PR electronics

2202

R/I transmitter

No. 2202V107-UK
From ser. no. 960391001

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!

R/I TRANSMITTER

Type 2202

CONTENTS

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.

INSTAL-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,

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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.

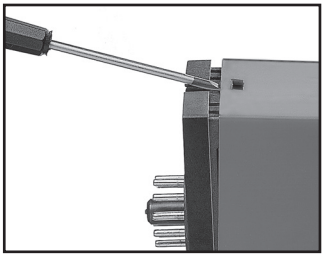
NORMAL OPERATION
Operators are only allowed to adjust and operate devices that are safely fixed in panels, etc., thus avoiding the danger of personal injury and damage. This means there is no electrical shock hazard, and the device is easily accessible.

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.

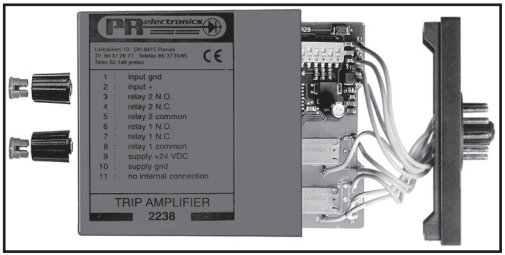
HOW TO DISMANTLE SYSTEM 2200

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.

R/I TRANSMITTER 2202

- *Input for Pt100, Ni100 or Ohm*
- *Sensor cable compensation*
- *Linearised analogue output*
- *24 VDC or universally supplied*
- *Individual 0 and 100% adjustment*
- *DIN rail mounting on a standard 11-pole relay socket*

Application

Electronic temperature measurement with a Pt100...Pt1000 or a Ni100...Ni1000 sensor. • Conversion of a linear resistance change to a standard analogue current / voltage signal from e.g. valves or linear movements with attached potentiometer. • As signal simulator via externally mounted 10-turn potentiometer. • Suitable in applications with potentiometers that are not fully utilised as the 0 and 100% adjustments on the front can be adjusted individually without interacting.

Technical characteristics

General

The unit is built around a microprocessor core with an efficient program operation. The supply voltage may be ordered to 24 VDC or with a universal supply of 24...230 VAC and 24...250 VDC with galvanic isolation between supply and input / output ground. The adjustment range for the 0 and 100% trimmers has a standard set-up for ±2.5% of span, but the device may be ordered with an adjustment range of up to ±25%. The sensor connection is always a 3-wire connection with cable compensation for up to 10 Ω in each wire. If a 2-wire connection is requested pins 7 and 6 must be short-circuited in the socket (no cable compensation).

Input

Pt100 temperature input according to the norm IEC 751 within the range -200...+850°C. Ni100 temperature input according to the norm DIN 43760 within the range -50...+250°C. Linear resistance input within the range 0...10 kΩ. The measurement range should be specified when placing the order, e.g. 0...150°C. The min. span is 50°C for the RTD input; for linear resistance the min. span is 30 Ω. The RTD input can be delivered as multiples of the main type (e.g. Pt100 x 10 = Pt1000). The input can be reversed so that 0% e.g. is 150°C and 100% is 0°C.

Output

Analogue standard current / voltage output of 0/4...20 mA / 0/2...10 VDC. The output signal is proportional and linear to the value of the temperature or resistance value that influences the input. Special current or voltage signals can be ordered. The max. load of the current output is 600 Ω. The minimum load of the voltage output is 500 kΩ. Also, a number of different sensor error detection methods are offered, for instance Upscale ≥ 23 mA.

Electrical specifications

Specifications range:

-20°C to +60°C

Common specifications:

Supply voltage, DC	19.2...28.8 VDC
Supply voltage universal	21.6...253 VAC 50...60 Hz 19.2...300 VDC
Internal consumption, 2202_ _ D	≤ 0.9 W
Internal consumption, 2202 _ _ P (universally supplied)	≤ 1.4 W
Isolation, test / operation (2202 _ _ P)	3.75 kVAC / 250 VAC
Signal / noise ratio	Min. 60 dB
Signal dynamics, input	17 bit
Signal dynamics, output	16 bit
Response time (0...90%/100...10%)	< 165 ms
Calibration temperature	20...28°C
Temperature coefficient:	
span < 100°C	< ±0.01°C /°Camb.
span > 100°C	< ±0.01% of span /°Camb.
Linearity error	< ±0.1% of span
EMC immunity influence	< ±0.5%
Relative air humidity	< 95% RH (non-cond.)
Dimensions (HxWxD)	80.5 x 35.5 x 84.5 mm
Protection degree	IP50
Weight DC / universally supplied	100 g / 150 g

Input:

Type	Min. value	Max. value	Min. span	Standard
Pt100	-200°C	+850°C	50°C	IEC 751
Ni100	-50°C	+250°C	50°C	DIN 43760
Lin. R	0 Ω	10 kΩ	30 Ω	-

Max. offset	50% of max. value
Adjustment acc. to order	±2.5...±25% of span
Cable resistance per wire max.	10 Ω
Sensor current	> 0.2 mA, < 0.4 mA
Basic accuracy	< ±0.3°C

Output:

Signal range	0...20 mA / 0...10 VDC
Min. signal range	5 mA / 250 mV
Max. offset	50% of max. value
Load (max.)	20 mA / 600 Ω / 12 VDC
Load stability	< ±0.01% of span / 100 Ω
Sensor error detection	Upscale / Downscale
Current limit	≤ 28 mA

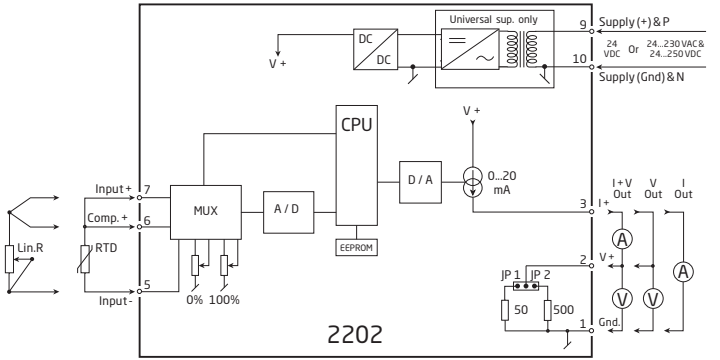
Observed authority requirements:	**Standard:**
EMC 2004/108/EC	EN 61326-1
LVD 2006/95/EC (2202 _ _ P)	EN 61010-1
EAC TR-CU 020/2011	EN 61326-1

Of span = Of the presently selected range

Order: 2202

Type	Input	Output	Supply	Rnge
2202	Pt100 : L	Special : 0	24 VDC : D	Acc. to orderr
	Ni100 : N	0...20 mA : 1	24...230 VAC & : P	
	Lin. R : R	4...20 mA : 2	24...250 VDC	
	Special : X	0...5 mA : 3		
		0...1 V : 4		
		0,2...1 V : 5		
		0...10 V : 6		
		2...10 V : 7		

BLOCK DIAGRAM



For 2-wire connection pins 6 and 7 must be short-circuited in the socket.

Voltage output	
JP1 ON JP2 ON	0/0.2...1 VDC 0/2...10 VDC
Short-circuit pins 3 and 2, V+ = 2, V- = 1	

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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