



Read these instructions before installation and operation

BF560-24 (24 VDC, 1.5 A) Installation Instructions



EN 54-4, EN 50131-6 Boxed Power Supply Unit (PSU)



WARNING: THIS PSU MUST BE INSTALLED AND MAINTAINED BY A SUITABLY SKILLED AND TECHNICALLY COMPETENT PERSON. THIS PSU IS A PIECE OF CLASS 1 PERMANENTLY CONNECTED EQUIPMENT AND MUST BE EARTHED.

The BF560-24 is a boxed Mains input to regulated DC PSU, providing 1.5 A @ 24V d.c. nominal, designed for use with fire and security systems. Combining the functions of a PSU, battery charging unit and battery monitoring unit, it is fully compliant with EN 54-4 + A1 + A2 and has been tested to comply electrically/environmentally with EN 50131-6 (Type A, up to Grade 4, Environmental Class II) and conforms to the relevant EU-Directives and EU-Regulations: (EU) No. 305/2011 – Construction Product Regulation; 2014/35/EU low voltage directive and 2014/30/EU EMC directive. The PSU is an approved product by BRE. Approvals are pending for AFNOR and VdS European notified bodies.

INSTALLATION

Location

The PSU must be installed indoors, positioned to avoid accidental damage, and **MUST NOT** be subjected to dust, conductive or corrosive gases or liquids, nor subject to temperatures, input voltages and electrical loads outside the stated operating range. Ideally, the indicators should be at eye level and the ambient light level should allow the status of the indicators to be clearly visible.

Mounting

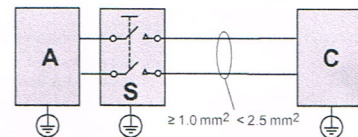
Using the five mounting holes provided, mount the plastic base securely onto a vertical wall. Assess the condition and construction of the wall and use suitable screw fixings for the in-service weight of the product. The mounting holes are suitable for use with No.8-10 or Ø4-5 mm countersunk screws. Any dust or swarf created during the mounting process must be kept out of the enclosure and due care must be taken not to damage any wiring or components.

Wiring and Cable Entry

All wiring should be installed in accordance with the current edition of the IEE Wiring Regs (BS 7671), or relevant local and national standards. The requirement for the Mains supply to the PSU is fixed wiring ($\geq 1.0 \text{ mm}^2$, $< 2.5 \text{ mm}^2$), either using 3-core cable, or a suitable three conductor system fed from an isolating switched fused spur at 3 A, or a 6 A Type B circuit breaker to IEC/EN 60898-1. The Mains supply must be exclusive to the PSU and be reliably earthed at the indicated earthing point.

For compliance with EN 54-4 the PSU must be closely coupled with the CIE.

HINT. As an alternative to a switched fused spur, a double-pole isolating switch (S) with 3 mm air gaps on the contacts & switching L & N only, may be used in the Mains feed from the Main Distribution Board (A) to the PSU (C), providing it meets the appropriate wiring regulations (see drawing right).

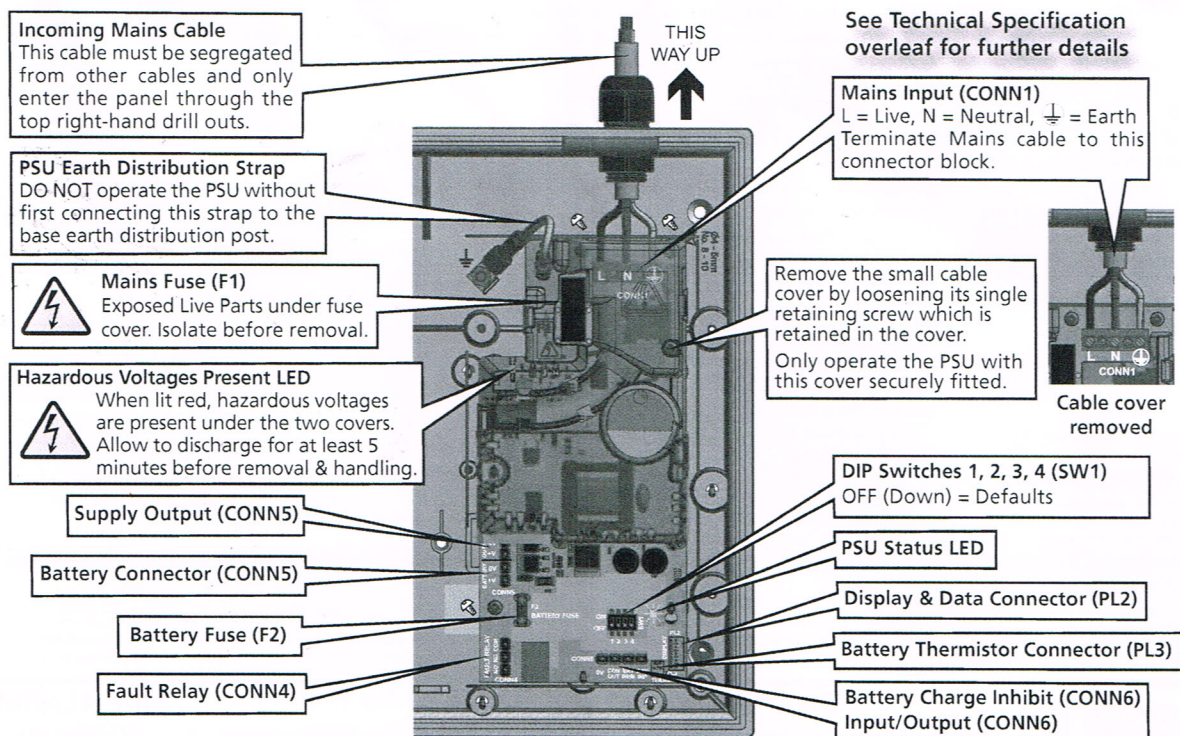


In order to maintain cable segregation from other cables, the incoming Mains cable should be fed into the panel via the top right-hand side of the enclosure. Drill out suitable holes in the enclosure using a suitable hole saw. Always ensure that if a hole is drilled out, it is filled with a good quality 20 mm strain relief, cable gland. Any unused holes must be securely blanked off.

WARNING: DO NOT ATTEMPT TO CONNECT THE MAINS SUPPLY TO THE PSU UNLESS ALL COMPONENTS ARE SECURELY INSTALLED IN ITS ENCLOSURE!

Terminate the Mains cable at the PSU's connector block CONN1 (see Figure 1 below).

Figure 1 - PSU Layout and Mains Connections (Full Protective Cover & Cable Cover Shown Fitted)

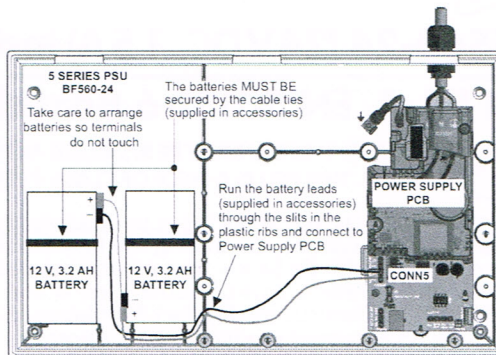


Batteries



WARNING: There is a risk of explosion if incorrect battery types or sizes are used. Always replace both batteries and always dispose of used batteries in accordance with the battery manufacturers instructions and local regulations. Batteries are heavy and can produce dangerously high currents if shorted. Take care when handling and routing battery leads to avoid damage. Using good quality, sealed, Valve Regulated Lead-Acid (VRLA) batteries, position and connect 2 x 12V batteries in the PSU enclosure, as shown in the diagram (right). The batteries must be safely secured using the supplied cable ties.

Note: On a standard 'as-supplied' unit, DIP Switch 4 ('Battery Not Fitted') is OFF (Down) and a fault will occur on initial power-up if fully charged batteries are NOT connected.



Battery Fault Monitoring

This PSU complies with EN 54-4 and therefore must monitor battery resistance. The fault threshold is directly related to the ability of the batteries to deliver the rated current to the load. For example, batteries stored un-charged for long periods of time, during shipment and/or distribution, degrade leading to increased internal resistance. If a degraded battery is fitted, a fault will be shown by the PSU as mandated by EN 54-4.

No. of LED Flashes	PSU Status
1	Mains Failure: • Check Mains & Mains Fuse. • Fault could occur if PSU trips due to a high DC Load current. Remove the fault, back-up batteries and cycle Mains to reset.
2	Battery Voltage Low
3	Battery Voltage Critical
4	Charger Failure
5	Charger OK (Battery is either actively charging, or in float charge)
6	No Batteries Fitted (indicating DIP Switch 4 position)
7	Battery Resistance Fault (Level set by DIP Switch 2 position)
8	Output Over Voltage

TECHNICAL SPECIFICATION

POWER SUPPLY SPECIFICATION: BF560-24 (24 V DC, 1.5 A)

Mains supply voltage (a.c.): 230 V ~, 50/60 Hz	Rated current: 0.4 A r.m.s.
Maximum continuous output current (including charging):	1.5 A
Maximum Approved VRLA battery size:	Up to 2 x 3.2 Ah
Battery charge capacity (C):	2 Ah up to 12 Ah (battery charged to 80% of capacity in 24 hrs)
Battery characteristics:	Final voltage: 21 V Float charge voltage: 27.3 V $\pm$ 1% @ 20°C Battery temp. compensation: -36 mV / °K
Output power rating:	'I max a' = 1.3 A if DIP Switch 3 OFF (Down), or 0.8 A if DIP Switch 3 ON (Up). Taking a load current greater than 'I max a' will temporarily disable the battery charging. 'I max b' = 1.5 A, charging turned off via CONN6. 'I min' = 0 mA
Maximum internal battery resistance 'Ri max':	1500 mΩ if DIP Switch 2 OFF (Down) 1200 mΩ if DIP Switch 2 ON (Up)
Maximum power output voltage 'V max':	30 V
Minimum power output voltage 'V min':	20 V $\pm$ 2% with Mains On 21 V $\pm$ 2% with Mains Off
Output ripple voltage (peak-to-peak):	<200 mV over the full input and output range of the PSU

FUSES (compliant to IEC/EN 60127-2)

Mains fuse (F1):	T 1 A H 230 V, 20 mm ceramic (T = Time Delay; H = High Breaking Capacity)
Battery fuse (F2):	3 A MINI [®] automotive blade fuse

POWER SUPPLY PCB CONNECTIONS

Mains Input (CONN1):	Mains supply input terminals: Live, Neutral & Earth. 1 mm ² to 2.5 mm ² cable size.
Supply Output (CONN5):	Output for auxiliary equipment. 1 mm ² cable size, <30 m cable length (screened cable must be used).
Battery Connector (CONN5):	Connection to the VRLA batteries. 1 mm ² cable size.
Fault Relay (CONN4):	Isolated changeover relay output, rated 1 A @ 30 Vd.c. 1 mm ² cable size, <30 m cable length (screened cable must be used).
Battery Inhibit (CONN6):	Connect to 0 V to inhibit battery charger. 1 mm ² cable size.
Con Input / Output (CONN6):	Not used
PL2:	Display connector
PL3:	Battery Thermistor Connector (Not used)
DIP Switch 1 (Default OFF):	No function
DIP Switch 2 (Default OFF):	OFF (Down) Higher battery resistance threshold 1500 mΩ; ON (Up) Lower battery resistance threshold 1200 mΩ.
DIP Switch 3 (Default OFF):	OFF (Down) Lower battery charge rate 0.2 A (1 Ah - 3.5 Ah); ON (Up) Higher battery charge rate 0.7 A (3.5 Ah - 12 Ah).
DIP Switch 4 (Default OFF):	OFF (Down) Battery fitted; ON (Up) Battery not fitted.

INDICATORS

3 x Front Panel Indicators (LEDs):	☒ (Green LED) - The Supply Output (CONN5) is healthy and within range ☒ (Amber LED) - A fault is present on the PSU (see PSU Status LED) ☐ (Amber LED) - A fault with an auxiliary unit (user-definable), 19 to 30 V, 3.5 to 7 mA.
2 x Power Supply PCB (LEDs):	Hazardous Voltages Present (Red LED); PSU Status (Amber LED); see PSU Status table above for further details.

PHYSICAL

Dimensions:	380 mm (W) x 235 mm (H) x 96 mm (D)
Weight / Construction:	1.55 kg (without battery) / Plastic lid and base
Enclosure finish:	RAL7035 textured

OPERATING CONDITIONS

The PSU enclosure has an IP30 rating (to EN 60529) and is designed for indoor use only. The components are selected to operate within their specification when the environmental conditions outside the enclosure comply with class 3k5 of the latest edition of IEC 721-3-3. Temperature range: -10°C to +40°C. Maximum humidity: 95% non condensing.

CERTIFICATES & DECLARATION OF PERFORMANCES to (EU) No. 305/2011, CPR (Certificates and DoPs are available for download on C-TEC's website)

VdS Approval No.: Gnnnnnn	LPCB Certificate No.: 176p	AFNOR Approval No.: TBA
Declaration of Performance: DOP0000061	CPR Certificate No.: 0832-CPR-F2284	EN 54-4:1997 + A1:2002 + A2:2006

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