

Loadstar AC/DC Systems



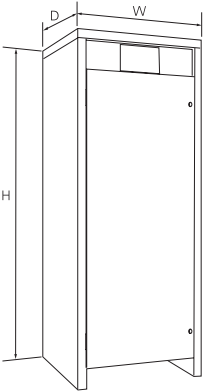
The Loadstar range of AC/DC central battery units comply with the latest relevant European and British standards. High quality, cost effective units provide secure sources of emergency power for escape and emergency lighting systems in a wide variety of installations. Many years of experience, gained whilst designing and manufacturing systems to customer requirements, have led to the current modular concept based on a basic specification, combined with a choice from five battery types and a number of standard optional extras. This enables the specifier to choose a standard product and select optional extras as required to customise the equipment to meet the project requirements.

- High specification systems
- Fully complies with BS EN50171:2001
- Digital display to clearly indicate system status
- Maintained or non-maintained versions with 1, 2 or 3 hour duration
- EasiCheck compatible versions available
- Simple operation and reduced complexity
- Low maintenance
- Low running cost

System Operation

- In mains healthy condition, the system charges the batteries and stores power, ready for emergency operation
- In the event of a mains failure, the system provides emergency power to dedicated slave or converted mains luminaires, until mains power is restored (or for the rated duration of the system in the event of extended mains failure)
- Output voltage from the system batteries is 24, 50 or 110V DC nominal
- Conversion modules or dedicated slave ballasts within the luminaire convert the output of the central system to operate the emergency lamp
- Systems are available with non-maintained or maintained circuit operation
- Sub-circuit monitoring and hold off relays can be added to the system to energise the emergency luminaires in the event of a localised mains circuit failure
- Converted luminaires have a combined inverter and changeover relay in each host luminaire
- Full detail of modes of operation is shown from page 376 - 379

Dimensions



Cubicle Ref	H (mm)	W (mm)	D (mm)
931	1200	715	680
932	1800	715	680
934	1800	1015	680

Dimensions are for guidance only and may be subject to change

Standard Specification

- **Cubicles**
 - 1.6mm zinc coated steel panels with powder coat RAL7032 light pebble grey finish
 - Plinth base feature to prevent build up of moisture/corrosive materials and aid mechanical handling by fork or pallet truck
 - 3 standard size cubicles, for combined charger/battery, charger only or battery only
 - Most systems require only one cubicle. Some larger systems are housed in multiple sets (see selection tables)
 - Electrical control gear and battery compartments are segregated, with lockable access door(s)
 - Battery compartments supplied, where appropriate, with separate tiered sections to enable ease of electrolyte level inspection
 - Separate fixed fascia panel for mounting control/display panel
 - Option of open battery racks on larger systems

- **Battery Charger**
 - Solid state, constant voltage charge control module
 - Fully automatic
 - Full recharge within 24 hours of a rated discharge
 - Recharge to 80% capacity within 12 hours, complying with BS EN 50171:2001
 - Manual boost switch on systems with vented battery cells
 - Current limit facility, preventing overcharging or damage to the system in the event of battery failure or fault
 - Outputs have low AC ripple currents for maximum battery life and in compliance with BS EN 50171:2001
 - Input protection by MCB to BS 3871 Part 1 or BS 4752 Part 1
- **Battery**
 - Systems can be specified with:
 - Valve regulated lead acid - 5 year design life
 - Valve regulated lead acid - 10 year design life
 - Vented nickel cadmium
 - High performance plate
 - Flat plate
 - See selection tables/guides for battery characteristics
- **Fuse Gear**
 - Removable industrial HRC fuses, complying with BS 88
- **Input Circuits**
 - Cable entry via removable gland plate on top of cubicle
 - Single phase 230V \pm 10% AC 50Hz supply. Other input voltages on request
 - Input terminals and MCBs DIN-rail mounted and easily accessible
- **Load Circuits**
 - Substantial DIN-rail mounted output terminals
 - 2 terminals per output pole for ease of connection of ring or parallel circuits
 - Option of integral distribution board (MCB or HRC fuses)
- **Monitoring Circuits**
 - Terminals provided for connection of remote monitors and controls
 - Maintained systems have terminals for connection of remote switch or time clock on primary control circuit
- **Cables**
 - Compliant with BS 6231
- **Transformer**
 - Double wound with earth screen to BS 171
- **Rectifier**
 - Full wave controlled thyristor/diode bridge
- **Contactor**
 - Mains failure contactor to BS 5424 Part 1
- **Temperature Compensation**
 - All lead acid cell systems supplied with transducer to monitor battery compartment temperature
 - Chargers pre-set for optimum performance in 20°C ambient
 - Charging voltage automatically adjusted to optimise battery life

- **Low Battery Voltage Disconnect Circuit**
 - Fitted as standard to lead acid cell systems
 - Automatically disconnects load from battery when battery voltage falls below pre-set level, during extended periods of mains supply failure
 - Helps prevent potential damage from deep discharge
 - Indicator remains lit until mains power restored and reset pressed
- **Test Push Button**
 - Simulates a mains failure
- **Metering and Display Panel**
 - Simple and easy to read status display
 - LCD meter indicating battery voltage, battery current or battery compartment temperature. Voltage is default, others displayed using push buttons. Display mode indicated by LED:
 - Volts
 - Amps
 - Temperature - lead acid batteries only
 - Charger indication LEDs
 - Power On
 - Maintained Lights (maintained systems only)
 - Float Mode
 - Current Limit
 - Full Charge
 - Boost mode (vented battery systems only)
 - Alarm indication LEDs
 - Mains Fail
 - Charge Fail
 - Battery High Volts
 - Battery Low Volts
 - DC Earth Fault
 - Deep Discharge Protection (protection circuit has operated)
 - Audible alarm fitted internally, with mute button on display, plus common volt free contacts for remote signalling of a fault condition and terminals for optional remote alarm unit

Installation Notes

- A full set of installation, operating and maintenance instructions is supplied with each system to assist the installer carry out the work efficiently and safely
- Adequate ventilation has been provided in the cubicle to allow a safe dispersal of gases but it is important to remember that when choosing where to locate systems, particularly those with large batteries, attention must be paid to ensuring a build-up of potentially explosive gases is avoided
- Please refer to the system design (see page 380) section for details of ventilation calculations
- Warning notices should be displayed on entry doors to battery rooms:

BATTERY ROOM. EXTINGUISH ALL NAKED LIGHTS BEFORE ENTERING. NO SMOKING



Factory Fitted Options

- **Dual Output Options**
 - Separate circuits on maintained systems for non-maintained and maintained luminaires/exit signs
 - Suffix - MNM
- **3 Phase Failure Monitor**
 - Detects phase failure and energises output from the battery
 - Suffix - P
- **Multi-way Sub Circuit Monitor**
 - Detects mains lighting circuit failure and energises output from the battery
 - Monitoring relays fitted inside cubicle and require supply from each mains lighting circuit
 - Suffix - xMPF (x = number of circuits)
- **Integral Distribution Board**
 - For output load circuits. MCB or HRC fuses
- **Fire Alarm Relay**
 - Input contacts from building fire alarm panel
 - Energises output from the battery when alarm signal received

Remote Mounted Options

- **Remote Alarm Unit**
 - Visual and audible indication of system fault
 - Sounder mute facility
 - Surface mounting dimensions: (H)114 x (L)114 x (D)25mm
 - Suffix - RAU2
- **Sub Circuit Monitor**
 - Non load switching
 - Monitors mains lighting circuits. Provides signal to central battery unit in the event of a sub circuit failure
 - Standard units available to monitor 4, 8 or 12 sub circuits
 - Multiple units can be used if more than 12 circuits require monitoring
 - A keyswitch can be fitted if required, to enable simple testing by authorised user
 - Unit dimensions: H250 x L265 x D130mm
- **Hold Off Relay Monitors**
 - Load switching
 - Used to hold off maintained output from central battery unit, providing non-maintained luminaire operation
 - Monitors mains lighting circuits. In the event of a sub circuit failure, contactor drops out, allowing the maintained supply to energise the emergency luminaires
 - Standard units available to monitor 4, 8 or 12 sub circuits
 - A keyswitch can be fitted if required, to enable simple testing by authorised user
 - Unit dimensions: H250 x L265 x D130mm



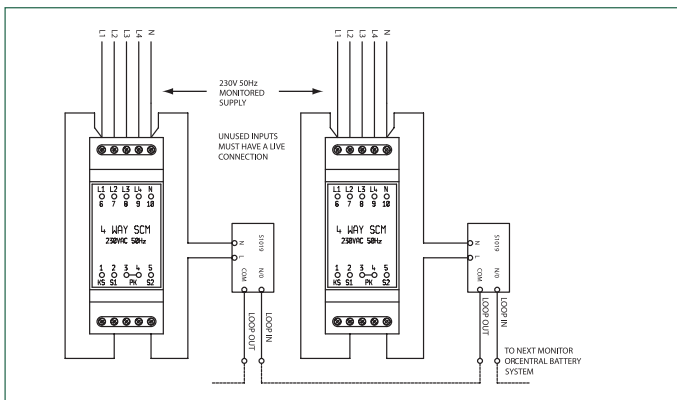
Hold off relay monitor

Catalogue Numbers

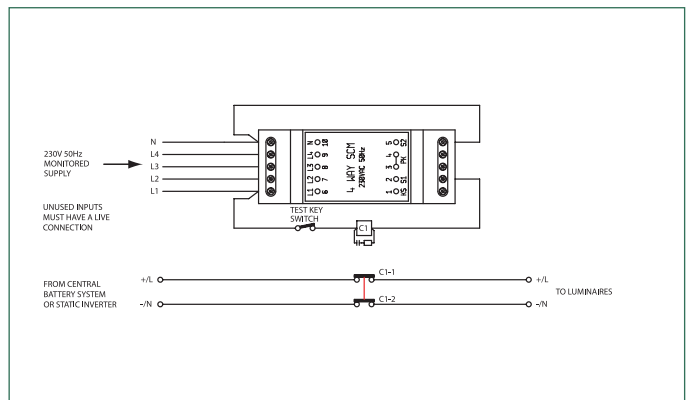
Number of Ways Monitored	Cat No of Sub Circuit Monitor	Cat No of Hold Off Relay Monitor
4	1SCM4	1HOR4
8	1SCM8	1HOR8
12	1SCM12	1HOR12

Use suffix /TS for addition of a test keyswitch, /NI for indicator, /RT for run on timer and /EC for EasiCheck

SCM and HOR units are designed to accept a single common neutral per enclosure, all monitored circuits connected to an individual unit must share a common neutral.



Typical sub-circuit monitor arrangement



Typical hold off relay arrangement

Systems with Valve Regulated Lead Acid Batteries

- Compact
- Reliable
- Cost effective
- Maintenance free
- Available with 3-5 year or 10 year design life batteries
- Low battery voltage disconnect circuit fitted as standard
- Charger temperature compensation fitted as standard

Selection Table: SLR Range - 10 year design life batteries

System Reference	Volts	1 Hour		2 Hour		3 Hour		Cubicle
		Watts	Amps	Watts	Amps	Watts	Amps	
SLR24/20*	24	250	10.6	152	6.4	110	4.7	†930
SLR24/28*	24	344	14.8	198	8.5	146	6.2	†930
SLR24/40*	24	572	24.7	326	14.0	243	10.4	†930
SLR24/75*	24	854	37.0	490	21.0	364	15.6	†930
SLR24/95*	24	1142	49.4	653	28.1	485	20.8	†930
SLR24/120*	24	1392	60.8	826	35.8	605	26.0	†931
SLR24/150*	24	1882	81.6	1104	47.6	797	34.1	†931
SLR24/200*	24	2285	98.7	1306	56.2	970	41.6	†931
SLR24/260*	24	3230	138.0	1695	69.0	2343	58.4	†932
SLR24/300*	24	3677	156.0	2123	90.8	1556	65.0	†932
SLR50/20*	50	500	10.6	303	6.4	220	4.7	†931
SLR50/28*	50	687	14.8	396	8.5	292	6.2	†931
SLR50/40*	50	1144	24.7	653	14.0	486	10.4	†931
SLR50/75*	50	1708	37.0	979	21.0	728	15.6	†931
SLR50/95*	50	2285	49.4	1306	28.1	970	20.8	†931
SLR50/120*	50	2734	60.8	1651	35.8	1210	26.0	†932
SLR50/150*	50	3763	81.6	2208	47.6	1594	34.1	†932
SLR50/200*	50	4570	98.7	2611	56.2	1939	41.6	†932
SLR50/260*	50	6461	138.0	3389	69.0	2733	58.4	†934
SLR50/300*	50	7354	156.0	4246	90.8	3111	65.0	†934
SLR110/20*	110	1126	10.6	682	6.4	496	4.7	†931
SLR110/28*	110	1547	14.8	890	8.5	657	6.2	†931
SLR110/40*	110	2575	24.7	1469	14.0	1093	10.4	†932
SLR110/75*	110	3845	37.0	2203	21.0	1637	15.6	†932
SLR110/95*	110	5141	49.4	2938	28.1	2182	20.8	†932
SLR110/120*	110	6264	60.8	3715	35.8	2722	26.0	†934
SLR110/150*	110	8467	81.6	4968	47.6	3586	34.1	†934
SLR110/200*	110	10282	98.7	5875	56.2	4363	41.6	†934
SLR110/260*	110	14537	138.0	7325	69.0	6150	58.4	†932 + 932
SLR110/300*	110	16546	156.0	9554	90.8	6950	65.0	†932 + 934

* Specify /NM1, /NM2, /NM3, /M1, /M2 or /M3 as appropriate

† See page 390 for cubical dimensions

Systems with Vented Nickel Cadmium Batteries

- Extremely robust over a wide temperature range
- Reliable, with a 25 year service life
- Good “through life” costs
- Resistant to electrical and mechanical abuse
- Can be stored in any state of charge without damage
- Automatic and manual boost circuits fitted as standard

Selection Guide: NC Range

System Reference	Volts	1 Hour		2 Hour		3 Hour		No of Cells
		Watts	Amps	Watts	Amps	Watts	Amps	
NC24 Series	24	186 - 3078	7.7 – 126.9	118 - 1979	4.9 – 82.1	83 - 137	3.4 – 57.1	20
NC50 Series	50	389 - 6412	7.7 – 126.9	246 - 4122	4.9 – 82.1	174 - 2872	3.4 – 57.1	42
NC110 Series	110	855 - 14106	7.7 – 126.9	542 - 9070	4.9 – 82.1	383 - 6319	3.4 – 57.1	92

This table provides only an overview of possible system configurations. Contact our central systems technical sales department for full details, including cubicle types required. Non-maintained or maintained operation can be specified on all systems

Systems with High Performance Plante Batteries

- 25 year service life
- Reliable
- Retains virtually full capacity throughout design life
- Low battery voltage disconnect circuit fitted as standard
- Charger temperature compensation fitted as standard

Selection Guide: HP Range

System Reference	Volts	1 Hour		2 Hour		3 Hour		No of Cells
		Watts	Amps	Watts	Amps	Watts	Amps	
HP24 Series	24	236 - 2379	10.0 - 102.2	148 - 1474	6.3 - 61.8	111 - 1111	4.6 - 46.2	13
HP50 Series	50	473 - 4758	10.0 - 02.2	296 - 2948	6.3 - 61.8	223 - 2215	4.6 - 46.2	26
HP110 Series	110	1001 - 10065	10.0 - 02.2	627 - 6237	6.3 - 61.8	473 - 4686	4.6 - 46.2	55

This table provides only an overview of possible system configurations. Contact our central systems technical sales department for full details, including cubicle types required. Non-maintained or maintained operation can be specified on all systems.

Systems with Flat Plate Batteries

- 10 year service life
- Low battery voltage disconnect circuit fitted as standard
- Charger temperature compensation fitted as standard

Selection Guide: HP Range

System Reference	Volts	1 Hour		2 Hour		3 Hour		No of Cells
		Watts	Amps	Watts	Amps	Watts	Amps	
FP24 Series	24	247 - 1482	10.6 - 63.6	164 - 983	6.6 - 39.6	122 - 733	5.0 - 30.0	13
FP50 Series	50	475 - 2850	10.6 - 63.6	315 - 1890	6.6 - 39.6	235 - 1410	5.0 - 30.0	26
FP110 Series	110	1045 - 6270	10.6 - 63.6	693 - 4158	6.6 - 39.6	517 - 3102	5.0 - 30.0	55

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