

cangoee
power

Isuzu D-MAX Installation Manual

INS0175



off-grid / on-grid / on-demand.

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Overview

The following guide is designed to assist with the install by providing a quick and easy guide for installation of this battery kit into the ISUZU D-MAX vehicle.

Cangoee strongly recommends following this guide and urges that the installers are qualified professionals.




Tools

Tools needed for this install

Tool	Description	Visual
PH2 Phillips Head Screwdriver	Philips Head Screwdriver Set	
Pliers	Multi-tool or long nose pliers	

What's in The Kit

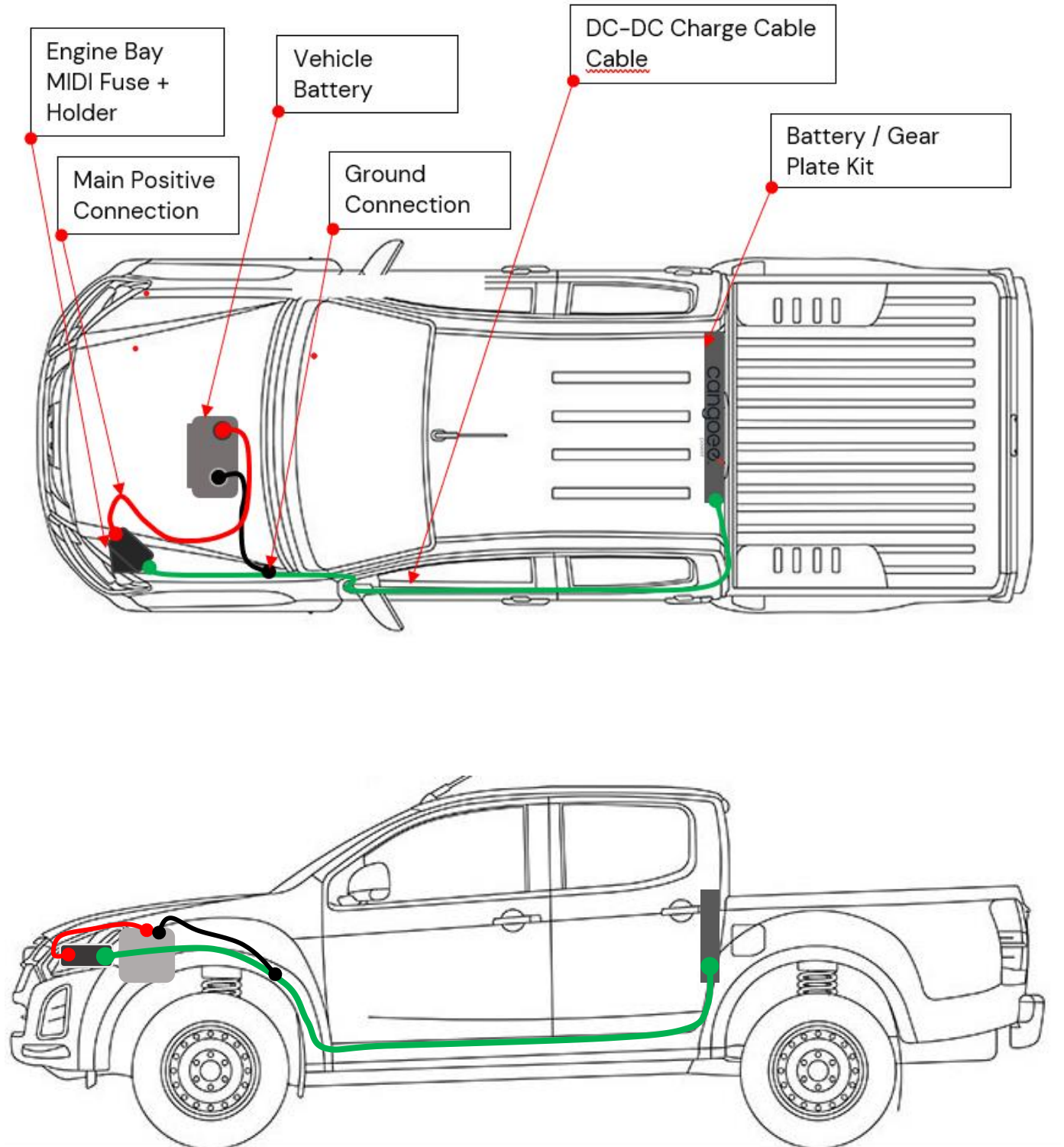
Included Cables and Parts

Part	Description	Visual
CANGOEE D-Max Battery System	The battery system for install	
DC – DC Charge Cable	DC-DC long Black Cable: Red and Black Connections	
Midi Fuse on Bracket	Midi Fuse attached to bolt-on bracket	

Installation Overview

This is an overview of the installation kit and where each component fits.

Please carefully examine the below diagram and adhere to the guide, this will ensure the finished installation matches this diagram.



Side view of installation: with DCDC cable (**Green**) running through passenger side firewall and through engine bay grommet.

WARNINGS and SAFETY

SAFETY!

The battery contains lithium iron phosphate (LiFePO₄) cells, considered to be the safest of all lithium-ion chemistries. The battery contains a large amount of stored energy.

Please follow these quick tips for safe use and operation:

- Ensure appropriate PPE gear is worn at all times during this install
- 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 POS and NEG 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.
- Do not connect multiple batteries in series to raise the voltage. The Battery Management System (BMS) is not designed to accommodate higher voltages.
- If the battery comes in contact with your skin, please immediately seek medical advice.

Please Note:

Cangoee strongly recommends that a competent person completes this install, however if installing at home or by yourself, please adhere to the instructions and follow all steps carefully.

This is to ensure your Cangoee battery System is properly installed, and functions as intended.

Please Make Sure proper PPE equipment is always used, and the vehicle has been turned off to avoid serious injuries or damage to your vehicle.

WARNINGS!

Please follow these warnings carefully and adhere to the 'safety' Guidelines when installing this battery system:

- Avoid mechanical shock
- Do not expose battery to fire
- Do not pierce battery
- Do not disassemble
- Do not drill into enclosure
- Do not short battery terminals
- Do not charge battery below 0 °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 should only be carried out by appropriately qualified competent persons.
- All minimum cable gauges and maximum lengths must be followed.

WARNING

This install works with live wires and electricity, ensure all safety guidelines are followed and proper equipment is used during this Install. Failing to follow these guidelines could result in incorrect installation of the Cangoee battery, malfunction or severe injury.

Install Guide: Step-By-Step

Stage 1: Remove Rear OEM Floor and Clear Space– Location: Rear Seats

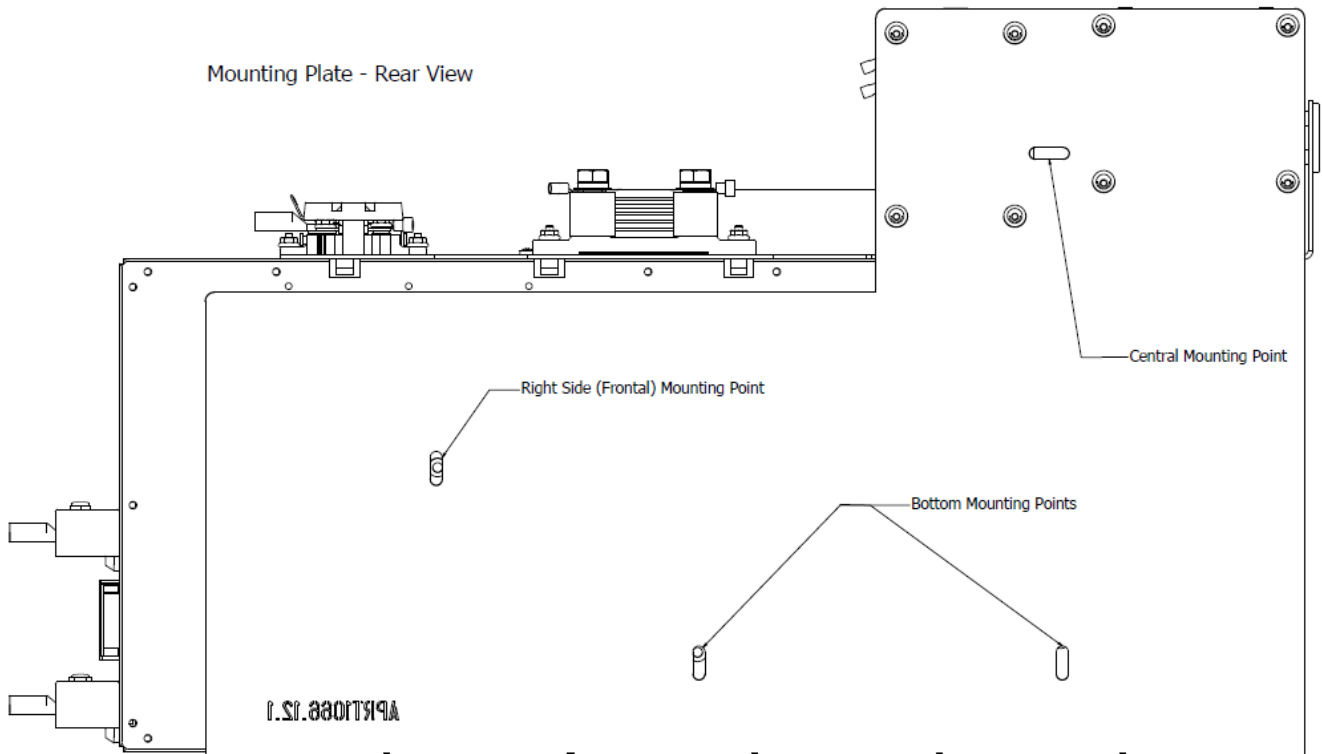


1. Locate second row seats and pull down with latch located on the top of the seat
2. Remove felt backing and black plastic cover to expose white metal backing
3. Clip on speed nuts to the 4 protruding stand offs.



Stage 1
COMPLETE

Stage 2: Cangoee D-Max Rear Mounting Plate Diagram



Selector Switch Settings/ DCDC Charger

The DC-DC charger in the CAN battery allows the battery to charge from a vehicle engine/alternator/start battery. However, to avoid draining the start battery, charging is only desired while the engine is running.

In some applications it can be difficult to determine when the engine is running. Therefore, the DC-DC charger reads several inputs to determine when to turn ON (charge) and turn OFF (stop charging) to achieve:

- Charging when the engine is running, to maximize charging of the Cangoee Battery
- Not charging when the engine is not running, to avoid discharging the vehicle start/cranking battery.

Logic to determine when to turn the DC-DC charger ON and OFF will be implemented using software running on a microcontroller to allow advanced control combining several inputs:

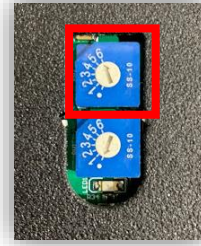
- Start battery voltage
- Ignition signal voltage
- Timing delays
- 2 x 7-position (0-6) rotary switches: user-accessible from outside the battery

Carefully view the below tables to understand the different Selection Modes.

Selection Modes.

Delay Switch Position	Delay Off Time	Application
0	0 Sec	Trad Alt, or Ignition Relay
1	30 Sec	Smart Alternator
2	1 Min	Smart Alternator
3	1.5 Min	Smart Alternator
4	3 Min	Smart Alternator
5	3.5 Min	Smart Alternator
6	0 Sec	Ignition Signal Control

OFF
DELAY



Voltage Switch Position	On Level	Off Level	Application
0	11	10	Always On: Ignition Relay/ Signal
1	12	11	Very Long, Thin Cable
2	13	12	Long, Thin Cable
3	13.3	12.3	Long Cable
4	13.5	12.5	Smart Alternator
5	13.7	12.7	Traditional Alternator
6	14	13	Traditional Alternator

MEASURED
VOLTAGE



ATTENTION

Please carefully view the different selection modes, as the switches are not easily accessible once installed.

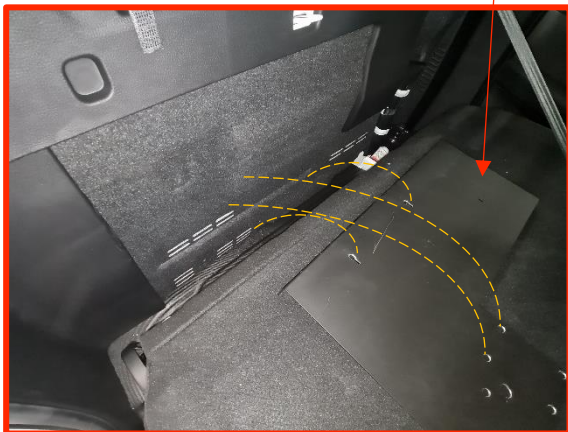
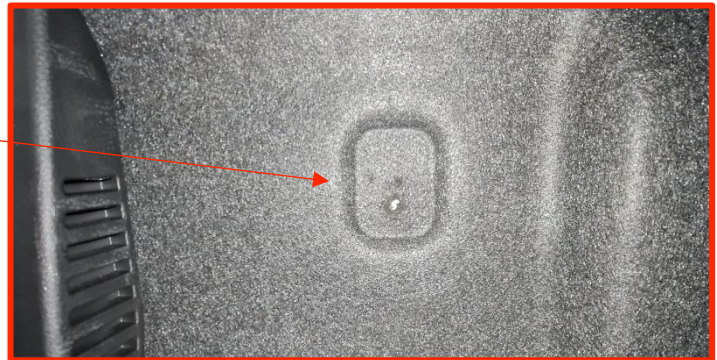
Stage 2.1: Placement of Battery – Location: Rear Seats



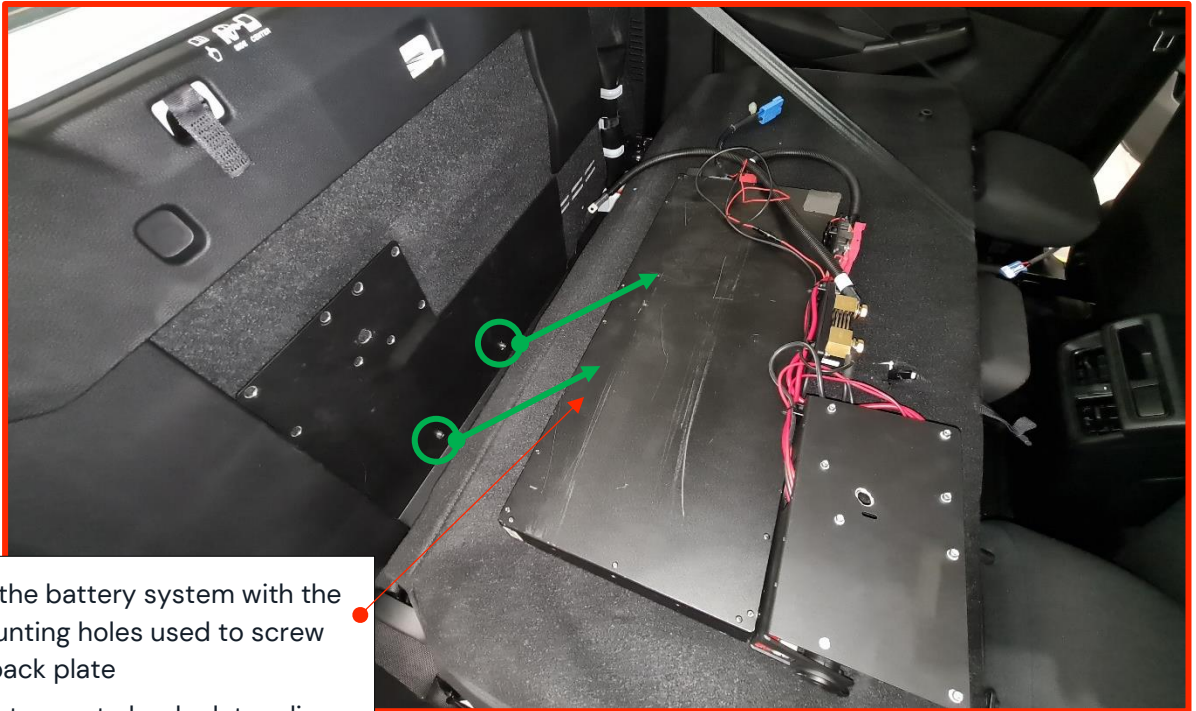
ATTENTION

Please carefully view the different selection modes on page 7 as the switches are not easily accessible once installed.

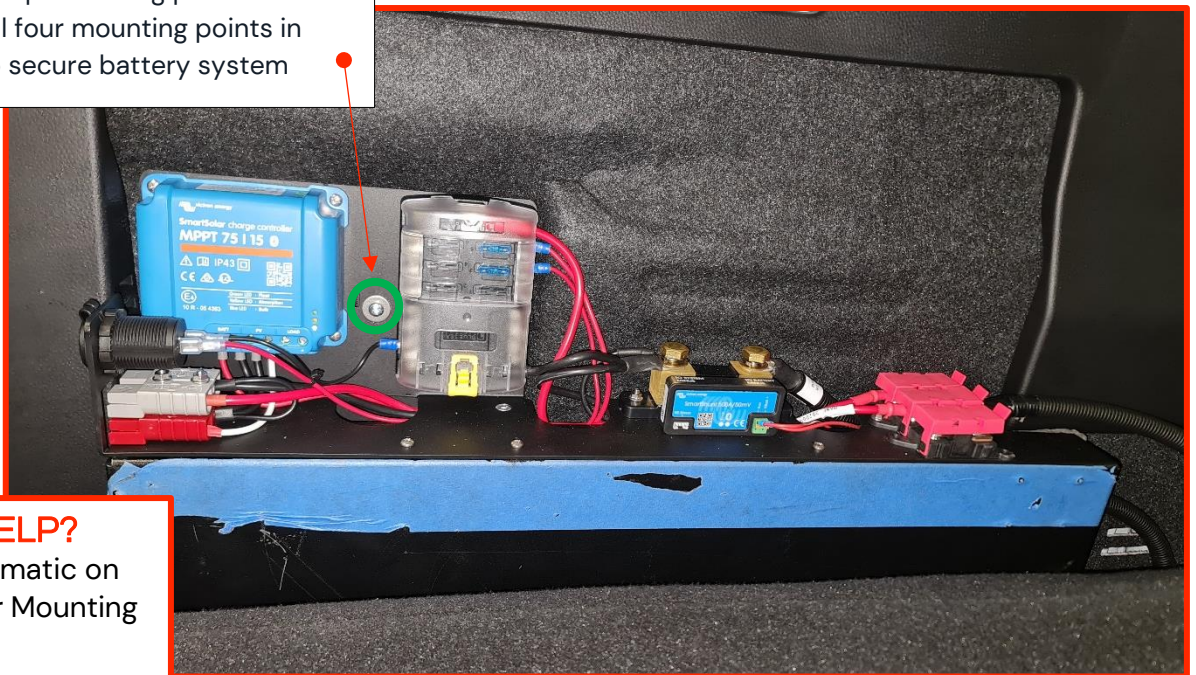
3. Reattach felt onto backing and glue down
4. Punch a small hole in felt on top mounting location to use as a guide for mounting
5. Line up back plate with top mounting hole and use to align with other holes – bolt the back plate to the bottom two mounting points.



Stage 2.2: Fixing Battery in Place – Location: Rear Seats



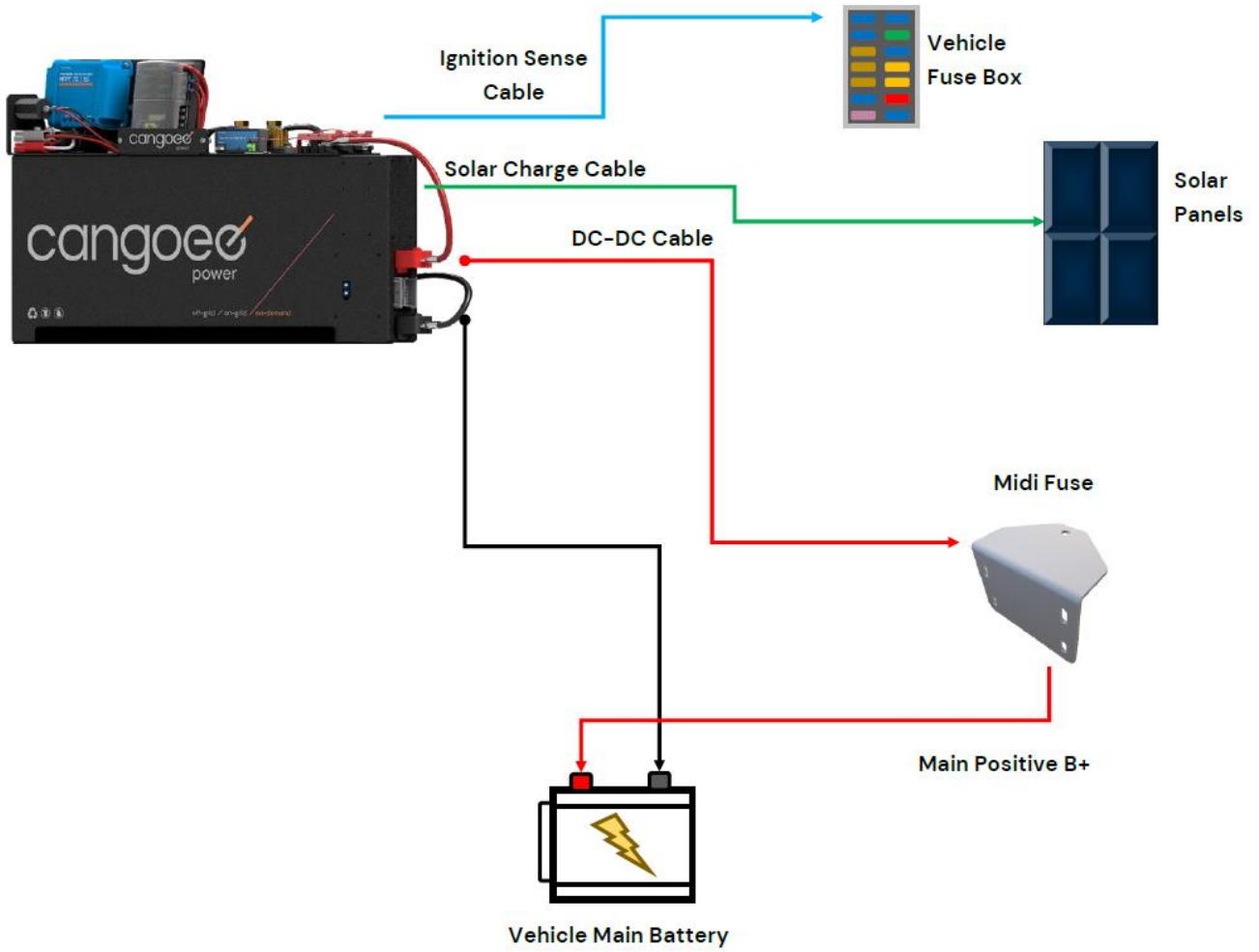
1. Line up the battery system with the two mounting holes used to screw on the back plate
2. Push system onto back plate – line up with top mounting position and screw all four mounting points in place to secure battery system



NEED HELP?
View Schematic on
Page 6 For Mounting
Locations.

**Stage 2
COMPLETE**

Stages 3 - 5: General Wiring Diagrams – For User Reference



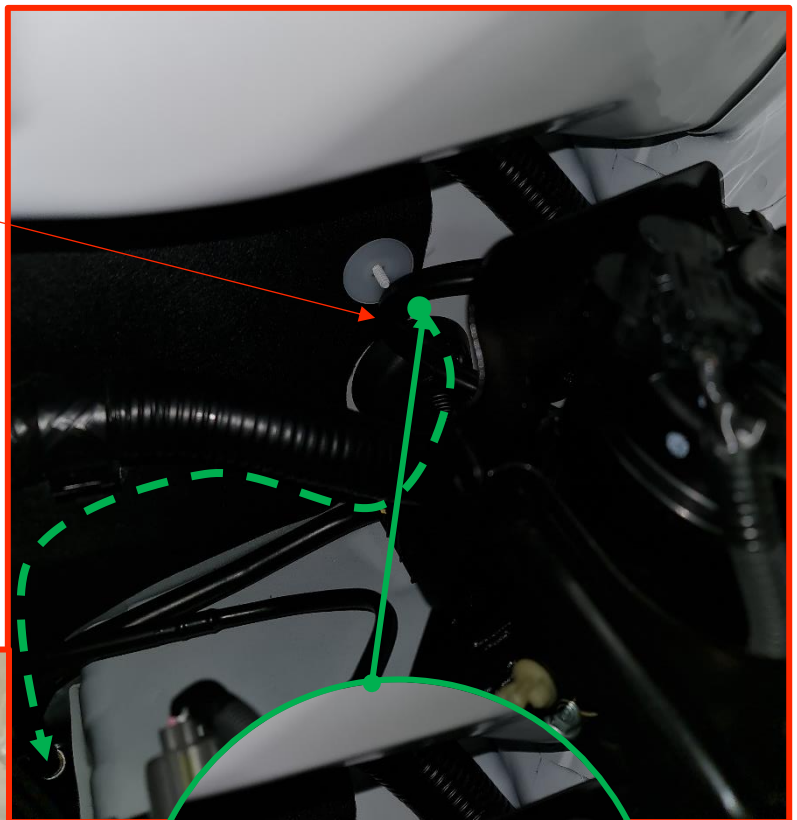
Stage 3.0: Main Cable Connections – Location: Rear to Front

1. Route DC-DC Cable from Blue Anderson through rear and into firewall on passenger side



Stage 3.1: Main Cable Connections – Location: Rear to Front

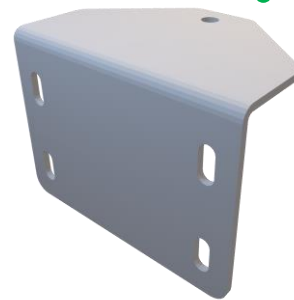
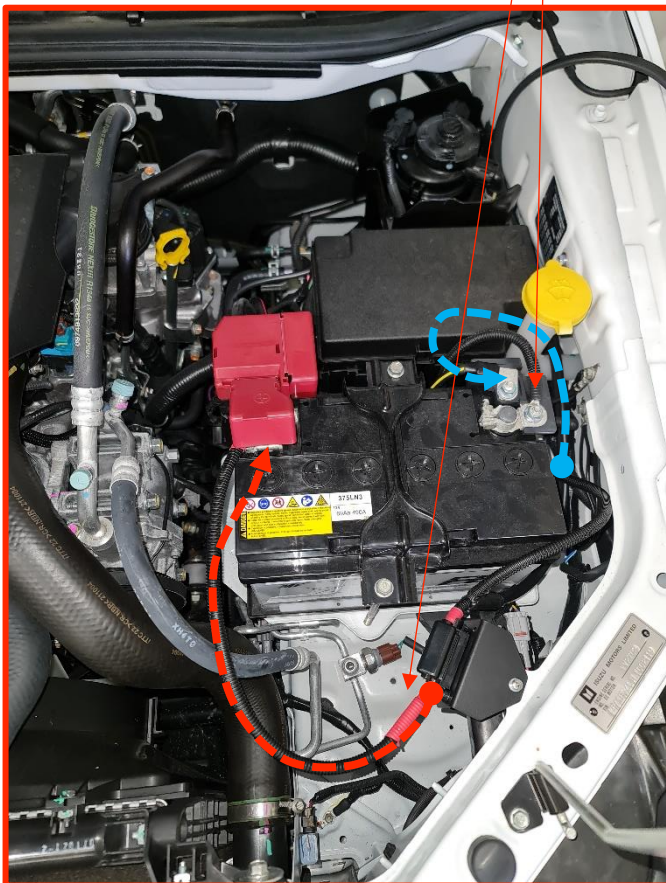
2. Route Cable through OEM grommet in engine bay
3. Run through engine bay around the right of the battery (looking front on).



Stage 3
COMPLETE

Stage 4.0: Connections in the Engine Bay – Location: Engine Bay

1. Attach Midi Fuse onto chassis with the provided M8 Bolt
2. Connect DC-DC positive to Midi Fuse.
3. Run Main Positive B+ to the vehicle battery positive by rerouting back and around to the rear of the vehicle battery
4. Attach Negative/ Ground cable onto the battery negative



Stage 4
COMPLETE

Please Note

Cangoee strongly recommends that installers do not disassemble, rearrange or misplace components of the battery system as this could result in improper use, malfunction, or serious damage to the battery system.

Once again, we urge that installers where appropriate PPE gear when assembling and disassembling and that safety guidelines and warnings are adhered to.

Please Make Sure that vehicle is **turned off** whilst installing or uninstalling the battery system.

WARNING

This install works with live wires and electricity, ensure all safety guidelines are followed and proper equipment is used during this Install. Failing to follow these guidelines could result in incorrect installation of the Cangoee battery, malfunction or severe injury.

Congratulations!

Your brand new Cangoee
Battery System is installed



Battery Management System

The BMS is an internally mounted electronic solid-state circuit board that manages the cells and protects the battery, including overcharge and over-discharge protection. The BMS protection mechanisms will also activate during low voltage at 10.5V, overcurrent at 100A, and short-circuit situations. 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. The BMS ensures that the battery cells are equalized throughout its operation. The BMS off is used for disconnecting remote loads and should only be used to isolate in place of a dedicated isolator.

Safety Tips

The battery contains lithium iron 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 POS and NEG posts during operation.
- ❑ Do not mount the battery upside down. The configuration of the battery is different for the BA and BA2 models, with each shown on Page (5, 6). The battery can also be mounted on its side if mounting upright is not an option.
- ❑ Do not connect multiple batteries in series to raise the voltage. The BMS is not designed to accommodate higher voltages.
- ❑ If the battery is in contact with the skin, please immediately seek medical advice.

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, 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.
- ❑ Do not operate the battery in 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.

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 is frozen it is essential to wait for the battery to be defrosted and wait for an appropriate room temperature before connecting power to the battery.
- ❑ 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.

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 as there is no external current draw.
- ❑ Store the battery close to full capacity (the battery does not need to be at 100%).
- ❑ There is no need to keep the battery on trickle charge. The battery will self-discharge over time slowly.
- ❑ Within every two months, give the battery a quick recharge to ensure battery longevity.