EPS 20-100D BS EN 50171

www.whatpowersupply.com

Description

The EPS D range of Static Inverter Systems fully comply with the latest emergency lighting standard - BS EN 50171 and provide an AC output which is compatible with suitable standard mains luminaires. This makes integration into existing installations easier and more cost effective than DC systems (central battery systems).
The EPS D system is offered with a range of power outputs from 300 VA to 1500 VA and is available in both 1 hour or 3 hour versions to suit the application.
The EPS D range is manufactured in our UK based factory in accordance with ISO 9001 standards.

Standard Features

+ Sinewave Output
+ Integrated Distribution with 4 Outgoing Ways, each configurable to be Maintained, non Maintained or Switched
+ Weekly Automatic Test for Battery and/or Load Monitoring
+ Output Earth Leakage Protection
+ 120% Continuous Overload
+ High Output Fault Clearance
+ Fire Test Input
+ Deep Discharge Protection for Batteries
+ Microprocessor Control
+ 4 x Volt Free Contacts for Remote Monitoring or BMS
+ Easy to use LCD Display
+ Front Access VRLA Batteries with 10 Year Design Life and Ageing Factor
+ Battery Temperature Compensation
+ Reverse Battery Polarity Protection
+ Modular Design improving Reliability and Serviceability
+ Compact Wall / Floor mount Cubicle
+ Complies with BS EN 50171

Optional Features

+ High IP Rating (max IP 54)
+ RS 232 Interface
+ Data Logger (stores up to 200 alarms)
+ SNMP Adapter for Remote Monitoring via LAN
+ Printer for Hard Copies of Data Logger Alarms
+ Extended Runtimes
+ Other Voltages / Frequencies

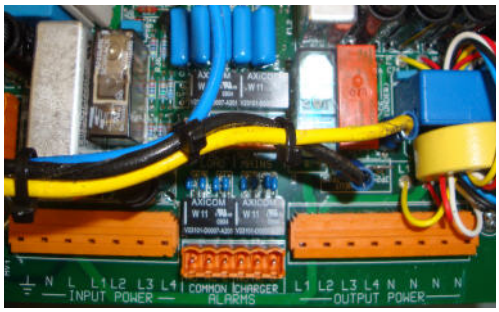
EMERGENCY LIGHTING INVERTER

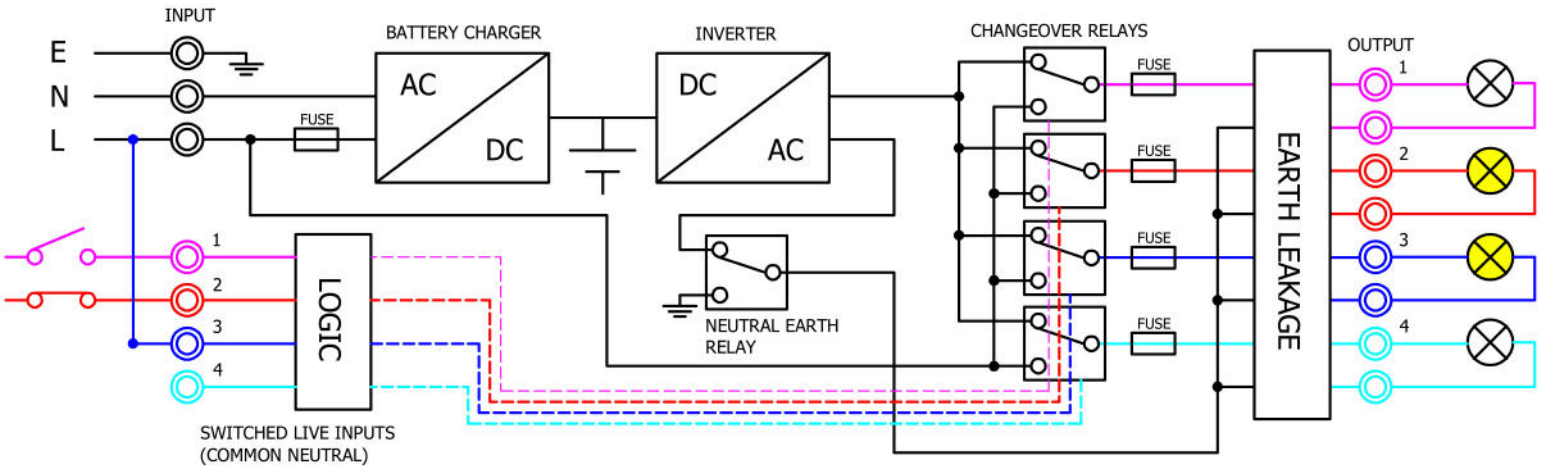
www.whatpowersupply.com

System Operation

Mains Healthy:
The battery is continuously charged and the inverter is off (passive standby) ready for emergency operation. The load is powered via the bypass circuits (when configured for maintained operation). There are 4 individually controlled bypass circuits, allowing each of the 4 outputs to be configured as maintained, switched maintained or non-maintained to suit specific requirements. The circuit below shows an example (one of many) of a system operating in the mains healthy condition, line 1 and 2 have been configured for switched maintained operation with line 1 switch in the open position and line 2 switch in the closed position. Line 3 has been configured for maintained operation by inserting a hard-wire link from the charger live input, line 4 has been left disconnected for non-maintained operation. The lamps on the output show the state of each output.

Mains Failure:
The inverter starts and switches the load from the bypass circuit to the inverter output. AC power is supplied via all 4 output circuits regardless of how they have been configured. The inverter will run for the duration of the mains failure or for the rated duration of the system (usually one or three hours). Each output is individually protected against short circuit by fuses effectively providing 4 way distribution to the luminaires. Each output is also monitored individually for load change, earth leakage and overload.





Load / Battery Monitoring

Load Monitoring:
During the Auto Test (weekly), the system monitors the load on each of the 4 output lines. After setting the reference load (first test), if the system detects that the load on any of the 4 output lines has changed by more than the preset amount (adjustable down to 10 VA for standard loads or 3 VA for LED loads) then the display will alarm and details of the load change will be displayed 'Line 1- 20 VA Change'. The change can be accepted once the cause has been corrected. This function can be turned off if the system is used in conjunction with hold-off relays.

Battery Monitoring:
The battery is also monitored during the Auto Test and if the battery discharges faster than predicted then an alarm is raised. The system achieves this by comparing the actual discharge current against a typical discharge curve. This test provides an early warning of battery failure - a critical feature for an emergency system. A Manual Test can also be activated at any time to coincide with other testing or routine maintenance.

Protections

Earth Leakage Protection:
The earth leakage protection can be set to 30, 100 or 300mA. Each of the 4 output lines is monitored and if an earth leakage is detected then the system will disconnect that particular output and display the load line with the fault e.g. Line 1.

Overload Protection:
During mains healthy conditions, the overall load is monitored, if the load exceeds the rated load for more than 5 seconds then the display will indicate overload and the buzzer will sound. During mains failure, if the load exceeds the preset overload point (>120% of rated load) for more than 5 seconds then the display will indicate overload, the buzzer will sound and the inverter will reduce it's output voltage in order to protect the inverter whilst maintaining supply to the load.

Fault Clearance:
The system has been designed to clear a short circuit on any of the four output lines whilst continuing to supply the other three output lines.

Battery Disconnection Protection:
The system monitors the battery current to ensure the battery is always connected, if the battery is not connected then the display will indicate battery off and the buzzer will sound.

Deep Discharge Protection:
During prolonged mains failures, the system will deplete the battery and shutdown the inverter. In order to protect the battery from further discharge of the battery, the system goes into sleep mode reducing the discharge current to virtually zero.

Reverse Battery Polarity Protection:
The system is protected from reverse battery connection as required by BS EN 5017.

Front Terminal VRLA Battery (10 Year Life)

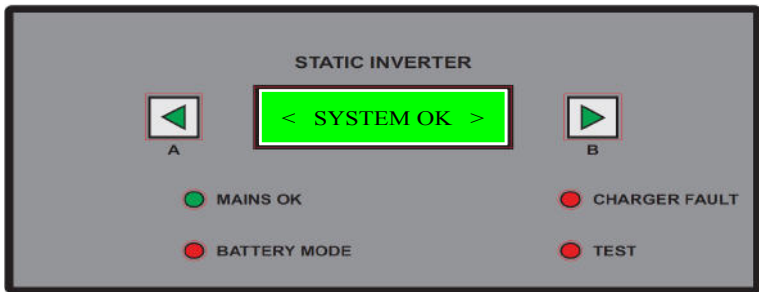
Front Terminal batteries are supplied as standard on all EPS D Systems. This reduces the intertier height allowing for a more compact system. In addition, battery maintenance is easier and safer than with traditional batteries. Batteries are sized in accordance with BS EN 50171 and include for the required ageing factors to allow the system to supply the full rated output for the required duration after 10 years.

Batteries are charged in line with manufacturers recommendations. Automatic Temperature Compensation adjusts the battery voltage in line with the ambient temperature.
Batteries are mechanically segregated from the remainder of the system.
Battery life reduces with temperature, ideally the ambient temperature should be 20°C for maximum battery life.

EPS 20-100D BS EN 50171

www.whatpowersupply.com

Digital Display



Indicating Lights:
- Mains Healthy
- Charger Fault
- Battery Mode
- Auto Test in Progress

Push Buttons:
- Right Button (multi-function)
- Left Button (multi-function)
- Tactile Feedback
- Buzzer Mute

Alarms:
- Mains Failure
- Auto Test in Progress
- Load Change Detected
- Battery Disconnected
- Battery Low
- Battery Fault
- Earth Leakage
- Overload
- Short Circuit
- Charger Fault
- Fire Alarm Test in Progress

Display Type:
- 2 Line x 16 Character LCD

Metering:
- Mains Voltage
- Inverter Voltage
- Load VA
- Load Watts
- Load Power Factor
- Battery Volts
- Battery Discharge Current
- Battery Charge Current
- Earth Leakage Current

Other Information:
- Time and Date
- Auto Test Information
- Setup Information

Remote Monitoring / Connections

Volt Free Contacts:
The system is supplied with 4 volt free contacts for the following alarms:
- System in Battery Mode
- Charger Fault
- Load Alarm
- Common Alarm

Normally open and normally closed contacts are provided for each of the above alarms.

Alarm relays are energised when in the healthy condition and relax into the fault condition, ensuring that even when the system is off or in sleep mode (no power for extended periods) the contacts indicate a fault condition.

Fire Test Input:
A dedicated set of terminals is available for a fire test input, this allows the system to simulate a mains failure after receiving a signal from the fire alarm or BMS.

Sub-circuit Monitoring:
The fire test input can also be used in conjunction with single or three phase remote monitoring devices to turn on the system output in the event of a sub-circuit mains failure, e.g. local distribution board breaker tripped.

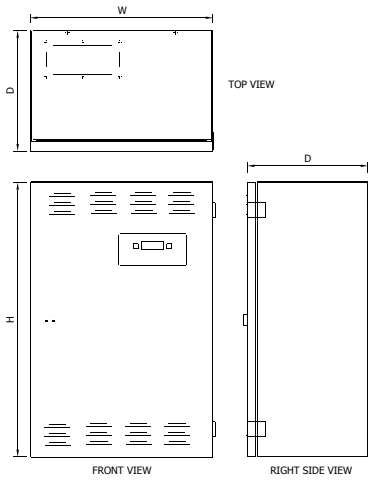
Night-watchman Switch:
The fire test input can also be used to turn off the maintained outputs via a single remote switch.

Enclosure

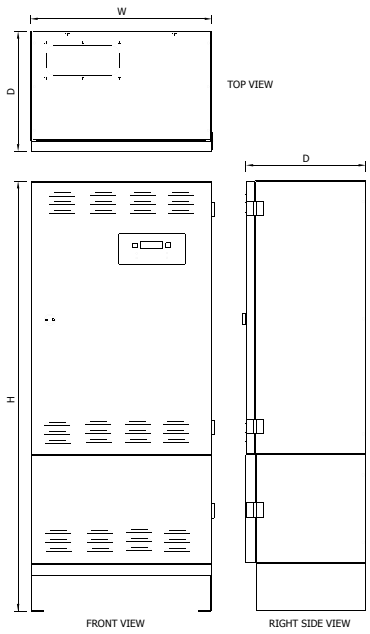
The EPS D enclosure is extremely compact, the standard enclosure is only 500mm wide with a depth of only 325mm. In addition, the EPS D is a true Front Access system and does not require any room to the sides or back for ventilation or maintenance.

EPS D Enclosure Features:
- Zintec Sheet Steel
- Powder Coated RAL 7032
- IP 23 Rated
- Lockable door
- Top Cable Entry
- Removable Gland Plate

There are two types of enclosures:
Wall Mount: For all standard 1 hour systems and 3 hour systems up to EPS 50D. Wall mount brackets are supplied as standard If wall mounting is not practical, then the extension can be fitted to the bottom of the enclosure to allow floor standing.
Floor Standing: For standard EPS 80-100D 3 hour systems. Includes 100mm plinth to raise the system off the floor



Wall Mount Enclosure



Floor Standing Enclosure

Optional Features

Datalogging Digital Display:
This feature allows access to up to 200 alarm records as well as up to 200 battery records. This information is very useful for fault diagnosis allowing the user or engineer to accurately determine the timeline for a particular event.

Remote Monitoring (RS 232):
Connection to remote computer via RS 232 complete with software allowing the system to be monitored and interrogated remotely.

Remote Monitoring (LAN):
Connection to remote computer via LAN (SNMP) allowing the system to be monitored and interrogated remotely.

Local Printer:
Local Hard Copy Printer for print out of battery test results. This can either be panel mounted or free standing as required.

High IP Rating:
The standard enclosure rating for the EPS D system is IP 23. Higher IP ratings are available to suit more severe environments up to a maximum of IP 54.

Extended Runtimes:
Run times can be extended / reduced to suit special applications.

Other Voltages / Frequencies:
The system can be configured to operate at other mains voltages and frequencies, for example 110/115/120V 60Hz.

TECHNICAL DATA FOR EPSD RANGE

www.whatpowersupply.com

EPS	20 D	30 D	40 D	50 D	60 D	80 D	100 D
Output Active Power (W)	240	360	480	600	750	960	1200
Apparent Output Power (VA)	300	450	600	750	950	1200	1500
INPUT							
Nominal Input Voltage	220 / 230 / 240 VAC + / - 6%						
Nominal Input Frequency	50 Hz + / - 5%						
OUTPUT							
Nominal Output Voltage	220 / 230 / 240 VAC						
Static Voltage Regulation	+ / - 2%						
Nominal Output Frequency	50 Hz						
Output Frequency Stability	1%						
Inverter Wave Shape	Sinewave						
Load Power Factor	0.8 Lagging						
Overload	120% Continuous						
GENERAL							
Operating Temperature	0-40°C						
Relative Humidity	90% Non-Condensing						
Altitude	Max 1000m before derating						
Protection Level	IP 23						
Colour	RAL 7032 (others colours available)						
Noise Level	< 50 dBA @ 1m (free filed, non reverberating conditions)						
BATTERY							
Type	VRLA Front Terminal						
Life Expectancy	10 Year @ 20 Degrees Celsius						
Ageing Factor	Included						
DIMENSIONS & WEIGHT	**1 HOUR SYSTEMS**						
Height (mm)	750	750	750	750	750	750	750
Width (mm)	500	500	500	500	500	500	500
Depth (mm)	325	325	325	325	325	325	325
Weight (kg)	72	76	80	84	125	133	137
	3 HOUR SYSTEMS						
Height (mm)	750	750	750	750	1170	1170	1170
Width (mm)	500	500	500	500	500	500	500
Depth (mm)	325	325	325	325	325	325	325
Weight (kg)	79	115	120	128	183	228	234
STANDARDS							
Emergency Lighting	BS EN 50171						
Safety	EN 50091-1						
EMC	EN 50091-2						
Harmonics	EN 61000-3-2						
Batteries	BS 6290-4						

PDS Design Solutions LTD
Unit 16 Greenway Business Centre
Harlow Business Park
Harlow, Essex
CM19 5QE

Tel: 01279 406960
Email: sales@whatpowersupply.co