



OWNER'S MANUAL

# BATTERY PLUS35-II

BATTERY PLUS35-II-HA

BATTERY PLUS35-II-SI

BATTERY PLUS35-II-SR



TEAMBMPRO.COM

# SAFETY PRECAUTIONS

Please read the Safety Precautions before installing or using the BatteryPlus35-II. 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 BatteryPlus35-II. If every consideration of these instructions has been satisfied, the BatteryPlus35-II 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, unless they have been given supervision or instructions concerning the use of the appliance by a person responsible for their safety.
-  Children shall not play with this product. Cleaning and user maintenance should not be performed by unsupervised 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 BatteryPlus35-II. Remove any personal metal adornment such as chain, watch or ring before handling the battery and BatteryPlus35-II.
-  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 BatteryPlus35-II. Grounding the negative output can result in damage to the BatteryPlus35-II 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.



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

CAUTION: Risk of fire.

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



This product is rated to draw between 20 and 30 amperes from a 12V vehicle outlet, depending on your model of BatteryPlus35-II. 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 BatteryPlus35-II. Information on the vehicle fuse rating are typically found in the vehicle operator's manual.

If a vehicle 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.

## IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS - This manual contains important instructions for Models BatteryPlus35-II-SR, BatteryPlus35-II-SI, BatteryPlus35-II-HA that shall be followed during the installation and maintenance.

The nominal voltage of the BatteryPlus35-II is 12V. All models of the BatteryPlus35-II series are rated to charge lead-acid batteries, and the BatteryPlus35-II-HA is also rated to charge LiFePO4 batteries.

The maximum ambient temperature rating for the BatteryPlus35-II is 50°C (122°F).

For 0-10A current, use 18 AWG, 90°C (194°F) copper wire.

For 10-20A current, use 14 AWG, 90°C (194°F) copper wire.

For 20-30A current, use 10 AWG, 90°C (194°F) copper wire.

Overcurrent protection for the battery circuit is to be provided by the installer or the user, whichever is applicable.

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# ABOUT THE BATTERYPLUS35-II

BMPRO's BatteryPlus35-II is a power management system designed specifically for use in recreational vehicles. The BatteryPlus35-II operates from 110 to 240V AC mains power supply, towing vehicle auxiliary and solar panels to provide 35A of current to simultaneously power caravan loads and charge the caravan battery.

The BatteryPlus35-II is available in a range of models to suit any RV and power management need.

FEATURE	BP35-II-SI	BP35-II-SR	BP35-II-HA
In-built Solar	20A - PWM	30A - MPPT	
Solar Connection	Direct to BatteryPlus35-II		
Lithium (LiFePO4) Charging	No	Yes	
Maximum AC Charging Current	20A	30A	

## OPTIONAL ADD-ONS

To get the most from your BatteryPlus35-II it may be used with the following products (sold separately) from the BMPRO range:

### BC300 + CommLink

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

### RVView2 Battery Monitor

A battery monitor to monitor battery parameters and charge sources.

### Trek3 Battery Monitor

A battery monitor to gain greater insights into battery usage, with the ability to monitor water tank levels and control water pumps.

### Odyssey + OdysseyLink

A system to monitor battery usage and caravan features (tanks and temperature) and control caravan loads from an in-built monitor.

### MiniBoost

A DC-to-DC charger for RV applications.

## COMPATIBLE BATTERY TYPES

The BatteryPlus35-II is rated to charge battery banks of up to 600Ah in capacity of the following battery types:

BATTERY TYPE		SI	SR	HA
Lead-acid	Valve-regulated (VRLA)		Yes	
	Absorbed Glass Mat (AGM)		Yes	
	Gel		Yes	
Lithium	LiFePO4	No		Yes

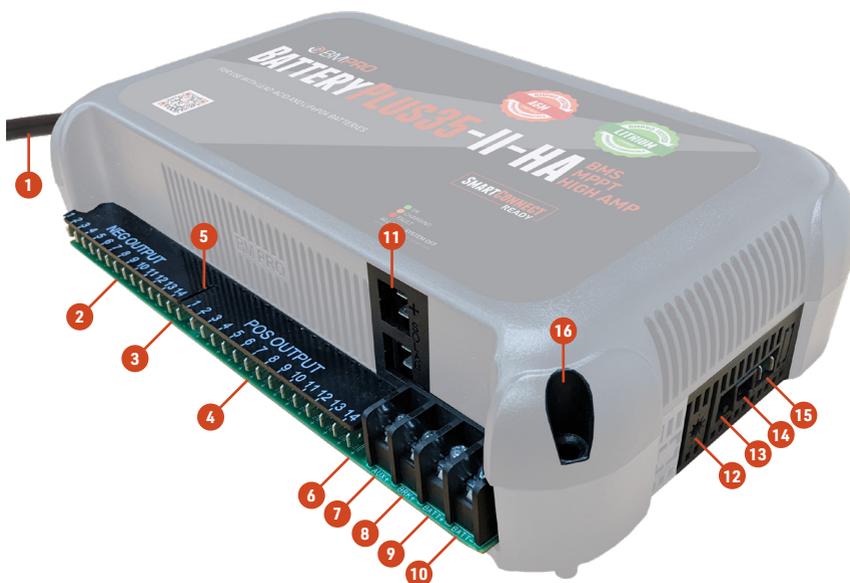
By default, the **BatteryPlus35-II-HA** is configured to charge lead-acid batteries. In order to charge lithium LiFePO4 batteries, it must be re-configured using the Odyssey app or the Trek3 battery monitor.

Instructions on how to re-configure the BatteryPlus35-II-HA can be found in the Odyssey or Trek product manuals.

### **WARNING**

The **BatteryPlus35-II-HA** is designed for use with lead-acid and LiFePO4 lithium batteries only. Do not connect other types of lithium batteries to the BatteryPlus35-II-HA. BMPRO Invicta batteries are recommended.

# DESCRIPTION OF PARTS



## 1. Mains Cable

The BatteryPlus35-II is pre-cabled with a permanent mains power supply cord for use with 240V or 110V input power.

### WARNING

Do not replace a damaged power supply cord. If the power cord is damaged, the BatteryPlus35-II 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 x 2 Positive Connections

Used for connecting the positive wire of 12V loads to outputs 1 & 2.

## 4. Load Outputs – 10A x 12 Positive Connections

Used for connecting the positive wire of 12V loads to outputs 3 – 14.

## 5. Load Output LED Status Indicator

## 6. System Status LED Indicator

Indicates the operational status of the BatteryPlus35-II.

## 7. AUX+

Connection point for external DC input positive.

Not all alternators are suitable for direct connection to the BatteryPlus35-II due to output current or voltage.

A MiniBoost DC-DC charger 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. Solar Panel Connection

## 12. Not Used

## 13. Reset (Master Reset Button)

Used if the system is unresponsive or not operating correctly.

## 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.

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)

## BATTERYPLUS35-II LOAD OUTPUTS

TERMINAL	DESIGNATED LOAD OUTPUT	LOAD RATING
1	Tablet / Spare	15A
2	Spare	15A
3-9	Spare	10A
10	Light 1	10A
11	Light 2	10A
12	Light 3	10A
13	Pump 1	10A
14	Pump 2	10A

## LOAD OUTPUT LED INDICATORS

The following table displays the load output status of loads connected to the BatteryPlus35-II.

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 BatteryPlus35-II, 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
	<b>SI:</b> Solar Charging <b>SR &amp; HA:</b> Solar or Aux/Solar Charging
	<b>SI:</b> Solar/Aux Charging <b>SR &amp; HA:</b> Aux Charging
	Battery OK, AC available
	Battery OK, no sources available
	<b>SI:</b> Battery OK, solar available <b>SR &amp; HA:</b> 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 BatteryPlus35-II should only be carried out only by suitably qualified personnel.

## EARTHING

The BatteryPlus35-II 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.

## Loads Greater Than 15A

If you are using 12V DC appliances that may draw greater than 15A, such as an inverter, a **BC300 External Shunt + CommLink** must be installed. Both the positive and negative must be wired directly to the new battery negative on the BC300 to ensure the BatteryPlus35-II sees the correct current so that correct information is displayed, such as the State of Charge and Time Remaining.

Refer to our website for more information on this product: <https://teambmp.com/products/bc300-comm-link-external-shunt/>

## VENTILATION, ORIENTATION AND THERMAL CONSIDERATIONS

The BatteryPlus35-II 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.

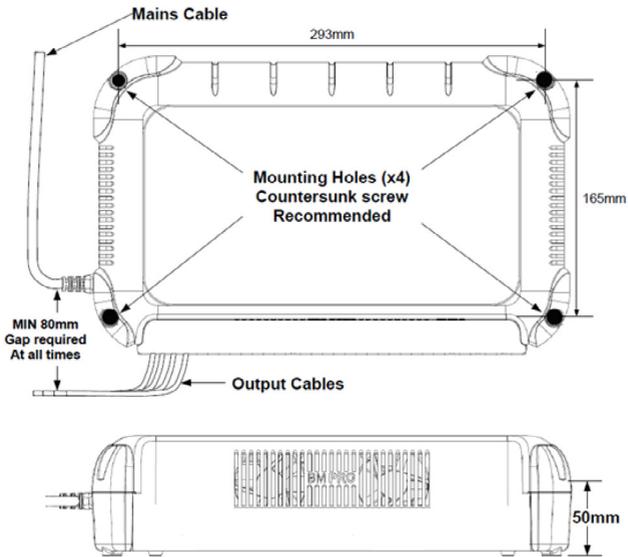
The overtemperature protection of the BatteryPlus35-II will cause it to shut down if its internal temperature rises above the safe level. The BatteryPlus35-II will automatically restart once it has cooled to an acceptable level.

**⚠ WARNING**

Do not install the BatteryPlus35-II in a compartment where flammable material is stored, such as petrol or LPG.

**MOUNTING**

Securely mount the BatteryPlus35-II 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 scrapped.

The BatteryPlus35-II 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	1.0mm <sup>2</sup> or 18 AWG
10-20A	3.0mm <sup>2</sup> or 14 AWG
20-30A	5.5 mm <sup>2</sup> or 10 AWG

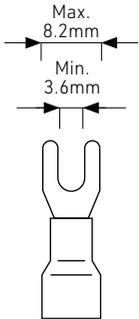
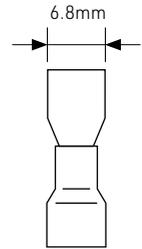
The wiring method used with the installation shall be in accordance with National Electrical Code ANSI/NFPA 70.

## CONNECTIONS

### Load, Battery and External DC Input Connections

Up to 14 loads may be connected. Loads are attached using 6.8mm wide female spade Quick Connects (QC).

All load negative returns must be connected directly to the BatteryPlus35-II negative terminals only.



### Main Charge Connection

The following inputs / outputs require fork type connections:

-  Aux+
-  Batt+
-  Batt-
-  BRK+

### Caravan Battery Connection

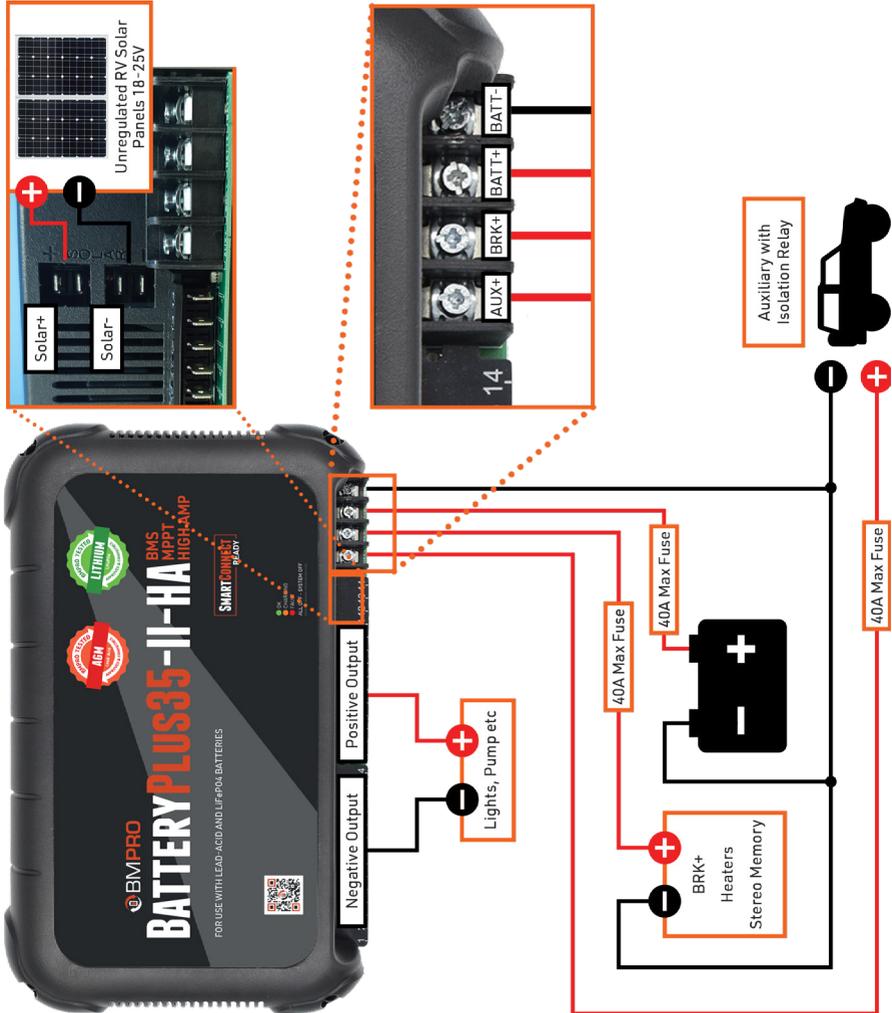
A fuse of no greater than 40A must be installed in the positive connection of the battery.

### WARNING

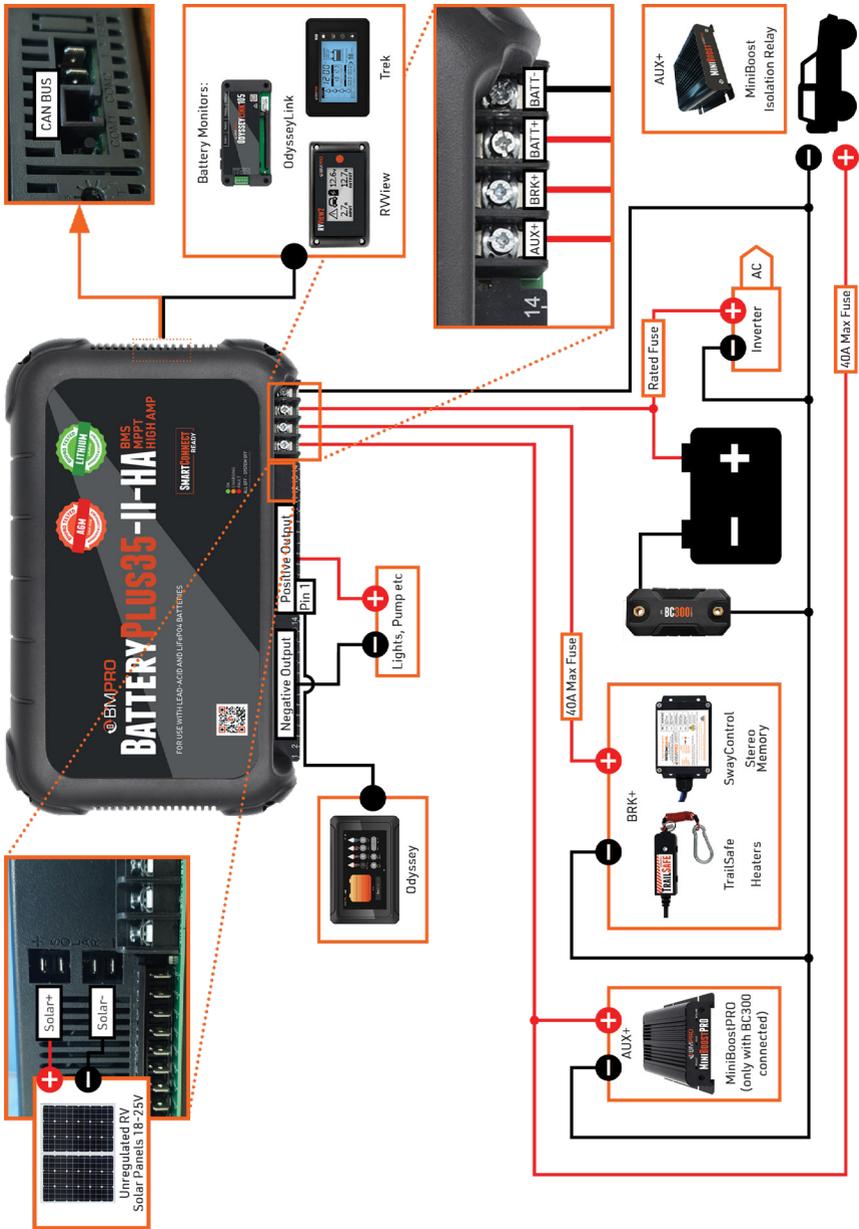
The positive connection fuse **MUST** be as close as possible to the battery. This fuse protects against short circuits and reverse battery conditions. A fuse rating no greater than 40A must be used.



# SIMPLE WIRING DIAGRAM



# WIRING DIAGRAM WITH OPTIONS



## CONNECTING A BATTERY TO THE BATTERYPLUS35-II

### WARNING

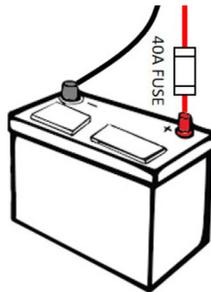
Sparks have the potential to cause an explosion if combustible gases are present. The following procedures are designed to minimise the risk of spark generation while connecting or disconnecting the battery. **The positive terminal of the battery must not be connected to the chassis.**

### 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 BatteryPlus35-II.

To connect a battery to the BatteryPlus35-II 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 BatteryPlus35-II. The easiest way is with a switch connected to the BatteryPlus35-II's RSW input.
3. Turn off the BatteryPlus35-II and remove all connected power sources (mains/solar/AUX).
4. Connect the battery's positive (red) terminal to the BatteryPlus35-II Batt+ connection point.
5. Connect the battery's negative (black) terminal to the BatteryPlus35-II Batt- connection point.

After fitting a new battery to the BatteryPlus35-II, make sure that it is configured in your battery monitor.

Correctly configuring the battery capacity and profile will ensure that the BatteryPlus35-II will select the best charging parameters for the caravan battery in use, and the software accurately estimates battery usage.

### DISCONNECTING A BATTERY FROM THE BATTERYPLUS35-II

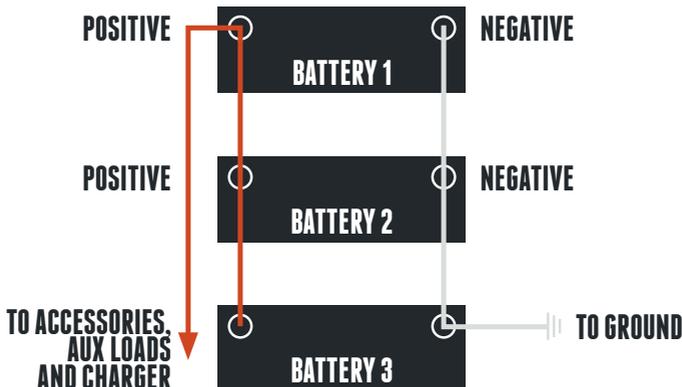
1. Power off all loads connected to the BatteryPlus35-II. The easiest way is with the switch connected to the BatteryPlus35-II's RSW input.
2. Turn off the BatteryPlus35-II and remove all connected power sources (mains/solar/AUX).
3. Disconnect the battery's negative (black) terminal from the BatteryPlus35-II Batt- connection point.
4. Disconnect the battery's positive (red) terminal from the BatteryPlus35-II Batt+ connection point.

### CONNECTING MULTIPLE BATTERIES

Before connecting multiple batteries in parallel to the BatteryPlus35-II, 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 BatteryPlus35-II is below. Depending on system requirements, a qualified auto-electrician may wire the batteries differently.



# USING YOUR BATTERYPLUS35-II

## INPUT POWER SOURCES

The BatteryPlus35-II 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 BatteryPlus35-II, power is used as specified in the tables below:

INPUT SOURCE TO BATTERYPLUS35-II	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.

### Mains

The BatteryPlus35-II mains power cord can accept power from either a 110 or 240V 50/60Hz voltage outlet.

## Solar

The BatteryPlus35-II features an in-built solar regulator. This enables solar panels to be connected directly to the BatteryPlus35-II without the need for an external regulator.

FEATURE	BP35-II-SI	BP35-II-SR	BP35-II-HA
Regulator Type	PWM	MPPT	
Solar Panel Support	12V Solar Panels		
Solar Charge Capacity	20A	30A	
Max Solar Panel Wattage	240W	800W	

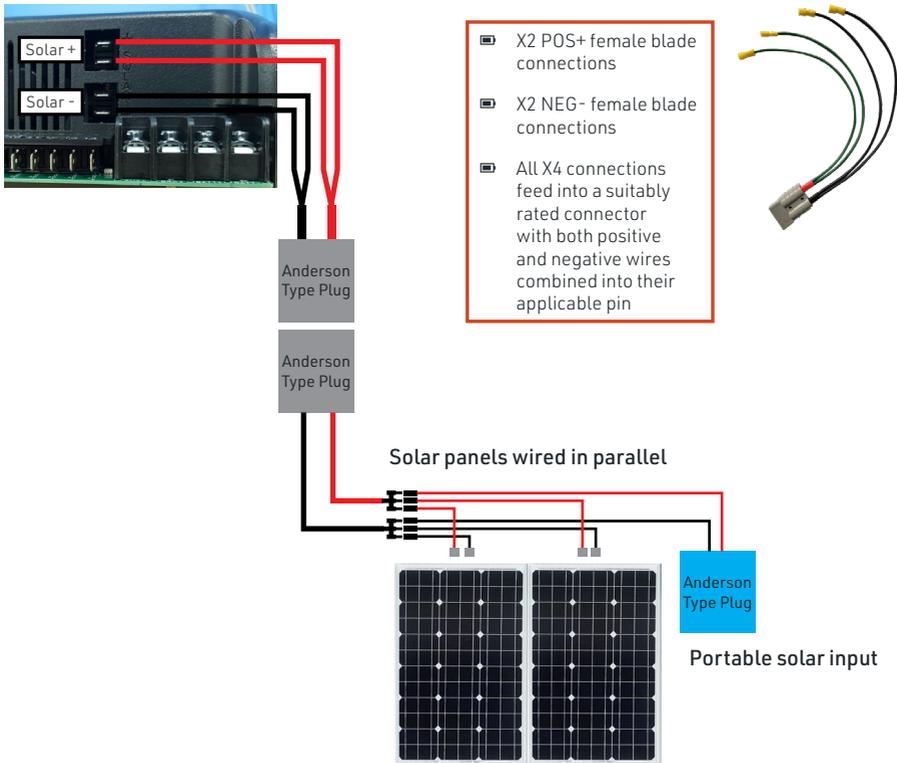
 **WARNING**

Ensure the solar panel open circuit voltage (Voc) does not exceed 25V and the short circuit current (Isc) rating does not exceed 20A.

## INSTALLING SOLAR

When installing a solar connection to the BatteryPlus35-II, it is crucial that the connections are suitable to handle the anticipated solar currents.

It is recommended that any solar installations exceeding 350W panels - including any portable panels which are likely to be installed - should utilise both solar input connection points to ensure adequate electrical connection at the solar input.



### **WARNING**

The solar panel negative output (0V) is not a common ground and cannot be grounded if connected to the BatteryPlus35-II. Grounding the negative output can result in damage to the BatteryPlus35-II and batteries.

## BATTERY CHARGING

The BatteryPlus35-II can deliver up to 35A to simultaneously power loads and charge the caravan battery, with a maximum charging current of either 20A (BatteryPlus35-II-SI and BatteryPlus35-II-SR) or 30A (BatteryPlus35-II-HA). 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 BatteryPlus35-II 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 BatteryPlus35-II 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 BatteryPlus35-II applies a multi-stage charging algorithm.

The **BatteryPlus35-II-SI** will use solar as a charging source if the voltage generated by the solar panel is greater than the battery voltage.

The **BatteryPlus35-II-SR** and **BatteryPlus35-II-HA** 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, a **BC300 External Shunt + CommLink** is required to be installed to ensure the BatteryPlus35-II receives correct battery data.

If an external charging device is connected through a BC300 External Shunt, 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 BatteryPlus35-II maintains battery health by preventing excessive discharge.

If battery voltage drops below a set threshold, the BatteryPlus35-II 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.

LVD MODE	LEAD-ACID THRESHOLD	LiFePO4 THRESHOLD (HA ONLY)
ECO	10.8V	12.0V
Storage	10.5V	11.5V
Recovery	12.8V	13.8V

The BatteryPlus35-II will enter the two stages of LVD, ECO Mode and Storage Mode, depending on the level of battery voltage.

The BRK+ battery output is not controlled by LVD.

## **ECO Mode**

In ECO Mode, the BatteryPlus35-II will continue to provide power to the battery monitor, however power to the load terminal block will shut down (except for terminal 1).

To exit ECO Mode, start battery charging. The BatteryPlus35-II will exit ECO Mode when battery voltage reaches the recovery voltage. Upon exiting ECO Mode, the BatteryPlus35-II 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 BatteryPlus35-US's RSW input, or by using the battery button on the Trek3, Odyssey or Mobile Apps. 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 BatteryPlus35-II 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 BatteryPlus35-II's RSW input.

## **Recovery Mode**

If the BatteryPlus35-II went into either ECO Mode or Storage Mode, once a charging source is present and the battery voltage rises above 12.8V (lead-acid) or 13.8V (LiFePO<sub>4</sub>), the BatteryPlus35-US will enter Recovery Mode and will resume normal operation.

## **Heavily Discharged Lead-acid Batteries**

The BatteryPlus35-II will not charge heavily discharged lead-acid batteries.

Lead-acid batteries should never become heavily discharged during normal use while the BatteryPlus35-II's battery health preservation features are active.

If your battery is heavily discharged, disconnect it from the BatteryPlus35-II and charge it with a standalone charger. Reconnect the battery once the battery voltage has recovered to normal levels.

## Heavily Discharged LiFePO4 Batteries

The **BatteryPlus35-II-HA** 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 BatteryPlus35-II-HA will provide the voltage to restart the LiFePO4 battery's BMS and then commence charging of the LiFePO4 battery.

The **BatteryPlus35-II-HA** 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 BATTERYPLUS35-II AS A POWER SUPPLY

The BatteryPlus35-II 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 BatteryPlus35-II, and
2. The BatteryPlus35-II is configured to charge lead-acid batteries, and
3. The BatteryPlus35-II 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 BatteryPlus35-II 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 BatteryPlus35-II 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 BatteryPlus35-II 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 BatteryPlus35-II 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 permanently 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 BatteryPlus35-II provides automatic protection for overtemperature, overvoltage and short circuit overload situations.

If any of these situations are detected, the BatteryPlus35-II will shut down and automatically attempt a restart every 30 seconds until the fault is removed.

# SERVICING, MAINTENANCE AND STORAGE

## SERVICING THE BATTERYPLUS35-II

This BatteryPlus35-II contains hazardous voltages and energy hazards that may cause death or injury. Only qualified service personnel may service the BatteryPlus35-II. Do not attempt to service the BatteryPlus35-II yourself, OR dismantle, modify or repair the BatteryPlus35-II yourself; this will void your warranty.

If your BatteryPlus35-II requires servicing other than what is stated in this Owner's Manual, please consult your BMPRO dealer.

## CLEANING THE BATTERYPLUS35-II

Use a dry or moist soft cloth to lightly remove dust or dirt from the BatteryPlus35-II. 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 BatteryPlus35-II and disconnect the battery before cleaning.

## STORING THE BATTERYPLUS35-II

Once your adventure is over make sure to charge the caravan's battery and power off all loads. Use a switch connected to the BatteryPlus35-II 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 BatteryPlus35-II into Storage Mode.

# FAQS AND TROUBLESHOOTING

**Need more help troubleshooting your BatteryPlus35-II?**

Contact our customer service team online at [teambmp.com/technical-support](https://teambmp.com/technical-support)

## BATTERY

**I have fitted a battery to the BatteryPlus35-II, 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, please contact your caravan dealership.

### **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 BatteryPlus35-II was put into ECO Mode.

The BatteryPlus35-II 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 BatteryPlus35-II will enter ECO Mode to conserve remaining battery voltage, which will disable power to caravan loads.  
Connect the BatteryPlus35-II 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 BatteryPlus35-II will power down if the BatteryPlus35-II was put into Storage Mode.

The BatteryPlus35-II will be put into Storage Mode if:

1. The switch connected to the BatteryPlus35-II RSW input has been activated.  
This turns off power to all caravan loads and accessories connected to the BatteryPlus35-II CAN bus, such as your battery monitor.  
Check that the switch has not been activated.
2. Battery voltage is very low. The BatteryPlus35-II will enter Storage Mode to conserve remaining battery voltage, which will disable power to all caravan loads and accessories connected to the BatteryPlus35-II CAN bus.  
Connect the BatteryPlus35-II 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 BatteryPlus35-II 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.

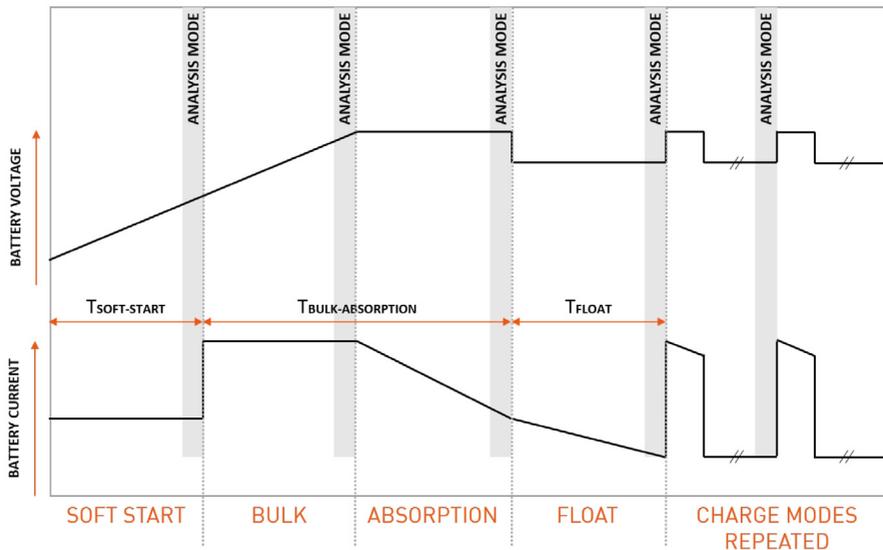
In some parts of the year (especially in southern parts of Australia) the sun will never be directly overhead, so your solar output will be reduced - sometimes by up to 50%.

# APPENDICES

## BATTERY CHARGING MANAGEMENT ALGORITHM

The BatteryPlus35-II uses a battery charging management algorithm when charging the caravan battery from a mains power source. The **BatteryPlus35-II-HA** and **BatteryPlus35-II-SR** will also use a battery charging management algorithm for solar charging.

The BatteryPlus35-II will operate as follows when the caravan loads are connected directly to the BatteryPlus35-II 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	BP35-II-SI CURRENT LIMIT	BP35-II-SR CURRENT LIMIT	BP35-II-HA CURRENT LIMIT
Soft Start	10	10	10
Bulk	20	20	30
Absorption	20	20	30
Float	10	10	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 BatteryPlus35-II will enter back into Bulk-Absorption modes.

# SPECIFICATIONS

SPECIFICATION	BP35-II-SI	BP35-II-SR	BP35-II-HA
Input Voltage Range	110-240V AC $\pm$ 10%, 50-60Hz (AU) 100 - 120V AC, 60Hz (US)		
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. 20A	max. 20A	max. 30A
Low Voltage Disconnect (Lead-acid)	10.8V $\pm$ 0.2V		
Battery Connect after LVD (Lead-acid)	12.8V $\pm$ 0.2V		
Low Voltage Disconnect (LiFePO4)	N/A	N/A	12.0V $\pm$ 0.2V
Battery Connect after LVD (LiFePO4)	N/A	N/A	13.8V $\pm$ 0.2V
Battery Drain	<15mA (when in Storage Mode)		
AC/DC Efficiency	>83%		
Cooling Fan	Digitally Controlled		
Maximum Solar Input	240W	800W	
Solar Output Current	max. 20A	30A (nominal)	
Solar Start Voltage	>VBatt	17.5V	
Solar Input Voltage (after start-up)	>VBatt	15-25V	
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, FCC Part 15 Approvals: RCM, UL, FCC		

# COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna,
- Increase the separation between the equipment and receiver,
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected,
- Consult the dealer or an experienced radio/TV technician for help.

Warning: Any changes or modifications not expressly approved by BMPRO could void the user's authority to operate this equipment.

## **BatteryPlus35-II-HA Only**

The converter/inverter is intended to recharge batteries. The battery that is connected to this product is only suitable if it complies with the given battery standard for that battery type and is provided with a power management system that will monitor and control the electrical and thermal health of the battery during charging. When installing this converter/inverter, the battery is to be verified as in compliance with the applicable battery standard.

# 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 (59 646 354 127) ("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 [teambmpro.com/technical-support](https://teambmpro.com/technical-support) or email [customerservice@teambmpro.com](mailto:customerservice@teambmpro.com)
2. If agreed with the BMPRO Product Specialist team, register a warranty claim or repair via [teambmpro.com/warranty-claim](https://teambmpro.com/warranty-claim) or email [customerservice@teambmpro.com](mailto:customerservice@teambmpro.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@teambmpro.com](mailto:customerservice@teambmpro.com)

Warranty Claim and Product Repair Form:

<https://teambmpro.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://teambmpro.com/product-registration/> for your new product today.

**POWERING YOUR ADVENTURES.**



**TEAM  
BMPRO  
.COM**

**BMPRO**  
customerservice@teambmpo.com  
teambmpo.com