

# ELMDENE

Protecting People & Property

**Elmdene International Ltd**  
3 Keel Close, Interchange Park,  
Portsmouth, Hampshire, PO3 5QD, UK

Tel: +44(0)23 9269 6638  
Fax: +44(0)23 9266 0483  
Web: [www.elmdene.co.uk](http://www.elmdene.co.uk)

## 13.8Vdc Switch Mode Power Supply

**GEN2-08-y<sup>#</sup>** for 8Ah Battery and up to 1.0A\* Continuous Load Current

**GEN2-18-y<sup>#</sup>** for 18Ah Battery and up to 1.5A\* Continuous Load Current

## FEATURES

High efficiency cost effective power supply suitable for use in systems designed to comply with PD6662:2017 and EN50131-6:2017 Grade 2 and Environmental Class II requiring 8Ah or 18Ah standby battery capacity. Two independent output signals are provided for loss of mains fault (EPS\*\*), and general fault (including APS\*\* fault). Self-diagnostics can detect blown output and battery fuses and low battery voltage (APS fault). The PSU incorporates a battery management system comprising low battery voltage detection and deep discharge protection to ensure that the battery is not permanently damaged through excessive discharge. A brownout filter ensures that short mains voltage dips do not create a false loss of mains alarm. Two LEDs assist with quick and easy installation by showing presence of mains, correct battery charging and a fault condition. Comprehensive protection is built-in as standard including mains transient filtering, electronic output overload protection and fuses on the load and battery outputs.

- PD6662:2017 and EN50131-6:2017  
Type A, Security Grade 2  
Environmental Class II Compliant
- Low quiescent battery monitoring current during standby operation
- Fault signals for loss of mains, power supply fault, and battery low voltage warning
- Battery Deep Discharge Protection
- Protection against reverse battery connection
- LED for comprehensive diagnostics
- Thermal protection of power circuitry
- Mains transient suppression and brown-out filter
- Fully enclosed lid tamper circuit

# "y" Denotes enclosure size – see overleaf

\* See table overleaf to determine continuous standby battery current available for given standby times

\*\* EN50131 Definitions: EPS = External Power Source APS = Alternative Power Source

## SPECIFICATION

### Mains Input

Rated Voltage / (Operational Voltage)	100-240Vac / (90 – 265Vac)
Frequency	50/60Hz
Input current	<b>GEN2-08 &amp; GEN2-18 &lt; 1.0A</b> at full load
Fuse	T2A 20mm HRC

### Output

	GEN2-08-y	GEN2-18-y
<b>Voltage at full load</b>		
Mains power	12.8 –14.2Vdc (13.8Vdc nominal)	
Battery standby	9.8 – 13.0Vdc	
<b>Ripple</b>	<400mV pk – pk max @ Rated Voltage	
<b>Fuse</b>		
Load	F1.0A	F1.6A
Battery	F1.0A	F1.6A
<b>Continuous Output Current*</b>		
Mains	1.0A	1.5A
Battery for 12 hours	0.6A with 8Ah Battery	1.5A with 18Ah Battery

\*See below for quiescent current of PSU under battery when calculating total system standby current resources.

### Mechanical

Product Reference	GEN2-08-A	GEN2-08-B GEN2-18-B	GEN2-08-C GEN2-18-C
<b>Enclosure Dimensions</b> w x h x d (mm)	230 x 200 x 80	355 x 330 x 80	330x 275 x 80
<b>Weight (kg)</b> excluding battery	2.0	4.0	3.3
<b>Material</b>	1.2mm steel white powder coated		

### Environmental

Temperature:	-10 to +40°C (operating) 75% RH non-condensing -20 to +80°C (storage)
Installation environment:	Intended for internal / indoor installation only.

### Standby Battery Management

Maximum Battery Size: (Not supplied with unit)	<b>Warning: risk of explosion if incorrect battery type fitted</b> GEN2-08: 8Ah 12V Valve Regulated Lead Acid GEN2-18: 18Ah 12V Valve Regulated Lead Acid
Intelligent Battery Recharge Time:	< 72 hours to 80% - If a heavily discharged battery, having a terminal voltage > 9.0V, is connected the PSU will attempt to charge it.
Minimum energy level:	(EN50131-6_2017 §6.0 ref. y') Percentage of SD (battery) rated capacity available to support the load = 100% (8Ah or 18Ah)
Testing:	Battery Not Present: <9.0V battery voltage Low battery voltage: <11.5V (no mains present)
Protection:	Reverse battery connection protection Deep discharge protection - Battery disconnect at 10.6V battery terminal voltage
Quiescent Current:	64 mA when running on battery - less than 1 mA after deep discharge protection.
Battery Cold Start (BCS)	Momentarily link BCS pins together to connect battery to load if PSU commissioned without any mains

**SIGNALLING OUTPUTS**

Rating:	0.10A @ 60Vdc 16Ω solid state relay contacts, volt free.
EPS Fault:	Open if Loss of mains for >10s
GEN Fault:	Open if Battery terminal voltage < 11.5V (when operating in standby with no mains present), battery not present or Output and/or battery fuse blown, or Output voltage < 9.0V or Output short circuit.
Tamper:	0.5A @ 30Vdc volt free contact. Open when lid is open.

**CONNECTIONS**

O/P +, -	Connection to equipment to be powered (Observe polarity)
EPS Fault:	Relay output for mains fail. Open if loss of mains.
GEN Fault:	Relay output for General Fault. Open in fault condition
BATT +, -	Connection to standby battery. Use cables provided (Observe polarity)

**INSTALLATION AND COMMISSIONING**

This unit is only suitable for installation as permanently connected equipment. This PSU is *NOT SUITABLE* for external installation. *EQUIPMENT MUST BE EARTHED*. Before installation, ensure that external disconnect device is *OFF*. The PSU should be installed according to all relevant safety regulations applicable to the application.

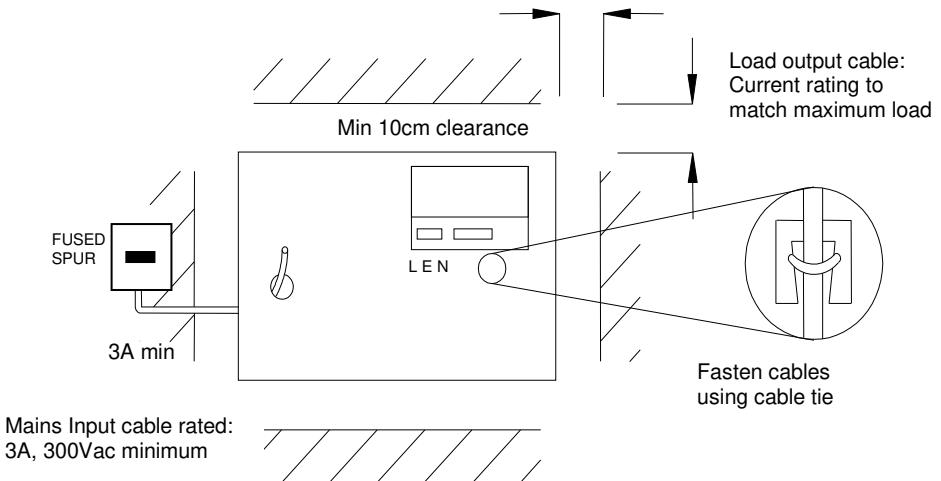


Fig 1 Mounting of Power Supply

## Mounting

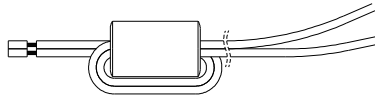
- 1) Mount securely in correct orientation allowing minimum clearance – see Fig. 1.0.
- 2) Ensure that the rear tamper is not in a position that will affect its operation, for example over a mortar course, recess or raised area on the wall.
- 3) Route mains and low voltage output cables via different knockouts and/or cable entry holes.
- 4) Use bushes and cable glands rated to UL94 HB minimum.

## Mains Power Up

- 5) Attach correctly rated mains cable (minimum 0.5mm<sup>2</sup> [3A], 300/500Vac). Fasten with cable ties.
- 6) Apply mains power.
  - Check for 13.8V on load outputs.
  - Check green Mains LED is ON.
- 7) Disconnect mains power.

## Load Output

- 8) Loop correctly rated load cable through supplied ferrite (1 turn) and attach to terminal block, note polarity. Fasten with cable ties.



**Fig 2 Position of ferrite**

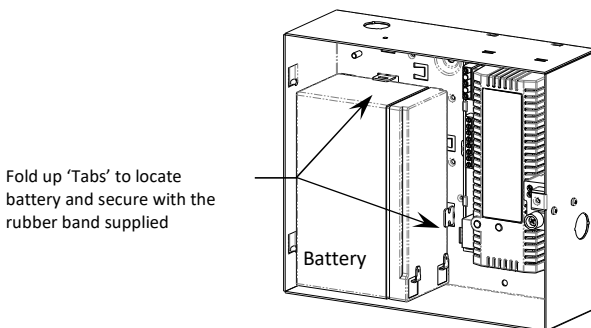
- 9) Apply mains power.
  - Check Green Mains LED is ON.
  - NOTE:** Red Fault LED may flash to indicate no battery has been connected, this is normal.
  - Verify load is operating correctly.
- 10) Disconnect mains power.

## Signalling

- 11) Connect EPS and GEN fault outputs to appropriate inputs of control and indicating equipment (CIE).

## Standby Battery

- 12) Attach supplied battery cables to terminal block and batteries.
  - NOTE:** ensure correct polarity of battery connections: **+ve** use **Red** lead, **-ve** use **Black** lead.
- 13) Position the battery as shown in Figures 2 - 6 below, avoiding the cover earth connection spades and the cover retaining screws. Fold up 'Tabs' to locate battery and secure with the rubber band supplied.



**Fig 2 GEN2-08-A**

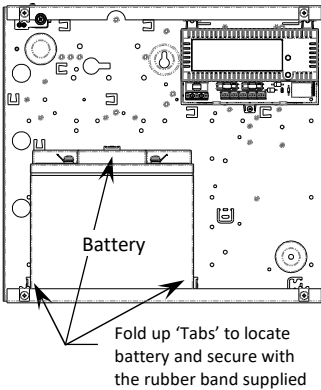


Fig 3 GEN2-18-B

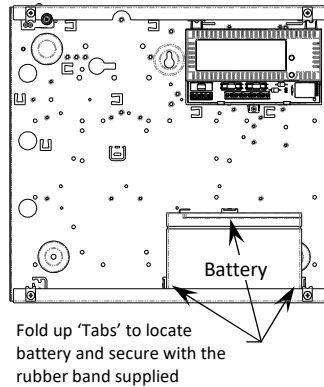


Fig 4 GEN2-08-B

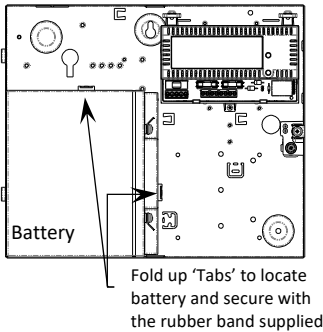


Fig 5 GEN2-18-C

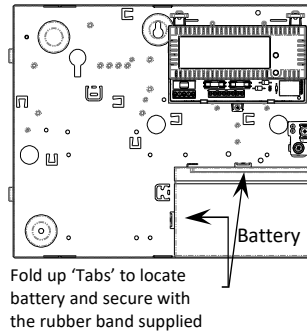


Fig 6 GEN2-08-C

- 14) Apply mains power.  
Check that Green Mains LED is ON.  
Check there is no fault indicated by the Red Fault LED, refer to diagnostic table on page 6.
- 15) Disconnect mains power.  
Check that the batteries continue to supply voltage and current to the output load.  
Check that Green Mains LED is OFF and the control panel displays a Loss of Mains (EPS) fault  
**NOTE:** Batteries must have sufficient charge to supply the output load
- 16) Reconnect mains power.  
Check that Green LED is ON.
- 17) Remove Output fuse.  
Check that Red Fault LED is indicating a fault, refer to diagnostic table on page 6, and that the control panel shows a General PSU fault.
- 18) Replace Output fuse.  
Check that Red Fault LED is OFF and General PSU fault has cleared at control panel.

**Tamper**

19) Connect tamper switch to appropriate inputs of control and indicating equipment (CIE).

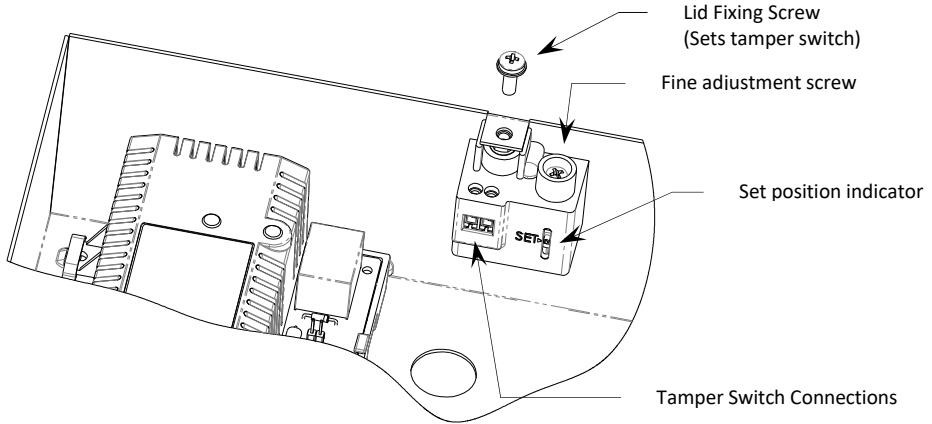


Fig 7 Position of tamper assembly on 'hinged lid' style enclosures

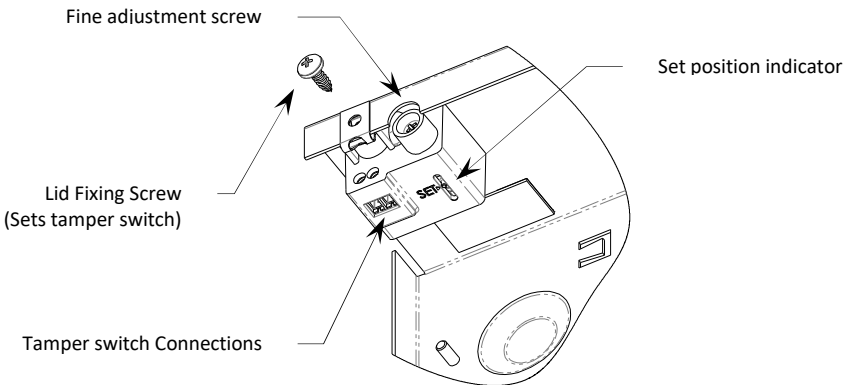


Fig 8 Position of tamper assembly on 'clam shell' style enclosures

- 20) Close the lid and fasten with screw supplied. Alternatively fit the cover in place, the correct orientation is with the cover retaining feature engaging over the bottom lip of the base, fasten with screws supplied.
- 21) Check that the tamper switch is:
  - CLOSED when the lid/cover is closed and the retaining screws are fitted.
  - OPEN when the retaining screws are removed the lid/cover is open.
  - Use fine adjustment screw if necessary to align set position indicator with set point.
- 22) Close the lid/cover and fasten.
- 23) Re-check tamper circuit is closed at control panel.

## OPERATING INSTRUCTIONS

In the event of loss of mains, a battery fault or a GEN fault, the corresponding Fault signal contacts will open.

If the output of the PSU fails, the cause of the failure should be investigated e.g. short circuit load, connection of a deeply discharged battery. The fault should be rectified before restoring power to the PSU. If any of the fuses require replacing, ensure the correct fuse rating and type is used.

## MAINTENANCE

### Maintenance

This unit is intended for use by Service Personnel only. There are NO USER SERVICEABLE parts inside.

There is no regular maintenance required of the PSU other than periodic testing, and replacement of the standby battery. **Reference should be made to the battery manufacturer's documentation to determine typical/expected battery life with a view to periodic replacement of the battery.**

## DIAGNOSTICS

### Local Diagnostics

Green LED

On = Mains Present

Red LED

Fault Diagnostics according to table:

Red LED (fault)	Green LED (mains)	Status
OFF	ON	<b>Normal:</b> Battery fully charged
One short flash every second	ON	<b>Normal:</b> Battery charging but not fully charged
Flashing: 1second On 1 second Off	ON	<b>Fault:</b> Output fuse or battery fuse blown, or battery missing
	OFF	<b>Fault:</b> No mains, output fuse blown
One short flash every 3 seconds	OFF	<b>Fault:</b> No mains, battery supplying load.
OFF	OFF	<b>Fault:</b> No mains, No output, Batteries disconnected or completely discharged

## COMPLIANCE

This power supply unit meets the essential requirements of the following EU Directives:

EMC: 2014/30/EU      Low Voltage: 2014/35/EU      WEEE: 2012/19/EU      RoHS2: 2011/65/EU

This product is suitable for use in systems designed to comply with  
PD6662:2017 at Grade 2 and Environmental Class II  
EN50131-6:2017      Type A Security Grade 2  
Environmental Class II



Certification Body:      Telefication B.V.  
Edisonstraat 12A  
Zevenaar, 6902 PK  
The Netherlands  
+31 (0) 316 - 583 180  
<http://www.telefication.com>

## DISPOSAL OF PRODUCT AT END OF LIFE

This product falls within the scope of EU Directives 2012/19/EU Waste Electrical and Electronic Equipment (WEEE) and 2013/56/EU (Battery). At the end of life, the product must be separated from the domestic waste stream and disposed via an appropriate approved WEEE disposal route in accordance with all national and local regulations.

Before disposal of the product, any batteries must be removed, and disposed separately via an appropriate approved battery disposal route in accordance with all national and local regulations. Package used batteries safely for onward transport to your supplier, collection point or disposal facility.

**Caution: Risk of fire or explosion  
if bare battery wires are allowed to touch.**

See Specification for battery type information. The battery is marked with the crossed-out wheelee bin symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg).

For more information see: [www.recyclethis.info](http://www.recyclethis.info)

*The packaging supplied with this product may be recycled.  
Please dispose of packaging accordingly.*

### Explanation of symbols: (Not all may apply)



Fault Indication



Shock Risk - isolate before attempting access



Mains Present



Certification Level



Protective Earth



Do not dispose of in unsorted waste

Specifications subject to change without notice