



OWNER'S MANUAL

POWERPLUSHUB35



TEAMBMPRO.COM

SAFETY PRECAUTIONS

Please read the Safety Precautions before installing or using the PowerPlusHub35. Be sure to observe all precautions without fail. Failure to observe these instructions properly may result in personal damage, or personal injury which depending on the circumstances may be serious and cause loss of life.



WARNING



Ensure that there is a good ventilation from the battery area.



Correct installation is the most critical factor in ensuring the safe use of the PowerPlusHub35. If every consideration of these instructions has been satisfied, the PowerPlusHub35 will be safe to operate.



This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.



Children shall not play with this product. Cleaning and user maintenance should not be performed by children.



Ensure that the product is well ventilated and that if the product has a fan, the fan is not covered or obstructed.



Metal conducts electricity. Take care not to drop or touch metal objects onto the battery terminals, which if contacts the battery terminals, could cause short circuits and may lead to serious personal injury. Take care and remove unwanted metal objects from the vicinity of battery and PowerPlusHub35. Remove any personal metal adornment such as chain, watch or ring before handling the battery and PowerPlusHub35.



Do not attempt to charge non-rechargeable batteries. Charging a non-rechargeable battery may result in the battery catching fire or possible explosion.



Do not replace a damaged mains power cord. If the power cord is damaged, the product must be discarded.



Batteries are always electrically live and must be treated with extreme caution. They can supply high short circuit currents, even if they appear damaged or undamaged.



Before servicing a battery, disconnect the power supply from all power sources.



Only charge battery types which are supported by this charger (see Compatible Battery Types).



Do not allow water or other liquids to enter the power supply area.



The solar panel negative output (0V) is not a common ground and cannot be grounded if connected to the PowerPlusHub35. Grounding the solar panel negative output can result in damage to the PowerPlusHub35 and batteries.



WARNING



Do not drop or vigorously shake the product as this may cause damage. Do not shock the product, its accessories or batteries as this may cause the product or battery to fail, catch fire or explode.



Stay away from magnetic equipment. Radiation may erase the information stored on this product causing it to become inoperative.

CAUTION: Risk of fire.

Do not replace any fuse with a rating higher than recommended by the manufacturer.



This product is rated to draw 30 amperes from a 12V vehicle outlet. Ensure that the electrical system in your vehicle can supply this product without causing the vehicle fusing to open. This can be determined by making sure the fuse in the vehicle which protects the outlet is rated higher than the maximum ampere drawing current for your PowerPlusHub35. Information on the vehicle fuse rating are typically found in the vehicle operator's manual.

If a fuse opens repeatedly, do not keep on replacing it. The cause of the overload must be found. On no account should fuses be patched up with tin foil or wire as this may cause serious damage elsewhere in the electrical circuit or cause fire.

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ABOUT THE POWERPLUSHUB35

BMPRO's PowerPlusHub35 is a power management system designed for use in recreational vehicles. It operates from 240V AC mains power supply, towing vehicle auxiliary and solar panels to provide up to 35A of current, enabling you to run caravan loads while simultaneously charging either a lead-acid or lithium LiFePO4 caravan battery.

The unit features an in-built 30A MPPT solar regulator, allowing solar panels to be connected directly to the PowerPlusHub35, and supports a maximum 30A AC charging current for reliable and efficient power management.

OPTIONAL ADD-ONS

To get the most from your PowerPlusHub35 it may be used with the following products (sold separately) from the BMPRO range:

XShunt500 + PXGateway

An external shunt for the integration of additional accessories and high current scenarios such as external charging devices and inverters.

PowerPlusNode

A communication centre for the PowerPlus system.

PowerPlusDisplay5

A battery monitor to monitor battery and other parameters and charge sources.

PowerPlusScreen7

A battery monitor to gain greater insights into battery usage, with the ability to monitor water tank levels and control up to 7 individual circuits.

MiniBoost

A DC-to-DC booster for RV or 4WD applications.

COMPATIBLE BATTERY TYPES

The PowerPlusHub35 is rated to charge lead-acid and lithium LiFePO4 battery banks of up to 1200Ah in capacity.

By default, the PowerPlusHub35 is configured to charge lithium LiFePO4 batteries. In order to charge lead-acid batteries, it must be re-configured using the PowerPlus app or the PowerPlusScreen7.

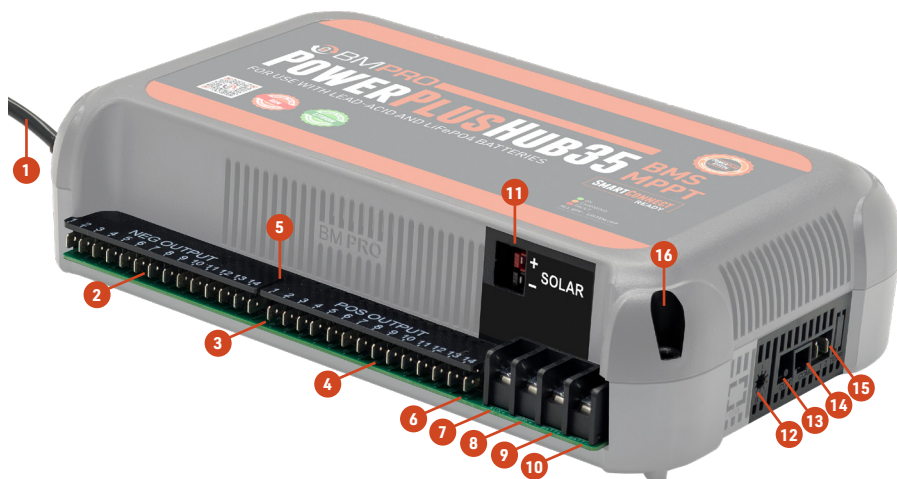
Instructions on how to configure battery chemistry for the PowerPlusHub35 can be found in the PowerPlusNode, PowerPlusScreen7 or PowerPlusDisplay5 product manuals.



WARNING

The PowerPlusHub35 is designed for use with lead-acid and LiFePO4 lithium batteries only. Do not connect other types of lithium batteries to the PowerPlusHub35. BMPRO Invicta batteries are recommended.

DESCRIPTION OF PARTS



1. Mains Cable

The PowerPlusHub35 is pre-cabled with a permanent mains power supply cord for use with 240V input power.



WARNING

Do not replace a damaged power supply cord. If the power cord is damaged, the PowerPlusHub35 must be discarded. Ensure that the AC mains source always has an earth terminal.

2. Load Terminal Block – Common Negative Connection

Negative wire connection return point for the caravan's 12V loads.

3. Load Outputs – 15A x6 Positive Connections

Used for connecting the positive wire of 12V loads to outputs 1-4 and 13-14.

4. Load Outputs – 10A x8 Positive Connections

Used for connecting the positive wire of 12V loads to outputs 5-12.

5. Load Output LED Status Indicator

6. System Status LED Indicator

Indicates the operational status of the PowerPlusHub35.

7. AUX+

Connection point for external DC input positive.

Not all alternators are suitable for direct connection to the PowerPlusHub35 due to output current or voltage.

A MiniBoost DC-DC booster may be required to ensure efficient charging.

8. BRK+ Battery Output (40A Match Rated)

WARNING

Loads connected to BRK+ will not turn off even in ECO Mode or Storage Mode. These loads must be manually turned off. Exceeding 40A total load current may turn off some of the load outputs 1-14. All loads connected on this output must be individually fused.

This output is an uncontrolled 15th output with a maximum current rating of 40A. This is specifically designed for loads which do not need to be isolated or have a current rating higher than the inbuilt circuit protection of the individual outputs and have a current rating less than 40A. This may include, but not be limited to:

-  BMPRO SwayControl
-  BMPRO Trailsafe (+)
-  Heaters
-  Stereo memory

WARNING

Non-braking loads must use a separate output if braking systems are already connected to BRK+.

9. Batt+

Connection point for battery positive terminal. Attach fuse to Batt+ wiring.

10. Batt-

Connection point for battery negative terminal.

11. Unregulated Solar Panel Connection

12. Not Used

13. Reset (Master Reset Button)

Used if the system is unresponsive or not operating correctly.

A short press will save the current state of charge parameters and reset the microcontroller.

A long press of 10 seconds or more will perform a full system reset.

14. CAN Bus Communication Connector

To connect to and power BMPRO accessories or monitors.

15. Remote Switch Terminal Block (RSW)

Terminal block for connecting an optional remote switch. This switch is used to disconnect power to all loads connected to load outputs 2-14.

The remote switch terminal block is a circuit which is normally open. Closing the circuit engages the RSW.

Load output 1 will remain connected to power if a remote switch is used while a sufficient solar or AC charging source is available.

If the remote switch is triggered and battery power is the only available power source, output 1 will lose power regardless of the battery's state of charge.

Output 1 will lose power if the battery voltage discharges below the Storage Mode threshold or the low voltage disconnect threshold.

16. Mounting Hole (x4)

POWERPLUSHUB35 LOAD OUTPUTS

TERMINAL	DESIGNATED LOAD OUTPUT	LOAD RATING
1	Tablet / Spare	15A
2-4	Spare	15A
5-7	Spare	10A
8	Uncontrolled Switch 1	10A
9	Uncontrolled Switch 2	10A
10	Light 1	10A
11	Light 2	10A
12	Light 3	10A
13	Pump 1	15A
14	Pump 2	15A

LOAD OUTPUT LED INDICATORS

The following table displays the load output status of loads connected to the PowerPlusHub35.

LED COLOUR	LOAD OPERATIONAL STATUS
Green	Loads operating normally
Flashing Red	Fault with load
Off	Load is off

SYSTEM STATUS LED INDICATORS

The following table displays the system status of the PowerPlusHub35, as shown by the coloured flash of the LED Status Indicator.

LED FLASH KEY	
	Solid Colour
	Flash Colour
	LED Off
	AC Charging
	Low Battery Voltage LFP Mode No Battery
	Solar or Aux/Solar Charging
	Aux Charging
	Battery OK, AC available
	Battery OK, no sources available
	Battery OK, solar or Aux/solar available
	Battery OK, Aux available
	Fault on One or More Output Loads
	High Temperature Fault
	Battery Fault
	Solar Fault
	Other Fault
	Power Off

INSTALLATION INSTRUCTIONS

Installation of the PowerPlusHub35 should only be carried out only by suitably qualified personnel.

EARTHING

The PowerPlusHub35 uses positive sensing for current monitoring. This allows for chassis earthing of both the battery and the negative of 12V DC appliances.

All 12V DC positive cables must be wired to outputs 1-14 or the 40A battery output connection.



WARNING

If you use an external charger or use more than 40A, you will require a battery shunt.

If you are installing a BMPRO shunt, you must ensure your PowerPlusHub-35 earthing is relocated to the load side of the shunt.

Loads Greater Than 15A

If you are using 12V DC appliances that may draw greater than 15A, such as an inverter, an **XShunt500 + PXGateway** must be installed. The battery negative(s) must be wired directly to the new battery negative terminal on the XShunt500 to ensure the PowerPlusHub35 sees the actual current so that correct information is displayed, such as the state of charge, battery current and time remaining.

Refer to our website for more information on this product:

<https://teambmpro.com/products/pxshunt500/>

When fitting an XShunt500 + PXGateway, ensure the power management system negative lead is also relocated to the load side of the shunt.

VENTILATION, ORIENTATION AND THERMAL CONSIDERATIONS

The PowerPlusHub35 should be oriented with the load connection at the bottom and located so that there is a minimum of 80mm of free air space from all vented sides. This allows for the lowest operating temperature of the internal electronics and the highest reliability of the product.

The final enclosure must provide adequate ventilation to the outside world (or larger internal cavity) to prevent excessive heating of the air within the enclosure.

At normal room temperature (25°C), the unit is rated to provide full power in both vertical and horizontal orientations. At elevated temperatures of up to 50°C, the output current is de-rated to 32A.

WARNING

If adequate ventilation is not provided, the enclosure air temperature can easily exceed 50°C.

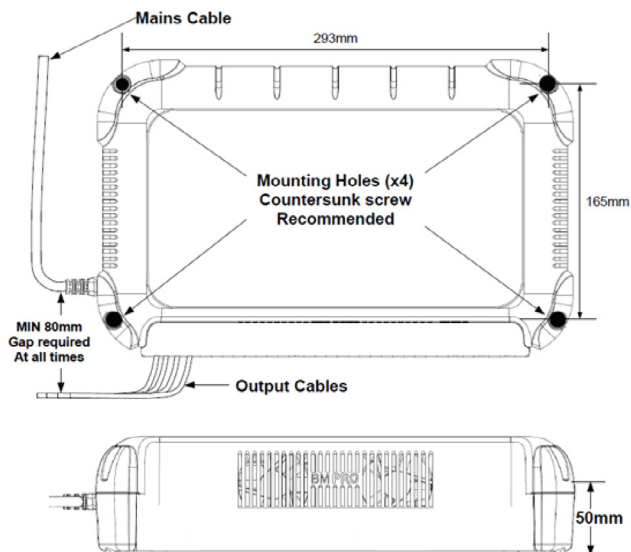
The overtemperature protection of the PowerPlusHub35 will cause it to shut down if its internal temperature rises above the safe level. The PowerPlusHub35 will automatically restart once it has cooled to an acceptable level.

WARNING

Do not install the PowerPlusHub35 in a compartment where flammable material is stored, such as petrol or LPG.

MOUNTING

Securely mount the PowerPlusHub35 to a suitably rigid surface, using the four pre-drilled mounting holes.



MAINS CABLE



WARNING

If the supply cord is damaged, it must not be replaced and the appliance should be disposed of.

The PowerPlusHub35 is pre-cabled and fitted with a mains plug. Ensure that the connections to the mains supply are in accordance with the national wiring rules, and that the earth connection is installed. For more information, refer to the **Mounting** section.

The mains cable must be at least 80mm away from the output cables. For information on wiring, refer to the **Wiring Diagram** section.

The plug must be accessible during installation. If this is not possible, an accessible mains disconnection switch must be incorporated in the mains wiring where the plug is connected.

Wire Size

DC cables must be sized to carry the maximum full load current and to not exceed the system volt drop requirements.

The following cable sizes are recommended. Ensure any wires that must pass through panels or walls are protected from damage by sharp edges. The use of cable glands is recommended.

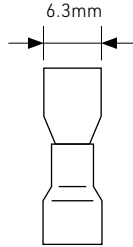
CURRENT	MINIMUM WIRE SIZE
0-10A	3mm automotive (1.13mm ²) or 18 AWG
10-20A	4mm automotive (1.84mm ²) or 14 AWG
20-30A	6mm automotive (4.59mm ²) or 10 AWG

The wiring method used with the installation shall be in accordance with National Electrical Code ANSI/NFPA 70.

CONNECTIONS

Load, Battery and External DC Input Connections

Up to 14 loads may be connected. Loads are attached using 6.3mm wide female spade Quick Connects (QC).



WARNING

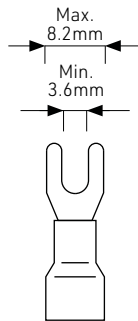
Ensure QC connectors are installed correctly and provide a firm connection. Loose fittings can contribute to faults.

All load negative returns must be connected directly to the PowerPlusHub35 negative terminals only.

Main Charge Connection

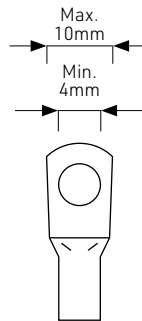
The following inputs / outputs require 40A rated fork type or narrow palm cable lug connections:

- ☐ Aux+
- ☐ Batt+
- ☐ Batt-
- ☐ BRK+



Fork type
connection

(Recommended)



Narrow palm
cable lug
connection

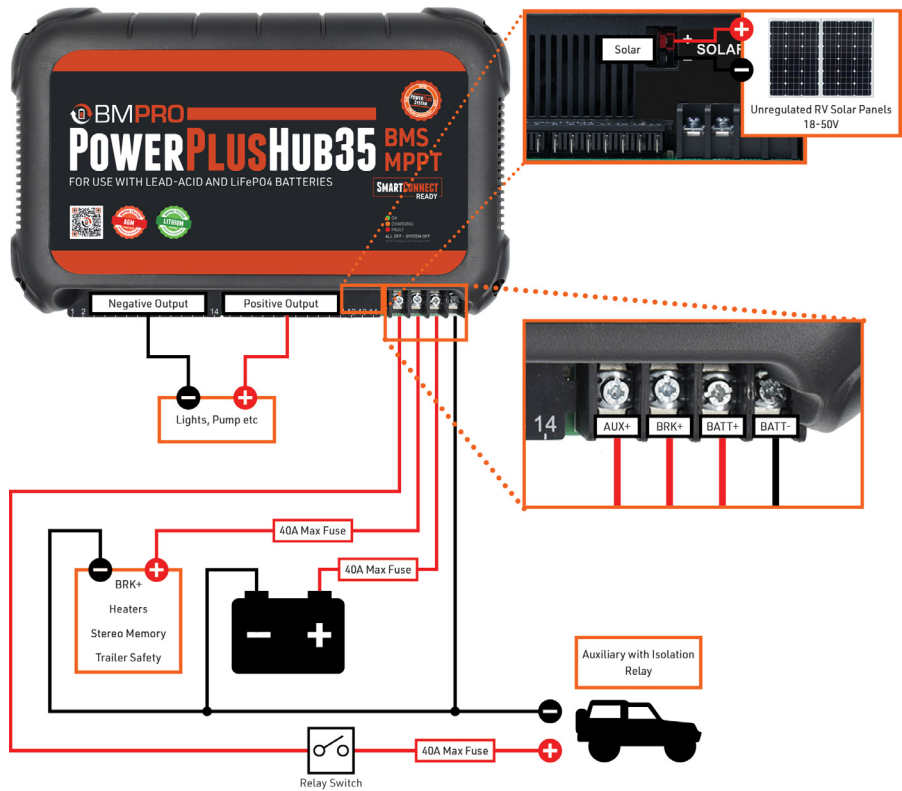
Caravan Battery Connection

A fuse of no greater than 40A must be installed in the positive connection of the battery. A MIDI style bolt-on fuse is recommended.

WARNING

The positive connection fuse **MUST** be as close as possible to the battery. This fuse protects against short circuits and reverse battery conditions. A fuse rating no greater than 40A must be used.

SIMPLE WIRING DIAGRAM



The diagram illustrates the wiring for the BM PRO PowerPlusHub35 BMS MPPT. The central hub is connected to various components as follows:

- 240V AC In (Not From Inverter):** Connected to the top of the hub.
- PowerPlusScreen7:** Connected to the hub via a CAN Bus and RSW.
- Unregulated RV Solar Panels (18-50V):** Connected to the hub via a 40A Max Fuse.
- Lights/Pumps/etc:** Connected to the hub via a 40A Max Fuse.
- TrailSafe Heaters:** Connected to the hub via a 40A Max Fuse.
- SwayControl Stereo Memory:** Connected to the hub via a 40A Max Fuse.
- Inverter (PurePro3000):** Connected to the hub via a 40A Max Fuse.
- Temp sense:** Connected to the hub via a 40A Max Fuse.
- XShunt500:** Connected to the hub via a 40A Max Fuse.
- MiniBoost:** Connected to the hub via a 40A Max Fuse.
- Relay Switch:** Connected to the hub via a 40A Max Fuse.
- Vehicle Battery:** Connected to the hub via a 40A Max Fuse.

Optional components include:

- ProBoost25:** Connected to the hub via a 40A Max Fuse.
- 45A Plug:** Connected to the hub via a 40A Max Fuse.

CONNECTING A BATTERY TO THE POWERPLUSHUB35

WARNING

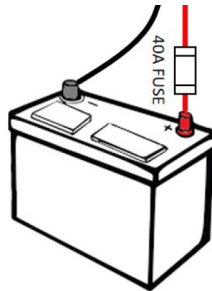
Sparks have the potential to cause an explosion if combustible gases are present. The following procedures are designed to minimise the risk of spark generation while connecting or disconnecting the battery. **The positive terminal of the battery must not be connected to the chassis.**

WARNING

Before using a battery other than that which was installed at the caravan dealership, consult with the battery manufacturer for a detailed description of the installation, uses and maintenance of the battery. Verify that the type and capacity of the battery or batteries used are compatible for use with the PowerPlusHub35.

To connect a battery to the PowerPlusHub35 and ensure the system is wired correctly:

1. Ensure a 40A fuse is installed as close as possible to the battery's positive terminal. This will protect against short circuits and reversed battery connections.



2. Power off all loads connected to the PowerPlusHub35. The easiest way is with a switch connected to the PowerPlusHub35's RSW input.
3. Turn off the PowerPlusHub35 and remove all connected power sources (mains/solar/AUX).
4. Connect the battery's positive (red) terminal to the PowerPlusHub35 Batt+ connection point.
5. Connect the battery's negative (black) terminal to the PowerPlusHub35 Batt- connection point.

After fitting a new battery to the PowerPlusHub35, make sure that it is configured in your battery monitor.

Correctly configuring the battery capacity and profile will ensure that the PowerPlusHub35 will select the best charging parameters for the caravan battery in use, and the software accurately estimates battery usage.

Please note that your battery can only reach top performance level only after it has been fully charged and discharged two or three times.

DISCONNECTING A BATTERY FROM THE POWERPLUSHUB35

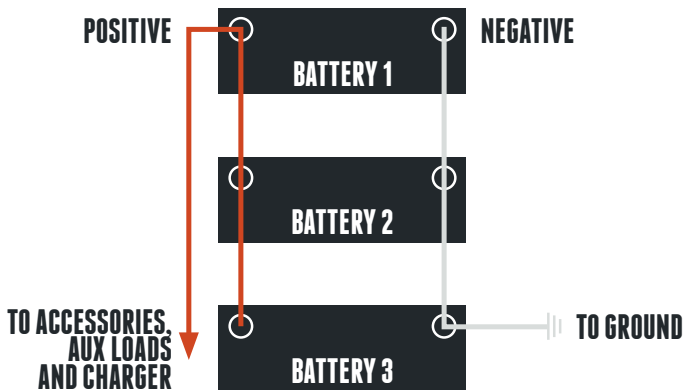
1. Power off all loads connected to the PowerPlusHub35. The easiest way is with the switch connected to the PowerPlusHub35's RSW input.
2. Turn off the PowerPlusHub35 and remove all connected power sources (mains/solar/AUX).
3. Disconnect the battery's negative (black) terminal from the PowerPlusHub35 Batt- connection point.
4. Disconnect the battery's positive (red) terminal from the PowerPlusHub35 Batt+ connection point.

CONNECTING MULTIPLE BATTERIES

Before connecting multiple batteries in parallel to the PowerPlusHub35, check that all batteries are:

- ▣ the same manufacturer
- ▣ the same model
- ▣ the same capacity
- ▣ the same age, and
- ▣ fully charged.

The recommended wiring for connecting multiple batteries in parallel to the PowerPlusHub35 is below. Depending on system requirements, a qualified auto-electrician may wire the batteries differently.



USING YOUR POWERPLUSHUB35

INPUT POWER SOURCES

The PowerPlusHub35 can charge from auxiliary, mains and solar input sources to provide the current needed to simultaneously power caravan loads and charge the caravan battery.

When multiple inputs are available to the PowerPlusHub35, power is used as specified in the tables below:

INPUT SOURCE TO POWERPLUSHUB35	POWER SOURCE
AUX + Mains	Mains
AUX + Solar	AUX/Solar Blending
AUX + Mains + Solar	Mains
Mains + Solar	Mains

Auxiliary

The auxiliary input is designed for use with 12V DC power sources. The voltage of the DC power source connected to the auxiliary input must not exceed 14.8V. Fuse protection is required at the auxiliary's positive input and to protect the wiring from the source. The rating on this protective fuse must not exceed 40A.



WARNING

To prevent your car battery from discharging when the vehicle's ignition is off, ensure the auxiliary is wired so that it is automatically disconnected in this condition. This can be done with a voltage sensitive relay or an ignition switched relay.

Mains

The PowerPlusHub35 mains power cord accepts power from a 240V 50/60Hz voltage outlet.

Solar

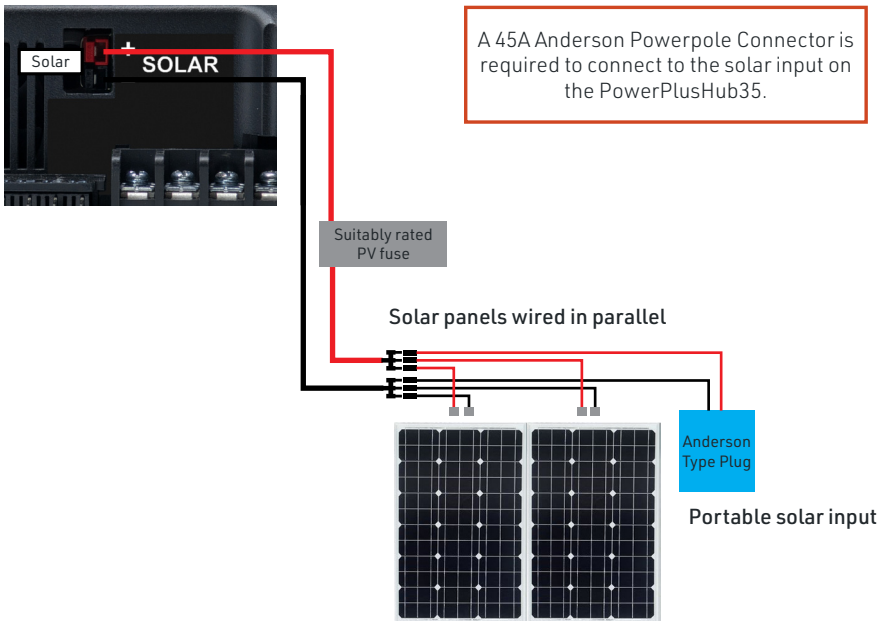
The PowerPlusHub35 features an in-built MPPT solar regulator. This enables 12V or 24V solar panels to be connected directly to the PowerPlusHub35 without the need for an external regulator.

WARNING

Ensure the solar panel open circuit voltage (Voc) does not exceed 50V.

INSTALLING SOLAR

When installing a solar connection to the PowerPlusHub35, it is crucial that the connections and protection methods are suitable to handle the anticipated solar currents and are compliant to the relevant standards.



WARNING

The solar panel negative output (0V) is not a common ground and cannot be grounded if connected to the PowerPlusHub35. Grounding the negative output can result in damage to the PowerPlusHub35 and batteries.

BATTERY CHARGING

The PowerPlusHub35 can deliver up to 35A to simultaneously power loads and charge the caravan battery, with a maximum charging current of 30A. The difference is reserved to supply 12V loads.

The maximum charging current is reduced if any loads are drawing significant current as the battery approaches full charge. To ensure that the caravan battery is charged by the maximum charging current, switch off non-essential loads.



WARNING

Do not attempt to charge non-rechargeable batteries. Charging a non-rechargeable battery may result in the battery catching fire or a possible explosion.

Auxiliary Charging

When charging from auxiliary, the PowerPlusHub35 monitors the battery voltage level and charges as needed.

Auxiliary charging commences only when the auxiliary voltage exceeds the battery voltage by at least 0.5V and is greater than 12.6V.

Mains Charging

When charging the battery from mains, the PowerPlusHub35 applies a multi-stage charging algorithm.

Information about the multi-stage charging algorithm can be found in the **Appendices**.

Solar Charging

When charging the battery from solar, the PowerPlusHub35 applies a multi-stage charging algorithm.

The PowerPlusHub35 will use solar as a charging source if the voltage generated by the solar panel is greater than 17.5V for at least two minutes.

Compatibility with External Charging Devices

If an external charging device is connected directly to the battery, such as a **ProBoost** DC-DC charger, a **PXShunt500** is required to be installed to ensure the PowerPlusHub35 receives correct battery data.

If an external charging device is connected through the PXShunt500, any difference between load/charging current and total input currents may show as solar input current as the source on any connected battery monitor.

BATTERY HEALTH PRESERVATION

The PowerPlusHub35 maintains battery health by preventing excessive discharge.

If battery voltage drops below a user-set threshold, the PowerPlusHub35 will start a two-stage shutdown or Low Voltage Disconnect (LVD), which will power down the outputs. This conserves remaining battery capacity until the battery can be charged.

Lead-acid Thresholds

LVD MODE	DEFAULT THRESHOLD	SELECTABLE THRESHOLD RANGE
ECO	10.8V	10V - 11.5V
Storage	10.3V	9.5V - 11V
Recovery	12.8V	12.5V - 13.5V

LiFePO4 Thresholds

LVD MODE	DEFAULT THRESHOLD	SELECTABLE THRESHOLD RANGE
ECO	12.0V	11.5V - 12.5V
Storage	11.5V	11V - 12V
Recovery	13.6V	13V - 14V

The PowerPlusHub35 will enter the two stages of LVD, ECO Mode and Storage Mode, depending on the level of battery voltage and the user-defined setting.

The BRK+ battery output is not controlled by LVD.

ECO Mode

In ECO Mode, the PowerPlusHub35 will continue to provide power to the battery monitor, however power to the load outputs will shut down (except for terminal 1).

To exit ECO Mode, start battery charging. The PowerPlusHub35 will exit ECO Mode when battery voltage reaches the recovery voltage. Upon exiting ECO Mode, the PowerPlusHub35 will automatically return to its previous state of operation.

While in ECO Mode, caravan loads can be turned on temporarily by cycling a switch connected the PowerPlusHub35 RSW input, or by using the ECO button on the PowerPlusDisplay5, PowerPlusScreen7 or the PowerPlus app. This feature allows you to retract slide-outs or electric steps.

Storage Mode

In Storage Mode, power to all loads and accessories including battery monitors and remote controls will shut down.

To exit Storage Mode, start battery charging. The PowerPlusHub35 will exit Storage Mode when battery voltage reaches the recovery voltage.

While in Storage Mode, caravan loads can be turned on temporarily by cycling a switch connected the PowerPlusHub35's RSW input.

Recovery Mode

If the PowerPlusHub35 went into either ECO Mode or Storage Mode, once a charging source is present and the battery voltage rises above the pre-defined user setting, the PowerPlusHub35 will enter Recovery Mode and will resume normal operation.

Heavily Discharged Lead-acid Batteries

The PowerPlusHub35 will not charge heavily discharged lead-acid batteries.

Lead-acid batteries should never become heavily discharged during normal use while the PowerPlusHub35's battery health preservation features are active.

If your battery is heavily discharged, disconnect it from the PowerPlusHub35 and charge it with a standalone charger. Reconnect the battery once the battery voltage has recovered to normal levels.

Heavily Discharged LiFePO4 Batteries

The PowerPlusHub35 can recover and charge a heavily discharged LiFePO4 battery if it is connected to a mains or AUX input.

The battery management system (BMS) of a LiFePO4 battery will turn off the battery voltage if it detects that the battery is heavily discharged. The PowerPlusHub35 will provide the voltage to restart the LiFePO4 battery's BMS and then commence charging of the LiFePO4 battery.

The PowerPlusHub35 cannot recover and charge a heavily discharged LiFePO4 battery if it is only connected to a solar input. It must be connected to a mains or AUX input to recover and charge a heavily discharged LiFePO4 battery.

USING THE POWERPLUSHUB35 AS A POWER SUPPLY

The PowerPlusHub35 will act as a power supply and can operate without a battery if all the following conditions are met:

1. A battery is not connected to the PowerPlusHub35, and
2. The PowerPlusHub35 is configured to charge lead-acid batteries, and
3. The PowerPlusHub35 is connected and powered by either a mains power source or an AUX input.

Power Supply mode allows you to control and power your RV's loads directly from mains or AUX without the need to connect the RV battery.

When powered from mains power, the PowerPlusHub35 provides an output voltage of 12.8V.

When powered from an AUX input, the output voltage will vary depending on the AUX input voltage. The output may shut down if input voltage is less than 12.6V.

The PowerPlusHub35 cannot act as a power supply if it is only powered from solar.

FAULT PROTECTION

Electronic Load Fuse Protection

Each load output is protected by an internal electronic fuse. Electronic fuses are auto-recoverable and eliminate the need to replace a blown fuse.

The electronic fuse will act if the PowerPlusHub35 detects a current greater than the current rating of the terminal. The Load Output Status Indicator will flash red and the System Status Indicator will show a solid red.

The PowerPlusHub35 will automatically attempt to reconnect a faulty output up to 3 times within a 45-second window. If the fault is still present after the 3rd attempt, the output will be disabled. Normal operation may resume once the fault has been rectified and the system is reset.

The system can be reset by pressing the reset button, or by disconnecting all sources (AC mains, auxiliary, solar and battery).

Overtemperature, Overvoltage and Short Circuit Overload Protection

The PowerPlusHub35 provides automatic protection for overtemperature, overvoltage and short circuit overload situations.

If any of these situations are detected, the PowerPlusHub35 will shut down and automatically attempt a restart every 30 seconds until the fault is removed.

SERVICING, MAINTENANCE AND STORAGE

SERVICING THE POWERPLUSHUB35

This PowerPlusHub35 contains hazardous voltages and energy hazards that may cause death or injury. Only qualified service personnel may service the PowerPlusHub35. Do not attempt to service the PowerPlusHub35 yourself, OR dismantle, modify or repair the PowerPlusHub35 yourself; this will void your warranty.

If your PowerPlusHub35 requires servicing other than what is stated in this Owner's Manual, please consult your BMPRO dealer.

CLEANING THE POWERPLUSHUB35

Use a dry or moist soft cloth to lightly remove dust or dirt from the PowerPlusHub35. Do not use alcohol, thinners, benzene or any other chemical cleaner as these products may degrade the housing surface. Do not allow any liquids to enter the housing.

Be sure to turn off all power sources to the PowerPlusHub35 and disconnect the battery before cleaning.

STORING THE POWERPLUSHUB35

Once your adventure is over make sure to charge the caravan's battery and power off all loads. Use a switch connected to the PowerPlusHub35 RSW input to enter Storage Mode and power off loads 2-14.

Load output 1 will remain connected to power if solar or AC power is available.

If only battery power is available, output 1 will lose power if the battery voltage discharges to below the Storage Mode or the low voltage disconnect threshold.

When not in use, it is recommended that you regularly recharge the caravan's battery, ideally monthly, or every three to six months. Regular recharge prevents the battery from becoming heavily discharged - a condition which can significantly shorten the battery's lifespan.

If you have a solar panel fitted, a convenient way to maintain your battery is to park your caravan in the sun and put the PowerPlusHub35 into Storage Mode.

FAQS AND TROUBLESHOOTING

Need more help troubleshooting your PowerPlusHub35?

Contact our customer service team online at teambmp.com/technical-support

BATTERY

I have fitted a battery to the PowerPlusHub35, but it's not detected by my BMPRO battery monitor?

Check the following:

1. The battery connections are tight and not loose or corroded.
2. The battery polarity is correct: red lead is positive, black lead is negative.
3. The dealership fitted in-line fuse with the caravan battery is fitted and not blown. The correct value is 40A.

I have replaced my lead-acid batteries with lithium batteries. What compatibility do I need to ensure my system runs correctly?

Lead-acid and lithium batteries have distinct characteristics, requiring different charging methods and state-of-charge algorithms to ensure accurate monitoring and optimal performance.

Some lithium batteries are promoted as direct replacements for lead-acid batteries without the need for lithium-compatible equipment. However, these batteries often have a unique discharge curve that differs from both traditional lithium and lead-acid batteries. As a result, state-of-charge algorithms that calculate using standard battery discharge curves may not provide accurate readings when used with these replacement batteries.

If you need guidance on battery compatibility with BMPRO products, please contact our customer service team.

CARAVAN LOADS

I think one of my loads is not receiving power?

The load may be faulty, activating the protective electronic fuse and turning the load off. If this is the case, the Load Status Indicator LED will be flashing red and the System Status Indicator will be solid red.

Should you encounter any faulty loads, reset the PowerPlusHub35. If the issue persists, please contact your caravan dealership or BMPRO.

None of my loads appear to be powered but I can still use my battery monitor?

All loads will power down, but the battery monitor will still be in use if the PowerPlusHub35 was put into ECO Mode.

The PowerPlusHub35 will be put into ECO Mode if:

1. You have pressed the Battery icon on your battery monitor.
Check to see that the Battery icon on your monitor has been pressed, which turns power off to the caravan loads.
2. Battery voltage is low. The PowerPlusHub35 will enter ECO Mode to conserve remaining battery voltage, which will disable power to caravan loads.
Connect the PowerPlusHub35 to a power source and begin battery charging.

None of my loads appear to be powered and the screen on my battery monitor has turned off?

All loads, including any battery monitor in use with the PowerPlusHub35 will power down if the PowerPlusHub35 was put into Storage Mode.

The PowerPlusHub35 will be put into Storage Mode if:

1. The switch connected to the PowerPlusHub35 RSW input has been activated. This turns off power to all caravan loads and accessories connected to the PowerPlusHub35 CAN bus, such as your battery monitor.
Check that the switch has not been activated.
2. Battery voltage is very low. The PowerPlusHub35 will enter Storage Mode to conserve remaining battery voltage, which will disable power to all caravan loads and accessories connected to the PowerPlusHub35 CAN bus.
Connect the PowerPlusHub35 to a power source and begin battery charging.

SOLAR

My solar output appears lower than expected?

If the battery is close to fully charged, the PowerPlusHub35 will periodically turn off solar to protect the batteries from overcharging. As a result, you may see less output on your solar display.

The following tips will also make sure you are getting the most of your solar set-up:

1. Make sure your solar panels are clean.

For optimal performance of your solar panels, regularly clean them (when cool) with warm, soapy water.

2. Consider the location of your caravan.

A shadow (for example from trees, buildings and even other accessories on the roof of your caravan) across any part of the solar panel can reduce the panel performance by up to 80%.

3. The time of day, month and year is important.

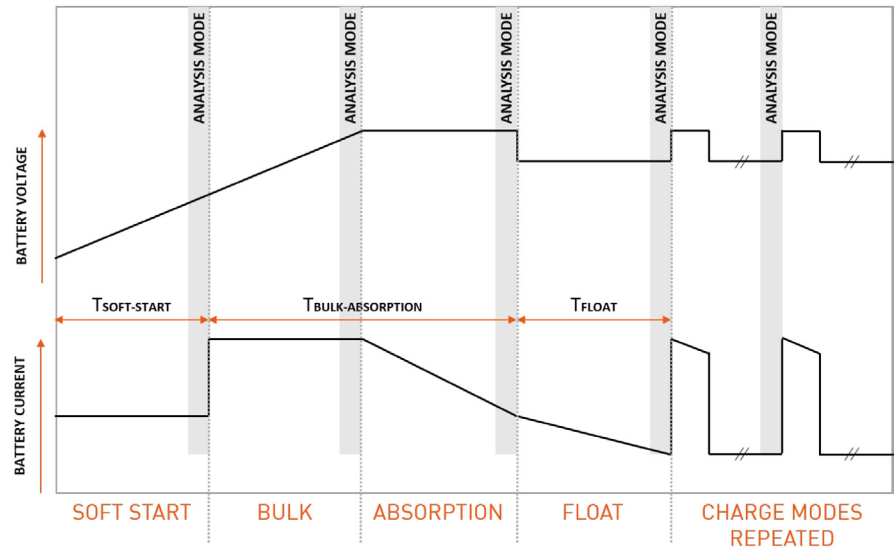
In some parts of the year (especially in southern parts of Australia) the sun will never be directly overhead, so your solar output will be reduced - sometimes by up to 50%.

APPENDICES

BATTERY CHARGING MANAGEMENT ALGORITHM

The PowerPlusHub35 uses a battery charging management algorithm when charging the caravan battery either a mains power source or solar.

The PowerPlusHub35 will operate as follows when the caravan loads are connected directly to the PowerPlusHub35 and not the caravan battery.



BATTERY CAPACITY	SOFT START TIMEOUT	BULK- ABSORPTION TIMEOUT	FLOAT TIMEOUT
≤ 100Ah	6 Hours	5 Hours	6 Hours
150Ah	6 Hours	7.5 Hours	6 Hours
200Ah	6 Hours	10 Hours	6 Hours
250Ah	6 Hours	12.5 Hours	6 Hours
≥ 300Ah	6 Hours	15 Hours	6 Hours

CHARGE MODE	LEAD-ACID VOLTAGE LIMIT	LiFePO4 VOLTAGE LIMIT
Soft Start	12.3	12.3
Bulk	14.4	14.6
Absorption	14.4	14.6
Float	13.6	13.6

CHARGE MODE	CURRENT LIMIT
Soft Start	10
Bulk	30
Absorption	30
Float	10

The algorithm intelligently sets charging parameters to maintain the best state of health for the caravan battery. The charging modes include:

Soft Start Mode

Charging current is maintained at 10A until the battery voltage reaches 12.3V or soft start timeout occurs.

Bulk Mode

Charging current is maintained at the Bulk current limit, until the battery reaches the Bulk voltage, after which charging proceeds to Absorption Mode.

Absorption Mode

Battery is charged at Absorption voltage until the current drops below 2A or Bulk-Absorption timeout occurs.

Float

Charging current is limited to 10A to keep the battery level topped up. Charging will remain in Float for 6 hours. After Float timeout, the PowerPlusHub35 will enter back into Bulk-Absorption modes.

SPECIFICATIONS

POWERPLUSHUB35	
Input Voltage Range	100-240Vac, 50-60Hz
Input Surge	<40A (cold start)
Output Current	35A (Load + Battery Current)
Factory Set Voltage	13.65V (Float Voltage)
Output Ripple Voltage	<150mV
Battery Current Limit	max. 30A
Low Voltage Disconnect (Lead-acid)	User settable - default 10.8V
Battery Connect after LVD (Lead-acid)	User settable - default 12.8V
Low Voltage Disconnect (LiFePO4)	User settable - default 12.0V
Battery Connect after LVD (LiFePO4)	User settable - default 13.6V
Battery Drain	<15mA (when in Storage Mode)
AC/DC Efficiency	>83%
Cooling Fan	Digitally Controlled
Solar Regulator Type	MPPT
Supported Solar Panel Voltage	12V and 24V
Maximum Solar Input	800W
Maximum Solar Output	450W/30A (nominal)
Solar Charge Capacity	30A
Maximum Solar Panel Open Circuit Voltage (Voc)	50V
Solar Start Voltage	17.5V
Solar Input Voltage (after start-up)	15-50V
Ambient Temperature	0-50 °C
Communication	CAN Bus
Dimensions	327mm x 207mm x 82mm
Weight	2kg
Standards	Safety: AS/NZS 60335.2.29, UL 458, UL 1741 EMC: AS/NZS CISPR 32 Approvals: RCM, UL, FCC

WARRANTY TERMS AND CONDITIONS

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

This warranty is provided by BMPRO Pty Ltd (ABN) ("BMPRO") for its products. Warranty benefits are applied along with any rights and remedies required by Australian State and Federal legislation that cannot be excluded. No part of this warranty excludes, restricts or modifies any State or Federal legislation relating to the supply of goods and services which cannot be excluded, restricted or modified.

WARRANTY

BMPRO warrants that the product will be free from any faults in materials and workmanship beginning from the original date of purchase under standard application, installation, use and service conditions, subject to the exclusions and limitations detailed below. The warranty period of the product is two years.

If, before the warranty period has ended, a fault occurs with the product and BMPRO finds the product is defective in materials or workmanship, BMPRO at its discretion will subject to further rights accorded by the Australian Consumer Law to either:

- Repair the defective product
- Replace the defective product
- Provide a refund to the purchaser for the price paid at purchase for the defective product.

WARRANTY CLAIMS

Refer to your manual before using the product. Most BMPRO products are designed to be installed by a suitably qualified installer. The products should be carefully inspected by you or your installer before installation for any visible manufacturing faults. If a product has been installed incorrectly, BMPRO accepts no responsibility on top of our consumer guarantee obligations.

1. If a fault covered by warranty occurs, the purchaser must either contact the dealer where the product was purchased within 7 days, or BMPRO at the contact details listed.
2. All warranty claims must include: (a) proof of purchase of the product; (b) complete details of the alleged fault; (c) any relevant documentation related to the fault (such as photographs or maintenance records); (d) return material authorisation (RMA) number.
3. The product must be made available to BMPRO or its authorised installer for inspection and testing within 14 days of contacting BMPRO or the dealer.
4. The reasonable cost of delivery and installation of any products or components of products that have been repaired or replaced to the place of purchase notified to BMPRO is covered by the warranty provided by BMPRO, along with the reasonable costs of removal and return of any products determined by BMPRO to be defective.
5. If, on return to BMPRO or on investigation by BMPRO, inspection and testing determines there is no fault in the product, the purchaser must pay BMPRO's reasonable costs of testing and investigating the product, as well as transportation and shipping costs.

REGISTER A WARRANTY OR REPAIR WITH BMPRO

To register a warranty or repair with BMPRO:

1. Lodge a support request via teambmp.com/technical-support or email customerservice@teambmp.com
2. If agreed with the BMPRO Product Specialist team, register a warranty claim or repair via teambmp.com/warranty-claim or email customerservice@teambmp.com to obtain a Return Material Authorisation (RMA) number.
3. Package and send the product to the BMPRO Warranty Department. The BMPRO Product Specialist team will advise you where to send the product. Please mark RMA details on the outside of the packaging.
4. Ensure your package also includes a copy of the proof of purchase, a complete description of the fault and your contact details including phone number and return address.

EXCLUSIONS

This warranty will not be applicable where: (a) the product has been altered, modified or repaired by someone other than BMPRO, an authorised installer or a qualified auto electrician; (b) the product has not been installed properly by either the user or manufacturer; (c) BMPRO cannot establish a fault in the product after inspection and testing; (d) the product has been used for purposes other than that for which it was designed; (e) the fault in the product has occurred due to a failure by the purchaser to ensure proper use and maintenance of the product according to BMPRO's instructions, recommendations and specifications (including maintenance); (f) the product has been subjected to abnormal conditions, such as environmental, temperature, water, fire, humidity, pressure, stress or similar; (g) the fault has been caused by abuse, misuse, neglect or accident; (h) the fault has been caused by a power surge or other kind of fault in the supply of electricity; (i) unauthorised parts or accessories have been used on or in relation to the product; (j) the appearance of the Product has deteriorated; or (k) the fault is a result of common wear & tear.

LIMITATIONS

No express warranties or representations are made by BMPRO other than what is set out in this warranty. The absolute limit of BMPRO's liability under this express warranty is the repair or replacement of the product or part of the product.

CONTACT

BMPRO's contact details for warranty claims are:

Phone: (03) 9763 0962

Email: customerservice@teambmp.com

Warranty Claim and Product Repair Form:

<https://teambmp.com/warranty-claim/>

Registering your BMPRO product is an important step to ensure that you receive all the benefits you are entitled to.

Please complete the online registration form at <https://teambmp.com/product-registration/> for your new product today.

POWERING YOUR ADVENTURES.



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