



CANR110BA/ BA2 Information Guide

MAN0037.14



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Product Number	Version	Version Date
CANR110BA/BA2	R3	26 – MARCH – 2024

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1. Safety Precautions

WARNING

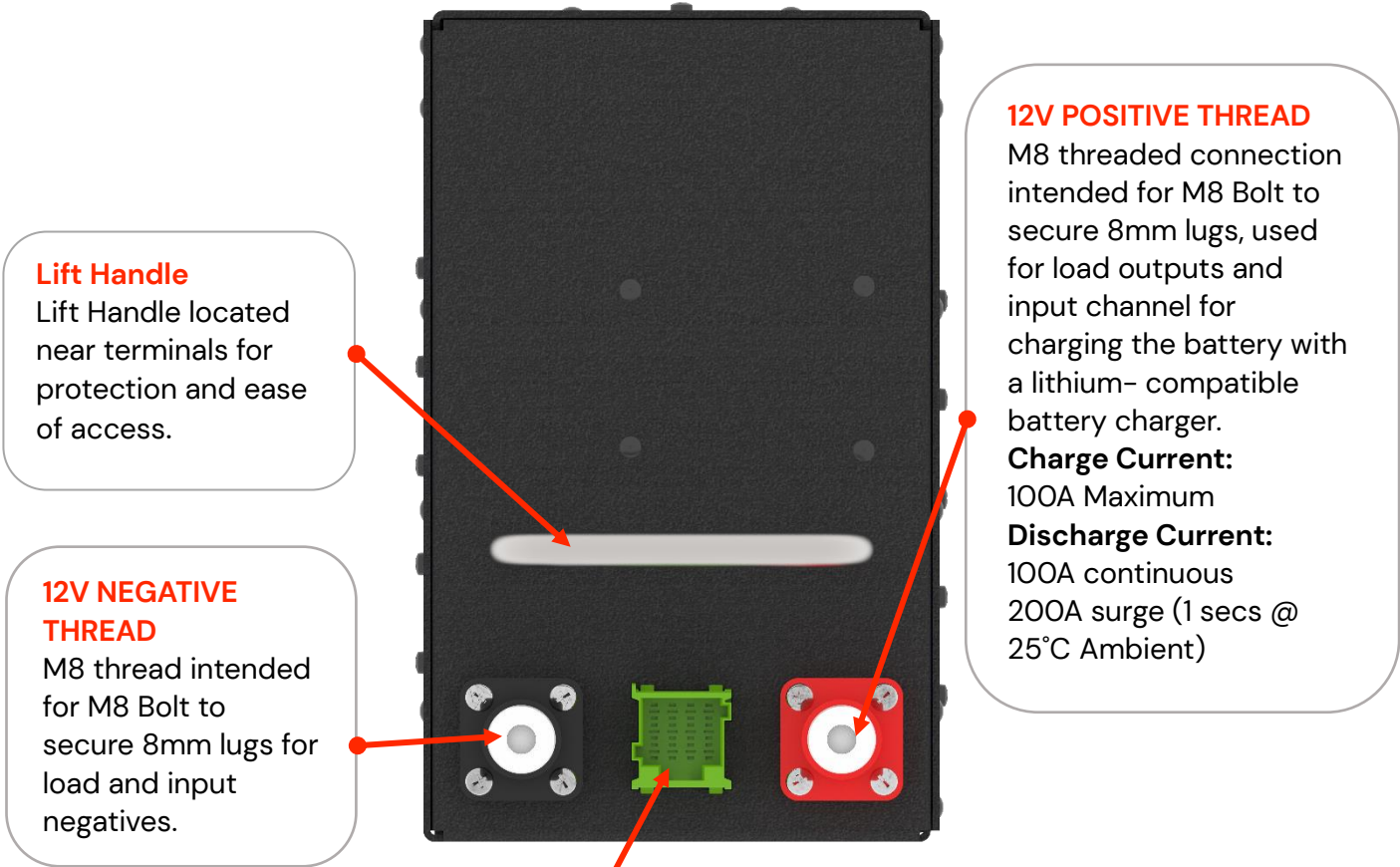
- ❑ Avoid mechanical shock.
- ❑ Avoid direct sunlight exposure.
- ❑ Do not store or mount batteries in incorrect orientations.
- ❑ Do not transport the battery unsecured.
- ❑ Do not expose the battery to water.
- ❑ Do not expose the battery to fire.
- ❑ Do not pierce the battery.
- ❑ Do not disassemble.
- ❑ Do not drill into the battery enclosure.
- ❑ Do not short battery terminals.
- ❑ Do not connect multiple batteries in a series configuration.
- ❑ Do not charge the battery outside the range of 0°C – 45°C.
- ❑ Do not store below -20°C or above 60°C.
- ❑ Risk of burns if misused.
- ❑ Always follow safe working practices.
- ❑ Installation of this device must only be carried out by appropriately qualified competent person(s).
- ❑ All connections must be fused at recommended fuse ratings to avoid damage to components.
- ❑ All minimum cable gauges and maximum lengths must be followed.
- ❑ Only use Lithium Battery Chargers to recharge batteries.

2. Specifications

Cell Type	Lithium Ferrous Phosphate
Total Capacity	110Ah
Nominal Voltage	12.8V
Charge Voltage	13.8 – 14.6V
Float Voltage	13.8V
Charge Current	100A
Discharge Current	100A Continuous/ 200A Surge
Operating Temp	0°C – 45°C
Dimensions (LxWxD)	332.5 mm x 227.5 mm x 141.5 mm

Table 1 CANR110BA Power Bank Specifications

3. Quick Start Guide – CANR110BA



12 WAY MULTI-CONTACT POINT (MCP) CONNECTOR

The MCP Connector serves as the access point to the internal features of the battery. The individual Lithium Cell voltage readings can be used for servicing the battery and fault finding – these correspond to PIN 1 through to PIN 5 – **DO NOT TOUCH THESE PINS**. Other active MCP Pins are detailed in the table below.

ACTIVE MCP PINOUT:

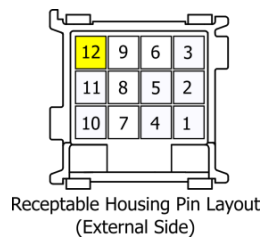
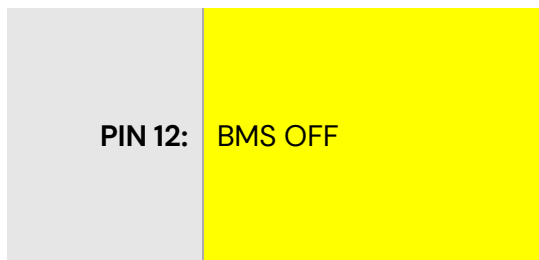


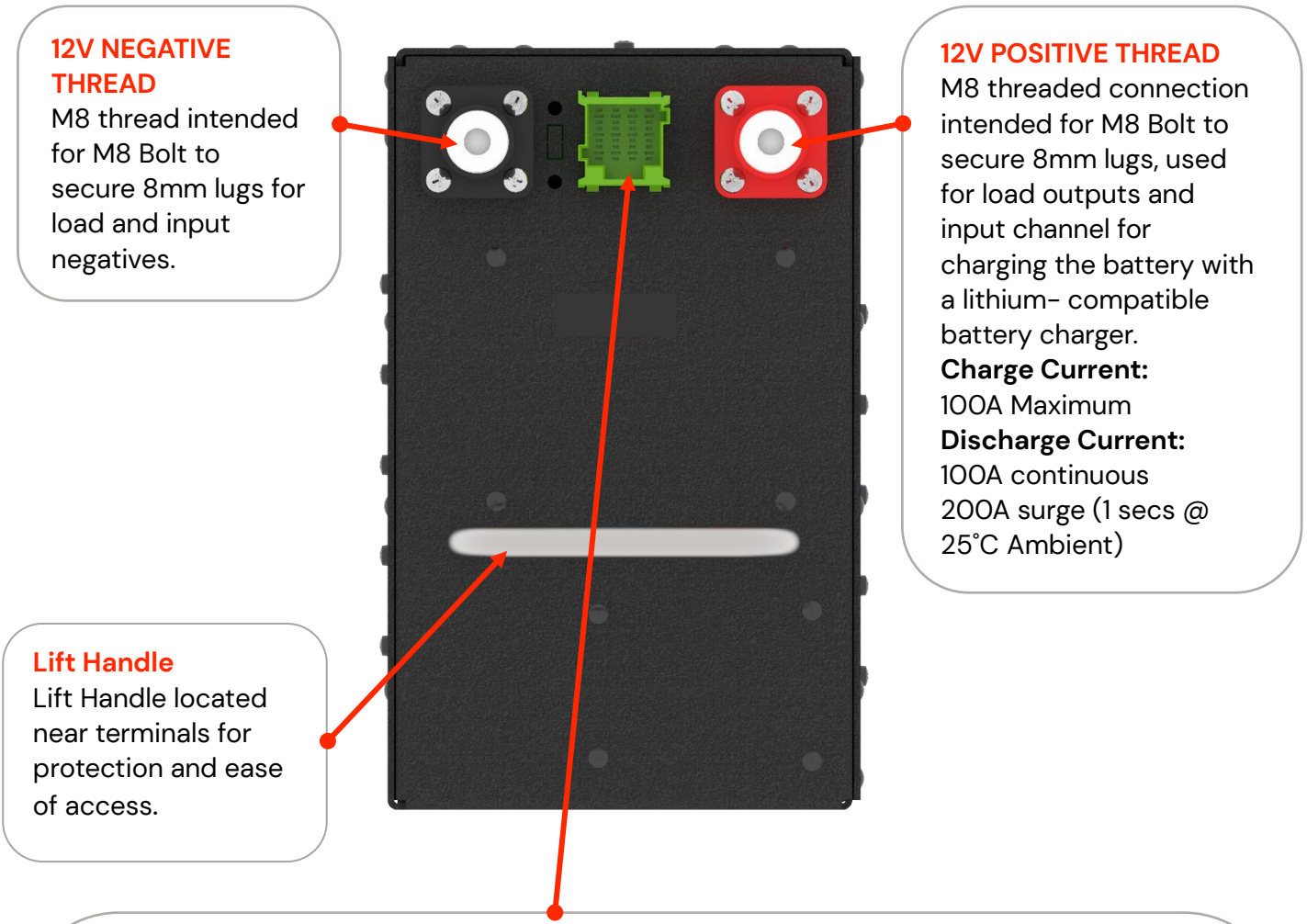
Table 2 MCP Pinout with Receptacle Housing Pin Layout Viewing from External of Battery

Figure 1 CANR110BA Power Bank Connection Description

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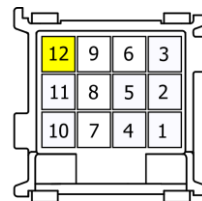
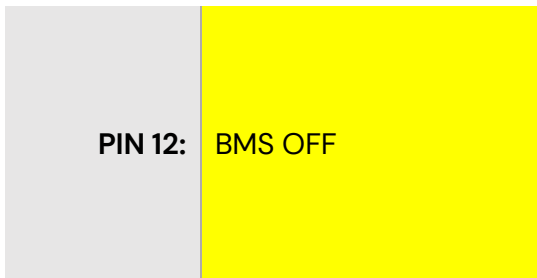
4. Quick Start Guide – CANR110BA2



12 WAY MULTI-CONTACT POINT (MCP) CONNECTOR

The MCP Connector serves as the access point to the internal features of the battery. The individual Lithium Cell voltage readings can be used for servicing the battery and fault finding – these correspond to PIN 1 through to PIN 5 – **DO NOT TOUCH THESE PINS**. Other active MCP Pins are detailed in the table below.

ACTIVE MCP PINOUT:



Receptable Housing Pin Layout (External Side)

Table 3 MCP Pinout with Receptacle Housing Pin Layout Viewing from External of Battery

Figure 2 CANR110BA2 Power Bank Connection Description

5. CANR110BA/BA2 Dimensions, Mounting Options, and Orientations

5.1 CANR110BA/BA2 Dimensions

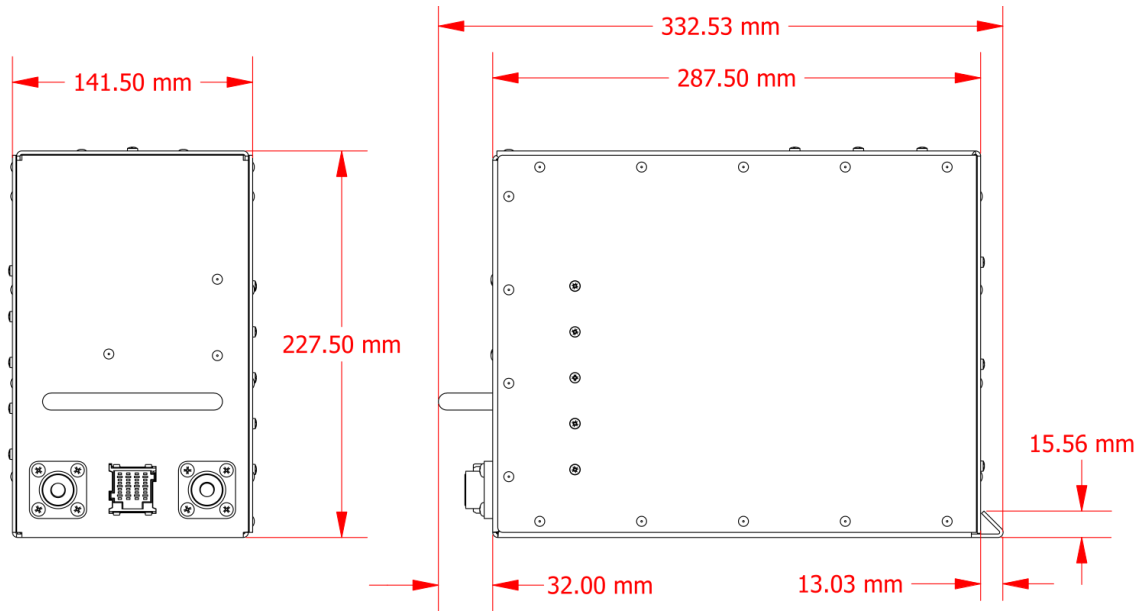


Figure 3 CANR110BA Dimensions.

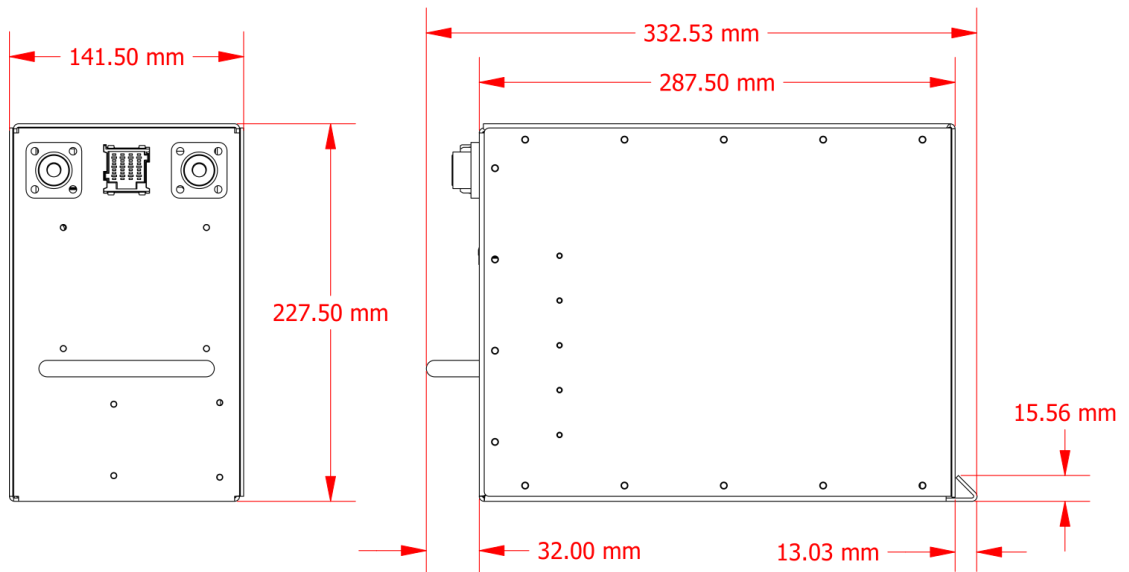


Figure 4 CANR110BA2 Dimensions.

5.2 CANR110 Series Mounting Options

The CANR110 batteries are equipped with mounting tabs at the rear of the unit, allowing for different mounting options that are available separately. These options range from singular mounting brackets which consist of a lift handle bracket and angle bracket to purpose-built mounting rack systems designed to securely house multiple units of the CANR110 Series products.

The lift handle bracket and the angle bracket are shown in Table 4 Mounting Bracket Options with Example Mounting Diagram for Lift Handle Bracket and Angle Bracket Purpose-built CANGOEE Mounting Rack Systems come in different options designed to fit 2, 3, or 6 units of the CANR110 series products. Please see page 10 for more details on the CANGOEE CANR110 Mounting Rack System

Example mounting orientations are shown on page 9.

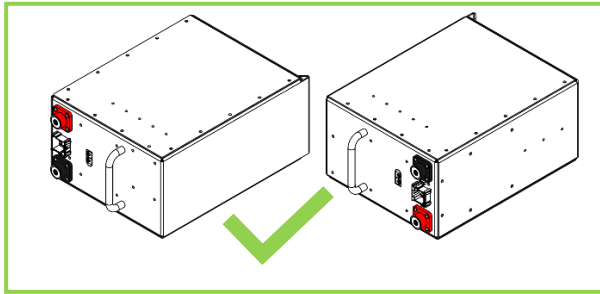
Singular CANR110 Series Unit Mounting Bracket Options	
CANR110 Series Lift Handle Bracket	CANR110 Series Singular Angle Bracket (Double option also available)

Table 4 Mounting Bracket Options with Example Mounting Diagram for Lift Handle Bracket and Angle Bracket

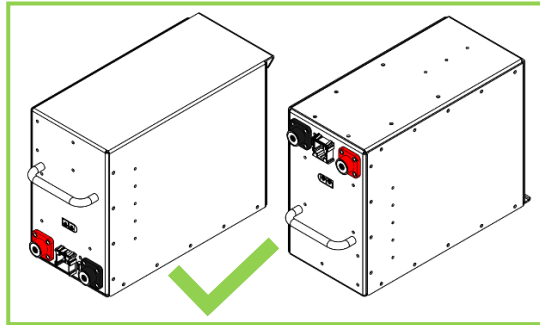
5.3 CANR110 Series Mounting Orientation

CANR110 Series Example Mounting Orientations

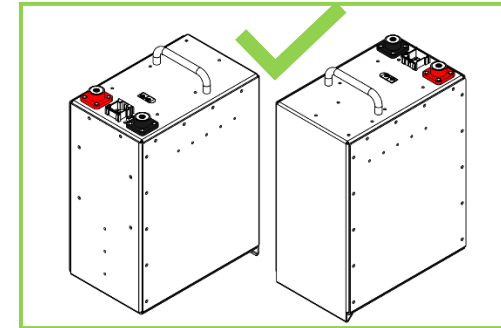
CORRECT Mounting Orientations



Horizontally on either of its sides.

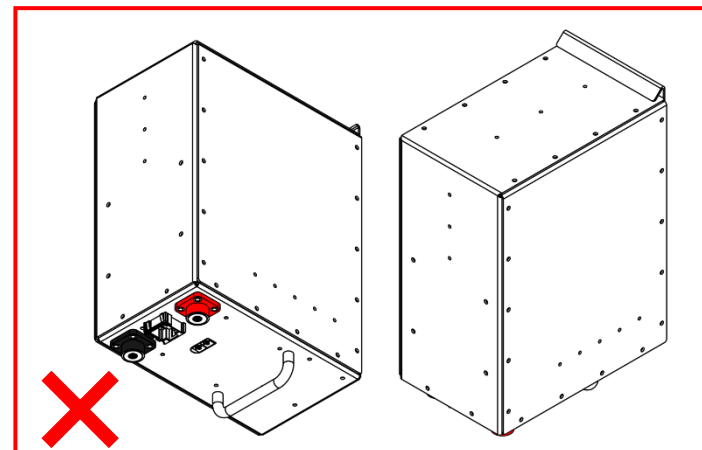
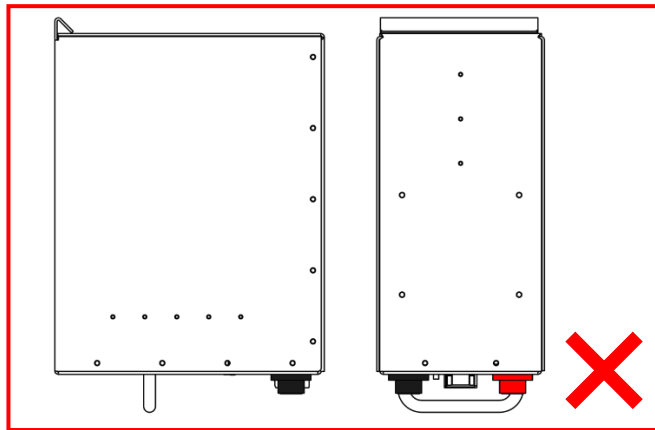


In upright orientation or upside down.



With the lift handle pointing towards the sky.

INCORRECT Mounting Orientations



Any orientation with the lift handle pointing towards the ground is **INCORRECT**.

Table 5 Power Bank Mounting Orientation Example

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6. Mounting and Installation Options

The unit can be installed within the CANGOEE CANR110 Mounting Rack System or by securing it using the lift handle brackets and angle brackets.

Please ensure that appropriate PPE gear is worn when installing the CANR110 series products and that the safety guidelines are followed carefully.

6.1 CANGOEE CANR110 Mounting Rack System (Optional)

The CANGOEE CANR110 Mounting Rack System allows for multiple units of the CANR110BA and CANR110BA2 Power Banks and CANR110 series Power Nodes or Power Hubs to be placed into the same rack bay for easy modularity of the overall power system.

By utilising a configuration consisting of multiple units of the CANR110 series Power Banks, Power Nodes, or Power Hubs, a separate bus bar system is employed for both the negative and positive terminals. This simplifies the connection to the power system, requiring only a single positive and a single negative connection – for recommended wire sizes and gauges for connections, please see the table on page 12.




CANGOEE CANR110 Mounting Rack System Options	
	<p>2 Bay Mounting Rack System</p> <p>Example System – 1 x CANR110NO20 Power Node + 1 x CANR110BA2 Power Bank = 220Ah System</p>
	<p>3 Bay Mounting Rack System</p> <p>Example System – 1 x CANR110NO20 Power Node + 2 x CANR110BA2 Power Banks = 330Ah System</p>
	<p>6 Bay Mounting Rack System</p> <p>Example System – 1 x CANR110NO20S15 Power Hub + 3 x CANR110BA Power Banks + 2 x CANR110BA2 Power Banks = 660Ah System</p>

Table 6 CANGOEE CANR110 Mounting Rack System Options

7. CANR110BA/BA2 Example Use Case Schematics

Please Note: This is for illustration purposes only and is **NOT** intended to be used as a guide for installation.

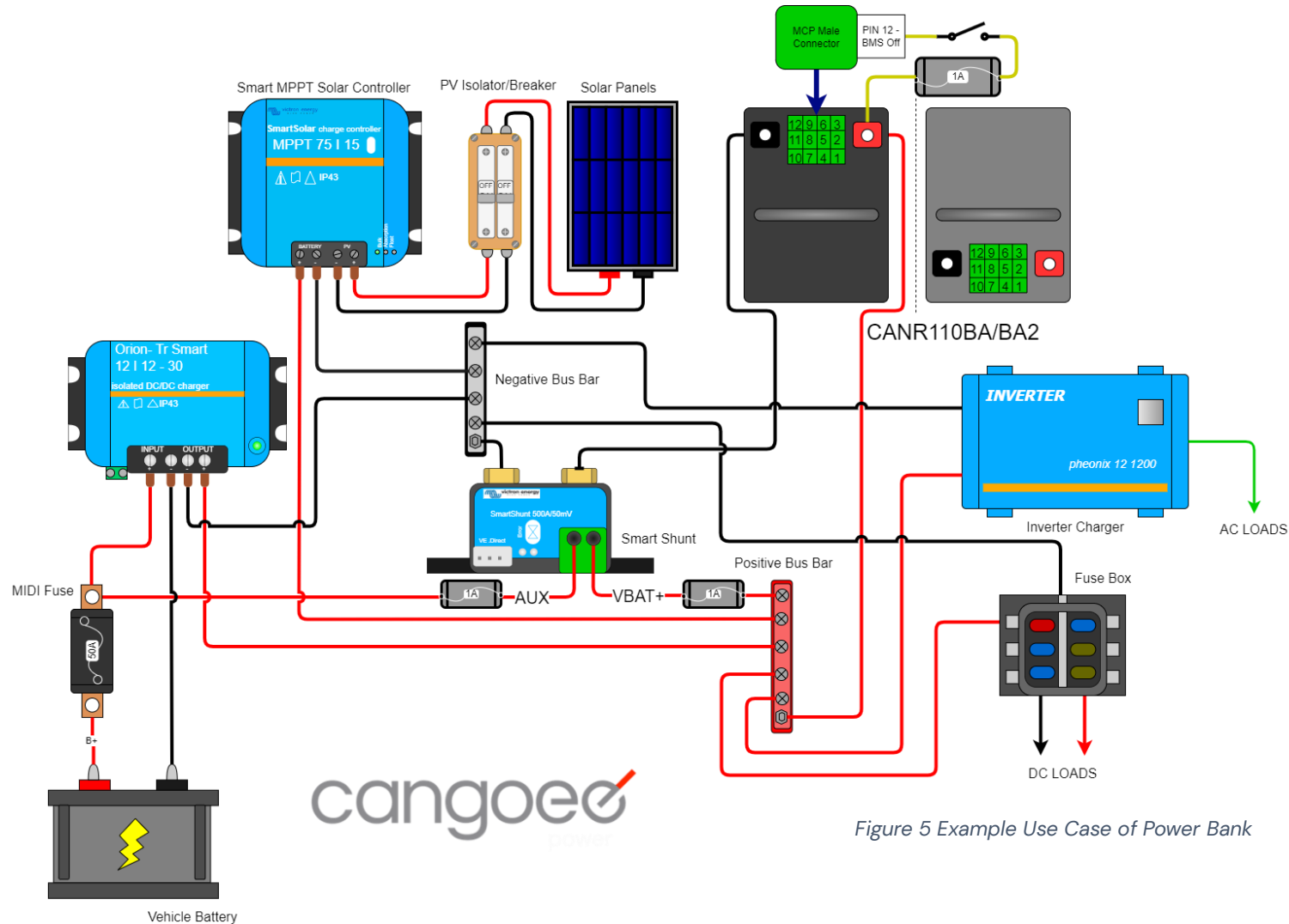


Figure 5 Example Use Case of Power Bank

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8. Recommended Wire Sizes and Gauges Chart

The below table represents the recommended wire sizes/ gauges, for battery installation into vehicles.

DCDC Capacity/ Cable	Recommended Wire Size/ Gauge Figure 8 Cable	Recommended Wire Length
DC-DC 20A	8 B&S/ AWG (CSA 7.71mm ²)	1m- Up to/ Maximum 5m
DC-DC 40A	6 B&S/ AWG (CSA 13.5mm ²)	1m – Up to/ Maximum 5m
Ignition Sense Cable	18-14 B&S/ AWG (CSA 0.64mm ² – 1.84mm ²) (Running a max of 1-2 Amps)	1m – Up to/ Maximum 6m
Main Positive +	6 B&S/ AWG (CSA 13.5mm ²) to 1 B&S/ AWG (CSA 42.4mm ²) 80A – 120A current carrying capacity	1m – Up to/ Maximum 4m
Main GND -	6 B&S/ AWG (CSA 13.5mm ²) to 1 B&S/ AWG (CSA 42.4mm ²) 80A – 120A current carrying capacity	1m – Up to/ Maximum 4m

Table 7 Recommended Wire Sizes and Gauges

Please Note: These wire gauges are suggested to mitigate the voltage drop along the cable. It is recommended that you check the voltage at the battery’s DC-DC input and alter charger selector switches accordingly.

9. Battery Management System

The Power Bank is equipped internally with a Battery Management System (BMS), which is an electronic solid-state circuit board that serves multiple important functions:

- ❑ Battery Cell Management: The BMS manages and maintains the cells within the battery.
- ❑ Safety Measures: The BMS provides safeguards that protect against overcharging and over-discharging as well as activating in response to situations where the battery is producing low voltage (less than 10.5V), overcurrent (more than 100A), or short-circuit situations.
- ❑ Cell Balancing: The BMS ensures that the Power Bank cells are equalised throughout its operation to promote overall efficiency and longevity.
- ❑ Cell Temperature Sensing. If the BMS detects the temperature of the cells to be above 45°C, it will automatically stop charging and discharging until the temperature has returned within the range of 0°C – 45°C.

Unlike lead-acid batteries, overcharging or over-discharging a lithium battery may lead to a hazardous scenario, therefore, the BMS is essential to the lithium battery.

9.1 BMS Off Functionality

The BMS is equipped with a remote load disconnecter which can cut off power/ voltage from the main positive and negative terminals. This functionality is intended for isolating remote loads and should only be utilised as a substitute for a dedicated isolator. It can be activated by supplying 12V to PIN 12 of the MCP Connector which will internally disconnect all loads from the battery terminals.

Please Note: The activation of this functionality will also disable the battery’s ability to charge.

- ❑ For single or multiple batteries in a switched circuit setup, it is considered best practice to fuse PIN 12 to the main positive with a fuse rated for 1 to 2 Amps. **DO NOT** connect PIN 5

10. Safety Tips

The battery contains Lithium Ferrous Phosphate (LiFePO₄) cells, considered to be the safest of all lithium-ion chemistries. The battery consists of a large amount of stored energy. Please follow these safety tips for use and operation:

- ❑ Ensure the battery is secured safely before travel.
- ❑ Do not drill into the enclosure. Doing so may inadvertently puncture one of the internal cells.
- ❑ Do not short-circuit the battery. Be careful not to drop a metallic object across the two exposed terminals. Always keep the terminal caps on the Positive (red) and Negative (black) posts during operation.
- ❑ Do not mount the battery upside down. The battery can also be mounted on its side if mounting upright is not an option. Correct battery mounting positions are shown in Table on page 9.
- ❑ Do not connect multiple batteries in series to raise the voltage. The BMS is not designed to accommodate higher voltages.

11. Longevity Tips

Factors that mainly affect the lifespan of the battery are depth of discharge and operating temperature. To ensure longevity and use of the battery:

- ❑ Do not fully discharge the battery to zero. Each time the battery is discharged to zero, either intentionally or unintentionally, it reduces the lifespan of the battery.
- ❑ Do not discharge the battery below 80% depth of discharge (i.e., 20% full).
- ❑ Do not charge the battery outside the range 0°C – 45°C to maximize the life of the battery and avoid damage to the cells.
- ❑ Avoid exposing the battery to direct sunlight, mount the battery in a compartment or undercover.

The cells are designed to last 2,000 cycles at 80% DOD (Depth of Discharge) and 5,000 cycles at 50% DOD.

12. Tips for Use

- ❑ Batteries of the same voltage may be placed in parallel to increase storage capacity. However, each battery should be independently fused, and the battery must be from **CANGOEE**.
- ❑ If the battery temperature is potentially less than 0°C it is essential to allow the battery to warm to ambient temperature before connecting power to it.
- ❑ The battery is splash-proof and water resistant but not waterproof, **DO NOT** directly submerge the battery in water.
- ❑ The battery is designed to be housed in a dry, enclosed compartment, not in direct sunlight or exposed to outside weather conditions for an extended period.
- ❑ Only use Lithium Battery Chargers to recharge the battery.

13. Maintenance Tips

If not using the battery for a prolonged period (months at a time), then store the battery as follows:

- ❑ Disconnect all loads from the battery so that there is no external current draw.
- ❑ Ensure the battery is close to full capacity as the battery will slowly self-discharge over time.
- ❑ Do not keep the battery on trickle charge as this may harm the internal battery cells.

Within every two months, give the battery a quick recharge to ensure battery longevity.