

# EMEX Power

## Modular Static Inverter AC/AC & AC/DC central power supply system

The EMEX Power inverter and charger modules utilise solid state electronics of the highest reliability to provide a rugged, easy to maintain system with exceptional performance for emergency lighting use.



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### System design

The system has been designed solely for emergency lighting, and not modified from other less essential power supply requirements. As such, the system has exceptional overload performance without the need to over-specify the rating of the inverter to ensure faults can be cleared.

Each module has input and output protection and each module measures and limits its own current, making it a self-contained unit. Both the inverter and the charger utilise this modular approach, allowing a much higher power density than similar non-modular systems. The number of modules fitted, together with the appropriate sized battery, determines the rating of the system.

All modules connect to a common control bus via IDC connectors. Main connections to modules are via five front panel terminals giving quick and easy access to terminations, allowing a module to be changed in a matter of minutes. Each module has two recessed handles to aid lifting. No side or rear access is required.

Alarms and status indicators are provided on the front panel display, which provides clear and concise information.

### System performance

EMEX Power has been designed to operate solely as an emergency lighting power supply, and as such is equipped with the following features:

- An overload performance of 120% continuous, 125% for 20 minutes with full output, 150% for 1 minute and 200% for 10 seconds without reduction in output voltage
- Short-circuit currents of 350% for 5 seconds
- Response time for luminaire power (Strike) up <0.5 Seconds
- The ability to strike the full load on mains failure without using a bypass supply
- Four pole contactor complying with EN 60947-4-1 (BS 5424)
- Available in single phase input/output, true three phase input – three phase output (4 wire)
- Modular Inverter
- Modular Charger
- MCB protection ( No fuses)
- 4 main components for simple maintenance



BS EN 61508 Functional Safety (Safety Integrity Level 2 Certified) KM 673347. See certificates for applicable systems.

Systems Certified to:  
BS EN 50171 2021, BS EN 61508 & IEC 62477

# EMEX Power

## System overview

EMEX Power offers a host of standard features and benefits, as listed below\*:

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\* **Note:** that some items will be optional, extra cost items on other systems, or may not be available at all if the system is not designed specifically and solely for emergency lighting use.

**Standard features: EMEX Power system overview**  
For further detail, please refer to the 'EMEX Power detailed specification'.

**Performance**

- True AC/AC 50/60 Hz output
- Ability to use remote standard proprietary AC distribution and protection devices on outgoing circuits
- Rated for any load power factor, zero to unity, at any output power up to the maximum rated kVA
- Compatibility with addressable test package using EMEX technology
- Excellent overload capability in full emergency mode: 350% for 10 seconds without reduction in output voltage
- Excellent recharge capability: 80% after 12 hours following rated discharge
- MCB protection throughout – no fuses
- EMEX Power true modular construction with common spares (inverter, charger, control PCB, and system interface common across the full system range)
- Individual MCB protection for each module - AC and DC circuits
- Individual cooling fans for each module with on-demand operation (not continuously running)

- Split parallel charger above 10 amps – enhanced integrity with the ability to operate with one or more charger modules isolated (subject to increased recharge)
- Integral maintenance bypass facility (ability to support output load in bypass mode whilst maintenance is performed)
- Temperature compensated charger
- Maintained output as standard (switchable to non-maintained)

**Alarms and instrumentation**

- Comprehensive display
- Charger and inverter alarm pack
- Momentary “push to test” button
- Fire alarm interface
- Final exit interlock
- Internal and external MCB monitoring
- Local/remote maintained circuit control
- Sub-circuit monitor connection
- Two sets of volt-free alarm relay contacts
- Inverter-inhibit engineers’ switch
- Remote alarm unit option

**Mechanical**

- IP21 & IP31 System as standard, IP41 available on request
- Easy front panel access
  - Inter-cabinet trunking for battery cables
  - Fork-lift plinth
  - Lifting eyes for crane lift as standard
  - Installation pack with all tools required
  - Detailed instruction manual

**Batteries**

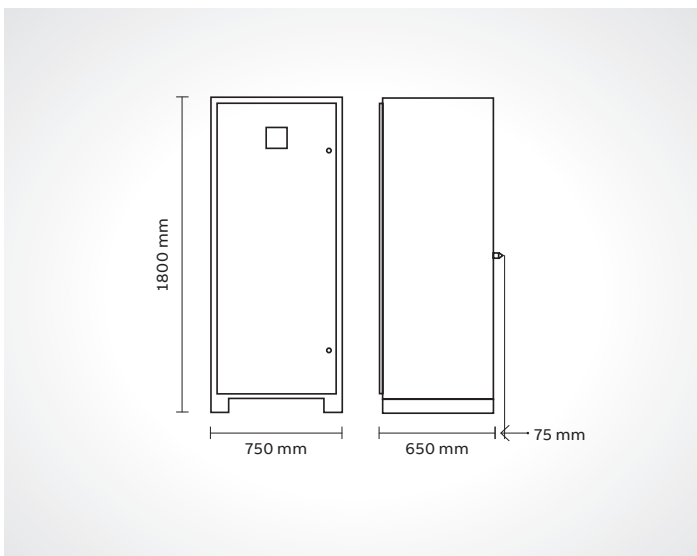
Standard systems are supplied with Valve Regulated Lead Acid (VRLA) batteries, also known as ‘Sealed Lead Acid’. These batteries are sealed for their design life of 10 years. Longer design life VRLA and Nickel Cadmium batteries are available upon request, however, these batteries require a much larger physical area, and emit potentially explosive gases, meaning the battery room must be adequately ventilated.

These reasons, along with the additional capital cost, generally outweigh the additional life obtained, as demonstrated below.

Battery	Initial cost	Design life	Maintenance
	££	YY	££
VRLA	£££££	YYYYY	£££££
Ni-CAD	£££££	YYY	££££

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# Technical reference AC/AC system

## Specification & certification

01 Emergency lighting system reference

### Central power supply & Static inverter specification

LED indications	
Mains healthy	Green
Maintained circuit on	Green
Battery high volts	Amber
Battery low volts	Amber
Supply from battery	Red
Charge fail	Red
System fault	Red
Common alarm	Red
Battery discharged	Red
System inhibited	Red

Inverter modules (EMEX Power, EMEX Mini only)	
Nominal output	220V – 240V 50/60Hz AC
Rating	1.5kVA or 3kVA rating with Primary / secondary configuration CPS
Overload	120% continuous with full output
	125% for 20 minutes with full output
	150% for 1 minute with full output
	200% for 10 seconds with full output
Short circuit	350% for 5 seconds
Cooling	Integral fan (on-demand operation)
Protection	AC 2 pole type D
	DC 2 pole type B
Module dimensions	360mm x 170mm x 575mm
Handling	Recessed handles front and rear
Weight	50kg

Charger modules	
Constant voltage current limited with temperature compensation. Voltage control to $\pm 1\%$ with full mains supply variations.	
Rating	10 amp minimum
Cooling	Integral fan (on-demand operation)
Protection	AC 2 pole type D
	DC 2 pole type B
Module dimensions	360mm x 170mm x 575mm
Handling	Recessed handles front and rear
Weight	50kg

Metering	
DC metering	Combined digital battery voltage and charge/discharge current
AC metering	Combined digital AC output Voltage and current

Controls	
Final exit interlock	Requires volt-free contact
Sub-circuit monitor	24V control loop
Maintained circuit control	24V control loop
Fire alarm control	12/24V DC from fire panel
Remote MCB monitoring	24V control loop
Changeover device	Four pole contactor to BS 5424 and EN 60947
Battery Earth leakage monitor	

Mechanical	
Input / output terminals	10mm/50mm dependant on rating
Control terminals	2.5mm

### Transient over voltage protection

The charger has a surge protection device of 190J and 10kA peak current (single pulse).



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**Battery**

Battery should be comprised of one or more strings of no more than 120V nominal voltage.

The batteries are maintenance free sealed lead acid, gas recombination type with a minimum design life of 10 years. They shall have extremely low gas generation, low self-discharge and have sealed pressure release vents. Other battery technologies to be available upon special request.

The batteries shall be sized to power the complete system for the rated duration following mains failure at 100% light output of all emergency lamps.

**Environmental conditions**

Ambient temperature of the installation (switch room) should be in the range 15 – 25°C. Air conditioning is required where normal ambient will exceed 25°C. This is to achieve optimum battery life expectations.

NOTE: Batteries must not be subject to prolonged extreme temperatures prior to installation and must be stored in a suitable environment.

**Indoor equipment categorized**

Ambient temperature (Nominal)	5°C – 35°C
Extreme temperature	0 – 40°C
Humidity (non-condensing)	40 – 85%
Noise level at 1 metre	55 dBA
Altitude without extra ventilation	1000 metres

**Cabinets**

Nominal output	220V – 240V 50/60Hz AC
Construction	Modular without welds; battery cubicles can be flat-packed for ease of access to site
Ingress protection	IP2X standard, options up to IP41
Colour	RAL 7016 (Anthracite grey) Other RAL colour finishes available to special order
Lifting & handling	M12 lifting eyes and 110mm plinth
Levelling	Levelling feet available
Access	Single door with 8mm square block key. Front access only required - opening angle 180° Key lockable doors on request. Removable top gland plate.
Ventilation	Ventilation in rear and front only – cubicles can be mounted adjacent to each other (no side ventilation)
Dimensions	1800mm x 750mm x 725mm (Dimensions are inclusive of 75mm ventilation back-stop)