

**PR**  
electronics



**2 2 2 3**

**Dual switchmode  
power supply**

No. 2223V101-UK  
From ser. no. 970296001



- 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!

# DUAL SWITCHMODE POWER SUPPLY

## Type 2223

### CONTENTS

Warning.....	2
Symbol identification .....	3
Safety instructions.....	3
How to dismantle system 2200.....	5
Technical characteristics.....	6
Mounting .....	6
Input.....	6
Output .....	7
Electrical specifications.....	7
Order: 2223.....	9
Block diagram.....	9
Connection diagram.....	10



**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

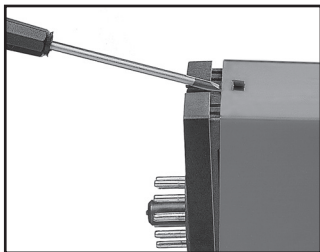
The back panel of the device is detached from the housing by way of a screw-driver as shown in picture 1.

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.

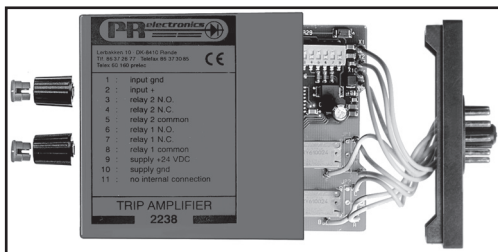
When assembling the back plate and housing, please make sure no wires are stuck.



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.

# DUAL SWITCHMODE POWER SUPPLY 2223

- *24 / 115 / 230 VAC supply voltage*
- *3.75 kVAC isolation*
- *2 adjustable 5...24 VDC outputs*
- *Output:  $\pm 5...24$  VDC, 10...48 VDC*
- *Short circuit protection*
- *Thermal protection against overload*

## **Applications**

Supply for small measuring systems that demand 2 stabilised voltages. Either as a combination of positive and negative voltages, or as 2 separate supplies as required.

## **Technical characteristics**

To achieve an adjustable output with minimum power loss, the 2223 is based on switchmode technology. The isolation test voltage between input and outputs being 3.75 kVAC, the unit is suitable in PELV/SELV circuits. The double-isolated safety transformer has a bimetal fuse that disconnects the input circuit if the internal temperature exceeds 100°C. The fuse resets automatically.

## **Mounting**

The 2223 is for standard 11-pole socket mounting in all positions. To achieve maximum cooling of the device, mounting in a vertical position at a distance of minimum 10 mm between neighbouring units is recommended.

## **Input**

Standard supply voltage according to the specifications. The built-in double-isolated safety transformer ensures galvanic isolation.



## Output

The outputs are adjustable by 2 front potentiometers in the ranges 5...24 VDC. Two green LEDs, Power on 1 and Power on 2, indicate active outputs.

The short circuit protection limits the current on each output. The two supplies are galvanically separated with 500 VAC test voltage and can be connected in series or used as two independent supplies with or without common gnd.

By connecting the two outputs in series, 10...48 VDC or  $\pm 5...24$  VDC are achieved. The total output power must not exceed 7.5 W.

## Electrical specifications

### Specifications range:

-20°C to +60°C

### Common specifications:

Internal consumption max .....	4 W
Isolation, test / operation.....	3.75 kVAC / 250 VAC
Isolation, output 1 / 2, test / operation.....	500 VAC / 50 VAC (75 VDC)
Transformer .....	EN 60742
Temperature coefficient.....	0.05%/°C
Effect of supply voltage change ( $\pm 10\%$ ) .....	< $\pm 30$ mV
Transient stability (10%-max. load).....	< 250 mV
EMC immunity influence .....	< $\pm 0.5\%$
Relative air humidity .....	< 95% RH (non-cond.)
Dimensions (HxWxD).....	80.5 x 35.5 x 84.5 mm
Protection degree .....	IP30
Weight .....	400 g

### Input:

Supply voltage .....	21.6...26.4 VAC 103.5...126.5 VAC 207...253 VAC
Frequency .....	50...60 Hz

**Output:**

Output voltage .....	4.75...25.2 VDC
Output power, total.....	max. 7.5 W
Output current, per channel.....	0.5 A / 5 VDC (2.5 W)
	0.37 A / 12 VDC (4.5 W)
	0.30 A / 15 VDC (4.5 W)
	0.18 A / 24 VDC (4.3 W)
Load effect, (10%-max. load).....	< 1.5% / A
Current limit (short circuit).....	typ. 100 mA
Output ripple .....	< 20 mVRMS

**Observed authority requirements:**

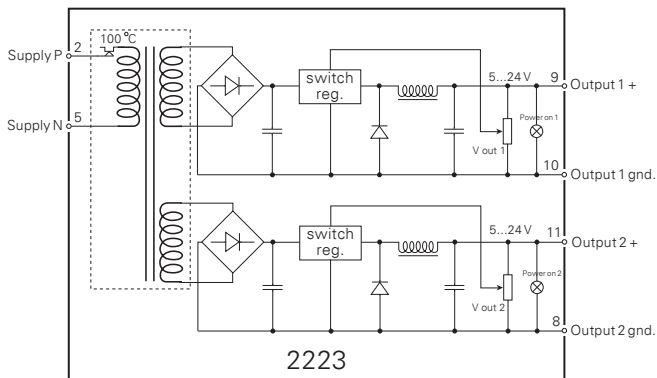
EMC 2004/108/EC .....	EN 61326-1
LVD 2006/95/EC.....	EN 61010-1
PELV/SELV .....	IEC 364-4-41 and EN 60742
EAC TR-CU 020/2011.....	EN 61326-1

**Standard:**

Order: 2223

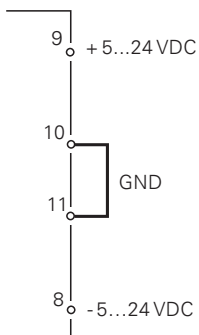
Type	Version	Output 1	Output 2
2223	115 VAC : A	Special (5...24 V) : 0	Special (5...24 V) : 0
	230 VAC : B	24 VDC : 1	24 VDC : 1
	24 VAC : D	15 VDC : 2	15 VDC : 2
		12 VDC : 3	12 VDC : 3
		5 VDC : 4	5 VDC : 4

## BLOCK DIAGRAM

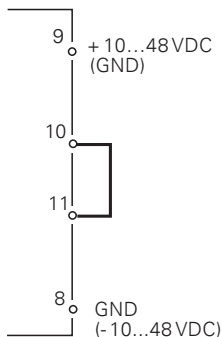


## CONNECTION DIAGRAM

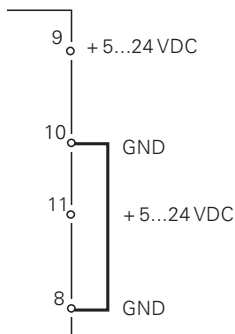
Serial connection  
+/- supply



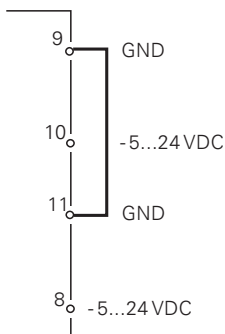
Serial connection  
+ or (-) 10 ... 48VDC



2 different pos. supplies  
with common ground



2 different neg. supplies  
with common ground





**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.





[www.preelectronics.fr](http://www.preelectronics.fr)  
[sales-fr@preelectronics.com](mailto:sales-fr@preelectronics.com)



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[sales-de@preelectronics.com](mailto:sales-de@preelectronics.com)



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[sales-us@preelectronics.com](mailto:sales-us@preelectronics.com)



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[sales-cn@preelectronics.com](mailto:sales-cn@preelectronics.com)



[www.preelectronics.be](http://www.preelectronics.be)  
[sales-be@preelectronics.com](mailto:sales-be@preelectronics.com)

## Head office

Denmark  
PR electronics A/S  
Lerbakken 10  
DK-8410 Rønede

[www.preelectronics.com](http://www.preelectronics.com)  
[sales-dk@preelectronics.com](mailto:sales-dk@preelectronics.com)  
tel. +45 86 37 26 77  
fax +45 86 37 30 85



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