



QE90 BATTERY INSTALLATION / WIRING GUIDE

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The Vigilant QE90 EWIS is a product of

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AMENDMENT LOG

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1. PROCEDURE

It is suggested that a QE90 Panel should be first tested with mains only i.e. with the batteries disconnected. This will provide greater protection in the event of a 24V wiring problem. However, do not to activate many speaker or strobe outputs at the same time, or the power supply may shutdown as its current limit could be exceeded.

When installing the batteries :

1. Unplug the power supply (or supplies) from the mains.
2. Turn off all circuit breakers and switches on all power supplies.
3. Unplug both ribbon cables from the Signals Interface Card (SE9004 or SPIF9709) and if the system has an ECM, unplug the 34 way ribbon cable from the ECP to the ECM. The batteries will then be floating relative to the chassis (as long as there are no shorts to earth in field wiring), and an accidental short from the chassis to any single battery terminal will have no effect.
4. Wire up the batteries as described herein.
5. Check the voltage of the unswitched 24V output from the power supply. Check the voltage on pin 3 of the ECP power connector is in the range +18V to +27V relative to pin 4 on the same connector. Note pin 4 is the one with the black wire attached. (The colour of the wire attached to pin 3 may vary.)
6. Plug the ribbon cables removed in step 3 back in.
7. Plug the power supplies back into the mains.
8. Turn on the mains power.
9. It is suggested that you wait for the batteries to charge somewhat before further testing. Measure the unswitched voltage again as described in step 5 above, and wait for it to exceed 26.0V.
10. Turn on the remaining switches on the power supplies, and check the QE90 system from step 4 of Section 17.3 in LT0088 "QE90 Installation and Commissioning Manual".

2. SAFETY NOTICE

Avoid shorting out batteries when fitting and wiring. Consider covering tools with heatshrink, insulating tape, or other insulating material, as touching the spanner to the QE90 cabinet or between +ve and -ve battery terminals could cause a short. Protecting the loose end of leads when wiring the batteries is also advisable. Small zip-top bags or masking tape are useful for this purpose.



Suggested Tools : 4" Crescent and 8mm or 5/16" A/F Nut driver

3. OVERVIEW

The QE90 design and costing program QECOST can calculate the required battery capacity for a given QE90 system. It can also print out the suggested arrangement for the batteries given the available space in the QE90 cabinet.

The diagram and instructions that follow are the recommended procedures for fitting the batteries specified by QECOST or calculated as described in the QE90 Technical Manual (LT9002).

Photographs of the finished arrangements are also included.

Kits consisting of wiring looms and sets of nuts bolts, and washers will be supplied with QE90 Panels in the correct quantities for wiring up the recommended batteries.

4. BATTERIES

These procedures utilise the following sealed lead acid batteries -

Capacity	Size (L * W * H) mm	Australia Part number	New Zealand part number (examples)
12V 33Ah	195 * 130 * 180	Tyco PS12330	CSB GP12340 (Intek)
12V 40Ah	197 * 165 * 170	Tyco PS12400	Tyco BA12400
12V 75Ah	259 * 168 * 208	Tyco PS12750	Haze HZB12-80 (Wormalds Hamilton)

Note that in Australia only CSIRO ActivFire listed batteries are permitted to be used. All batteries supplied by Tyco will be so listed. Batteries supplied by Tyco can be operated in any orientation. Refer to the ActivFire Listing afp-1636.

In New Zealand it is not required that the batteries be listed. The above part numbers are examples of batteries that can be used. If using other manufacturer's batteries be sure to check that they have a suitable life, that they can be operated in the intended orientation, that a float voltage of 13.65V at 20 degrees C is suitable, and that their dimensions are the same as or close to those given above.

5. KITS

The following kits are available and will be supplied with the QE90 Panel in the correct quantities for connecting the recommended battery configuration, as specified by QECOST.

KT0500 KIT, IN-CABINET M6 BATTERY LINK KIT, consisting of:

KT0499 KIT, M5/M6 BATTERY TERMINAL HARDWARE KIT	1 OFF
LM0377 LOOM, 158AUTO, RED, 0.35M, BOTH: CRIMP M6 LUG	1 OFF
LM0378 LOOM, 158AUTO, BLK, 0.35M, BOTH: CRIMP M6 LUG	1 OFF
LM0379 LOOM, 156AUTO, RED/BLK, 0.35M, BOTH: CRIMP M6 LUG	1 OFF



Photo of KT0500

KT0501 KIT, INTER-CABINET M6 BATTERY LINK KIT , consisting of:	
KT0499 KIT, M5/M6 BATTERY TERMINAL HARDWARE KIT	1 OFF
LM0379 LOOM, 156AUTO, RED/BLK, 0.35M, BOTH: CRIMP M6 LUG	1 OFF
LM0380 LOOM, 158AUTO, RED, 1.2M, BOTH: CRIMP M6 LUG	1 OFF
LM0381 LOOM, 158AUTO, BLK, 1.2M, BOTH: CRIMP M6 LUG	1 OFF



Photo of KT0501

6. INTER-CABINET WIRING

If there are multiple cabinets with batteries, the batteries in all cabinets need to be wired in parallel. You will need to make matching holes in the sides of the cabinets so that the required wires can be passed out of the right side of one cabinet and into the left side of the adjacent cabinet.

The diagrams and text below describe how to connect one pair of wires for multiple cabinets. This wiring is what is required if there are **two** cabinets with batteries.

If there are **three** or more cabinets with batteries, you will need to connect a second set of inter-cabinet wires to the batteries in the “middle” cabinets. This set can be connected to the same terminals as the first set of inter-cabinet wires, or to the same terminals as the PSU wires, whichever is most convenient.

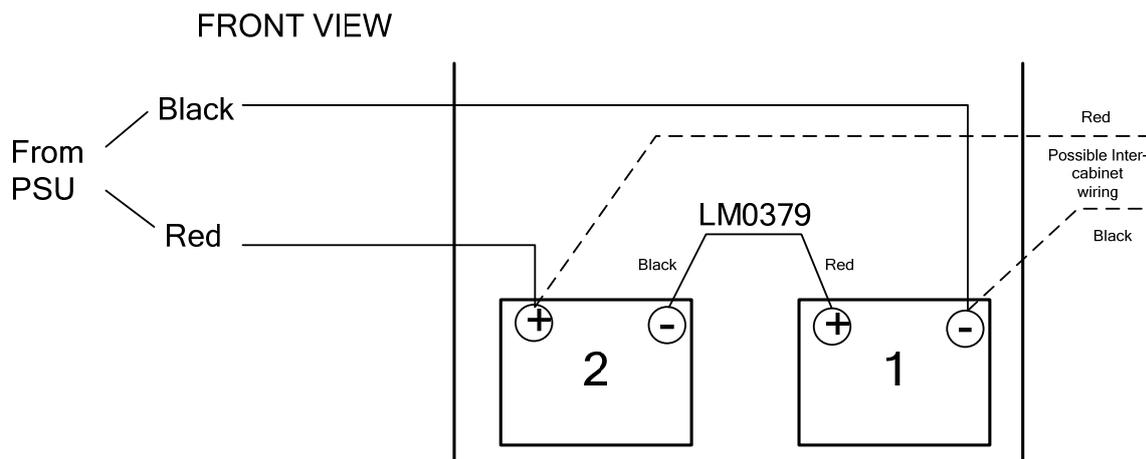
7. TYPICAL BATTERY / WIRING ARRANGEMENTS

In the following diagrams and procedures detailing typical battery / wiring arrangements, the batteries are numbered in the order that they are to be placed in the cabinet and, for convenience, these numbers are referred to in the procedures. For example B1 +ve refers to the positive terminal on battery number 1.

7.1 40Ah(2 x 40Ah BATTERIES)

Connection Procedure

1. Place B1 and B2 in the cabinet with the terminals facing the door.
2. Connect a red/black wire (LM0379) between B1 +ve and B2 -ve.
3. Connect to B2 +ve
 - the PSU red wire, and
 - a red inter-cabinet wire (LM0380) if required.
4. Connect to B1 -ve
 - the PSU black wire, and
 - a black inter-cabinet wire (LM0381) if required.



2 * 40Ah Layout

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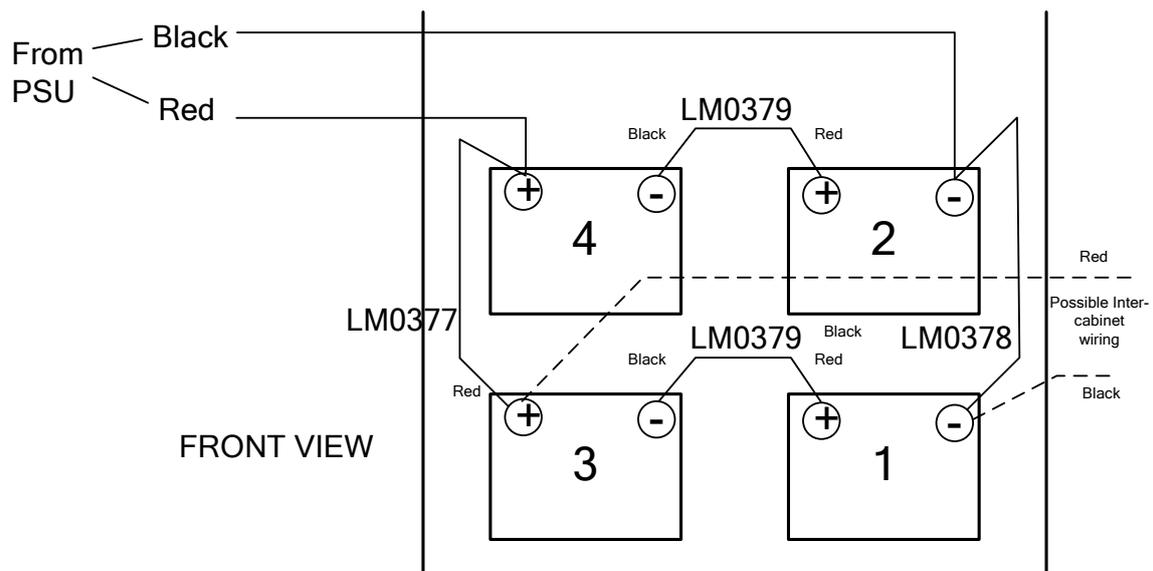


2 * 40Ah Photo

7.2 80Ah (4 x 40Ah BATTERIES)

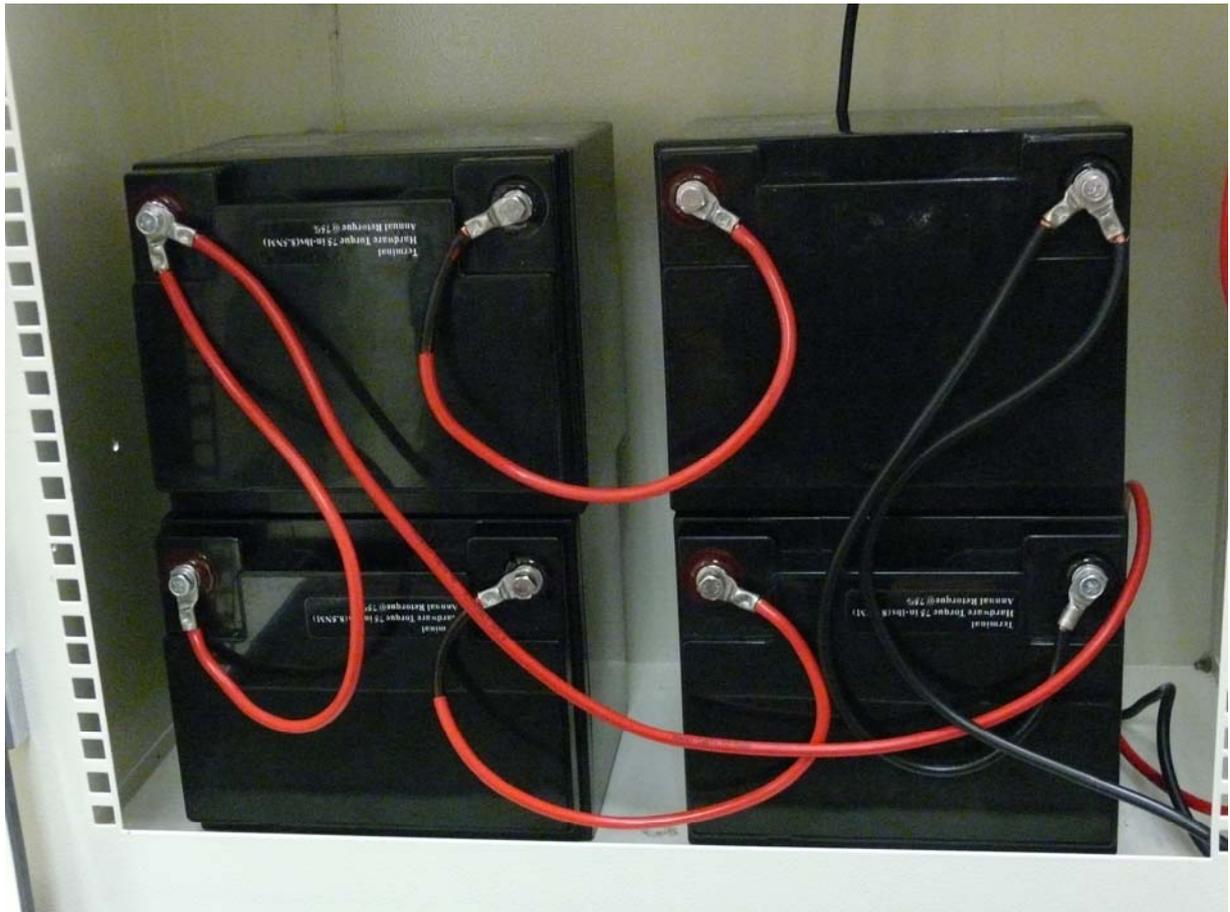
Connection Procedure

1. Place B1, B2, B3, and B4 in the cabinet as shown below with the terminals facing the door, and with B2 and B4 on top of B1 and B3.
2. Connect a red/black wire (LM0379) between B1 +ve and B3 -ve.
3. Connect a red/black wire (LM0379) between B2 +ve and B4 -ve.
4. Connect to B3 +ve
 - one end of a red wire (LM0377), and
 - a red inter-cabinet wire (LM0380) if required.
5. Connect to B4 +ve
 - the free end of the red wire that connects to B3 +ve, and
 - the PSU red wire.
6. Connect to B1 -ve
 - one end of a black wire (LM0378), and
 - a black inter-cabinet wire (LM0381) if required.
7. Connect to B2 -ve
 - the free end of the black wire that connects to B1 -ve, and
 - the PSU black wire.



4 * 40Ah Layout

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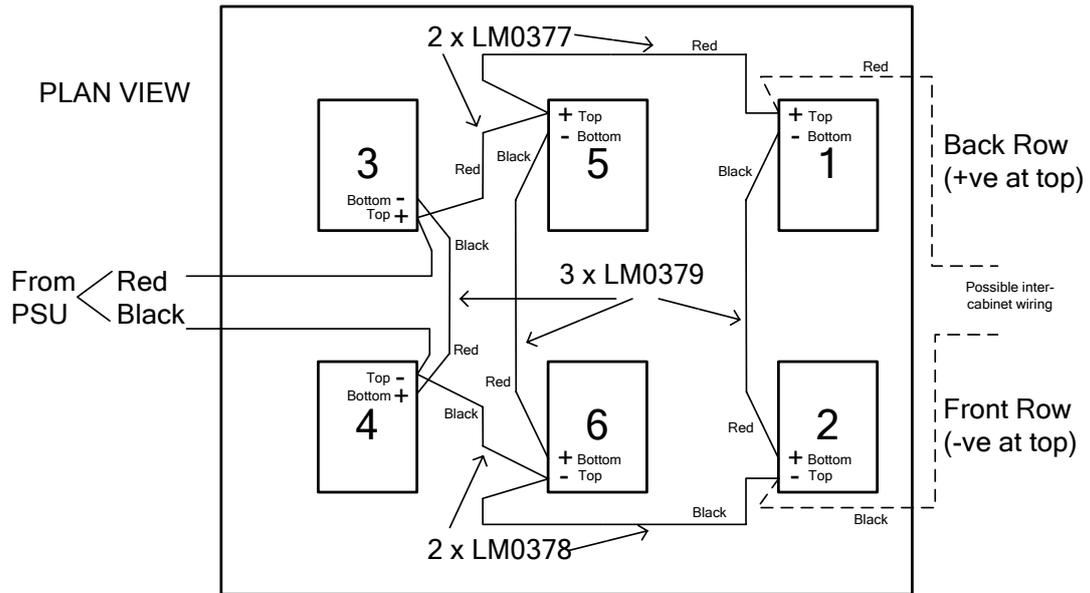
4 * 40Ah Photo

7.3 99Ah (6 x 33Ah BATTERIES)

Connection Procedure

1. The batteries are placed on their ends, with the terminals facing to the left or right as appropriate. Place the batteries in sequence, as they are wired, as follows –
2. Connect to B1 +ve
 - one end of a red wire (LM0377), and
 - a red inter-cabinet wire (LM0380) if required.
3. Connect the black end of a red/black wire (LM0379) to B1 –ve. Place B1 in the cabinet in the position/orientation shown in the diagram below.
4. Connect to B2 –ve
 - one end of a black wire (LM0378), and
 - a black inter-cabinet wire (LM0381) if required.
5. Place B2 in the cabinet.
6. Connect to B2 +ve
 - the free (red) end of the red/black wire that connects to B1 –ve.
7. Move B1 and B2 against the cabinet RHS.
8. Connect to B3 +ve
 - one end of another red wire (LM0377), and
 - the PSU red wire.
9. Connect the black end of a red/black wire (LM0379) to B3 –ve. Place B3 in the cabinet.
10. Connect to B4 –ve
 - another black wire (LM0378), and
 - the PSU black wire.
11. Place B4 in the cabinet .
12. Connect to B4 +ve
 - the free (red) end of the red/black wire that connects to B3 –ve.
13. Move B3 and B4 against the cabinet LHS.
14. Connect the black end of another red/black wire (LM0379) to B5 –ve. Place B5 in the cabinet.
15. Connect to B5 +ve
 - the free end of the red wire that connects to B1 +ve, and
 - the free end of the red wire that connects to B3 +ve.
16. Place B6 in the cabinet.
17. Connect to B6 +ve
 - the free (red) end of the red/black wire that connects to B5 –ve.
18. Connect to B6 –ve
 - the free end of the black wire that connects to B2 –ve, and
 - the free end of the black wire that connects to B4 –ve.

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6 * 33Ah Layout

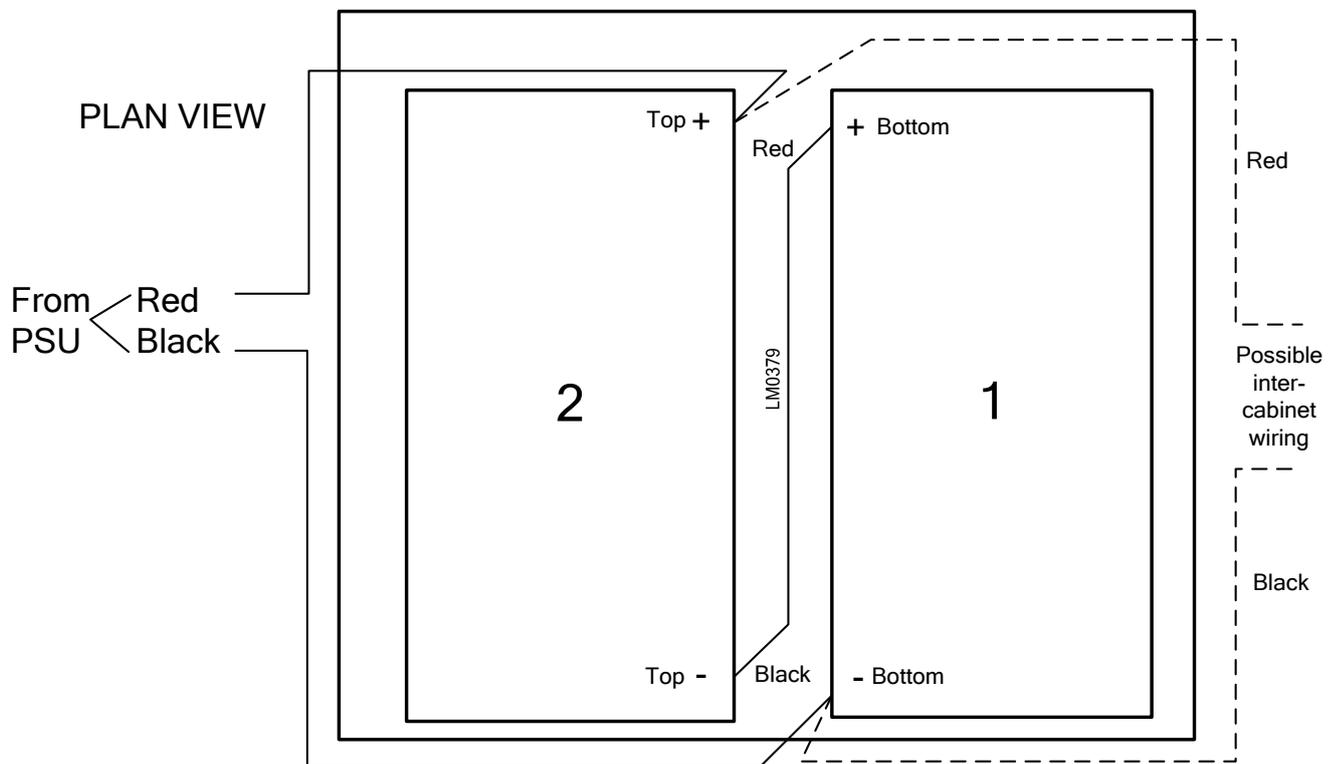


6 * 33Ah Photo

7.4 75Ah (2 x 75Ah BATTERIES)

Connection Procedure

1. The batteries are orientated on their sides with the terminals facing to the left or right as shown below. Place the batteries in sequence, as they are wired, as follows –
2. Connect the red end of a red/black wire (LM0379) to B1 +ve. Place B1 in the cabinet.
3. Connect to B1 –ve
 - the PSU black wire, and
 - a black inter-cabinet wire (LM0381) if required.
4. Connect to B2 +ve
 - the PSU red wire, and
 - a red inter-cabinet wire (LM0380) if required.
5. Place B2 in the cabinet.
6. Connect to B2 –ve
 - the free (black) end of the red/black wire that connects to B1 +ve.



2 * 75Ah Layout

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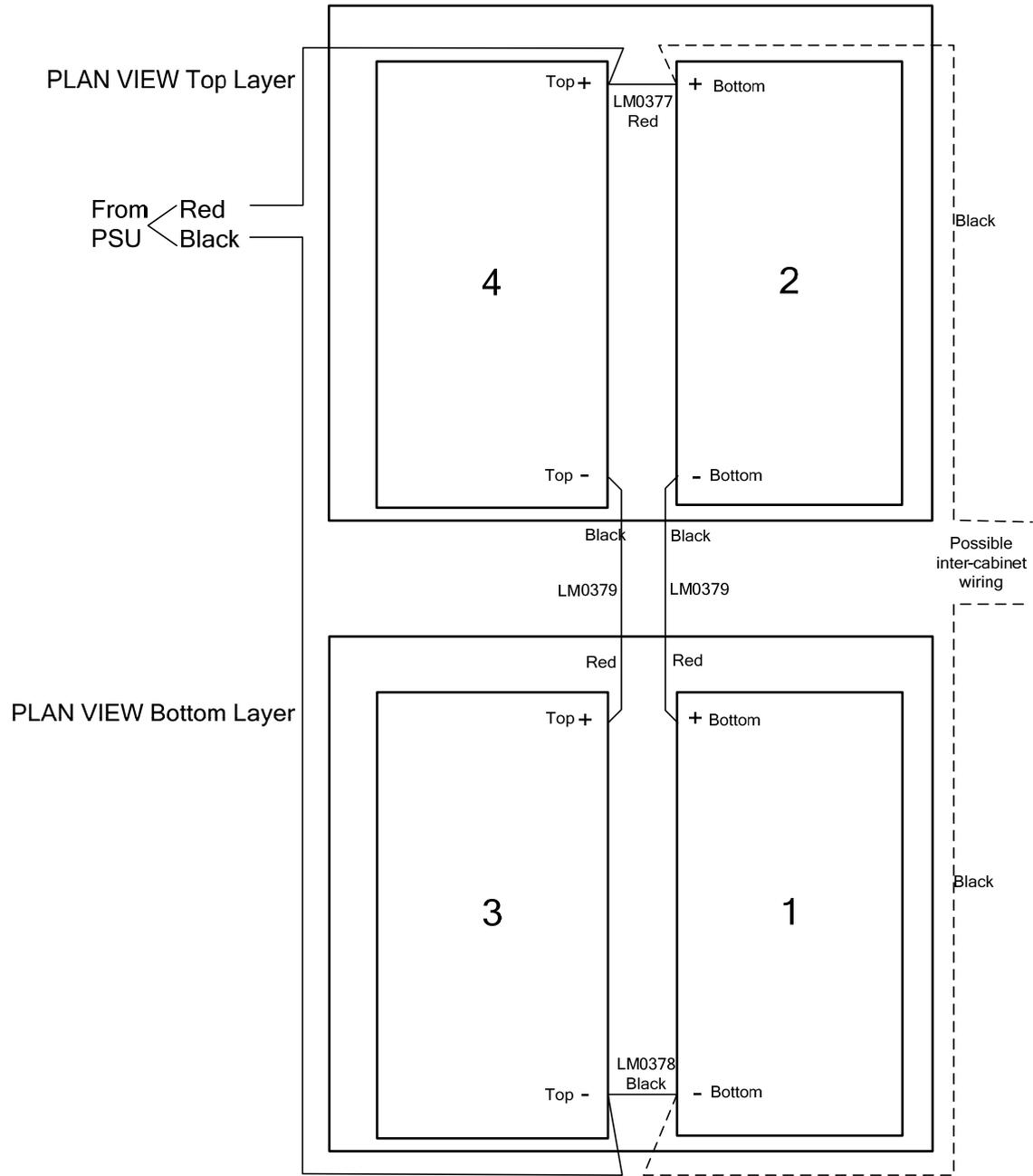
2 * 75Ah Photo

7.5 150Ah (4 x 75Ah BATTERIES)

Connection Procedure

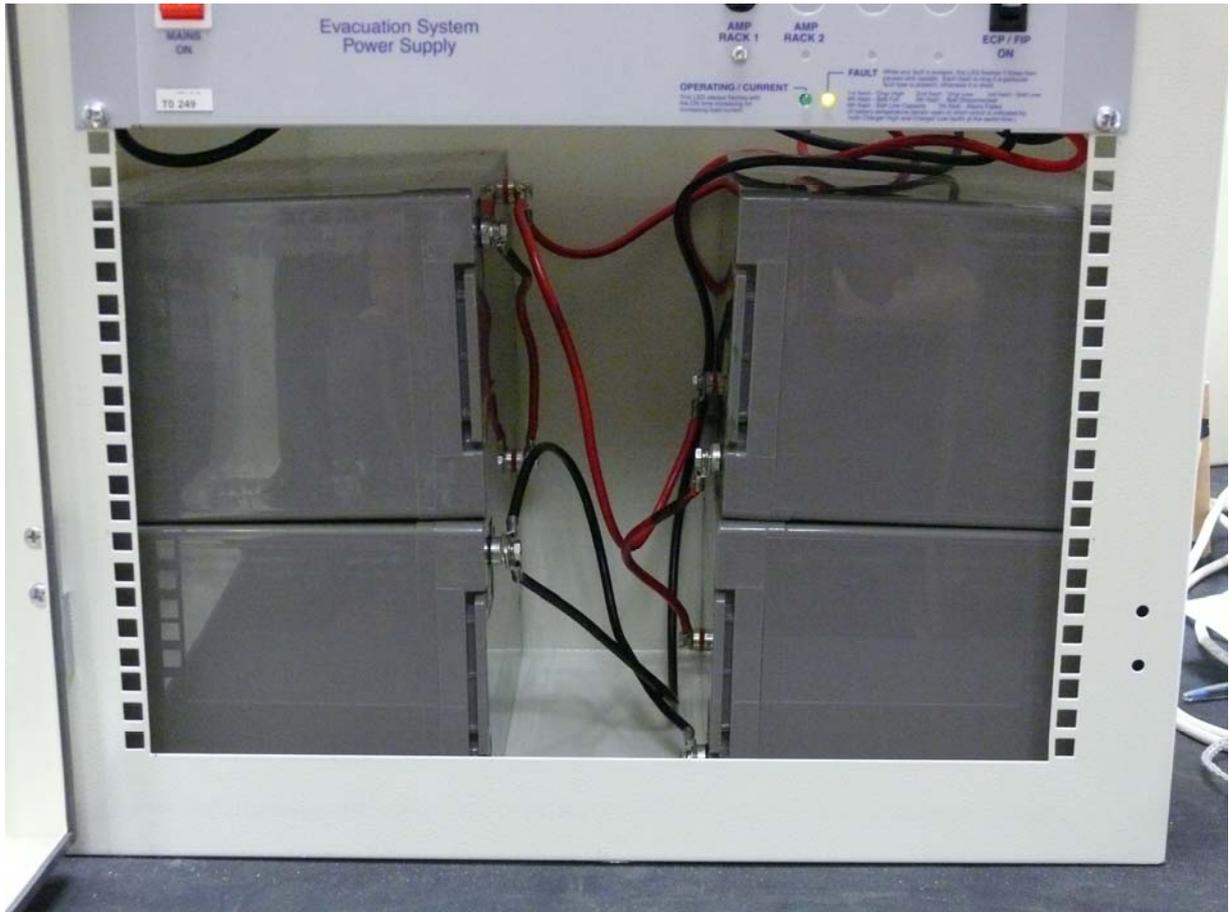
1. The batteries are placed on their sides with their terminals facing to the left or right as shown below. Place the batteries in sequence, as they are wired, as follows –
2. Connect the red end of a red/black wire (LM0379) to B1 +ve. Place B1 in the cabinet, with the terminals facing to the left and the +ve terminal at the rear.
3. Connect to B2 +ve
 - a red wire (LM0377), and
 - a red inter-cabinet wire (LM0380) if required.
4. Place B2 in the cabinet on top of B1 in the same orientation as B1.
5. Connect to B2 –ve
 - the free (black) end of the red/black wire that connects to B1 +ve.
6. Connect the red end of a red/black wire (LM0379) to B3 +ve. Place B3 in the cabinet, with its terminals facing to the right and with the +ve terminal at the rear.
7. Connect to B1 –ve
 - a black wire (LM0378), and
 - a black inter-cabinet wire (LM0381) if required.
8. Connect to B3 –ve
 - the free end of the black wire that connects to B1 –ve, and
 - the PSU black wire.
9. Place B4 in the cabinet on top of B3 in the same orientation.
10. Connect to B4 +ve
 - the PSU red wire, and
 - the free end of the red wire that connects to B2 +ve.
11. Connect to B4 –ve
 - the free (black) end of the red/black wire that connects to B3 +ve.

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4 * 75 Ah Layout

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4 * 75Ah Photo

7.6 225Ah (6 x 75Ah BATTERIES)

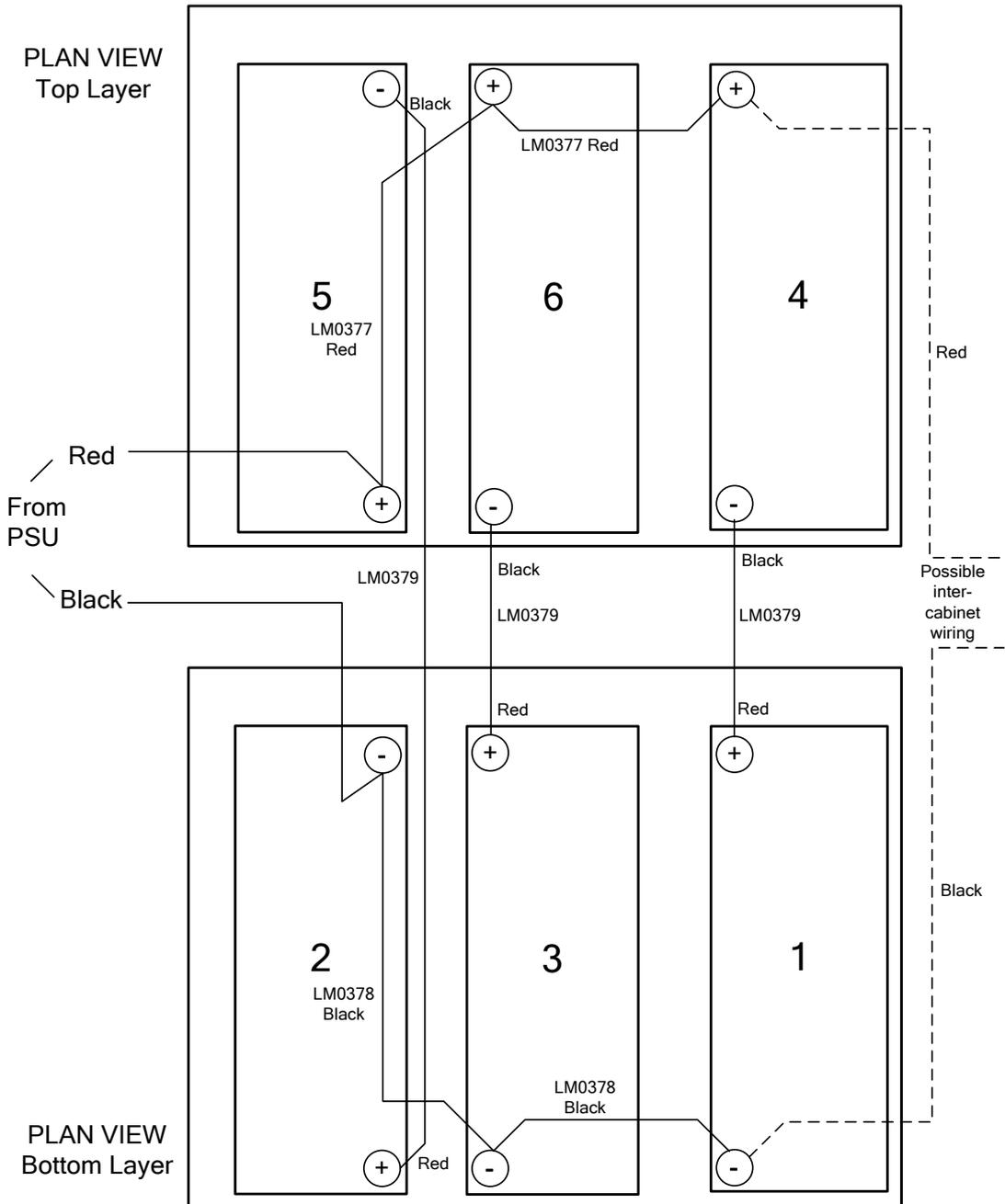
Notes

Note for this configuration the batteries are mounted with the terminals on top. The top layer should be spaced from the bottom layer with rectangles of 18mm thick plywood or chipboard, or folded newspaper, so that the top layer clears the terminals of the bottom layer.

Connection Procedure

1. Connect the red end of a red/black wire (LM0379) to B1 +ve. Place B1 in the cabinet as shown with the +ve terminal to the rear.
2. Connect the PSU black (-ve) wire and one end of a black wire (LM0378) to B2 -ve.
3. Connect the red end of a red/black wire (LM0379) to B2 +ve. Place B2 in the cabinet with the -ve terminal to the rear.
4. Connect the red end of another red/black wire (LM0379) to B3 +ve. Place B3 in the cabinet with the +ve terminal to the rear.
5. Connect to B1 -ve
 - a black wire (LM0378), and
 - a black inter-cabinet wire (LM0381) if required.
6. Connect to B3 -ve
 - the free end of the black wire that connects to B1 -ve, and
 - the free end of the black wire that connects to B2 -ve.
7. Connect to B4 +ve
 - a red wire (LM0377), and
 - a red inter-cabinet wire (LM0380) if required.
8. Place B4 on top of B1 with the +ve terminal to the rear.
9. Connect to B4 -ve
 - the free (black) end of the red/black wire that connects to B1 +ve.
10. Place B5 on top of B2, with the -ve terminal to the rear.
11. Connect to B5 -ve
 - the free (black) end of the red/black wire that connects to B2 +ve.
12. Connect to B5 +ve
 - the PSU red (+ve) wire, and
 - one end of a red wire (LM0377).
13. Place B6 on top of B3, with the +ve terminal to the rear.
14. Connect to B6 +ve
 - the free end of the red wire that connects to B5 +ve, and
 - the free end of the red wire that connects to B4 +ve.
15. Connect to B6 -ve
 - the free (black) end of the red/black wire that connects to B3 +ve.

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6 * 75Ah Layout

