

The APS-612 switching power supply has been designed for use with 12 V DC electrical devices. It comes with a dedicated connector allowing for integration with Satel's devices.



The power supply can be integrated with the following SATEL devices (required firmware version is given in parentheses):

- ACCO-NT (v. 1.10),
- INT-ADR (v. 2.05),
- INT-E (v. 5.04),
- INT-IORS (v. 2.04),
- INT-O (v. 2.04),
- INT-ORS (v. 2.04),
- INT-PP (v. 2.04).

The APS-612 power supply meets the requirements of EN50131 Grade 3.



If the "power supply + interacting device" system is to meet the standard requirements for Grade 3, the interacting device must also comply with that standard requirements. The standard requirements for Grade 3 are met by: INT-E, INT-O and INT-PP.

1. Features

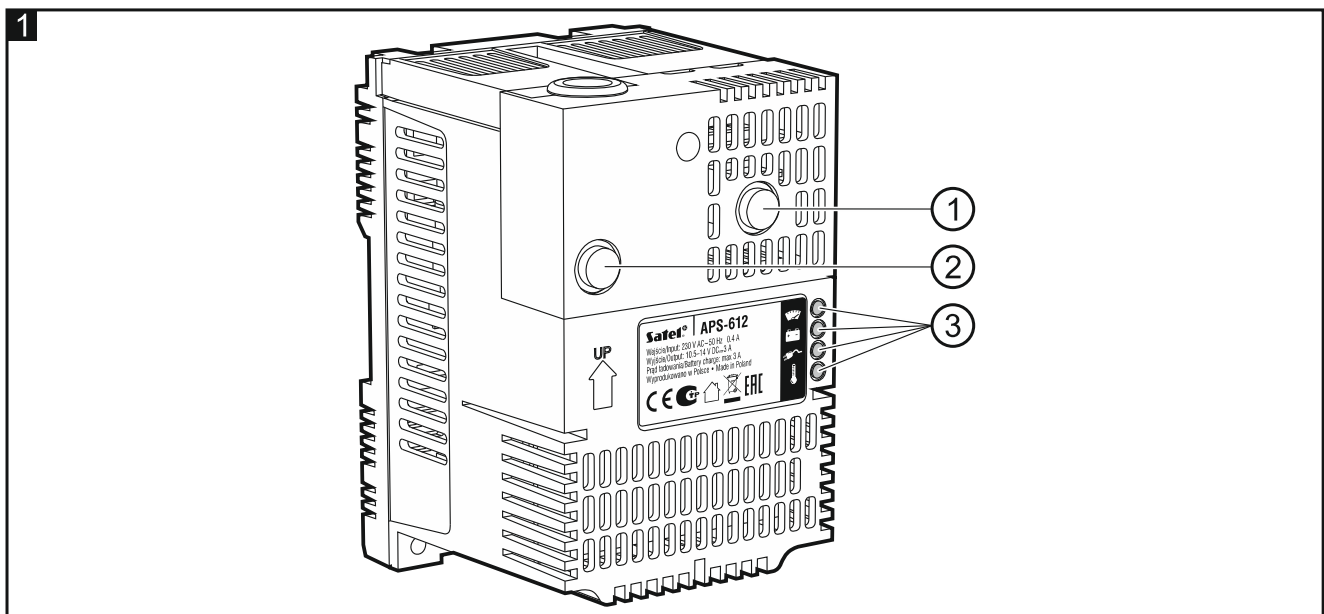
- Output current:
 - 3 A – supply output,
 - 3 A – battery charging.
- Battery backup:
 - backup battery supervision,
 - automatic low battery cut-off.
- DIP switches enabling configuration of the power supply settings.
- 4 LED indicators:
 - power output status,
 - battery status,
 - AC power status,
 - too high temperature of the power supply.
- 4 OC outputs to indicate the following troubles:
 - AC power loss,
 - no battery, low battery or too high internal resistance of the battery,
 - power supply overload,
 - permissible working temperature exceeded.
- Audible signaling of troubles.

- Dedicated connector for Satel's devices.
- Short-circuit protection of AC power supply circuit and battery charging circuit.
- Short-circuit and overload protection of the power output.
- Input interference filter.
- Precision voltage control.
- Suitable for mounting in enclosures, as well as in distribution switchboards on 35 mm DIN rail.



According to Standard EN 50131 for Grade 3, the power supply has overvoltage protection on the power supply output. It provides protection for devices connected to the power supply unit. Overvoltage on the output (caused by installing devices with the power on, unprotected inductive elements in the installation, like relays, etc.) may result in blowing the fuse in the battery charging circuit or the power supply entering the emergency mode.

2. Description of the power supply



① F2 slow-blow fuse 3.15 A – battery charging circuit protection.

② F1 slow-blow fuse 3.15 A – AC circuit protection.

③ LEDs indicating present status of the power supply:



– red LED indicating power output status:

OFF – correct operation, current consumption not exceeding 3 A,

ON – short circuit,

flashing – overload, current consumption exceeding 3 A.





– yellow LED indicating the battery status, if the battery testing mode is enabled:

OFF – no battery or blown F2 fuse (3.15 A),

ON – battery OK,

flashing – low battery (battery voltage below 11.5 V or too high internal resistance of the battery).

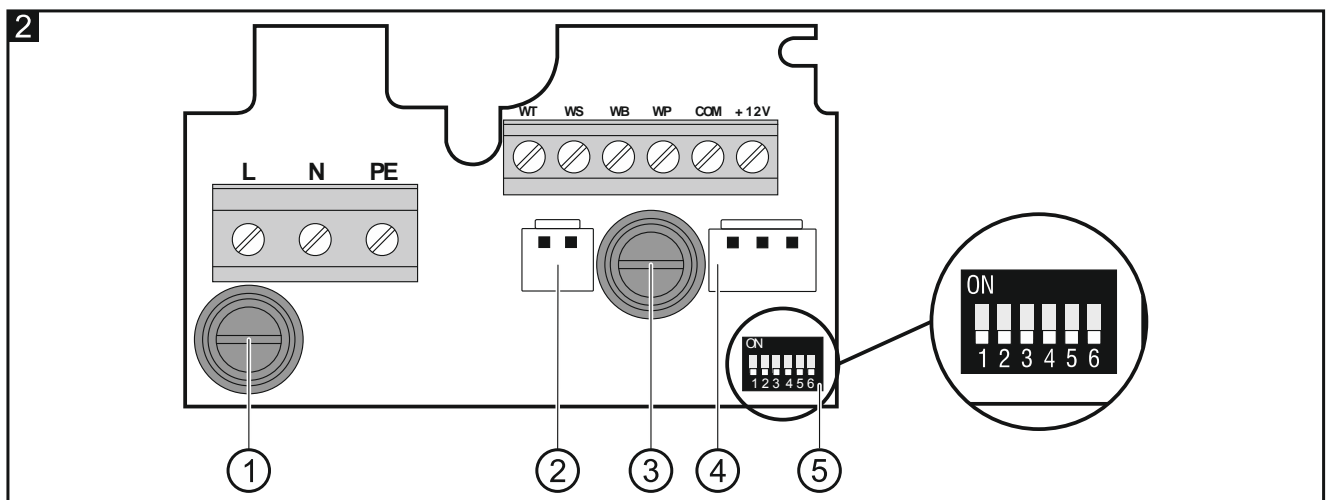
If the testing mode is disabled, the battery is OFF.

-  – green LED indicating the AC power status:
ON – AC power OK,
flashing – no 230 V AC power or blown F1 fuse (3.15 A).
-  – blue LED which indicates by flashing that the operating temperature rose above 75°C (which may result in damage to the power supply).

If, with the 230 V AC supply connected, all the LEDs are OFF, the power supply must have entered the emergency mode as a result of the power supply output being shorted to the common ground (voltage spike) – see section “Installation”.

2.1 Electronics board

Figure 2 shows a portion of power supply electronics board, that can be seen after removing the cover.



- ① F1 slow-blow fuse 3.15 A – AC circuit protection.
- ② battery connector.
- ③ F2 slow-blow fuse 3.15 A – battery charging circuit protection.
- ④ connector for connecting the power supply to SATEL devices provided with similar connector.
- ⑤ DIP-switches (see: section „DIP-switches”).

Description of terminals:

- L** – terminal for connecting phase conductor.
- N** – terminal for connecting neutral conductor.
- PE** – terminal for connecting protective conductor.
- WT** – OC type output signaling that permissible operating temperature is exceeded.
- WS** – OC type output signaling 230 V AC power loss.
- WB** – OC type output signaling no battery, low battery (below 11.5 V) or too high internal resistance of the battery.
- WP** – OC type output signaling current overload (above 3 A).
- COM** – common ground.
- +12V** – +12V DC power output.

During normal operation of the power supply, the OC type outputs are shorted to the common ground (0 V), but when trouble occurs, the respective output is disconnected from the common ground.

2.2 DIP-switches



The switch 6 must be set in OFF position.

The switches 1-5 are intended for setting operating parameters of the power supply (see Table 1). By factory default, all of them are set in OFF position.

Switch No.	Description
1	audible trouble signal Enables (ON) / disables (OFF) the audible trouble signal (short beep every 3 seconds).
2	battery test Enables (ON) / disables (OFF) the battery testing mode. Setting the OFF position will also disable the no battery and battery trouble indication on the WB output.
3	battery charging current Defines the battery charging current (ON – 3 A, OFF – 1.5 A).
4	AC power failure reporting delay Defines the time that must elapse after the moment of AC power failure for the WS output to be activated. The delay time shall be set in accordance with Table 2.
5	

Table 1.



It is recommended that you activate the battery testing mode for continuous monitoring of the operation of emergency power supply. The battery test is performed irrespective of the voltage on the 12 V DC power supply output.

Switch No.	Delay time			
	3 s	60 s	600 s	1800 s
4	OFF	ON	OFF	ON
5	OFF	OFF	ON	ON

Table 2.



If the power supply is connected to the dedicated expander connector and the expander has been identified as an expander with power supply, the AC power failure reporting delay set by means of the switches will be disregarded. The delay shall be programmed for the expander.

3. Installation



Disconnect power before making any electrical connections.

Making connections with the power ON may lead to blowout of the fuse in the battery circuit or cause the power supply enter the emergency mode. In order to exit the emergency mode, disconnect the 230 V AC supply and then reconnect it after about 30 seconds.

The power supply has been designed for use with lead-acid batteries or other batteries having similar charging characteristics. Using other batteries than the recommended ones may cause an explosion.

The used batteries must not be discarded, but should be disposed of in accordance with the existing rules for environment protection.

The power supply should be permanently connected to the 230 V AC mains supply. Before you make the cabling, familiarize yourself with the electrical installation of the facility. Make sure that the circuit you choose for powering will be always alive. The power circuit should be protected with a proper safety device. The owner or user of the alarm system should be instructed on how to disconnect the power supply from the mains (e.g. by indicating the power circuit breaker).

As the emergency power supply source, use a 12 V sealed lead-acid battery. The battery capacity must be appropriately selected to match the current consumption in the system. If the power supply is to be used in an alarm system which is to meet requirements of the EN 50131 standard for Grade 3, the battery should provide 30 hours of system operation in the event of mains power loss. On the other hand, the power supply should enable such a battery to be charged up to 80% of its capacity within 24 hours. Table 3 contains information on what current must be used for charging batteries of different capacities so as to meet the requirements of EN 50131 for Grade 2 and Grade 3.



The minimum battery capacity must be 7 Ah. If the capacity is lower, the power supply will report a trouble when the battery testing mode is started.

Battery capacity	Charging current	Power supply output current	EN 50131 grade
90 Ah	3 A	3 A	Grade 3
60 Ah	3 A	2 A	Grade 3
30 Ah	3 A or 1.5 A	1 A	Grade 3
18 Ah	3 A or 1.5 A	3 A	Grade 2
12 Ah	1.5 A	2 A	Grade 2
7 Ah	1.5 A	1 A	Grade 2

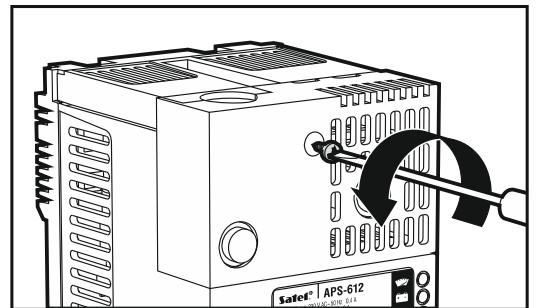
Table 3.



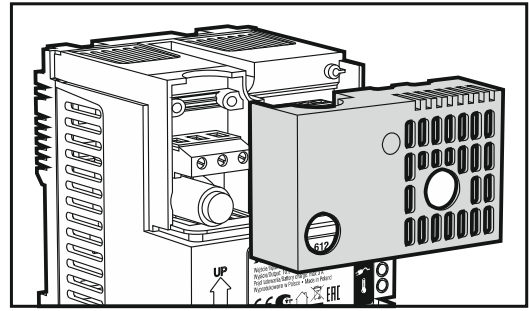
If the battery voltage drops to 10.5 V, the power supply unit will turn off to protect the battery against deep discharge and damage.

Before proceeding to installation, estimate the current consumption by all devices which are to be supplied from the APS-612 power supply unit. The sum of currents consumed by these devices must not exceed 3 A.

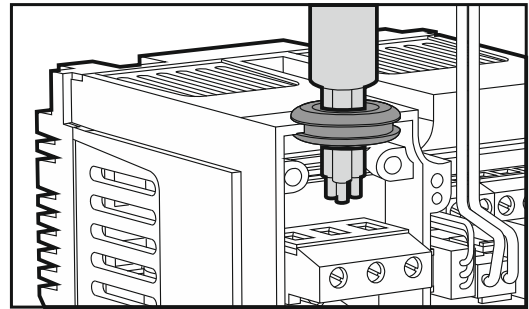
1. Remove the screw fixing the cover of power supply terminals.



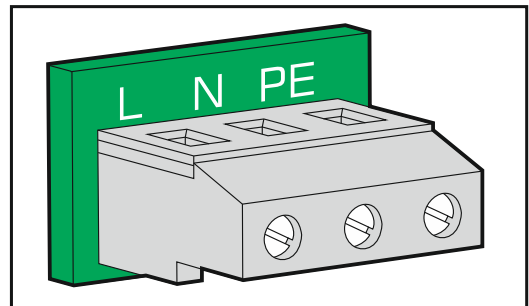
2. Remove the cover of power supply terminals.



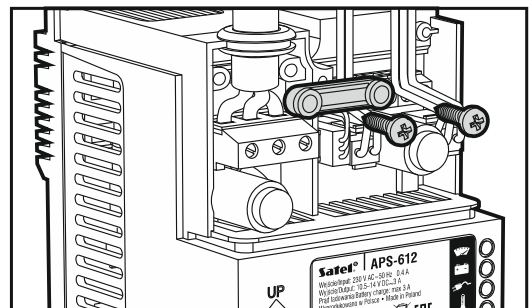
3. Configure the power supply using the DIP switches.
4. If the power supply is to be connected to a device provided with dedicated connector, use the cable delivered with the power supply, to connect the power supply and the device.
5. Connect wires to the +12V and COM terminals, if they are to be used to supply the external device.
6. You may connect LEDs or relays to the trouble signaling outputs, or connect these outputs to control panel zones.
7. Connect battery cables to the connector designated ② in Fig. 2.
8. Run the cable through the cable grommet.



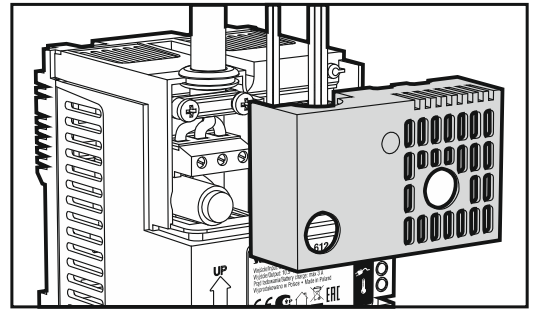
9. Screw the 230 V AC power leads to the corresponding terminals (phase conductor to L terminal, neutral conductor to N terminal, and protective conductor to PE terminal).



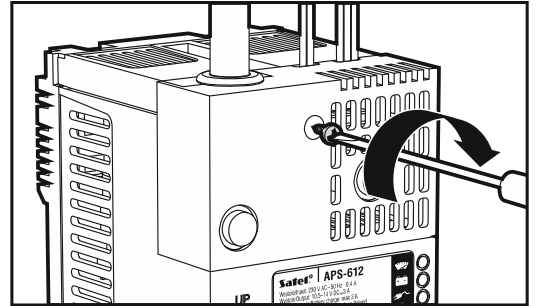
10. Screw the wire fastening element.




11. Replace the cover of power supply terminals.





12. Replace the screw fastening the cover of power supply terminals.



13. Connect the battery to the dedicated leads (positive terminal to RED one, negative terminal to BLACK one).

14. Turn on 230 V AC power. The power supply will signal voltage presence with 1 beep and the  LED will go on.

4. Battery testing by the power supply

After starting the power supply, provided that the battery testing mode is enabled and a sufficiently charged battery is connected, the  LED should go on. The battery is checked every 4 minutes. Duration of a full test of the battery charge status is up to 12 minutes. If the battery voltage drops below 11.5 V, the power supply will report a trouble on the WB output, and the  LED will start blinking (optionally, the trouble may be audibly signaled).

5. Specifications

Power supply type (according to EN50131).....	A
Supply voltage	195 - 265 V AC
PF (Power Factor Correction)	up to 0.98
Efficiency	up to 90%
Nominal output voltage (according to IEC 38)	12 V DC
Actual output voltage	13.8 V DC
Output current:	
supply	3 A
battery charging (selectable)	1.5 A / 3 A
Battery failure voltage threshold	11.5 V ±10%
Battery cut-off voltage	10.5 V ±10%
WS, WB, WP, WT outputs (OC type).....	50 mA
Security grade according to EN50131	Grade 3
Environmental class.....	II

Operating temperature range.....-10...+55 °C
Enclosure dimensions..... 78 x 122 x 84 mm
Weight.....525 g

The declaration of conformity may be consulted at www.satel.eu/ce