



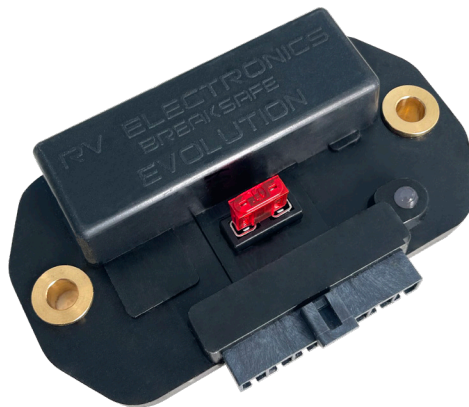
RV ELECTRONICS
MANUFACTURER OF RECREATIONAL VEHICLE ACCESSORIES



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BREAKSAFE EVOLUTION

OPERATING INSTRUCTIONS



The RV Electronics Breaksafe Evolution is the next generation break-away system that utilises the onboard battery system to power the electric brakes in the event of accidental separation.

This allows for a more compact design without the need to service a separate battery system which saves time and cost for the user.

The Breaksafe has 2 modes of operation (**Passive and Active.**) In the event of accidental separation between the tow vehicle and trailer, the Breaksafe will enter active mode and engage the brakes and stop lights on the trailer to bring it to a rest.

This is done when the pin that is attached to the tow vehicle by the cable is removed from its housing. The brakes are then applied and held on for 15 minutes or until the pin is placed back into the housing.

The second operation is called passive mode. When the Breaksafe is not engaged it will monitor the battery condition periodically and display the battery condition on the indicator LED.

For this to function correctly, 3 conditions must first be met:

- 1:** The battery must be in good condition and more than 50 A/H
- 2:** The correct battery profile must be selected.
 - To determine the current battery profile, *see section 1- (Initial start-up routine:)*
 - If the incorrect battery profile is selected *see section 2 - (Procedure for selecting battery profile)*
- 3:** Before starting your journey, Carry out a battery condition test. It is also good practice when traveling to turn off all non-essential electrical loads to the on-board batteries to minimise the risk of insufficient battery capacity. Follow the battery test procedure outlined on the next page (*Section 3 - Battery test procedure*)

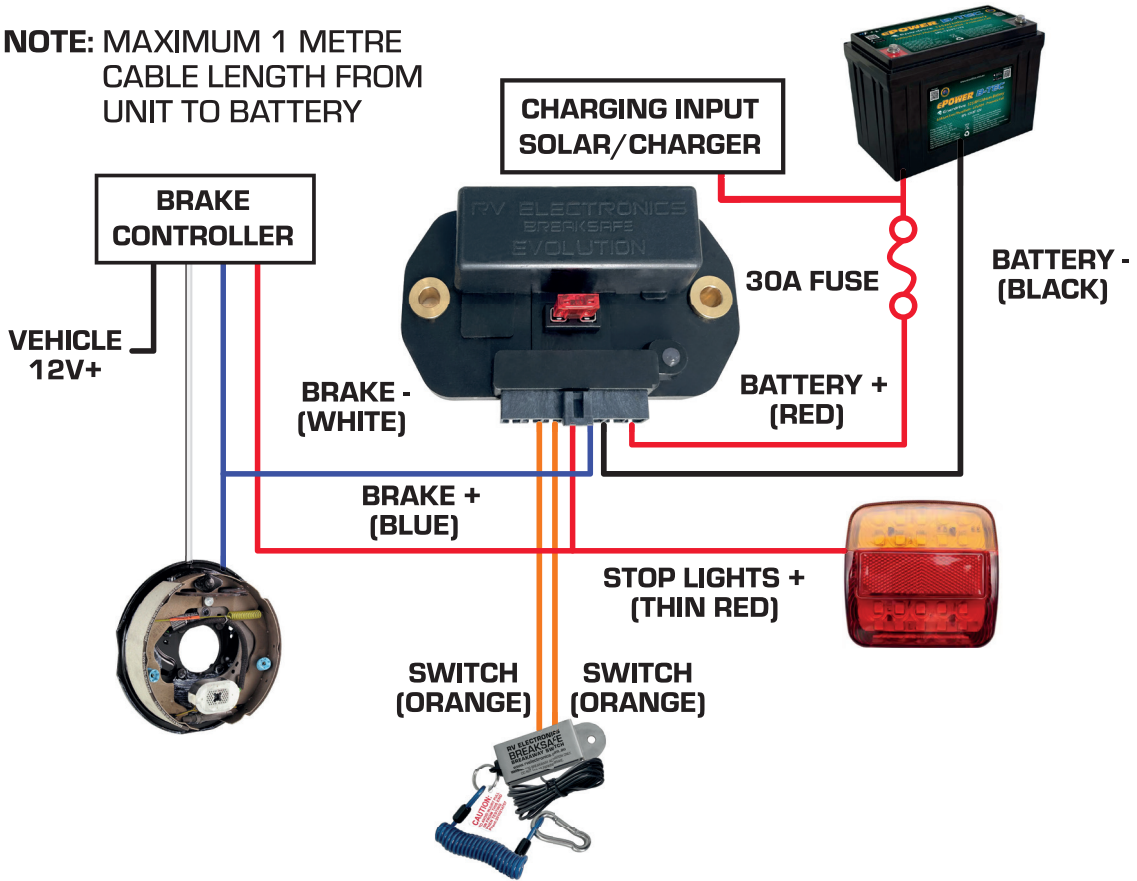


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**NOTE: MAXIMUM 1 METRE
CABLE LENGTH FROM
UNIT TO BATTERY**



LED INDICATOR GUIDE:

LED CONDITION	
Slow consistent Green LED on and off	Battery is at charging voltage (Being charged or has just been on charge. It may take a short period to come down to the correct voltage)
Green LED flash	Battery is in good condition.
Long delay -	Breaksafe is in passive mode.
Short delay -	Breaksafe is in active mode.
LED alternating Green and Red	Initial start-up / Breaksafe is engaged and testing battery
Red LED flash	Battery may not have enough charge or is at a voltage that may cause damage to the battery if left for long periods.
Long delay -	Breaksafe is in passive mode.
Short delay -	Breaksafe is in active mode.
Slow consistent Red LED and stop light circuit on and off	The Breaksafe 15 minute limit has been reached and the Breaksafe has disconnected power to the brakes. At this point the stop lights will be flashing slowly to alert that the Breaksafe needs to be reset by placing the pin back into the housing.

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1: INITIAL START-UP ROUTINE

When the Brakesafe is powered up, the unit will go into the initial start-up routine. The LED indicator will display the start-up sequence which is as follows:

1. Red and Green alternating – Initialisation.
2. For the next 60 seconds the LED will flash Green either 1,2 or 3 times to indicate the current battery profile.

1 x Green LED flash	SLA
2 x Green LED flash	LIPO
3 x Green LED flash	AGM

3. Once the 60 seconds has finished the indicator LED will turn solid Green for a further 10 seconds – Initialisation is complete and now in passive mode.

2: PROCEDURE FOR SELECTING BATTERY PROFILE

To determine what battery profile the Brakesafe is set to:

Disconnect and reconnect power to the Brakesafe. This will make the unit enter the initial start-up routine outlined above and will display the current battery profile. (1,2 or 3 flashes)

If the battery profile is not correct, follow the steps below:

1. Disconnect power to the Brakesafe.
2. **Remove** the pin from the Break-away switch on the A frame
3. Connect and disconnect power to the Brakesafe in quick succession (approximately 4-8 times until the LED illuminates solid Green) either by pulling fuse (Not the one in the face of the Brakesafe unit, that is the stop light fuse) or disconnecting battery. **ONCE THE LED ILLUMINATES, KEEP POWER CONNECTED** until the LED flashes either 1,2 or 3 times in quick succession to save the change and display the current profile above. (If the unit is set to the wrong battery profile, repeat this step to cycle through profiles)
4. The Brakesafe indicator will display the current battery profile 5 times and then revert to its initial start-up routine. If the pin is still out, the Brakesafe will also enter active mode. Replace the Break-away pin into the switch housing on the A frame.



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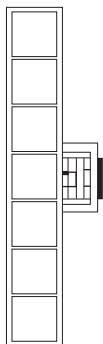
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3: BATTERY TEST PROCEDURE

The battery test procedure simulates a Breakaway situation to ensure the battery capacity is sufficient. In the event of an actual break-away situation the unit will constantly monitor the battery and the indicator LED will display the battery status after the testing period is complete in the same manner as a standard battery test.

- Before beginning the test procedure:
 - Disconnect the tow vehicle from the Caravan/Camper Trailer.
 - Disconnect from 240v and solar charging if being used. *(This will minimise the chances of false reading by the testing component of the Breaksafe.)*
 - Turn off all unnecessary electrical loads.
- Remove pin from the breakaway switch. This will activate the electric brake system and place a load on the battery to test the condition.
- Wait until the alternating Red and Green LED testing sequence has stopped.
- The LED will either display one of the 3 battery states:
 - A slow consistent on and off Green LED - Battery is at charging voltage
 - Green LED flash with a short delay - Breaksafe is in active mode and battery condition sufficient.
 - Red LED flash with short delay - Breaksafe is in active mode and the battery level is either low or at a level that can cause damage to the battery if not charged soon.
- Once the status is displayed, replace the pin in the switch housing.
- If the battery condition is low when in test mode but sufficient when pin is replaced, this means the battery is close to being low/battery damage if kept below this voltage for extended periods of time.

4: WIRING DIAGRAMS



- BRAKE -** (WHITE)
- BREAKAWAY SWITCH -** (ORANGE)
- BREAKAWAY SWITCH -** (ORANGE)
- STOP LIGHTS -** (THIN RED)
- BRAKE +** (BLUE)
- BATTERY -** (BLACK)
- BATTERY +** (RED)

*** Note on installation:** When mounting, make sure there are no cables in the wall behind the fixing screws. Ensure cables are fixed securely and there is no unnecessary tension in the wiring loom to unit (Wires so tight it pulls the unit in any direction.)

WIRE GAUGE GUIDE

Battery (Red + & Black -) = 2.5mm ²	Brake (Blue + & White -) = 2.5mm ²
B/A Switch (2 x Orange) = 1.5mm ²	Stop Lights (Thin Red) = 1.5mm ²

*** NOTE:** Battery wires must be connected between VSR and battery for system to operate if VSR disconnects power.