USER MANUAL

EN

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AWZ637

v1.1

Enclosure with power supply unit dedicated to Dahua's access control

Features:

- supply voltage ~200 - 240 V
- DC 13,8 V/6 A uninterruptible power supply
- fitting battery 17 Ah/12 V
- high efficiency (87%)
- battery charging current jumper selectable
- function START allows running PSU from battery power
- LED optical indication
- deep discharge battery protection (UVP)
- dynamic battery test
- enclosure dedicated for Dahua controllers ASC2104B-T, ASC2102B-T (and similar)
- battery circuit continuity control
- battery voltage control
- battery charging and maintenance control
- battery output protection against short circuit and reverse connection
- protections:
  - SCP short circuit protection
  - OLP overload protection
  - OVP overvoltage protection
  - surge protection
  - antisabotage protection: unwanted enclosure opening
- warranty – 2 years from production date

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1. Technical description.

1.1. General description.

The buffer power supply is used for uninterrupted supply equipment requiring stabilized voltage of 12 V DC (+/-15%). The PSU provides voltage of **U=13,8 V DC.** Current efficiency:

1. Output current 6 A + 1 A battery charge
2. Output current 5 A + 2 A battery charge

Total device current + battery: 7 A max.

In case of power decay, a battery back-up is activated immediately. The PSU is constructed based on the switch mode PSU, with high energy efficiency. The PSU is housed in a metal enclosure (colour RAL 9005) which can accommodate a 17 Ah/12 V battery. A micro switch indicates door opening (front cover). TH35 rail, length of 185 mm, for mounting the controller was installed inside. The PSU has been equipped with a LB4 fuse module to protect the controller outputs.

1.2. Block diagram (fig.1).

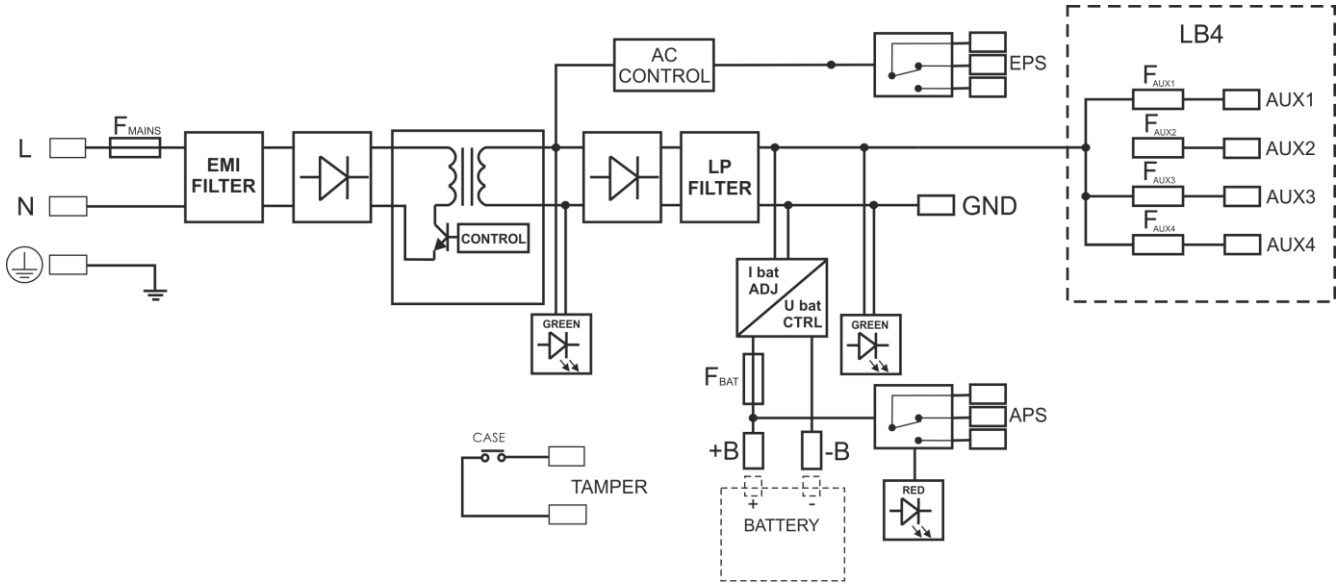


Fig.1. The block diagram of the PSU.

1.3. Description of PSU components and connectors.

Table 2. Elements and connector of PSU (see Fig. 2).

Element no.	Description
[1]	LED indicating the presence of DC voltage
[2]	Connector for external LED indicators
[3]	Selection jumper for charging current: • I_{BAT} = ▬, I_{BAT} = I1 • I_{BAT} = ▪▪, I_{BAT} = I2
[4]	**START** - button (launching from battery)
[5]	Output of PSU (**V+**, **V-**)
[6]	Battery terminals (**B+**, **B-**)
[7]	**APS** – technical output of battery failure
[8]	**EPS** – technical output of AC network absence indication
[9]	**L-N** power supply connector 230 V AC, ⏚ – connector for connection of a protective conductor

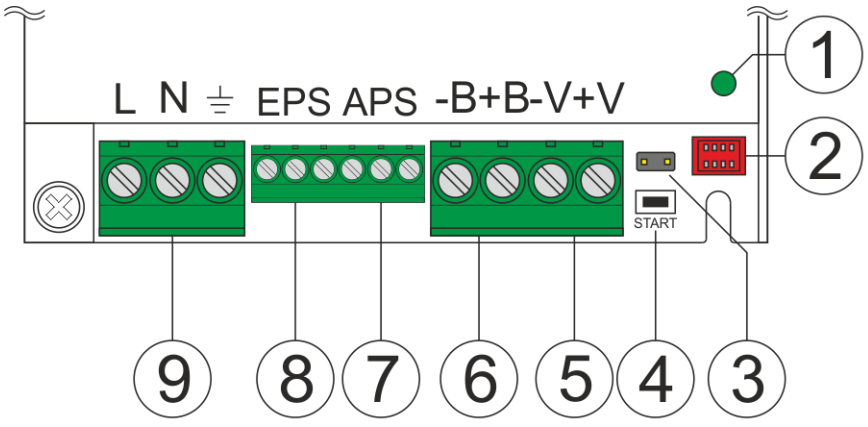


Fig. 2. View of power supply module

Table 3. View of PSU (see Fig. 3).

Element no.	Description
[1]	**PSU module**
[2]	Fitting battery **17 Ah/12 V (SLA)**
[3]	**TAMPER, contact, sabotage protection (NC)**
[4]	**L-N** ~230 V power supply connector, protection connector ⏚
[5]	Power cord for the controller, ended with a **DC 2,1/5,5 plug**
[6]	Rail TH35
[7]	**Fuse module** LB4

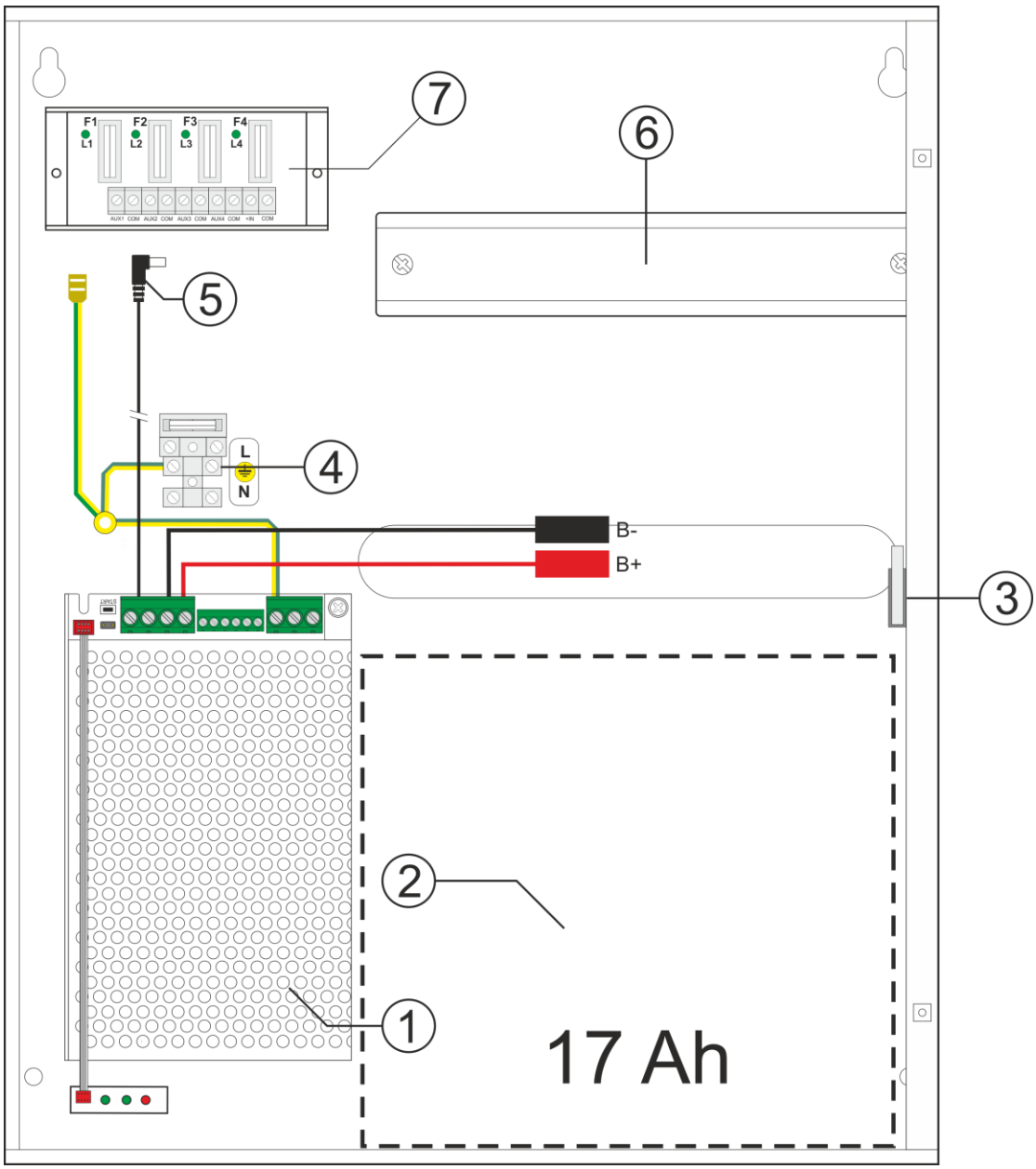


Fig. 3. View of PSU.

1.4. Specifications:

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

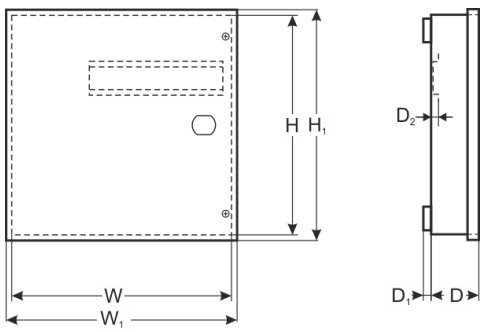


Table 4. Electrical parameters.

Supply voltage	~ 200 - 240 V
Current consumption	1 A
Power frequency	50/60 Hz
Inrush current	40 A
PSU power	96 W
Output current max.	7 A
Efficiency	87%
Output voltage	11 - 13,8 V – buffer operation 10 - 13,8 V – battery-assisted operation
Ripple voltage (max.)	100 mV p-p
Current consumption by PSU systems during battery-assisted operation.	30 mA
Fitting battery	17 Ah (SLA)
Charging current (jumper selectable)	I1: 1 A I2: 2 A
Overload protection (OLP)	105-150% PSU power, automatically recovered
Over voltage protection (OVP)	>19 V (activation requires disconnecting the load or supply for about approx. 1 min.)
Battery circuit protection SCP and reverse polarity connection	- F_{BAT} fuse (in case of a failure, fuse-element replacement required))
Deep discharge battery protection UVP	U<9,5 V (± 5%) – disconnection of battery circuit
Technical outputs: **- EPS; output indicating AC power failure** **- APS; output indicating battery failure**	- relay type: 1A@ 30VDC/50VAC
Tamper switch protection: **- TAMPER indicates enclosure opening**	- microswitch, NC contacts (enclosure closed) 0,5 A@50 V DC (max.)
Optical indication	- LCD on PSU's PCB - LED indicators on power supply's cover (see section 3.1)
Fuses: - F_{BAT}	F 8A/250V
Terminals: **Mains supply:** **Outputs:**	0,5 – 2,5 mm^2 (AWG 26 – 12)
Battery outputs:	Battery wires 6,3F – 45cm, angle muffs ML062
TAMPER	Wires, 40cm
Notes	Convectional cooling

Table 5. Mechanical parameters.

Dimensions:	W=320, H=397, D+D_1=92+8 [+/- 2 mm] W_1=325, H_1=401 [+/- 2 mm] D_2=18 [+/- 2 mm]
Fixing (WxH)	290x348
Space for battery (WxHxD)	190 x 170 x 75 mm (WxHxD) max
Number of DIN rails / length / number of „S" fields:	1 / 185 / 10
Net/gross weight	3,5 / 3,8 [kg]
Enclosure	Steel sheet DC01 1,0 mm
Closing	Cheese head screw (at the front), (lock assembly possible)
Notes	Enclosure does not adjoin assembly surface so that cables can be led..

Table 6. Operation safety.

Protection class EN 62368-1	I (first)
Protection grade EN 60529	IP20
Electrical strength of insulation: **- between input and output circuits of the PSU** **- between input circuit and protection circuit** **- between output circuit and protection circuit**	 2500 V AC min. 1500 V AC min. 500 V AC min.
Insulation resistance: **- between input circuit and output or protection circuit**	 100 MΩ, 500 V DC

Table 7. Operating parameters.

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	According to PN-83/T-42106

2. Installation.

2.1 Requirements.

The buffer PSU shall be mounted by a qualified installer with appropriate permissions and qualifications for 230 V AC installations and low-voltage installations (required and necessary for a given country). Unit should be mounted in confined spaces, in accordance, with normal relative humidity (RH=90% maximum, without condensing) 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 unit should be mounted in a metal enclosure (cabinet) in a vertical position so as to ensure free, convection air flow through the vents. In order to meet the EU requirements, follow the guidelines on: power supply, enclosures and shielding: - according to application.

As power supply is designed for a continuous operation and is not equipped with a power-switch, therefore, an appropriate overload protection in power supply circuit should be provided. 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.

2.2 Installation procedure.

CAUTION!
Before installation, cut off voltage in 230 V power-supply circuit. To switch power off, use an external switch, in which distance between contacts of all poles in disconnection state is not less than 3mm.

It is required to install an installation switch with a nominal current of 6 A in power supply circuits outside power supply unit.

1. Mount the PSU in a selected location and connect the wires.
2. Connect power cables (~230 V) to L-N clips of PSU. Connect ground wire to clip marked by earth symbol ⏚. Use a three-core cable (with a yellow and green protection wire ⏚) to make connection. Lead the power cables to the relevant terminals of the power supply via an isolation conduit.

The shock protection circuit shall be done with a particular care: the yellow and green wire coat of the power cable should be connected to the terminal marked with the grounding symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause damage to the equipment or an electric shock.

3. If needed, connect the device cables to the technical outputs:
   - EPS; technical output of AC network absence indication
   - APS; technical output indicating battery failure
4. Connect the receivers' cables to the terminals AUX and COM fuse module. If necessary, the values of the fuses in the LB4 module can be selected, but the value of 1.5 A should not be exceeded.
5. Use the I_{BAT} jumper to set the maximum battery charging current, taking into account charging capacity and required charging time.
6. Mount the battery in the battery compartment of the enclosure. Connect the batteries with the PSU paying special attention to the correct polarity.
7. Activate 230 V AC supply. LEDs on cover of power supply should light (LED APS shines only in case of battery failure, see Section 3.1).

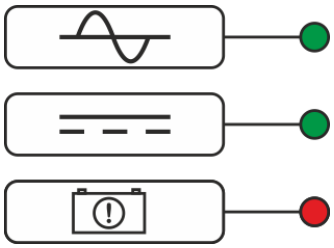
Output voltage of the PSU, without load U = 13,8 V DC.
During battery charge, voltage can amount to U = 11 - 13,8 V DC.

8. Run the PSU test: check the LED and acoustic indication (Tab. 7), technical output; through:
   - **cutting off the 230 V current**: LED AC (Fig. 2 level 5), EPS technical output after time 30s
   - **battery disconnection**: optical indication, APS technical output – after a battery test have been completed (~5min).
9. After installing and checking proper working, the enclosure can be closed.

3. Operating status indication.

3.1 Optical indication.

The power supply unit features LED status indication:



Green LED AC:
- **on – PSU is supplied with 230 V,**
- **off – no 230 V power, battery-assisted operation**

Green LED DC:
- **on – presence of DC voltage in output of PSU**
- **off – no voltage in the output of the PSU**

Red LED APS:
- **off – no failure**
- **on – indicates battery failure status**

Moreover, PSU is equipped with LED indicating presence of voltage at PSU output, located on PCB of PSU module.

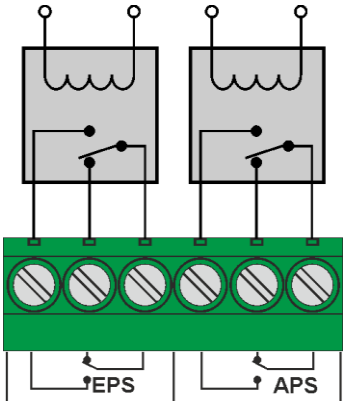
3.2 Technical outputs.

The PSU is equipped with indication outputs:

- **EPS FLT - output indicating 230 V power loss**.
  The output indicates 230 V power failure. In case of power failure, contacts of relay change over after about 30 seconds.

- **APS FLT - output indicating battery failure.**
  The output indicates the PSU failure. In case of failure, contacts of relay change over.
  PSU failure can be caused by the following events:
  - defective or low battery
  - battery fuse failure
  - no continuity in the battery circuit
  - battery voltage below 23 V during battery-assisted operation

  A battery failure is detected within a maximum of 5 minutes - after each battery test.



CAUTION! The figure set of contacts shows a potential-free status of relay, which corresponds to power supply failur.

3.3 Standby time.

Battery-assisted operating depends on battery capacity, charging level and load current. To maintain an appropriate standby time, current drawn from the PSU in battery mode should be limited. Required battery capacity can be calculated using following formula:

$$Q_{AKU} = \text{standby time} * (I_{WY} + Iz)$$

where:
Q_{AKU} – minimum battery capacity [Ah]
I_{WY} – ausgangsstrom von Netzteilen (von Empfängern verbraucht)
Iz – PSU current consumption (including optional modules) [A] (Table 4)

Total current of the receivers + battery charging current mustn't exceed maximum current of power supply.

3.4 Battery charging time.

The PSU has a battery circuit charged with direct current. The current selection is done with use of the I_{BAT} jumpers. The table below shows how long does it take to charge a (fully discharged) battery up to min. 80% of its nominal capacity.

Table 8. Approximate battery charging time up to the capacity of 0,8.

Battery	Output current	
	1 A	2 A
17Ah	16h	8h

3.5 Running PSU on battery backup.

Power supply allows you to run on battery backup when necessary. To do this, press the START button on PCB.

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 the case of significant dust rate, its interior is recommended to be cleaned with compressed air. In the case of a 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

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