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## 24V DC Operating Light Battery Backup Panel)

### Product Description

Fixed theatre operating lamps, including the main unit and any satellite units, should be connected to a battery back-up panel providing three hours of autonomy.

There is a requirement that Tertiary Power Supply Units use BS6290-4:1997 flame retardant 10-year VRLA batteries.

Our battery backup panels are fully compliant with current requirements. One Battery Backup Panel is required per set of operating lights / per operating theatre.

All battery backup panels are fully UKCA / CE Marked and manufactured in the UK.



### Configuration

Configuration	Charger	Battery	Discharge Current	Discharge Time	Enclosure Size	Enclosure Weight
220W	150W – 5.6A	38Ah	9.5A	3hr	600sq.x300d	60Kg
380W	200W – 7.5A	65Ah	16.0A	3hr	800sq.x300d	85Kg
490W	250W – 9.3A	78Ah	20.5A	3hr	800sq.x300d	90Kg
790W	500W – 18.0A	130Ah	33.0A	3hr	800sq.x400d	150Kg

Charger sized to deliver minimum 10% of battery Ah for optimum charging. Discharging characteristics are based on the standard Yuasa battery discharge curves. Equal or equivalent batteries are used.

### Features

The battery backup panel has the following features across all configurations.

### Features

Feature	Range	Factory Set
Adjustable Charger Voltage	25.6-29.7 VDC	27 VDC
Adjustable Charger Failure Alarm	6-30 VDC	26.5 VDC
Adjustable Battery Low Voltage Disconnect	6-30 VDC	20 VDC



## Indication

Each battery backup panel has the following visual indication on the enclosure door, or on the TCP fascia if an integrated system is chosen. 24VDC LED Indicators are used (except mains healthy which is 230VAC).

### Indication

Indicator	Function	Colour
Mains Healthy	Indicates when there is mains power to the panel.	White
Battery System General Fault	Indicates when the battery system has one or more of the following faults: Mains / Battery / Charger Failure, Mains to Power Module Failed	Red
Load On Battery	Indicates when the load (operating lights) is being supplied from battery power, this is usually due to a mains failure.	Amber

## Volt Free Contacts

Two common alarms V.F. contacts are provided for connection to the building management system (BMS) or Theatre Control Panel (TCP). Contacts are normally closed, open on a fault condition.

### Volt Free Contact Characteristics

Characteristic	Value	Characteristic	Value	Characteristic	Value
Input Range	85-264 VAC	Overload Protection.	105 – 135%	Output Tolerance	±1%
Input Inrush	40A Cold Start	Overload Type	Constant Current	Ripple & Noise	150-200mV
Efficiency	83-88%	Auto Recovery	Yes	Forced Air Cooled	Yes (>200W)
Built In Active PFC	Yes (0.93-0.95)	Over-voltage Protection.	115 – 135%	Working Temp.	-10°C - +50°C

## Environmental Requirements

Batteries function at their optimum within a narrow temperature window 20-25°C.

Below this temperature and the battery's ability to deliver current is reduced. Above this temperature and the battery's lifespan is reduced.

### Battery Lifespan

Temperature	20°C	25°C	30°C	35°C	40°C	45°C
Float Life	100%	100%	80%	60%	40%	20%

## Theatre Control Panel Integration

Battery backup configurations up to 490W can be built into our standard sTCP range of Theatre Control Panels. This reduces cost, space, and on-site cabling. eTCP integration is possible with the addition of the lower equipment enclosure upgrade.



### Operating Light Power Module Integration

When using Operating Lights, the battery backup panel can contain the operating light power modules, thus reducing on-site cabling and making future maintenance access easier.

Additionally, it is possible to mount third-party power supply modules and change over relays dependent upon the operating light configurations and manufacturer's types.

These items would need to be free issued to Starkstrom for inclusion into the battery backup panel.

It should be noted that this may affect the final price when compared against that of the standard battery backup panel, as the panel size may have to be changed to accommodate the third-party components.

## Product legislation and standards of conformity

EU Ref	EU Title	UK Ref	UK Title
2014/ 35/EU	Low Voltage Directive	2016/ 1101	Electrical Equipment (Safety) Regulations 2016
2014/ 30/EU*	Electromagnetic Compatibility Directive	2016/ 1091	Electromagnetic Compatibility Regulations 2016
2011/ 65/EU	Restriction of Hazardous Substances (RoHS) Directive	2012/ 3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Reference	Title	Edition
EN 60947-1	Low-voltage switchgear and control gear - General rules	2007+A2:2014
BS EN 60947-6-1	Low-voltage switchgear and control gear - Multiple function equipment. Transfer switching equipment	2005+A1:2014
EN 61000-6-1*	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	2019
EN 61000-6-3*	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	2021
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	2018
HTM 06-01	Health Technical Memorandum 06-01	2017

\* EMCD only applies to active devices like contactors, not to manual switching.

