



Read these instructions before installation and operation



BF562-5/E (24 V DC, 5 A)

INSTALLATION INSTRUCTIONS

EN 54-4, EN 50131-6 Caged Power Supply Unit (PSU) with Touch Protection



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 BF562-5/E is a mains input to regulated DC PSU providing 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 third-party OEM equipment. The PSU is supplied with touch-protective 'live parts' covers.

The system designer must ensure compatibility with all relevant standards for the PSU within the installed enclosure. To comply with all applicable standards and directives, the PSU must be installed inside a suitable enclosure.

Specific parts of the relevant standards are EN 54-4/A2, EN 50131-6 (Grades 1 to 4), EN 62368-1, CPR No. 305/2011, EU Directives 2014/30/EU (EMC), 2014/35/EU (LVD) and 2015/863 (RoHS).

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 Figure 1 for PSU connection details.

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 3A, 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.

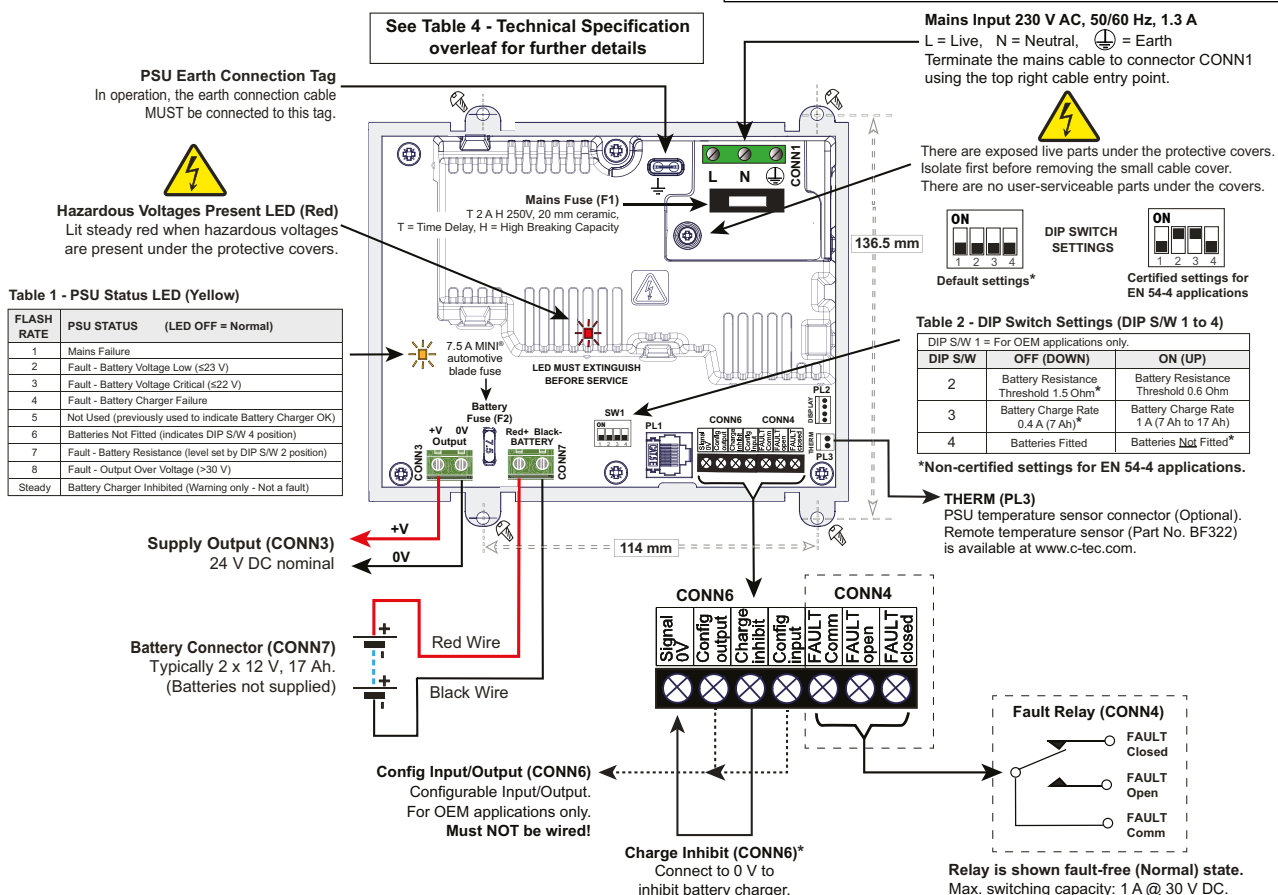
HINT: As an alternative to a switched fused spur, a double-pole isolating switch with 3 mm air gaps on the contacts & switching L & N only, may be used in the mains feed from the Main Distribution Board to the PSU, providing it meets the appropriate wiring regulations.

Figure 1 - PSU Connection Details with Touch Protection Covers for the Circuit Board and Mains



Scan the QR code to download your documentation or visit:

<https://www.c-tec.com/info/psu-resources.html>



Note: On a standard 'as-supplied' unit (default settings), the PSU is set with DIP Switch 4 in the OFF (DOWN) position for 'Batteries Fitted'. If fully charged batteries are NOT connected to the PSU, a fault will occur on initial power-up due to the PSU's monitoring function, see Figure 1, Table 2 - DIP Switch Settings (above).

Over Current/Over Load Protection: If the output load attempts to pull current more than the PSU rating, the PSU will shutdown and try to auto-recover after approximately 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 the PSU by switching off mains and disconnecting the batteries, then wait for the red 'Hazardous Voltage Present' LED to extinguish before re-applying mains and batteries. Check the battery fuse (F2) has not blown.



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 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. The supplied battery leads with 6.3 mm receptacles are also suitable for 4.8 mm battery contacts. The batteries may be safely secured using cable ties if required.

INSTALLATION

Important Note: It is the OEM's responsibility to ensure that the PSU is installed in an enclosure suitable for the intended application and that all relevant standards, directives and local regulations are complied with. If the OEM product is used in the EU market, the final OEM product must be marked with the corresponding CE mark in accordance with EU directives.

Mounting: Using suitable screw fixings, secure the PSU into its enclosure using the four 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.

Mains Connection (Note: The PSU is a piece of class 1 permanently connected equipment and 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 MAINS SUPPLY TO THE PSU UNLESS ALL COMPONENTS ARE SECURELY INSTALLED IN ITS ENCLOSURE!

Battery Fault Monitoring: This PSU meets all the requirements of EN 54-4 and, therefore must monitor the battery internal resistance and report faults when batteries are fitted. The battery resistance fault threshold directly relates to the battery's ability to deliver the rated current to the load.

Battery Characteristics: 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 more than six months old if the supply chain is not properly managed. Therefore, it is essential 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).

Battery Life: 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. Therefore, operating at 40°C will lead to only a quarter of the expected life. High temperature also degrades battery life during shipping and storage.

Table 3 - Battery Internal Resistance (for information only)

VRLA Battery	Typical Battery Resistance (single battery x2 for 24 V systems)
12 V, 2 Ah	280 mΩ
12 V, 3.2 Ah	100 mΩ
12 V, 12 Ah	72 mΩ
12 V, 17 Ah	65 mΩ
12 V, 38 Ah	58 mΩ

VRLA = Valve Regulated Lead Acid.

Maintenance-free, with a pressure relief valve.

Battery Disconnection: If the batteries are disconnected in service for any reason, including (but not limited to) installation, commissioning, test, replacement or accidental disconnection, the monitoring circuit must be reset to ensure correct operation. To reset the monitoring circuit, ensure the batteries are connected and then disconnect the mains power supply. Wait for 10 seconds, then reconnect the mains power supply.

Table 4 - Technical Specification

SPECIFICATION: BF562-5/E (24 V DC, 5 A)		
Mains supply voltage (AC):	230 V ~, 50/60 Hz. Rated current: 1.3 A r.m.s.	
Maximum continuous output current:	5 A (battery charger disabled)	
Battery charge capacity (C):	7 Ah up to 17 Ah (batteries charged to 80% of capacity in 24 hours)	
Output power rating:	'I max a' = 4.6 A continuous if DIP Switch 3 OFF (DOWN), non-certified setting for EN 54-4 applications.	
	'I max a' = 4 A continuous if DIP Switch 3 ON (UP), certified setting for EN 54-4 applications.	
	Note: Taking a load current greater than 'I max a' will temporarily reduce the battery charge current.	
	'I max b' = 5 A, charging device switched off via CONN6, bridge CHG INHB terminal to 0 V.	
	'I min' = 0 mA	
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):	<320 mV over the full input and output range of the PSU	
Battery characteristics:	Final voltage @ discharge current:	21 V ± 2%
	Float charge voltage:	27.3 V ± 1% @ 20°C
	Battery temperature compensation:	-36 mV / °K / cell

CONNECTIONS	
Mains Input (CONN1):	Mains supply input terminals: Live, Neutral & Earth. 1 mm ² to 2.5 mm ² cable size.
Supply Output (CONN3):	24 V DC output for auxiliary equipment. 1 mm ² cable size, <30 m cable length (screened cable must be used).
Battery Connector (CONN7):	Connection to the VRLA batteries (connection cables supplied). 1 mm ² cable size.
Fault Relay (CONN4):	Isolated changeover relay output, rated 1 A @ 30 VDC, 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 Charge Inhibit (CONN6):	Bridge CHG INHB terminal to 0 V to inhibit battery charger, non-certified for EN 54-4 applications. 1 mm ² cable size.
Config Input/Output (CONN6):	Configurable input/output (for OEM applications only). Must NOT be wired!
Display (PL2):	4-way Molex connection from the PSU to a display card or OEM equipment. The transmission of C-TEC data protocol is available for third-party OEM applications. Optional BF423 PSU configurator is available on request.
Therm (PL3):	2-way Molex connection for external PSU temperature sensor. Optional BF322 PSU temperature sensor is available on request.

INDICATORS	
2 x LED indicators on the circuit board:	Hazardous Voltages Present (Red LED): Lit steady when dangerous voltages are present.
	PSU Status (Yellow LED): Flashes in accordance with PSU Status Table 1, see Figure 1 for further details.

PHYSICAL PROPERTIES		
Dimensions (mm): 142 (H) x 162 (W) x 58 (D)	Weight: 680 g	Material: Zintec base 1.2 mm thick, polycarbonate covers.
Clearance:	To avoid overheating of the PSU components, ensure there is adequate ventilation and installation clearances.	

ENVIRONMENTAL 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.	

E&OE. No responsibility can be accepted by the manufacturer or distributors of these power supplies for any misinterpretation of this instruction, or for the compliance of the system as a whole. The manufacturers policy is one of continuous improvement and we reserve the right to make changes to product specifications at our discretion and without prior notice.



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