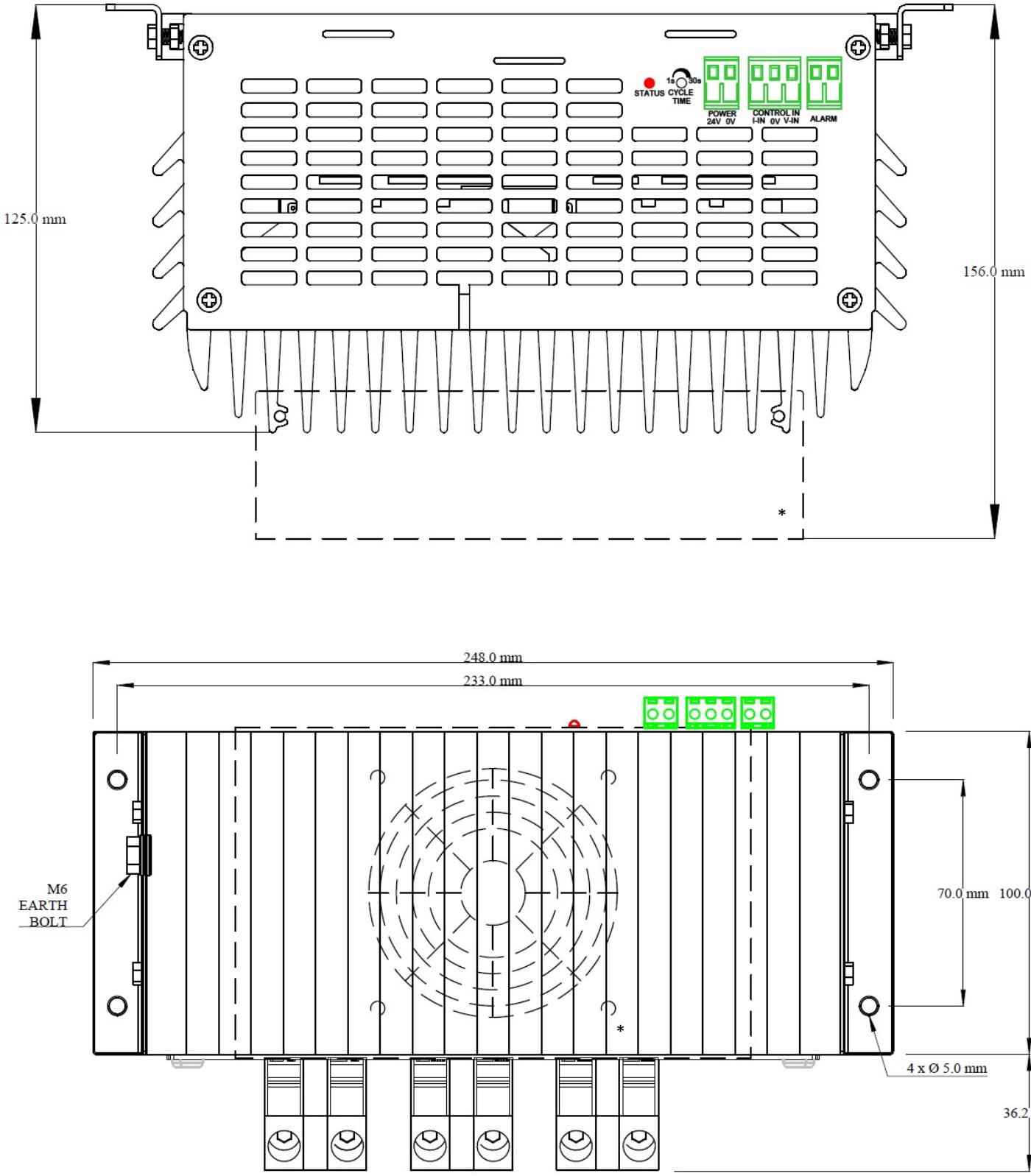

Figure 1 - Dimensions

**Cooling fan deck fitted to 54KW models only*

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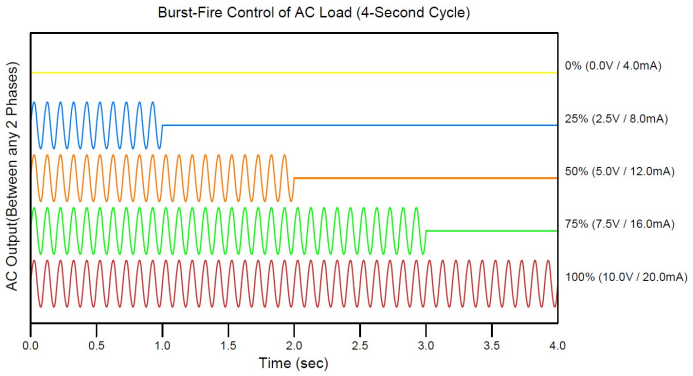
Operation

The AX-PPR3VI series controls electric heating loads in linear proportion to the applied 0-10 Vdc or 4-20 mA control signal. Solid-state semiconductor devices switch the load using burst-fire control combined with zero-crossing point switching, which virtually eliminates RFI emissions. Burst-fire control refers to the method where the AC load is switched fully on for an integer number of complete half cycles in a burst.

Assuming a cycle time of 4 seconds:
- With a control input of 10 V / 20 mA, the load will be ON the entire time, i.e., fully ON (100% output).
- With a 5 V / 12 mA input, the load will be switched ON for 2 seconds and OFF for 2 seconds, resulting in an average power output of 50%.
- With a 2.5 V / 8 mA input, the load will be ON for 1 second and OFF for 3 seconds, leading to an average power output of 25%.

It is important to note that whenever the load is switched ON, full load current is drawn for that period of control time.



Installation

Installation should be done by a suitably qualified technician in conjunction with any guidelines for the equipment it is to be connected to and any local regulations.

The AX-PPR3VI series Power Regulators must be mounted vertically on a panel. Allow a minimum of 100mm between units mounted in a vertical plane. It is important that free air movement around the enclosure is not restricted.

⚠ In normal operation the heatsink surface can exceed 90˚C. Dangerous potentials exist on the unit and particular care should be taken.

Load Supply and Back-up Protection

It is recommended that a load disconnect switch and a contactor are installed in the load supply. The supply to the contactor coil should be interrupted by sensors for over temperature in the heater and also upon air flow loss. Fuses or MCB's (miniature circuit breakers) are required to provide back-up protection. High Speed Fuses will protect the solid-state switching devices against short circuit currents. Choose the models with built-in semiconductor fuses for enhanced short-circuit protection.

Fuse ratings in -F versions

AX-PPR3VI-27(S)F, AX-PPR3VI-36(S)F	- 80A
AX-PPR3VI-54(S)F	- 120A

Contact sales for spares.

Maximum Heating Load

The power rating of the units are given as a guide. The maximum current (which is dependant on the actual supply voltage and heating load) as shown in the specification table must not be exceeded.

Control Signal

All low voltage signal and supply cables should be kept separate from high voltage or mains cables, separate trays or conduit should be used. Screened cable should be used for connections to BMS Controllers. Where possible the cable screen should be connected to a functional earth (not mains safety earth). The screen should be earthed at one end only to avoid earth loops.

The device can operate on either 4-20mA or 0-10Vdc control signal. If both signals are connected, 4-20mA will be selected for control.

Ventilation

The ambient temperature of the installation should not exceed 55˚C. If necessary, enclosures or control panels should be ventilated with a cooling fan. See note in product specification for de-rating to be applied above ambient temperatures of 40˚C.

Cycle Time

The Cycle Time is preset for 4 seconds. Adjustment is possible using a preset located near the control terminals, but is not normally required. Use a thin flat screwdriver to vary it from 1 second to 30 seconds.

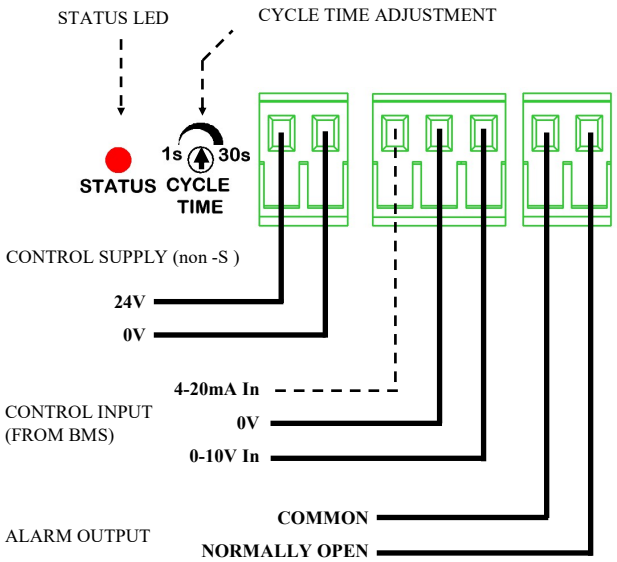
Over Temperature and Alarm

An electronic thermal cutout is fitted to the heatsink to protect against over temperature. The AX-PPR3VI series will switch off the load if the heatsink temperature exceeds approximately 90˚C and will reconnect the load once the heatsink temperature has dropped below 85˚C. The Alarm output will also change state. Under normal operating conditions the heatsink temperature will not reach 90˚C but this might occur, for example, if the ambient temperature exceeds 40˚C.

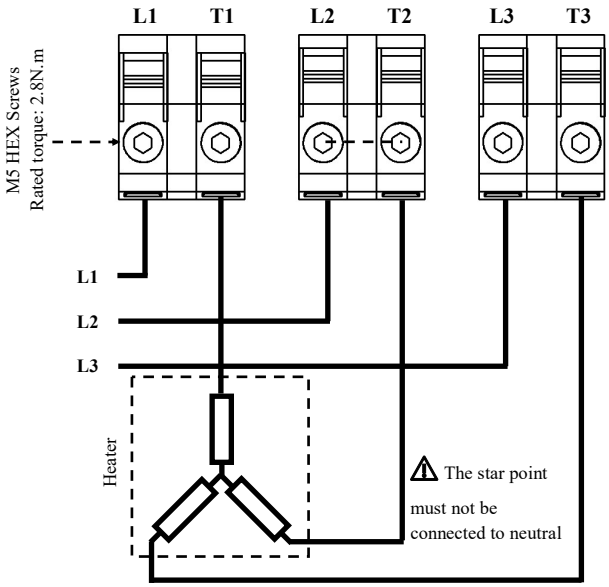
The Alarm output is an isolated volt-free contact, which closes on over-temperature detection, or on control voltage power fail. The AX-PPR3VI-54 is fitted with an integral fan deck. The fans will turn on and off automatically as required to control the heatsink temperature.

Connections

- **Control**



- **Load**



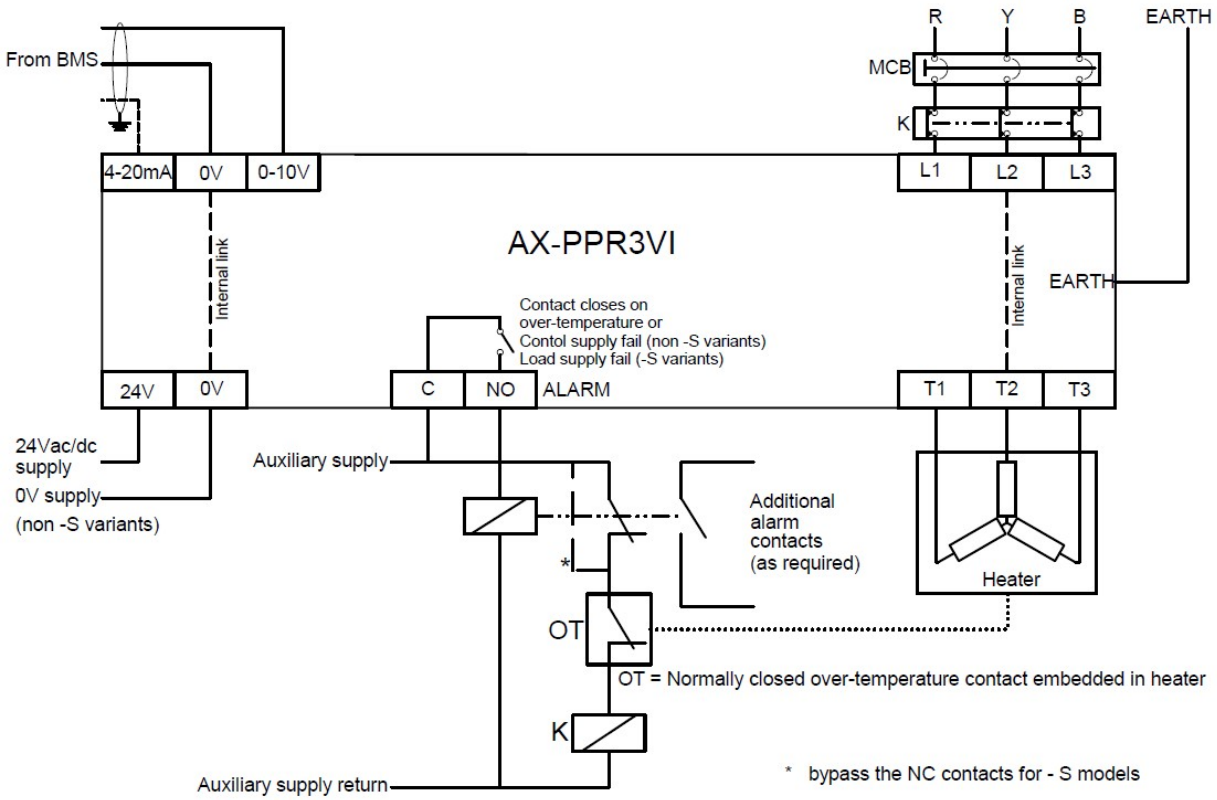
Ensure all power connections are securely tightened without excessive torque. Verify that the maximum possible conductor contact area is maintained at the terminals.

Load Configuration: The load may be connected in a delta configuration when using heater elements rated for 415 V.

- **Earth**

The M6 earth bolt (see Figure 1) shall be used with an appropriately rated protective conductor to bond the unit to a suitable earth point.

Recommended minimum control wiring



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