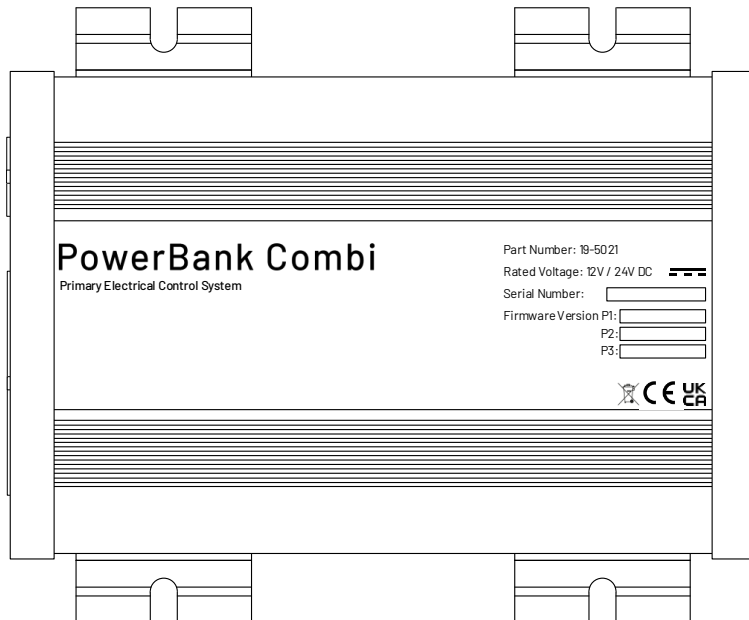




MERLIN POWERBANK COMBI MANUAL ADDENDUM

Revision A



Merlin Equipment Ltd
Clyst Court
Hill Barton Industrial Estate
Exeter, Devon, EX5 1SA
United Kingdom
T: +44 (0) 1202 697979

Merlin Power Systems
332-4 West Montauk Highway
Hampton Bays
New York NY11946
United States of America
T: +1(631)594 5102

www.merlinequipment.com

INTRODUCTION

Thank you for choosing Merlin PowerBank Combi!

PowerBank Combi is a complete power management and monitoring system designed for mobile platforms (e.g. boats or vehicles) with multiple battery banks.

This manual is design to be read in conjunction with the PowerBank Installation & User Guide.

In the PowerBank Combi, the PowerBank (battery management controller) is connected to a DataCell (battery monitor) via the MerlinNet data connection.

This additional connection provides battery monitoring (including Battery Voltage and State of Charge) for up to four battery banks. The two devices are located within one enclosure for ease of installation and convenience.

The 'PowerBank Installation & User Guide' provides details regarding the connection and operation of the PowerBank battery management system. This manual addendum will provide additional information relative to the battery monitoring system (DataCell) as contained within the ECU.

Programming relative to the PowerBank battery management system remain as per the 'PowerBank Programming Guide' which is available separately. This addendum will also cover programming of the DataCell configuration settings.

Please take the time to read and understand this manual before installation and use.

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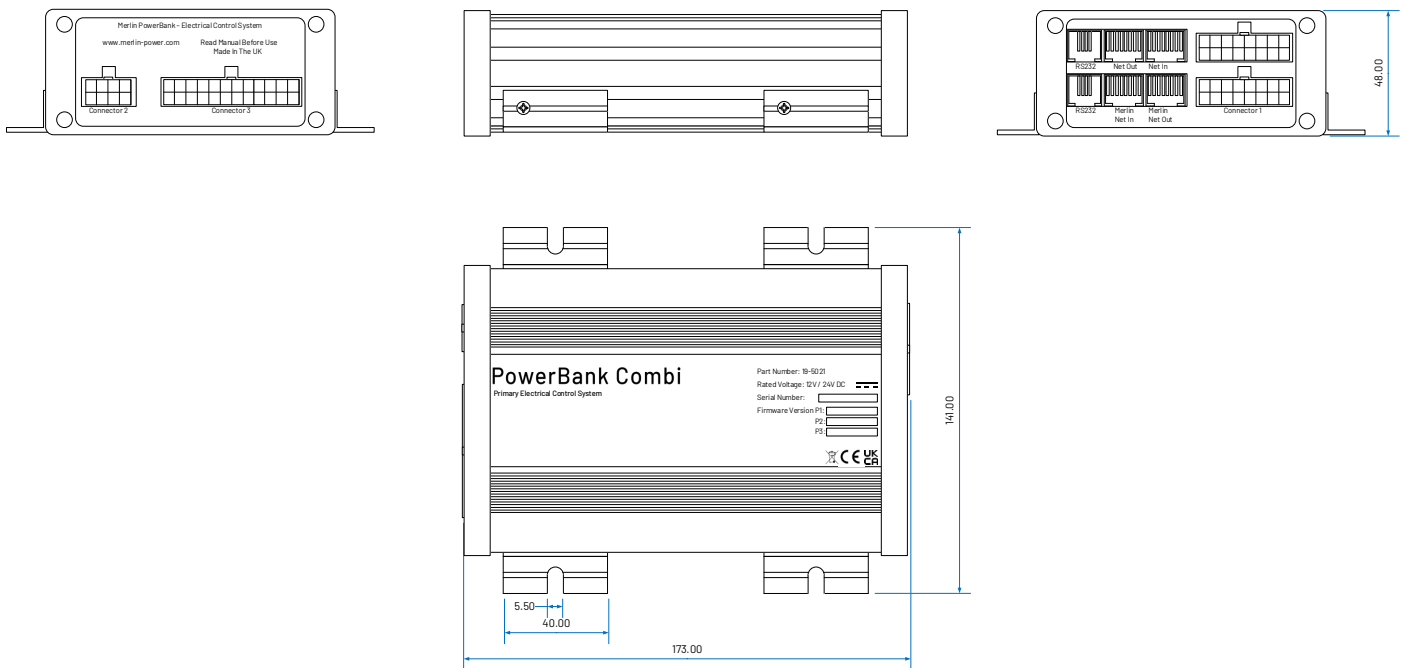
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INSTALLATION

Warning! Isolate all power supply sources before starting installation.

POWERBANK COMBI ECU INSTALLATION

The PowerBank Combi ECU is supplied with 4 Mounting Flanges. Each flange has a mounting slot to enable fitment of M5 bolts. Ensure that the unit is securely mounted to the vehicle using suitable bolts, washers and nuts. Unit dimensions are as detailed below:



The ECU is designed for location in a dry / clean environment. The ECU is NOT suitable for installation or operation in atmospheres where there is a risk of ignition or explosion. The ECU is NOT suitable for installation outside, under bonnet or in wet / damp cupboards.

Caution! Damage will occur if the PowerBank Combi ECU is allowed to get wet.

Warning! Do not install the PowerBank Combi ECU in a petrol/gas engine room environment.

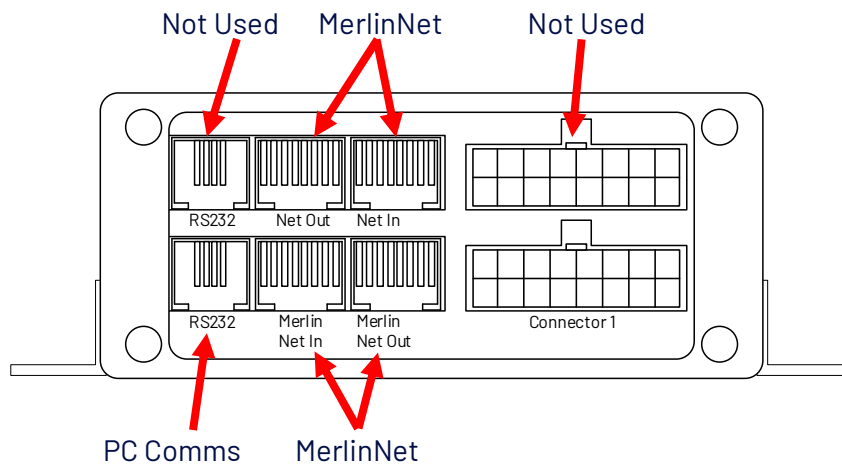
WIRING CONNECTIONS

The PowerBank Combi wiring connections are as detailed within the PowerBank Installation and User guide - 'Control and Sense Cabling' section. This includes the connections to the control switches, contactors, LED outputs and battery sense wiring.

Please note that connections to the 'upper' 16-way Molex connector are not required (see drawing overleaf).

WIRING CONNECTIONS

The PowerBank Combi ECU is supplied with the following data cable connections:



The PC comms connection is used to connect to the PowerBank Combi ECU for configuration and diagnostic purposes.

PowerBank Combi can be connected to other devices using 'MerlinNet'. This is a proprietary low power multiplex network developed by Merlin Equipment. The PowerBank Combi has 4 such connections.

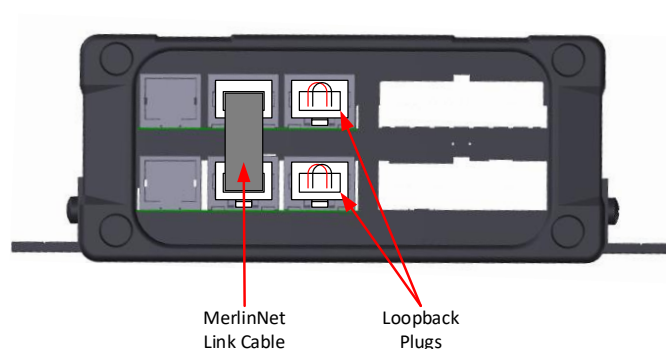
In PowerBank Combi, the PowerBank is connected to a DataCell via two of the four 'MerlinNet' data connections

Where the PowerBank Combi has been ordered or supplied with a control panel, connection to the control panel will be via the one of the 'MerlinNet' connections.

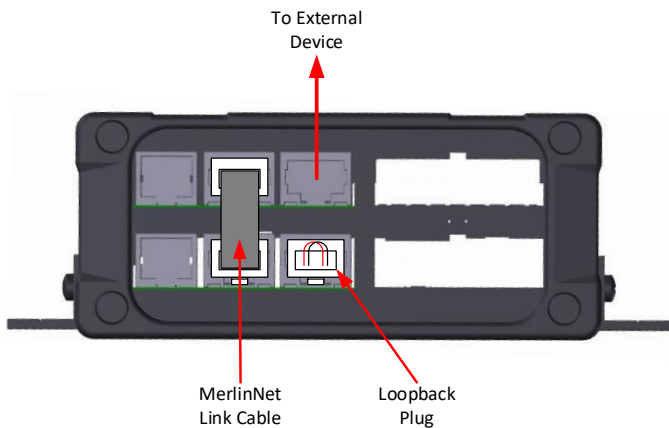
Connection to the different devices is via an 8-way flat data cable and mating RJ45 connectors.

'Loopback' plugs will have to be fitted to the PowerBank Combi and / or Control Panel depending on the actual configuration required. Typical Data Cable connection configurations are as follows:

1. PowerBank Combi ECU only

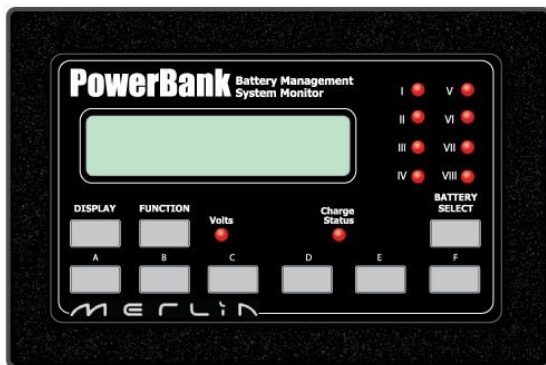


2. PowerBank Combi and PowerBank Control Panel

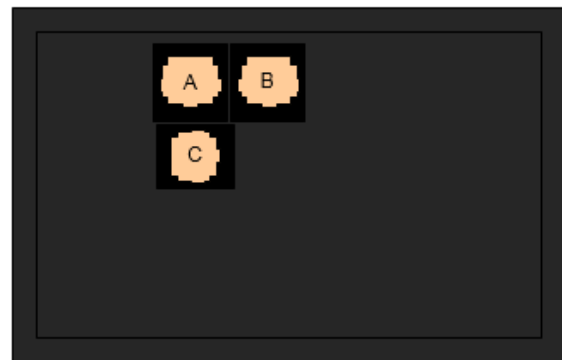


In the above instance the 'external device' would be the control panel. This connection could alternatively connect to other devices such as the MerlinNet Expansion Module (EM06).

Where the external control panel is used, connections to the panel are as follows:



Front Face



Rear Face

MerlinNet Socket A: Loopback Plug
MerlinNet Socket B: PowerBank Combi
Socket C: Not Used

A Loopback plug must be fitted in socket A to ensure correct data comms operation.

PROGRAMMING

In most cases, PowerBank Combi will be pre-configured for your installation. You should only need to access the programming software to adjust voltage thresholds and timers. It is not recommended that you change high level configuration functions without consultation with Merlin Equipment.

Please ensure all programming requirements and parameters and any customer training needs are addressed by your specifying engineer before taking delivery of the unit.

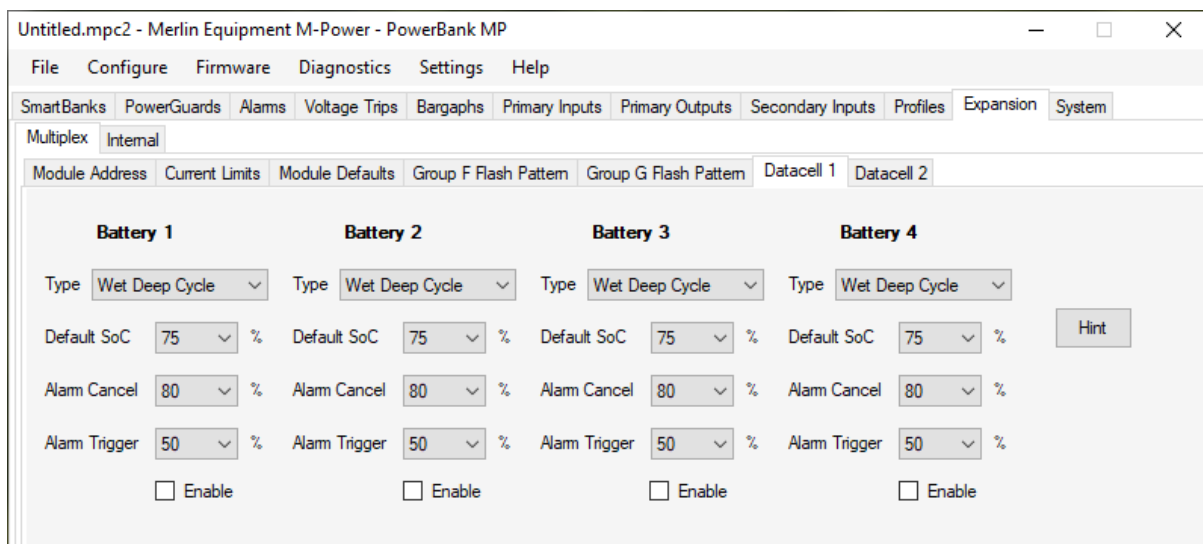
Due to the complexity of the PowerBank configuration, the programming instructions are available within a separate programming guide, however specific instructions with regards to configuring the DataCell battery monitor are as detailed below.

CONNECTION AND COMMUNICATIONS

Please refer to the PowerBank programming guide sections 1 -9 prior to attempting configuration of the DataCell battery monitor. These sections will provide instructions on connection, how configuration works, establishing communications and how to upload and save configuration files.

DATACELL CONFIGURATION

To access, select 'Expansion' menu, then select the 'DataCell I' tab. The following menu will now be visible:



From here you can now enter the following information for each battery bank:

- Battery Type (e.g. Wet Lead Acid, AGM, Gel, etc).
- Default State of Charge (SoC).
- SoC Alarm Cancel and Trigger Point.
- Alarm Enable.

Notes on configuration of each of these settings are viewable by clicking on the 'Hint' button.

BATTERY MONITORING INFORMATION

The DataCell battery monitor will provide the following information for each battery bank:

- Voltage
- State of Charge (SoC)
- SoC Alarms

This information is displayed in the following locations:

1. Merlin M Power Configuration Software:

From the main menu select 'Diagnostics' and then 'Diagnostics and Monitor'. The following window will appear:

The screenshot shows the 'Main Diagnostics - PowerBank MP' window. The 'Battery Data' table is highlighted with a red box and contains the following data:

Battery Name	Volts	DSP	SoC	24 V
Port Engine	25.9	25.9	75	■
Domestic	25.9	25.9	75	■
Stb Engine	25.0	25.0	74	■
Generator	25.0	25.0	74	■

The 'Primary Outputs' table is also highlighted with a red box and contains the following data:

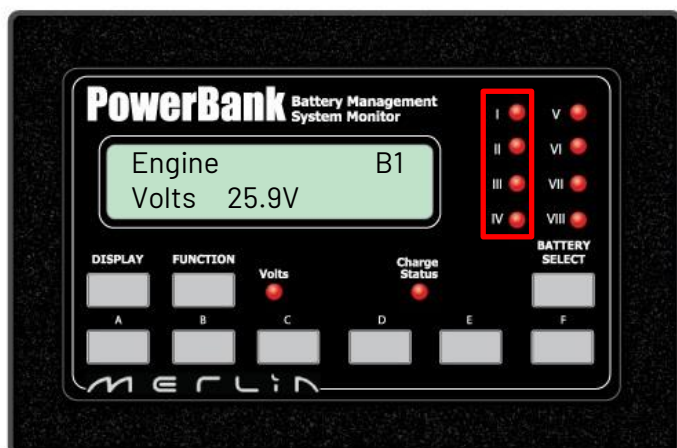
Pre A	Delay	Del A	B
1	0	■	■
2	0	■	■
3	0	■	■
4	0	■	■
5	0	■	■
6	0	■	■
7	0	■	■
8	0	■	■

The 'Status' section shows 'Datacell Status' as 'E 01'. The 'Detected Devices' list includes: 1 PowerBank MP, 2 Datacell I (4 Channel), 3 16 input/Output (lo address), 4 16 input/Output (hi address), 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

From this window battery voltage and SoC can be observed.

It is also possible to view the 'Primary Outputs' which depending on PowerBank Combi configuration could be set up to trigger due to low battery voltage or SoC.

2. PowerBank Control Panel:



Pressing the 'Function' button will toggle between the battery voltage and SoC. Pressing the 'Battery Select' button will toggle between the batteries on the platform (1 to 4 battery banks).

Warning LEDs are also provided which depending on PowerBank Combi configuration could be set up to trigger due to low battery voltage or SoC.

AFTER INSTALLATION

If you are unsure about any aspect please consult a suitably qualified engineer, your Dealer or Merlin Equipment Ltd before commissioning the unit.

PRODUCT SPECIFICATIONS

PowerBank Combi	
Part Number(s)	19-5006
ECU Maximum Dimensions excluding cabling (W x L x H)	173 x 141 x 48mm
ECU Weight excluding cabling	0.56 Kg
Voltage Rating	12 or 24V DC
Operational Input Voltage Range	6.5 to 36V DC
Operation Temperature Range (°C)	-25 to + 105°
Maximum Contactor Current (200A Contactor)	200A Continuous, 350A Peak
Current Consumption	35mA* *At 12V DC with ECU in idle state with no contactors or LEDs powered and no additional items connected to the MerlinNet multiplex.
Maximum number of Battery Banks	4
Voltage Reading Range	0 to 19.3V or 38.6V (Dependant on 12 / 24V Setting)
Voltage Reading Accuracy	+/- 0.1V DC on 12V setting +/- 0.2V DC on 24V setting
LED Output	5V DC Source with 1K series limiting resistor
PC Communications	RJ11 - RS232 Communications

PRODUCT ACCESSORIES

Merlin Part Number	Description
19-5004	DataCell/PowerBank/PowerBank Combi Programming Kit
19-5010	Flat Battery / Isolator Contactor 12V (200A)
19-5011	Flat Battery / Isolator Contactor 24V (200A)
19-5014	Split Charge Contactor 12V (200A)
19-5015	Split Charge Contactor 24V (200A)
19-5012	Flat Battery / Isolator Contactor 12V (350A)
19-5013	Flat Battery / Isolator Contactor 24V (350A)
19-5016	Split Charge Contactor 12V (350A)
19-5017	Split Charge Contactor 24V (350A)
19-5018	Input Switch (On)-Off Momentary with Red LED
19-5019	Input Switch (On)-Off Momentary with Green LED
19-5030	PowerBank LED Remote Panel
19-5031	PowerBank LCD Remote Panel
19-5032	Expansion Module (EM06)
19-5052	MerlinNet Cable 3.2m
19-5053	MerlinNet Cable 7.5m
19-5054	MerlinNet Cable 10m
19-5057	Merlin Net Loop Back Plug
U3/WIP/PBANK/RELAY-FIX12	PowerBank Relay Driver 12 Volt (350A Latching Contactors)
U3/WIP/PBANK/RELAY-FIX24	PowerBank Relay Driver 24 Volt (350A Latching Contactors)
10-4012	Cable Cap Insulation Boot 2 - 2/0 AWG Red
10-4013	Cable Cap Insulation Boot 2 - 2/0 AWG Black
08-1060	Mega Fuse Holder
08-1054	200A Mega Fuse
08-1013	ATO Single Blade Fuse Holder
08-1003	3 Amp Blade Fuse
08-1005	5 Amp Blade Fuse

WARRANTY

For details of our market-leading warranty policy, please refer to the FAQs section of the Merlin Power website: www.merlin-power.com



All details of the warranty policy are detailed here, to include duration, scope, claims procedure, limitations & governing law.

If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Merlin directly at: Merlin Equipment Ltd, Clyst Court, Hill Barton Industrial Estate, Exeter, Devon, EX5 1SA, United Kingdom. Tel: +44 (0)1202 697979.