

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.



—
01

—
01 EMEX Power central
supply system

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*:

—
* **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.

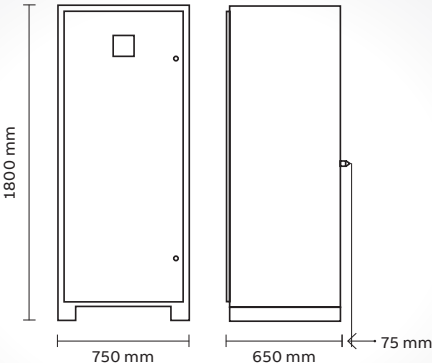
Standard features: EMEX Power system overview
For further detail, please refer to the ‘EMEX Power detailed specification’.

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)

—
02 EMEX power measurements

—
02



- 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
VRLA	££	YY	££
Ni-CAD	££££££	YYYYY	££££££
Planté	£££££	YYY	£££££

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).

—
01

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)

—
01

EMEX Power System selection

Design of centrally-powered emergency lighting systems is a complex process. For each system, it is imperative that sufficient battery power is made available to operate all emergency luminaires in the event of a mains failure.

—
01 Institutional building
with EMEX power system

Fully compatible with EMEX Test software and components, EMEX offers a comprehensive solution to providing emergency power to large and complex installations.

EMEX TS range of systems

EMEX TS offers all the benefits of the EMEX Power range of central power supplies with the added benefit of an on-board EMEX Test monitoring capability.

EMEX TS is supplied complete with MXKP addressable interfaces, panel mount touch screen monitor (pre-loaded with EMEX Test software).

To select an EMEX TS product, simply add suffix / TS to the standard product order codes (part numbers) on pages 85-87

EMEX Power: EMEX 230V AC/AC and EMEX 400V AC/AC

EMEX Power system installed codes:

Part Code Key:

ELD A B C D . E F G H

A	Power factor - 9 for 0.85PF or 8 for 1.0 Unity PF
B (C)	Duration: 1 for 1hr, 15 for 1.5 hr, 2 for 2 hr and 3 for 3hr
C (D)	Phase - 1 for single and 3 for 3 phase
EFG	kVA (multiplied by 0.1)
H	additional suffix below, e.g. TS

Example:

ELD9110.015 = 0.85PF, 1 hr, 1 Phase @ 1.5 kVA
ELD9151.015 = 0.85PF, 1.5 hr, 1 Phase @ 1.5 kVA

Note: X & B suffix code will be used to allow the phasing of battery deliveries and will not show on product documentation or product. The X & B codes will only be used for order processing and logistics and will show on and will show on the Shipping and invoice document.

0.85 PF designed systems

EMEX Power - Single phase 220-240 V 50/60 Hz

0.85 PF designed systems

EMEX Power - Single phase 220-240 V 50/60 Hz

Suffix Description:

X	Excluding batteries
B	Battery Kit
60	60 Hz system
N	Nicad cells
TS	Touch screen EMEX Test control GUI

Note: adding this Suffix TS the EMEX power central battery system contains the full hardware to communicate and operate the EMEX Test Automatic testing system.

Example:

ELD9110.015NTS
ELD9110.01560TS
ELD9110.015X
ELD9110.015B

The new EMEX order codes have the Machine and Batteries split into two codes, to allow the control to customers during project execution. So to explain the process with this as an example the new codes will be quoted as: Full System Code ELD9110.015 as declared in the following tables this code is the installed machine including the batteries, this is a descriptive code for certification compliance and product identification, etc. ELD9110.015 = Total Price of installed system.

Actual order codes for processing with GID codes are as below:

- ELD9110.015X – Machine
- ELD9110.015B – Battery

Commercial rating		ICEL rating		1 hour duration	1.5 hour duration	2 hour duration	3 hour duration
VA	Watts	VA	Watts	EMEX Power part no.	EMEX Power part no.	EMEX Power part no.	EMEX Power part no.
1500	1275	1250	1063	ELD9110.015	ELD9151.015	ELD9210.015	ELD9310.015
3000	2550	2500	2125	ELD9110.030	ELD9151.030	ELD9210.030	ELD9310.030
4500	3825	3750	3188	ELD9110.045	ELD9151.045	ELD9210.045	ELD9310.045
6000	5100	5000	4250	ELD9110.060	ELD9151.060	ELD9210.060	ELD9310.060
7500	6375	6250	5313	ELD9110.075	ELD9151.075	ELD9210.075	ELD9310.075
9000	7650	7500	6375	ELD9110.090	ELD9151.090	ELD9210.090	ELD9310.090
10500	8925	8750	7438	ELD9110.105	ELD9151.105	ELD9210.105	ELD9310.105
12000	10200	10000	8500	ELD9110.120	ELD9151.120	ELD9210.120	ELD9310.120
13500	11475	11250	9563	ELD9110.135	ELD9151.135	ELD9210.135	ELD9310.135
15000	12750	12500	10625	ELD9110.150	ELD9151.150	ELD9210.150	ELD9310.150
16500	14025	13750	11688	ELD9110.165	ELD9151.165	ELD9210.165	ELD9310.165
18000	15300	15000	12750	ELD9110.180	ELD9151.180	ELD9210.180	ELD9310.180
19500	16575	16250	13813	ELD9110.195	ELD9151.195	ELD9210.195	ELD9310.195
21000	17850	17500	14875	ELD9110.210	ELD9151.210	ELD9210.210	ELD9310.210
22500	19125	18750	15938	ELD9110.225	ELD9151.225	ELD9210.225	ELD9310.225
24000	20400	20000	17000	ELD9110.240	ELD9151.240	ELD9210.240	ELD9310.240

All EMEX systems are subject to price on application so to obtain a quotation and the correct part order codes or to order an EMEX Power system please contact your local ABB Emergilite sales office / representative.

EMEX Power: EMEX 230V AC/AC and EMEX 400V AC/AC

EMEX Power system codes:

EMEX Power - Three phase 380-415 V 50/60 Hz

Commercial rating		ICEL rating		1 hour duration	1.5 hour duration	2 hour duration	3 hour duration
VA	Watts	VA	Watts	EMEX Power part no.	EMEX Power part no.	EMEX Power part no.	EMEX Power part no.
4500	3825	3750	3188	ELD9130.045	ELD9153.045	ELD9230.045	ELD9330.045
9000	7650	7500	6375	ELD9130.090	ELD9153.090	ELD9230.090	ELD9330.090
13500	11475	11250	9563	ELD9130.135	ELD9153.135	ELD9230.135	ELD9330.135
18000	15300	15000	12750	ELD9130.180	ELD9153.180	ELD9230.180	ELD9330.180
22500	19125	18750	15938	ELD9130.225	ELD9153.225	ELD9230.225	ELD9330.225
27000	22950	22500	19125	ELD9130.270	ELD9153.270	ELD9230.270	ELD9330.270
31500	26775	26250	22313	ELD9130.315	ELD9153.315	ELD9230.315	ELD9330.315
36000	30600	30000	25500	ELD9130.360	ELD9153.360	ELD9230.360	ELD9330.360
40500	34425	33750	28688	ELD9130.405	ELD9153.405	ELD9230.405	ELD9330.405
45000	38250	37500	31875	ELD9130.450	ELD9153.450	ELD9230.450	ELD9330.450
49500	42075	41250	35063	ELD9130.495	ELD9153.495	ELD9230.495	ELD9330.495
54000	45900	45000	38250	ELD9130.540	ELD9153.540	ELD9230.540	ELD9330.540
58500	49725	48750	41438	ELD9130.585	ELD9153.585	ELD9230.585	ELD9330.585
63000	53550	52500	44625	ELD9130.630	ELD9153.630	ELD9230.630	ELD9330.630
67500	57375	56250	47813	ELD9130.675	ELD9153.675	ELD9230.675	ELD9330.675
72000	61200	60000	51000	ELD9130.720	ELD9153.720	ELD9230.720	ELD9330.720
76500	65025	63750	54188	ELD9130.765	ELD9153.765	ELD9230.765	ELD9330.765
81000	68850	67500	57375	ELD9130.810	ELD9153.810	ELD9230.810	ELD9330.810

Unity PF Designed Systems

EMEX Power - Single phase 220-240 V 50/60 Hz

Commercial rating		ICEL rating		1 hour duration	1.5 hour duration	2 hour duration	3 hour duration
VA	Watts	VA	Watts	EMEX Power Part no.	EMEX Power Part no.	EMEX Power Part no.	EMEX Power Part no.
1500	1500	1250	1250	ELD8110.015	ELD8151.015	ELD8210.015	ELD8310.015
3000	3000	2500	2500	ELD8110.030	ELD8151.030	ELD8210.030	ELD8310.030
4500	4500	3750	3750	ELD8110.045	ELD8151.045	ELD8210.045	ELD8310.045
6000	6000	5000	5000	ELD8110.060	ELD8151.060	ELD8210.060	ELD8310.060
7500	7500	6250	6250	ELD8110.075	ELD8151.075	ELD8210.075	ELD8310.075
9000	9000	7500	7500	ELD8110.090	ELD8151.090	ELD8210.090	ELD8310.090
10500	10500	8750	8750	ELD8110.105	ELD8151.105	ELD8210.105	ELD8310.105
12000	12000	10000	10000	ELD8110.120	ELD8151.120	ELD8210.120	ELD8310.120
13500	13500	11250	11250	ELD8110.135	ELD8151.135	ELD8210.135	ELD8310.135
15000	15000	2500	12500	ELD8110.150	ELD8151.150	ELD8210.150	ELD8310.150
16500	16500	13750	13750	ELD8110.165	ELD8151.165	ELD8210.165	ELD8310.165
18000	18000	15000	15000	ELD8110.180	ELD8151.180	ELD8210.180	ELD8310.180
19500	19500	16250	16250	ELD8110.195	ELD8151.195	ELD8210.195	ELD8310.195
21000	21000	17500	17500	ELD8110.210	ELD8151.210	ELD8210.210	ELD8310.210
22500	22500	18750	18750	ELD8110.225	ELD8151.225	ELD8210.225	ELD8310.225
24000	24000	20000	20000	ELD8110.240	ELD8151.240	ELD8210.240	ELD8310.240

EMEX Power - Three phase 380-415 V 50/60 Hz

Commercial rating		ICEL rating		1 hour duration	1.5 hour duration	2 hour duration	3 hour duration
VA	Watts	VA	Watts	EMEX Power Part no.	EMEX Power Part no.	EMEX Power Part no.	EMEX Power Part no.
4500	4500	3750	3750	ELD8130.045	ELD8153.045	ELD8230.045	ELD8330.045
9000	9000	7500	7500	ELD8130.090	ELD8153.090	ELD8230.090	ELD8330.090
13500	13500	11250	11250	ELD8130.135	ELD8153.135	ELD8230.135	ELD8330.135
18000	18000	15000	15000	ELD8130.180	ELD8153.180	ELD8230.180	ELD8330.180
22500	22500	18750	18750	ELD8130.225	ELD8153.225	ELD8230.225	ELD8330.225
27000	27000	22500	22500	ELD8130.270	ELD8153.270	ELD8230.270	ELD8330.270
31500	31500	26250	26250	ELD8130.315	ELD8153.315	ELD8230.315	ELD8330.315
36000	36000	30000	30000	ELD8130.360	ELD8153.360	ELD8230.360	ELD8330.360
40500	40500	33750	33750	ELD8130.405	ELD8153.405	ELD8230.405	ELD8330.405
45000	45000	37500	37500	ELD8130.450	ELD8153.450	ELD8230.450	ELD8330.450
49500	49500	41250	41250	ELD8130.495	ELD8153.495	ELD8230.495	ELD8330.495
54000	54000	45000	45000	ELD8130.540	ELD8153.540	ELD8230.540	ELD8330.540
58500	58500	48750	48750	ELD8130.585	ELD8153.585	ELD8230.585	ELD8330.585
63000	63000	52500	52500	ELD8130.630	ELD8153.630	ELD8230.630	ELD8330.630
67500	67500	56250	56250	ELD8130.675	ELD8153.675	ELD8230.675	ELD8330.675
72000	72000	60000	60000	ELD8130.720	ELD8153.720	ELD8230.720	ELD8330.720
76500	76500	63750	63750	ELD8130.765	ELD8153.765	ELD8230.765	ELD8330.765
81000	81000	67500	67500	ELD8130.810	ELD8153.810	ELD8230.810	ELD8330.810