

PSU-EN54 Power Supplies

**Power Supply / Battery Charger Units,
incorporating load switching relays for
Smoke Dispersal, Bell Booster or other uses**

**Installation, Commissioning
and
Operating Manual**



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PSU RANGE OF 24V DC BATTERY CHARGERS

MODELS: PSU24-3EN54 PSU24-5EN54

Stand alone 24V battery chargers of 3 and 5 amp capacities.

Maximum battery size for enclosure:	PSU24-3EN54	17Ah
	PSU24-5EN54	17Ah

The constant voltage charging rate is set at $27.3 \pm 0.2V$ DC @ 20°C (non adjustable)

The battery chargers are rated for fire alarm use. Should they be used for standing loads, then the output should be de-rated by 500mA e.g. a 5 amp charger should not supply a standing load of more than 4.5 amps and a 3 amp should not supply more than 2.5 amps.

When used in a fire alarm system, then to comply with the requirements of British Standard EN54 Pt.2 1998, the charger should be for the exclusive use of the fire alarm.

Smoke Dispersal

An auxiliary double pole relay is supplied as standard to supply the standby loads required in smoke dispersal systems (i.e. roof vents and Naco louvre window vents etc.). The majority of smoke dispersal ventilators are designed with electromagnets to hold them in the closed position. When de-energized the electromagnets allow the vents to open.

To prevent overheating any standing load placed on the charger should only be 80% of the rated capacity i.e. a 5 amp charger should only supply a 4 amp constantly rated load.

These smoke dispersal chargers can be controlled either from an auxiliary relay on a fire alarm panel or from a simple switch i.e. a non-resistive, break glass call point (preferably not a red one).

Refer to Drawing No. S1618 for different connection scenarios. Thought should be given to providing a 'fail-safe' signal method, preferably via a continuous 24V signal or by normally closed contact.

Specification

Input Voltage	90v AC - 264v AC, Auto ranging
Input Frequency	47Hz - 63Hz
Input Current	< 2 amps
Max Ripple	250mV
Output Voltage	19v DC min (Batt), 30v DC Max (Mains On)
Aux Output	12v DC @ 80mA
Charging Rate	27.3 ± 0.2V DC @ 20°C, 26.58 @ 40°C, 28.2 @ -5°C (Temp compensated)
Fault Outputs	Fail safe relay contacts (1A @ 24v DC) Common Fault
PSU Data & Clock	Switch negative open collector signal lines (100mA Max)

Fuse Ratings

PSU24-3EN54	Input fuse, 3.15A, T3.15A H 250VAC Load fuse, self resetting Polyfuse, 3A rated Aux OP fuse, self resetting Polyfuse, 100mA rated Batt bypass protecting fuse, 3.15A (not replaceable)
PSU24-5EN54	Input fuse, 3.15A, T3.15A H 250VAC Load fuse, self resetting Polyfuse, 5A rated Aux OP fuse, self resetting Polyfuse, 100mA rated Batt bypass protecting fuse, 6.3A (not replaceable)
Cabinet	Constructed from 18 SWG mild steel folded and welded. Five mounting holes in rear face. Knockouts at the top, 20mm diameter.
Colour	Radon MW334E (Silver Metallic)
Size	300mmH x 400mmW x 80mmD

Environmental Specifications

Rohs compliant lead free construction
Storage temperature -20 deg C to +80 deg C to 95% RH
Cooling: convection cooling only
Vibration: withstand 10-500Hz, 2G 10 min/1 cycle for 60 mins X, Y, Z axis
IEC60721-3-3 CLASS 3K5

International Standards

Safety standards applied, UL 60950-1, EN 60950-1, IEC 60950-1, EN54-4 1998,

EMI standards applied, EN55014, EN 61000-6-3

EMS standards applied, EN50130-4, EN61000-4-2 through 6, EN61000-4-11

Batteries

Rechargeable sealed lead acid, PowerSonic or equivalent.

Maximum capacity 17Ah, minimum capacity 7Ah

Maximum current consumption from battery = 3A (3 amp unit), 5A (5 amp unit)

Quiescent current in mains failure mode = 70mA

Indications and Controls

External Indications:

Supply Healthy	-	Green LED
Common Fault	-	Yellow LED
Silenced	-	Fault buzzer, Yellow silenced LED
Silence Button	-	Mutes fault buzzer. Electronic, with auto reset

Internal Indications:

Battery Fault	-	Yellow LED
Mains Fault	-	Yellow LED
Volts Fault	-	Yellow LED

Installation Instructions

This product should be installed by trained service personnel in accordance with the following:-

(i) IEE regulations for electrical equipment in buildings codes of practice and statutory requirements.

1) **Precautions:**

It is the responsibility of the installer to ensure suitability of this equipment for the purpose intended, to install it in compliance with EN54 Pt. 2 & 4 1998 or local authority requirements and to ensure it is correctly commissioned and maintained by a qualified person.

WARNING: Always take full anti-static precautions when handling this electronic equipment. Any equipment returned to the manufacturer must be suitably protected in anti-static packing materials.

ONLY apply the stated supply voltage to the input terminals marked N.E.L.

NEVER supply any high voltage directly to any printed circuit boards (PCB) contained in the panel.

NEVER apply greater than 50V DC to any auxiliary relay mounted on the PCB.

NEVER use unsuppressed or unpolarised bells or coils.

NEVER subject panel to liquids.

NEVER use a megger or similar test equipment to check cables while they are connected to the Fire Detection System or any other electronic equipment.

ENSURE swarf, brick dust, wire clippings etc. are not allowed to contaminate the PCB, as this can cause severe damage to the circuits.

ALWAYS isolate the mains supply before connecting or disconnecting the mains supply lead.

2) Mount the cabinet securely to a wall using the four fixing holes provided. A centre 'key hole' is provided as an additional aid.

To assist installation of the cabinet, the door can be removed to a safe place for storage.

Ensure that any swarf or brick dust is not allowed to contaminate any of the electronic components or PCBs.

3) Knockouts are provided in the top face, but the cabinet can be drilled, with care, to accept additional cable entries.

4) Ensure all cables are routed neatly and to avoid contact with any PCBs or components. All cables should be fastened securely into the terminals provided.

5) Check all connections and wiring to ensure that the load figures quoted earlier are not ex-

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ceeded or that short circuits are not inadvertently placed across the terminals.

- 6) Connect 2 off 12V batteries in series to give 24V and connect as shown in figure 1..

Battery Connections

Batteries of even very small capacity are capable of delivering very high currents which can cause fire or injury. Battery connections must therefore be done using **extreme caution**.

As supplied, the PSU has battery leads already wired to the battery terminals on the circuit board. These leads are coloured red for + and black for –.

As this is a 24 volt system, there will be two 12 volt batteries which need to be connected in series. This is done using the jumper link provided.

To optimise the service life of the batteries, the battery charger output voltage varies with temperature. To enable optimum temperature compensation, the flying lead thermistor should be attached to one of the batteries as shown in drawing S1617.

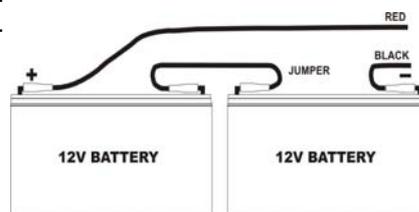


Figure 1.

- 7) Switch on mains supply and warning LED will extinguish and the Supply Healthy LED should illuminate.

- 8) Test charger by:

- a) Disconnecting mains supply. 'Common Fault' LED will show and the buzzer sounds.

Mute buzzer by pressing 'Silence' button. 'Common' LED will pulse slowly. Reconnect mains, the Yellow LED will extinguish and the 'Supply Healthy' will show.

- N.B. The 'Battery Charger' circuit will disconnect the batteries at 19V to protect them from full discharge after the mains supply has failed. When the mains are restored the relay pulls up and the batteries are reconnected.

Maintenance

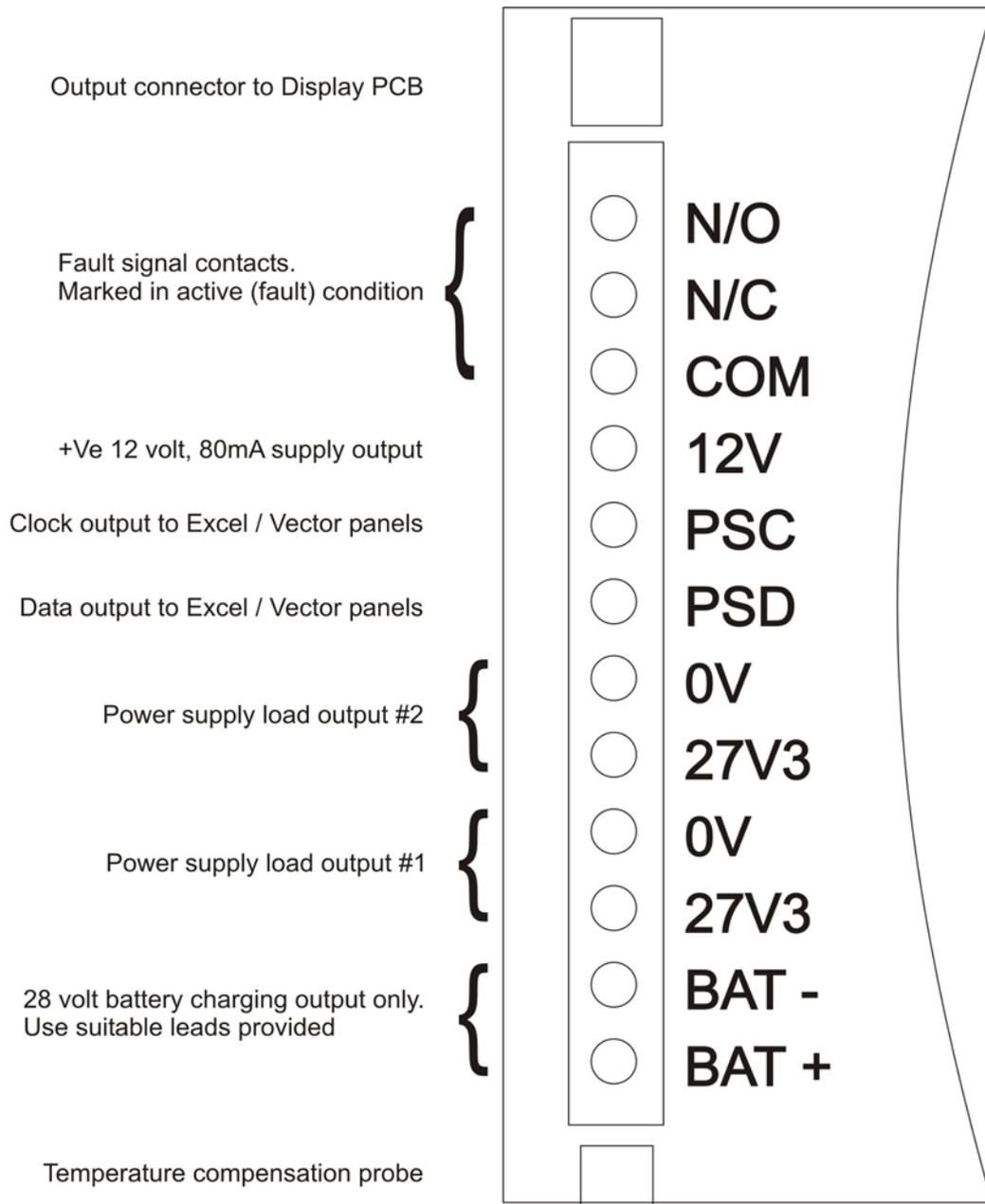
Apart from periodic checking of the functions as in '8' above and the charging voltage, no regular maintenance is required.

We would recommend that a discharge test be carried out on the Sealed Lead Acid batteries in accordance with the manufacturers' instructions.

Checking the Charging Voltage

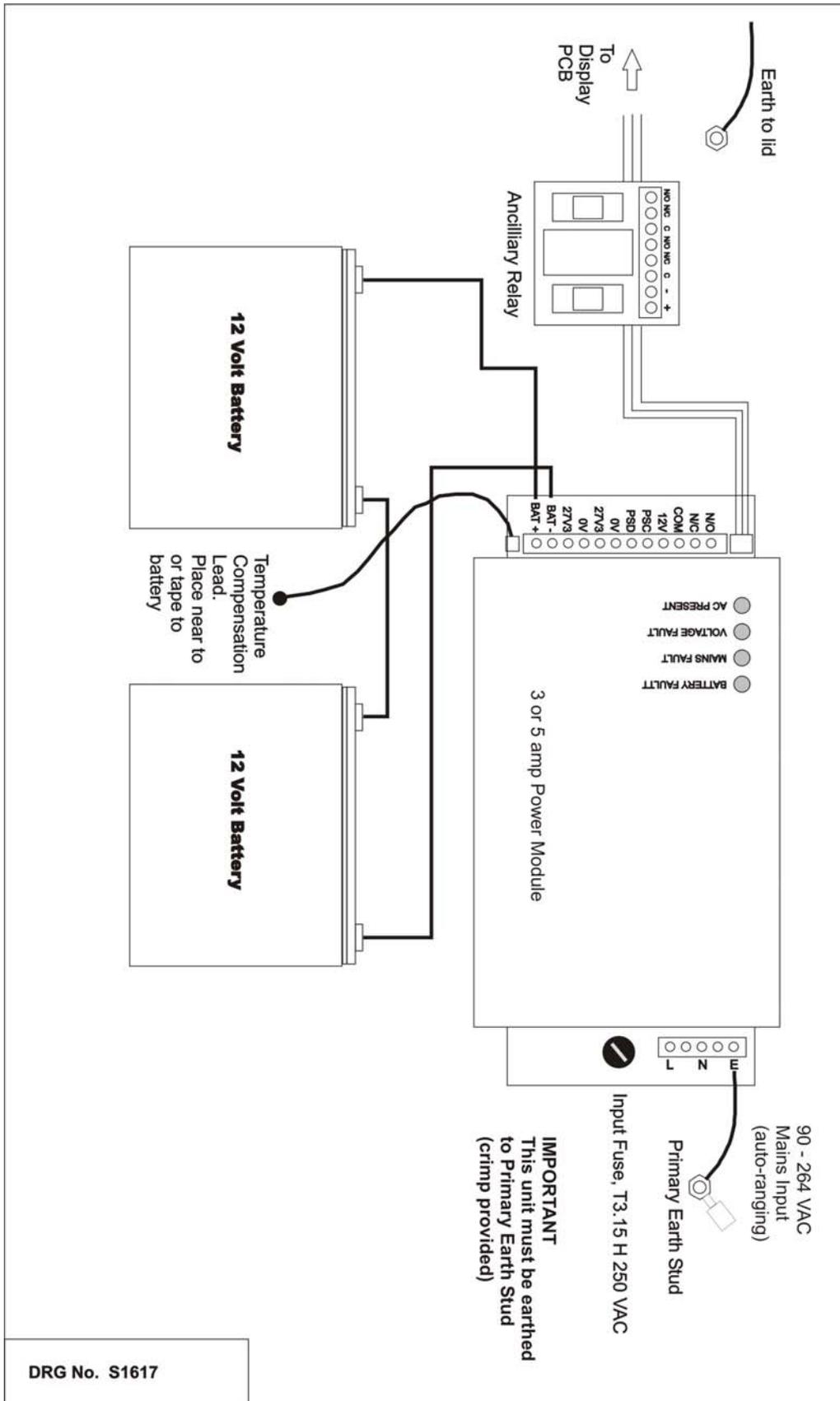
Disconnect batteries and measure across charger output terminals marked "Load". Check voltage to $27.3 \pm 0.2V$ DC @ 20°C. An accurate voltmeter must be used. NO ADJUSTMENT CAN BE MADE

Connection Details

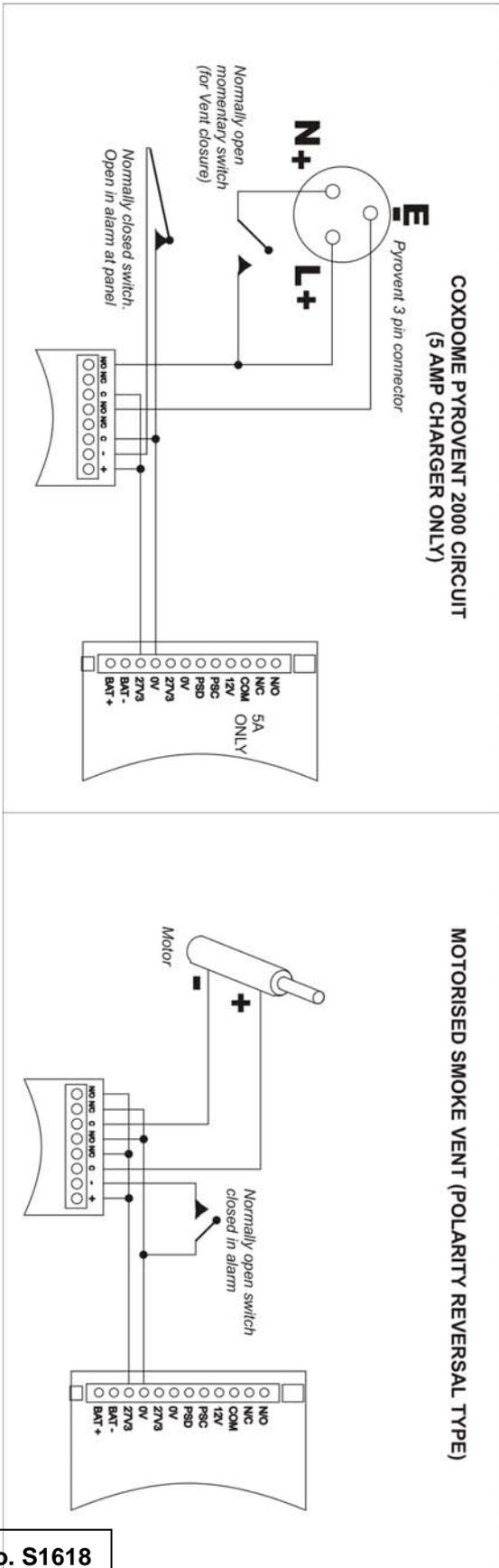
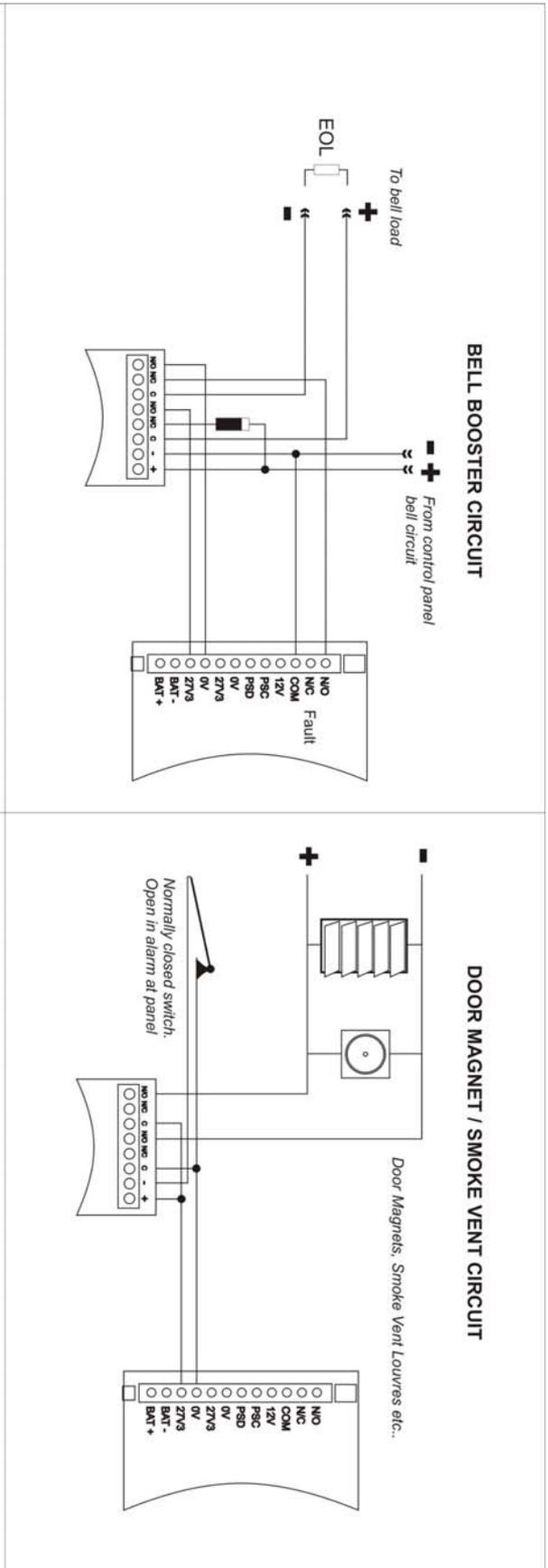


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General Layout Drawing



Various connection scenarios



DRG No. S1618