

AX-PPR1-12

12kW Single Phase Power Regulator

AXIO



Product overview

The AX-PPR1-12 panel mounting Power Regulators (thyristors) provide continuously adjustable control of electric heating loads from a BMS Controller or similar. Applications include electric heating coils, heating cables and electric furnaces. The unit uses solid-state switching with “zero crossing technology” for minimum RFI and to provide accurate switching control. The Power Controller features Over Temperature Protection with automatic reset and Alarm Output, and LED Indication of output operation. No additional heatsinks or fans are needed.

Features

- 0-10Vdc Control Input
- 12kW single phase
- Burst-fire Control
- Auto Reset Over-Temperature Protection
- 24Vac/dc Powered
- Alarm Output
- LED Indication
- Small Footprint

Product specifications

Input:	0-10Vdc at 0.2mA maximum
Power Supply:	24Vac/dc \pm 10%
Power Consumption:	110mA @ 24Vdc (2.7VA) or 185mA @ 24Vac (4.5VA)
Alarm Output:	250Vac at 5A VFC - contact closed when over temperature alarm is active or on removal of control voltage
Max. Heater Duty:	12kW
Rated Load:	52.2A
Rated Supply:	220-255Vac / 50-60Hz
LED Indication:	ON when output is on
Control isolation:	3,000V
Dissipated Heat:	84W
Terminals:	Control Power
Ambient Temperature Range:	Rising Clamp for 0.5-1.5mm ² Cable Rising Clamp for 0.5-16mm ² stranded or 0.5-25mm ² solid core 0 to 55°C. Note: The units are rated at 40°C. If using at higher ambient temperature de-rate the unit by 10% for every 5°C above 40°C.
Over temperature:	Load is disconnected when heatsink temperature exceeds 90°C Load is reconnected when heatsink temperature falls below 85°C
Dimensions:	188 x 132 x 130mm. Refer to drawing for fixing holes
Weight:	200g
Country of Origin:	United Kingdom

Order code

AX-PPR1-12 12kW Single Phase Power Regulator

Order Online at:

www.annicom.com

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Sales@annicom.com

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Operation

The AX-PPR1-12 controls electric heating loads in linear proportion to the applied 0-10Vdc 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 is where the ac load is switched fully on for an integer number of complete half cycles in a burst. Assume a cycle time of 4 seconds: With a 0-10Vdc Input Signal of 10V the load will be on all of the time i.e. fully ON. At 5V input the load will be switched ON for 2 seconds and OFF for 2 seconds, i.e. on average the load is at 50% power. At 2.5V input the load will be switched ON for 1 second and OFF for 3 seconds, i.e. on average the load is at 25% power. Note that whenever the load is switched ON, full load current will be drawn for that period of control time.

Installation and configuration

The AX-PPR1-12 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.

CAUTION!

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

Electrical Installation:

Installation must be carried out by a suitably trained electrician, and in accordance with the relevant statutory regulations.

Load Supply and Protection:

It is recommended that a suitably rated contactor is installed in the supply to the unit. The contactor coil should be interrupted by sensors for over temperature in the heater and also ideally upon air flow loss. Fuses or MCB's (miniature circuit breakers) are required to provide overload protection. High Speed Fuses will protect the solid-state switching devices against short circuit currents.

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.

Earthing:

The M6 earth bolt must always be bonded to a good Earth. This earth bond lead should be appropriately rated according to the maximum load and fusing in the installation. Refer to BS7671.

Control Supply:

The control circuitry is fully isolated from the load supply and requires a 24Vac/dc supply. The control supply common is internally connected to the 0-10V Input Signal common.

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.

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 the Cycle Time potentiometer, but is not normally required.

Over Temperature Monitoring:

An electronic thermal cutout is fitted to the heatsink to protect against over temperature. The unit 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.

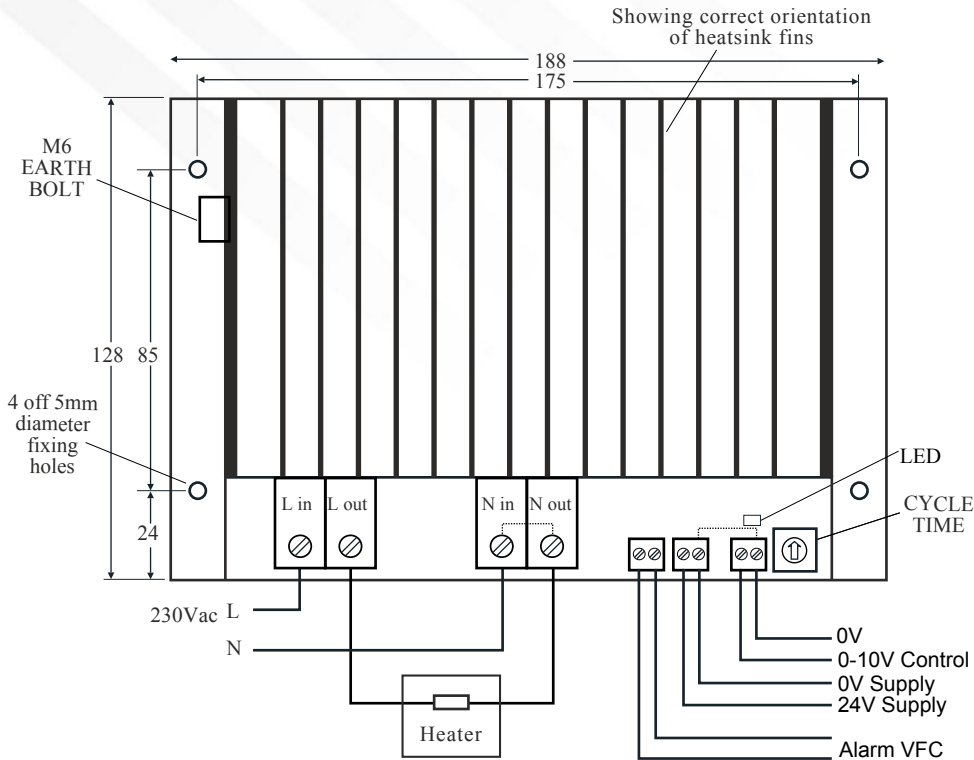
The Alarm output is an isolated volt-free contact, which closes on over-temperature detection, or on control voltage power fail.

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Connections



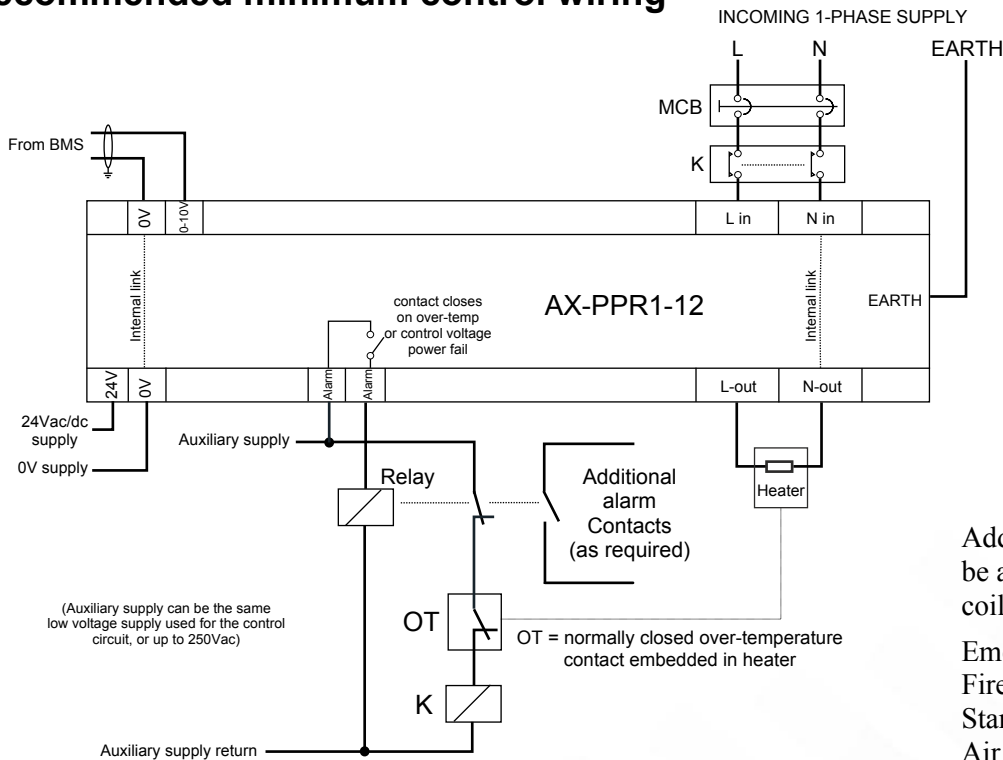
All models:

Terminals N-in and N-out are connected internally. The Neutral may be connected directly to the heater if permitted by local regulations.

It is imperative that the power connections are fully tightened, without excessive force, and ensure the maximum area of cable is in contact with the terminals.

The M6 Earth bolt must be used with an appropriately rated cable to bond the unit to an

Recommended minimum control wiring



Additional interlocks that could be added in to the contactor (K) coil circuit:

- Emergency stop signal
- Fire signal
- Start/Stop from BMS
- Air flow switch

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