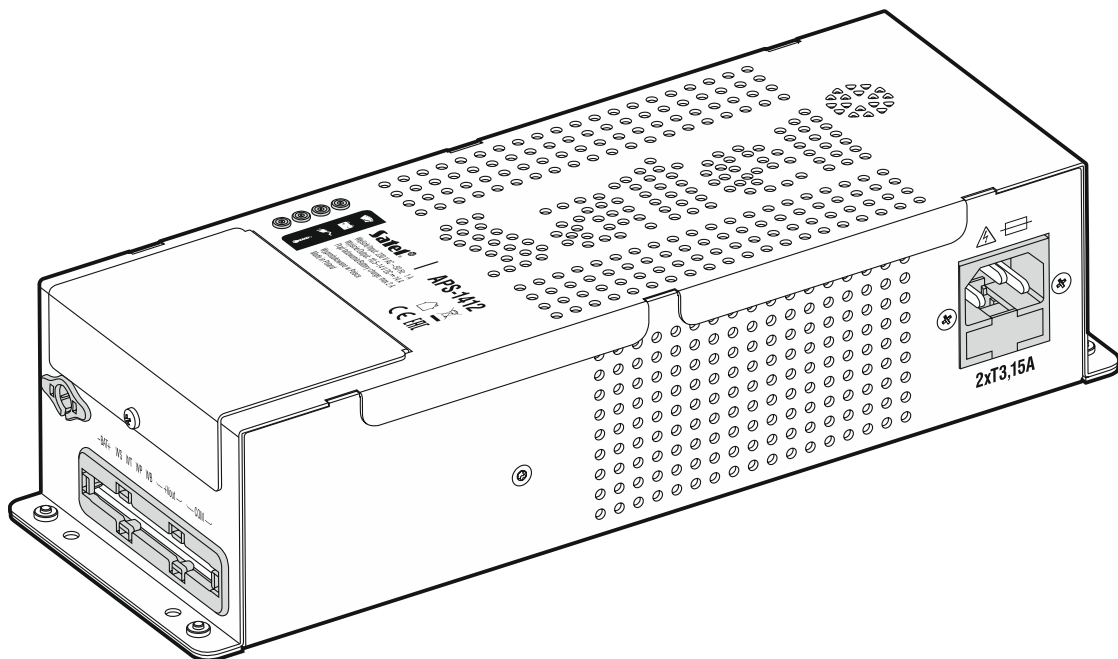




APS-1412

Power supply



Firmware version 1.00

aps-1412_en 12/20

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IMPORTANT

The device should be installed by qualified personnel.

Prior to installation, please read carefully this manual.

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

SATEL aims to continually improve the quality of its products, which may result in changes in their technical specifications and software. Current information about the changes being introduced is available on our website.

Please visit us at:
<https://support.satel.eu>

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

The following symbols may be used in this manual:



- note,



- caution.

The APS-1412 switch mode power supply is designed for devices requiring 12 VDC nominal voltage.



The power supply can be integrated e.g. with the following SATEL devices (shown in brackets is the required firmware version):

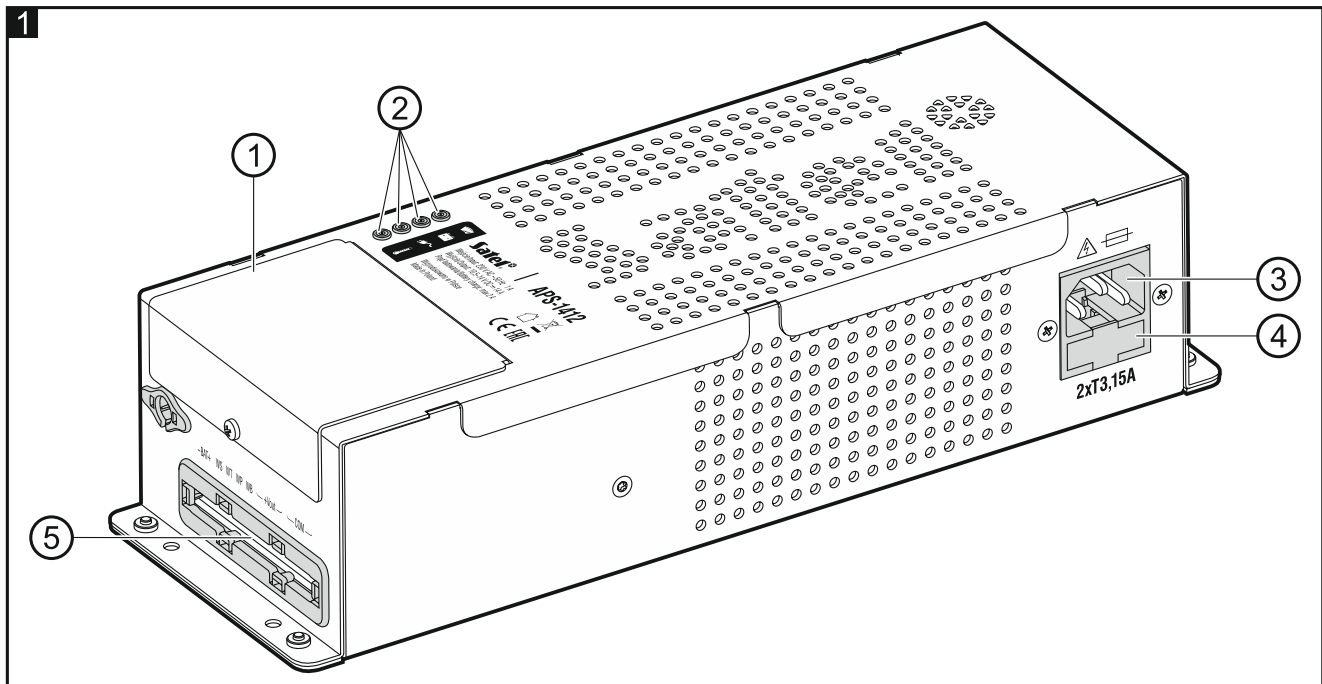
- ACCO-NT (v.1.10),
- ACX-220,
- GSM-X,
- INT-ADR (v. 2.05),
- INT-E (v. 5.04),
- INT-IORS (v. 2.04),
- INT-O (v. 2.04),
- INT-ORS (v. 2.04),
- INT-PP (v. 2.04).

The APS-1412 power supply meets the requirements of EN 50131 for Grade 2.

1 Features

- High efficiency.
- Nominal output voltage (according to IEC 38): 12 VDC.
- Output voltage stabilization.
- Battery status supervision and low battery disconnect system.
- Ability to work without a battery connected.
- Output current:
 - operation with battery: 12 A,
 - operation without battery: 14 A.
- Battery charging current: 2 A.
- Connector for integration with SATEL devices.
- DIP switches enabling configuration of the power supply settings.
- 4 LEDs indicating:
 - power output status,
 - battery status,
 - AC power status,
 - power supply over-temperature.
- 4 OC type outputs indicating the following troubles:
 - no AC power,
 - no battery, low battery or too high internal resistance of the battery,
 - power supply overload,
 - exceeded permissible operating temperature.
- Audible signaling of trouble.
- Input interference filter.
- Short-circuit protection fuses for AC supply circuit (2 x T3.15A).
- Short-circuit protection fuse for battery charging circuit (MINI 15 A).
- Electronic short-circuit and overload protection of the power output.

2 Power supply description



① terminals cover.

② LEDs indicating the power supply status:



– red LED – power output status:

OFF – normal operation, current consumption up to 14 A,

flashing – overload, current consumption exceeds 14 A.



– yellow LED – battery status if the mode of operation with battery is enabled:

OFF – no battery or blown fuse of the battery charging circuit,

ON – battery OK,

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



– green LED – AC power status:

ON – AC power OK,

flashing – no AC power or blown fuses of the AC circuit (battery operation).



– blue LED – flashing when the operating temperature exceeds 75°C (prolonged high temperature may cause harm to the power supply).

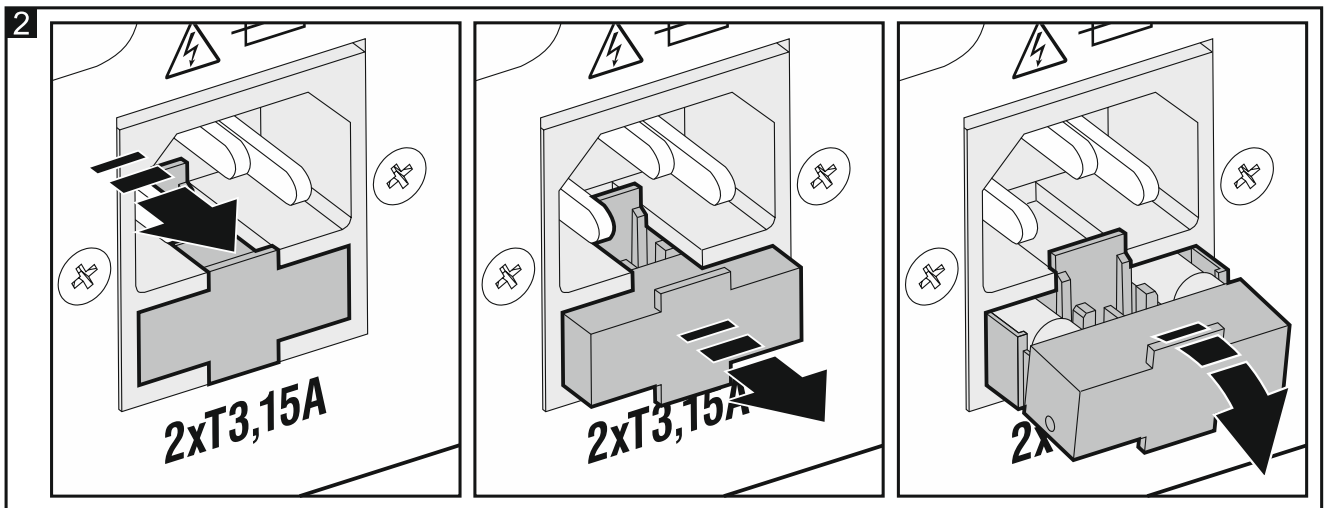


If all LEDs are off when the 230 VAC power is connected, it means that the power supply has been put into emergency mode as a result of shorting the power output to ground – see section “Installation”.

③ 230 VAC power connector (cable included).

④ cover for AC circuit slow-blow fuses (opening shown in Fig. 2). Bipolar protection: T3.15A fuse in the phase circuit and T3.15A fuse in the neutral circuit.

⑤ terminals (see “Description of terminals”).



2.1 Electronics board

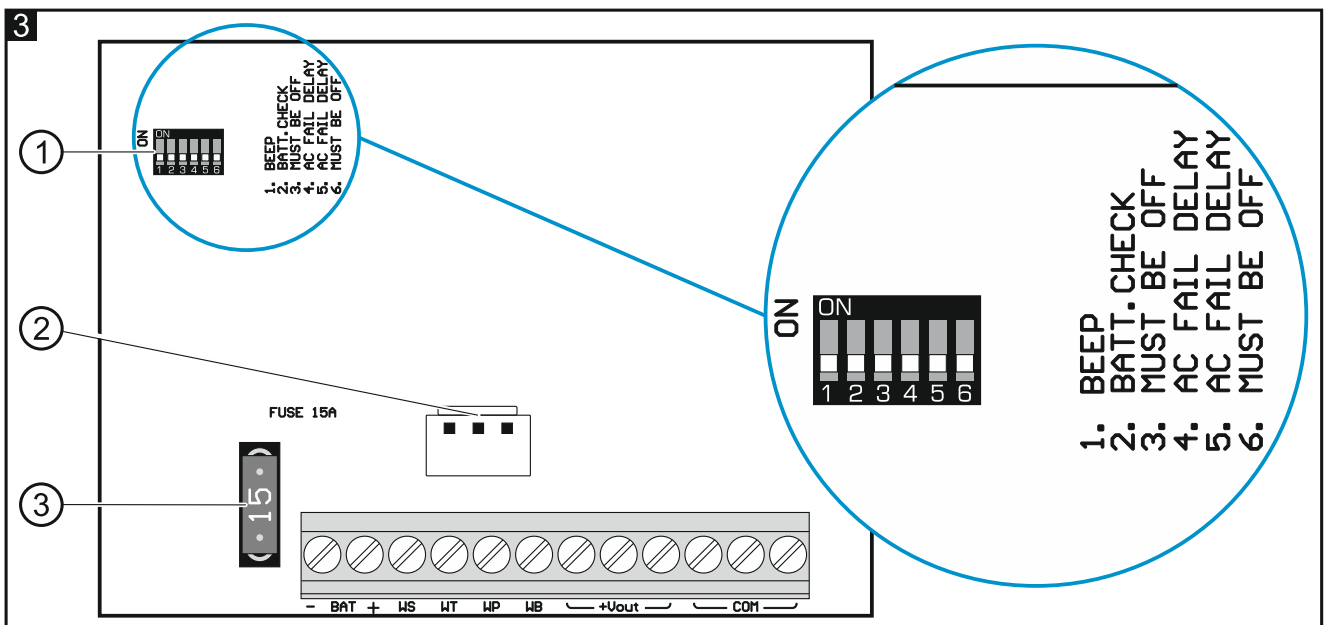


Fig. 3 shows the part of the power supply electronics board that is visible after removal of the cover (see Fig. 1).

- ① DIP-switches (see “Configuring the power supply”).
- ② 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.
- ③ MINI 15 A car fuse – battery charging circuit protection.

Description of terminals

- **BAT +** – battery connection terminals.
- WS** – OC type output signaling 230 VAC power loss.
- WT** – OC type output signaling the exceeding of the permissible temperature.
- WP** – OC type output signaling the exceeding of the permissible load current (above 12 A).

- WB** – OC type output signaling no battery, low battery voltage (below 11.5 V) or too high internal battery resistance.
- +Vout** – +12 VDC power output.
- COM** – common ground.

In the normal state, the OC type outputs are shorted to ground (0 V), but when a trouble occurs, the output is disconnected from ground.

2.2 Configuring the power supply

You can configure the power supply working parameters by using the DIP switches 1, 2, 4 and 5 (see Table 1). By factory default, all switches are set to OFF position.

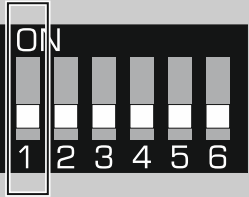
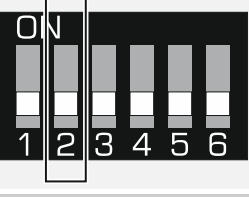
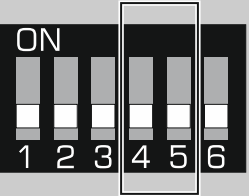
Switch number	Description
1	 <p>audible signaling of trouble Enables (ON) / disables (OFF) the audible signaling of trouble (short beep every 3 seconds).</p>
2	 <p>operation with battery Enables (ON) / disables (OFF) the mode of operation with battery. When the mode of operation with battery is enabled, the power supply is testing the battery state.</p>
4	 <p>AC power failure reporting delay Defines the time that must elapse after AC power loss before the WS output turns on. The delay you can set according to Table 2.</p>
5	

Table 1.

i If a battery is connected to the power supply, it is recommended that you enable the mode of operation with battery. Thus, the backup supply operation will be supervised.

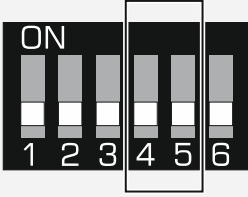
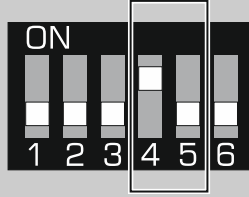
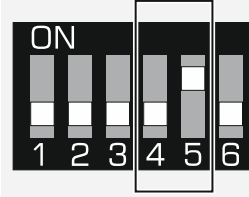
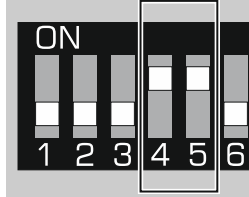
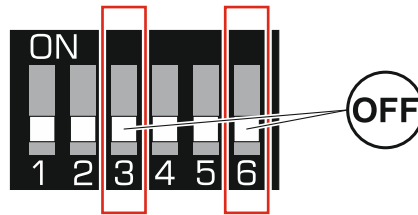
Switch number	Delay time			
	3 s	60 s	600 s	1800 s
4	OFF	ON	OFF	ON
5	OFF	OFF	ON	ON
				

Table 2.



The switches 3 and 6 **must** be set to OFF position (Fig. 4).

4



3 Installation



Disconnect power before making any electrical connections.

Making connections with the power on may lead to blowout of the battery circuit fuse or cause the power supply unit to enter emergency mode. To deactivate the emergency mode, disconnect the 230 VAC power supply and reconnect it after about 30 seconds.

The power supply should be connected to the 230 VAC mains supply. Before you connect the power supply to AC power, familiarize yourself with the electrical installation of the facility. Make sure that the circuit you choose for powering will be always alive. This circuit should be protected by a suitable safety device.

As the backup 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 selected to match the system current consumption. If the battery is to meet the requirements of EN 50131 for Grade 2, refer to the “Standard requirements for battery”.

After the battery voltage drops to 10.5 V, the battery will be disconnected to protect it against deep discharge and damage.



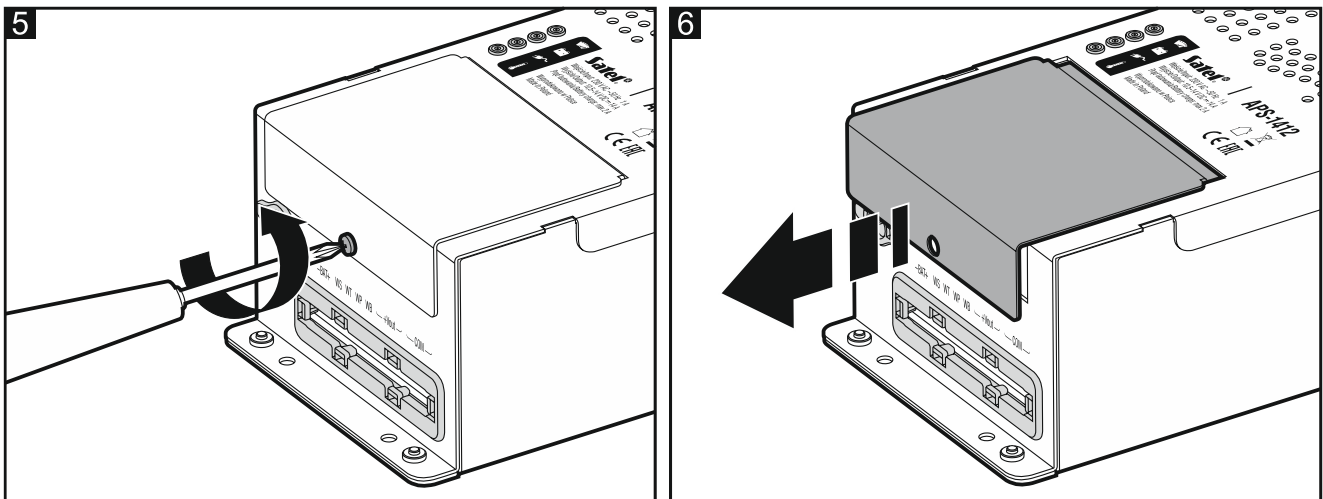
Do not use batteries other than the recommended ones.

Do not connect a battery with less than 17 Ah capacity to the power supply.

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

The sum of currents consumed by the devices to be supplied via the APS-1412 power supply may not exceed:

- 12 A if a battery is connected to the power supply,
- 14 A if no battery is connected to the power supply.



1. Remove the screw securing the cover of power supply terminals (Fig. 5).
2. Remove the cover of power supply terminals (Fig. 6).
3. Use the DIP switches to configure the power supply (see “Configuring the power supply”).
4. If the power supply is to be integrated with a SATEL device, use the cable delivered with the power supply to connect the power supply and the device. Pass the cable through the opening in the enclosure (Fig. 7).
5. Connect devices to the power supply outputs (terminals +Vout and COM).




Remember that the cables connecting the + Vout power outputs to the devices should be evenly loaded with current.

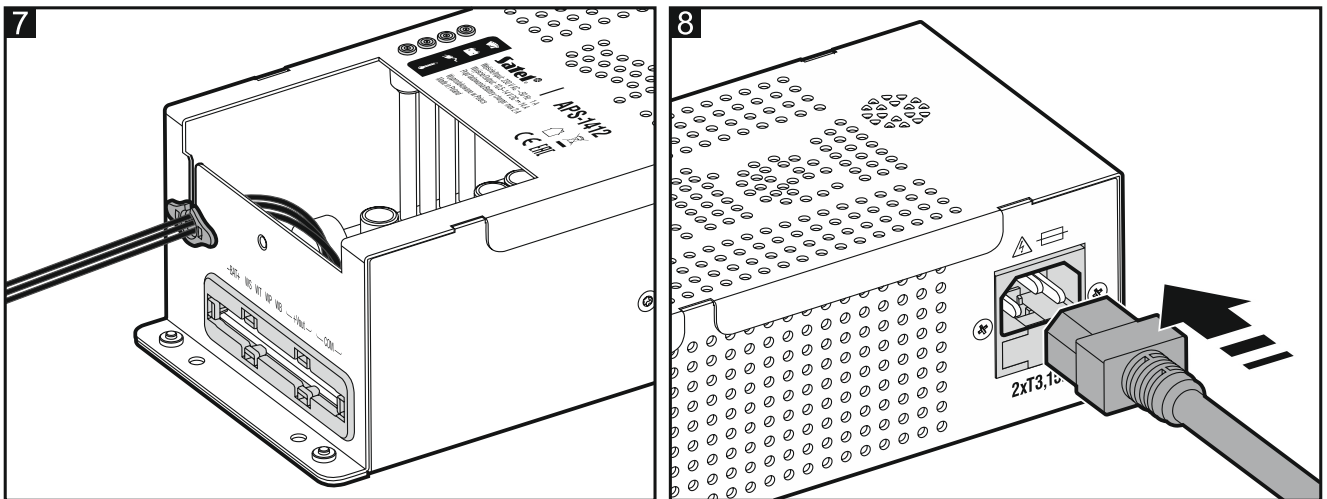
If you want to use the maximum power supply current of 14 A, connect the loads so that each + Vout output supplies devices with a total current consumption of about 5 A. To make connections, it is advisable then to use wires with a minimum cross section of 1.5 mm².

6. To the trouble signaling outputs, you can, for example, connect LEDs, relays, or connect them to the inputs of control panel or other device which is to supervise the power supply operation.
7. Connect the battery to the - BAT + terminals.



If the +Vout power supply outputs are loaded with 12 A current, it is recommended that you use a minimum 4 mm² cross-section wires for battery connection. The wires should be as short as possible.

8. Replace the cover of power supply terminals.
9. Replace and tighten the screw to secure the power supply terminals cover.
10. Connect the power cable to the power supply socket (Fig. 8).
11. Insert the power cable plug into the 230 VAC socket. The power supply will signal the presence of voltage with 1 beep, and the  LED will go on.



4 Standard requirements for battery

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.

The power supply should ensure that the battery can be charged to 80% of its capacity in 72 hours. Tables 3 provides instructions on what battery to use so that the EN 50131 requirements for Grade 2 are met.

Battery capacity	Charging current	Power supply output current
144 Ah	2 A	12 A
72 Ah	2 A	6 A
36 Ah	2 A	3 A

Table 3.

5 Specification

Power supply type (according to EN50131)	A
Supply voltage	230 VAC
Power Factor Correction (PF)	up to 0.98
Efficiency	up to 91%
Nominal output voltage (according to IEC 38)	12 VDC
Actual output voltage	13.8 VDC
Output current	
operation without battery connected	14 A
operation with battery connected	12 A
Battery charging current	2 A
Battery failure voltage threshold	11.5 V ±10%
Current consumption of power supply circuits	82.5 mA
Battery cut-off voltage	10.5 V ±10%
OC type outputs (WS, WB, WP, WT)	50 mA / 12 VDC

Security grade according to EN50131	Grade 2
Environmental class	II
Operating temperature range.....	-10°C...+55°C
Enclosure dimensions.....	101 x 68 x 291 mm
Weight.....	1.37 kg