

24VDC Operating Light Battery Back-up Panel

Requirement

It is a requirement of HTM06-01 (sec.16.78) that all fixed theatre operating lamps, including the main unit and any satellite units, should be connected to a battery unit providing three hours of autonomy. It is a further requirement of HTM06-01 (sec.10) that Tertiary Power Supply Units use BS6290-4:1997 flame retardant 10 year VRLA batteries. Starkstrom battery backup units are compliant with both of these points. One Battery Backup Panel is required per set of operating lights / per operating theatre.

Table 1: 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. Discharge 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.

Table 2: 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 system 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).

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) are being supplied from battery power, this is usually due to a mains failure.	Amber

Volt Free Contacts

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

Table 3: 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.

Table 4: 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 Starkstrom 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 as supplied by Starkstrom, 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 3rd 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 back up. It should be noted that this may effect the final price when compared against that of the standard battery back, as the panel size may have to be changed to accommodate the third party components.

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