

## EF 5 ELI Range



### EMERGENCY LIGHTING STATIC INVERTER Single Phase 150 – 1500 VA

The Effekta EF 5 ELI emergency lighting static inverter performs automatic load tests of the luminaires by monitoring the current they draw. There is no need for additional wiring, they are suitable for loads between 150 and 1500VA and where luminaires are directly connected to the system output.

Standard mains AC light fittings may be used as well as upgraded styles as and when required. 4 fused load paths with earth leakage detection can be monitored giving the user defined areas in which to easily locate faults, load flexibility allows any one load line to be maintained, non-maintained or switched. The systems are designed with space saving as a priority.

Through incorporating these additional features the Effekta EF 5 ELI range offers dependable emergency lighting systems that save time, money and comply with required industry standards.

### FEATURES

- Automatic load monitoring
- Highly compact design with wall or floor mount enclosure
- Front access
- Output earth leakage detection
- Integral 4 way fused distribution
- Fully compliant with BS EN 50171  
120% continuous overload  
10 year design life batteries and ageing factor
- Simple accessible smart LCD display for immediate detection/diagnosis
- Sine wave output
- Deep discharge protection for batteries
- Microprocessor control
- 3 x volt free contacts for remote monitoring or BMS
- Battery temperature compensation
- Reverse battery polarity protection
- Modular design improving reliability and serviceability

### OPTIONAL FEATURES

#### High IP Rating:

- Enclosure ratings are available from Standard IP 23 to maximum IP 54

#### Extended Run Times:

- Run times can be extended or reduced to suit specific applications

#### Other Frequencies:

- Can be configured for 60Hz operation

#### Remote Monitoring RS 232/LAN:

- The system can be monitored and interrogated remotely by local or networked PC

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**effekta**  
RANGE



## TECHNICAL DATA

EF 5 ELI Range	10D	20D	30D	40D	50D	60D	80D	100D
Output active power (W)	120	240	360	480	600	750	960	1200
Apparent output power (VA)	150	300	450	600	750	950	1200	1500

### INPUT

Number of phases	1
Nominal input voltage	230
Voltage tolerance	+ / - 10%
Nominal input frequency	50 Hz (+ / - 5%)

### OUTPUT

Nominal output voltage	220 / 230 / 240 VAC
Static voltage regulation	+ / - 3%
Nominal output frequency	50 Hz
Output frequency stability	0.1 Hz
Inverter wave shape	sine wave
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 7035 (other colours available)
Noise level	< 50 dBA @ 1m (free field conditions)

### BATTERY

Type	VRLA front terminal
Life expectancy	10 years @ 20°C
Ageing factor	included

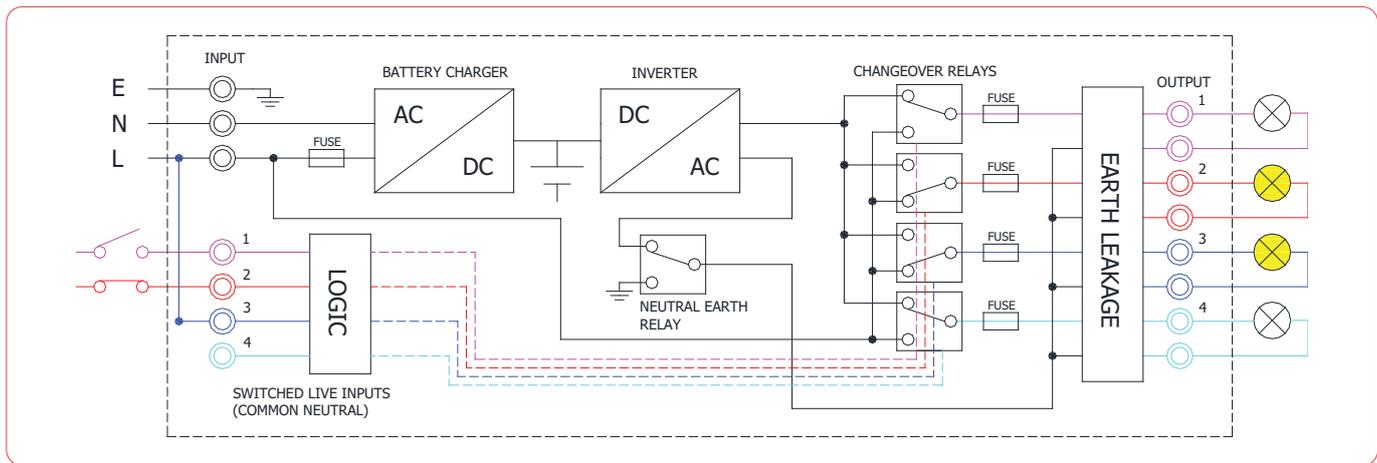
1 HOUR SYSTEMS	10D	20D	30D	40D	50D	60D	80D	100D
Enclosure (see Enclosures below)	SA							
Weight (Kg)	72	72	76	80	84	125	133	137

3 HOUR SYSTEMS	10D	20D	30D	40D	50D	60D	80D	100D
Enclosure (see Enclosures below)	SA	SA	SA	SA	SA	SAF	SAF	SAF
Weight (Kg)	72	79	115	120	128	183	228	234

DIMENSIONS	Height (mm)	Width (mm)	Depth (mm)
SA	750	500	325
SAF (Floor Standing)	1170	500	325

### STANDARDS

Emergency lighting	BS EN 50171
Safety	EN 62040-1
Emissions	EN 61000-6-3
Immunity	EN 61000-6-2
Batteries	BS 6290-4



## SYSTEM OPERATION

### Mains Healthy:

In passive standby the battery is continuously charged and the inverter is off ready for emergency operation. When configured for maintained operation the load is powered via the bypass circuits.

4 individually controlled bypass circuits allow 4 outputs to be configured as maintained/non-maintained or switched as required.

The circuit shows just one example of a mains healthy operating system condition.

Line 1 – switch maintained open position

Line 2 – switch maintained closed position

Line 3 – configured for maintained operation through hard-wire link from charger live input

Line 4 – disconnected for non-maintained operation

The lamps 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 configuration. The inverter will run for the duration of the mains failure or for the rated duration of the system (one or three hours). 4 Way distribution to the luminaires is provided by fuses individually protecting against short circuit. The load change, earth leakage and overload is individually monitored at each output.

## MONITORING

### Load Monitoring:

Once the reference load and the load tolerances are set (from 10VA for standard load or 3VA for LED loads) the weekly Auto Test monitors the load on each of the 4 output lines. The display will alarm and show specific line details if the load changes beyond the preset amount on any of the 4 lines. 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 or changeover relays.

### Battery Monitoring:

The Auto Test raises an alarm if the battery is discharging faster than predicted by comparing actual discharge current against a typical discharge curve. This critical emergency system feature provides early warning of battery failure. Manual Tests can support other testing and routine maintenance.

## PROTECTIONS

### Earth Leakage Protection settings of 30, 100 or 300mA:

If earth leakage is detected at any of the 4 output lines the system will disconnect the line and display the faulty line.

### Overload Protection:

During mains healthy conditions the overall load is monitored, overload is displayed and the buzzer sounds if the rated load is exceeded for more than 5 seconds.

During mains failure the overall load is monitored, overload is displayed and the buzzer sounds if the rated load is exceeded for more than 5 seconds. If the overload exceeds 120% of the rated load, then the inverter will reduce its output voltage to protect the inverter whilst continuing to supply power to the load.

### Fault Clearance:

During mains and battery operation, the system will clear short circuits on individual output lines whilst continuing to supply the remaining lines.

### Battery Disconnection Protection:

Battery connection is monitored to ensure continuity and if disconnected 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. To protect the battery from further discharge the discharge current is reduced to virtually zero by the system inducing sleep mode.

### Reverse Battery Polarity Protection:

The system is protected from reverse battery connection as required by BS EN 50171.

## FRONT TERMINAL VRLA BATTERY (10 YR LIFE)

EF 5 ELI are supplied with Front Terminal batteries as standard allowing for:

- Compact sizes
- Easy and safe battery maintenance

### Batteries are:

- Sized in accordance with BS EN 50171 allowing the system to supply the full rated output for the required duration after 10 years
- Charged in line with manufacturers recommendations

Automatic Temperature Compensation adjusts the battery voltage in line with ambient temperature. To maximise battery life, the ambient temperature should not exceed 20°C.

Batteries are mechanically segregated from the remainder of the system.

## 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 Detection
- Battery Disconnected
- Battery Low
- Battery Fault
- Earth Leakage
- Overload
- Short Circuit

- Charger Fault
- Fire Alarm Test in Progress
- 'Energy Save' mode

### Display Type:

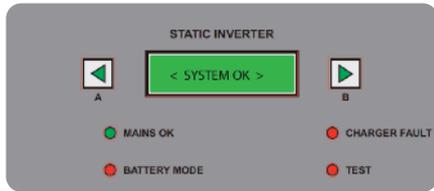
- 2 line x 16 Character LCD

### Metering:

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

### Other Information:

- Time and Date
- Auto Test Information
- Set Up Information



## REMOTE MONITORING / CONNECTIONS

### Volt Free Contacts:

Includes 3 volt free contacts for the following alarms;

- System in Battery Mode
- Load Alarm
- Common Alarm

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

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

### Fire Test Input:

The system simulates mains failure on receiving signals from the fire alarm or BMS via a dedicated set of terminals.

### Sub-Circuit Monitoring:

In the event of sub-circuit mains failure e.g. local distribution board breaker tripped, the system output is turned on by using the fire test input together with single or three phase remote monitoring devices.

### Energy Save / Night-Watchman Switch:

Turns off the maintained output via a single remote switch to avoid unnecessary energy consumption.

## ENCLOSURE

Front terminal batteries minimise space requirements in the EF5 ELI Range. The front access system requires no side or back room for maintenance or ventilation.

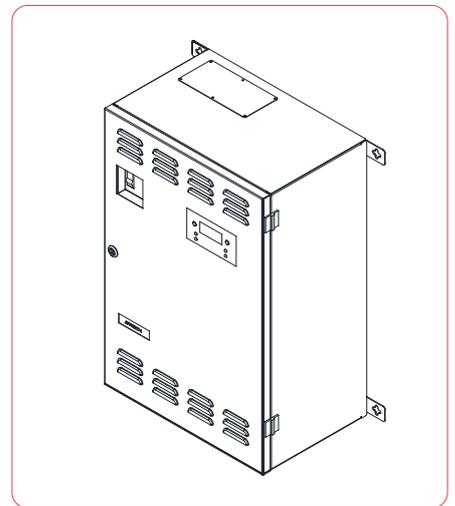
### Enclosure Features:

- Zintec Sheet Steel
- Lockable Door
- Top Cable Entry
- Removable Gland Plate

All 1 hour systems and 3 hour systems up to 50D are designed for wall mounting, mounting brackets are included as standard.

3 hour systems 60D and above are designed for floor standing and include extension and 100mm plinth as standard.

The SA enclosure



The SAF (floor-standing) enclosure

