

KIRAVANS CAMPERVAN ELECTRICS GUIDE

Installing electrics in your campervan is very do-able by the home converter. Be prepared to spend sufficient time researching, and don't scrimp on the planning stage. This guide aims to explain the process simply, starting with the basics.

1. THERE ARE TWO ELECTRIC SYSTEMS

The first thing to understand is that most van conversions contain two separate electrical systems. One is **HIGH VOLTAGE** (240 volts), which is the same as the domestic circuit in your house (dangerous!). The second is **LOW VOLTAGE** (12 volts), which is powered by a leisure battery.

2. HOW THE TWO SYSTEMS WORK TOGETHER

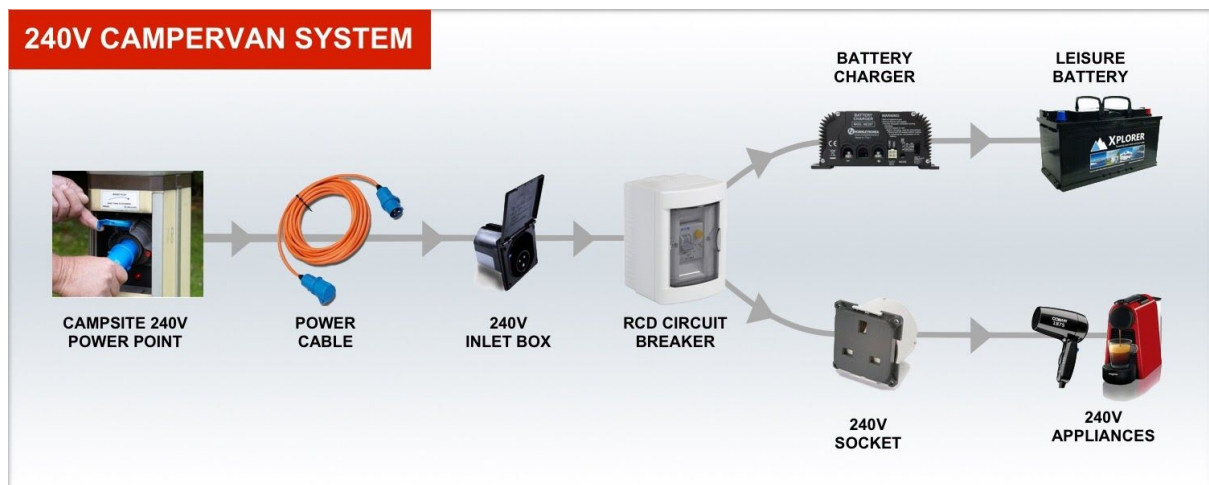
HIGH VOLTAGE (240V) AC CIRCUIT	LOW VOLTAGE (12V) DC CIRCUIT
Power only available when your van is stationary and connected to a campsite/home 240v outlet via a cable.	Power available anywhere, any time , as long as the leisure battery has sufficient charge.
Used for two main purposes: <ol style="list-style-type: none">1. Powers an on-board battery charger to give your leisure battery a good quality charge.2. Powers standard 3-pin sockets in your van so that domestic appliances can be used eg. hair dryer, coffee maker.	Used for built-in 12volt systems, such as: <ol style="list-style-type: none">1. Interior lights2. Water pump3. Microswitch tap4. Compressor fridge5. Gas hob electronic ignition6. USB charging points
	ALSO can be converted back into 240V AC using an inverter. This would enable you to use a mains appliance off-grid but does drain the leisure battery faster.

3. THE 240 VOLT SYSTEM

You will need a campsite power-point and a mains hook-up cable to connect to a 240v inlet socket mounted to the outside of your van.

This then needs to feed to an RCD (Circuit Breaker) inside the van for safety. From the RCD you would probably want to run two 240v cables:

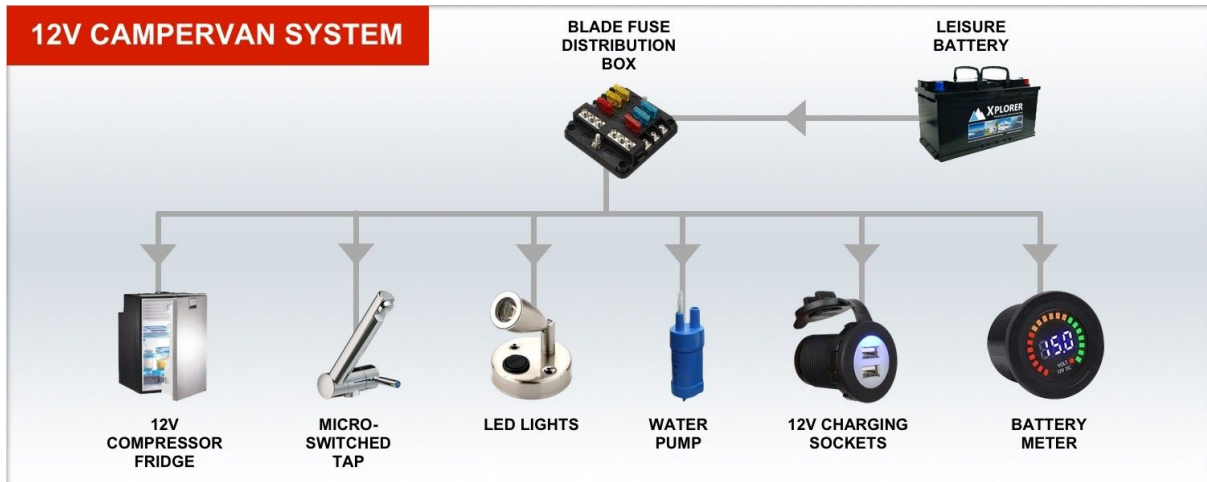
- 1st to your 240v power sockets
- 2nd to a 240v battery charger



The power sockets will then only work when you are plugged into the mains at a campsite. Likewise, the battery charger will only charge your leisure battery when your van is hooked up to the mains.

NB: High voltage (240V) circuits should be installed & checked by a suitably qualified professional.

4. THE 12 VOLT CIRCUIT



The leisure battery and 12v circuit is used to power low voltage items like your fridge, lights, water pump, USB charging sockets etc. You could, of course, use your van starter battery but the risk is that you might drain it completely and not be able to start the van.

It's also good practice to avoid messing with your original vehicle electrics as it will just make things complicated if you have to get any work done to it in future.

5. KEEPING YOUR LEISURE BATTERY CHARGED

Now, in a typical small campervan set-up, an average sized leisure battery will probably run all your electrical needs for a couple of days before it needs charged up. Luckily there are a few different ways to do this. You can choose how many of these systems to instal in your van.

Mains powered battery charger	As mentioned above, this gives your leisure battery the fastest and highest quality charge. Available when van is plugged in to a 240v supply at home or at a campsite.
Charge whilst driving	Let your van's engine charge the leisure battery whilst you are driving. Depending on the age of your vehicle you will need to instal either a basic relay, a Voltage Sensitive Relay (VSR) or a Battery to Battery charger.
Solar Panel	Take advantage of the sun's energy and stick a solar panel on your roof. You will also need a Regulator to make it work.

6. 240v BATTERY CHARGERS

There are lots to choose from. Basically, the more expensive battery chargers will do multi stage charging & battery maintenance. These are definitely worth the money as your leisure battery will last a lot longer and hold more charge. Better ones will also have a fan to keep the charger cool so it works more efficiently, and they will have a higher output to charge your battery faster.



Remember that a 240v battery charger will always do a better job at maintaining your battery than any other charging method. It is always worth using periodically to keep your battery in good condition.

7. CHARGE WHILST DRIVING (Split Chargers, Voltage Sensitive Relays, Battery to Battery Chargers)

When your van's engine is running it generates 12 volt power using the *alternator*. This power is used to keep your starter battery (usually located under the bonnet) charged up.

If you are converting your van into a campervan, you need to find a way to use some of this *alternator-generated* power to also charge your leisure battery (usually located in the rear of the van or under a front seat).

There are a few ways to do this and your chosen technology will depend on the age of your vehicle and the type of engine it has.

1. Simple Split-Charge Relays - Back in the 'good old days' (think 15 years ago and more), folks used to just wire in a simple relay between the alternator and the leisure battery. There was a D+ connection wire which activated the charging circuit when the engine was started and the alternator happily charged both the starter and leisure batteries whilst driving along. This set-up is still used in some vehicles today but by the time the VW T5 came along many converters started using a VSR...
2. VSR (Voltage Sensitive Relay) - This little box is wired in between the starter and leisure batteries. When the engine is running, the VSR senses when the starter battery has had enough charge and then sends any extra to the leisure battery. This system worked really well until the introduction of the Euro6 engine (VW T6), with all its clever environment-saving efficiencies.
3. Battery to Battery charger - The clever Euro6 engines deliver just enough power from the alternator to run the van's driving systems and then they shut off. So, effectively, there is no spare power generated to charge a leisure battery.

