

X10591

HVAC | HEATER BATTERY CONTROLLER

# PR1-E SERIES

1.5kW, 3kW and 6kW

Phase Burst Fire Power Controller



## KEY FEATURES:

- ✓ **Seamless Control:** Full control of single-phase resistive loads with DC signal control.
- ✓ **Burst Firing Technology:** Utilizes fast pulse zero volts switching to minimize flicker and eliminate RFI problems.
- ✓ **Over Temperature Protection:** Automatic-reset trip for over temperature conditions.
- ✓ **Integral Components:** Includes semiconductor fuses and heatsink, all enclosed for safety and reliability.
- ✓ **Model Variants:** Available in 1.5kW, 3kW, and 6kW models to suit different power requirements.
- ✓ **Ease of Installation:** Easy access to signal and power terminals for simple and efficient installation.
- ✓ **Robust Design:** Designed for durability and effective thermal management.

## APPLICATIONS:

The PR1 thyristor stacks are ideal for **single-phase 'mains' resistive loads, especially in the Heating, Ventilating, and Air Conditioning (HVAC) sector.**

They are perfect for controlling **battery heaters, hot water tanks, heating cables, and various processing equipment.**

The **PR1 range of thyristor stacks** offers precise control of single-phase resistive loads with seamless integration. Utilizing DC signal control, these stacks employ fast pulse zero volts switching technology to minimize flicker and eliminate RFI issues. The PR1 series features automatic-reset over-temperature protection, integral semiconductor fuses, and a heatsink, all enclosed for durability. Available in three models—1.5kW, 3kW, and 6kW—these units ensure easy access to signal and power terminals for straightforward installation.

## TECHNICAL SPECIFICATIONS

|                          |         |  |
|--------------------------|---------|--|
| Power / Current Ratings  |         | 1.5kW (6.3A), 3.0kW (12.5A), 6.0kW (25A) @ a typical supply of 240V rms  |
| Input Voltage            |         | 230V RMS ± 10%   |
| Frequency                |         | 50/60Hz  |
| Control Input Options    |         | <b>Signal:</b> 0 to 10V DC (factory set) OR 0 to 5V (Selected by switch SW1)<br><b>Manual:</b> Manual control (using 5kΩ Potentiometer – NOT supplied) |
| Status Indicator         |         | (Tracking control signal) LED indicator changes Intensity  |
| Over-temperature         |         | Trip in temperature @ 90°C ± 1°C (LED indicator ‘flashes’ at 0.5sec. on/off intervals)<br>Trip out temperature @ 85°C, ± 1°C                           |
| Sensor Loss Detection    |         | LED indicator ‘flashes’ at 1 sec. on/off intervals   |
| Cable Terminations       |         | <b>Power &amp; Earth 6kW</b> 4mm <sup>2</sup> Maximum cable entry  |
|                          |         | <b>Power &amp; Earth 1.5kW &amp; 3.0kW</b> 2.5mm <sup>2</sup> Maximum cable entry  |
|                          |         | <b>Control Signal All models</b> 2.5mm <sup>2</sup> Maximum cable entry  |
| Terminal Torque Settings |         | 0.5Nm for all power and earth terminals.   |
| Fusing                   | 1.5kW   | F10A (6mm ø x 32mm) – ceramic quick blow type ferrule fuse   |
|                          | 3kW     | F16A (6mm ø x 32mm) – ceramic quick blow type ferrule fuse   |
|                          | 6kW     | 30A (10mm ø x 38mm) – high-speed semiconductor type ferrule fuse   |
| Max. Ambient Temperature |         | 65°C (maximum operational)   |
| Dimensions               | 1.5kW   | 140mm (L) x 99mm (W) x 45mm (H)  |
|                          | 3 & 6kW | 140mm (L) x 99mm (W) x 80mm (H)  |
| Fixing Centres (all)     |         | 4 x 4.5 clear holes on centres 75mm (W) x 120mm (L) – top two are key-hole slots   |
| Weight                   |         | 1.5kW 0.5Kg, 3 & 6kW 1.1Kg   |



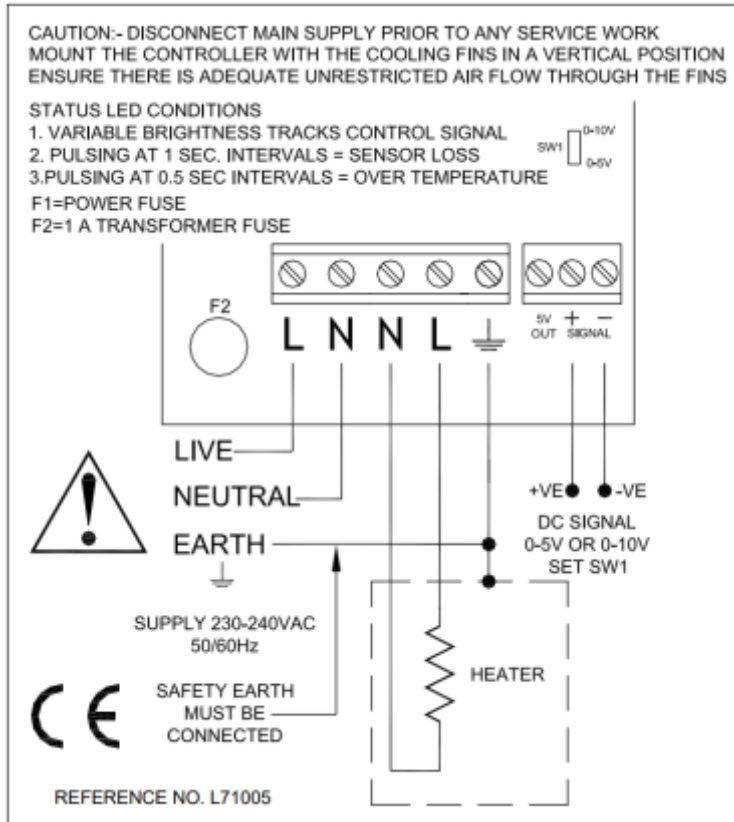
# PR1-E SERIES

1.5kW, 3kW and 6kW

Phase Burst Fire Power Controller

## INSTALLATION

## DIMENSIONS & CONNECTIONS



## FUNCTIONS

### Over-Temperature Protection:

When the heat sink temperature exceeds 90°C, the sensor triggers an LED indicator to pulse at 0.5-second on/off intervals. Power to the load will be disconnected and will only be restored once the temperature drops below 85°C.

### Temperature Sensor Loss:

If the temperature sensor fails, the LED indicator will pulse at 1-second on/off intervals to signal the failure.

### WARNING:

1. This unit comes equipped with a fail-safe fuse for protection. Refer to the SPECIFICATION/INSTALLATION sections for detailed information.
2. The enclosure contains HAZARDOUS LIVE parts and terminal connections. Ensure the power supply is isolated before beginning any installation work.
3. Secure the unit using the designated fixing/mounting holes provided.



# PR1-E SERIES

1.5kW, 3kW and 6kW

Phase Burst Fire Power Controller

## INSTALLATION

### Cooling Requirements

The robust stack assembly operates at a temperature of up to 65°C with natural cooling and includes a built-in 90°C over-temperature trip on the heatsink for safety. Mount the unit vertically with the heatsink fins oriented top to bottom, ensuring sufficient surrounding air space to maximize natural convection cooling. If the unit is installed in an enclosure or cabinet, provide adequate ventilation or forced air-cooling.

### Load Considerations

The PR-series power controllers are designed for resistive type loads, such as heaters. Unusual heating loads, like Molybdenum, Platinum, or Tungsten, have a typical 10:1 hot to cold resistance ratio, meaning they draw larger currents when cold. This range is equipped with a TRIAC power device to handle such conditions.

### Connections

The unit features simple clamp-type terminal connectors for all auxiliary wiring requirements, making installation straightforward.

### Fastening

Secure the unit using the four fixing holes provided. Two of these holes have key-hole slots for quick installation and removal.

### SAFETY NOTE

**SAFETY WARNING:** Always isolate the power supply before removing the cover. Metal parts, especially the heatsink, can become extremely hot during operation.

**DO NOT COVER** the enclosure ventilation slots to ensure proper cooling.

It is crucial to install a load break switch and a contact breaker in the load supply.

An over-temperature thermostat located in the heater battery should interrupt the supply to the contactor coil if excessive heat is detected or if there is a loss of airflow.



# PR1-E SERIES

1.5kW, 3kW and 6kW

Phase Burst Fire Power Controller

## RECOMMENDATIONS

### FUSING

It is recommended that semiconductor, fast -acting type fuses or circuit breakers (Semiconductor-MCB) be used for unit protection. On initial operation some loads may need an increased Factor of Safety (F of S) for unit and/or device protection. See the SRA datasheet for further information.

### CE Marking

This product family carries a "CE" marking. These burst firing type controllers do not require a filter. For information see recommendation section and contact our sales desk. See the Declaration of Conformity.

## DOCUMENTS

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

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

It is recommended that installation and maintenance of this equipment should be done with reference to the current edition of the I.E.T. regulations (BS7671) by suitably qualified/trained personnel. The regulations contain important requirements regarding the safety of electrical equipment. For International standards refer STANDARDS on D of C.

## PRODUCT CODE AND RELATED PRODUCT CODE

| Product Code      | Product Description                   |
|-------------------|---------------------------------------|
| <b>A407549-HV</b> | PR1-E-1.5kW - Single Phase – Enclosed |
| <b>A407550-HV</b> | PR1-E-3kW - Single Phase – Enclosed   |
| <b>A407552-HV</b> | PR1-E-6kW - Single Phase – Enclosed   |

