

## 12V Auxiliary Battery Installation Guide

### A Beginner's Guide to Installing a Safe and Reliable 12V Touring System

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#### Introduction

A dual battery system is one of the best upgrades you can make to a touring or camping vehicle. It allows you to run fridges, lighting, charging systems and other accessories without risking a flat starter battery.

This guide covers the basic principles of installing a 12V auxiliary battery system using a DC-DC charger and solar panels while highlighting important safety considerations.

**Disclaimer: This guide is intended as general information only. Always follow manufacturer instructions and consult a qualified auto electrician if unsure.**

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#### Components You'll Typically Need

- Auxiliary lithium or AGM battery
- DC-DC charger
- Battery tray or mounting system
- Solar panel(s)
- Solar regulator (if required)
- Appropriately sized cable
- Circuit breakers or fuses
- Anderson plugs
- Battery terminals
- Cable protection conduit
- Crimping tools and heat shrink



## Understanding The Basic System

A typical setup works as follows:

**Vehicle Alternator**



**DC-DC Charger**



**Auxiliary Battery**



**Accessories (Fridge, Lights, Chargers etc.)**

Optional:

**Solar Panels**



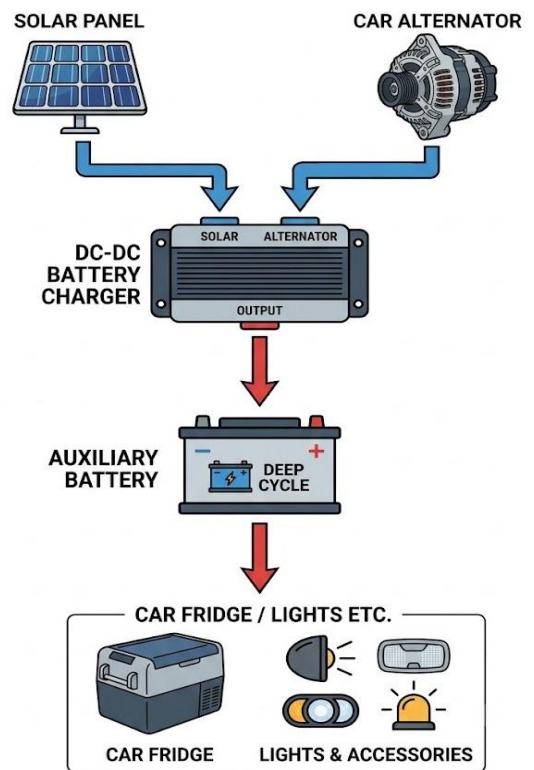
**DC-DC Charger Solar Input**



**Auxiliary Battery**

The DC-DC charger manages charging from both the alternator and solar panels, ensuring your auxiliary battery receives the correct charging profile.

BASIC VEHICLE DUAL BATTERY & POWER SYSTEM FLOW



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## Cable Sizing Matters

One of the biggest mistakes people make is using cable that is too small.

Undersized cable can:

- Cause voltage drop
- Reduce charging performance
- Create excessive heat
- Damage equipment
- Become a potential fire hazard

Always use cable capable of carrying the expected current over the distance being run.

As a general rule, larger cable is usually better than smaller cable when installing charging systems.



## **Fuse Every Power Source**

### **Fuses Protect Wiring**

A common misconception is that fuses protect accessories.

In reality, fuses are installed to protect the wiring from excessive current during a fault condition.

If a cable becomes damaged, shorts to earth or overheats, the fuse should blow before the wiring becomes dangerous.

Every power source should be fused so both your battery and solar.



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## **Every Positive Power Source Must Be Fused**

This includes:

- ✓ Starter battery
- ✓ Auxiliary battery
- ✓ Solar panels
- ✓ Distribution blocks
- ✓ Any high-current accessory circuits

Fuses should be installed as close as practical to the power source.

For example:

Starter Battery

→ Fuse

→ DC-DC Charger

Auxiliary Battery

→ Fuse

→ Accessory Distribution

Solar Panel

→ Fuse

→ DC-DC Charger Solar Input

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## Installing The DC-DC Charger

Most modern DC-DC chargers require:

### Input Side

- Positive feed from starter battery
- Earth connection
- Ignition trigger wire (if required)

### Output Side

- Positive connection to auxiliary battery
- Earth connection to auxiliary battery

Keep cable runs neat, protected and secured away from sharp edges, moving parts and heat sources.

Always follow the manufacturer's wiring diagram for your specific charger.

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## Connecting Solar Panels

Many modern DC-DC chargers include a dedicated solar input.

This allows solar panels to charge the auxiliary battery whenever sunlight is available.

Typical wiring:

Solar Panel

↓

Fuse

↓

Anderson Plug

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Solar Input On DC-DC Charger

The charger automatically prioritises and manages available charging sources.

Benefits of solar charging include:

- Reduced reliance on the alternator
- Extended camping time
- Improved battery charging when stationary
- Reduced fuel consumption

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## Battery Earths Are Important

Poor earth connections are responsible for many charging issues.

Ensure:

- Earth cables are the same size as positive cables.
- Earth points are clean and free from paint.
- Connections are tight and corrosion-free.

A poor earth can restrict charging performance just as much as undersized positive wiring.

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## Protect Your Wiring

Always:

- ✓ Use split conduit or cable protection.
- ✓ Secure wiring regularly with quality cable ties or P-clamps.
- ✓ Avoid exhaust systems and heat sources.
- ✓ Keep wiring clear of moving suspension and steering components.
- ✓ Use grommets where cables pass through panels.



## Final System Check

Before powering up:

- Check all connections are tight.
- Confirm fuse sizes are correct.
- Verify polarity on all wiring.
- Ensure cables are protected.
- Confirm solar polarity is correct.
- Check battery voltage.
- Follow DC-DC charger setup procedures.

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## Final Thoughts

A well-designed dual battery system can provide years of reliable service for camping, touring and off-grid adventures. By using appropriately sized cable, correctly rated fuses and quality components, you'll maximise charging performance while ensuring your system remains safe and dependable wherever your travels take you.

