

Topo DC Power
Long Range lithium
MODEL: T-LRR-144AH

User Operation Manual

This manual must be read in its entirety before operating the Centerfire and retained for future reference.

Thank you for choosing to purchase TOPO DC Power products.

TOPO DC POWER
Technical Support and Product Information
Website: www.topodcpower.com
Email: contact@topodcpower.com

TOPO Customer Care
For any and all product related inquiries,
Phone: +61 (08) 9457 7809
Email: contact@topodcpower.com.

(Office hours 8:30am - 4:30pm , UTC + 8)

Australia Headquarters

Address: 3 Whyalla Street,
Willetton, 6155
Western Australia

Warranty

TOPO DC power products are backed with a 24 month workshop warranty.
In the event you require assistance, please contact TOPO Customer Service.

This warranty will not apply in circumstances where:

1. the goods have not been installed, maintained, operated or used in accordance with the manufacturer's instructions or any other specifications provided with the goods;

2. where damage or defects are caused by deliberate or negligent misuse or abuse, physical alteration, fire, liquid spillage, use of incorrect voltage, power surges or dips, thunderstorm activity, force majeure, voltage supply problems, tampering or unauthorized repairs by any persons, use of defective or incompatible accessories, computer viruses, corrosive conditions or introduction by an insect, pest or other foreign body;

3. where damage results from any third party software or hardware not provided by us;

4. where items are lost or stolen; and

5. in relation to repairs of batteries, where the batteries have not been used in accordance with specifications or they expire by normal use.

IMPORTANT SAFETY INSTRUCTIONS

BEFORE USING THIS APPLIANCE, READ ALL SAFETY AND USAGE INSTRUCTIONS LOCATED ON THE APPLIANCE AND IN THIS MANUAL

These warnings apply to the appliance, and also where applicable, to all tools, accessories, chargers or mains adapters.

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR INJURY

1. This TOPO appliance is not intended for use by young children, or infirm persons with reduced or impaired mental or physical capabilities, or persons with a lack of knowledge and experience unless directly under the supervision or instruction of a responsible party to ensure that safe use conditions are met.
2. This appliance is not a toy. If this appliance is in use in the vicinity of children, proper attention and supervision must be given to ensure that they do not play with this electrical device.
3. Use only as described in this manual. Do not undertake any maintenance unless described in this manual or advised by Topo Customer Service personnel.
4. Suitable for use in dry conditions only. Operate under shelter with adequate protection from elements.
5. Do not handle any part of the appliance with wet hands.
6. Damaged electrical cords are a hazard, In the case of damaged or frayed electrical cord DO NOT USE and seek replacement from Topo, a Topo service agent or similarly qualified person.
7. If the appliance is not working as it should, is damaged, or has been dropped, submerged in water or exposed to the elements for an extended period of time, discontinue use immediately and contact Topo Customer Service.
8. Do not disassemble. Contact Topo Customer Service when service or repair is required.
9. Do not stretch or place electrical cables under strain. Avoid placing cable where it can be stepped on or tripped over.
10. Keep appliance away from sources of fire and high temperature.
11. Avoid contact with and submersion in water.
12. Use only Topo recommended accessories and replacement parts. Do not use any high capacity DC-DC charger beyond the recommended maximum charging current.
13. If used in vehicle, ensure that the appliance is secured and fixed in place.
14. Charge in a well ventilated location
15. Do not go beyond the maximum recommended load for each socket or panel

Packing List:

1. One Topo Long Range Lithium.

   Model: T-LRR-144AH

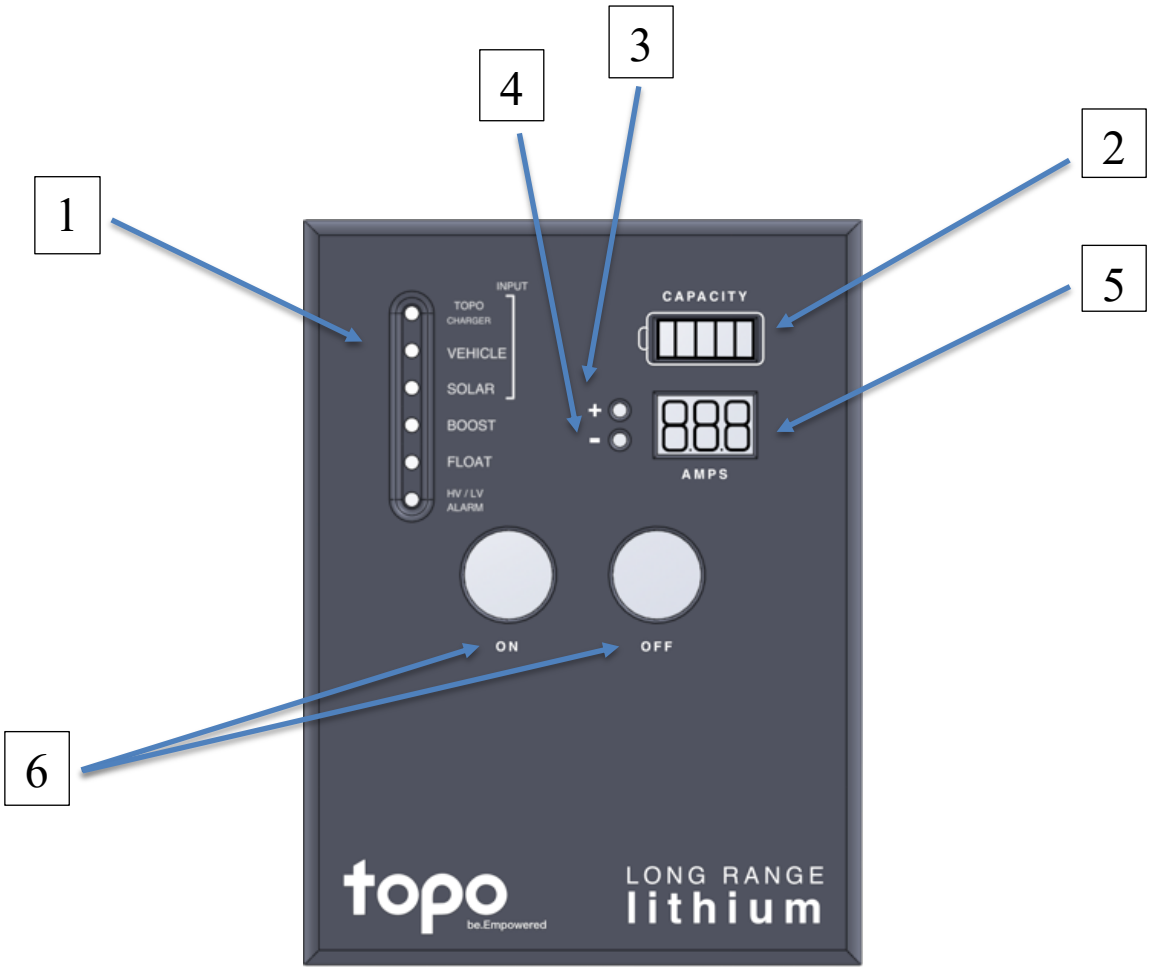
2. Vehicle charge inline fuse protection

   1 x 80A Twin Midi fuse and holder

3. One Long Range lithium connector pack:

   1 x RED 35A mini connector
   2 x GREY 35A mini connectors
   2 x GREY 50A Anderson type connectors
   1 x BLUE 50A Anderson type connector

Front Display Panel and Indicators



1. **Mode Indicators**
2. **Battery Capacity Gauge**
3. **Charging Current Indicator**
4. **Discharge Current Indicator**
5. **Amps, Net Charge / Discharge**
6. **System ON/OFF Switch**

All charging inputs and outputs are uniquely colour coded.
Vehicle and Solar input connectors are supplied.

1x 35A Yellow mini connector ➡ Topo 10A MAINS Battery Charger/ Power Supply

1x 50A Blue Anderson type connector ➡ Vehicle DC-DC Charger

1x 35A Red mini connector ➡ Solar power source

2x 35A Grey mini connector ➡ 12Volt Output

1x 50A Grey Anderson type connector ➡ 12Volt Output

I just purchased/received my Long Range lithium. What is the first thing I should do?

1. Check for any damage and for any missing parts shown in the packing list.

2. Before using or storing your Long Range lithium, you should ensure the battery is fully charged using MAINS AC power.

How do I charge my Long Range lithium?

The Long Range lithium ON/OFF switch, display and input and output connections are clearly marked and located in front of the unit.

If the Long Range lithium is connected and receiving a charge, the charge input and mode will be displayed with LED indicators on the front panel.

THE LONG RANGE LITHIUM MUST BE TURNED ON FOR ALL CHARGING

All charging inputs are uniquely labeled and colour coded. Vehicle and Solar input connectors are supplied in set of connectors.

35A Yellow mini connector ➡ Topo 23A MAINS Battery Charger/ Power Supply

50A Blue Anderson type connector ➡ Vehicle DC-DC Charger

35A Red mini connector ➡ Solar power source, will accept 12V & 24V Solar panel

From the Wall (Mains AC)

For good practice, all power sources and Long Range lithium unit should be switched OFF while carrying out connections.

The Long Range lithium is designed to ONLY suit Topo's Mains battery charger/ Power supply.

Failure to follow these instructions may damage the battery and void warranty.

1. Use supplied cables, inspect for any damages and secure a good connection between
Mains Power ➡ Charger/ Power Supply ➡ Long Range lithium Mains DC input.

2. Turn ON Mains power then the Long Range unit.
Mains LED on the internal panel will turn ON, showing AC power connected and charging.

THE LONG RANGE LITHIUM MUST BE TURNED *ON* FOR ALL CHARGING

From Vehicle (built-in 40amp DC-DC charging)

The Long Range lithium has a built-in vehicle input voltage sensing and a 40amp DC to DC charger. Use the Blue 50amp connector (supplied) to connect charge from your vehicle's primary battery.

CAUTION: ensure correct polarity connection, wrong polarity connection will cause damage.

Topo's vehicle input voltage sense isolates your primary battery automatically and prevents your primary battery from going flat.

The Long Range lithium unit will automatically energise vehicle charge connection when
Primary battery voltage is above 12.8V and
Disconnect when below 12.5V
Refer to pg. 16 for wiring diagram.

1. Run rated Positive and Negative cable from starter battery to Blue 50A connector (supplied) to Vehicle DC charging input Blue 50A Connector
2. When supplied DC power source is above 12.8V, the Vehicle LED indicator on the front panel will turn ON indicating charge.

THE LONG RANGE LITHIUM MUST BE TURNED ON FOR ALL CHARGING

Vehicle charge checklist

1. Ensure the Blue 50A Anderson connector is plugged into the Long Range Vehicle charge input and 12V DC power is available from the Vehicle primary battery.

2. At first startup/vehicle charge connection. Check that the Vehicle LED indicator on the front panel is Off. If Vehicle LED indicator is On, turn On/ OFF the Long Range unit until Vehicle LED indicator turns Off.

3. Start your engine, to check that that Vehicle Charge system is working normal. The Long Range Vehicle charge input will measures your vehicles primary battery voltage and will automatically turn ON the internal DC/DC charger when above 12.8V.

4. Turn your engine off. The Long Range Vehicle charge input will measure your vehicle primary battery and will automatically turn OFF the DC/DC charger when below 12.5V.

5. Vehicle charge test complete. Long Range unit can be left ON full time. Ensure Vehicle LED indicator is OFF before disconnecting Vehicle charge connection.

THE LONG RANGE LITHIUM MUST BE TURNED ON FOR ALL CHARGING

From Solar (unregulated input)

The Long Range lithium uses a Red 35A mini connector (supplied) to connect solar charge from a 12V or 24V Solar panel to the unit. The units Red Solar input has an internal built in solar regulator/controller in series. Connect unregulated Solar panel source to Red solar input.

1. Run a 12volt or 24V solar panel using the Red 35A mini connector (supplied) to the Solar DC input on the Long Range solar charge input (**RED mini connector**).

2. When your Solar power source is connected, Topo's Long Range lithium Solar LED will turn On when solar charge is above 2 Amps.

Please note: Max Solar Charge input 25Amps

THE LONG RANGE LITHIUM MUST BE TURNED ON FOR ALL CHARGING

How do I use the Long Range lithium?

1. To turn On the Long Range Lithium, press the ON switch on the front panel. The LED indicators and Battery Bar display will light up.

2. DC Power Output connectors are colour coded and labeled. They are located below the front panel for easy access, consider Topo's magnetic power distribution options offering a wide range of connections.

   2x 50A Grey Anderson connectors. (Combined rated output: 100Amps)
   2x 35A Grey mini connectors. (Combined rated output: 40Amps)

3. Charging inputs are colour coded and labeled. Located below the front panel for easy access, charge from Mains Power, Vehicle and Solar.

   1x 35A Yellow mini connector for Mains charging- to suit Topo 23A Mains charger.
   1x 50A Blue Anderson connector for Vehicle input charging- to suit inbuilt 40A DC/DC charger.
   1x 35A Red mini connector for Solar input charging- rated at 25A max charge.

4. When the low voltage audible alarm is triggered, charge immediately to available (Mains, Vehicle or Solar) charging sources.

5. To turn Off the Long Range lithium, press the OFF switch on the front panel. The LED indicators and Battery Bar display will turn off.

6. Turn Off unit before making any new connections and turn back On.

* Topo's built-in Battery Management System allows for safe easy plug and play.
* Unique colour coded and labeled Input & Output connecters.
* High /Low voltage audible alarm.
* High and Low voltage protection, automatic cut-off and shutdown.
* Equipped with magnetic overload circuit protection.

How does the Battery Capacity gauge work?

1. Switch On the Long Range lithium unit.

2. Fully charge the Long Range Unit from any available charging sources (Mains, Vehicle or Solar) until the Float LED indicator turns ON, resetting the 12V/ 144AH battery capacity.

3. Battery capacity gauge, uses 5 green LEDs to displays battery stage of charge. Each bar representing 20% of 144AH capacity.

*****	**100 - 80%**
****	**79 - 60%**
***	**59 - 40%**
**	**39 - 20%**
*	**19 – 10% (Automatic Shutdown)**

4. Fully charge the Long Range Unit from any available charging sources (Mains, Vehicle or Solar) until the Float LED indicator turns ON, resetting the 12V/ 144AH battery capacity.

How does the Amp gauge work?

The front panel amp meter displays the Net Charge or Discharge indicated with a (+) or (-) indicator to and from the Long Range unit. This is particularly useful when calculating the charge rate from a Solar panel or the discharge from as 12V fridge or other powered accessories.

Optional: Wireless Remote Battery Monitor

Model: T-LRR-144AH is compatible with Topo's Plug & Play remote battery monitor. Plug into any 12V ciga socket and the remote battery monitor will mirror the same display as shown on the front of the Long Range front panel. Operating range is approximately 10meters from Long Range unit range will vary depending on surrounding environment.

Storage and Downtime

Keeping the Long Range lithium fully charged while not in use will prolong battery life and keep the battery healthy. It also means that no matter how short notice, you will always be ready to go with a topped-up battery.

If possible, store the Long Range Lithium in a dry, cool, dark place, charging fully at least every 3 months.

Hot & Cold Weather Use
Extremes in temperature can impact battery capacity. For use in extreme cold and hot temperatures outside the following range, below -10° C, an above 50° C (14° ~ 122° F). We recommend storing the Long Range lithium in a well ventilated, controlled temperature environment. A container with sufficient insulation properties able to maintain battery temperature at 20-30 degrees ° C will maintain optimal battery capacity.

Failure to follow these storage instructions may damage the battery and void warranty.

When your Long Range lithium is fully charged

Boost Mode LED: Indicates that the unit will take charge or battery voltage is below 13.8V

Float Mode LED: Indicates that battery voltage has reached above 14.4V
(regulating your battery not to overcharge)

When your Battery is fully charged Boost and Float LED's will begin to toggle between the two modes. The frequency/ time between Boost and Float will shorten, Float mode LED will remain ON for longer indicating your battery is fully charged.

Charge Times

The charge time will vary depending on your battery's remaining capacity and charging input source.

If your unit's battery is dead flat, charge immediately. We recommend only charging using Mains AC power.

It will take approximately 7 hours (144Ah) to fully charge from dead flat (Topo's 20A Mains charger).

Charge times will depend on available input charging methods and conditions.
You can charge and discharge your Long Range lithium via Solar, Vehicle and Mains AC simultaneously.

WARNING: You must charge your Long Range lithium when low voltage audible alarm is sounded. Prolonged use and delays may result in damage to your battery and unit may need to be sent to our workshop for recovery.

Charging / Status LEDs

- **MAINS** LED will display when Mains Power is connected and available.
- **VEHICLE** LED will display when Vehicle DC input is connected, and the supply voltage is above 12.8V or otherwise specified.
- **SOLAR** LED will display when Solar input power available is above 2amps.
- **BOOST** LED will display when the battery can be charged via the MAINS, SOLAR and VEHICLE inputs. The boost cut out voltage is 14.6V and will cut in when internal voltage drops below 13.8V
- **FLOAT** LED will display when the boost cut out voltage is reached, and will switch off when the boost cut in voltage is reached.
- **HV/LV ALARM** LED will display when internal voltage drops below 12V. An alarm will sound, and the battery should be charged as soon as possible while the LOW LED is on.

Input & Output Connectors

OUTPUT-
Any output socket exceeding MAX output will trip the internal magnetic circuit breaker and automatically shut down the unit. The Long Range lithium unit will need to be turned back ON after shutdown.

Combined total output 40Amps

- 35A GREY connector – Max Output, 20A
- 35A GREY connector – Max Output, 20A

Combined total output 100Amps

- 50A GREY connector - Max Output, 50A
- 50A GREY connector - Max Output, 50A

INPUT –

- Yellow connector – To only suit Topo's Mains chargers
- RED connector – Max Input, 25A
- BLUE connector – Max Input, 50A

DO's and DON'Ts

	DO	DON'T
Charging:	-Turn ON Long Range lithium while charging. - Fully charge the Long Range lithium on purchase -Charge the battery immediately when the warning indicator sounds and ALARM LED lights up. -Switch off the Long Range lithium when not in use or not charging -Charge in a well ventilated location -Follow all rating advise for charging input as described in the user manual. -Unit will accept unregulated Solar input from 12V an 24V Solar panels	- Leave unit uncharged after low voltage alarm. - Charge Long Range lithium with any other DC-DC chargers using the Blue 50A Anderson connector.
Use:	-Keep your Centerfire in an upright position -Keep away from excessive heat and fire -Avoid contact or submersion in water -Secure your Centerfire while in use in vehicle.	-Unscrew or open the internal panel, this will void warranty. -Use the Long Range lithium if exposed or submerged to water. -Use the Long Range lithium if you observe any sign of physical damage to cabling or internal electrical components. -Use the Long Range lithium as a jump starter battery.
Storage:	-Store in a cool, dry place. -Keep your Long Range lithium fully charged when not in use. Where possibly, plug the battery into the wall outlet to maintain a float charge.	-Store anywhere that the Long Range lithium may be exposed to water or fire.

Technical Specifications:

Battery:	
Cell Chemistry	Lithium Iron Phosphate (LiFePO4)
Capacity	1,728Wh (12V, 144Ah),
Cycles	2000+ Cycles to 80% D.O.D
Shelf Life	1 year
Battery Management System	Topo's Battery Management System High Voltage cutoff - 15.2 Low Voltage cutoff - 11.5V Low voltage alarm – below 12V
Inputs/Outputs	
Car DC Input (Blue 50A Anderson connector)	Draw up to 50A from Primary battery DC Voltage range, 12V to 15.5V Built -in ,40A DC-DC Charger
Solar DC Input (Red 35A mini connector)	MAX 25A from regulated OR unregulated solar panels. For 12V system. Will accept unregulated 24V panels
Mains Charge Input (Yellow 35A mini connector)	To only suit Topo's 10A Mains charger Topo's 23A Mains charger
2x 50A Grey Anderson type connectors	Combined total output 100 Amps
2x 35A Grey mini connectors	Combined total output 40 Amps
General:	
Weight:	21kg (144Ah),
Dimensions (L x H x W)	L: 623mm x W: 120mm x H: 310mm (144Ah), Width including mounting brackets L: 623mm x W: 80mm x H: 310mm (144Ah) Mounting brackets turned inwards
Operating Temperature (Charge)	-10° ~ 50° C ~ (14° ~ 122° F)
Operating Temperature (Discharge)	-10° ~ 50° C ~ (14° ~ 122° F)
Optimal Storage Temperature	25° C ~ (77° F)
Warranty	24 months

Frequently Asked Questions:

What kind of Battery does the Long Range lithium use?
The Long Range lithium uses a custom 12V 144Ah Lithium Iron Phosphate (LiFePO4) battery. This battery provides 1,728Wh - a true portable 12V battery. Lithium Iron differs in performance from lithium ion (LiCoO2) in several notable ways.

Can I charge my Long Range lithium through more than one charging input at a time?
Yes, you can charge your unit using one charging input method or all 3 simultaneously Solar, Vehicle and Mains AC.

	Lithium Iron Phosphate	Lithium Ion
Energy Density:	High	Highest
Stability:	Extremely Stable Completely Nontoxic Remains cool at room temperature under normal operating conditions	Higher temperature during normal operating conditions Risk of thermal runaway (could lead to explosion or combustion of battery) Li Ion batteries making use of cobalt are toxic and can be hazardous to dispose of
Shelf Life	~ 1 year	~ 300 days
Discharge Rate	Lower (maintains constant discharge)	Higher (discharge rate can accelerate over time)
Capacity Loss over time (rate of battery degradation)	Lower (Energy density after 1 year becomes approximately the same as Lithium Ion, despite an initially lower density)	Higher

WIRING DIAGRAM

TOPO- LONG RANGE LITHIUM : MODEL : T- LRR144AH

BUILT- IN VEHICLE VOLTAGE SENSE + 40AMP DC/DC CHARGER

WILL AUTOMATICLLY ENERGISE VEHICLE CHARGE CONTACT WHEN
PRIMARY BATTERY IS ABOVE : 12.8 VOLTS AND
DISCONNECT WHEN BELOW : 12.5 VOLTS

