

MY23 Toyota 79 Series Battery Kit

INS0209



cangoe
power

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

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Revision	Date	Author/ Edit	Checked	Comments
R1	24/07/2023	TW/SH	DK	Initial Revision

WARNINGS AND SAFETY

SAFETY!

The battery contains Lithium Ferrous Phosphate (LiFePO₄) cells, considered 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 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.
- 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 chemicals from a battery cell come into contact with your skin, immediately seek medical advice.

Please Note:

Cangoee strongly recommends that the installation of the battery kit be carried out by a competent, un-intoxicated individual. However, if installing at home or independently, strict adherence to the instructions and careful execution of each step is paramount to ensure proper installation and optimal functionality of your Cangoee battery system.

Please Ensure the consistent use of proper PPE, and, turn off the vehicle to minimize the risk of serious injuries or damage to the installer as well as the vehicle.

WARNINGS!

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

- 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.

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.

Purpose

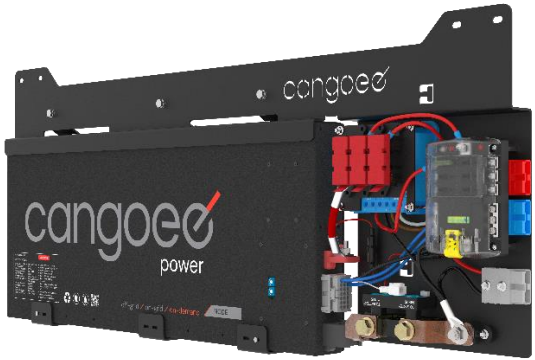
This document serves as a comprehensive guide for users to successfully install the Cangoee battery kit in the Toyota LC79 Series MY23. As this installation involves electrical equipment and live cables, it is crucial to ensure that the procedure is performed by a competent and cautious individual.

Completed Installation




Item List


Battery Kit

Item Image	Item Name	Part Number	Quantity
	Cangoee Power Node Battery Kit	FASM1120	1


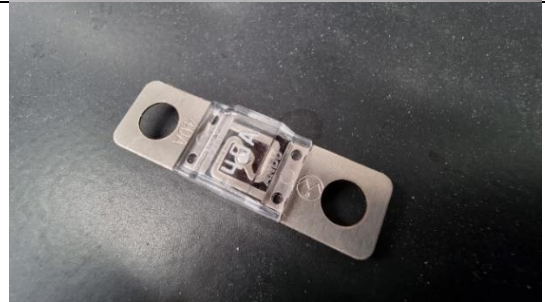
Brackets

Item Image	Item Name	Part Number	Quantity
	Toyota LC79 Series MIDI Fuse Holder Bracket	BKT10389	1





Installation Looms

Item Image	Item Name	Part Number	Quantity
 <p>A black braided ignition sense loom with a black connector on one end and a green connector on the other.</p>	<p>Cangoee Toyota LC79 Series Ignition Sense Loom</p>	<p>WIR10469.8</p>	<p>1</p>
 <p>A black braided charge cable with a blue connector on one end and a red and black connector on the other.</p>	<p>Cangoee Toyota LC79 Series Charge Cable</p>	<p>WIR10469.9</p>	<p>1</p>
 <p>A black braided fuse holder cable with a red and black connector on one end and a metal ring on the other.</p>	<p>Cangoee Toyota LC79 Series Fuse Holder to Vehicle Battery</p>	<p>WIR10469.10</p>	<p>1</p>

Modules

Item Image	Item Name	Part Number	Quantity
	Strip MIDI Fuse Holder	PEle SFH	1
	40A MIDI Fuse – Bolt On	CFus SWE-MID040	1

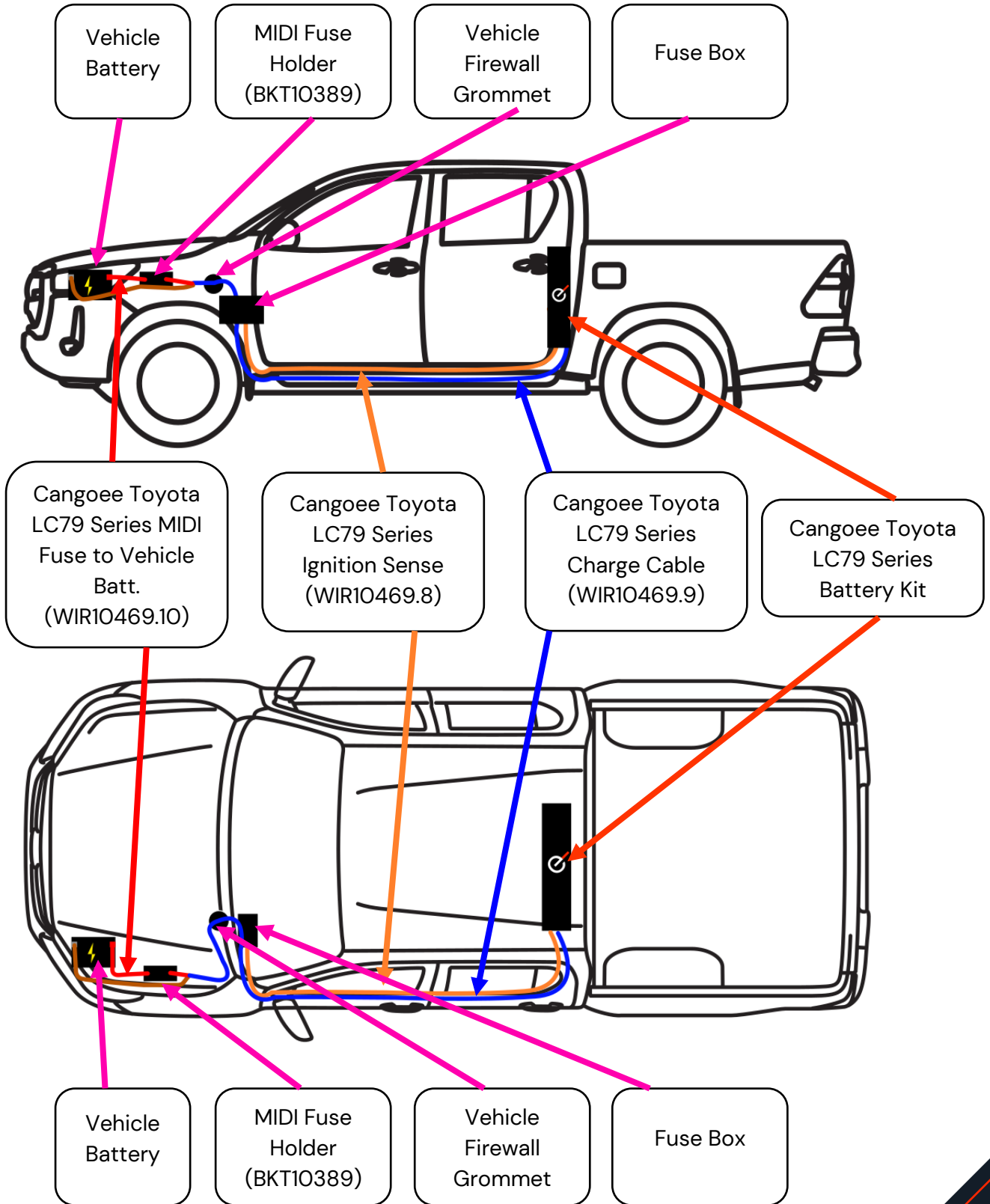
Fasteners

Item Image	Item Name	Part Number	Quantity
	M6x19mmx1.2mm (1/4"x3/4") Zinc Plated Washer	XAM 14X34ZPEW	1
	M4 Stainless Steel Nyloc	XAM 4MG304NN	2
	M4x9x0.8mm Stainless Steel Washer	XAM 4MG304W	2
	M4x20mm Pan Head Phillips Stainless Steel Screw	XAM 4X20MG304PCRM T	2

	M6x2.5x1.6 mm Zinc Plated Flat Washer	XAM 6MSW	1
	M6x16mm Hex Head Stainless Steel Bolt	XAM 6X16MG304SS	1
	M6 Steel Nutsert	XAM IN-YLFO6-4.2	4
	M6 Hex Head Zinc Plated Set Screw	XAM 6X20MZPSS	4
	M6 Stainless Steel Spring Washer	XAM 6MG304SW	4
	M6 Stainless Steel Flat Washer	XAM 6MG304W	4

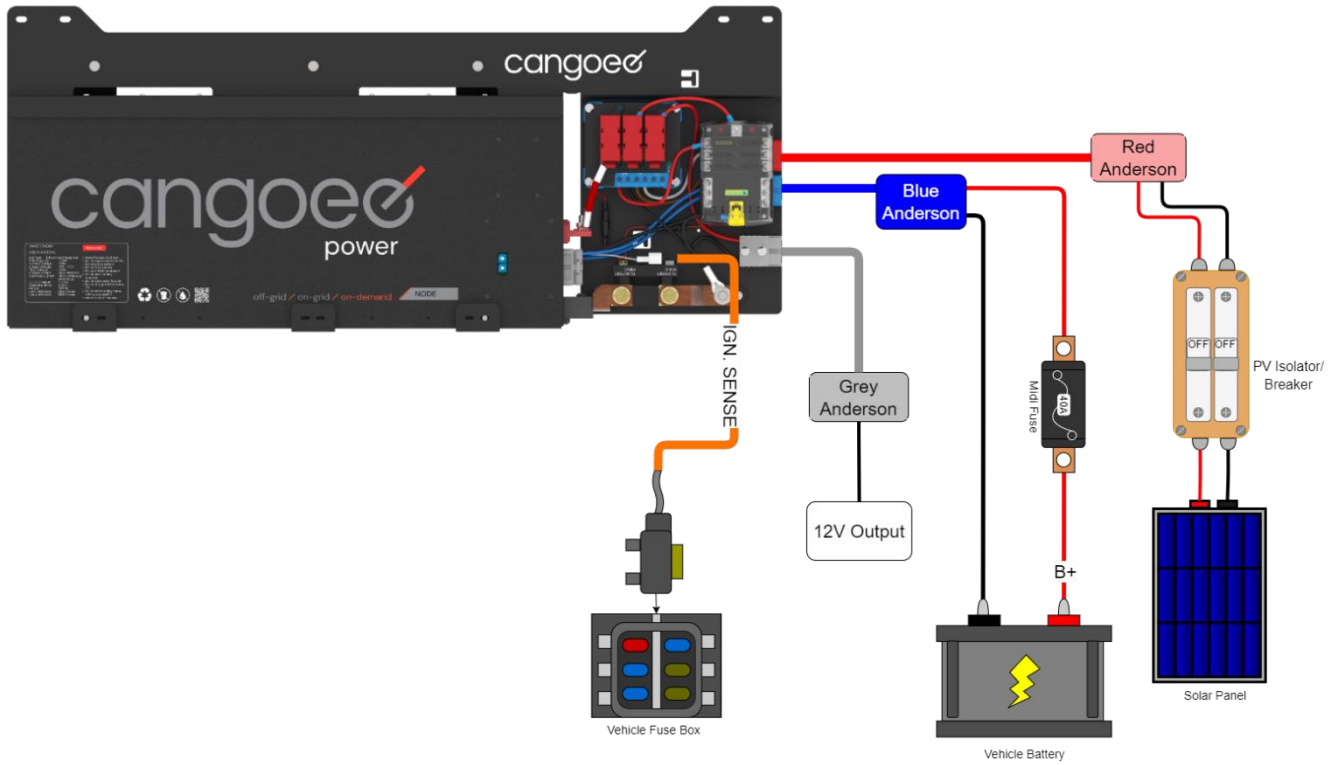
Installation Overview

This is an overview of the installation kit and where each component fits. Please carefully examine the diagram below and adhere to the guide to ensure the finished installation matches this diagram.



Wiring Schematic

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



Battery Installation Procedure



CAUTION REQUIRED

This installation 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 injuries.

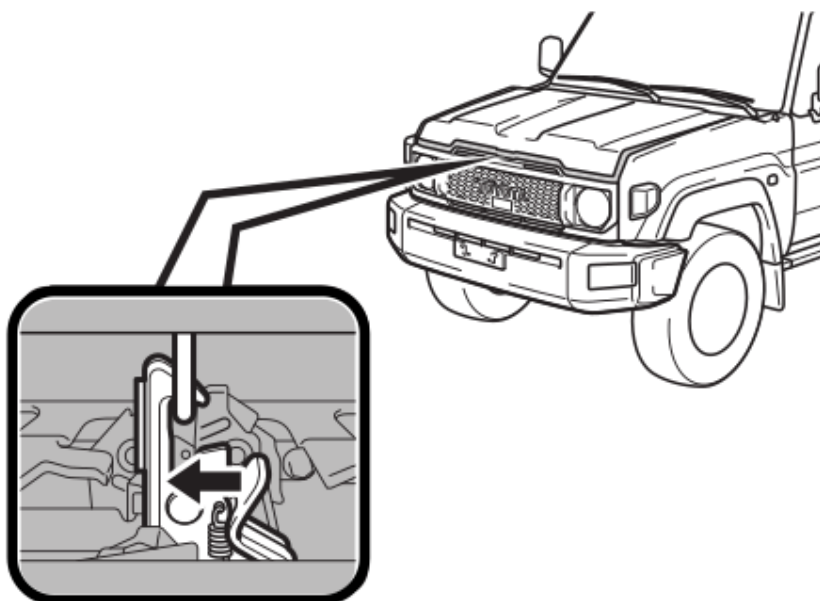
Vehicle Preparation

Step 1 – Accessing the Vehicle Engine Bay

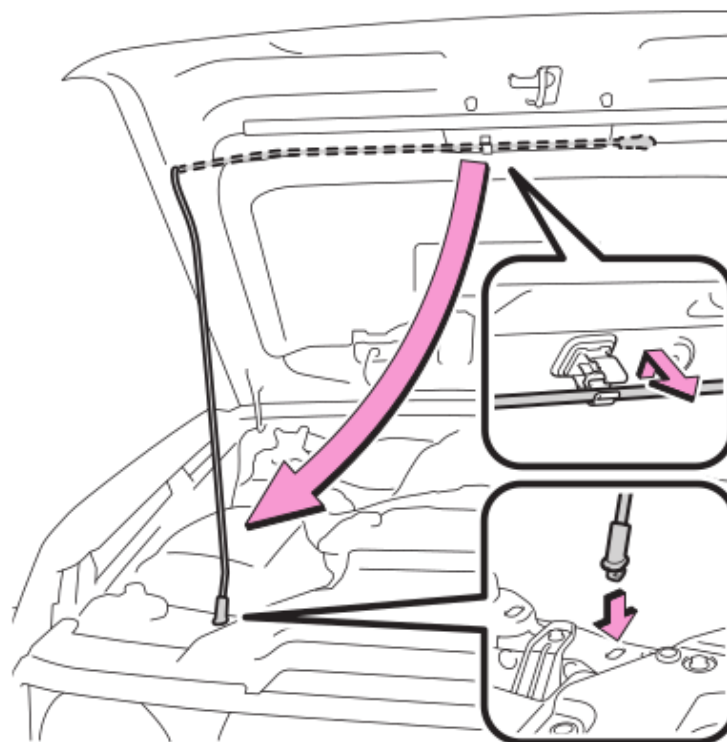
Prop the vehicle's bonnet by pulling the bonnet release lever located on the driver's side beneath the steering wheel.



Slightly lift the bonnet and release the bonnet latch by pushing the secondary release lever to the left.



Open the bonnet and support it with the prop rod.



Once the bonnet has been propped open, it will expose the engine bay.



Please note: If the vehicle has an auxiliary battery installed within the engine compartment, it may need to be removed before installation to allow for access to the firewall grommet.

Step 2 – Accessing the Vehicle Fuse Box

There are two fuse boxes that are located beneath the front passenger glove box.

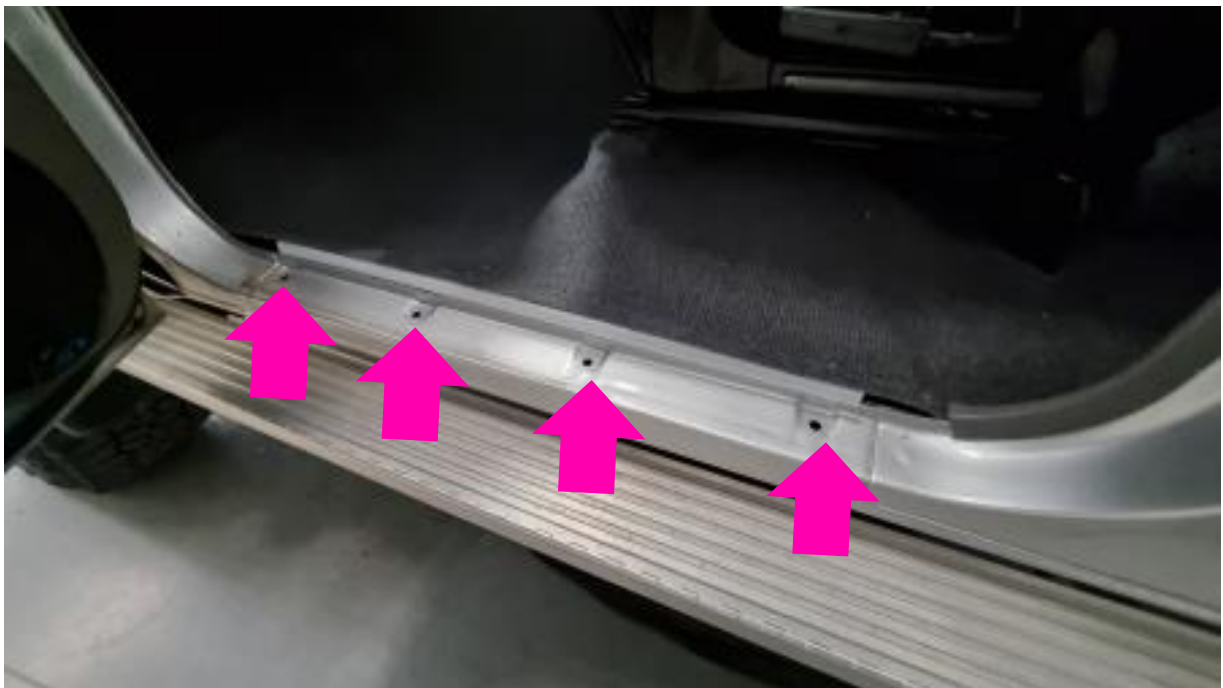
One is directly beneath the glove box. The other fuse box is located behind the kick panel.



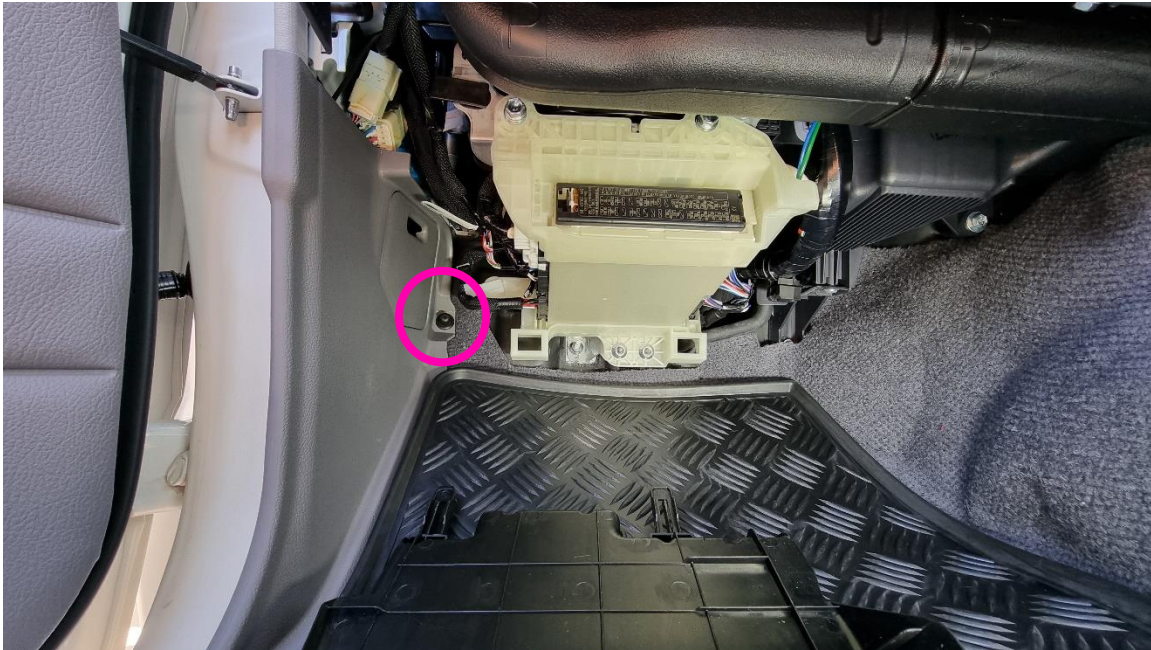
To gain access to the first fuse box directly beneath the glove box, there are two clips that will need to be unclipped. The trim panel can be pulled towards the rear of the vehicle to remove.



The second fuse box is behind the front passenger kick panel and can be accessed by first removing the door trim of the front passenger door. The door trim is secured by four clips which can be loosened with the assistance of trim removal tools.



Once the door trim is removed, the kick panel can be removed by first removing the plastic lock nut and gently pulling the panel towards the rear of the vehicle.



This space will be required later to install the Cangoee Toyota LC79 Series Ignition Sense Loom (WIR10469.8).

Please identify exactly which fuse socket this loom should be plugged into (see page 30).

In the case that there is only one fuse box underneath the glove box – the fuse socket to plug the Ignition Sense Loom will need to be re-identified with a multimeter.

Step 3 – Firewall Grommet Access

The firewall grommet underneath the glove box will need to be accessed to be able to route cables through to the engine compartment. The fuse box does not need to be completely removed.

To access the firewall grommet, the fuse box underneath the glove box needs to be loosened beforehand. There are four bolts securing the fuse box in place which will need to be removed.



The front plastic securing bracket of the fuse box can be removed by removing the two bolts and unclipping the clip at the top of the bracket.



The lower two bolts can be removed to allow the fuse box to be moved out of the way to reveal the firewall grommet.



Step 4 – Passenger Side Trim Removal for Cable Routing Access

Cable routing access will be required on the passenger side to accommodate the charge cable and ignition sense cable. To access these cable routes, there are four trims that are required to be removed:

- Front passenger door trim (removed in Step 2 to access fuse box)
- Front passenger kick panel (removed in Step 2 to access fuse box)
- Passenger side rear door trim
- Passenger side B-Pillar trim

The passenger rear door trim is held down with two plastic clips and can be removed with the assistance of a trim removal tool.



The B-Pillar trim panel can be removed by first removing the seatbelt anchor. The seatbelt anchor can be loosened with a 14mm socket.

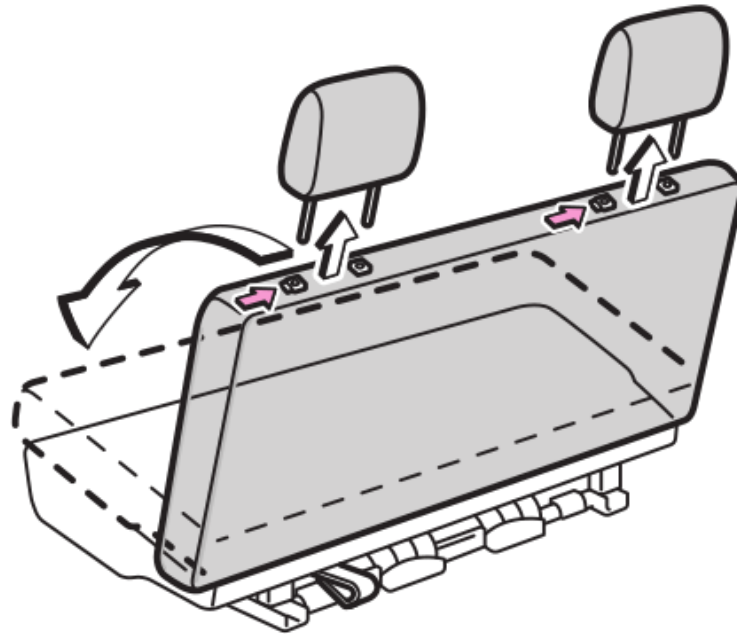


Once the seatbelt anchor is removed, the trim panel can be removed. Please ensure that the seatbelt anchor is loosely secured after the trim panel is removed to keep it from hanging loose.



Step 5 – Folding Rear Seats to Expose Battery Mounting Points

To fold the rear seats, the head rests on the rear seats can be removed first to allow for the seats to be folded up without obstructions.



Use the top lever on the side of the seat to fold the seats down. The bottom lever can be used to tumble the rear seats forward to reveal more space in front of the cab chassis wall.





Remove the tool pouch that is secured by unhooking the rubber band from the chassis wall.

Only the tool pouch is required to be removed. The bottom two tool rods and the vehicle jack do not interfere with the battery kit installation.

Please ensure that the tool pouch is stored securely in another location.



Installing the Battery Kit

Step 1 – Installing Nutsert for Battery Kit Mounting

Item Name	Part Number	Quantity
M6 Nutsert	XAM IN-YLF06-4.2	4

The rear chassis wall of the vehicle cab will be revealed once the seats have been folded forward.

M6 Nutserts should be inserted with a Nutsert tool into the indication locations.



Step 2 – Installing the Battery Kit Mounting

Item Name	Part Number	Quantity
M6x20mm Hex Head Zinc Plated Set Screw	XAM 6X20MZPSS	4
M6 Stainless Steel Spring Washer	XAM 6MG304SW	4
M6 Stainless Steel Flat Washer	XAM 6MG304W	4

The battery kit can be mounted and secured using a set consisting of M6x20mm set screws, M6 spring washer and M6 flat washer at the inserted Nutsert locations.

Although the battery is only mounted with bolts at the top of the bracket. Please ensure that the battery is secure once mounted and that all four magnets on the rear of the vehicle kit are engaged to the vehicle chassis.



Toyota Landcruiser 79 Series Charge Cable Routing

Step 1

Route the Toyota Landcruiser 79 Series Charge Cable from the installed Battery Kit along the vehicle cable routes underneath the passenger side door trims towards the firewall grommet, to underneath the vehicle glove box. The Blue Anderson SB50 plug can be temporarily plugged in to assist with the routing process and to ensure that there is still sufficient cable length within the vehicle.





Route the charge cable through the firewall grommet and into the engine compartment.





Once enough cable has been routed through the firewall grommet to reach the vehicle battery with the BLACK NEGATIVE cable, set the cable aside and **DO NOT CONNECT YET.**

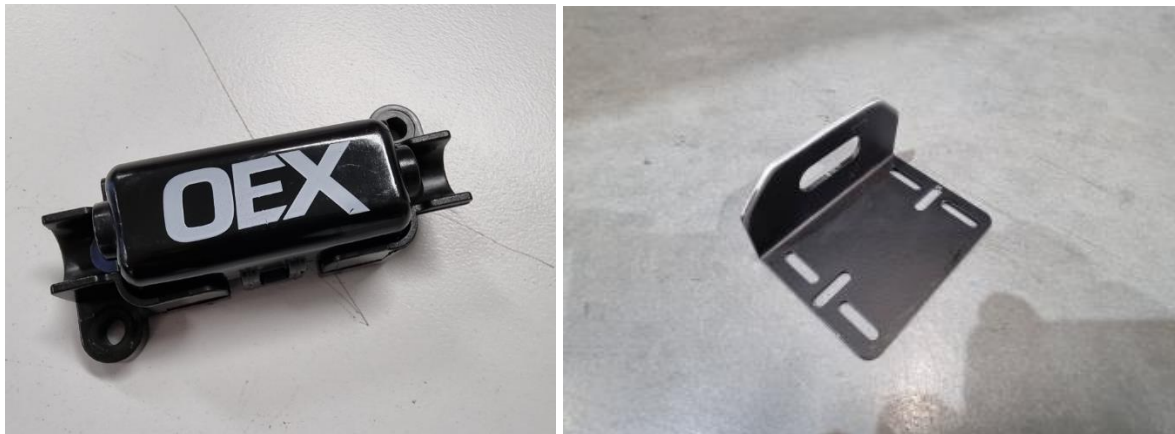
Please ensure that the Blue Anderson SB50 is unplugged from the battery as well.

Engine Bay MIDI Fuse Holder Bracket Installation

Step 1

Item Name	Part Number	Quantity
M4x20mm Pan Head Phillips Screw	XAM 4X20MG304PCRMT	2
M4 Stainless Steel Flat Washer	XAM 4MG304W	2
M4 Stainless Steel Nyloc	XAM 4MG304NN	2
Strip MIDI Fuse Holder	PEle SFH	1
40A MIDI Fuse – Bolt On	CFus SWE-MIDO40	1
Cangoee Toyota LC79 Series Charge Cable	WIR10469.9	1
Cangoee Toyota LC79 Series Fuse Holder to Vehicle Battery	WIR10469.10	1
Toyota LC79 Series MIDI Fuse Holder	BKT10389	1

Prepare the Engine Bay MIDI Fuse Holder Bracket (BKT10389) by first installing the fuse holder (PEle SFH) onto the bracket and secure it with two M4x20 Pan Head Phillips Screws, two M4 Flat Washers and two M4 Nyloc Nuts.



Before installation of the prepared MIDI Fuse holder into the vehicle, the 40A MIDI fuse and the Toyota 79 Series Vehicle Fuse Holder to Vehicle Battery (WIR10469.10) wiring loom can be pre-installed.

Install the POSITIVE cable from Cangoee Toyota LC79 Series Charge Cable (WIR10469.9) on this side of the fuse holder after it has been routed through vehicle firewall grommet.



Install the Cangoee Toyota LC79 Series Vehicle Fuse Holder to Vehicle Battery (WIR10469.10) on this side of the fuse holder.

Item Name	Part Number	Quantity
M6x16mm Hex Head Stainless Steel Set Screw	XAM 6X16MG304SS	1
M6x19mmx1.2mm (1/4"x3/4") Zinc Plated Washer	XAM 14X34ZPEW	1
M6x2.5x1.6 mm Zinc Plated Flat Washer	XAM 6MSW	1

The MIDI Fuse Holder will be installed in the location indicated below.



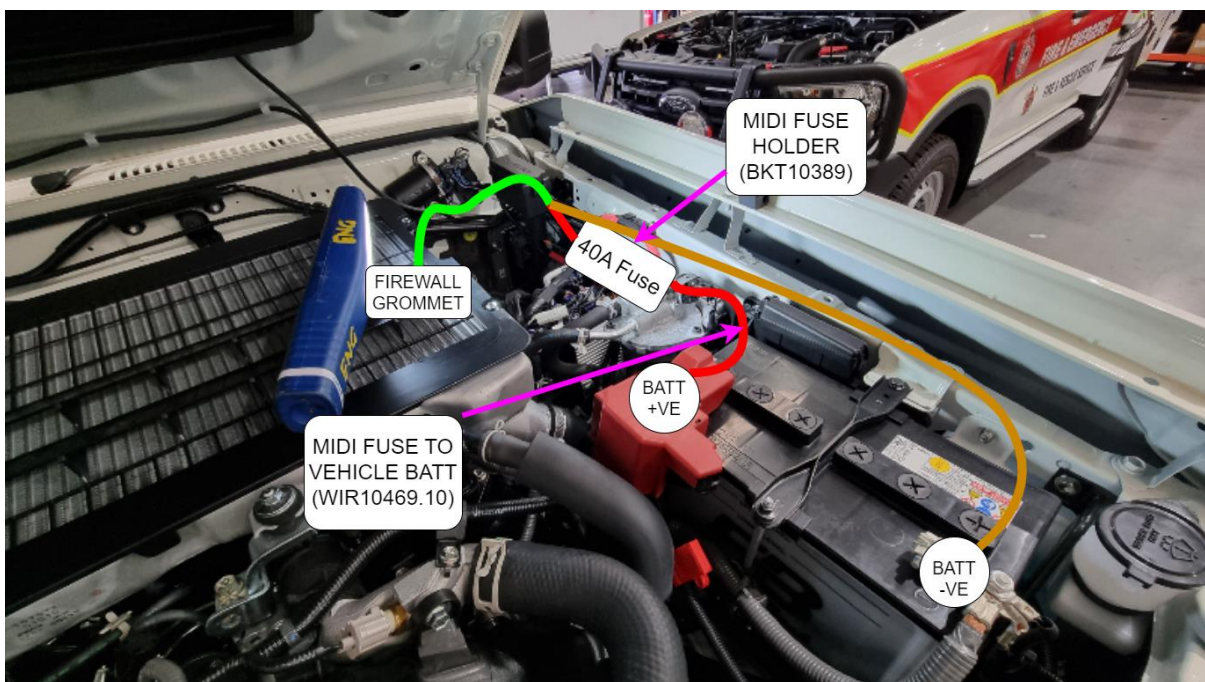
The MIDI Fuse Holder can be secured in the engine compartment at this threaded mounting point. Use M6x16mm Hex Bolt to secure the bracket to the chassis.





Note: Please ensure that the Blue Anderson SB50 is unplugged from the battery before connecting the charge cable terminals to the vehicle battery.

Connect the RED POSITIVE cable from MIDI fuse to the POSITIVE terminal on the vehicle battery. Terminal connections must be secured with the hex nut that is on the battery terminals. Once the POSITIVE connection is secure on the battery, connect the BLACK NEGATIVE cable from the Charge cable (WIR10469.9) to the NEGATIVE terminal on the vehicle battery. **Please secure to existing cable runs and ensure the connections and cables are secure – DO NOT FORGET TO USE AUTOMOTIVE SEALANT ON GROMMET ONCE CABLE LENGTHS HAVE BEEN REACHED.**



Connecting the Ignition Sense Cable

CAUTION REQUIRED



This section details works involving the vehicle fuse box, ensure all safety guidelines are followed and proper equipment is used during this procedure. Failing to follow these guidelines could result in incorrect installation of the Cangoee battery, malfunction, or severe injuries.

Step 1

Item Name	Part Number	Quantity
Cangoee Toyota LC79 Series – Ignition Sense Loom	WIR10469.8	1

The Cangoee Toyota LC79 Ignition Sense Loom (WIR10469.8) will need to connect to Fuse Socket (ECU-IG1 No.2). Replace the 5A fuse that is currently in place with the fuse attached to the Ignition sense cable.



Step 2

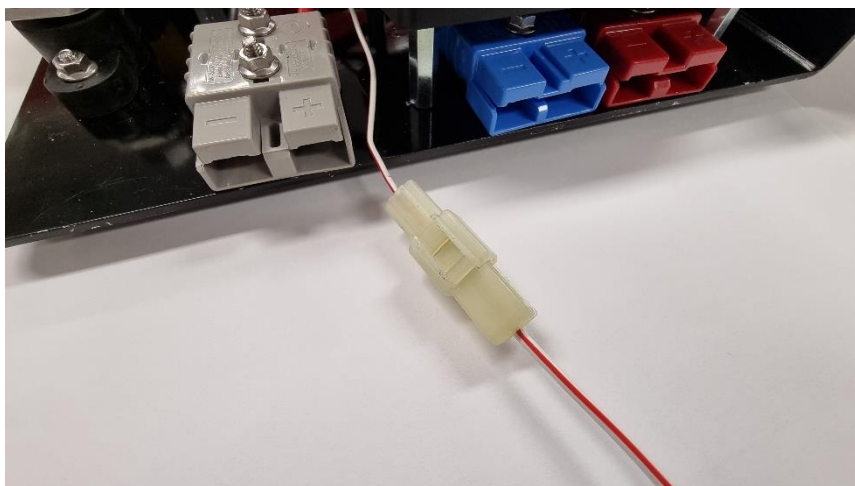
Route the Ignition Sense Loom from the vehicle fuse box underneath the front passenger glove box, underneath the kick panel, the door trims on the passenger side, and finally towards the battery kit.





Step 3

Connect the Faston 250 Plug connector on the Ignition sense cable to the corresponding Faston 250 Receptacle connector on the battery kit. The Blue Anderson SB50 Plug connector can also be plugged into the battery kit.



Completed Installation

Battery Installation



Re-assembly Checklist

Please ensure that the following components of the vehicle have been re-secured, re-installed or re-sealed.

Item	Location	Checked
Fuse box lids	Under Front Passenger Glove Box	
Fuse Box Plastic Securing Bracket	Under Front Passenger Glove Box	
Under Glove Box Trim	Under Front Passenger Glove Box	
Front Passenger Kick Panel	Front Passenger Seat	
Front Passenger Door Trim	Front Passenger Door	
Resealing of Firewall Grommet with Automotive Sealant	Engine Compartment/Under Front Passenger Glove Box	
B Pillar Trim	B Pillar – Passenger Side	
Front Passenger Seal Belt Anchor (after B Pillar Trim has been replaced)	B Pillar – Passenger Side	
Rear Passenger Door Trim	Rear Door Passenger Side	
Rear Passenger Seats Folded Back	Rear Passenger Seat	
OEM Vehicle Tool Pouch – Stored in Alternate location	Removed from Behind Rear Passenger Seats	

Congratulations for completing the installation for the Cangoee Battery Kit on a Toyota LandCruiser 79 Series MY23.

DC-DC Charger

The DC-DC charger in the Cangoee Vehicle Kit allows the battery to charge from a vehicle engine/alternator/start battery. However, to prevent the depletion of the start battery, it is essential to limit charging to when the engine is actively running.

In some scenarios, determining when the engine is actively operating can be challenging. As a solution, the DC-DC charger uses a combination of inputs to decide when to initiate charging (turn ON) and when to cease charging (turn OFF). The primary goals of the charger are:

- ❑ Ensuring that charging occurs only when the engine is actively running, to maximise charging of the Cangoee Vehicle Kit.
- ❑ Preventing charging when the engine is not running to avoid discharging the vehicle's start/cranking battery.

The logic for controlling when to activate or deactivate the DC-DC charger is executed through specialised software running on a microcontroller. This software allows for advanced control by considering several inputs including:

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

Measured Voltage

The vehicle's start battery/alternator voltage will be measured with high precision, accurate to $\pm 0.1V$ or better, and used as a reference for comparison with the ON and OFF levels.

The DC-DC Charger will be activated (start charging) when the **Measured Voltage** goes ABOVE the **ON Level**. Thereafter it will deactivate after the **Measured Voltage** goes BELOW the **OFF Level**.

The OFF level is lower than the ON Level by 1.0V; this forms a "dead-band" where the charger will simply remain in the same state (i.e., remain ON if already ON, and remain OFF if already OFF).

ON and OFF Levels can be selected by the user/installer by choosing the corresponding position on the **Voltage Switch**, which is the left rotary switch accessible from the outside of the battery indicated by the image below:

Voltage Switch Position	ON Level	OFF Level	Application
0	11.0	10.0	Always on: Ignition Relay/ Signal
1	12.0	11.0	When dealing with extended lengths of thin cable, it is IMPORTANT to consider voltage drops . It is recommended to measure the voltage at both the battery and at the end of the connected cabling.
2	13.0	12.0	
3	13.3	12.3	
4	13.5	12.5	
5	13.7	12.7	
6	14.0	13.0	

Measured Voltage Switch Position Table



Left Rotary Switch for Measured Voltage Applications outlined in RED.

Delay Switch

Delay times can be selected by the user/installer by choosing the corresponding position on the **Delay Switch**, which is the right rotary switch accessible from the outside of the battery indicated in the image below:

Delay Switch Position	Delay OFF Time	Application
0	0 sec	Traditional Alternator, or Ignition Relay
1	30 sec	Vehicles with Smart Alternators
2	1 min	
3	1.5 min	
4	3 min	
5	5 min	
6*	0 sec	Ignition signal control



Right Rotary Switch for Off Delay Applications outlined in RED.

Off Delay Switch Position Table

Off-Delay

After the measured voltage falls BELOW the OFF level, the DC-DC charger will incorporate a delay before turning off (ceasing to charge). This delay is implemented to accommodate smart alternators, which may lower the voltage for brief periods of time (duration may vary based on the drive cycle, vehicle model, and other factors).

During this delay period where the voltage has gone BELOW the OFF level and the DC-DC charger is "waiting" to turn OFF, the status LED will flash to indicate that it will turn off soon.

If the voltage rises ABOVE the ON level within this delay period, the timer will reset, and the DC-DC charger will stay on.

On-Delay

If the Ignition Signal is selected (position **6** on the **Delay Switch**) the DC-DC charger will wait **15 seconds** before turning ON. This delay prevents placing extra load on the start battery before and straight after the engine turns on. There is no On-Delay for other positions as the DC-DC Charger will monitor the vehicle start battery/alternator voltage to operate.

Ignition Signal

If **Position 6** on the **Delay Switch** is selected then the ignition signal (via a separate connection point) will serve as a binary reference (ON or OFF), and there will be no delay when turning off. This has two benefits:

- ❑ The ignition signal is (usually) a reliable indicator that the engine is running.
- ❑ Voltage drop considerations along the positive DC-DC charging cable are not required.

The default setting for most applications is 0 on the voltage switch and 6 on the delay switch, this enables DC-DC charging operation to be ON 15 seconds after the Ignition is on.

Note that even if the ignition signal is used for the measured voltage, there will still be a voltage drop along the negative path of the DC-DC charging cable to the start battery. Voltage drop is likely to be negligible along vehicle chassis, however, if the negative path is via a long and/or thin cable, then voltage drop may still be a factor and needs to be considered.

Victron Connect App

Download the Victron Connect application onto your smart device to access and manage the Power Hub's Victron Energy Components.

Victron Connect info:





Download on the
App Store



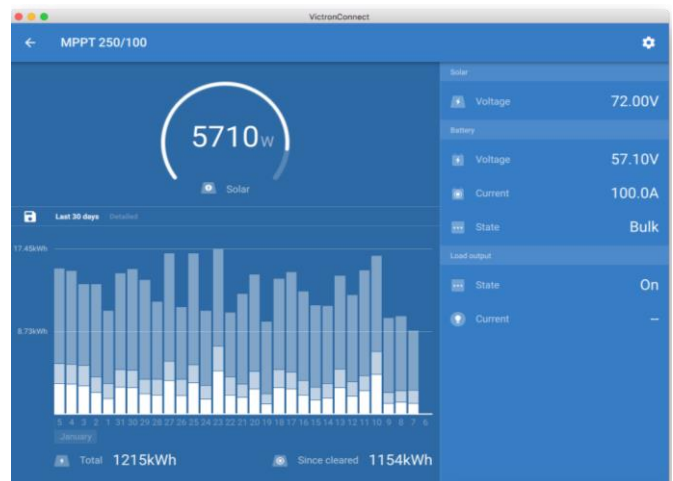
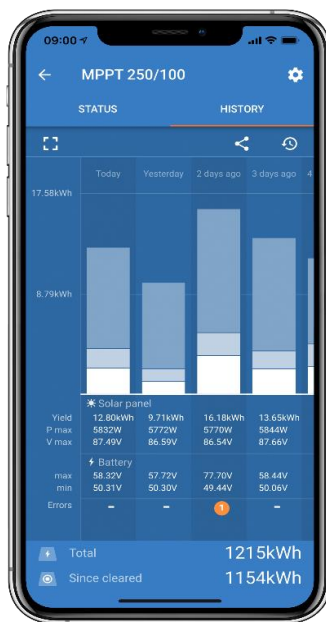
Get it on
Google Play



Available on the
Mac app





Download for
Windows



Victron Energy SmartSolar MPPT 75/15



Victron Energy SmartSolar MPPT 75/15	
Manual	Datasheet
	

The Victron Energy SmartSolar MPPT 75/15 model is a compact and highly efficient solar charge controller, ideal for optimizing solar power systems. It offers advanced Maximum Power Point Tracking (MPPT) technology to maximize the energy harvested from your solar panels.

Solar Panel Array Input Limitations

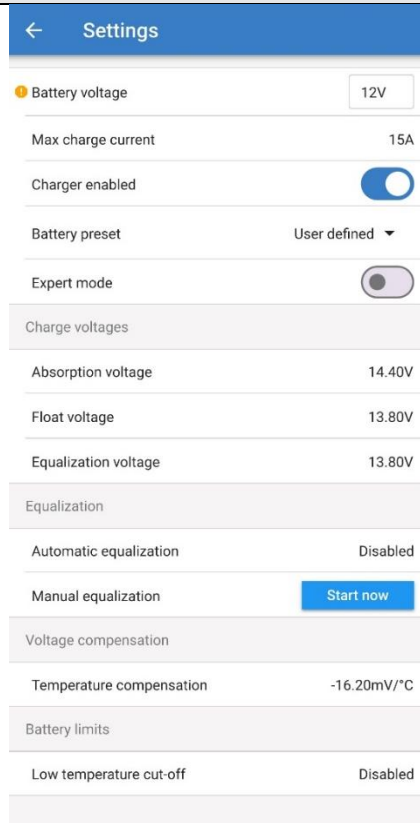
MAX OPEN CIRCUIT VOLTAGE (Voc): 75 V

It is recommended to stay at least 10% below the rated maximum open circuit voltage (Voc)

MAX SHORT CIRCUIT CURRENT (Isc): 15A

Pre-set and suggested programming settings in the Victron Connect Application

Victron Connect → SmartSolar MPPT 75/15 →  (Settings) → Battery



Victron Energy SmartShunt 500A/ 50mV



Victron Energy SmartShunt 500A/ 50mV	
Manual	Datasheet

The Victron Energy SmartShunt is an all in one battery monitor, only without a display. A smartphone can be utilised as a display. The SmartShunt connects via Bluetooth to the VictronConnect app on the smart device and conveniently displays all monitored battery parameters.

Pre-set and suggested programming settings in the Victron Connect Application

Victron Connect → SmartShunt 500A/ 50mV → ⚙️ (Settings) → Battery

← Battery settings	
Battery capacity	110Ah
Charged voltage	14.0V
Discharge floor	20%
Tail current	1.00%
Charged detection time	3m
Peukert exponent	1.05
Charge efficiency factor	99%
Current threshold	0.10A
Time-to-go averaging period	3m
Battery SOC on reset	<input type="button" value="Keep SOC"/>
State-of-Charge <small>Manually set the current state-of-charge</small>	85.0%
Synchronize SOC to 100%	<input type="button" value="Synchronize"/>
Zero current calibration	<input type="button" value="Calibrate"/>

Battery Management System

The Power Hub 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 and activates 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 Cangoee Vehicle Kit 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.

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 8.
- ❑ Do not connect multiple batteries in series to raise the voltage. The BMS is not designed to accommodate higher voltages.

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.

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.

Storage 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.