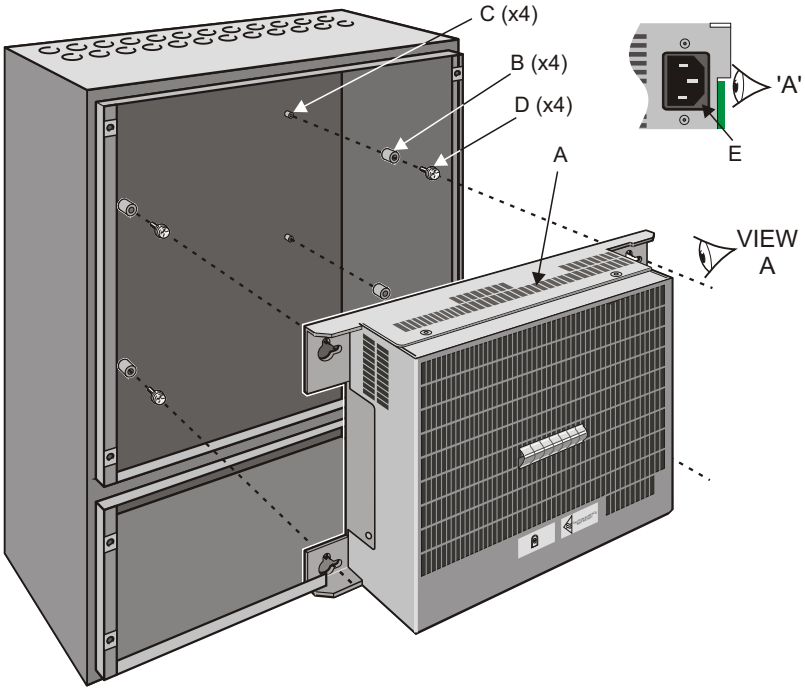
Installing the Kit PSU7A Assembly

The Kit PSU7A Assembly (PN: 020-579) is simple to fit to an ID2000/3000 Series Extended Deep Back Box or in a Remote Battery/PSU Enclosure, providing the instructions described below are followed. The PSU must be fitted BEFORE installing the main chassis in the Back Box. The PSU Assembly is secured to the Back Box or Remote Battery/PSU Enclosure using four M4 x 16 SEM screws and nylon spacers. A DTP/Booster module MUST be fitted to the ID3000 chassis when using a PSU7A.

Your Kit PSU7A, PN: 020-579, should contain:

PSU Assembly	PN: 010-114
M4 x 16 SEM screws (4 off)	PN: 776-043
Nylon spacers (4 off)	PN: 423-309
Battery interlink cable	PN: 082-218
Orange wire (1 off)	PN: 982-198
Green wire (1 off)	PN: 982-201
Ribbon cable assembly with ferrite	PN: 082-171-003
Thermistor assembly	PN: 082-223
Battery lead, 50/0.25, Red (1 off)	PN: 082-214-005
Battery lead, 50/0.25, Black (1 off)	PN: 082-214-006
Red wire (1 off)	PN: 914-161
Black wire (1 off)	PN: 914-162
Ferrite (1 off)	PN: 670-068
IEC Cable assembly	PN: 082-254
Cable clips (4 off)	PN: 233-229
Cable tie	PN: 233-144
Fuse T 10A H	PN: 570-153
2-way link connector (2 off)	PN: 542-074
Ratings Label	PN: 345-405
Anti-Static Warning instructions	PN: 997-180



Check Your Equipment....

Taking suitable precautions, before proceeding with the installation, remove all packaging and inspect contents for any damage that may have occurred during transit. If no damage is evident, proceed using the instructions below. In the unlikely event that damage has occurred, or any items are missing, DO NOT PROCEED, contact your supplier and refer to the panel Installation & Commissioning Manual.

Observing all necessary precautions, proceed with the installation of the PSU Assembly to the Back Box.

A Cautionary Note....

During this procedure, various wiring connections are to be made and it is important that the manufacturer's recommendations are followed to avoid the possibility of damage occurring to wiring when fitting the PSU Assembly.

Procedure for Fitting the Kit PSU7A Assembly into a Deep Back Box

It is recommended that the PSU end of all wiring connections (see overleaf) is made BEFORE the PSU assembly is fitted into the Back Box.

To fit the PSU assembly (A) into the Back Box, proceed as follows:

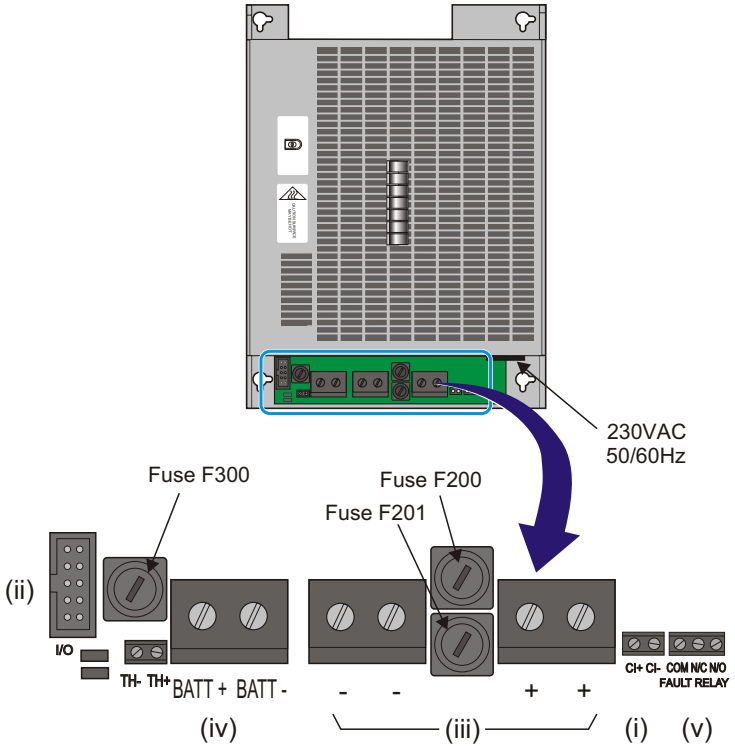
1. Place one of the nylon spacers (B) supplied in the kit over each of the four larger stand-offs (C) on the rear wall of the Back Box, then screw one of the M4 x 16 SEM screws (D) approximately 2 or 3 rotations into each stand-off - DO NOT FULLY TIGHTEN.
2. Hang the PSU assembly (A) over the screws - orientate it so that the mains socket (E) is to the right - then fully tighten the screws.
3. Refer to PSU wiring instructions overleaf.

NOTE:
Access to components inside the safety cover of the PSU7A is not required for installation and commissioning purposes. There is no need to remove the safety cover to replace any fuses, as with earlier versions of the PSU7A, as these are located on the PCB outside the cover.

Fuses

Fuse ID	Type
F200	T 10A H
F201	T 10A H
F300	T 10A H

H = High break capacity (may be labelled 'HBC')



Wiring Connections

Connect the wiring to the PSU as follows:

1 Connect the PSU Charger Inhibit wiring between the Charger Inhibit connector (i) and the DTP/Booster module, using the orange and green wires supplied in the PSU kit. Cut wires to length as required. Connect + to + and - to -. Route this cable to the Back Box side wall and secure with supplied self-adhesive cable clips.

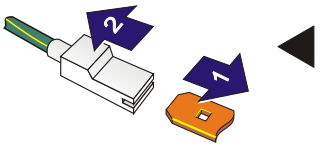
2 Connect one end of the supplied DTP/Booster module ribbon cable, with attached ferrite, to the PSU at the ribbon cable connector (ii) - marked 'I/O'.

3 Connect the PSU output (iii) to the DTP/Booster module using the supplied black and red wires. Cut each in half, to provide a dual transmission path. Route this cable with the PSU Charger Inhibit wiring and secure using supplied self-adhesive cable clips.

4 DO **NOT** CONNECT THE BATTERIES UNTIL INSTRUCTED TO DO SO IN THE INSTALLATION AND COMMISSIONING MANUAL. When so instructed, connect them to the battery connector (iv) using the correct cables supplied in the PSU kit. Follow the connection procedure given in the manual but note that any references to a connector should be replaced by references to ring terminals. ENSURE CORRECT POLARITY.

5 Locate the thermistor assembly in close proximity to the batteries.

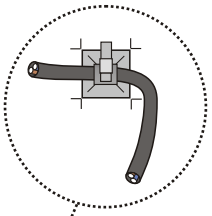
6 When the PSU is fitted internally, no connection is made to the Common Fault connector (v), which may be left unconnected.

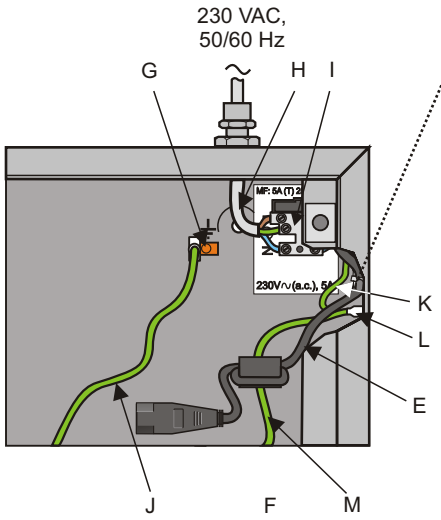


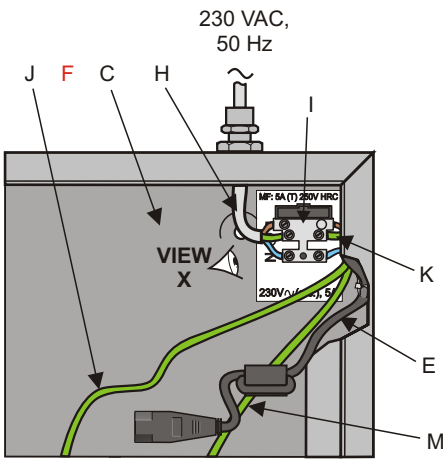
Note: All blade connections to earth incorporate a locking barb. To make a connection push the shrouded receptacle on to the earth blade (1). To remove this connection, pull the shroud (2), NOT the earth wire.

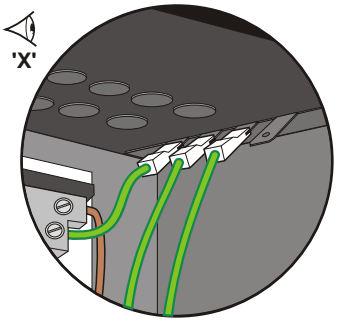
IF PSU7A IS A REPLACEMENT FOR 'OLD' VERSION WITH INTEGRAL MAINS LEAD: Remove the existing mains terminal block and use its screw to fit terminal block of mains cable PN: 082-254 in its place. The cable has a factory-fitted clip which must be affixed to the side wall of the back box (at the marked cross-hairs - see illustration at right).

YOU MUST ALSO MAKE THE SAFETY EARTH CONNECTION (K to L).









Mains and Safety Earth Wiring Connections

WARNING. Risk of electric shock. Before working on mains connections, ensure the mains power supply to the panel is disconnected.

Segregate mains wiring from all other wiring.

TRANSIT CABLE CLIP: Before proceeding, CAREFULLY cut the cable clip that secures the ferrite cable loop to the front of the back box. DO NOT cut the cable clip that secures the mains cable to the side of the back box.

Connections in 'original' back box

1 The 230VAC mains input wiring (H) must be terminated at the mains termination block (I) in the top right-hand side of the Back Box. The PSU mains cable (E) is factory-fitted to the termination block. Push the mains cable's connector into the socket on the PSU7A. Pull tight the cable clip at the side of the back box.

2 The blade connector (G) to the left of the terminal block is also used to earth the main chassis; the other end of this earth lead (J) connects to the main chassis rear enclosure earth terminal. The safety earth is provided by a short factory-fitted lead (K) from the mains termination block to the blade connector (L) on the Back Box side wall. This blade connector is also used to earth the DTP/Booster module earth lead (M).

Note: Connections to the DTP/Booster module kit are shown on the instruction sheet (997-267-000-X) supplied with that kit.

Connections in 'revised' back box

1 The 230VAC mains input wiring (H) must be terminated at the mains termination block (I) in the top right-hand side of the Back Box. The PSU mains cable (E) is factory-fitted to the termination block. Push the mains cable's connector into the socket on the PSU7A. Pull tight the cable clip at the side of the back box.

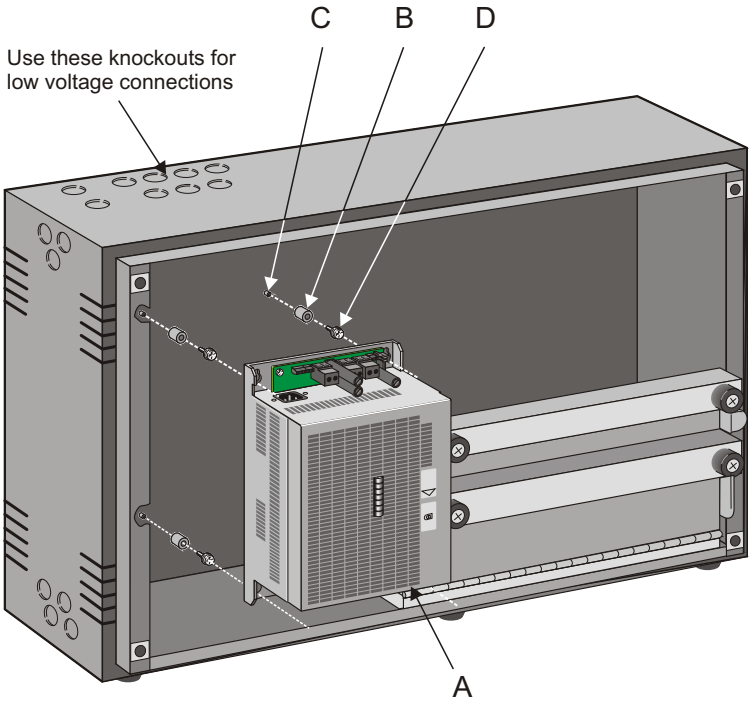
2 One of the blade connectors is used to earth the main chassis; the other end of this earth lead (J) connects to the main chassis rear enclosure earth terminal. The safety earth is provided by a short factory-fitted lead (K) from the mains termination block to the another of the blade connectors. The fourth blade connector is used to earth the DTP/Booster module earth lead (M).

Note: Connections to the DTP/Booster module kit are shown on the instruction sheet (997-267-000-X) supplied with that kit.

IMPORTANT NOTE

If the PSU7A is used in the remote battery enclosure the enclosure must be mounted in close association with the cie. Power cables must be routed through steel conduit connecting the two enclosures.

1

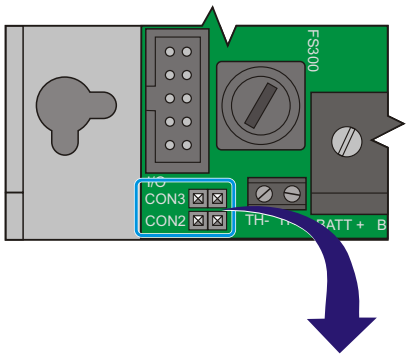


Procedure for Fitting PSU kit into a Remote Battery/PSU Enclosure

To fit the PSU7Aassembly (A) into a remote battery enclosure, proceed as follows:

1 Place a nylon spacer (B) over each of the four stand-offs (C) on the rear wall of the enclosure. Screw an M4 X 16 SEM screw (D) approximately 2 or 3 rotations into each stand-off. DO NOT FULLY TIGHTEN. The PSU7A assembly must be orientated so that the mains connector is to the upper left. Position the PSU7A over the screws, then tighten them to secure the assembly in place.

2



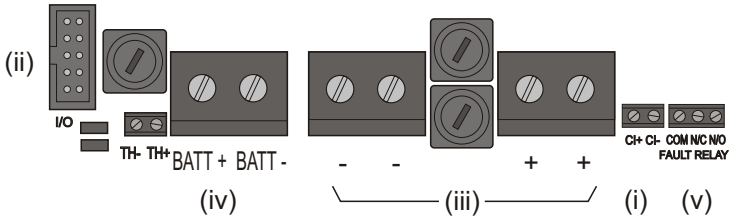
Charger Current	Backup Batteries (Ah)	CON3 & CON2 Links
4.5	42 - 78	CON3 CON2 CON 2 ONLY
7.3	79 - 130	CON3 CON2 CON 2 & 3

2 The PSU output is configured using jumper links; the three valid options are: no links fitted, one or both fitted. Refer to the table below left for guidance on the fitting of jumper links on the PSU PCB in the appropriate position. Jumper headers CON 2 and CON 3 are located to the left of the thermistor wiring connectors when the PSU is orientated with the wiring connectors at the bottom (as illustrated).

CAUTION: Incorrect fitting of the link(s) or failing to fit both links with 78Ah or 130Ah backup batteries, will reduce the power available to the panel during quiescent operation or invalidate the battery charging requirement of EN54 Part 4.

IMPORTANT NOTE when using 130Ah Battery Back Up....

To ensure correct operation of the PSU7A when used with 130Ah back up batteries, two remote enclosures MUST be used. The PSU7A must be installed in one enclosure and ALL the batteries must be installed in the other enclosure. For further details when using the 130Ah batteries, refer to instruction sheet 997-270-000-X.



Wiring Connections

When mounting the PSU7A in an external battery box, the following supplied cables are not required:

a) The orange and green wires.

b) The red and black wires.

c) The ribbon cable with attached ferrite.

The following Table describes suitable cables for wiring the remote PSU:

Connector	Cable Size	Instruction
(i)	0.5mm^2-2.5mm^2	Charger Inhibit.
(ii)	Not applicable	Optional Status Indication kit, PN: 020-548, can be connected here.
(iii)	<1.4m - use 1.5mm^2 <2.3m - use 2.5mm^2 <3.8m - use 4mm^2 <6.0m - use 6mm^2 <10.0m - use 10mm^2 All rated at 15A	Dual Transmission Path supply cables. The cables listed here are example sizes for various distances (termination to termination) between the panel and the power supply unit. Lengths are for systems drawing the max of 7A (typically Alarm current). Wire lengths may be increased proportionally for lower currents.
(iv)	84/0.3 (6mm^2)	Battery leads.
(v)	0.5mm^2-2.5mm^2	Fault relay Common (pin 1) and Normally Open (pin 3).

Connect the wiring to the PSU as follows:

1 Connect the PSU7A Charger Inhibit wiring between the 'CI' connector (i) and the DTP/Booster module in the panel, using suitable cables as detailed in the table above. Connect + to + and - to -.

2 Connect the PSU output (iii) to the DTP/Booster module using suitable cables, as detailed in the table above, to provide the dual transmission path.

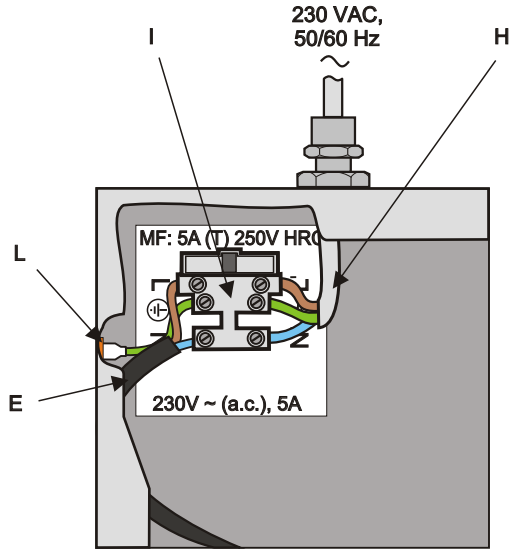
3 DO **NOT** CONNECT THE BATTERIES UNTIL INSTRUCTED TO DO SO IN THE INSTALLATION AND COMMISSIONING MANUAL. Use the appropriate cables supplied in the Remote Enclosure kit to connect to the battery connector (iv). Follow the connection procedure given in the manual but note that any references to a connector should be replaced by references to ring terminals. Cut ring terminals off where required. When instructed, connect to the battery. ENSURE CORRECT POLARITY.

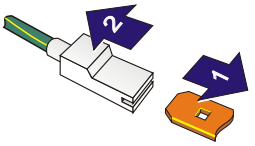
4 Connect the PSU7A fault relay wiring between the Common Fault connector (v) and the DTP/Booster module in the panel, using suitable cables as detailed in the table above. Connect the C to COM and N/O to N/O.

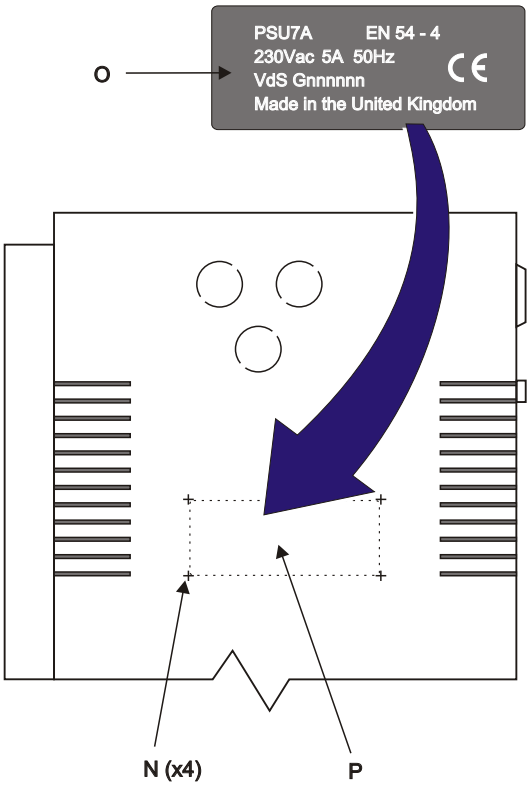
5 Mount the thermistor on the batteries away from any heat source.

Continued overleaf.....

IF PSU7A IS AREPLACEMENT FOR 'OLD' VERSION WITH INTEGRAL MAINS LEAD: Remove the existing mains terminal block and use its screw to fit terminal block of mains cable PN: 082-254-001 in its place. The cable has a factory-fitted clip which must be affixed to the side wall of the enclosure. **YOU MUST ALSO MAKE THE SAFETY EARTH CONNECTION (I to L).**







Mains and Safety Earth Wiring Connections

WARNING. Risk of electric shock. Before working on mains connections, ensure the mains power supply to the enclosure is disconnected.

Segregate mains wiring from all other wiring.

TRANSIT CABLE CLIP: Before proceeding, CAREFULLY cut the cable clip that secures the ferrite cable loop to the front of the enclosure (at the ventilation grille). DO NOT cut the cable clip that secures the mains cable to the side of the enclosure.

1 Make/check the following safety earth connections:

Safety earth connection between terminal block (I) and earth blade connector (L).

2 **WARNING: It is vital that the main panel has a safety earth connection which may be connected to a convenient safety earth bonding point.**

3 The 230VAC mains input wiring (H) must be terminated at the mains termination block (I) in the top left-hand side of the Battery/PSU Enclosure. The PSU mains cable (E) is factory-fitted to the termination block. Push the mains cable's connector into the socket of the PSU7A. Pull tight the cable clip at the side of the enclosure.

Note: Connections to the DTP/Booster module kit are shown on the instruction sheet (997-267-000-X) supplied with that kit.

Note: All blade connections to earth incorporate a locking barb. To make a connection push the shrouded receptacle on to the earth blade (1). To remove this connection, pull the shroud (2), NOT the earth wire.

Ratings Label

When the PSU7A is installed in the Remote Battery/PSU Enclosure, the ratings label (PN: 345-405) supplied in the PSU7A Kit must be attached to the Enclosure as follows:

1 Four cross-hairs (N) are provided for guidance in positioning the ratings label (O) on the right-hand side wall of the remote enclosure (when viewed from the front). Ensure this area is free of grease and/or dust.

2 Ensure the correct orientation of the ratings label. Partially remove backing paper and offer the exposed area to the indicated location (P) on the enclosure side wall.

3 Align the end of the label where the backing paper has been pulled clear with one pair of vertically-placed cross-hairs to start the application to the side wall. Gradually remove the rest of the backing paper, gently applying pressure to the label as you proceed until the other end of the label is reached.

4 To ensure sufficient adhesion has occurred, cover the label with the removed backing paper and apply pressure over the whole area of the label using, for example, your finger - DO NOT use any object capable of marking or defacing the ratings label.

PSU7A Specifications

The PSU may be mounted in the ID3000 Series Back Box or mounted in an external battery box. When the PSU7A is mounted in an external battery box there are three charging configurations set by links on the PSU7A (refer to previous page for details).

The power supply provides dual redundancy of fusing and power connections to the main panel.

The table below compares the key specifications:

PSU and Battery Enclosure		Battery Capacity[1]	Charge Current	Alarm Current[2]	Quiescent Current[2]
Description	**Part Number**				
Deep back box	020-474-XXX or 020-475-XXX	42Ah[3]	2.5A	4.5A	2.5A
External battery box	020-541-XXX	42Ah	2.5A	6.3A	4.0A
External battery box	020-541-XXX	78Ah	4.5A	6.3A	3.0A
2 external battery boxes	020-541-XXX (x 2)	130Ah	7.3A	6.3A	1.5A

[1] Charged to 80% within 24 hours.

[2] Currents in this table refer to the maximum current available at the output of the DTP/Booster.

[3] Refer to instruction sheet 997-270-000-X for the sizes and battery capacity of other enclosures.

PSU7A Ratings

Input Rating:

Voltage, frequency:	230Vac, ±15%, 50 / 60Hz
Maximum current consumption:	5A (Protection by 5A mains supply fuse in terminal block)

PSU Output Ratings:

Output voltage:	28.1Vdc - 27.7Vdc when primary power (230Vac) present.
	28.1Vdc - 19.5Vdc when on standby power (batteries).
Ripple voltage:	± 200mV
EN54 PSU Loadings	Imax(a): 1.5A; Imax(b): 10A; I(min): 0A
EN54 Battery Wiring:	Ri(max) [Test Impedance]: 0.3ohm

DTP / Booster Output Ratings:

Output voltage:	26.0V - 28.3Vdc @ 6.3A load (Input Voltage 19.5V to 28.5V)

Battery Charger Output Ratings:

The ratings below are common to all PSU7A Options. Refer to the table above for details of maximum battery capacity and charging current.

Battery voltage when charged:	27.3V at 20° C (Charge float voltage)
Temperature compensation:	-3mV/ °C/ cell
Battery fuse rating:	10A. 250V HRC (T)
Final battery voltage:	21V
Charger ripple voltage:	±20mV

Low Voltage Shut Down

If the battery output drops below the final battery voltage, then the batteries are disconnected to avoid system malfunction and deep discharge causing permanent damage. Battery capacity should be selected to ensure sufficient backup power in the event of mains power failure.

Battery Capacity

CAUTION - RISK OF EXPLOSION
IF BATTERIES ARE REPLACED WITH AN INCORRECT TYPE.

Sealed valve regulated lead-acid battery types MUST be used. Battery lifetime depends on the ambient temperature. Refer to the battery manufacturer's technical specification for guidance. When using multiple batteries, all batteries should be from the same Manufacturer, of the same type and date code and be mounted in the same cabinet. If batteries are to be installed external to the panel, then ALL batteries must be installed externally.

Two 12V batteries must be connected in series. The maximum capacity depends on the cabinet size and the battery manufacturer. To achieve a 130Ah rating, four 65Ah, 12V batteries may be connected in a series/parallel arrangement. Refer to instruction sheet 997-270 for details.