



OWNER'S MANUAL

# J35+ CONTROL NODE

FOR MODELS

J35A | J35B | J35C | J35D





## POWERING YOUR ADVENTURES

With over 50 years' experience in power solutions combined with manufacturing and design facilities in Melbourne, Australia, BM PRO are the leading experts in RV power management.

Inspired by the great outdoors, we have created a range of rugged, smart and reliable products to power your adventures.

Our range of battery, power and RV management and control systems gives you peace of mind when you are on the road, so that you can relax in even the most far-flung destinations, knowing you have control over your power needs.

To learn more about the BM PRO range of products, please visit our website [teambmpro.com](http://teambmpro.com)



# SAFETY PRECAUTIONS

Please read the Safety Precautions before installing or using the **J35** and **ControlNode**. 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.

-  Correct installation is the most critical factor in ensuring the safe use of the **J35** and **ControlNode**. If every consideration of these instructions has been satisfied, the **J35** and **ControlNode** 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 instruction 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 the battery and the **J35**. Remove any personal metal adornment such as chain, watch or ring before handling the battery and **J35**.
-  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.
-  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.
-  Electricity and water do not mix. Keep this product and your battery dry and do not expose it to water or water vapour. Do not operate this product or battery near any sort of liquid. Do not operate this product with wet hands..
-  Do not use this product in environments that are excessively hot, cold, dusty or humid or where it will be exposed to magnetic fields or long periods of sunshine. Such exposure may cause the product or your battery to fail, catch fire or explode.
-  Only use this product with the supplied power cable and with batteries or accessories recommended in this manual. Use of other batteries or accessories not recommended in this manual may cause damage to the unit and will void the warranty.
-  The **J35** and **ControlNode** is a high precision electronic product. It contains no user-serviceable parts inside. Do not try to dismantle, modify or repair it yourself. Disassembly, service or repair by an unauthorised person will void the warranty.
-  Before using this product, check that cable connections to the battery are of correct polarity. To protect against accidental short circuit, ensure that the shrouding supplied with the batteries are always fitted to the battery terminals.
-  Consult caravan dealer or qualified personnel before servicing your battery.
-  Do not install this product in the same compartment where flammable materials, such as petrol is stored.
-  Product specifications are subject to change and improve without notice.

## ABOUT THE J35

BMPRO's range of **J35** Battery Management Systems are specially designed to be fitted in Jayco caravans.

The **J35** operates from 240V AC mains power supply, towing vehicle auxiliary and solar panels to simultaneously power caravan loads and charge the caravan battery.

The **J35** employs intelligent charging algorithms, ensuring optimal battery health. Automatic battery preservation mode saves remaining battery power until you're ready and able to charge.

Download the **JHub App** to your mobile device and with the **ControlNode**, enjoy the freedom to monitor your caravan battery and operate caravan onboard features, all from your own personal mobile device.

The **J35** is available in a range of models to suite any RV and battery management needs.

FEATURE	J35A	J35B	J35C	J35D
Load Connections	7	14	14	14
Maximum Current Output	20A	35A	35A	35A
Maximum Charging Current	15A	15A	15A	30A
Solar Input	✗	300W	450W	450W
BYOD + JHub App	✓	✓	✓	✓
Lithium Compatible	✗	✗	✗	✓

**Table 1:** Comparison of features for the models in the **J35 + ControlNode** range

## OPTIONAL ACCESSORIES

To get the most of your **J35** it may be used with the following products (sold separately) from the BMPRO range:

- ▣ **BC300 + CommLink** External Shunt for integration of additional accessories and high current loads such as inverters
- ▣ **JControl** or **JHub** Battery Monitors
- ▣ **MiniBoost** DC-to-DC charge-booster for RV applications

## COMPATIBLE BATTERY TYPES

The **J35** is rated to charge battery banks of up to 600Ah in capacity and of the following battery types:

	BATTERY	J35A	J35B	J35C	J35D*
Lead Acid	Valve-Regulated (VRLA)	✓	✓	✓	✓
	Absorbed Glass Mat (AGM)	✓	✓	✓	✓
	Gel	✓	✓	✓	✓
Lithium	LiFePO4	✗	✗	✗	✓

**Table 2:** Batteries compatible for use with the **J35**

\* By default, the **J35D** is configured to charge lead acid batteries



The **J35D** is designed for use with LiFePO4 Lithium batteries only. Do not connect other types of Lithium batteries to the **J35D**.

**MANUAL PART 034785**  
REV 7.0



Designed by BM PRO, one of Australia's leading power solution experts, the BM PRO product range is proudly designed and manufactured in Melbourne, Australia, and represent a high-quality product that will provide years of service.

**DISCLAIMER** BM PRO accepts no liability for any loss or damage which may occur from the improper or unsafe use of its products. Warranty is only valid if the unit has not been modified or misused by the customer.

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# J35

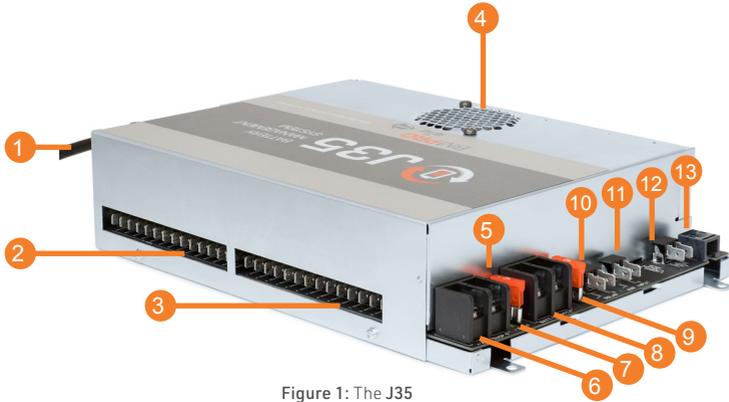


Figure 1: The J35

## 1 MAINS CABLE

The **J35** is pre-cabled with a permanent mains power supply cord. The AC mains input is protected by a quick acting, high breaking capacity type fuse (rated 250V, 10A).



Do not replace a damaged power supply cord. If the power cord is damaged, the J35 must be discarded. Ensure that the AC mains source always has an earth terminal.

## 2 LOAD TERMINAL BLOCK – COMMON NEGATIVE CONNECTION

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

## 3 LOAD TERMINAL BLOCK – POSITIVE CONNECTION

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

To control loads from the **JHub App**, each load must be connected to the correct terminal. Terminals are labeled according to their designated load output.

TERMINAL/LOAD	CURRENT RATING	TERMINAL/LOAD	CURRENT RATING
1-Stereo	15A	5-Lights/Spare	10A
2-Spare	15A	6-Lights/Spare	10A
3-Pump	10A	7-Lights/Spare	10A
4-HWS	10A		

Table 3: Designated terminal-load outputs for the load terminal block-positive connection, J35 Model A.

TERMINAL/ LOAD	CURRENT RATING	TERMINAL/LOAD	CURRENT RATING
1-Slide-Out	15A	8-12V Outlet 1	10A
2-Spare 2	15A	9-12V Outlet 2	10A
3-Water Pump	10A	10-Spare 10	10A
4-Hot Water	10A	11-Spare 11	10A
5-Lights 1	10A	12-Spare 12	15A
6-Lights 2	10A	13-AirSusp ECU	10A
7-Lights 3	10A	14-Tablet	5A

**Table 4:** Designated terminal-load outputs for the load terminal block-positive connection, **J35 Models B, C & D.**

Each output is protected by an internal, electronic, auto-recoverable fuse. This eliminates the need for the user to replace a blown fuse. If an electronic fuse is activated, the LED Status Indicator on the **J35** will flash a solid red. The **J35** will power off the faulty load and resume normal operation once the fault is fixed.

#### 4 FAN

Regulates the internal temperature of the **J35**.



To ensure continuous air-flow, the fan ventilation holes must never be blocked otherwise the temperature of the **J35** may rise and inhibit the optimal operation of the **J35** and/or cause the **J35** to shut down. The **J35** will automatically restart once it has cooled to an acceptable level.

#### 5 LED STATUS INDICATOR

Indicates the operational status of the **J35**.

#### 6 AIR SUSPENSION OUTPUT (J35C / J35D)

Connection point to power the caravan's air suspension.



The Air Suspension output is not controlled by the Load Isolation Switch circuitry. Engaging Load Isolation will not affect the operation of the caravan's Air Suspension.

#### 7 AIR SUSPENSION FUSE (J35C / J35D)

40A automotive air suspension fuse.

#### 8 BATTERY CONNECTION TERMINAL

Screw connection for the caravan's battery.



Do not connect the caravan battery's negative terminal to caravan chassis or earth ground point. Connecting the battery's negative terminal to points other than the **J35** negative Battery Connection Terminal (Batt-) may cause the battery to overheat and/or overcharge.

## 9 BATTERY FUSE

40A automotive battery fuse.

## 10 SOLAR INPUT (J35B /J35C / J35D)

The **J35B** supports the use of panels up to a total of 300W and the **J35C** & **J35D**, 450W. Input current to the solar regulator is limited to 20A (**J35B**, equivalent to 2x150W solar panels) or 27A (**J35C** & **J35D**, equivalent to 3x150W solar panels).

The solar input is unable to operate in Power Supply Mode, i.e. with no caravan battery connected.

## 11 AUXILIARY (AUX) INPUT

AUX input is designed for use with 12V DC power sources. The voltage of the DC power source connected to the AUX input must not exceed 14.8V.

AUX will be available to charge the battery if the AUX voltage exceeds the battery voltage by at least 0.5V.



Not all DC-DC chargers in the market used to boost auxiliary charging voltage from the towing vehicle are compatible with the **J35**.

## 12 LOAD ISOLATION SWITCH

To connect the caravan's load isolation switch. This switch is used to enter Storage Mode and power off all outputs (load terminal block and CAN bus) on the **J35**, except for the Air Suspension output.

Battery charging is not affected by use of the load isolation switch.

As the caravan loads are no longer powered, activating the load isolation switch to enter Storage Mode is a convenient way to save remaining power of your battery if you are on the road and have limited ability to charge the battery. When charging, Storage Mode ensures that all available charging current is dedicated to charging your battery.

## 13 CAN BUS COMMUNICATION

To connect to and power BMPRO accessories (**BC300 + CommLink** or **ControlNode**)

# CONTROLNODE

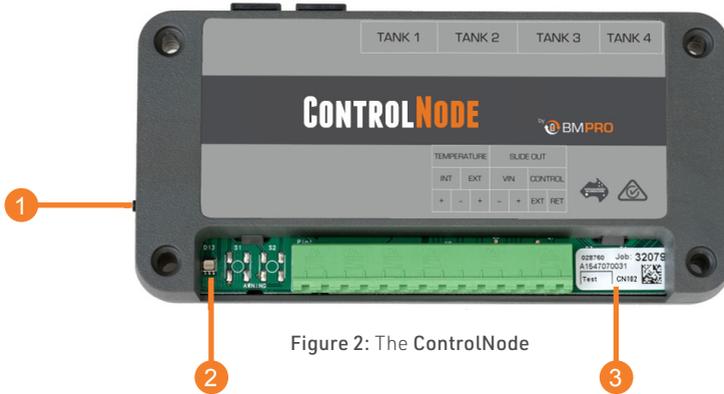


Figure 2: The ControlNode

## 1 PAIRING BUTTON

Button to enable Bluetooth pairing between the **ControlNode** and the **JHub App** on your own personal mobile device or **JHub Tablet**.

## 2 LED STATUS INDICATOR

Indicates the operational/pairing status of the **ControlNode**.

Table 5: ControlNode Operational Status and LED Flash Codes

Operational Status	Flashing Status	Note
ControlNode is ready to pair	Green Flash 30 sec ■ ■ ■ ■ ■	
ControlNode memory is full, cannot pair to any new mobile devices	Orange Flash 1 sec ■ ■ ■ ■ ■	To pair to a new mobile device, clear the memory of the <b>ControlNode</b>
Clearing ControlNode memory*	Red Flash 1 sec ■ ■ ■ ■ ■	Memory will only be cleared if the user presses and holds the Pairing Button for 10 seconds.

\*After memory has been cleared, the **ControlNode** LED Status Indicator will immediately flash green to enable pairing to a new mobile device.

## 3 CONTROLNODE SERIAL NUMBER

Required to choose the correct device when pairing the **ControlNode** to the **JHub App** on your own personal mobile device or **JHub Tablet**.

# INSTALLATION INSTRUCTIONS

## REPLACING BATTERIES



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 **J35**.

Figure 3 details connection of the caravan battery to the **J35**.

After fitting a new battery to the **J35**, make sure that it is configured in the **JHub App**.

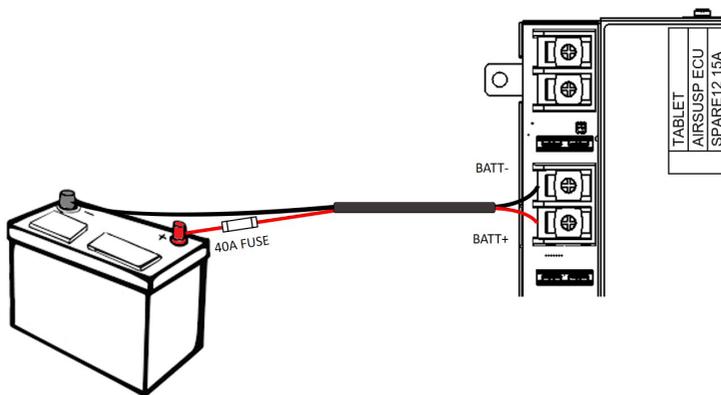
Correctly configuring the battery capacity and profile will ensure that the **J35** will select the best charging parameters for the caravan battery in use, and the software accurately estimates battery usage.



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



Do not install battery in the same compartment where flammable material, such as petrol, is stored.



**Figure 3:** Wiring the caravan house battery to the **J35**. To protect against short-circuits and reversed battery connections, install a 40A fuse, as close as possible to the battery's positive terminal.

## DISCONNECTING A BATTERY FROM THE J35

To disconnect a battery from the **J35**:

1. Power off all loads connected to the **J35**, the easiest way is with the switch connected to the **J35** Load Isolation input
2. Turn off and remove all power sources (mains/solar/AUX) to the **J35**
3. Disconnect the battery's negative (black) terminal from the **J35** Batt-connection point
4. Disconnect the battery's positive (red) terminal from the **J35** Batt+ connection point

## CONNECTING A BATTERY TO THE J35

To connect a battery to the **J35**:

1. Power off all loads connected to the **J35**, the easiest way is with the switch connected to the **J35** Load Isolation input
2. Turn off and remove all power sources (mains/solar/AUX) to the **J35**
3. Connect the battery's positive (red) terminal to the **J35** Batt+ connection point
4. Connect the battery's negative (black) terminal to the **J35** Batt- connection point

## CONNECTING MULTIPLE BATTERIES

Before connecting multiple batteries in parallel to the **J35**, check that all batteries are:

1. Of the same type, for example, deep cycle AGM battery
2. Of the same capacity, for example, 100Ah
3. By the same manufacturer
4. Fully charged
5. Of the same age-never use batteries that differ in age

The recommended wiring for connecting multiple batteries in parallel to the **J35** is given in Figure 4. Depending on system requirements, a qualified auto-electrician may wire the batteries differently.



**Figure 4:** Recommended wiring for connecting batteries in parallel.

# USING YOUR J35

## BATTERY CHARGING AND MANAGEMENT WITH THE J35

### Input Power Sources

The **J35** may be powered from mains, AUX or solar inputs to provide battery charging current and power to caravan loads.

If mains and one or more other sources are available to the **J35**, the **J35** will be powered exclusively by the mains source.

If both AUX and solar inputs are available and the mains is not, the **J35** will draw power from both the AUX and solar inputs. As full charge approaches, one of these sources may dominate the other as appropriate.

### Battery Charging

The **J35** can simultaneously deliver up to 20A (**J35A**) or 35A (**J35B**, **J35C**, **J35D**) to the caravan battery and loads from the mains input source, with a maximum charging current of 15A. Maximum charging current is boosted to 30A in the **J35D**.

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

When charging the battery from mains, the **J35** applies a multi-stage charging process.

For charging from AUX and/or solar sources, the **J35** monitors the battery voltage level and charges as needed.

### Battery Health Preservation

The **J35** preserves battery health by preventing the battery from excessive discharge. The **J35** will start a two-stage shutdown or Low Voltage Disconnect (LVD), powering down all **J35** outputs except for Air Suspension. This is to conserve remaining battery capacity until the battery can be charged.



Air Suspension output is not affected by LVD and will remain operational throughout. The remaining battery capacity will drain quickly if Air Suspension is engaged while the **J35** is in LVD.

LVD MODE	LEAD ACID	LiFePO4 (J35D ONLY)
Sleep Mode	10.8V	12.0V
Storage Mode	10.5V	11.5V

**Table 6:** LVD Mode voltage thresholds

The **J35** will enter the two stages of LVD, Sleep Mode and Storage Mode, when the caravan's battery voltage falls below the LVD thresholds.

### SLEEP MODE

The **J35** will provide power to the CAN bus. This allows you to continue to monitor battery consumption from the battery monitor. However, power to the load terminal block will be turned off and you will not be able to use your battery monitor to power caravan loads.

To exit Sleep Mode, start battery charging. The **J35** will exit Sleep Mode when the battery is sufficiently charged. Upon exit of Sleep Mode, the **J35** will automatically return to its previous state of operation.

When in Sleep Mode you may temporarily turn on caravan loads by cycling the caravan's Load Isolation Switch. This feature allows you to retract slide-outs or electric steps should you need to pack your caravan. This temporary switch on of the caravan loads may also be done by pressing the Battery icon on your battery monitor.

### STORAGE MODE

Power to the CAN bus will now be turned off; meaning no communication or power to the accessories connected to the **J35** CAN bus. Please note, the **JHub Tablet** (if in use) may run on its internal battery for some time.

To exit Storage Mode, start battery charging. The **J35** will exit Storage Mode when the battery is sufficiently charged. Upon exit of Storage Mode, the **J35** will not automatically return to its previous state of operation; caravan loads will need to be powered on manually.

When in Storage Mode you may temporarily turn on caravan loads by cycling the caravan's Load Isolation Switch.

### Heavily Discharged Batteries (Lead Acid)

The **J35** will not charge heavily discharged lead acid batteries.

In normal use, and with the **J35** battery health preservation, batteries should never become heavily discharged.

If your battery is heavily discharged, disconnect it from the **J35** and charge with a stand-alone charger. Reconnect the battery once the battery voltage has recovered to normal levels.

### **Heavily Discharged Batteries (LiFePO4) (J35 Model D only)**

The **J35D** can recover and charge a heavily discharged LiFePO4 battery. The internal Battery Management System (BMS) of a LiFePO4 battery will turn off if it detects that the battery is heavily discharged. The **J35D** will provide the voltage to restart the LiFePO4 battery's BMS and then commence charging of the LiFePO4 battery.

### **USING THE J35 AS A POWER SUPPLY (BATTERY-LESS OPERATION)**

The **J35** will act as a power supply if the following conditions are met:

1. A battery is not connected to the **J35**, and
2. The **J35** is connected and powered from mains, or
3. The **J35** is connected and powered from AUX input

Power Supply mode allows you to control and power your caravan's loads directly from mains or AUX without the need to connect the caravan battery. When powered from the mains, the **J35** provides an output voltage of 12.8V. When powered from an AUX input, the output voltage will vary depending on the AUX input voltage.

### **FAULT PROTECTION**

#### **Overload or Short Circuit Protection**

If an overload or short circuit is detected, the affected output will shut down. The **J35** will automatically attempt to restart the output every 30 seconds until the fault is removed.

#### **Over-Voltage or High Internal Temperature Protection**

If an over-voltage or high internal temperatures are detected the **J35** will automatically turn off. Once the over-voltage is rectified, or the internal temperature drops to normal levels, the **J35** may be restarted by cycling the mains input on and off.

#### **Reverse Battery Protection**

The **J35** Battery fuse and fuse fitted by your Jayco dealership at the battery protects from accidentally connecting the battery to the **J35** in reverse polarity.

# PAIRING WITH THE CONTROLNODE

To pair the **ControlNode** to your own personal mobile device:

1. Make sure that the **ControlNode** is connected to the **J35** and that the **J35** is powered on.
2. Turn on Bluetooth on your own personal device
3. Press the Pairing Button on the **ControlNode**. The LED Status Indicator on the **ControlNode** will flash green, indicating you have 30 seconds to pair to the **ControlNode**.
4. Launch the **JHub App** and press scan at the prompt.
5. The **JHub App** will now search for nearby **ControlNode** devices and a pop-up window will appear listing **ControlNode** devices available for connection.
6. Select the device with the number that corresponds to the last six digits of the serial number of the **ControlNode** you wish to pair to.

For successful pairing, the LED Status Indicator on the **ControlNode** will turn off and the Bluetooth Connectivity icon in the **JHub App** will turn blue.



A **ControlNode** can simultaneously pair to five mobile devices (including the **JHub Tablet**). If the **ControlNode** is already paired to and in Bluetooth range with five mobile devices, the LED Status Indicator on the **ControlNode** will flash orange for one second.

Press and hold the Pairing Button on the **ControlNode** for 10 seconds until the LED flashes red. This will clear the **ControlNode** memory of any connected devices. The **ControlNode** will then automatically flash green to indicate that it's ready to pair with a new mobile device.



When you clear the memory on the **ControlNode**, the Bluetooth connection to all mobile devices paired to but not in Bluetooth range with the **ControlNode** will be lost. To use the **JHub App** on these devices again, these devices will need to be re-paired.

# SERVICING, MAINTENANCE AND STORAGE

## SERVICING

This **J35** and **ControlNode** contain hazardous voltages and energy hazards that may cause death or injury. Only qualified service personnel may service the **J35** or **ControlNode**. Except where stated in the following sections, do not attempt to service the **J35** or **ControlNode** yourself, OR dismantle, modify or repair the **J35** or **ControlNode** yourself; this will void your warranty.

If your **J35** or **ControlNode** requires servicing other than what is stated in this Owner's Manual, please consult your Jayco dealer for assistance.

## SERVICEABLE FUSES

The **J35** air suspension and battery fuse, if required, may be replaced by the owner. To further protect from short circuits or overloading, the dealership will have fitted a 40A fuse in-line with the caravan battery and a 30A fuse at the AUX input.

If any fuse continues to fail, please contact your dealership for guidance.

## MAINTENANCE

Use a dry or moist cotton cloth to lightly remove dust or dirt from the **J35**. 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 **J35** and disconnect the battery before cleaning.

## STORAGE

Once your adventure is over be sure to charge the caravan's battery and power off all loads connected to the **J35**. Use the switch connected to the **J35** Load Isolation input to enter Storage Mode and power off all loads.

When not in use, it is recommended that you 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.

## FAQS AND TROUBLESHOOTING

Need more help troubleshooting your **J35** and **ControlNode**? Contact our customer service team online at [teambmpro.com/technical-support](https://teambmpro.com/technical-support) or give us a call on (03) 9763 0962.

### JHUB APP

#### Is there a user guide for the JHub App?

You can access the **JHub App** User Guide from the settings menu of the **JHub App**. If you would like to know more about the features of the **JHub App**, download the **JHub Tablet** Owner's Manual from the [teambmpro](https://teambmpro.com) website.

### BATTERY

#### I've fitted a battery to the J35, but it's not detected by my BPRO battery monitor?

Check the following:

1. Battery connections are tight and not loose or corroded
2. Battery polarity, red lead-positive, black lead-negative
3. The dealership fitted in-line fuse with the caravan battery is fitted and not blown. Correct value is 40A.
4. Battery fuse on the **J35** is fitted and not blown. Correct value is 40A.

### 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 LED Status Indicator on the **J35** will flash a 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 **J35** was put into Sleep Mode. The **J35** will be put into Sleep Mode if:

1. The user pressed the Battery icon on their battery monitor.  
Check to see that Battery icon on your monitor has been pressed, thus turning power off to the caravan loads.
2. The **J35** has entered Sleep Mode and to conserve remaining battery voltage will disable power to caravan loads.  
Connect the **J35** 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 **J35** will power down if the **J35** was put into Storage Mode. The **J35** will be put into Storage Mode if:

1. The user activated the switch connected to the **J35** Load Isolation input. This turns off power to all caravan loads and accessories connected to the **J35** CAN bus such as your battery monitor.  
  
Check that the switch has not been activated.
2. The **J35** has entered Storage Mode and to conserve remaining battery voltage will disable power to all caravan loads and accessories connected to the **J35** CAN bus.  
  
Connect the **J35** to a power source and begin battery charging.

### **Solar Output Appears to be Lower than Expected**

If the battery is close to fully charged, the **J35** 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/RV  
  
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 and time of year is important as well.

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

## J35 OPERATIONAL STATUS INDICATOR

The following details the operational status of the J35, as shown by the coloured flash of the LED Status Indicator on the J35.

		Colour Code	Flashing Status
White	Internal Error	—————	On, Solid
	Identify Device	.....	Flashes, 5 Times Quickly
	Storage Mode	▪        ▪        ▪	Flashes Every 2min
Yellow: Charging	AC, Charging Normally	—————	On, Solid
	AC, Low Battery Voltage	•    •    •    •    •	Flashes, 1 Time
	Solar, Charging Normally	••   ••   ••   ••   ••	Flashes, 2 Times Quickly
	Aux, Charging Normally	•••   •••   •••   •••   •••	Flashes, 3 Times Quickly
Green: OK	AC, Battery OK or No Battery	—————	On, Solid
	Solar, Battery OK	••   ••   ••   ••   ••	Flashes, 2 Times Quickly
	Aux, Battery OK	•••   •••   •••   •••   •••	Flashes, 3 Times Quickly
	Normal, No source present	•    •    •    •    •	Flashes, 1 Time
Red: Error	One (or more) Output is Overloaded	—————	On, Solid
	Critical Fault	••••   ••••   ••••   ••••	Flashes, 4 Times Quickly
	Solar Fault	•••   •••   •••   •••   •••	Flashes, 3 Times Quickly
	Battery Fault	••   ••   ••   ••   ••	Flashes, 2 Times Quickly
	Over Voltage Fault, or High Temperature Fault	•    •    •    •    •	Flashes, 1 Time
OFF	J35 Powered Off		Off

## BATTERY CHARGING MANAGEMENT ALGORITHM

The following describes the Battery Charging Management Algorithm used by the **J35** when charging the caravan battery from a mains power source. The **J35** will operate as described when the caravan loads are connected directly to the **J35** and not the caravan battery.

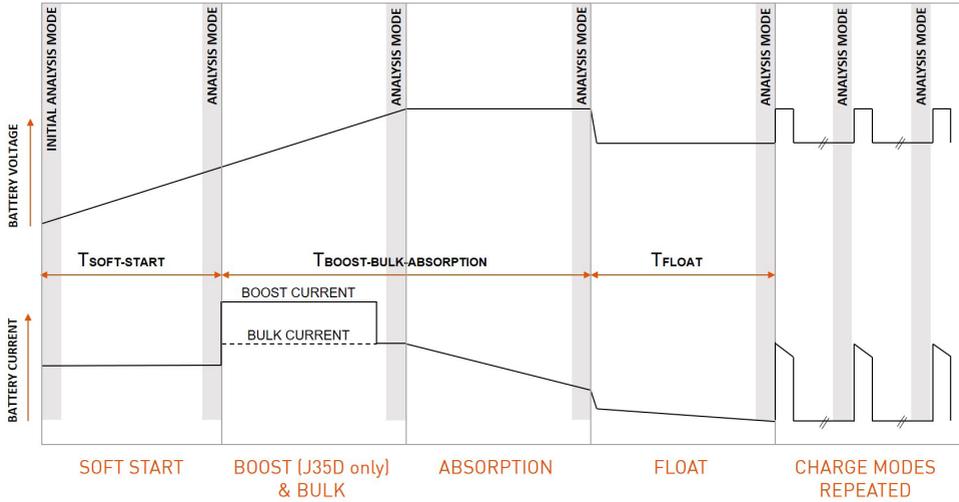


Figure 5: J35 Battery Charging Management Algorithm

Battery Capacity	Soft Start	Boost + Bulk-Absorption	Float
≤ 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

Table 7: Timeout for each charging mode, based on battery capacity

Charge Mode	Voltage Limit (V) Lead Acid Battery	Voltage Limit (V) LifePO4 (J35D Only)	Current Limit (A)
Soft Start	12.0	12.0	10
Boost (J35D only)	14.0	14.0	30
Bulk	14.4	14.6	15
Absorption	14.4	14.6	15
Float	13.6	13.6	10

**Table 8:** Battery charging management algorithm voltages and currents

The **J35** intelligently controlled charging algorithm, automatically sets charging parameters so that the caravan battery will maintain the best state of health. The charging modes include:

### SOFT START MODE

Charging current is maintained at 10A until the battery voltage reaches 12V or soft start timeout (see table 7) occurs.

### BOOST MODE

A feature of the **J35D** model only, current is boosted to 30A to bring the battery voltage up to 14V, after which charging proceeds to Bulk Mode.

### BULK MODE

Charging current is maintained at 15A until the battery reaches the Bulk voltage (see table 8), after which charging proceeds to Absorption Mode

### ABSORPTION MODE

Battery is charged at Absorption voltage until the current drops below 2A or Boost-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 **J35** will enter back into Boost-Bulk-Absorption modes.

## SPECIFICATIONS

J35 BATTERY MANAGEMENT SYSTEM	J35A	J35B	J35C	J35D
Input Voltage Range	240 VAC $\pm$ 10% (nominal), 50-60 Hz			
Input Surge	< 40A (cold start)			
Output Current (Load + Battery Current)	20A	35A	35A	35A
Factory Set Voltage (Float Voltage)	13.65 V $\pm$ 0.1 V			
Output Ripple Voltage	< 150 mV			
Over Voltage Protection	< 18V			
Over Current Protection (Load + Battery Current)	20-25A	35-38A	35-38A	35-38A
Battery Current Limit	15A			30A
Low Voltage Disconnect Lead Acid	10.5 $\pm$ 0.2V			
Low Voltage Disconnect LiFePO4	-			11.5 $\pm$ 0.2V
Battery Drain (when in Storage Mode)	< 8mA			
AC/DC Efficiency	> 83 %			
Cooling Fan	Thermally controlled			
Solar Input Current	-	<20A	<27A	<27A
Solar Input Voltage	-	15-25V	15-25V	15-25V
Ambient Temperature	0-50°C			
Communication	CAN Bus			
Weight	2 kg			
Standards	Safety: IEC60335-2-29, IEC62109-1, UL458, CSA C22.2 No.107-1, EMC: CISPR 14, IEC61000-3-2, IEC61000-3-3 Approvals: RCM, UL, cUL			
CONTROLNODE				
Input Voltage	8-15 V DC			
Battery Drain	< 21 mA			
Ambient Temperature	0-50°C			
Cable Length	0.5m			

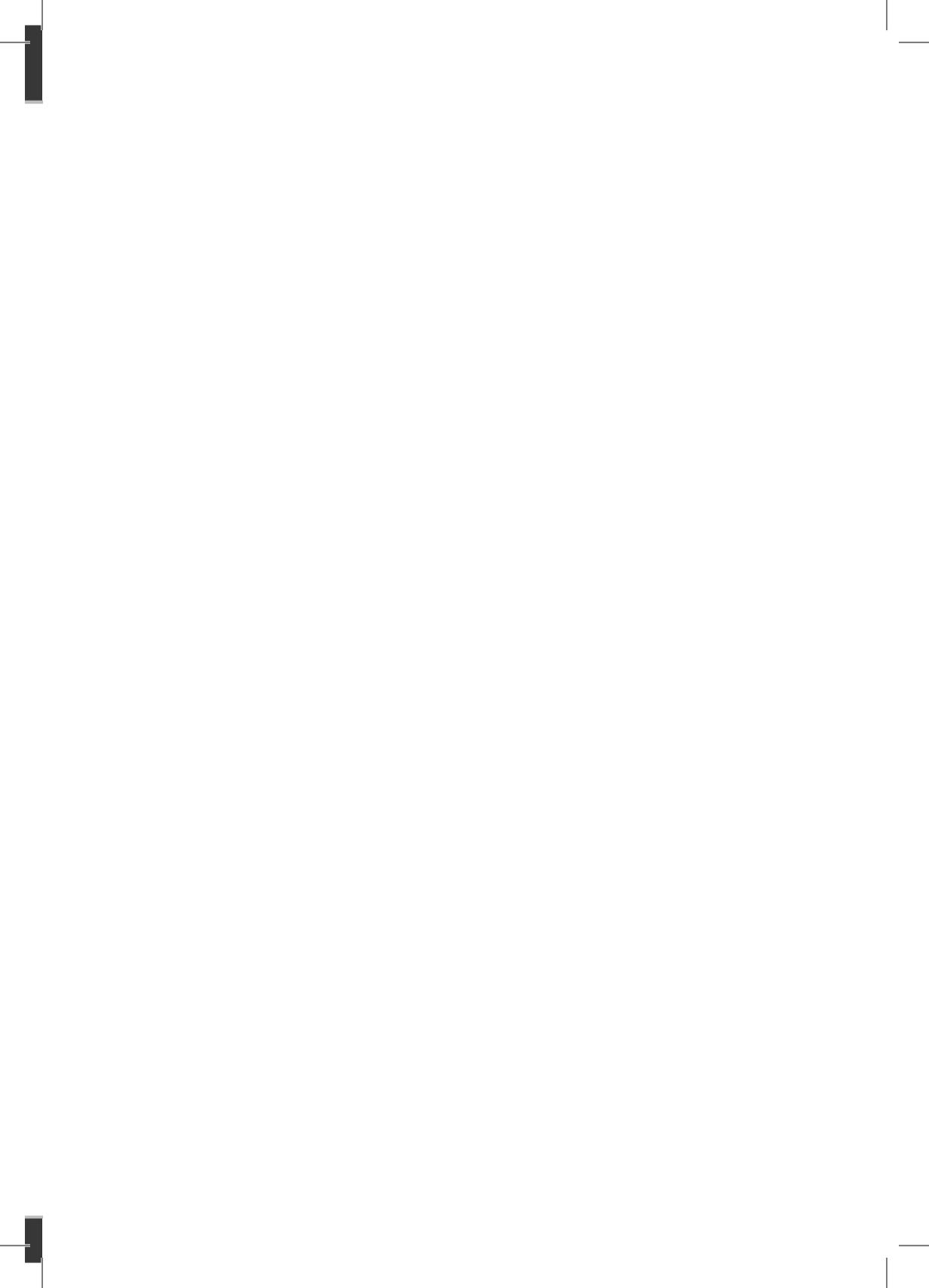
# WARRANTY TERMS AND CONDITIONS

Registering your BMPRO product is an important step to ensure that you receive all of the benefits you are entitled to. Please visit [teambmp.com](http://teambmp.com) to complete the online registration form for your new product today.

1. BMPRO goods come with guarantees that cannot be excluded under Australian Consumer Law. You are entitled to a replacement or refund for major failure and for compensation for any reasonably foreseeable loss or damage. You are 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. The benefits under this Warranty are in addition to your other rights and remedies under a law in relation to the goods to which this Warranty relates (the Australian Consumer Law).
2. BMPRO warrants products against defects for a period of two years, commencing from the original date of purchase. Proof of purchase is required before you can make a claim under this warranty.

## HOW TO PROTECT YOUR RIGHTS UNDER THIS WARRANTY

3. The **J35** and **ControlNode** are designed to be installed by a suitably qualified installer. You or your installer should carefully inspect the product before installation for any visible manufacturing defects. We accept no responsibility in addition to our consumer guarantee obligations where a product has been installed incorrectly.
4. This warranty does not extend to product failures or defects caused by, or associated with, but not limited to; failure to install or maintain correctly, unsuitable physical or operating environment, accident, acts of God, hazard, misuse, unauthorised repair, modification or alteration, natural disaster, corrosive environment, insect or vermin infestation and failure to comply with any additional instructions supplied with the product.
5. BMPRO may seek reimbursement of any costs incurred by BMPRO when a product is found to be in proper working order or damaged as a result of one or more of the warranty exclusions mentioned in point 4 of this statement.
6. To enquire or make a claim under this warranty, please follow these steps:
  - a. Prior to returning a BMPRO product, please email [customerservice@teambmp.com](mailto:customerservice@teambmp.com) to obtain a Return Material Authorisation (RMA) number.
  - b. Package and send the product to:  
**BMPRO Warranty Department**  
**19 Henderson Road**  
**Knoxfield, VIC 3180**  
Please mark RMA details on the outside of the packaging.
  - c. Please ensure the package also includes: a copy of the proof of purchase, a detailed description of the fault and your contact details including phone number and return address.
7. BMPRO will not be liable for any costs, charges or expenses incurred in the process of returning a product in order to initiate a warranty claim.



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