



INSTALLATION INSTRUCTIONS

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/E is a Mains input to regulated DC PSU providing 1.5 A @ 24 V DC nominal, designed for use with fire and security systems. Combining the functions of a PSU, battery charging unit and battery monitoring unit, it is designed and intended for use in OEM equipment. It is supplied with a finger-protective 'live parts' cover.

The system designer must assure the compatibility to all relevant standards for the PSU within the installed enclosure. For full compliance with all relevant standards and directives, the PSU must be installed inside a suitable enclosure.

Specific parts of the relevant standards are EN 54-4, EN 50131-6, EN 62368-1, EU Directives 2014/30/EU, 2014/35/EU and CPR No. 305/2011.

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



INSTALLATION

Important Note: It is the responsibility of the OEM to ensure that the final product housing and application of this power supply complies with the requirements of all applicable directives and national standards for the product. If used in the EU market, the OEM has the responsibility to affix the CE marking to the final product in accordance with EU directives

Mounting

Using suitable screw fixings, secure the power supply into its enclosure using the three mounting holes provided.

The mounting holes are suitable for use with M5 fixing screws. Care must be taken not to damage any wiring, or components.

Connecting Mains (Note: This power supply must be earthed!)

The requirement for the Mains supply is fixed wiring, using 3-core cable (no less than 1 mm² and no greater than 2.5 mm²). Local guidelines and directives for the installation must be observed including overcurrent protection and disconnect devices.

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

Batteries



WARNING: There is a risk of explosion if incorrect battery types or sizes are used. Always dispose of used batteries in accordance with the battery manufacturer's 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.

Use good quality, sealed, Valve Regulated Lead Acid (VRLA) batteries 2 x 12V. **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/E (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	
Battery charge capacity (C):		2 Ah up to 12 Ah (batteries charged to 80% of capacity in 24 hrs)	
Battery characteristics:		Final voltage: 21 V	Float charge voltage: 27.3 V ± 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 ± 2% with Mains On	21 V ± 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):		3A 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). CONN4 should not be used for compliance with EN 50131-6, PL2 provides serial data for all fault signals.	
Battery Inhibit (CONN6):		Connect to 0V to inhibit battery charger. 1 mm ² cable size.	
Con Inp / Out (CONN6):		Not used	
PL2:		4-way connector to a display card, or to OEM equipment for the transmission of the C-TEC data protocol.	
PL3:		Bi-directional data port.	
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) Batteries fitted; ON (Up) Batteries not fitted.	
INDICATORS			
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 (H x W x D):		174 mm x 112 mm x 50 mm	Construction & Finish:
Weight:		300 g	IP Rating:
Clearance:		Dependent on mounting enclosure	
Clearance:		Create adequate ventilation to ensure power supply components do not overheat	
OPERATING CONDITIONS			
The PSU is designed for indoor use only. The PSU components are selected to operate within their specification when the environmental conditions 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.			

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