APPLIED SATELLITE ENGINEERING

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Contact information.

Contact us at anytime to discuss your particular application and needs.

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harland simon
power solutions

Installation and Commissioning Manual

For Harland ProtectUPS Citadel DC UPS

HPU-M-0001

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power solutions

This Manual contains important instructions relating to your UPS system

KEEP IT IN A SAFE PLACE

WARNING!

The battery Charger enclosure has dangerous voltages present and should only be opened by trained personnel. The unit has power available even when disconnected from the mains supply.

How to contact us:

If you have a problem, a query, or require details of our product range and service/maintenance contracts contact our Engineering Department at the following address.

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Contents

Appendix Contents

1 Safety Information

1.1 Manual

Please read this manual thoroughly before installing or using the equipment. If you are unsure on any point, please contact your supplier or ourselves for assistance before attempting installation or use.

1.2 Battery Suitability

This equipment is only to be used with the battery specified in section 2. Do not attempt to operate it with any other type or size of battery.

1.3 Battery Handling

Batteries can produce very high short circuit currents. There is a serious danger of burns from metal items that fall across the battery terminals. Do not wear metal watches or jewellery when handling batteries and always use insulated tools when making battery connections to avoid the possibility of causing a short circuit.

1.4 Connection of Battery Blocks

When connected in series to give the correct voltage, batteries should be in a similar state of charge. Do not mix new battery blocks with old ones.

1.5 Charger Installation

This charger is for installation in a sheltered location. It must be installed only in the normal orientation with the battery at the bottom of the enclosure. Suitable cable glands must be used on input and output cables in order to prevent water ingress.

1.6 Servicing

Refer servicing and repair to the manufacturer. There are no user-serviceable parts within the charger module.

1.7 Earthing

Make sure that the earth terminal within the UPS unit is properly connected to earth.

2 Specification

DC UPS Type:	Harland Protect UPS Citadel DC UPS
Battery:	Valve recombination lead acid type of 24 Ah rated capacity (at the 20 hour rate). 10 year design life. 2 off Lead Crystal 6-CNFJ-24.
AC Supply:	230V (90-264V) 50/60 Hz single phase/IT Supply Recommended upstream circuit protection is 6A.
Inrush Current:	30/60A at 115/230V
Leakage current:	<3.5 mA max.
Output:	24V DC nominal.
Charger Type:	Constant voltage switched mode type.
Float Voltage:	27.3V
Charger Rating:	2.5 Amps.
Output Earth:	Output is floating (not connected to earth on either pole)
Max. Load:	1 A continuous or 6 A peak.
Autonomy:	100 Hours Powered Standby (0.2A) OR 55 Hours Talk Time (0.35A) when supporting ASE-Citadel System
Ripple and noise:	50mV pk-pk (20Mhz bandwidth) Switching frequency approx 100KHz
EMC	Immunity: EN61000-4-3 Radiated EN61000-4-2 ESD Emission: EN55022 Level B Conducted
CE Marking	Unit is CE marked for LVD and EMC.
Enclosure:	IP55 rating to IEC60529
Temperature:	-40 to +60°C ambient. (Please note that battery life will be reduced at temperatures above 61°C)

Dimensions:	520mm high x 400mm wide x 210mm deep approx.
Weight:	32 Kg approx. (including batteries)
Terminals:	AC input and DC output MCB terminals are suitable for up to 4mm^2 cable.

3 Description

3.1 Purpose

This DC Uninterruptible Power Supply (UPS) unit is designed to provide a constant source of power for communications equipment. If the normal mains supply fails, the unit will continue to supply the load without a break for a duration which will depend upon the level of loading.

3.2 Charging Method

The battery is charged with a constant voltage. Normally the battery draws only the current that it requires to remain fully charged. A current limit circuit restricts the charging current to within the rating of the charger components when a discharged battery is being recharged.

3.3 Panel Controls and Indications

The “Charger Healthy” indicator on the door shows that output is available from the battery charger. This will go out when the mains fails. The input and output circuit breakers are internally mounted.

4 Installation

4.1 Mounting

The unit must be installed in a sheltered location. Avoid installing in a high temperature location as this will cause battery life to be substantially reduced. Fix to a suitable wall or bulkhead using all four fixing holes provided. If necessary, temporarily remove the batteries and plywood spacer to gain access to the lower two fixing holes. Space must be allowed around the charger to allow the heat generated within to escape. Avoid installing where the unit could be covered.

4.2 Wiring

Mains: Connect the mains input to the terminals provided.

Battery: The batteries are supplied already installed but with the series link between the two blocks removed for safety in transit. This link should only be fitted when the unit is completely ready for commissioning and permanent energisation.

Load: The load goes to MCB2 + and - terminals.

5 Commissioning

Check that all field wiring is complete and that the battery polarity is correct. Both MCBs should be switched off before connecting the battery link between the two battery blocks. Energise the mains supply and close MCB1. The “Charger Healthy” indicator should illuminate. After a time which is dependent on the battery state of charge (with new fresh batteries this will be about an hour) measure the battery voltage with an accurate digital multimeter. The voltage measured should be within 1% of the stated float voltage given in the specification section of this manual.

Test the system by switching off the mains (external to the charger) and ensuring that the battery takes over supplying the load.

6 Fault Finding

The following points should be checked in the event of a fault and before calling for service:

The “Charger Healthy” LED does not light
Check that mains supply is present at the input terminals and that MCB1 is closed. Switch off the load by opening MCB2. If this does not highlight the problem, the battery may be faulty. Try removing the battery link. If the LED now comes on, the battery may be partially short circuit. If this is the case, replace the battery.

The unit does not supply the load on mains failure
Check that “Charger Healthy” LED is illuminated. If not, see above.
Check battery connections.
The battery may be faulty (open circuit or high impedance).

7 Maintenance

7.1 Isolation

Isolate the charger from the mains and disconnect the battery link before undertaking any disassembly of the charger unit. If the unit is to be powered down during an extended mains interruption, be sure to isolate the battery (by switching off MCB2 and removing the battery link) so that it will not become discharged.

7.2 Battery

In order to avoid permanent damage due to over-discharge, the batteries must be kept charged at all times when not in use. Shelf life of Lead Crystal Batteries before recharge is 24 months (depending on temperature) or when the open circuit terminal voltage of any block falls below 12.6 V. The blocks should be recharged in the unit or with a constant voltage charger at 2.45V per cell (14.7 Volts per block) for a minimum of 3 days. Alternatively if battery capacity falls below 80% or rated capacity, carry out 2 full discharge/recharge cycles to recover to 100%.

A short duration discharge test or heavy current discharge test on the battery blocks is advisable periodically (maybe annually) to check their integrity.

Battery Replacement Procedure: Switch off mains upply, remove battery straps, disconnect battery, fit new battery and reverse procedure.

7.3 Charger

The charger requires no routine maintenance other than periodic cleaning. Isolate input and battery before undertaking cleaning. No attempt should be made to adjust the potentiometer within the charger module. This is carefully set during manufacture and is sealed in position. To confirm correct operation of the charger, the battery float voltage should be measured periodically and should be within 1% of the stated float voltage (see specification).

To change the charger module, switch off mains supply, disconnect battery, note position of and disconnect wires to old charger module and remove it. Fit new module and reverse procedure.

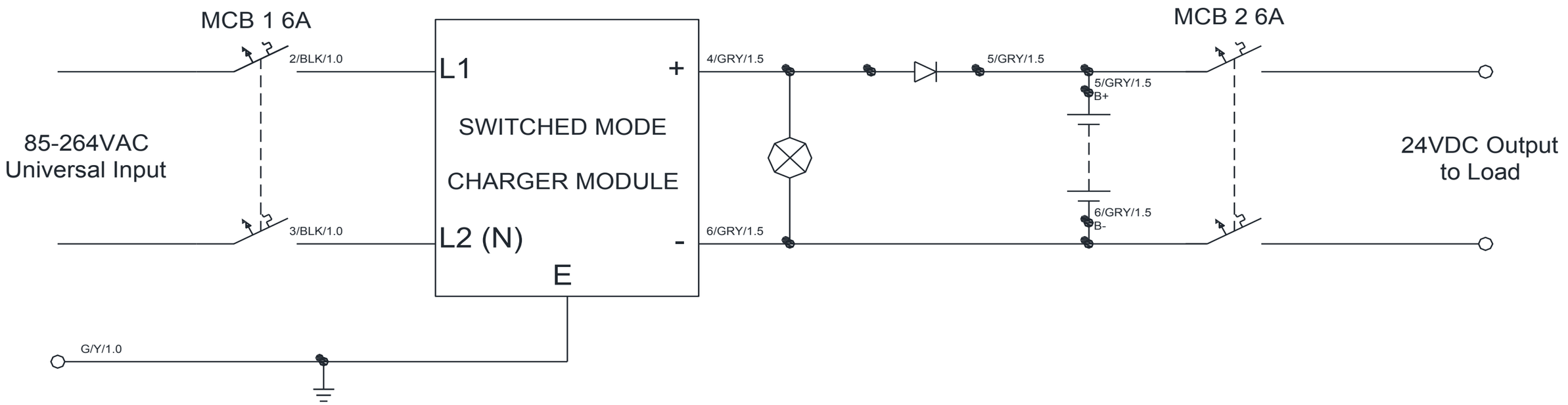
8 Spare Parts

Component	Circuit Ref.	Harland Simon Ref.	Details/Rating	Qty
Battery		6-CNFJ-24	12V 24Ah Lead Crystal	2
Bracket		010-CITADEL-02	Battery Bracket	2
Charger Module		008-DRAN60-24-24VPSU	24V 2 Amps	1
2 Pole MCB	MCB1	EPC62C06	6 Amp C type 6KA	2
Diode	D1	625-5199	3A 400V	1
Enclosure		NSYCRN54200	500H x 400W x 200D	1
Enclosure Breather		060-NSYCAG12LPH1		1
Label		Citadel-LB-01	Enclosure Label	1
LED Indicator	LED1	062-1719076	22mm hole	1
Terminal 2.5mm	E	101000	Earth 2.5mm	1
Terminal Accessory		106120	End stop	5

Note: Spare charger modules are pre-adjusted during manufacture and contain no user-serviceable parts.

1	2	3	4	5	6	7	8

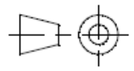
Leave interconnecting battery link unconnected for transport.



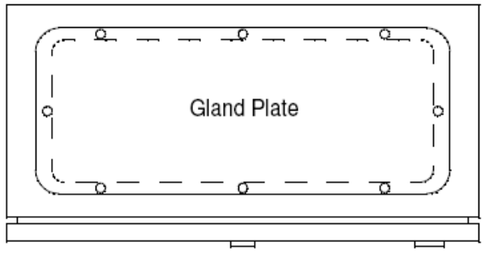
DRAWING HISTORY

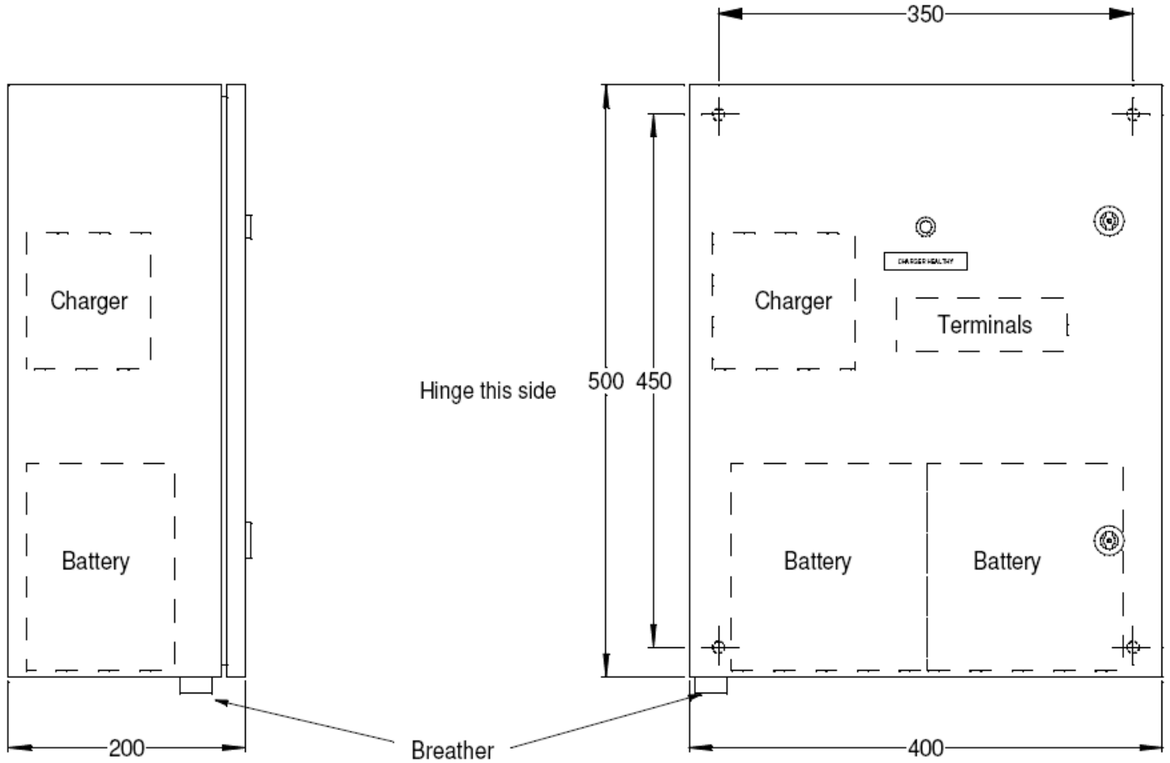
Drawn	Approved	CHANGE	REV
NW	AP	Initial Release	01

3rd Angle Projection	Harland Simon UPS Ltd. Milton Keynes England	All Dimensions in MM Unless Otherwise Stated.	Date: 20/08/14	Description: 24VDC CITADEL UPS Wiring Diagram With LCB	Sheet 1 of 1
		Project Title: Citadel DC UPS System		Drawn By: NW	Drawing No. HPU-M-0001-WD
		Customer:		Approved By: AP	Rev No: 01



TOP VIEW





4 Off Fixing holes 10mm Dia.

Paint Finish:
RAL7035 Light Grey Textured

Weight: 31 Kg Approx.

THIRD ANGLE PROJECTION NOT TO SCALE ALL DIMENSIONS IN mm

Issue	Mod. No.	Approved	Date
A			

Title

CITADEL BATTERY BACKUP
24V DC UPS

Drawn	Approved	Date
TPM		23/5/11

Drawing No. G3936