Read these instructions before installation and operation

BF560-12 (12 V DC, 2 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 RELIABLY EARTHED.

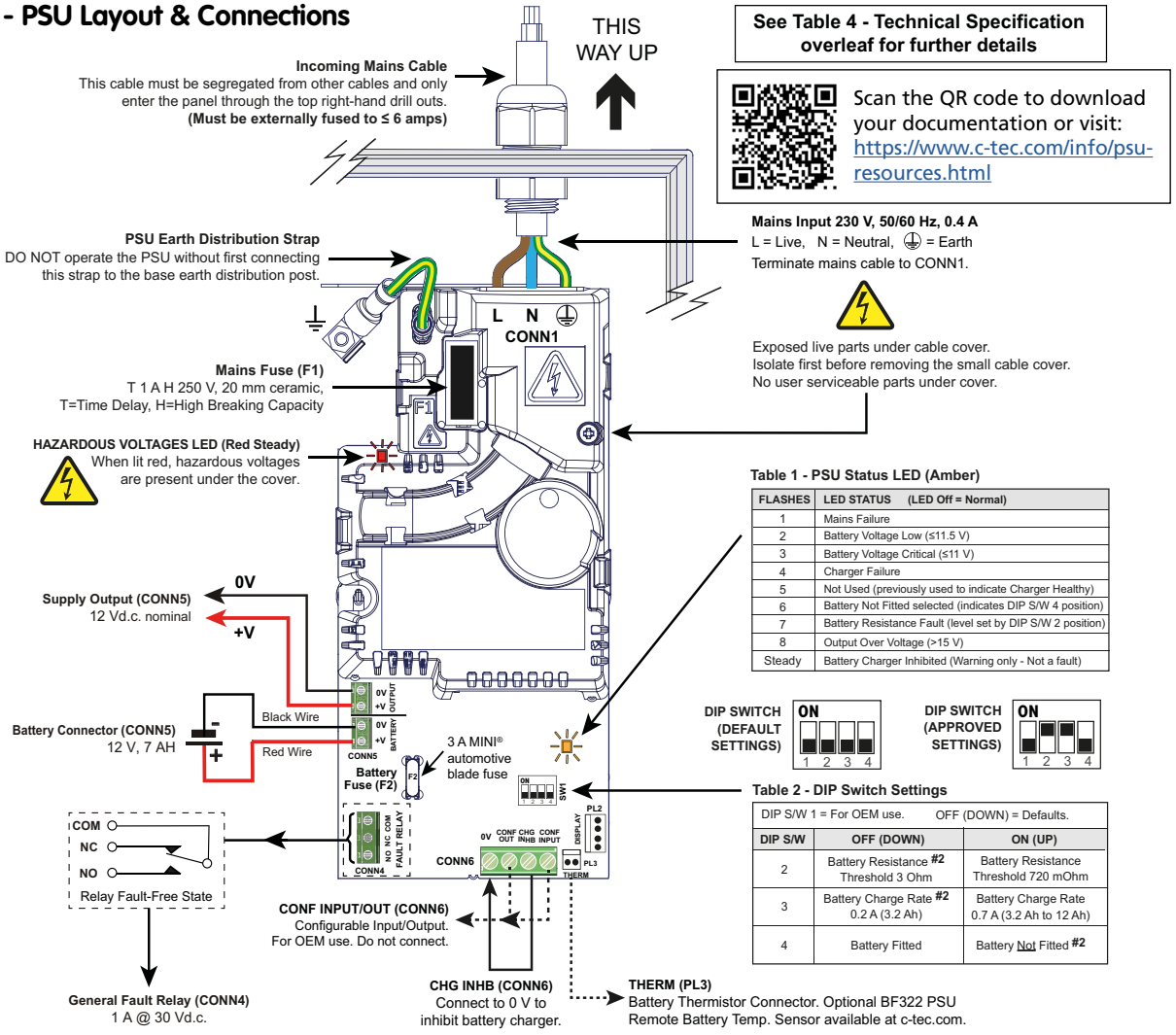
The BF560-12 is a boxed mains input to regulated DC PSU, providing 2 A @ 12 Vd.c. nominal, designed for use with fire and security systems. Combining the functions of a PSU, battery charging unit and battery monitoring unit, it is fully compliant with EN 54-4 + A1 + A2, EN 62368-1 and has been tested to comply electrically/environmentally with EN 50131-6 (Type A, up to Grade 4 #1, Environmental Class II). The PSU is an approved product by BRE and VdS.

All wiring must be installed in accordance with all applicable national, regional or local standards. In the UK this is BS 7671 (IET Wiring Regulations). Fuses must comply with IEC/EN 60127-2. See Fig.1 for PSU connection details.

The requirement for the mains supply to the PSU is fixed wiring (≥1.0 mm², <2.5 mm²), 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.

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

Fig.1 - PSU Layout & Connections



Note: On a standard 'as-supplied' unit, DIP Switch 4 is OFF (DOWN) and a fault will occur on initial power-up if a fully charged battery is NOT connected. See Table 2 - DIP Switch Settings (Fig.1).

Over Current / Over Load Protection: If the output load attempts to pull current in excess of the PSU rating, the PSU will shut-down and attempt to auto-recover after approx. 10 seconds, and will continue to do so until the overload is removed. If the PSU is subjected to a short circuit across the output terminals, the PSU may trip and require power cycling to reset. Reset by switching off mains and disconnecting the battery, then wait for the red 'Hazardous Voltage Present' LED to extinguish before re-applying mains and battery. Check the battery fuse (F2) has not operated.

WARNING: There is a risk of explosion if an incorrect battery type or size is used. 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. The battery may be safely secured by using cable ties if required.

Important Note about Batteries: This PSU complies with EN 54-4 and therefore must monitor and report battery resistance faults when batteries are fitted. The battery resistance fault threshold is directly related to the ability of the batteries to deliver the rated current to the load.

VRLA battery resistance varies with manufacturer quality, battery age (from date of manufacture, particularly if left uncharged during shipping or storage), temperature, size and state of charge. It is not uncommon for so called "new" batteries to be in excess of six months old if the supply chain is not properly managed. It is therefore important to fit good quality, new batteries that have not been shelf soiled during shipment or storage. VRLA battery resistance naturally increases in cold environments and may make marginally usable batteries at room temperature unusable at low temperatures. Careful siting of the product may alleviate some of the natural limitations of VRLA batteries. Smaller batteries have a higher resistance than larger batteries as shown in Table 3 right.

VRLA battery life is typically rated at 20°C. Raising the temperature by 10°C will halve the expected usable life of a VRLA battery. Operating at 40°C will therefore lead to only a quarter of the expected life. High temperature also degrades battery life during shipping and storage.

Table 3 - Battery Resistance

VRLA Battery	Typical Battery Resistance (single battery for 12 V systems)
12 V, 2 Ah	280 mΩ
12 V, 3.2 Ah	100 mΩ
12 V, 7 Ah	85 mΩ
12 V, 17 Ah	65 mΩ
12 V, 38 Ah	58 mΩ

Table 4 - Technical Specification

POWER SUPPLY SPECIFICATION: BF560-12 (12 V DC, 2 A)		
Mains supply voltage (a.c.):	230 V ∿, 50/60 Hz. Rated current: 0.4 A r.m.s.	
Maximum output current:	2 A (battery charger disabled)	
Output current / power rating:	1.8 A continuous 'I max a' if DIP Switch 3 OFF (DOWN) #2 1.3 A continuous 'I max a' if DIP Switch 3 ON (UP) **Taking a load current greater than 'Imax a' will temporarily reduce the battery charge current**	
	2 A 'I max b', battery charger turned off via CONN6	
	'I min' = 0 mA	
Output voltage:	10 V ('V min') to 15 V ('V max') ± 2% <150 mV ripple pk-pk	
Battery characteristics:	Discharge cut-off: 10.5 V ± 2%	
	Float charge voltage: 13.65 V ± 1% @ 20°C	
	Battery temp. compensation: -18 mV / °K	
Maximum approved VRLA battery size:	Up to 7 Ah	
Battery charge capacity (C):	3.2 Ah up to 12 Ah (battery charged to 80% of capacity in 24 hrs)	
Maximum internal battery resistance 'Ri max':	3 Ω if DIP Switch 2 OFF (DOWN) #2	720 mΩ if DIP Switch 2 ON (UP)

CONNECTIONS	
Mains Input (CONN1):	Mains supply input terminals: Live, Neutral & Earth. 1 mm² to 2.5 mm² cable size.
Supply Output (CONN5):	Output for auxiliary equipment. 1 mm² cable size, <30 m cable length (screened cable must be used).
Battery Connector (CONN5):	Connection to the VRLA battery. 1 mm² cable size.
Fault Relay (CONN4):	Isolated changeover relay output, rated 1 A @ 30 Vd.c., 1 mm² 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 Charge Inhibit (CONN6):	Connect to 0 V to inhibit battery charger. 1 mm² cable size.
CONF Input / Output (CONN6):	For OEM use
PL2:	Serial Data Connector. Protocol available via C-TEC Technical. Optional BF423 configurator tool available at c-tec.com.
PL3:	Battery Thermistor Connector. Optional BF322 PSU Remote Battery Temperature Sensor available at c-tec.com.

INDICATORS	
3 x Front Panel Indicators: 	✓ (Green Steady LED) - The Supply Output (CONN5) is healthy and within range
	✕ (Amber Steady LED) - A fault is present on the PSU
	▭ (Amber LED) - A fault with an auxiliary unit (user-definable), 10 to 15 V, 3.5 to 7 mA.
2 x Power Supply PCB LEDs:	Hazardous Voltages Present (Red Steady LED)
	PSU Status (Amber Flashing LED), see Table 1 - PSU Status LED (Fig.1)

FUSES	
Mains fuse (F1):	T 1 A H 250 V, 20 mm ceramic (T = Time Delay, H = High Breaking Capacity)
Battery fuse (F2):	3 A MINI® automotive blade fuse

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

FITMENT & OPERATING CONDITIONS
Five mounting holes are provided for Ø4-5 mm CSK screws. Mount ≤2 m on a vertical surface. Wall condition, construction and in-service weight must be considered when choosing screw fixings. For compliance with EN 54-4 the PSU must be closely coupled with the CIE. 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.: G218032	LPCB Certificate No.: 176p	UKCA Certificate No.: 0832-UKCA-CPR-F1066
Declaration of Performance: DOP0000060	CPR Certificate No.: 2831-CPR-F2283	EN 54-4:1997 + A1:2002 + A2:2006

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