



**RN500**  
v1.0  
**RN-5A/12V**  
**DC voltage reducer**



Edition: 3 from 03.07.2012  
Supersedes the 2 edition from 05.05.2011

EN

### Features:

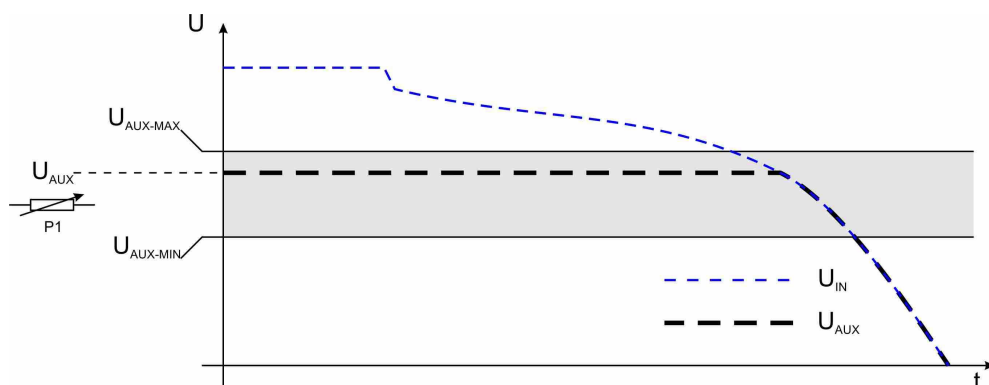
- supply voltage of 14V DC max.
- power output 12V DC/5A
- output voltage adjustment range  $11V \div U_{in}$
- linear voltage stabilization
- lossless conductivity below stabilisation threshold
- LED indication
- protections:
  - SCP short circuit protection
  - OLP overload protection
- warranty – 5 year from the production date

## 1. Technical description.

### 1.1. General description.

The **RN-5,0A/12V (RN500)** is intended for lowering and stabilising DC voltage within the range of  $12 \div 14V$  into the value of 12V (adjustment  $11V \div U_{in}$  DC). In the case when the output voltage drops below the preset output value, the transistor opens and the reducer conducts without any loss (voltage drop  $\Delta U < 1\%$ ). That enables full use of energy accumulated in the PSU's battery during batter-assisted operation.

The **RN500** voltage reducer along with a typical buffer PSU is intended for supplying devices that require voltage of  $10V \div 12V$  DC. It is particularly dedicated for CCTV systems (cameras, IR illuminators), KD access control systems and others which feature devices supplied with voltage of 12V DC ( $-10\% / +5\%$ ) and cannot be powered directly from the 13,8 DC output of a buffer PSU.



Maximum load current of the reducer is 5A (receiver's power  $P=60W$  max.). The output of the **RN500** reducer is protected against an overload (OLP) and a short circuit (SCP). It features LED indication of DC power and DC output operating status. The module does not have galvanic isolation between input and output (IN-AUX), it operates at same ground potential (0V) (IN- and AUX terminals are galvanically connected = joint terminal).

## 1.2. Block diagram (fig.1).

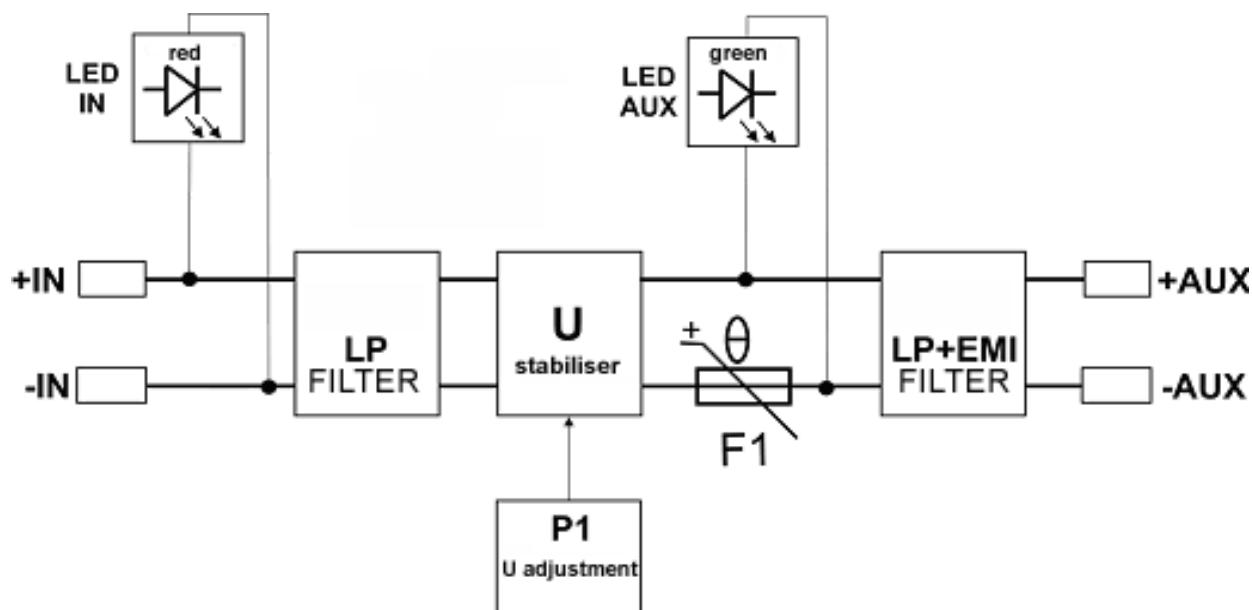


Fig.1. Block diagram of the voltage reducer.

## 1.3. Typical application of RN500.

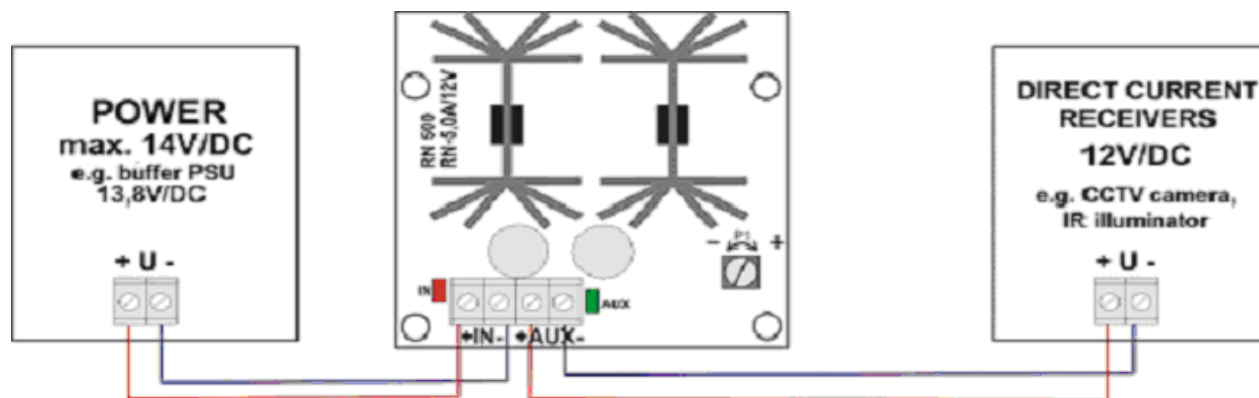


Fig.2. Typical application of the RN500 voltage reducer.

## 1.4. Description of components and connectors of the reducer.

Table 1.

No. [fig.3]	Element description
[1]	IN LED – red (reducer's power status)
[2]	+IN-, +AUX-, connectors of the reducer (see tab.2)
[3]	AUX LED – green (reducer's output status)
[4]	P1 potentiometer, voltage adjustment ( $11-U_{in}$ )

Table 2.

[2]	Connectors description
+IN - IN	DC power input (+IN= +U, -IN=GND, 0V), 9V-14V DC stabilised
+AUX - AUX	DC power output (+AUX= +U, -AUX=GND), voltage $U < 12V$ DC

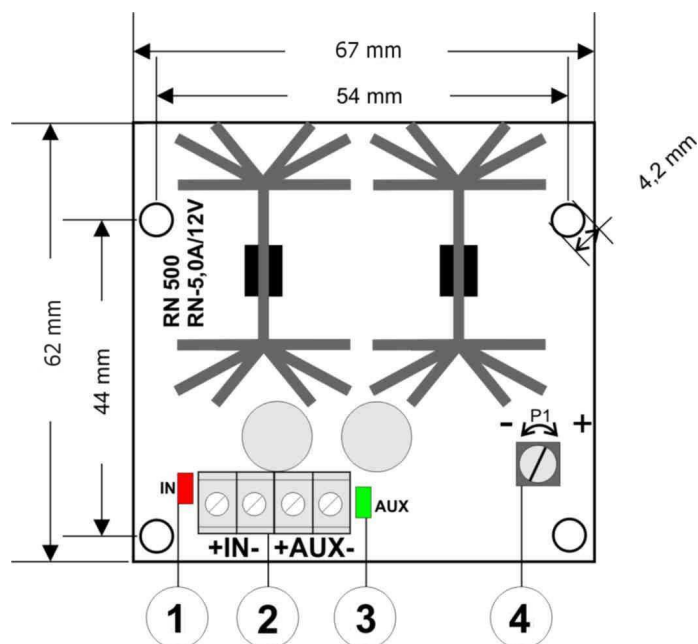


Fig.3. The view of the RN500 voltage reducer.

### 1.5. Specifications:

- electrical specifications (tab.3)
- mechanical specifications (tab.4)

Table 3.

<b>Supply voltage</b>	max. 14V/DC (-/+5%)
<b>Output voltage</b>	< 12V DC nom. (+/- 0,3V)
<b>Output voltage adjustment range</b>	11 V $\pm$ U <sub>in</sub> (preset 12V DC)
<b>Power of the receiver</b>	60W max.
<b>Output current</b>	5 A max.
<b>Current drawn by the module's systems</b>	5 mA max.
<b>Protection against a short circuit (SCP) and an overload (OLP)</b>	110% ÷ 150% of reducer's power – current limiting by the PTC resettable fuse, manual restart
<b>LED indication</b> - IN diode indicating DC power status - AUX diode indicating DC power status at the module's output	- red, normal status – continuously lit - green, normal status – continuously lit
<b>Operating conditions</b>	II environmental class, -10°C ÷ 40°C, provide sufficient airflow around the reducer for convectional cooling

Table 4.

<b>Dimensions</b>	67 x 62 x 42 (WxHxD)
<b>Fixing</b>	Dowel pins x 4 (PCB fi=4,2 mm)
<b>Connectors</b>	Φ0,41÷1,63 (AWG 26-14)
<b>Net/gross weight</b>	0,1kg/0,14kg

## 2. Installation

### 2.1 Requirements.

The module of the reducer is to be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for low-voltage installations. The unit should be mounted in confined spaces, in accordance with the 2nd environmental class, with normal relative humidity (RH=20%-90% maximum, without condensation) and temperature from -10°C to +40°C. The module shall work in such a position that guarantees sufficient convectional air-flow through around the reducer.

Before the installation, perform a load balance of the reducer. During normal operation, total current drawn by the receivers cannot exceed  $I=5A$  ( $P=60W$  max.). For proper operation, an appropriate current efficiency of the power source shall be guaranteed. The power source (a PSU) must feature its own short-circuit protection (SCP) and an overload protection (OLP).

The device should be installed in a metallic enclosure (cabinet). In order to meet the LVD and EC requirements, the rules concerning: supply, development and shielding ought to be followed- accordingly to the application.

## 2.2 Installation procedure.

1. Install the enclosure, (a cabinet, etc.) and lead the cables through the cable ducts.
2. Mount the **RN500** voltage reducer on dowel pins (the dowel pins shall be fixed prior to the installation of the enclosure/cabinet).
3. Deliver the DC power to **+IN, -IN** terminals, keeping polarisation.
4. Connect the receivers' cables to the **+AUX, -AUX** terminals, keeping polarisation.
5. Switch on the DC supply (IN red diode and AUX green diode should be continuously lit).
6. Check the output voltage (nominal voltage of the reducer shall amount to 12,0 V). If the value of the maximum voltage requires adjustment, it should be set by the P1 potentiometer, monitoring the voltage at the AUX output of the reducer.
7. Once the tests and operation control have been completed, the enclosure/cabinet can be locked.

## 3. Reducer's operating status indication.

### 3.1. LED indication.

The reducer is equipped with two LEDs: IN, AUX indicating operating status.

- **IN- red diode:** under normal status (DC supply) the diode is permanently illuminated. The absence of DC supply is indicated by the IN diode going out.
- **AUX- green diode:** indicates the DC supply status at the output of the reducer. Under normal status, the diode is permanently illuminated. In case of a short circuit or an overload the diode is off.

## 4. Operation and use.

### 4.1. Overload or short circuit at the reducer's output.

In case of a short circuit in the AUX, BAT output, there is an automatic disconnection of the output voltage which is indicated by the AUX diode going out. This requires disconnection of the load from the reducer's output for approx. 1 minute.

### 4.2. Maintenance.

The reducer does not require performing any specific maintenance measures. However, in case of a significant level of dust, clean the device with compressed air.

### WEEE MARKING

According to the EU WEE Directive – It is required not to dispose of electric or electronic waste as unsorted municipal waste and to collect such WEEE separately.

### WARRANTY

Pulsar K. Bogusz Sp.j. (the manufacturer) grants a five-year warranty for the equipment, counted from the device's production date.

### Pulsar K.Bogusz Sp.j.

Siedlec 150, 32-744 Łączycza, Polska  
Tel. (+48) 14-610-19-40, Fax. (+48) 14-610-19-50  
e-mail: [biuro@pulsar.pl](mailto:biuro@pulsar.pl), [sales@pulsar.pl](mailto:sales@pulsar.pl)  
http:// [www.pulsar.pl](http://www.pulsar.pl), [www.zasilacze.pl](http://www.zasilacze.pl)