

**PR**  
electronics



**2222**

**Switchmode  
power supply**

No. 2222V102-UK  
From ser. no.970138001



- DK** ▶ PR electronics A/S tilbyder et bredt program af analoge og digitale signalbehandlingsmoduler til industriel automation. Programmet består af Isolatorer, Displays, Ex-barrierer, Temperaturtransmittere, Universaltransmittere mfl. Vi har modulerne, du kan stole på i selv barske miljøer med elektrisk støj, vibrationer og temperaturudsving, og alle produkter opfylder de strengeste internationale standarder. Vores motto »Signals the Best« er indbegrebet af denne filosofi - og din garanti for kvalitet.
- UK** ▶ PR electronics A/S offers a wide range of analog and digital signal conditioning devices for industrial automation. The product range includes Isolators, Displays, Ex Interfaces, Temperature Transmitters, and Multifunctional Devices. You can trust our products in the most extreme environments with electrical noise, vibrations and temperature fluctuations, and all products comply with the most exacting international standards. »Signals the Best« is the epitome of our philosophy - and your guarantee for quality.
- FR** ▶ PR electronics A/S offre une large gamme de produits pour le traitement des signaux analogiques et numériques dans tous les domaines industriels. La gamme de produits s'étend des transmetteurs de température aux afficheurs, des isolateurs aux interfaces SI, jusqu'aux modules universels. Vous pouvez compter sur nos produits même dans les conditions d'utilisation sévères, p.ex. bruit électrique, vibrations et fluctuations de température. Tous nos produits sont conformes aux normes internationales les plus strictes. Notre devise »SIGNALS the BEST« c'est notre ligne de conduite - et pour vous l'assurance de la meilleure qualité.
- DE** ▶ PR electronics A/S verfügt über ein breites Produktprogramm an analogen und digitalen Signalverarbeitungsgeräte für die industrielle Automatisierung. Dieses Programm umfasst Displays, Temperaturtransmitter, Ex- und galvanische Signaltrenner, und Universalgeräte. Sie können unsere Geräte auch unter extremen Einsatzbedingungen wie elektrisches Rauschen, Erschütterungen und Temperaturschwingungen vertrauen, und alle Produkte von PR electronics werden in Übereinstimmung mit den strengsten internationalen Normen produziert. »Signals the Best« ist Ihre Garantie für Qualität!

# SWITCHMODE POWER SUPPLY

## Type 2222

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**GENERAL**

## **WARNING**

This device is designed for connection to hazardous electric voltages. Ignoring this warning can result in severe personal injury or mechanical damage.

To avoid the risk of electric shock and fire, the safety instructions of this manual must be observed and the guidelines followed. The electrical specifications must not be exceeded, and the device must only be applied as described in the following.

Prior to the commissioning of the device, this manual must be examined carefully.

Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.



**HAZARDOUS  
VOLTAGE**

## **WARNING**

Until the device is fixed, do not connect hazardous voltages to the device. The following operations should only be carried out on a disconnected device and under ESD safe conditions:

Dismantlement of the device for setting of DIP switches and jumpers.

General mounting, connection and disconnection of wires.

Troubleshooting the device.



**Repair of the device and replacement of circuit breakers must be done by PR electronics A/S only.**



**INSTALL-  
LATION**

## **WARNING**

To keep the safety distances, devices with two built-in relays must not be connected to both hazardous and non-hazardous voltages on the same device's relay contacts.

SYSTEM 2200 must be mounted in socket type S3B Releco (order no 7023).

## SYMBOL IDENTIFICATION



**Triangle with an exclamation mark:** Warning / demand. Potentially lethal situations.



**The CE mark** proves the compliance of the device with the requirements of the directives.



**The double insulation** symbol shows that the device is protected by double or reinforced insulation.

## SAFETY INSTRUCTIONS

### DEFINITIONS

Hazardous voltages have been defined as the ranges: 75 to 1500 Volt DC, and 50 to 1000 Volt AC.

**Technicians** are qualified persons educated or trained to mount, operate, and also troubleshoot technically correct and in accordance with safety regulations.

Operators, being familiar with the contents of this manual, adjust and operate the knobs or potentiometers during normal operation.

### RECEIPT AND UNPACKING

Unpack the device without damaging it. The packing should always follow the device until this has been permanently mounted. Check at the receipt of the device whether the type corresponds to the one ordered.

### ENVIRONMENT

Avoid direct sunlight, dust, high temperatures, mechanical vibrations and shock, as well as rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

All devices fall under Installation Category II, Pollution Degree 1, and Insulation Class II.

### MOUNTING

Only technicians who are familiar with the technical terms, warnings, and instructions in the manual and who are able to follow these should connect the device.

Should there be any doubt as to the correct handling of the device, please contact your local distributor or, alternatively,

**PR electronics A/S**  
**[www.prelectronics.com](http://www.prelectronics.com)**

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.a. wire cross section, protective fuse, and location. Descriptions of Input / Output and supply connections are shown in the block diagram and side label.

The following apply to fixed hazardous voltages-connected devices:

The max. size of the protective fuse is 10 A and, together with a power switch, it should be easily accessible and close to the device.

The power switch should be marked with a label telling it will switch off the voltage to the device.

### **CALIBRATION AND ADJUSTMENT**

During calibration and adjustment, the measuring and connection of external voltages must be carried out according to the specifications of this manual.

The technician must use tools and instruments that are safe to use.

### **NORMAL OPERATION**

Operators are only allowed to adjust and operate devices that are safely fixed in panels, etc., thus avoiding the danger of personal injury and damage. This means there is no electrical shock hazard, and the device is easily accessible.

### **CLEANING**

When disconnected, the device may be cleaned with a cloth moistened with distilled water.

### **LIABILITY**

To the extent the instructions in this manual are not strictly observed, the customer cannot advance a demand against PR electronics A/S that would otherwise exist according to the concluded sales agreement.

## HOW TO DISMANTLE SYSTEM 2200

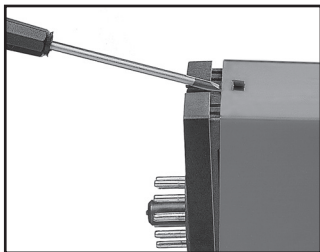
The back panel of the device is detached from the housing by way of a screw-driver as shown in picture 1.

On a device with knobs, these may have to be removed before the PCB can be taken out as shown in picture 2.

After this, the back panel can be pulled out together with the PCB, but please notice the position of the PCB as there is a number of different positions in the house. Do not pull the wires unnecessarily, instead pull the PCB, see picture 3.

Switches and jumpers can now be moved.

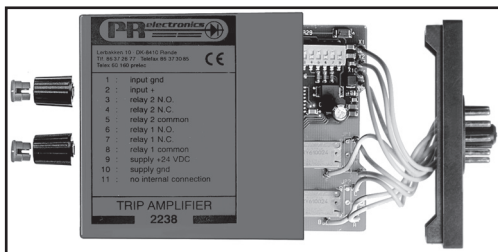
When assembling the back plate and housing, please make sure no wires are stuck.



Picture 1: Dismantlement of back plate and housing.



Picture 2: Removal of knobs.



Picture 3: Removal of PCBs for adjustment of DIP switches and replacement of jumpers.

# SWITCHMODE POWER SUPPLY

## 2222

- *230 or 115 VAC primary voltage*
- *24 or 15 VDC output voltage*
- *Double isolation by 3.75 kVAC*
- *48 Watt output power, short circuit-protected*
- *Thermal protection against overload*
- *DIN rail mounting on a standard 11-pole relay socket*

### Applications

General 24 or 15 VDC supply for equipment that requires a stabilised DC voltage. Separation of circuits in safety installations according to the PELV/SELV norm. Two units can be connected in series to achieve a plus / minus supply or a higher output voltage. The small mechanical dimensions of the switchmode power supply allow for a high DC output power, even in narrow spaces.

### Technical characteristics

The power supply is based on primary switchmode technology to achieve a high efficiency. Galvanic isolation between the primary and the secondary voltage is achieved through the double-isolated safety transformer. A thermal fuse protects the input circuit when the internal temperature exceeds 100°C.

An 1 A fuse on the input protects the switchmode power supply against a short overload. The DC output is protected against a short circuit by an electronic current limiter that activates at an output current of 2.5 A. A green LED on the front of the module indicates an active primary voltage.

### Mounting

To achieve maximum cooling of the module, mounting in a vertical position at a distance of minimum 10 mm between neighbouring units is recommended.

### Input

AC power supply according to the specifications.



## Output

DC voltage of 24 or 15 V. An internally mounted potentiometer allows for a  $\pm 5\%$  adjustment of the output voltage.

## Electrical specifications

### Specifications range:

-20°C to +60°C

### Common specifications:

Max. consumption.....	60 VA
Efficiency .....	$\geq 80\%$
Fuse.....	1 A T / 250 VAC
Thermal overload protection.....	100°C
Isolation, test / operation.....	3.75 kVAC / 250 VAC
Power derating .....	1% / °C amb. (T amb. > 40°C)
Transient stability (10% - max. load) .....	< 500 mV
Temperature coefficient.....	0.05%/°C
Effect of supply voltage change ( $\pm 10\%$ ).....	< 1%
EMC immunity influence .....	< $\pm 0.5\%$
Relative air humidity .....	< 95% RH (non-cond.)
Dimensions (HxWxD)	
(D is without pins).....	80.5 x 35.5 x 84.5 mm
Protection degree.....	IP30
Weight .....	210 g

### Input:

Supply voltage .....	207...253 VAC 102.4...132.2 VAC
Frequency .....	50...60 Hz

### Output:

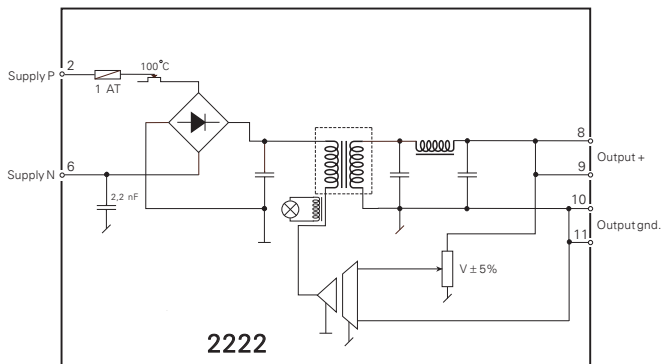
Output voltage .....	24 or 15 VDC
Adjustment.....	$\pm 5\%$
Output power (max.) .....	48 W
Output current .....	2 A / 24 VDC, 2 A / 15 VDC
Load stability (0 - max. load) .....	< 1.5% / A
Electronic current limit .....	nom. 2.5 A
Output ripple .....	$\leq 40$ mVRMS (100 kHz)

<b>Observed authority requirements:</b>	<b>Standard:</b>
EMC 2004/108/EC .....	EN 61326-1
LVD 2006/95/EC.....	EN 61010-1
PELV/SELV .....	IEC 364-4-41 and EN 60742
EAC TR-CU 020/2011.....	EN 61326-1

Order: 2222

Type	Input	Output
2222	115 VAC : A	24 VDC : 1
	230 VAC : B	15 VDC : 2

## BLOCK DIAGRAM





**Displays** Programmable displays with a wide selection of inputs and outputs for display of temperature, volume and weight, etc. Feature linearization, scaling, and difference measurement functions for programming via PReset software.



**Ex interfaces** Interfaces for analog and digital signals as well as HART signals between sensors / I/P converters / frequency signals and control systems in Ex zone 0, 1 & 2 and for some devices in zone 20, 21 & 22.



**Isolation** Galvanic isolators for analog and digital signals as well as HART signals. A wide product range with both loop-powered and universal isolators featuring linearization, inversion, and scaling of output signals.



**Temperature** A wide selection of transmitters for DIN form B mounting and DIN rail devices with analog and digital bus communication ranging from application-specific to universal transmitters.



**Universal** PC or front programmable devices with universal options for input, output and supply. This range offers a number of advanced features such as process calibration, linearization and auto-diagnosis.





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