PSUPS20A12E

v.1.0

PSUPS 13,8V/12V/20A/65Ah

Buffer power supply for 16 cameras and recorder.

EN

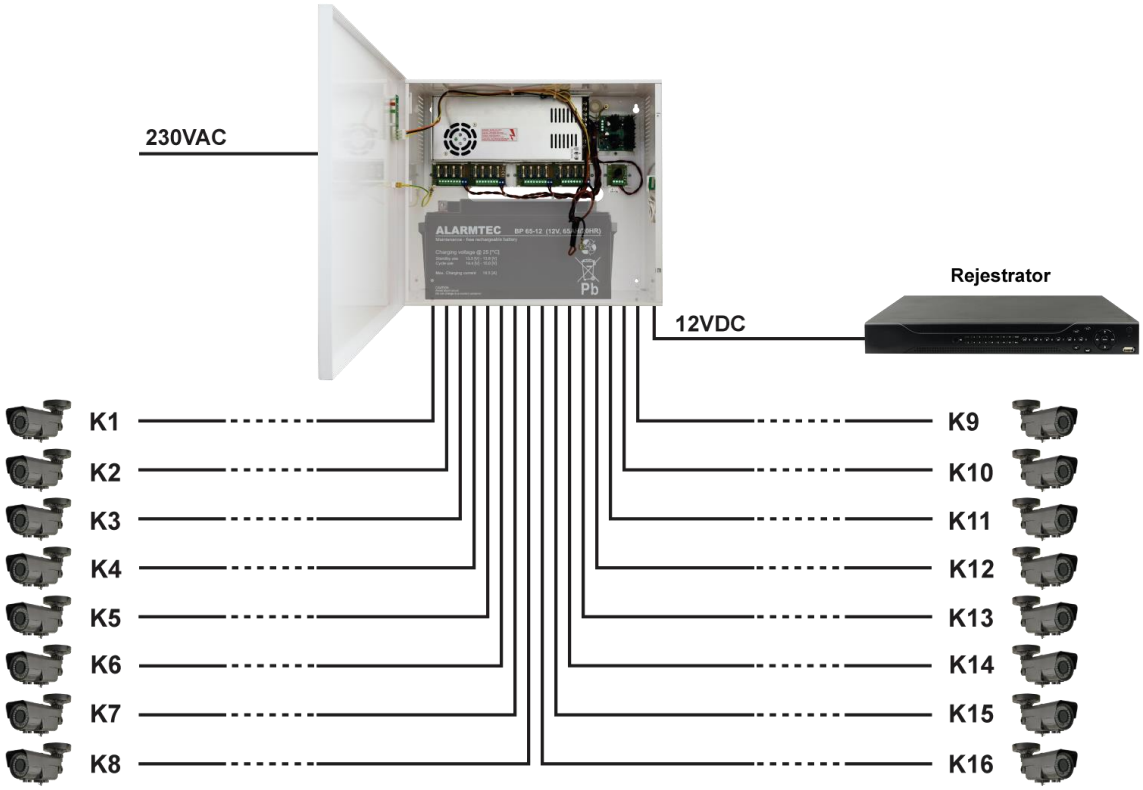
Edition: 1 from 09.04.2015

Supercedes the edition: ----------

GREEN POWER CCTV

Features:

- DC 13,8V uninterruptible power supply of cameras
- DC 12V uninterruptible power supply of the recorder
- fitting battery 65Ah/12V
- wide range of mains supply AC 176÷264V
- built-in power factor correction system (PFC)
- high efficiency 85%
- 16 outputs protected by 1A glass fuses for powering analog cameras
- 12V/5A output dedicated to supply the recorder
- battery charge and maintenance control
- deep discharge battery protection (UVP)
- battery charging current 2A/4A/8A jumper selectable
- battery output protection against short circuit and reverse polarity connection
- LED indication
- protections:
  - SCP short-circuit protection
  - OLP overload protection
  - OVP over voltage protection
  - OHP overheat protection
  - surge protection
  - against sabotage
- warranty – 2 years from the production date



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1. Technical description.

1.1. General description.

A buffer PSU is intended for an uninterrupted supply to CCTV system devices requiring stabilized voltage of **12V DC (+/-15%)**. The PSU has two circuits: first **1x5A/12VDC** for supplying the recorder and **16x0,8A/13,8V DC** for both cameras. Current efficiency of the PSU amounts to:

1. **Output current 16x0,8A + 5A recorder + 2A battery charging** *
2. **Output current 16x0,7A + 5A recorder + 4A battery charging** *
3. **Output current 16x0,4A + 5A recorder + 8A battery charging** *

Total current of the receivers + battery 20A* max.

In case of 230V mains power loss, a battery back-up is activated immediately. The PSU is mounted in a metal enclosure (RAL 9003 colour) that accommodates a 65Ah/12V battery. The enclosure is equipped with a micro-switch indicating unwanted opening of the door (faceplate).

1.2. Block diagram (fig.1).

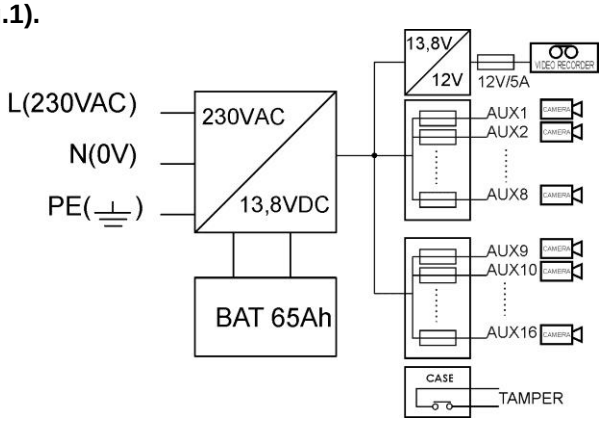


Fig.1. Block diagram of the PSU.

1.3. Description of PSU components.

Table 1. Description of components and connectors module LB8

Component no. [Fig. 2]	Description
①	**F1÷F8** glass fuses
②	**L1÷L8** LED voltage indication at the outputs
③	**AUX1 ÷ AUX8** independently protected outputs **IN1-, IN2-** power supply inputs of the fuse module

Table 2. Description of components and connectors module LB1

Component no. [Fig. 3]	Description
①	**F_{AUX}** glass fuses
②	**LAUX** LED voltage indication at the outputs
③	**AUX – output** **IN-** power supply inputs of the fuse module

* See chart 1

The power supply enclosure houses 2 fuse modules for powering 16 analog cameras.

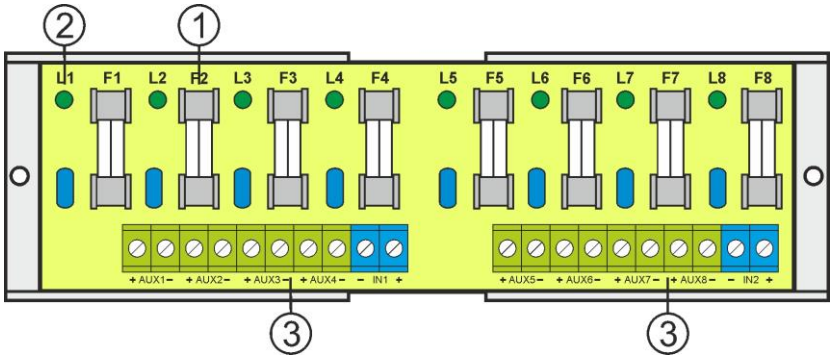


Fig.2. The view of the fuse module LB8.

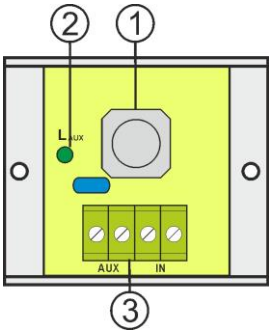


Fig.3. The view of the fuse module LB1.

Table 3. Description of the module's components and connectors.

Component no. [Fig. 4]	Description
1	**PSU module**
2	**Connectors of the PSU:** **L-N** 230V/AC power connector, PE protection connector **V+, V-** DC supply outputs **B+, B-** battery output
3	**green LED** indicates DC power
4	**P1 potentiometer,** output voltage adjustment
5	Battery outputs: red: +, black: -
6	**TAMPER,** contact of tamper protection **(NC)**
7	Battery charging current selection: Battery Charge: 2A 4A 8A Description: jumper on, jumper off
8	Fuse module LB8
9	Voltage regulator. RN500
10	Strip fuse base (LB1) 5A

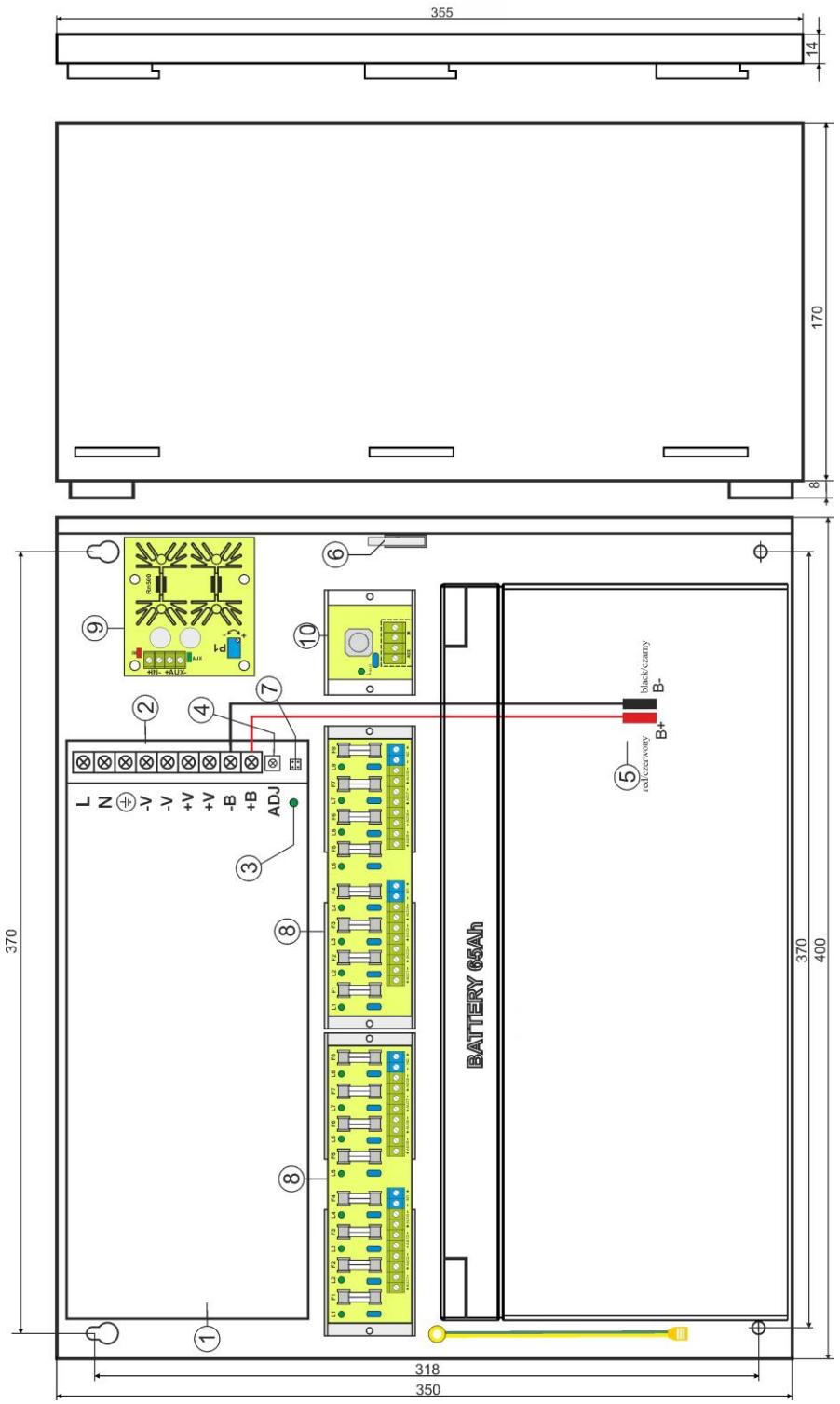


Fig.4. The view of the PSU.

1.4. Specifications:

- electrical specifications (tab.4)
- mechanical specifications (tab.5)
- operation safety (tab.6)
- operating specifications (tab.7)

Table 4. Electrical specifications.

PSU type	A (EPS - External Power Source)
Mains supply	176÷264V AC / 50Hz
Current consumption	1,5A @230V AC
PSU's power	300W
Efficiency	85%
Power factor PF	>0,95 @230V AC
Output voltage – Fuse base for fuse strips16x Output voltage – recorder	11V÷ 13,8V DC – buffer operation 9,5V÷13,8V DC – battery-assisted operation 11,0V ÷ 12V DC – buffer operation 9,5V ÷ 12V DC – battery-assisted operation
Output current t_{AMB}<30°C	**16x0,8A + 5A recorder + 2A battery charging *** **16x0,7A + 5A recorder + 4A battery charging *** **16x0,4A + 5A recorder + 8A battery charging** * **Total current of the receivers + battery 20A* max.** *** see chart 1**
Output current t_{AMB}=40°C	**16x0,4A + 5A recorder + 2A battery charging** * **Total current of the receivers + battery 14A* max.** *** see chart 1**
Output voltage adjustment range	12÷14V DC
Ripple voltage	120mV p-p max.
PSU current consumption	230mA
Battery charging current	2A, 4A,8A jumper selectable
Short-circuit protection SCP	2x STRIP LB8: 16x F 1A glass fuse, STRIP LB1:1xF 5A
Overload protection OLP	105% ÷ 150% of the PSU power, automatic recovery
Battery circuit protection SCP and reverse polarity connection	glass fuse 30A
Surge protection	varistors
Over voltage protection OVP	>16V (activation requires disconnecting the load or supply for about 20 s.)
Deep discharge protection UVP	U<9,5V (± 5%) – disconnection of battery terminal
Sabotage protection: - TAMPER output indicating enclosure opening	 - micro-switches, NC contacts (enclosure closed), 0,5A@50V DC (max.)
Optical indication: front panel of the PSU - AC OK.; LED indicating the AC power status - AUX OK.; LED indicating the DC supply at the PSU output	 - red, normal status – on, failure: off - green, normal status – on, failure: off

Table 5. Mechanical specifications.

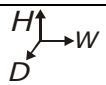
Enclosure dimensions	400 x 350 x 170+8 [mm] (WxHxD)
Fixing	See Fig. 3
Fitting battery	65Ah/12V (SLA) max. 360x175x165mm (WxHxD) max 
Net/gross weight	7,1/7,4 kg
Enclosure	Steel plate DC01 1,0mm, colour RAL 9003
Closing	Cheese head screw x2 (at the front), lock assembly possible
Connectors	Mains supply: Φ0,63-2,50 (AWG 22-10) Outputs: Φ0,63-2,50 (AWG 22-10) Battery outputs: Φ6/2,5mm^2 TAMPER output: wires
Notes	The enclosure does not adjoin the assembly surface so that cables can be led. Forced cooling - built-in fan.

Table 6. Operation safety.

Protection class PN-EN 60950 -1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: - between input (network) circuit and output circuits of the PSU (I/P-O/P) - between input circuit and PE protection circuit (I/P-FG) - between output circuit and PE protection circuit (O/P-FG)	 3000 V/AC min. 1500 V/AC min. 500 V/AC min.
Insulation resistance: - between input circuit and output or protection circuit	 100MΩ, 500V DC

Table 7. Operating specifications

Environmental class	II
Operating temperature	-10ºC...+40ºC
Storage temperature	-20ºC...+60ºC
Relative humidity	20%...90%, without condensation
Vibrations during operation	unacceptable
Impulse waves during operation	unacceptable
Direct insolation	unacceptable
Vibrations and impulse waves during transport	Wg PN-83/T-42106

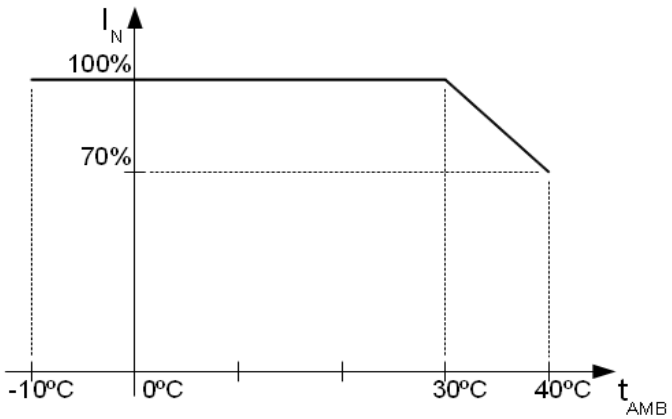


Chart 1. Acceptable output current from the PSU depending on ambient temperature.

2. Installation.

2.1 Requirements.

The buffer PSU is to be mounted by a qualified installer, holding relevant permits and licenses (applicable and required for a given country) for 230V/AC interference and low-voltage installations. The unit should be mounted in confined spaces, in accordance with the 2nd environmental class, with normal relative humidity (RH=90% maximum, without condensation) and temperature from -10°C to +40°C. The PSU shall work in a vertical position that guarantees sufficient convectional air-flow through ventilating holes of the enclosure.

The power supply load balance should be done before installation:

1. **Output current 16x0,8A + 5A recorder + 2A battery charging** *
2. **Output current 16x0,7A + 5A recorder + 4A battery charging** *
3. **Output current 16x0,4A + 5A recorder + 8A battery charging** *

Total current of the receivers + battery 20A* max.

As the PSU is designed for a continuous operation and is not equipped with a power-switch, therefore an appropriate overload protection shall be guaranteed in the power supply circuit. Moreover, the user shall be informed about the method of unplugging (most frequently through separating and assigning an appropriate fuse in the fuse-box). The electrical system shall follow valid standards and regulations.

* See chart 1

2.2 Installation procedure.

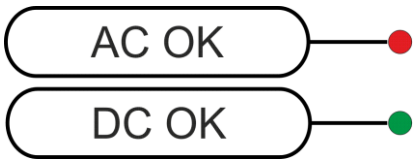
1. Before installation, make sure that the voltage in the 230V power-supply circuit is cut off.
2. Mount the PSU in a selected location and connect the wires.
3. Connect the power cables (~230VAC) to L-N terminals of the PSU. Connect the ground wire to the terminal marked by the earth symbol – "⏚" on the plate. Use a three-core cable (with a yellow and green PE protection wire) to make the connection. Lead the cables to the appropriate terminals of the connection board through the bushing.

The shock protection circuit shall be performed with a particular care, i.e. the yellow and green wire coat of the power cable shall stick to one side of the terminal marked with the '⏚' earth symbol in the PSU enclosure. Operation of the power supply without a properly made and fully operational shock protection circuit is UNACCEPTABLE! It can result in device damage or an electric shock.

4. Connect the camera cables to the **AUX1…AUX16** connectors of the LB8 modules.
5. Connect the recorder to the output of the AUX 12V connector of the LB1 module.
6. Connect the power (~230V).
7. Check the PSU output voltage:
- the PSU voltage without load should amount to U=13,8V DC.
8. Connect the battery (mind the colours):
- battery output (+V): BAT+ cable / red,
- battery output (0V): BAT – cable / GND / black.
9. Check the PSU operation indicator: green LED on the power supply module.
10. After installing and checking proper working, the enclosure can be closed.

3. Operating status indication.

The PSU is equipped with two diodes on the front panel:



RED LED:
- on – The PSU supplied with 230V AC voltage
- off – no 230V AC mains supply

GREEN LED:
- on – DC voltage at the AUX output
- off - no DC voltage at the AUX output

4. Operation and use.

4.1 Overload or short circuit of the PSU output (SCP activation).

In case of overload, the output voltage is automatically shut off, and so is the LED indicator. The restoration of the voltage takes place immediately once the failure (overload) is over.

4.2 Overload or short circuit of the recorder's module or CCTV camera module

The modules of the recorder and CCTV cameras are protected against a short circuit by fuses (fuse-elements). In case of fuse replacement, use a replacement of the same parameters, in conformity with specific norms and power balance.

4.3 Battery-assisted operation.

The power supply is equipped with deep discharge battery protection (UVP). If the voltage at the battery terminals drops below 9,5V during battery-assisted operation, the batteries will be disconnected.

4.4 Maintenance.

Any and all maintenance operations may be performed following the disconnection of the PSU from the power supply network. The PSU does not require performing any specific maintenance measures. However, in case of dust, clean the interior with compressed air. In case of fuse replacement, use a replacement of the same parameters.

WEEE MARK

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.

CAUTION! The power supply unit is adapted for a sealed lead-acid battery (SLA). After the operation period it must not be disposed of but recycled according to the applicable law.

GENERAL WARRANTY CONDITIONS

1. Pulsar (the manufacturer) grants a five-years warranty for the equipment, counted from the device's production date.
2. The warranty includes free-of-charge repair or replacement with an appropriate equivalent (the selection is at the manufacturer's discretion) if the malfunction is due to the manufacturer, includes manufacturing or material defects, unless such defects have been reported within the warranty period (item 1).
3. The equipment subject to warranty is to be brought to the place where it was purchased, or directly to the main office of the manufacturer.
4. The warranty applies to complete equipment, accompanied by a properly filled warranty claim with a description of the defect.
5. Should the claim be accepted, the manufacturer is obliged to provide warranty repairs, at the earliest convenienve, however not later that within 14 days from the delivery to the service centre of the manufacturer.
6. The repair period mentioned in item 5 may be prolonged, if there are no technical possibilities to carry out the repairs, or if the equipment has been conditionally accepted, due to the breaking warranty terms by the claimant.
7. All the services rendered by force of the warranty are carried out at the service centre of the manufacturer, exclusively.
8. The warranty does not cover the defects of the equipment, resulting from:
- reasons beyond the manufacturer's control,
- mechanical damage,
- improper storage and transport,
- use that violates the operation manual or equipment's intended use
- fortuitous events, including lightning discharges, power failures, fire, flood, high temperatures and chemical agents,
- improper installation and configuration (in defiance with the manual),
9. The warranty is void in any of the following circumstances:
- construction changes
- repairs carried out by any unauthorized service center
- damage or removal of warranty labels
- modifications of the serial number
10. The liability of the manufacturer towards the buyer is limited to the value of the equipment, determined according to the wholesale prices suggested by the manufacturer on the day of purchase.
11. The manufacturer takes no reponsibility for the defects that result from:
- the damaging, malfunctioning or inability to operate the equipment
- defects that result from using the equipment outside its stated specifications and operating parameters failing to abide by the recommendations and requirements contained in the manual, or the use of the equipment.

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