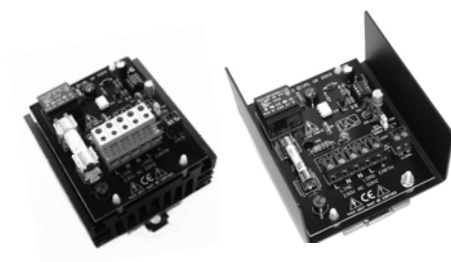


Single-Phase Heater Controllers

Features



- 0-10Vdc or 0-5Vdc Control input
- Over temperature protection with auto reset
- No additional heatsinks required
- No external 24V supply required
- No external RFI filters required

Specification

Input signal	0-10Vdc or 0-5Vdc
Supply	230Vac RMS $\pm 10\%$ 50/60Hz
Power/current ratings:	
RE-PR1-F-1.5	1.5kW (6.3A)
RE-PR1-F-3	3kW (12.5A)
RE-PR1-F-6	6kW (25A)
Fusing:	
RE-PR1-F-1.5	F10A Ceramic quick blow type ferrule fuse (integral)
RE-PR1-F-3	16A Ceramic quick blow type ferrule fuse (integral)
RE-PR1-F-6	30A High speed semiconductor type ferrule fuse (integral)
Terminal connections	Rising cage for 2.5mm ² cable max. (4.0mm ² for 6kW power & earth)
Terminal torque setting	0.5Nm (only required for power and earth terminals)
Over temperature:	
Trip in temp.	@ 90°C $\pm 1^\circ\text{C}$
Trip out temp.	@ 85°C $\pm 1^\circ\text{C}$
Fault condition:	
Over temp	LED flashes in 0.5 sec. pulse bursts
Loss of signal	LED flashes in 1 sec. pulse bursts
Ambient temperature	65°C (maximum operational)
Dimensions (L, W, H):	
RE-PR1-F-1.5	112 x 95 x 75mm
RE-PR1-F-3	112 x 95 x 75mm
RE-PR1-F-6	112 x 96 x 85mm
Conformity	CE Marked
Country of origin	UK

Product Codes

RE-PR1-F-1.5
Din rail mount, 1.5kW electric heater controller

RE-PR1-F-3
Din rail mount, 3kW electric heater controller

RE-PR1-F-6
Din rail mount, 6kW electric heater controller

Accessories

RE-PR1-F15102
F10A Ceramic quick blow type ferrule fuse

RE-PR1-F15103
F16A Ceramic quick blow type ferrule fuse

RE-PR1-F11307
FF30A High speed semiconductor type ferrule fuse

RE-PR1-F-6-GD
6kW protective guard

SAFETY REQUIREMENTS & ADVICE SHEET

Introduction

The objective of this leaflet is to provide information to ensure that the safety of the person(s) installing or maintaining the equipment is not compromised and its location and method of installation does not endanger others, either during or after installation.

Customers should be aware of the Health and Safety at Work Act 1974 (HSW 1974) and the EC "Provision and Use of Work Equipment Regulations 1992" (PUWER). Both are available from the Health and Safety Executive (HSE) publications, within the UK.

Installation

CE Directives

These are European regulations which apply to our industry. They affect the equipment emissions and immunity to Radio Frequency Interference (RFI) and various elements of safety for electrical equipment.

The European Community 'CE' Directives that mainly concern Sontay Ltd are, the Low Voltage Directive (LVD) and the Electromagnetic Compliance Directive (EMC).

A Declaration of Conformity may be supplied with the product or supplied on request.

Torque Settings

Good working practises must be adhered to ensuring appropriate electrical and mechanical installation. This would include the mechanical fixing of potentiometer bushes and electrical set screw and/or pillar connections. These Electrical Connections and Mechanical Fastenings must not be over tightened. We would recommend a typical torque setting of 1 to 5Nm. For specific product information, see appropriate product data sheet, where applicable.

Cooling Requirements

The use of an additional heatsink (this could be a conductive panel) suitably attached or mounted with the unit, will help to dissipate heat away from the device(s). An alternative or additional method would be forced air-cooling (using a fan), to assist the natural convection of airflow over an existing heatsink within the unit. The product fins should be mounted in line with the forced and/or natural airflow.

The equipment's environment and its initial ambient temperature also need to be considered, as this could have an adverse effect on the overall operating conditions.

Fusing

We recommend that semiconductor, fast acting to BS88 IEC 269, type fuses or circuit breakers (Semiconductor - MCB) should be used for unit and/or device protection. The appropriate maximum load current should be known to select the required SCR fuse or Z curve MCB, but must not exceed the equipment rating. The $I^2 t$ ($A^2 s$) rating of the selected fuse must be less than that of the equipment so as to protect the equipment's discrete device. Further appropriate fusing may be required for protection of the unit supply using standard fuse links and holders. Failure to address these requirements and the use of incorrectly selected fuses may cause the equipment to fail.

Earthing

The protective conductor terminal of the equipment must be utilised at all times and bonded to a 'good' Earth (ground). The earth bonding (strapping) leads of any combined equipment should be as short as possible and be substantial, i.e. at least rated higher than the equipment's load. For further information, refer to BS7671. Following these simple guidelines will ensure optimum use of any appropriate filter circuits which may be required.

Insulation (over-voltage category) and Protection from electric shock Classification of Equipment

All equipment, unless otherwise stated, is rated to CLASS II Insulation (Over-voltage category) and CLASS I (Protection category).

Maintenance

Before any servicing is carried out, reference should be made to appropriate installation instructions, drawings and labelling which may come with the equipment. Personnel should switch off the unit supply before accessing or removing any safety cover and be aware of hazardous live parts.

Technical Overview

The RE-PR1-F series are a range of Thyristor control assemblies that provides full seamless control of single phase electric heating loads, to provide adjustable control output in proportion to the demand control signal.

These burst fire control assemblies use fast pulse zero volt switching technology, to minimise flicker and eliminate RFI problems. They also incorporate a temperature trip, automatic reset, integral ceramic/semiconductor fuses and heatsink.

Applications include electric heater batteries and dust heaters.

Location & Ventilation

The unit is designed to be installed on DIN rail in an electrical control panel, and should be installed with the heatsink cooling fins in a vertical plane. Allow a minimum of 100mm between units on the vertical axis.

The maximum ambient of 65°C should not be exceeded. Where necessary control panels & enclosures should be ventilated with a fan.

Over Temperature Monitoring

The RE-PR1-F is fitted with a thermal protection device to protect against over temperature. The unit will automatically switch off the load in the event of the heatsink temperature exceeding safe limits (90°C \pm 1°C). Once the temperature has fallen to a safe level (85°C \pm 1°C) the load will be switched on again if the supply is still present.

Caution: During the course of normal operation metal parts, in particular the heatsink, may get very hot.

Load Supply

It is recommended that a load break switch and a break contactor is installed in the load supply. The supply to the contactor coil should be interrupted by an over-temperature thermostat located in the heater battery and also upon detection of airflow loss.

Maximum Heating Load

The total installed kW rating of the heating load must not exceed the maximum kW duty rating, see specification on page 1.

Load Considerations

The RE-PR1-F series of power controllers are designed for resistive type loads only. Capacitive, or unusual heating loads such as Molybdenum, Platinum or Tungsten, (which can have a 10:1 hot to cold resistance ratio) are not suitable.

Fuse back-up protection

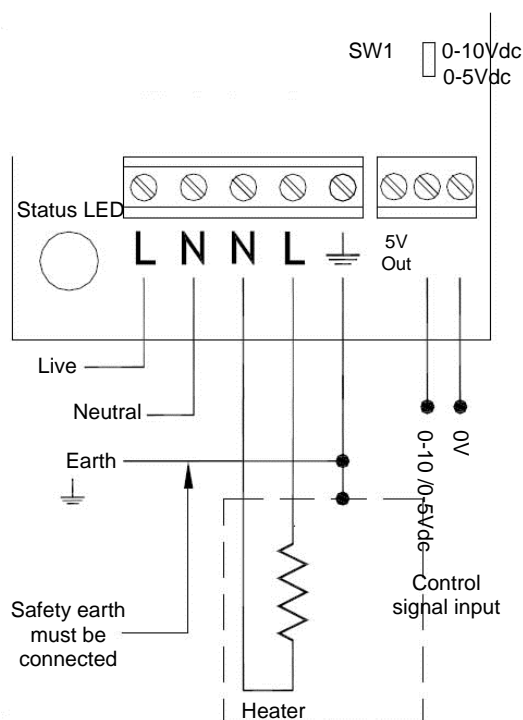
The RE-PR1-F are fitted with fuses to provide back up protection. To select the required fuses or Z curve MCB's (semi conductor circuit breakers), the load current should be known, but not exceed the electric heater battery rating.

Installation

1. The RE-PR-F should only be installed by a competent, suitably trained technician, experienced in installation with hazardous voltages. (>50Vac & <1000Vac or >75Vdc & 1500Vdc)
2. Ensure that all power is disconnected before carrying out any work on the RE-PR-F.
3. Maximum cable size is 2.5mm² (4mm² for 6kW), care must be taken not to over tighten terminals.
4. When mounting the RE-PR-F care should be taken not to stress the PCB when fitting to the DIN rail. If it is necessary remove the module from the DIN rail, be sure to use a flat bladed screwdriver to release the DIN clips.
5. The RE-PR1-F is self powered from the 230Vac load input, so a separate 24V supply is not required.
6. When installation is complete, the protective guard must be replaced on the 6kW version. The 1.5 & 3kW versions are fitted with protective shrouds on the fuse.

Caution: When monitoring 230Vac inputs, dangerous voltages are present on the terminal blocks and on the printed circuit board. Care **MUST** be exercised to avoid coming into contact with live components.

Connections



Fitting Protective Guard to RE-PR1-F-6

1. Make all wiring connections as shown on page 3 before fitting the protective cover.
2. Ensure that **all** power is disconnected before carrying out the installation of the protective cover on the RE-PR1-F-6.
3. Drill a 2.6mm hole in the position shown below.
4. Slide the protective cover onto the heatsink assembly.
5. Fit the No.4 self tapping screws that are supplied to hold the cover in place.

