

# explore planet earth™

## MATRIX PWR Portable DC Power Pack Instruction Manual



### MATRIX45

Model No. BP5531 45Ah/576Wh Lithium  
Iron Phosphate (LiFePO<sub>4</sub>) Power Pack

### MATRIX60

Model No. BP5533 60Ah/768Wh Lithium  
Iron Phosphate (LiFePO<sub>4</sub>) Power Pack

### MATRIX120

Model No. BP5535 120Ah/1536Wh Lithium  
Iron Phosphate (LiFePO<sub>4</sub>) Power Pack  
(As Shown)



It is in your interest to read this instruction manual in its entirety to fully understand the safe operation of this product before use. Keep it in a safe place for future reference.

Introduction Page	03
General Warnings	04
MATRIX PWR Power Pack Key Features	06
Unpacking your MATRIX PWR Power Pack	06
Disposal	06
Understanding your MATRIX PWR Power Pack	07/08
Turning On & Off	09
Charging - The First Time	09
Operation - LCD (Liquid Crystal Display)	10
Charging - Input Options	11
Operation - Using the Output Sockets	12
Vehicle Flat Battery Recovery - Lead connection	13/15
Charging Installation - Optional	16
Vehicle Mounting - Tie Down	17
Maintenance & Storage	17
Inverter Connection - Optional	18
Troubleshooting	18
Technical Details/Specifications	19/21
Frequently Asked Questions	22/23
Compliance/Certification	23
Warranty & Customer Service	24

# Introduction

The Explore Planet Earth DC (direct current) MATRIX PWR Power Packs have been designed and developed in Australia to suit the tough requirements needed for any type of regional or outback adventure.

Utilising the latest in Lithium Battery technology, only the best Lithium Iron Phosphate (LiFeP04) cells are used across all three models, which in turn, pack a huge punch when it comes to safety, usable power, actual appliance run times and longevity in comparison to other lithium chemistry types currently available.

Couple this power to the massive selection of fourteen DC output sockets, all accessible from the front, making the Explore Planet Earth MATRIX PWR DC Power Pack the most versatile portable power solution available. including;

- 4 x USB-A
- 2 x USB-C (PD)
- 3 x Standard CIG type
- 2 x Merit type
- 1 x Posi-Fit (Engel 2 pin) type
- 2 x Anderson type sockets

All three models were designed from the ground up to take advantage of using the same compact ABS & PC flame retardant moulded case. Being extremely compact and light weight.

One of the key features of the Explore Planet Earth MATRIX PWR Power Packs is the ability to be charged 4 different ways;

1. Using the included 240V AC battery charger.
2. Using the included DC USB-C (PD) panel socket.
3. USB-C AC wall charger.
4. Solar or DC/DC charger (3 and 4 not included).

All relevant and real time information can be viewed through the comprehensive and easy to read angled LCD display, showing remaining capacity, watts and current coming in and going out of the Power Pack.

All Explore Planet Earth MATRIX PWR Power Packs use the very latest in electronic and battery cell technologies giving the consumer a high performance, ultra-compact solution for powering your DC appliances or limited AC appliance (when connected to the recommended capacity AC inverter) while camping, caravanning, taking part in leisure activities or as a back-up power supply while at home.



## **IMPORTANT: This instruction manual contains important safety information and operating instructions.**

**Read this instruction manual carefully to familiarise yourself with the product and accessories before connecting to the battery being charged. Keep this manual in a safe place for future reference.**

**Only Sitro Group Australia Pty Ltd certified agents are authorised to conduct repairs and or maintenance on this product.**

**For Safe Handling & Emergency Procedures, please refer to the link to the SDS page below;  
Web: [sitro.com.au/support/sds/](http://sitro.com.au/support/sds/)  
Call: 1300 174 876**

## **General Warnings**

- This product must not be used by children or by an adult who has reduced physical or mental capabilities. Also, this product is not to be used by an adult who has a lack of knowledge or experience with this type of product, unless they are being supervised by a person who is competent in the safe use of this type of product.
- If an Input/Output socket is not in use, ensure that the dust cover is securely in place to stop foreign objects entering and possibly causing a short circuit.
- Allow adequate ventilation clearance when being used or transported within a vehicle as to not cause excessive heat build-up. Failure to do so could cause permanent damage to the battery and/or personal injury if the battery ruptures.
- Follow the instructions within this instruction manual carefully to not cause harm to yourself or others, particularly when 'connecting' and 'disconnecting' the DC clamps (Direct Current clamps) to or from the battery being recovered.
- Do not expose the MATRIX PWR Power Pack to water/rain or snow.
- Do not expose the MATRIX PWR Power Pack to heat or fire.
- Do not charge a damaged battery.
- Do not charge a frozen battery.
- Do not use this MATRIX PWR Power Pack if it is damaged in any way. Contact your point of sale or Sitro Group Pty Ltd Customer Service (details at the end of this instruction manual) if there is a problem.
- Do not disassemble the MATRIX PWR Power Pack under any circumstances.
- Ensure that the battery being recovered is in a well-ventilated area as poisonous gases may be emitted during the charging process.
- Ensure that appropriate personal protective equipment (PPE) is worn while near the battery being recovered; safety glasses, gloves, protective clothing as a minimum
- Ensure that no metal objects or jewelry make contact with the battery terminals. It is recommended to remove rings, bracelets etc. when working with all chemistry types of batteries. A battery can produce a short-circuit current high enough to melt metallic materials possibly causing severe burns.
- Do not smoke or have the battery in the vicinity of sparks, open flame, fuel, or solvents while the battery is being recovered as gases emitted could be 'EXPLOSIVE'.
- Battery acid is highly corrosive. Avoid 'CHEMICAL BURNS' wash effected area immediately with clean running water if contact is made with your skin or eyes, seek medical advice.

- Ensure correct DC clamp connection 'sequence' when 'connecting' and 'disconnecting' the DC clamps to or from the battery being recovered.

See heading; Vehicle Flat Battery Recovery – Lead connection for further details.

This will reduce the danger of a potential short-circuit and excessive sparking of the battery terminals.

- Ensure correct DC clamp connection 'polarity' when 'connecting' to the battery being recovered.

See heading; Vehicle Flat Battery Recovery – Lead connection for further details

- Immediately cease charging if the Power Pack is found to be excessively hot, leaks or appears to be taking a long time to charge.
- **Do NOT install permanently.**

# MATRIX PWR Power Pack

## Key Features

- Extremely lightweight & compact in design
- Utilising LiFePO<sub>4</sub>, the safest in lithium cell technology
- Three capacity models to choose from: 45Ah/576Wh, 60Ah/768Wh & 120Ah/1536Wh
- Far greater appliance run times in comparison to wet cell batteries
- 2000 plus battery cycle life in comparison to wet cell batteries having approximately 300 cycles
- A selection of fourteen DC output sockets on each model
- Ability to be charged 4 different ways.
  1. Using the included 240V AC battery charger.
  2. Using the included DC USB-C (PD) panel socket.
  3. USB-C AC wall charger.
  4. Solar or DC/DC charger (3 and 4 not included).
- Comprehensive angled LCD display
- Flat battery recovery feature (MATRIX120 Only)
- Transporting strap tie down tabs (straps not included)
- Carry handle & unique integrated finger grip grooves on either side of the base
- Top storage compartment
- Able to connect a DC/AC 240V AC inverter if required (inverter not included)

# Unpacking your MATRIX PWR Power Pack

Carefully open the product carton and remove all the contents. The Explore Planet Earth MATRIX PWR Power Packs are fully assembled and ready to use once sufficiently charged.

Remove the product/s from the packaging materials and discard/recycle all packaging materials appropriately.

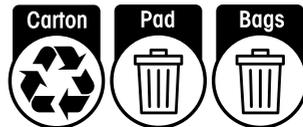
Visually Inspect your MATRIX PWR Power Pack for any obvious damage and ensure that all the components are included as per 'Understanding your Power Pack' below.

Contact your point of sale or Sitro Group Pty Ltd Customer Service (details at the end of this Instruction Manual) if there is a problem.

## Disposal

Dispose of all packaging materials appropriately by utilising recycling practices as outlined by Government regulations. Ensure to follow local guidelines when disposing of lithium battery cells. Contact your local Council or Government Agency for the correct disposal procedure or recycling center nearest to you.

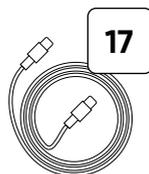
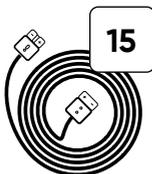
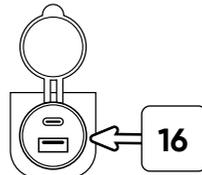
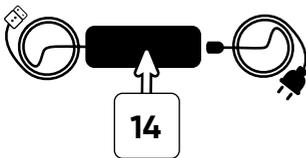
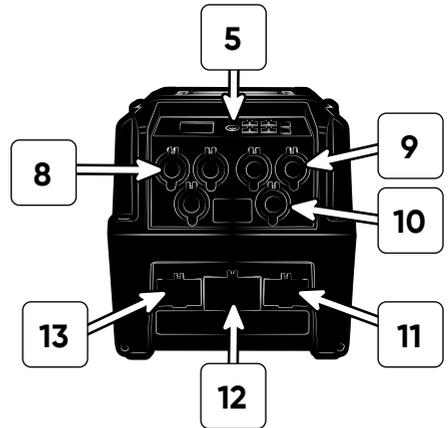
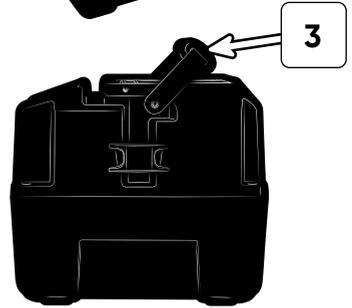
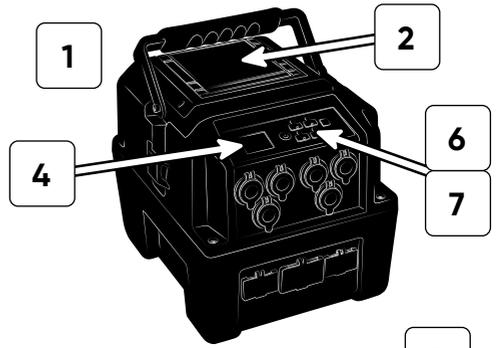
For more information on recycling visit [arl.org.au](http://arl.org.au)



# Understanding your MATRIX PWR Power Pack

## Part No. BP5531 & BP5533:

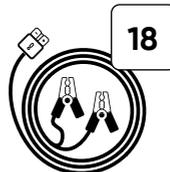
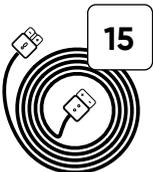
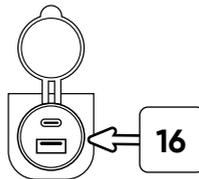
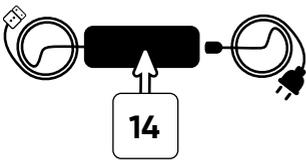
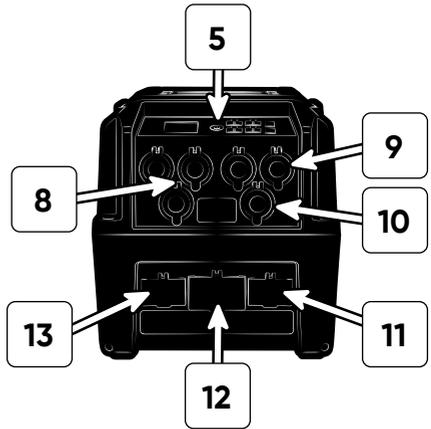
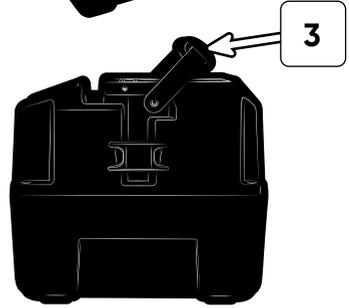
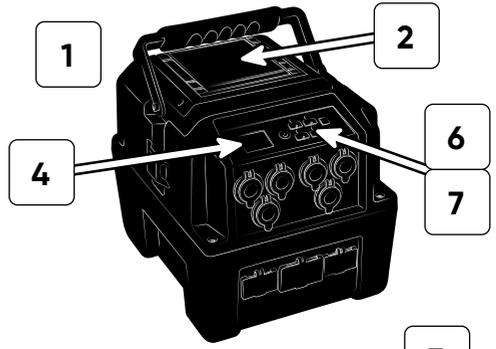
1. BP5531 DC 45Ah/576Wh Power Pack, BP5533 DC 60Ah/768Wh Power Pack
2. Storage compartment
3. Folding carry handle
4. LCD display
5. On/Off button
6. USB-A Output sockets (4)
7. USB-C (PD) Output & Input socket (2)
8. Cigarette type output sockets (3)
9. Merit type output sockets (2)
10. Posi-Fit type (Engel 2 pin) output socket (1)
11. Anderson type (black) output socket (1) (Powering DC 12V accessories)
12. Anderson type (blue) output socket (1) (Powering DC 12V accessories & powering the optional AC 240V inverter (not included))
13. Anderson type (red) input socket (1) (Charging input ONLY)
14. 240V AC battery charger (BP5531 6A, BP5533 8A)
15. Vehicle or Solar input lead (1m length)
16. USB-C (PD) 100W panel type socket (Optional vehicle installation)
17. USB-C to USB-C (PD) 100W power cable (1m length) (Optional vehicle installation)
18. Instruction manual



# Understanding your MATRIX PWR Power Pack

## Part No. BP5535:

1. BP5535 DC 120Ah/1536Wh Power Pack
2. Storage compartment
3. Folding carry handle
4. LCD display
5. On/Off button
6. USB-A Output sockets (4)
7. USB-C (PD) Output & Input sockets (2)
8. Cigarette type output sockets (3)
9. Merit type output sockets (2)
10. Posi-Fit type (Engel 2 pin) output socket (1)
11. Anderson type (black) output socket (1) (Powering DC 12V accessories & vehicle flat battery recovery)
12. Anderson type (blue) output socket (1) (Powering DC 12V accessories & powering the optional AC 240V inverter (not included))
13. Anderson type (red) input socket (1) (Charging input ONLY)
14. 240V AC battery charger (BP5535 15A)
15. Vehicle or Solar input lead (1m length)
16. USB-C (PD) 100W panel type socket (Optional vehicle installation)
17. USB-C to USB-C (PD) 100W power cable (1m length) (Optional vehicle installation)
18. Vehicle battery clamp lead (1m length)
19. Instruction manual

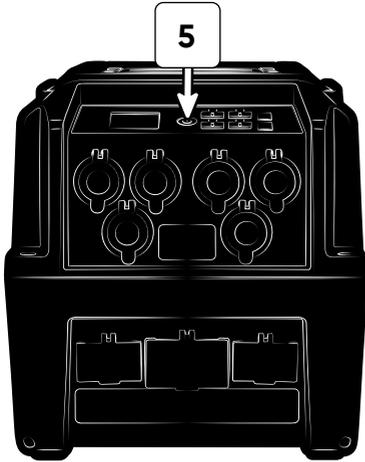


## Turning On and Off

The On/Off button is located on the front display panel.

Push the On/Off button (5) briefly to turn the Power Pack on and push again briefly to turn the Power Pack off.

The Power Pack will also turn off automatically after approximately 24 hours of non-use.



## Charging - The First Time

This Explore Planet Earth MATRIX PWR Power Pack may have been sitting idle for some time before your purchase and therefore it is highly recommended to charge your Power Pack for a minimum of 10 hours to recondition and re-balance the Lithium Iron Phosphate cells.

Simply connect the included 240V AC battery charger (14) 'Red' Anderson type plug into the 'Red' Anderson type input socket located in the front panel of the Power Pack (13). Then connect the 2-pin plug of the 240V AC battery charger into an approved mains 240V AC socket and turn it on.



### **WARNING!**

It is strongly advised to monitor the Power Pack throughout the charging cycle.

The LCD display will visually indicate the 'time' to fully charge and the 'capacity' of the Power Pack as a percentage.

### **Important:**

Disconnect the charging source once fully charged, 100% State of Charge (SoC) is reached.

# Operation - LCD (Liquid Crystal Display)

The comprehensive LCD display will indicate all relevant information in real-time.

Push the On/Off button (5) briefly to turn the Power Pack On and at the same time, take note of the Battery 'Capacity' percentage displayed. If this figure is too low for your anticipated usage, charging will be necessary before or while in use.

The 'Time' in minutes and hours, will not register until an 'Appliance/Load' is connected. The display will then indicate the 'Time Remaining' of usable power. Conversely, once a 'Charge' is connected, the 'Time' in minutes and hours, will display the 'Time Remaining' until fully charged.

'Watts' and 'Amps' for both the 'Input' and 'Output' connections, indicate the power coming in from the charging source and the power going out to the appliance/load applied.

The 'Input' and 'Output' data will not be displayed simultaneously. The greater of the two will take preference in what information is displayed on the LCD display. The data displayed will be a combination of the power coming in and the power going out, automatically adjusting the data displayed for real-time information.

For example, if the 'Input' power is greater than the power being consumed, the Input 'Watts' and 'Amps' will be displayed, minus the 'Output' power being consumed.

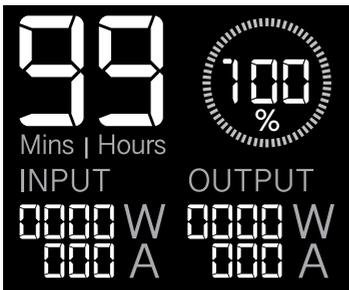
Equally, if the 'Output' power is greater than the charge power coming in, the Output 'Watts' and 'Amps' will be displayed, plus the 'input' charging power.

The same can be said for the 'Time' in minutes and hours, if an 'Input Charge' current and an 'Output Load' current are connected at the same time, the 'Time' displayed will be a combination of the two. In other words, if the 'Input Charge' current is higher, the 'Time' displayed will be the time to fully charged (100% SoC) and if the 'Output Load' current is higher, the 'Time' displayed will be the time to fully discharge.

A simple visual check to see if the Power Pack is 'charging' or 'discharging' is to look at the circular 'ring' around the SoC percentage figure on the LCD screen. This ring will simulate rotation in the clockwise direction for 'charging' and anti-clockwise for discharging.

The LCD display will always remain on while the Power Pack is in use and will automatically 'time-out' or turn its self-off after approximately 24 hours of being idle with no power being used. To reactivate the LCD display, push the On/Off button (5) briefly to turn the Power Pack on again.

The LCD display will also display the 'Error Codes' if something out of the ordinary unexpectedly occurs. See Troubleshooting section on page 18 for detailed explanations.



# Charging – Input Options

All Explore Planet Earth MATRIX PWR Power Packs can be charged 4 different ways.

Charging can be achieved by either of the following ways;

- (AC) Mains or generator by utilising the included 240V AC battery charger.
- (DC) Installing the included DC USB-C (PD) panel socket and USB-C to USB-C power lead.
- (AC) USB-C (PD) by purchasing a separate rapid power 240V AC wall charger up to 100W.
- (DC) By connecting your existing DC Solar charger/regulator or DC/DC charger

This gives you the choice of best charging source available, no matter how close to home or how remote you happen to be.

Charging 'Input' has been made simpler by colour matching the 'Red' Input Anderson type socket (13) to the output lead of the 240V DC battery charger (14) and the Vehicle or Solar input lead (15). Note; The USB-C (PD) input socket is not colour coded.

## Charging Options:

- 1 240V AC Mains or 240V AC Generator (pure sinewave) Power:** Using the included 240V AC battery charger (14) and connected to input (13).
- 2 Vehicle DC/DC:** Installing the included DC USB-C (PD) panel socket (16) and USB-C to USB-C power lead (17) and connected to input (7). (see page 16 for installation instructions)
- 3 - USB-C (PD) Power Delivery:** By purchasing a separate rapid power 240V AC wall charger up to 100W and using the included USB-C to USB-C power lead (17) and connected to input (7).
- 4 Solar or DC/DC Charger:** By connecting your existing DC Solar charger/regulator or DC/DC charger and using the included vehicle or solar input lead (15) and connected to input (13). (see page 16 for DC/DC charger installation instructions)



### WARNING!

A conventional USB-C power lead and wall charger lower than 100W should not be used in case of overheating and possible fire.

Do not charge by multiple input charging sources at the same time. This could lead to possible damage to the Power Pack.

# Operation – Using the Output Sockets

All Explore Planet Earth Power Packs have a selection of fourteen DC output sockets, all accessible from the front, making access very easy and depending on the power requirements, most can be used at the same time.

- **4 x USB-A 3.0 (#6)**

Charging mobile phones, tablets or powering LED lights and other devices with this type of matching plug up to DC-15W, 5V-3A\*\*.

- **2 x USB-C (PD) (#7)**

Charging mobile phones, tablets, laptops or powering LED lights and other devices with this type of matching plug up to DC-100W, 20V-3A\*\*.

- **3 x Standard CIG type (#8)**

Powering various devices with this type of matching plug up to DC-27A (345W) Max total combined\*\*.

- **2 x Merit type (#9)**

Powering various devices, including portable fridges with this type of matching plug up to DC-27A (345W) Max total combined\*\*.

- **1 x Posi-Fit type (Engel 2 pin) (#10)**

Powering various devices, including portable fridges with this type of matching plug up to DC-27A (345W) Max total combined\*\*.

- **1 x Anderson type socket – Black (#11)**

BP5531 45Ah & BP5533 60Ah (Black Anderson type socket) powering various devices, including portable fridges with this type of matching plug to DC 30A (384W) (BP5531) and DC 50A (640W) (BP5533) Max \*\*.

BP5535 120Ah ONLY, powering various devices, including portable fridges and vehicle flat battery recovery function up to DC-100A (1280W) Max\*\*.

- **1 x Anderson type socket – Blue (#12)**

BP5531 45Ah & BP5533 60Ah (Blue Anderson type socket) powering various devices, including portable fridges with this type of matching plug and powering a (BP5531) 300W Max DC/AC 240V AC inverter up to DC-30A (384W) Max and (BP5533) 500W Max DC/AC 240V AC inverter up to DC-50A (640W) Max\*\*.  
BP5535 120Ah ONLY, (Blue Anderson type socket) powering various devices, including portable fridges and powering a 1000W Max DC/AC 240V AC inverter up to DC-100A (1280W) Max (inverter not included)\*\*.

(\*See page 11, Note/Warning under the heading: Charging – Input Options).

(\*\*See page 19, Technical Details/Specifications for individual model specifications).

# Vehicle Flat Battery Recovery – Lead connection

**(Engine capacity restrictions apply)**

This function is ONLY available on BP5535 120Ah MATRIX120, utilising the included vehicle battery clamp lead (18) and connected to the black Anderson type output socket (11) ONLY.



## **WARNING!**

- Connecting to any other Anderson type output socket (Red or Blue) while attempting to recover a vehicle flat battery will result in potential damage to the MATRIX120 Power Pack and will void the warranty.
- Method 1 - Suitable Diesel and larger petrol capacity engines (Page 15).
- Method 2 - In an emergency up to 3.0 Litre petrol engines (Page 15).

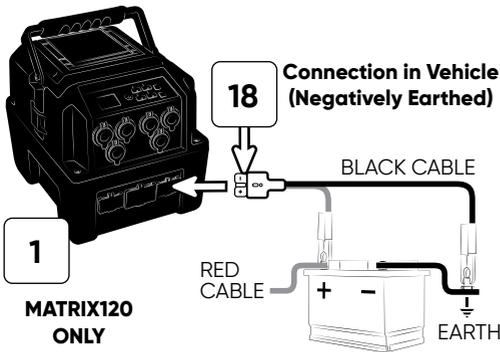
Ensure that the MATRIX120 Power Pack is fully charged and in good working condition. Un-plug all unnecessary loads (accessories) before attempting to recover a vehicle flat battery.

## Important:

The sequence outlined below is for a flat battery which is still mounted within a vehicle. The following information is to be used as a general guide only and may differ from vehicle to vehicle.

Please refer to your vehicle's user manual to establish if your vehicle electrical system is 'Negatively' or 'Positively' earthed, this will determine the correct lead connection sequence/method for your vehicle.

- 1** Position the MATRIX120 Power Pack as close as possible to the vehicles battery which is requiring recovery and place on stable ground (not on the vehicle).
- 2** Before turning the MATRIX120 Power Pack on, locate the included vehicle battery clamp lead (18) and connect the BLACK Anderson type plug on the lead to the BLACK Anderson type socket (11), located on the front panel.
- 3** Connect the DC clamps to the vehicle battery ensuring correct 'earth connection' and 'sequence' as follows when 'connecting' and 'disconnecting' the DC clamps to or from the battery being recovered.



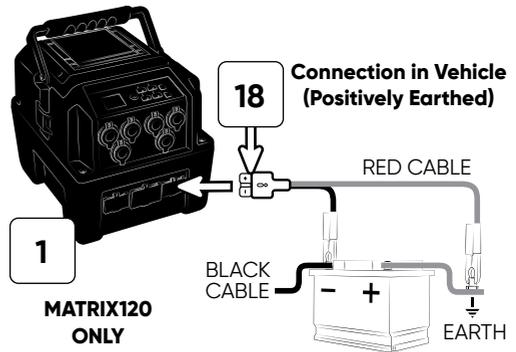
## Negatively Earthed Battery (most common type):

The negative (BLACK) '-' DC clamp is 'LAST' on and 'FIRST' off (the negative '-' vehicle chassis).

This will reduce the dangers of a potential short-circuit and excessive sparking of the battery terminals.

Ensure correct DC clamp connection 'polarity' when 'connecting' to the battery being recovered.

- 1** Firstly, connect the 'RED' coloured DC clamp to the positive '+' battery terminal.
- 2** Connect the 'BLACK' coloured DC clamp to the negative '-' vehicle chassis or engine block.
- 3** Make sure cables are clear of the fuel line and rotating parts to 'earth' the black DC clamp.



## Positively Earthed Battery:

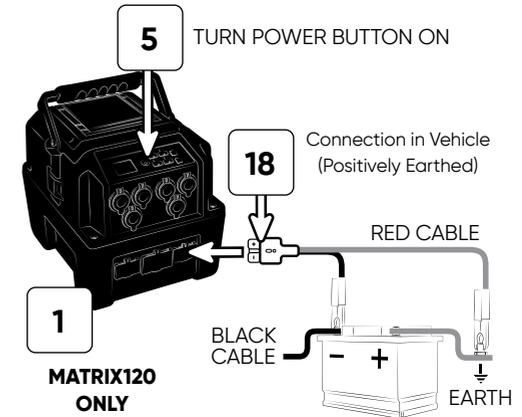
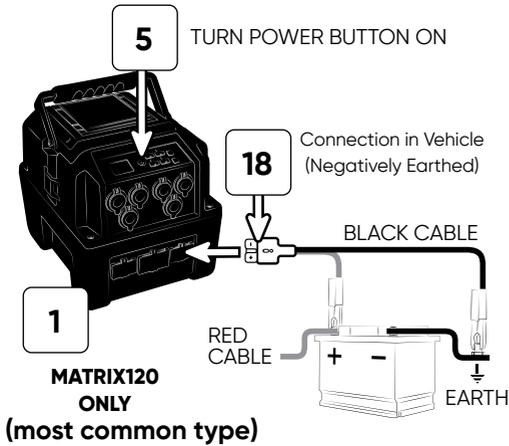
The positive (RED) '+' DC clamp is 'LAST' on and 'FIRST' off (the negative '-' vehicle chassis).

This will reduce the dangers of a potential short-circuit and excessive sparking of the battery terminals.

Ensure correct DC clamp connection 'polarity' when 'connecting' to the battery being recovered.

- 1** Firstly, connect the 'BLACK' coloured DC clamp to the negative '-' battery terminal
- 2** Connect the 'RED' coloured DC clamp to the positive '+' vehicle chassis or engine block.
- 3** Make sure cables are clear of the fuel line and rotating parts to 'earth' the red DC clamp.

# Vehicle Flat Battery Safe Start Sequence



## Safe Car Starting - Method 1:

After following the DC clamp connection above, turn on the Power Pack (5) which will allow current to flow through to the vehicle battery.

Wait for approximately 15 minutes for the vehicle battery to recover to a point where it may start without any further assistance

**CAUTION: Ensure to disconnect the clamp lead before attempting to start the vehicle.**

Note; If this method is unsuccessful, you may be required to use another vehicle to assist with jump starting or in an emergency refer to method 2.

## Safe Car Starting - Method 2:

After following the DC clamp connection above, turn on the Power Pack (5) which will allow current to flow through to the vehicle battery.

Wait for approximately 15 minutes for the vehicle battery to accept a small amount of power and then turn the ignition key to start the engine. Avoid cranking the engine excessively if it has not started. Continual cranking of the engine will unnecessarily drain the MATRIX120 Power Pack as there could possibly be another unknown issue causing the engine not to start.

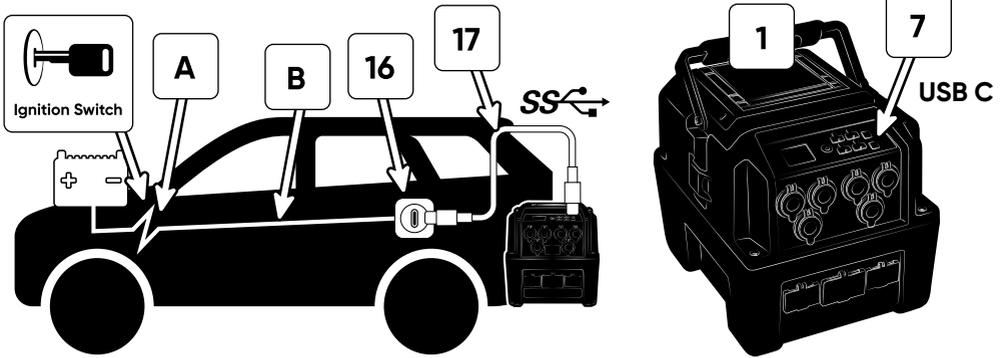
Once the engine starts, wait for 2 minutes before dis-connecting the DC clamp lead using the reverse sequence setup.

Apply the accelerator to increase the engine rev's momentarily before allowing the engine to return to idle.

If the engine remains at idle speed and un-assisted by the accelerator, you are good to go.

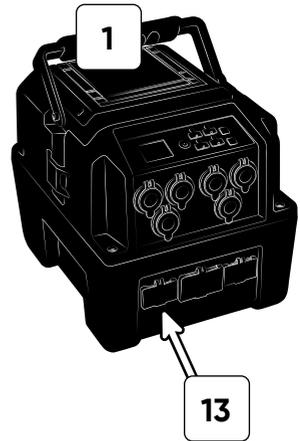
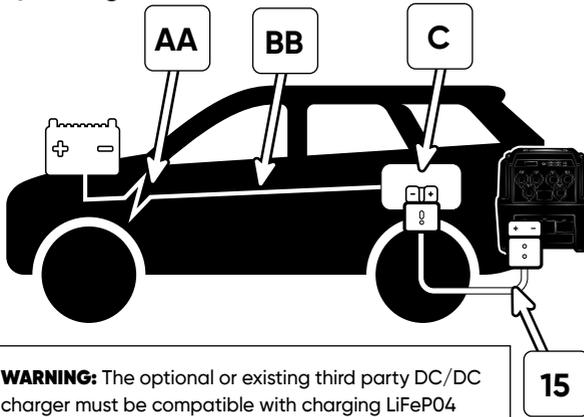
## INSTALLING THE INCLUDED USB-C PD PANEL MOUNT.

Connected to the vehicle's ignition system (RECOMMENDED).



To prevent possible complete discharge of the power source (cranking battery), the USB-C Panel Type Socket (#16) can be installed via cable (B) to the vehicle's ignition system. This will ensure that power from the power source (cranking battery) will only occur when the ignition is on.

## Installing an optional or existing LiFeP04 DC/DC Charger (15A, 20A, 30A Max depending on model)



Red Anderson type input socket

**WARNING:** The optional or existing third party DC/DC charger must be compatible with charging LiFeP04 Lithium type cell batteries and output must be fused - 30A max depending on model.

### Recommended MIDI type fuse and holder

A 30A (Install maximum distance from the starter battery - 100mm)

AA Refer to third party DC/DC charger installation instructions

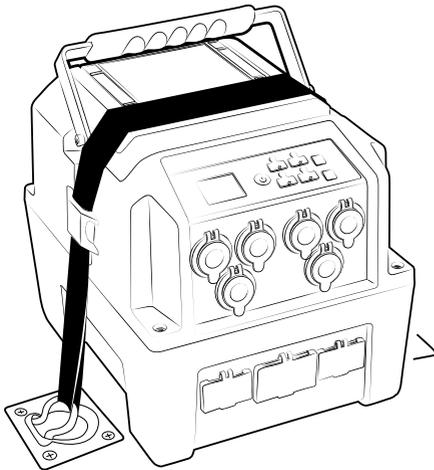
### Recommended Cable

	Required Installation Length	Recommended Cable Size	AWG Equivalent
B	1 - 6 m	8.78mm <sup>2</sup> - 10mm <sup>2</sup>	8
BB	Refer to third party DC/DC charger installation instructions		
C	Optional or existing third party LiFeP04 DC/DC charger		
Fuse A, AA Cable B, BB and DC/DC charger C are not supplied			
Recommended that installation is carried out by a qualified licensed trades person, e.g., Auto Electrician.			

## Vehicle Mounting Tie Down

It is highly recommended that your MATRIX PWR Power Pack be securely tied down by using a close weave (seat belt type) polyester webbing strap with suitable tension adjustment when transported either temporarily or permanently within a vehicle.

Being involved in any low-speed collision or roll-over with an unrestrained mass of this type could severely injure or kill an occupant.  
(Strap/s not included)



TIE DOWN

## Maintenance & Storage

Only basic maintenance is required, wipe down your MATRIX PWR Power Pack periodically with a damp cloth only. If an Input/Output socket is not in use, ensure that the dust cover is securely in place to stop foreign objects entering and possibly causing a short circuit.

Contact Sitro Group Pty Ltd Customer Service (details at the end of this Instruction Manual) if a problem occurs with your MATRIX PWR Power Pack and do not, under any circumstances, attempt to dismantle or repair yourself due to possible electrical shock.

If storing your MATRIX PWR Power Pack for a long period of time, ensure that the Power Pack is turned off (5), all loads are disconnected, all dust covers are in place and the battery capacity is at approximately 40% to 60% SoC as indicated on the display. Doing this will ensure the maximum life and health of the LiFePO4 battery cells and will also provide better longevity if not stored at 100% full. Just simply charge before the next trip away and finally, store in a cool, dry environment.

Self-discharge will occur over time and depending on the environment, this could be many months and up to a year/s. It is advisable to charge when and if required to achieve the 40% to 60% SoC again. Simply, turn the Power Pack on every 4-6 months to monitor the battery capacity and charge if necessary.

If the Power Pack is left unattended (forgotten) for a significant amount of time, the internal battery management system (BMS) will protect the battery cells from any potential damage by automatically shutting down or putting the system to sleep at 10V. If this happens to be the case, the only way to revive or wakeup the BMS is to apply a charge load to the Anderson type (red) input socket (13) using the included 240V AC battery charger.

# Inverter Connection - Optional

The MATRIX45 (45Ah/576Wh), MATRIX60 (60Ah/768Wh) and MATRIX120 (120Ah/1536Wh) Power Packs are all capable of powering an optional DC/AC 240V AC Inverter (not included). This can be done via the 'Blue' Anderson type output connection ONLY (12). Refer to the table below for the recommended cable size, cable length and fuse required for each model.

Model	Inverter Wattage (Max)	Current (Max)	Cable Length (Max)	Recom'd Cable Size	AWG Equivalent	Fuse
MATRIX45	300W Inverter	30A	1.5m	10mm <sup>2</sup>	8	40A
MATRIX60	500W Inverter	50A	1.5m	16mm <sup>2</sup>	6	80A
MATRIX120	1000W Inverter	100A	1.5m	25mm <sup>2</sup>	4	140A

Recommended that installation is carried out by a qualified licenced trades person to relevant Australian Standards. Installation must include a Residual Current Device (RCD)

## Troubleshooting

Problem	Possible Cause	Corrective Action
Error Code 'SC'	Short Circuit	Check for possible reverse polarity connection and rectify
Error Code 'OC'	Over Charge	The input voltage is too high during the charging process. Unplug the charging source for the unit to reset
Error Code 'OD'	Over Discharge	Excessive load (current draw). Remove the load and wait for 15 seconds for the unit to reset
Error Code 'OT'	Over Temperature	The ambient temperature or conditions of the environment during the charging or discharging process may trigger this warning. Remove the load and wait for the temperature to drop or relocate the Power Pack to a more suitable environment
Power Pack will not turn on	The BMS has shut down the Power Pack at 10V	Revive or wakeup the BMS is to apply a charge load to the Anderson type (red) input socket (13) using the included 240V AC battery charger
	Internal fault	Contact your point of sale or Sitro Group Pty Ltd Customer Service
Power Pack will not charge	Incorrect or bad cable connection	Check all cable connections
	Faulty input cable	Check condition of cables & replace if necessary
	Error Code	Check Error Code & clear
	No input power	Check that the input power is connected or turned on
	Faulty solar cell or solar array is shaded	Check output of the solar array, move out of the shade

# Technical Details - Specifications

Part No	Unit	BP5531	BP5533	BP5535
<b>Dimensions:</b>				
Length	mm	262		
Width	mm	310		
Height	mm	273		
Weight (Including accessories)	Kg	8.3	9.8	16.1
<b>Overview:</b>				
Battery Chemistry		Lithium Iron Phosphate (LiFePO4)		
Nominal Voltage	V	12.8		
Nominal Capacity	Ah	45	60	120
Internal Impedance	Wh	576	768	1536
Standard Charge Method	A	6	8	15
Max.Continuous Charge Current, via DC/DC charger (not included)	A	15	20	30
Max.Continuous Discharge Current (Anderson Type Connection)	A	30	50	100
Max.Continuous Discharge Current (USB Type Connection)	A	8	8	8
Max.Continuous Discharge Current (Cigarette, Merit & Posi-Fit Type Connection)	A	15	15	27
Cell Cycle Life		2000 (80% SoC)		
Additional Features		LCD Display		
<b>Output:</b>				
Max. Voltage	V	12.8V		
Max. Total Current	A	30	50	100
Max. Cigarette Type Socket (x3)	A	15	15	27
Max. Merit Type Socket (x2)	A			
Max. Posi-Fit Type (Engel 2 pin) Socket (x1)	A			
Max. Anderson Type Blue Socket (x1)	A	30	50	100
Max. Anderson Type Black Socket (x1)	A	30	50	50
Max. USB-A 3.0 : DC 15W, 5V=3A	A	8	8	8
Max. USB-C (PD): DC 100W 20V=3A, 15V=3A, 12V=3A, 9V=3A, 5V=3A	A			
Max. Vehicle Flat Battery Recovery	A			360

# Technical Details - Specifications

Part No	Unit	BP5531	BP5533	BP5535
<b>Input:</b>				
Mains Charging 240V AC battery charger (included)	A	6	8	15
Mains charging - USB-C (PD) 240V AC wall charger & USB-C PD cable (not included)	W	100	100	100
Solar charging - Nominal 18V DC Solar array, charger/regulator (not included)	W	200	360	540
Vehicle charging - USB-C (PD) Panel mount socket and USB-C PD cable (included)	W	100	100	100
<b>Ambient Condition:</b>				
Operating temperature	°C	-20~40		
<b>Storage Condition:</b>				
Storage temperature	°C	-5~30		
<b>Battery Pack Protection:</b>				
Battery pack Over-Charge voltage Protection / Release	V	14.6 / 14.4		
Battery pack Over-Charge voltage protection delay time	mS	1000±500		
Battery pack Over- Discharge voltage Protection / Release	V	10 / 10.4		
Battery pack Over-Discharge voltage protection delay time	mS	1000±500		
Over-Current charge protection (Anderson Type)	A	20	25	30
Over-Current charge protection delay time	mS	2000±500		
Over-Current charge protection release		10 Sec additional delay		
Over-Current discharge protection 1 (Anderson Type) BLUE	A	35	55	120
Over-Current discharge protection 2 (Anderson Type) BLACK	A	100	150	360
Short circuit discharge protection	A	350	400	800
Short circuit protection delay time	uS	400		
Charge over temperature Protection / Release	°C	55 / 45		
Charge low temperature Protection / Release	°C	-5 / 0		
Discharging over temperature Protection / Release	°C	75 / 65		
Discharging low temperature Protection / Release	°C	-20 / -10		

# Technical Details - Specifications

Part No	Unit	BP5531	BP5533	BP5535
<b>Current Consumption:</b>				
Normal mode	mA	50-60		
Idle mode	uA	200-400		
Shut down mode (Vcell ≤ 2.3V)	uA	40-100		
Idle mode from Normal mode	Hr	No current, delay 24 (approx)		
Wake-up (Shut down mode)		Charging or switch		
<b>Additional Charging Information:</b>				
Mains Charging 240V AC battery charger (included)		240V AC 14V/80W,14.6V=6A	240V AC 14V/120W,14.6V=8A	240V AC 14V/220W,14.6V=15A
Via the Anderson Type RED Input Socket				
Est. Charging time (based on 20% to 100% SoC)	Hr	6.6	6.6	7
Mains charging - USB-C (PD) 240V AC wall charger & USB-C PD cable (not included)		Up to 20V DC=5A Max 100W		
Via the USB-C (PD) Socket				
Est. Charging time (based on 20% to 100% SoC)	Hr	7.9	10.5	21.1
Solar Charging (Solar array, charger/regulator (not included)		18V DC=11A Max 200W	18V DC=20A Max 360W	18V DC=30A Max 540W
Via the Anderson Type RED Input Socket				
Est. Charging time (based on 20% to 100% SoC)	Hr	3.6	2.6	3.5
Vehicle charging - USB-C (PD) Panel mount socket and USB-C PD cable (included)		12V DC=5A Max 100W	12V DC=5A Max 100W	12V DC=5A Max 100W
Via the USB-C (PD) Socket: (DC/DC Function)				
Est. Charging time (based on 20% to 100% SoC)	Hr	7.9	10.5	21.1
<b>Additional Output Information:</b>				
Recommended Max DC/AC 240V AC Inverter Capacity		240V AC~300W	240V AC~500W	240V AC~1000W
Via the or Anderson Type BLUE Output Socket				

# Frequently Asked Questions

**Q: How long will my MATRIX PWR Power Pack power a 60W portable fridge?**

**A: There are many variables, including the environment which will affect the run time.**

**Below are generic examples calculating continuous run times although in actual situations, the portable fridge would cycle on & off when required.**

## Example #1

---

A 60W portable Fridge, 12.8V (nominal voltage) 120Ah Lithium iron Phosphate (LiFePO<sub>4</sub>) MATRIX120 Power Pack.

Battery watt-hours = amp-hour (Ah) capacity x battery volts

Battery watt-hours = 120Ah x 12.8V = 1536 watt-hours

Using the recommended 80% of the capacity, only 1228 watt-hours (Wh) are available for use.

Run time = 1228Wh/60W = 20.46 hours or 1228 minutes (continuous).

## Example #2

---

A 60W portable Fridge, 12.8V (nominal voltage) 60Ah Lithium iron Phosphate (LiFePO<sub>4</sub>) MATRIX60 Power Pack.

Battery watt-hours = amp-hour (Ah) capacity x battery volts

Battery watt-hours = 60Ah x 12.8V = 768 watt-hours

Using the recommended 80% of the capacity, only 614 watt-hours (Wh) are available for use.

Run time = 614Wh/60W = 10.23 hours or 613 minutes (continuous).

## Example #3

---

A 60W portable Fridge, 12.8V (nominal voltage) 45Ah Lithium iron Phosphate (LiFePO<sub>4</sub>) MATRIX45 Power Pack.

Battery watt-hours = amp-hour (Ah) capacity x battery volts

Battery watt-hours = 45Ah x 12.8V = 576 watt-hours

Using the recommended 80% of the capacity, only 460.8 watt-hours (Wh) are available for use.

Run time = 460.8Wh/60W = 7.68 hours or 460 minutes (continuous).

---

---

**Q: How long will my MATRIX PWR Power Pack power a DC/AC 240V AC Inverter?**

**A: Below are generic examples calculating continuous run times.**

## Example #4

---

A 12.8V (nominal voltage) 60Ah Lithium iron Phosphate (LiFePO<sub>4</sub>) MATRIX60 Power Pack will power a fully loaded 500W inverter for approximately 62 minutes before reaching a state of charge (SoC) of 20% (or 80% of the capacity used). The calculation incorporates a typical pure sine wave inverter efficiency of 85%.

(5% state of charge (SoC) is possible (95% of the capacity used) however, this will reduce the life of the battery considerably).

Battery watt-hours = amp-hour (Ah) capacity x battery volts

Battery watt-hours = 60Ah x 12.8V = 768 watt-hours

Using the recommended 80% of the capacity, only 614 watt-hours (Wh) are available for use.

Run time = 614Wh/500W = 1.22 hours or 73.2 minutes

Applying the 85% inverter efficiency the run-time = 1.04 hours or 62 minutes (continuous).

# Frequently Asked Questions

## Example #5

---

A 12.8V (nominal voltage) 120Ah Lithium iron Phosphate (LiFePO<sub>4</sub>) MATRIX120 Power Pack will power a 900W 240V toaster using a 1000W inverter for approximately 69 minutes before reaching a state of charge (SoC) of 20% (or 80% of the capacity used). The calculation incorporates a typical pure sine wave inverter efficiency of 85%.

(5% state of charge (SoC) is possible (95% of the capacity used) however, this will reduce the life of the battery considerably).

Battery watt-hours = amp-hour (Ah) capacity x battery volts

Battery watt-hours = 120Ah x 12.8V = 1536 watt-hours

Using the recommended 80% of the capacity, only 1228 watt-hours (Wh) are available for use.

Run time = 1228Wh/900W = 1.36 hours or 81.6 minutes

Applying the 85% inverter efficiency the run-time = 1.15 hours or 69 minutes (continuous)

---

---



## Compliance/Certification

---

---

# explore planet earth™

## Warranty

The MATRIX PWR Portable Power Packs have a limited warranty period of 2 years from the date of purchase.

### Key Points:

The original purchaser of this product is offered a warranty if during this time period the product fails due to a fault in either materials or workmanship. Service under this warranty is available by returning the product, with your proof of purchase, to where it was purchased. If after inspection it is determined that the product is defective, we will repair or replace it (at our discretion) free of charge. This warranty does not cover misuse, damage caused by accident, storm or wind damage, mildew, neglect, UV degradation and fair wear and tear. Please note, the warranty on this product will be deemed void if the product is used for any purpose other than what it was designed for. If the claim is not deemed a warranty or is outside its warranty period, we can repair the product at a nominal cost.

#### AUSTRALIA ONLY

Customer Service **1300 174 876**

Hours of operation: Monday to Friday 8.00am - 5.00pm EST

Do not return to place of purchase.

Keep your purchase receipt, this will be required to make any claims.

#### NEW ZEALAND ONLY

Customer Service **0800 161 161**

For warranty details visit [www.aberliving.co.nz](http://www.aberliving.co.nz).

For warranty claims, return to place of purchase.

Keep your purchase receipt, this will be required to make any claims.

No itinerary.  
No boundaries.  
**Go explore.**

EPE® is a registered trademark  
of Sitro Group Australia Pty. Ltd.  
[www.exploreplanetearth.com.au](http://www.exploreplanetearth.com.au)