

APS-412

Power supply

aps-412_en 12/21

The APS-412 switching power supply has been designed for use with 12 VDC electrical devices. It comes with a dedicated connector allowing for integration with Satel's devices.



If the power supply is to be used in conjunction with the devices specified below, make sure their firmware version is at least:

- INT-ADR – v. 2.02,
- INT-E – v. 5.01,
- INT-IORS – v. 2.01,
- INT-O – v. 2.01,
- INT-ORS – v. 2.01,
- INT-PP – v. 2.01.

The APS-412 power supply meets the requirements of EN50131 Grade 2.

1. Features

- Output current 4 A.
- Can be used with an emergency backup battery:
 - battery charge status control,
 - automatic cutoff of discharged battery.
- DIP switches enabling configuration of the power supply settings.
- 3 LEDs to indicate the status of:
 - power supply unit,
 - battery,
 - AC power.
- 3 OC outputs to indicate the following troubles (in case of the trouble, the output is disconnected from the ground):
 - AC power loss,
 - low battery,
 - power supply overload.
- Audible signaling of troubles.
- Dedicated connector for Satel's devices.
- Short-circuit protection of AC mains 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 OPU-3 P and OPU-4 P / PW enclosures, as well as in distribution switchboards on 35 mm DIN rail.

2. Description of the power supply

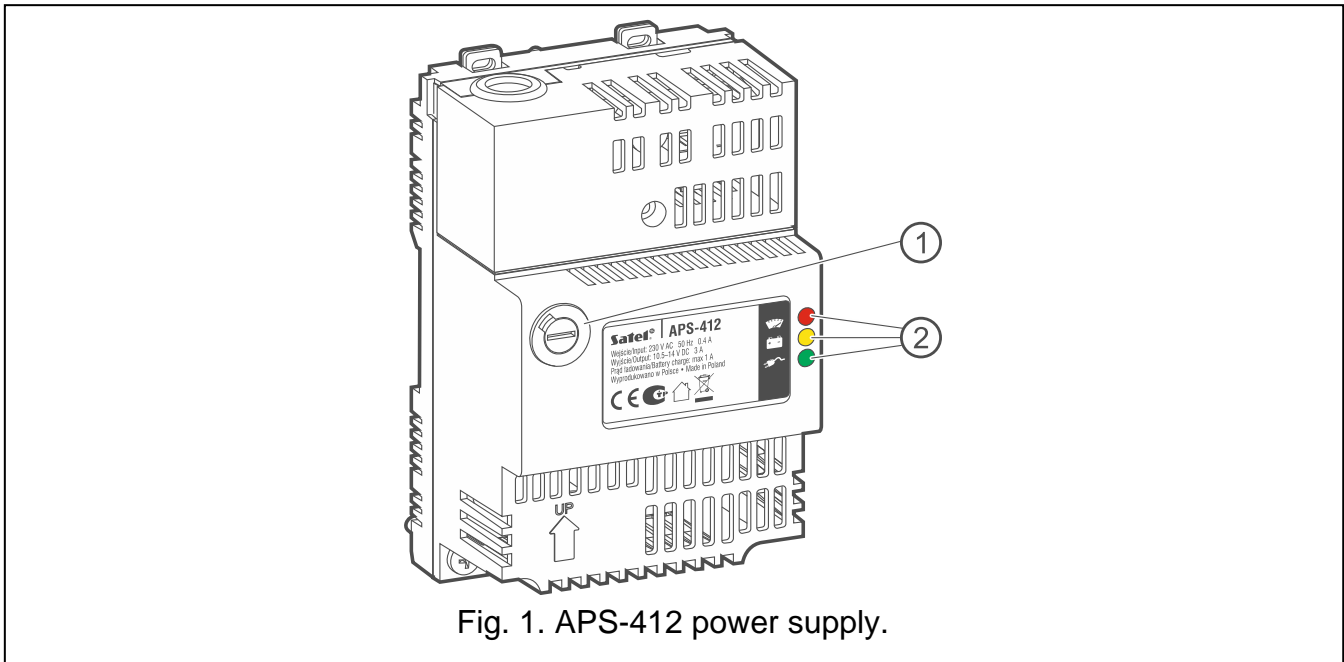





Fig. 1. APS-412 power supply.

Explanations for Fig. 1:

- ① F1 slow-blow fuse 3.15 A – AC circuit protection.
- ② LEDs indicating present status of the power supply:
 -  – red LED indicating current overload of the power supply:
 - OFF – current consumption not exceeding 4 A,
 - blinking – current consumption exceeding 4 A.
 -  – yellow LED indicating the battery status (battery testing mode enabled):
 - ON – battery OK (or the battery testing mode disabled),
 - blinking – low battery (battery voltage below 11.5 V),
 - OFF – no battery or blown F3 fuse (3.15 A).
 -  – green LED indicating the AC power status:
 - ON – AC power OK,
 - blinking – no 230 VAC power or blown F1 fuse (3.15 A).

2.1 Electronics board

Description of terminals:

- L** – terminal for connecting phase conductor.
- N** – terminal for connecting neutral conductor.
- PE** – terminal for connecting protective conductor.
- +12V** – +12 VDC power output.
- COM** – common ground.
- WS** – OC type output signaling 230 VAC power loss.
- WB** – OC type output signaling low battery voltage (below 11.5 V).
- WP** – OC type output signaling current overload (above 4 A).

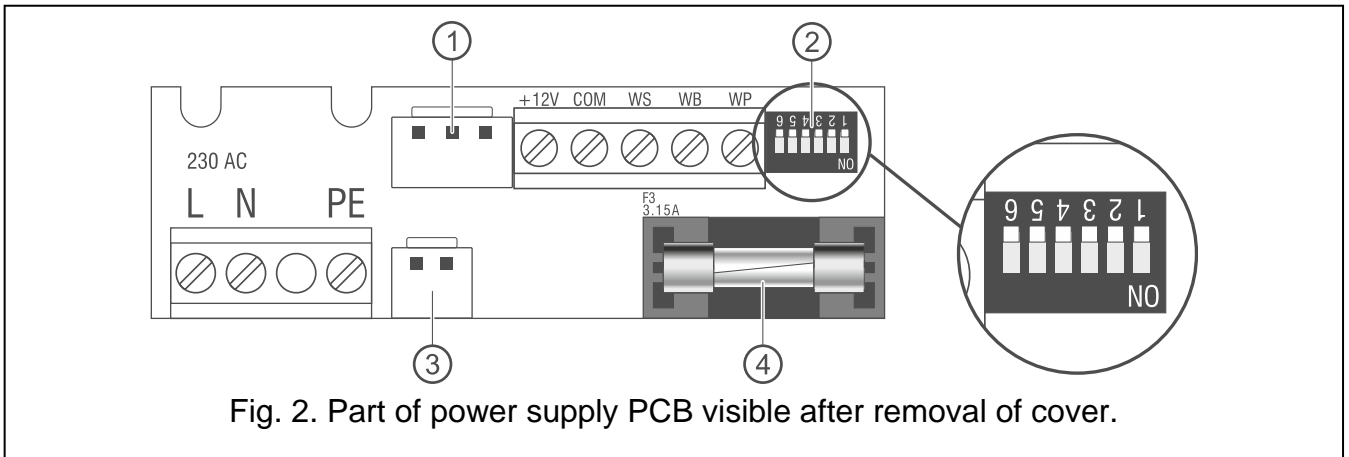


Fig. 2. Part of power supply PCB visible after removal of cover.

Explanations for Fig. 2:

- ① connector for connecting the power supply to SATEL devices provided with similar connector. Used for supplying power to SATEL devices and transferring information about:
 - AC power status,
 - battery status,
 - power supply overload.
- ② DIP-switches (see section "Configuring the power supply").
- ③ battery connector.
- ④ F3 slow-blow fuse 3.15 A – protection of battery charging circuit.

3. Configuring the power supply



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 battery trouble indication on the WB output.
3	battery charging current Defines the battery charging current (ON – 1 A, OFF – 0.5 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.



Do not charge the battery with current exceeding 10% of the battery capacity.

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.

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

Table 2.

4. Installation



Disconnect power before making any electrical connections.

The power supply should be permanently connected to the 230 VAC mains supply. Before you make the cabling, familiarize yourself with the electrical installation of the facility. Select a circuit which is always alive to supply the unit. The power circuit should be protected with a proper safety device. Instruct the owner / user of the power supply how to disconnect the unit from the mains (e.g. indicate the fuse protecting the power circuit).

As the emergency power supply source, use a 12 V sealed lead-acid battery or other 12 V battery with similar charging characteristics. 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 2, the battery should provide 12 hours of system operation in the event of mains power loss. 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.

Battery capacity	Charging current	Power supply output current	EN 50131 grade
Alarm system with remote notification			
18 Ah	1 A or 0.5 A	3 A	Grade 2
12 Ah	1 A or 0.5 A	2 A	Grade 2
7 Ah	1 A or 0.5 A	1 A	Grade 2
Alarm system without remote notification			
36 Ah	1 A or 0.5 A	3 A	Grade 2
24 Ah	1 A or 0.5 A	2 A	Grade 2
12 Ah	1 A or 0.5 A	1 A	Grade 2

Table 3.



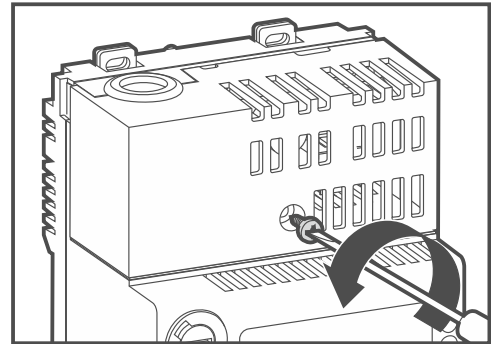
Do not use batteries other than the recommended ones.

Do not connect deeply discharged battery to the power supply (with voltage across unloaded terminals below 11.5 V). The battery should be precharged with a proper charger.

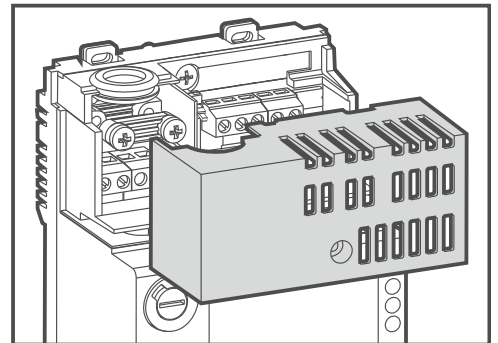
The used batteries must not be discarded, but should be disposed of in accordance with the existing rules for environment protection.

Before proceeding to installation, estimate the current consumption by all devices which are to be supplied from the APS-412 power supply unit. The sum of currents consumed by these devices must not exceed:

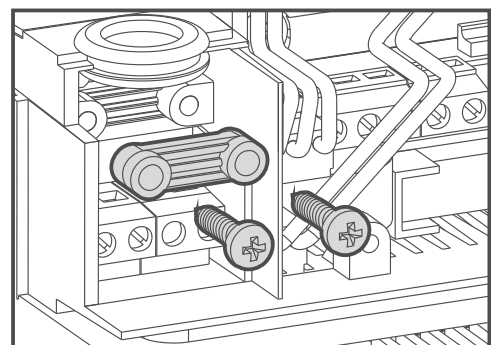
- 3 A, if a battery is connected to the power supply,
 - 4 A, if no battery is connected to the power supply.
1. Remove the screw fixing the cover of power supply terminals.



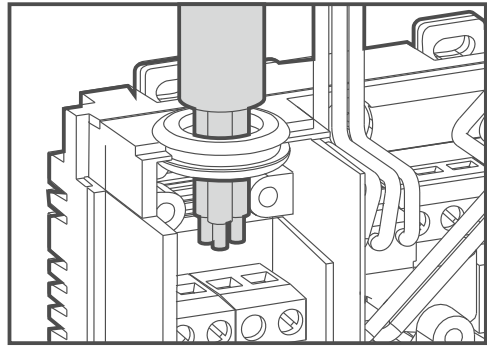
2. Remove the cover of power supply terminals.



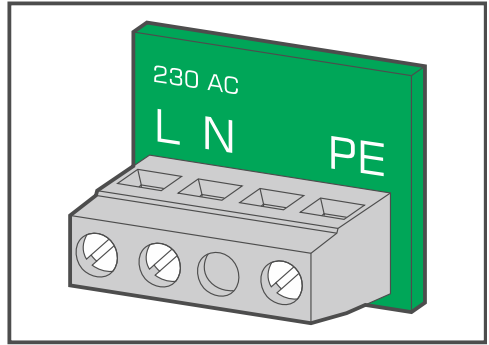
3. Configure the power supply using the DIP switches.
4. If the power supply is to be connected to a device provided with dedicated connector, connect the dedicated cable to the connector designated ① in Fig. 2.
5. Connect cables to the +12V and COM terminals, if they are to be used to supply the external 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 ③ in Fig. 2.
8. Remove the screws and take out the wire fastening element.



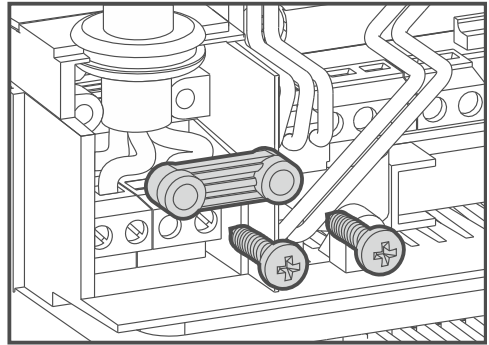
9. Run the cable through the cable grommet.



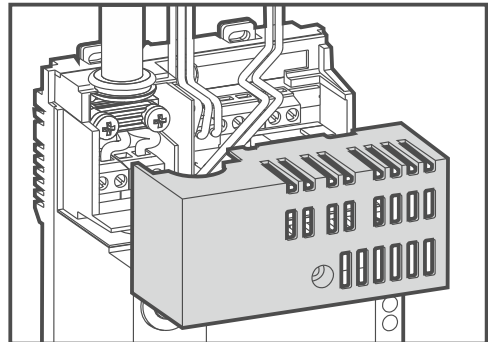
10. Screw the 230 VAC power leads to the corresponding terminals (phase conductor to L terminal, neutral conductor to N terminal, and protective conductor to PE terminal).



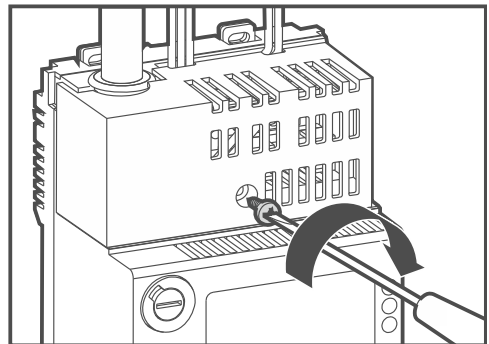
11. Screw the wire fastening element.




12. Replace the cover of power supply terminals.



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






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

15. Turn on 230 VAC power. The power supply will signal voltage presence with 1 beep and the  LED will go on.



If the event of a ground fault of power supply output (due to installation mistake or cable defect) or a short circuit caused by failure of the fuse F3 in the battery circuit, the power supply will turn off. After the problem is cleared, the power supply will turn on automatically.

5. 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 after about 10 seconds. The battery is checked every 4 minutes for ten to twenty seconds. 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). When the voltage goes down to 10.5 V, the power supply will disconnect the battery to protect it against full discharge and damage. The  LED will go off.

6. Specifications

Power supply type	A
Supply voltage	230 VAC
Rated output voltage.....	12 VDC
Output current.....	4 A
Current consumption of power supply circuits	57 mA
Battery failure voltage threshold	11.5 V ±10%
Battery cut-off voltage	10.5 V ±10%
Battery charging current (selectable)	0.5 A / 1 A
Load-carrying capacity of outputs: WS, WB, WP (OC type)	50 mA
Environmental class.....	II
Operating temperature range.....	-10...+55°C
Enclosure dimensions.....	77 x 122 x 59 mm
Weight.....	306 g

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