BMPRO

OWNER'S MANUAL

TRAILSAFE SERIES

MODELS
TRAILSAFE
TRAILSAFE+



TEAMBMPRO.COM

BMPRO

POWERING YOUR ADVENTURES

With over 50 years' experience in power solutions combined with manufacturing and design facilities in Melbourne, Australia, BMPRO 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 BMPRO range of products, please visit our website **teambmpro.com**

BMPRO TEAM BMPRO .COM

SAFETY PRECAUTIONS

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

After completing installation of the TrailSafe or TrailSafe+, conduct a trial operation to check for faults. Refer to the **Inital Self-Test** section of this manual for information on how to check for faults.

WARNING	
⚠	Correct installation is the most critical factor in ensuring the safe use of the TrailSafe If every consideration of these instructions has been satisfied, the TrailSafe will be safe to operate.
⚠	Before wiring / servicing TrailSafe, disconnect it from all power sources.
⚠	The pull pin should be tested before use to confirm the switch function and battery status.
⚠	The TrailSafe 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.
⚠	It is essential the house battery is well maintained and must have at least 50% of nominal capacity available.
⚠	It is essential all wiring is protected by fusing close to any power source.

CONTENTS

SAFETY PRECAUTIONS 4

ABOUT THE TRAILSAFE 8

KEY FEATURES 8

VEHICLE STANDARDS 8

INSTALLATION INSTRUCTIONS 9

TRAILSAFE WIRING INSTRUCTIONS 10

TRAILSAFE WIRING DIAGRAM 11

TRAILSAFE+ WITH SWAYCONTROL WIRING INSTRUCTIONS 13

TRAILSAFE+ WITH SWAYCONTROL WIRING DIAGRAM 15

USING THE TRAILSAFE 17

INITIAL SELF-TEST 17

IN-CAR MONITOR 17

LED STATUS INDICATORS 18

CALIBRATION 18

TRAILSAFE OPERATIONAL USE WITHOUT SWAYCONTROL 19

TRAILSAFE+ OPERATIONAL USE WITH SWAYCONTROL 20

SERVICING 22

FAQS AND TROUBLESHOOTING 22

SPECIFICATIONS 24

WARRANTY TERMS AND CONDITIONS 26

MANUAL PART **038107**

REV **4.0**

Copyright © 2023

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

DISCLAIMER: BMPRO 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.

ABOUT THE TRAILSAFE

The TrailSafe is a system designed to activate the electric brakes of a trailer or caravan (or similar) in the event of a disconnection from the towing vehicle. It utilises the house battery located on the trailer to activate the electric brake system and brake lights on the trailer in an emergency breakaway situation.

The TrailSafe also provides an indication of the charge status of the house battery and checks the condition of the pull pin and effective activation of the brakes. This information is displayed via a multi-coloured LED on the TrailSafe unit. This can also be displayed on the Bluetooth TrailCheck available for in-car monitoring if installed.

The mechanical pull pin is forcibly detached if the towing vehicle becomes separated from the trailer. Upon disconnection, the brakes and brake lights are activated as long as charge remains in the trailer battery or until the pin is replaced.

There are two available models in the TrailSafe series: the TrailSafe and TrailSafe+. The TrailSafe+ includes an extra cable to integrate it with BMPRO's SwayControl.

KEY FEATURES

- Bluetooth and wired connectivity options for in-vehicle monitors.
- Works off house battery – no additional battery required.
- LED status indicators for full system safety check at trailer tongue.
- Tests pull pin functionality as well as battery health.
- Activates brake lights as well as electric brakes in the event of a breakaway.
- When wired to BMPRO's proactive electronic stability control SwayControl and used with the wireless in-car monitor, provides comprehensive data on the RV safety system (only available with TrailSafe+).
- Meets Australian regulations for break away systems on trailers over 2000kg.

VEHICLE STANDARDS

Australian Design Rule 38/05 mandates that for all trailers having a Gross Trailer Mass over 2000 kg, an emergency braking system is required on all wheels and must be capable of automatically activating should the trailer become detached from the tow vehicle. In such a situation the brakes must remain active for a minimum of 15 minutes.

INSTALLATION INSTRUCTIONS

It is recommended that installation of the TrailSafe or TrailSafe+ is carried out by a trained auto electrician.

Using the supplied mounting screw, mount the unit on the right-hand side of the trailer's drawbar, about 300mm from the tow ball hitch.

The unit must be mounted horizontally on top or the side of the drawbar, with the wires pointing towards the rear of the trailer (away from the tow vehicle) and the pull pin facing the tow vehicle.

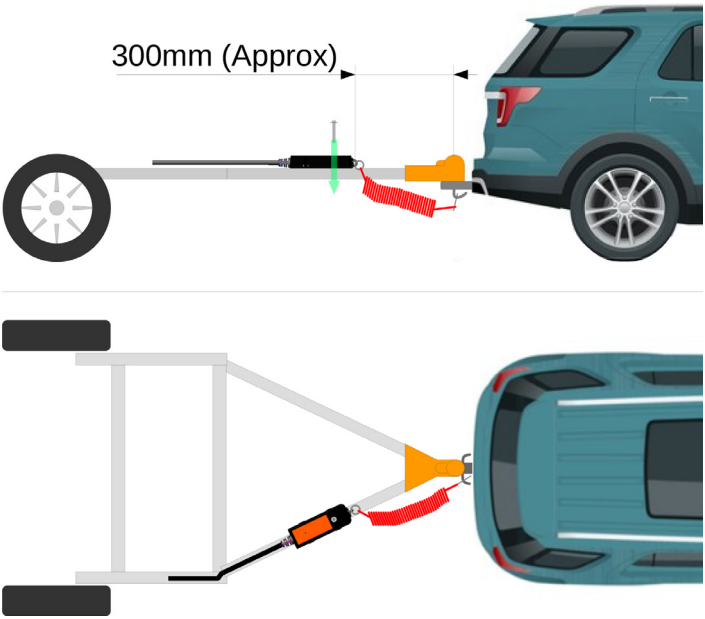
Only one mounting point is required for the unit to swivel in an emergency.

Ensure it is secured tightly to prent it from vibrating loose.

⚠ WARNING

Do not tighten the mounting screw to a torque higher than 30Nm.

Attach the other end of the pull pin cord to the towing vehicle using a D-shackle or similar.



TRAILSAFE WIRING INSTRUCTIONS

NOTE: This section applies to the TrailSafe without the use of a SwayControl. If you are using the TrailSafe+ with the SwayControl, refer to the **TrailSafe+ with SwayControl Wiring Instructions** section.

The TrailSafe has multiple colored wires coming from the rear side which require connection to ensure correct functionality. As this is a safety critical system, all wiring should be done by a suitably qualified Auto Electrician.

Wire the TrailSafe to the house battery, trailer brakes and brake lights. Refer to the **TrailSafe Wiring Diagram**.

TRAILSAFE	
RED (14AWG / 2.5mm2)	Connect to the positive of the brake lights.
BLUE (12 AWG/ 4mm2)	Connect to the positive of the brakes.
PURPLE (14 AWG/ 2.5mm2)	Connect to a remote voltage monitor.
WHITE (14 AWG/ 2.5mm2)	Connect to the negative of the house battery.
BLACK/RED (12AWG / 4mm2)	Connect to the positive of the house battery (30A fuse required).
GREEN (20AWG / 0.5mm2)	If using LiFePO4: connect to the positive terminal of the house battery. If using lead-acid: connect to the negative terminal of the house battery.

⚠ WARNING

The green wire must be connected to a battery positive terminal when a LiFePO4 battery is used. Failure to do so may result in false battery capacity information.

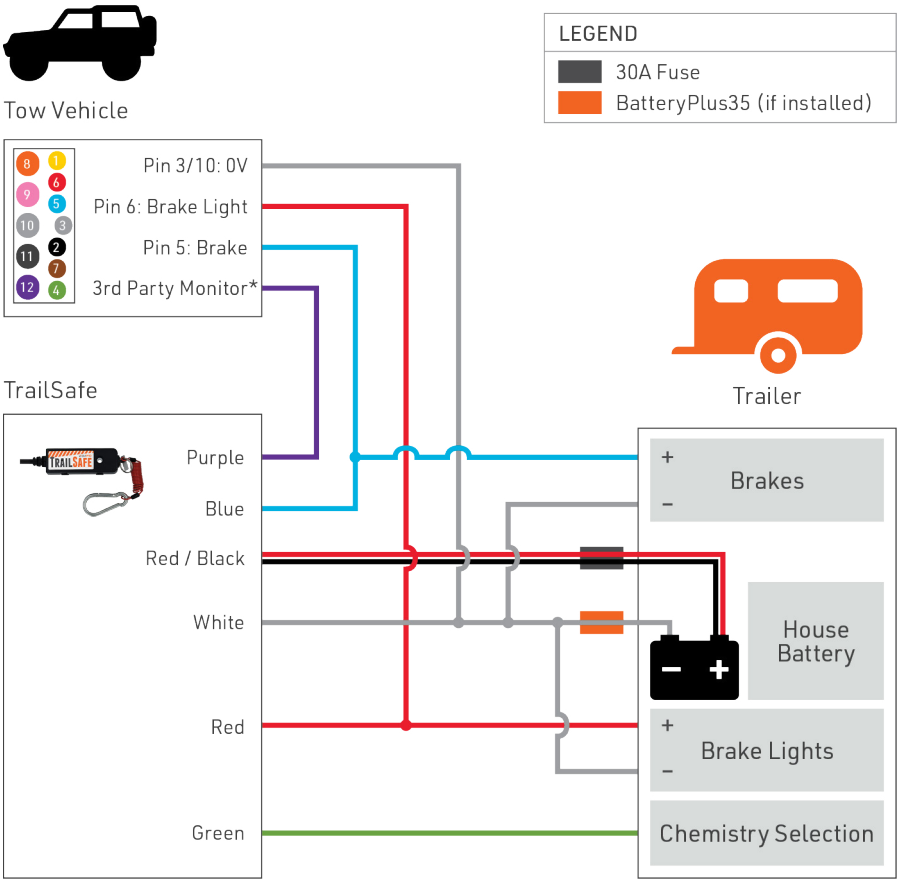
NOTE: Larger wire sizes may be used. The minimum is shown.

For the black/red wire, a 30A automotive-grade fuse must be located as close to the trailer battery as possible, but not before the battery charging source feed.

⚠ WARNING

Failure to install the fuse may result in permanent and serious failure or damage to the TrailSafe and/or the wiring.

TRAILSAFE WIRING DIAGRAM



*Refer to your display monitor's manual for connection instructions.

⚠ WARNING

If you have a BatteryPlus35/J35 installed, all negatives must pass through the BatteryPlus35/J35 before connecting to the house battery.

⚠ WARNING

If you have a BC300 installed, all negatives must pass through the BP35/J35, and then the BC300 before connecting to the house battery.

The return (negative) wires of the brakes and brake lights from trailer must be wired directly to:

- One of the negative output connections on BatteryPlus35 or J35 if fitted
- To the non-battery side of a negative side shunt such as the BC300
- Directly to the battery negative in all other cases

Ensure the house battery has a suitable charging source such as a BatteryPlus35, J35 or other charging means and is functioning correctly. Refer to manufacturer's instructions for these products as required. A basic charging means such as diode from the Auxiliary to the house battery may be employed in simple systems.

An external automotive-grade fuse is required to be fitted (30A maximum) between the TrailSafe and the battery to protect against wiring faults and issues.

TRAILSAFE+ WITH SWAYCONTROL WIRING INSTRUCTIONS

NOTE: This section applies to the TrailSafe+ when also using a SwayControl. If you are using the TrailSafe without a SwayControl, refer to the **TrailSafe Wiring Instructions** section.

The TrailSafe+ has multiple colored wires coming from the rear side which require connection to ensure correct functionality. As this is a safety critical system, all wiring should be done by a suitably qualified Auto Electrician.

Wire the TrailSafe+ to the house battery, trailer brakes and brake lights. Refer to the **TrailSafe+ With SwayControl Wiring Diagram.**

TRAILSAFE+	
RED (14AWG / 2.5mm2)	Connect to the positive of the brake lights.
BLUE (12 AWG/ 4 mm2)	Connect to the positive of the brakes.
PURPLE (14 AWG/ 2.5 mm2)	Connect to a remote voltage monitor.
WHITE (14 AWG/ 2.5 mm2)	Connect to the negative of the house battery.
BLACK/RED (12AWG / 4mm2)	Connect to the positive of the house battery (30A fuse required).
GREEN (20AWG / 0.5mm2)	If using LiFePO4 Unconnected: connect to the positive terminal of the house battery. If using lead-acid: connect to the negative terminal of the house battery.
YELLOW (20AWG / 0.5mm2)	If SwayControl is being used, connect to the YELLOW cable of SwayControl via connector. If SwayControl is not being used, leave unconnected.
THIN RED (20AWG / 0.5mm2)	If SwayControl is being used, to the RED cable of SwayControl via connector. If SwayControl is not being used, leave unconnected.

⚠ WARNING

The green wire must be connected to a battery positive terminal when a LiFePO4 battery is used. Failure to do so may result in false battery capacity information.

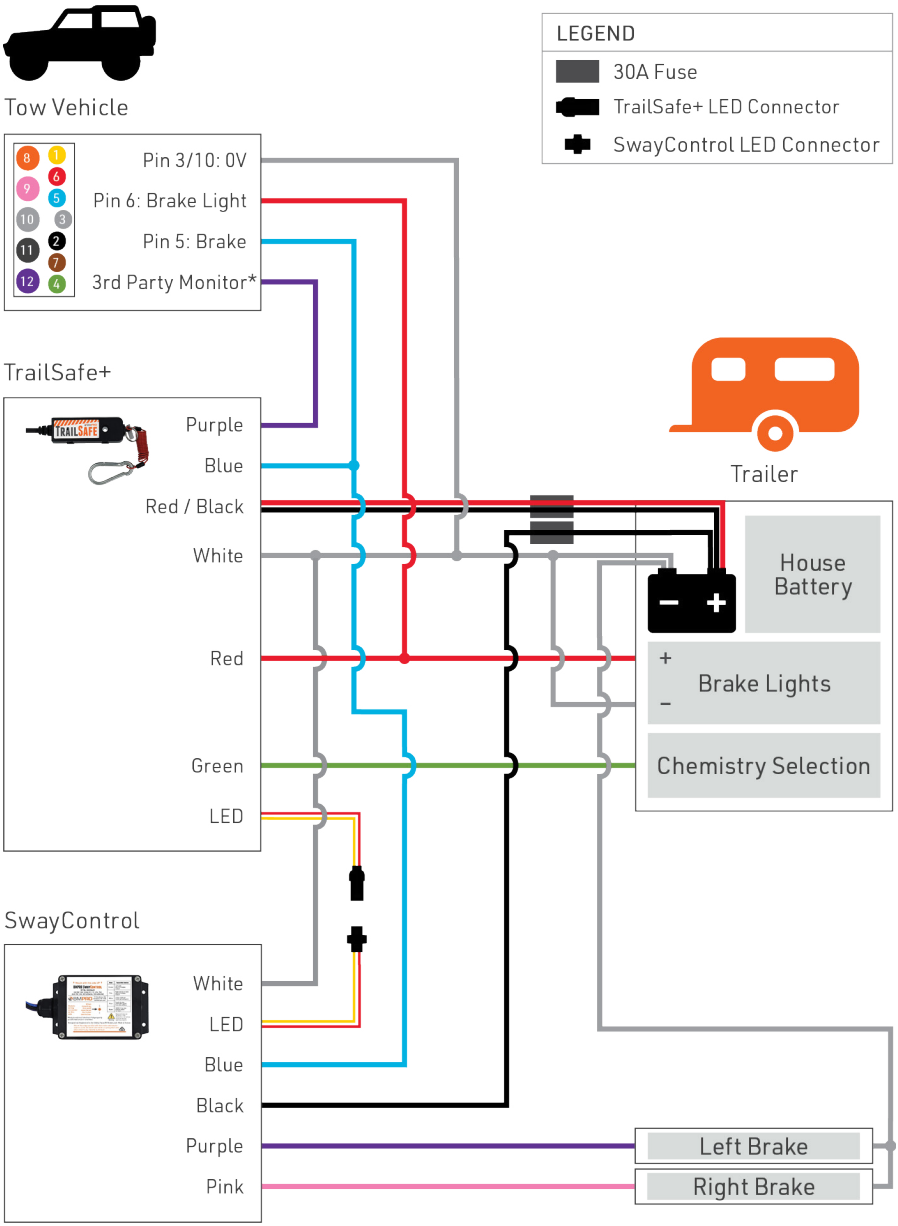
NOTE: Larger wire sizes may be used. The minimum is shown.

For the black/red wire, a 30A automotive-grade fuse must be located as close to the trailer battery as possible, but not before the battery charging source feed.

⚠ WARNING

Failure to install the fuse may result in permanent and serious failure or damage to the TrailSafe and/or the wiring.

TRAILSAFE+ WITH SWAYCONTROL WIRING DIAGRAM



*Refer to your display monitor's manual for connection instructions.

⚠ WARNING

Do not connect the TrailSafe+ blue wire directly to trailer brakes if the SwayControl is also installed. Failure to do so disables the unit's ability to control sway.

⚠ WARNING

If you have a BP35/J35 installed, all negatives must pass through the BP35/J35 before connecting to the house battery.

⚠ WARNING

If you have a BC300 installed, all negatives must pass through the BP35/J35, and then the BC300 before connecting to the house battery.

The return (negative) wires of the brakes and brake lights from trailer must be wired directly to:

- One of the negative output connections on BatteryPlus35 or J35 if fitted
- To the non-battery side of a negative side shunt such as the BC300
- Directly to the battery negative in all other cases

Ensure the house battery has a suitable charging source such as a BatteryPlus35, J35 or other charging means and is functioning correctly. Refer to the manufacturer's instructions for these products as required. A basic charging means such as diode from the auxiliary to the house battery may be employed in simple systems.

An external automotive-grade fuse is required to be fitted (30A maximum) between the TrailSafe / TrailSafe+ and the battery to protect against wiring faults and issues.

USING THE TRAILSAFE

INITIAL SELF-TEST

1. Before starting, ensure the TrailSafe or TrailSafe+ pull pin is in place.
2. Power up the TrailSafe or TrailSafe+ from your 12V battery as per the wiring instructions. The LED will display a continuous flashing **PURPLE**, indicating the first stage of calibration is in progress. This will last for up to 5 minutes.
3. When the first stage is completed, the LED will display a solid **PURPLE**. When this happens, pull the safety pin out. The LED will display a continuous flashing **PURPLE** again, indicating the second stage of calibration is in progress. This will last for up to 1 minute.
4. If the LED indicates an alternating **PURPLE**/**RED**, the wiring Voltage Drop in the black/red wire (+v) and/or the white wire (-v) is exceeding 10% of the nominal voltage. Check the wiring connections and consider increasing the black/red and/or the white wire size.
5. Once completed, LED will display a solid **PURPLE** again. At this stage, put the pull pin back in. The LED will then display a status indicator. For details, refer to the **LED Status Indicators** section of this manual.

IN-CAR MONITOR

If an in-car monitor is used, it needs to be located in a position where it is visible to the driver.

If you are using BMPRO's TrailCheck, refer to the **Wireless Monitor TrailCheck manual** for more details.

LED STATUS INDICATORS

LED STATUS KEY	
Continuous Flash	Solid Colour
Blink Every Few Secs	No Light

CALIBRATION

State	Status	Condition	Solution
Initialisation pin in		The TrailSafe is in calibration.	Wait about 5 minutes until the LED displays a solid PURPLE.
		Completed 1st calibration stage.	Remove the pin.
Initialisation pin out		The pull pin is out when calibration starts.	Put the pull pin back in and wait for 1 minute, or power cycle the unit to restart calibration.
		The TrailSafe is in calibration.	Wait about 1 minute until the LED displays a solid PURPLE.
		Completed 2nd calibration stage.	Put the pin back in.
		The wiring voltage drop is exceeding 10% of the nominal voltage. The LED will flash both purple and red.	Check wiring and connections and consider increasing the wire size.
		The pull pin was removed before the calibration stage was completed. The LED will flash both purple and orange.	Put the pull pin back in to restart.
Initialisation complete		The TrailSafe has finished calibrating, and is calculating battery capacity.	Wait for the LED to move to standby mode. The LED may stay orange for some time, or may move to standby mode very quickly.

TRAILSAFE OPERATIONAL USE WITHOUT SWAYCONTROL

Once the TrailSafe has finished calibrating and is ready for operational use, the colour of the LED will change depending on the charge state of the battery.

NOTE: If you are using the TrailSafe+ alongside BMPRO's SwayControl, refer to the **TrailSafe+ Operational Use With SwayControl** section of this manual.

Colour	Condition
	The house battery capacity is sufficient for 15 minutes of emergency braking operation.
	The house battery may have insufficient capacity for 15 minutes of emergency braking operation. Check the battery to ensure at least 10Ah of house battery capacity is available.
	The house battery is not detected or there is insufficient capacity for 15 minutes of emergency braking operation. Charge or replace the house battery.

State	Status	Condition	Solution
Standby mode		The TrailSafe is in standby as no brake activity has been detected for 1 minute. The colour will change depending on the charge state of the battery.	
Brake pedal depressed	 For 1 minute	The colour will change depending on the charge state of the battery.	
Pin out		A trailer breakaway has occured. The colour will change depending on the charge state of the battery.	
		There is a TrailSafe breakaway switch fault. The LED will flash both orange and red.	Do not use unit. Replace the unit.
Battery flat	 Always on	The battery is flat.	Charge or replace the house battery.
Other		The TrailSafe is in standby, or there is no power, or the voltage is less than: - 10.5V for lead-acid batteries - 11.5V for Lithium batteries	If necessary, check the TrailSafe by depressing the brake.

TRAILSAFE+ OPERATIONAL USE WITH SWAYCONTROL

The LED on the TrailSafe+ displays different indicators if used with BMPRO's SwayControl.

NOTE: If you are using the TrailSafe+ without BMPRO's SwayControl, refer to the **TrailSafe Operational Use Without SwayControl** section of this manual.

State	Status	Condition	Solution
Battery flat	 Always on	The battery is flat. ⚠ **Warning**: This state will override other LED indicators. Refer to the **Battery Flat** section for more information.	Charge or replace the house battery.
Normal operation, battery sufficient			
Sway event active			
Standby mode		The TrailSafe is in standby as no brake activity has been detected for 1 minute, and the SwayControl is in "sleep" mode	
Battery insufficient		The house battery may have insufficient capacity for 15 minutes of emergency braking operation.	Check the battery to ensure at least 10Ah of house battery capacity is available.
SwayControl not detected		The SwayControl is not detected by the TrailSafe+.	Check if the SwayControl is connected.
No power		No power to SwayControl after a "wake-up" signal from the brake controller.	Check the quality of power, ground and brake controller wire connections. Check for any blown fuses on the tow vehicle and trailer.
Battery over-voltage / under-voltage		There is a house battery overvoltage(> 20V) or undervoltage (< 3V) on the SwayControl.	Check the power source voltage. The required voltage is 12-15V.

LED STATUS KEY	
Continuous Flash	Solid Colour
Blink Once Every 10 Secs	No Light
Blink Once Every Few Secs	Blink Twice Every Few Secs
Blink 3 Times Every Few Secs	Blink 4 Times Every Few Secs

State	Status	Condition	Solution
Off-road mode		The SwayControl is disabled momentarily. The unit will return to normal operation when not on rough terrain. The LED will flash both green and red.	
Other		The three following conditions are met: ▪ The SwayControl is in "sleep" mode. ▪ The TrailSafe+ is in standby. ▪ The house battery capacity is sufficient for 15 minutes of emergency braking operation.	If necessary, check the TrailSafe by depressing the brake.
		There is no power.	

Battery Flat

If the battery is flat, the LED will show a constant **RED** even if other LED indication states are also active at the same time. The only indication states that will not be overridden are the fault indicators.

Fault Indicators

State	Status	Condition	Solution
System malfunction		The SwayControl has suffered a system malfunction.	A service centre repair is required.
		The SwayControl has no control of the trailer.	A service centre repair is required.
Left brake short		There is a wiring short in the left-side brake.	Repair the wiring short.
Right brake short		There is a wiring short in the right-side brake.	Repair the wiring short.

SERVICING

Do not attempt to service the TrailSafe or TrailSafe+ yourself, or dismantle, modify or repair the TrailSafe or TrailSafe+ yourself, as this will void your warranty. If your TrailSafe product requires servicing, please consult your BMPRO dealer or visit **teambmpro.com** for assistance.

FAQS AND TROUBLESHOOTING

Need more help troubleshooting your TrailSafe or TrailSafe+?

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

When I pull the pin, the TrailSafe indicator does not illuminate?

1. Check the supplied fuse on the black/red wire.
2. Check the wiring matches the diagram.
3. Ensure TrailSafe or TrailSafe+ pin slot is clean of dirt.
4. Ensure the house battery is charged.

Why should I test TrailSafe before hitching it to the tow vehicle?

Testing the TrailSafe or TrailSafe+ ensures that the house battery has sufficient capacity to operate the brakes for at least 15 minutes should the need arise.

What is the difference between a solid green, orange and red status indicators on the TrailSafe?

GREEN confirms that the battery has been detected, has been determined to have sufficient charge and no fault in the wiring to the brakes has been detected. Good to go!

ORANGE indicates there is a need for a secondary check as the battery maybe too low.

RED indicates that battery not detected or not having enough capacity for 15 minutes emergency brake operation.

It is possible that with dual axles brakes, heavy brake light loads, warm batteries, a large load on the trailer etc, that the battery is sufficient but failing to give a clear pass.

It is necessary that there is at least 10Ah of useful battery capacity remaining, which may require 20% of aged 100Ah-rated battery for this load. If any loads (e.g. lights, 12V fridges) are on in the trailer, turn these off if possible. If your trailer or caravan has a display showing remaining battery capacity this should be able to provide a useful indication that there is enough battery capacity remaining for the emergency braking function.

Refer to the **LED Status Indicators** section of this manual for information.

Can I use a wired in-car monitor?

A wired 12VDC battery voltage indicator can be used with the TrailSafe or TrailSafe+ if desired.

When I pull the pin, the LED display is flashing RED and ORANGE?

The pull pin is faulty, which may cause the brakes to not operate correctly or for as long as desired.

Refer to the **LED Status Indicators** section of this manual for information.

I have charged my house battery, but the TrailSafe shows a RED LED.

If a large load is applied to the house battery, such as a fridge, the house battery terminal voltage may drop below the minimum TrailSafe threshold, due to the internal resistance of the house battery.

Switch off any loads and re-test.

Refer to the **LED Status Indicators** section of this manual for information.

I thought it was not a good idea to remove the pin?

This is a key feature of the device. By removing the pin to test the unit, it checks to ensure that the switch is functioning. It also checks the battery is ready to function should an emergency happen.

The LED is indicating a solid RED all the time?

The battery voltage is very low and is considered flat. Charge or replace the battery.

Refer to the **LED Status Indicators** section of this manual for information.

SPECIFICATIONS

TrailSafe / TrailSafe+	
System Voltage	12V Nominal (not suitable for 24V systems)
Electric Brake Load	18A max
Brake Light Load	8A Max
Communications	Bluetooth Low Energy (BLE 5.0)
Wired Monitor Current	30mA max
Battery Chemistry Compatibility	LiFePO4 / Lead-acid
Temperature	-20°C to 60°C
IP Rating	IP67
Battery Nominal Capacity	70Ah - 300Ah

WARRANTY TERMS AND CONDITIONS

Registering your BMPRO product is an important step to ensure that you receive all the benefits you are entitled to. Please visit teambmpro.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 TrailCheck is designed to be installed by a suitably qualified installer. You or your installer should carefully inspect the products 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 any 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 service@teambmpro.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.

POWERING YOUR ADVENTURES.

BMPRO
customerservice@teambmpro.com
19 Henderson Rd, Knoxfield VIC 3180 Australia
teambmpro.com