

SecuriFire B5-PSU

Power supply unit

The B5-PSU board is used for supplying the SecuriFire SCP 3000 with power and has five additional +27 V connections for external consumers.

Domain: SCP3000



Fig. 1 B5-PSU

Function/Application

The B5-PSU power supply unit is an internal 7 A power supply unit, and together with the B5-MCB15 Main Control Board and the B5-BUS it forms the basis for the B5 hardware platform.

The B5-PSU provides output voltages of 3.3 V, 5 V and 27 V required in every SCP 3000. In the event of mains failure, the standards compliant, battery buffered DC voltage for the SCP and peripheral devices must be ensured. This is accomplished by connecting two (or four) batteries of a type which has been tested by VdS and approved by Securiton AG. The batteries are connected on the front side of the B5-PSU with a 2-pin terminal and monitored.

The system connection to the B5-BUS is on the rear side using a 64-pin male connector. The mains connection, two LED displays, on/off switch, a terminal for connecting external consumers, output fuses, a connector for battery current measurement and the battery connection are found on the front of the B5-PSU.

Interfaces

- X1** Mains connection
- X3** Connector for battery current measurement
- X4** Connection to the B5-BUS
- X5** Connector plug for external consumers
- X13** VBAT battery connection
- X14** GNDBAT battery connection
- S1** On/Off switch
- V45** LED displays
- A10** Fuses F1 to F5 for external consumers

Mains connection (X1)

Technical data	
Input voltage	230 V AC (47 to 63 Hz)
Fuse protection:	Fine-wire fuse 5x20, 4A time lag: (T), on filter print
Max. power consumption	max. 350 VA
Mechanical	IEC plug

Connector for battery current measurement (X3)

Technical data	
Battery current measurement	50 mV/A ±5 %
Mechanical	Two-pin test socket, Ø 2 mm



Fig. 2 B5-PSU interfaces

Connector plug for external consumers (X5)

Each of the monitored outputs are individually protected by a screw-in glass tube fuse (2.5 A)!

Terminal	Designation	Function	Fuse
1	VExt5	+ 27 V	F5
2	GNDExt5	GND	
3	VExt4	+ 27 V	F4
4	GNDExt4	GND	
5	VExt3	+ 27 V	F3
6	GNDExt3	GND	
7	VExt2	+ 27 V	F2
8	GNDExt2	GND	
9	VExt1	+ 27 V	F1
10	GNDExt1	GND	

Technical data	
Nominal voltage	27 V
Fuse protection	Fine-wire fuse 5x20, 2.5 A super quick-action (FF)
Mechanical	plug-in screw terminal, max. 2.5 mm ²

Data sheet

Battery connection VBAT/GNDBAT (X13/X14)

Technical data

Charge voltage	U (0 °C) = 28,3 V ±1 % U (50 °C) = 26,3 V ±1 %
Minimum output voltage for battery test	20,2 V
Undervoltage switch-off	18,3 V ±3 %
Threshold for consumer deactivation if mains failure (low discharge protection)	19,6 V ±3 %
Mechanical	2 mounting clamps 6,3 mm

The batteries are subjected to a battery test every 10 to 15 min for 10 s.

If the batteries indicate a fault (e.g. cell short-circuit or battery short-circuit), the system voltage is automatically disconnected from the batteries by the integrated protection circuit. When this happens, only the battery charging current and not the system supply current is interrupted; this guarantees the uninterruptible power supply of the system even if the batteries are faulty.

The criterion for switching off the charging current is an undervoltage of the batteries of about 18.3 V. When the battery charging branch is deactivated, the system voltage is regulated to the nominal 29 V.

Should the mains supply fail and thereby the associated transition to battery supply, monitoring the batteries to protect them against low charge is extremely important. For longer mains failures, the consumers are deactivated when the battery voltage is 19.6 V.

LED displays (V45)

The B5-PSU power supply unit has two LED displays on the front side which indicate the current state of the board.

The NET OK display lights up as soon as there is mains voltage on the B5-PSU, regardless of whether the power supply unit is switched on or off!

LED	Status	Meaning
NET OK	On	Mains voltage present
	Off	No mains voltage present / overtemperature
+5 V; 3,3 V	On	All system voltages (27 V; 5 V; 3.3 V) are present
	Off	At least one system voltage is lacking / power supply unit switched off

Planning

The country-specific directives apply when planning and installing automatic fire detector systems.

The B5-PSU (Power Supply Unit) is fitted in slot 10 in the unit rack of each SecuriFire 3000.

Power can be supplied to the internal and external consumers either from the mains or internal batteries; this guarantees power supply to the system from two independent sources of energy. If the mains voltage or the mains power supply fails, the internal batteries automatically supply the system.

The batteries provided by Securiton are VdS approved and have been specially tested for use in the fire alarm control panel. Faultless operation cannot be guaranteed if other batteries are used.

Depending on the configuration and connected peripheral devices (boards, detectors, sirens, etc.), it is important to ensure that the batteries have sufficient capacity to operate the fire alarm control panel for the specified time (e.g. according to a standard or directive).

Moreover, the consumer current has to be dimensioned so that batteries which have become empty can be charged to 80% of their capacity within 24 hours.



The overall output current of the power supply unit (internal and external consumers) must not exceed 7 A under any circumstances.

The power requirement calculation is performed by entering the battery types in use and the necessary bridging time (according to the local standards and directives) in a power requirement tool.

One battery pair (38..45 Ah) is connected to the B5-PSU power supply unit by default in an SCP. As an option, an additional battery pair can be used in an additional box (B5-ADB 11) for connecting to the B5-PSU.

The temperature sensor integrated in the B5-PSU power supply unit monitors the ambient temperature of the SecuriFire SCP. When connecting a second pair of batteries, the additional box must be mounted in the immediate vicinity of the SCP because it is also monitored by the temperature sensor.

The B5-PSU is included in the basic configuration of all SecuriFire 3000s and is supported regardless of the SecuriFire software.

Connection mains and batteries

The connection cable is delivered with crimped eye rings. The eye rings can be screwed onto the battery. To do this, it is best to remove the screwed on flat plug of the battery. If the connection is a plug-in, replace the ring eye on the cable with a flat blade receptacle.

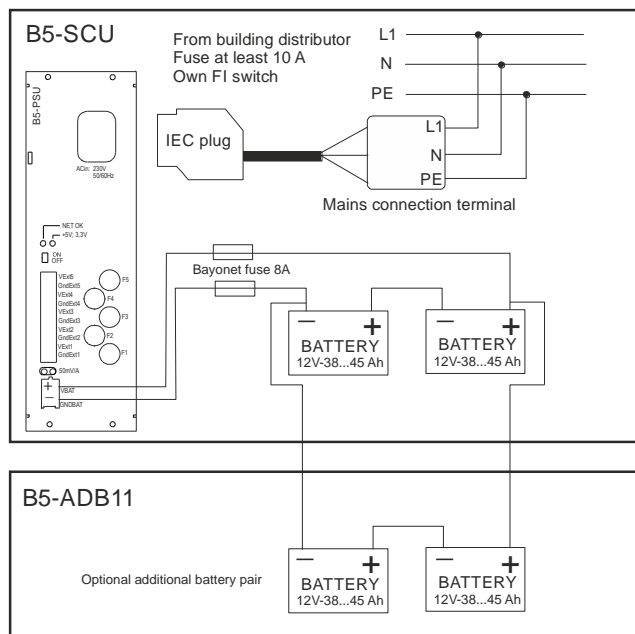


Fig. 3 Connection mains and batteries

Battery current measurement

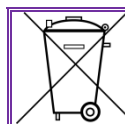
After the system has been successfully commissioned, it is necessary to perform a battery current measurement (mains fault under full load, dropped holding magnet, display lighting off, printer at standstill, service PC cable disconnected from the SCP) in order to guarantee that the battery capacity meets the requirements.

The result of the battery current measurement must match that of the power requirement calculation ($\pm 5\%$).

Details on the battery current measurement can be found in the document T 811 044 "SecuriFire 3000 mounting and installation".

Maintenance

The batteries must be replaced after their usage period has expired (see corresponding specifications from the battery manufacturer). Batteries must be replaced at least every four years from their date of manufacture in accordance with VdS 2095. The batteries provided by Securiton are VdS approved and have been specially tested for use in the fire alarm control panel. Faultless operation cannot be guaranteed if other batteries are used.



It is not permitted to dispose of batteries in the domestic rubbish. As the end user you are legally obliged to return used batteries. Used batteries can be returned gratis to the seller or brought to a designated recycling point (e.g. to a communal collection point or retailer).

Article numbers / spare parts

Short designation		Art. number CH	Art. number
B5-PSU	Power supply unit	115.614 874	EG072918
	Battery power cable	---	FG81720
B5-ADB 11	Additional box SecuriFire 3000	---	10-2000001-01-01
SI-G 8A	Replacement fuse for cable set	038.616 249	IS625040
FF2,5 /250V/E	Replacement fuse (F1-F5)	238.024 600	IS625228
ST-PSU EV	Plug for external load	239.239 666	FG74090
B5 BATKAB1	Battery cable set	---	FG29910
B5 BATKAB2	Battery cable set long	---	FG29911

Technical data

Input voltage	230 V AC (47 to 63 Hz)
Output current	max. 7 A
Cooling	temperature-controlled fan
Temperature threshold for fan ON	Typically 55 °C
Temperature threshold for fan OFF	Typically 50 °C
Temperature threshold for main converter OFF	Typically 95 °C
Protection type	according to control panel
Ambient temperature, Relative humidity, Air pressure	according to control panel
Weight	xxx g