RAYNE AUTOMOTIVE

12V/240V CONVERSION KIT

FITTING GUIDE

2024

Vol 1.5

RAYNE AUTOMOTIVE

Contents:

Information, Precautions & Maintenance
- Installation requirements
- Wire routings
- Protection against thermal effects
- Fixed Gas System Bonding
- Notes on installation labelling.
- Owners Handbook.

Fitting instructions
- Core wiring kit (1001)
  - Split Charge System
  - Auxiliary fuse box
  - Control panel
  - Wiring looms
- Mains wiring kit (1002)
  - Consumer unit
  - Battery charger
- Inverters (1003)
  - Mounting
  - Connecting
- Solar panels (1004)

Testing and Certification

Additional Information, Schematics & How To's
- Creating a good earthing point
- Batteries -

Troubleshooting

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Information, Precautions & Maintenance

PLEASE READ THE FOLLOWING INFORMATION **BEFORE** INSTALLATION
PLEASE NOTE, UPON PLACING AN ORDER OF GOODS YOU ARE REQUIRED TO READ AND SIGN OUR TERMS & CONDITIONS WHICH SET OUT YOUR LEGALLY BINDING CONTRACT WITH RAYNE AUTOMOTIVE LIMITED.

Please note: electricity can be **dangerous**. installation /maintenance should only be carried out by a competent individual.

All kits MUST be fitted by a competent individual in accordance with the BS7671:2018 and BS EN 1648 part 2 requirements or local regulations.

All relevant local guidelines and regulations must be followed. Any failure to do so may result in an unsafe installation and the warranty being voided.

If you are in any way in doubt over the installation, please contact a competent person with the relevant experience to complete your installation process and fill out the necessary paperwork.

Installation requirements

All installations should have an Electrical installation certificate (EIC)(as set out in appendix 6 of the BS7671:2018 (18th edition)) completed before use and Any amendments to any product supplied must be accompanied by a minor electrical installation works certificate filled out by the person who modified the system, detailing all modifications, reason, purpose and location as well as the relevant test results to confirm the modifications are sound. This should be submitted to the manufacturer for their records, failure to do so may invalidate any warranty you may have.

It is your responsibility to ensure that the installation complies with all of the manufacturers' instructions and the BS7671:2018 (18th edition) installation guidelines and after installation to complete an Electrical Installation Certificate (EIC). The EIC will only be valid with a Schedule of Inspections and Schedule(s) of Test results.

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You should have a regular as needed, not exceeding 3 yearly, periodic Electrical Installation Condition Report (EICR) completed by a component person, to assess the electrical system and identify any hazards that may have arisen over time, (such as loose connections or deteriorated insulation).

This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the product by a person responsible for their safety. Children should be supervised to ensure that they do not play with the product.

Wire routings

Should be either horizontal or vertical, not diagonal and should be marked either inline with the socket, origin or clearly marked.

12V and 240V wires should be run at least 100mm apart where possible and should not have anything stored on them or any danger of damage to the cables.

All cables should be securely mounted every 250mm on horizontal runs and 400mm on vertical runs unless they’re in a rigid conduit, Cable fixings should not be the same as electrical connections, (use a mix of cable ties, P-clips and cable tie adhesive bases to make sure wires are well fitted).

When passing through any metalwork or any sharp edges cables should be protected with a grommet, bush, gland or other suitable protection.

Cables should avoid being routed in areas with limited access such as sealed voids. This prohibits proper inspection and potential maintenance. If a cable must be routed in an area of restricted access, please ensure it’s suitably protected against damage and does not have any joins or connections in those areas of limited access.

No cables of any kind should run through a gas compartment/locker unless they are to service a gas gauge or sensor, in which case they should be 12V or less and suitably protected.

Wiring is often made with PVC outer sleeving, this should not come into contact with polystyrene as this may cause damage to the electrical insulation.

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Please try to avoid contact between the electrical insulation and thermal van lining insulation. If this is unavoidable, use a suitable conduit to protect the wire.

Excess cable shouldn't be coiled tightly away, if you have excess cable, leave in as large and loose of a coil as possible. The wire is specified to dissipate heat. Coiling will reduce the effectiveness of this.

NEVER disconnect a component/circuit by pulling the cable. This can cause damage that may not always be visible. Always disconnect the cables using the plug/housing/terminal and if necessary the appropriate tool.

Protection against thermal effects

Electricity can be very dangerous and cause burns, both internal and external as well as fire. Electrical equipment can generate heat.

To protect against thermal effects. Keep combustible materials away from electrical items and cable joints/terminations. Ensure any heat generating equipment has a suitable guard fitted to prevent touching the equipment whilst it is hot.

Fixed Gas System Bonding

If you are having a 240v supply (via mains hook up or a power inverter) and are using metal gas pipes you will need a suitable bonded connection between the pipe, the chassis and the main earthing terminal (MET) with a resistance not exceeding 0.5 ohms.

Notes on installation labelling.

Bonding connections should be denoted with a permanent label stating "safety electrical connection, do not remove".

Every vehicle with electrical hook up should be fitted with a BS7671:2018 compliant "instructions for electricity supply" notice.

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Owners Handbook.

New van conversions should be supplied with an owners handbook. Please download and fill out our template for the electrical section here

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Fitting instructions

Please note: this walkthrough is based on a standard kit and as such may not apply completely or in part to your individual kit, if at any stage you are unsure please get in touch.

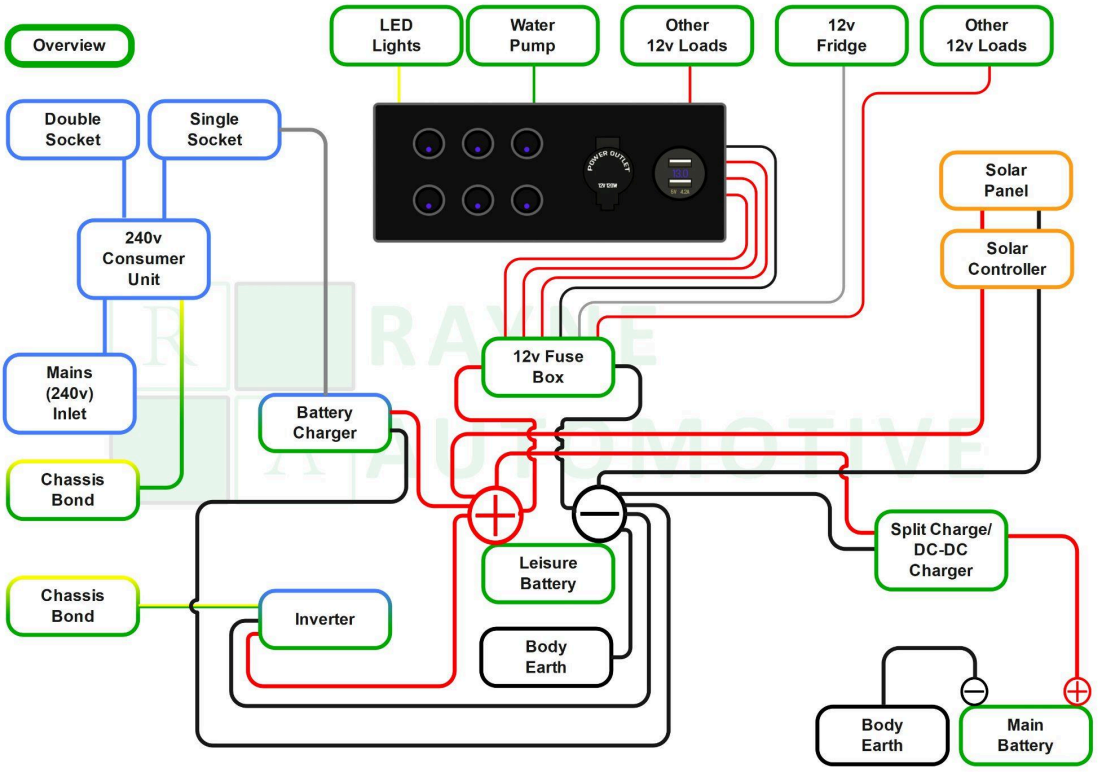
QR codes: throughout this walkthrough, you will see QR codes, these link to relevant information or videos showing that part of the installation. Either click on the link next to the code or scan them using the camera on your smartphone.

Overview

As each part of the guide, for the core wiring kit, mains wiring, inverters and solar panels can be used independently of one and other, you should not make your final electrical connections until you have completed the whole installation.

Below is an overview diagram illustrating how the various parts of the system connect together.

Please note this diagram is for illustrative purposes only and the actual content of your kit may vary based on products ordered and availability. For more detailed information on fitting please refer to the relevant section in the fitting guide or help centre on our website.



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Core wiring kit (1001)

Select the desired mounting location for your leisure battery, ensuring it is protected from mechanical damage, with easy access for maintenance, removal etc. The battery must be secured and prevented from moving when the vehicle is in motion in a sealed compartment, with no other electrical items inside the compartment, (airtight battery box vented to the outside or similar).

You should also have the following warning notices, clearly visible, located near the battery.
“Switch off all appliances and lamps before connecting or disconnecting the battery.”
“Any replacement battery shall be of the same type and specification as originally fitted and specified by the manufacturer.”

Split Charge System

Step 1

Before starting any work involving a vehicle electrical system the battery should always be isolated.

Route the split charge main lead from the engine battery through to your leisure battery location (the split charge lead will usually be a thick **BLACK** cable, however, if you are using a DC-DC charger the cable will be **RED**)

Take care when routing to avoid any harsh bends and wherever there are areas where the cable may suffer from wear or abrasion (such as where it passes through the bodywork of the vehicle) it **MUST** be adequately protected The cable should be clipped every 400mm on vertical runs and 250mm on horizontal runs.

Always leave connecting the main lead to your engine battery until the end of the install, connecting it just before your main and leisure battery negative.

The next step will depend on the type of split charge system you have.

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CTEK DC-DC CHARGER

VICTRON ORION DC-DC CHARGER

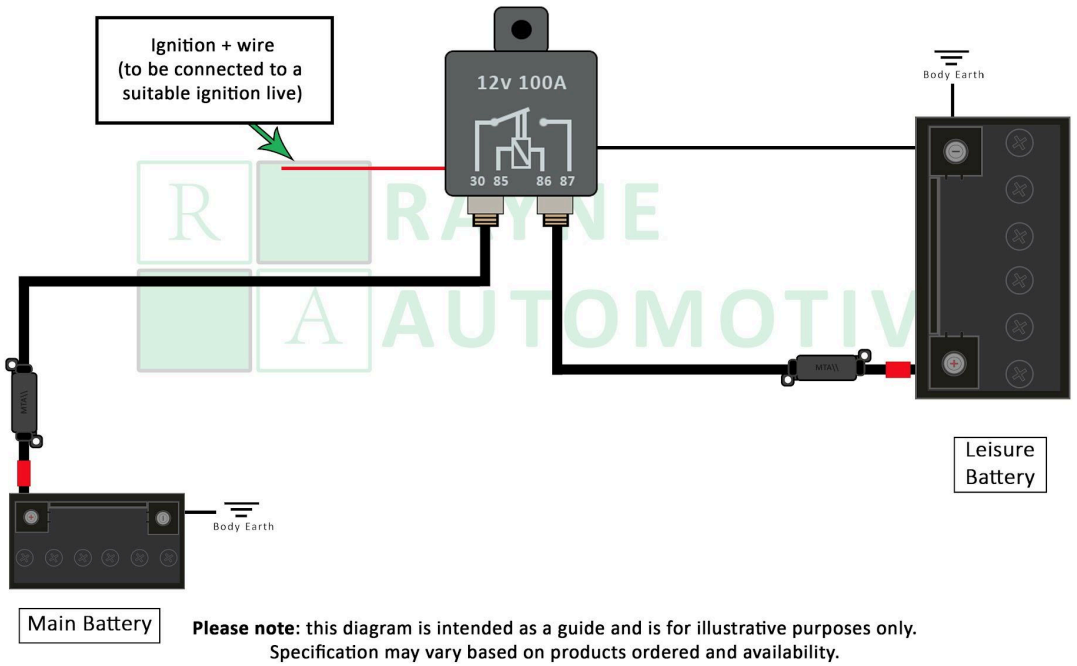
VOLTAGE SENSING RELAY (VSR)

For ignition triggered relays - continue to step 2

For voltage sensing relays - skip to step 3

For DC-DC Chargers - please refer to the schematics below in addition to the instruction manual provided with the unit.

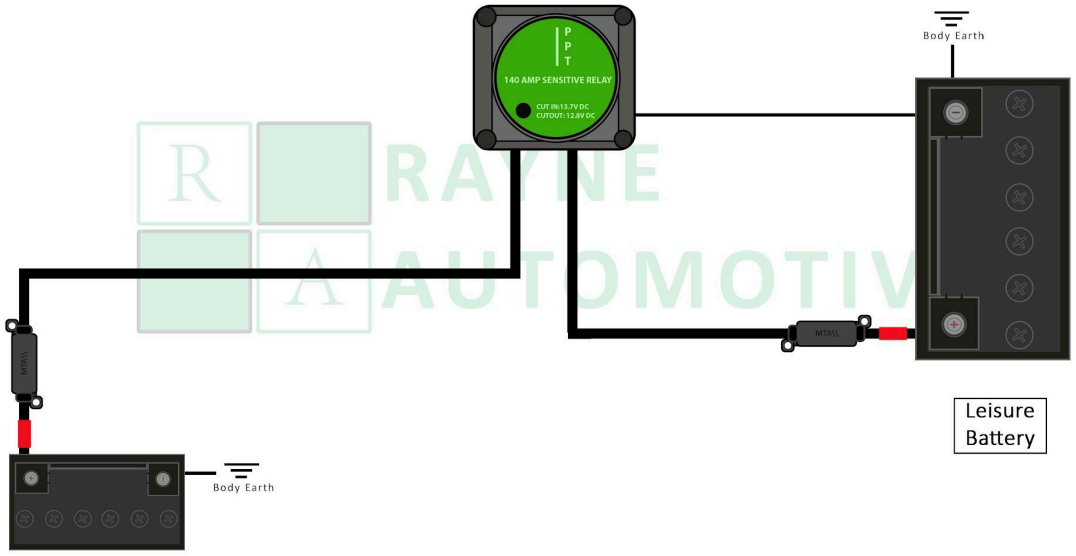
Ignition triggered split charge kit schematic



Please note: this diagram is intended as a guide and is for illustrative purposes only. Specification may vary based on products ordered and availability.

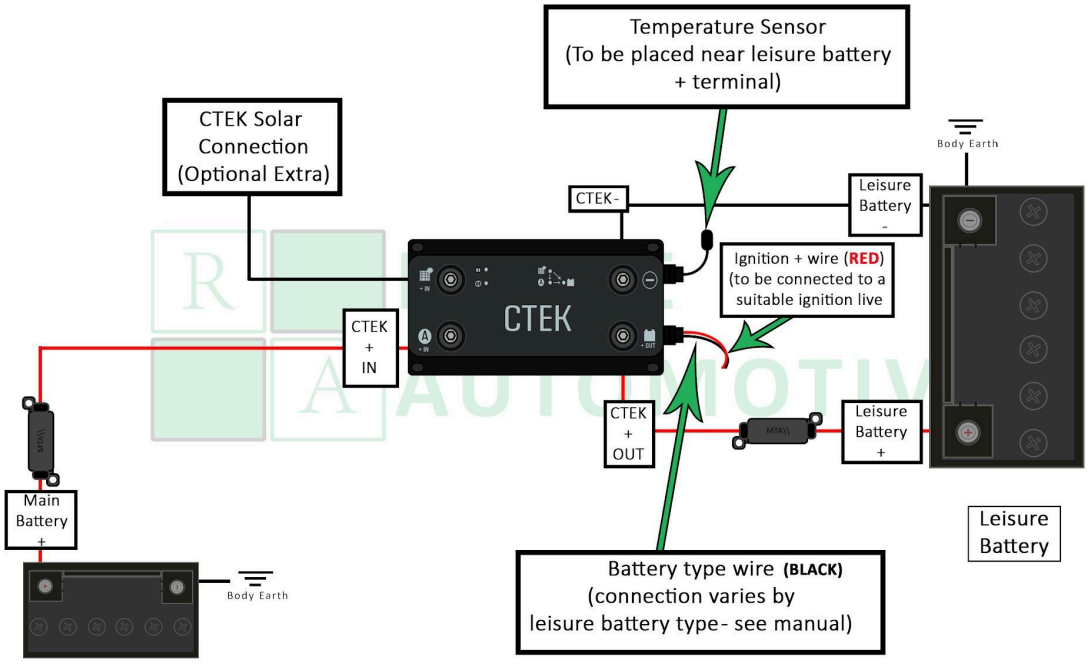
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Voltage sensing relay (VSR)
Schematic



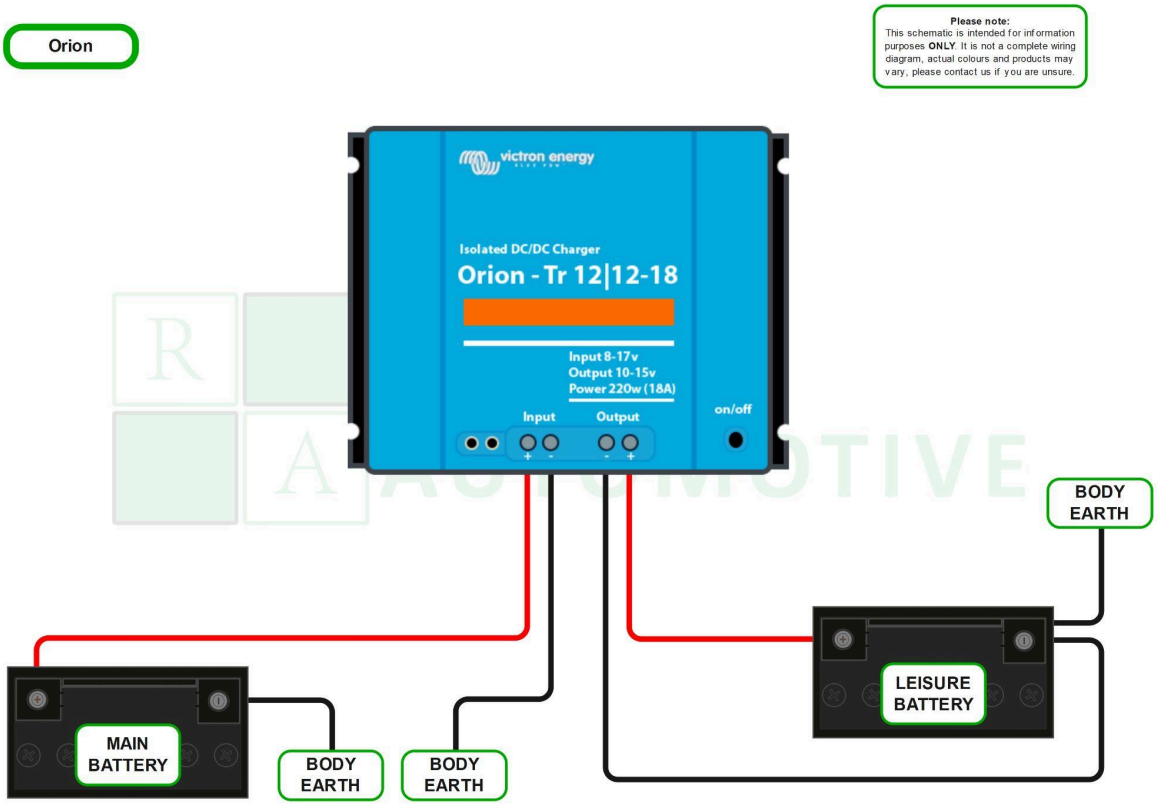
Please note: this diagram is intended as a guide and is for illustrative purposes only. Specification may vary based on products ordered and availability.

CTEK Wiring Schematic



Please note: this diagram is intended as a guide and is for illustrative purposes only. Specification may vary based on products ordered and availability.

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If you have the Victron Orion Smart, click here to see the full fitting section for this below.

Step 2 -

This only applies if you are fitting an ignition triggered split charge kit or a CTEK D250SE. If you have a VSR or Victron Orion: skip to step 3.

Run the **RED** ignition trigger wire to a suitable ignition live and connect into it. (using the snap-lock connector or piggyback fuse if necessary)

For more information on ignition lives please refer to **'5 easy steps to finding an ignition live'** in the Additional Information, Schematics & How To's section.

Step 3 -

Mount the split charge relay/DCDC charger safely near the leisure battery and run the thin **BLACK** relay earth wire to the leisure battery **NEGATIVE** terminal (though at this stage do **NOT** connect either battery terminal to the battery for safety)

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Step 4 -

Find a good, clean and suitable place to connect your main leisure battery earth lead to (the lead itself is usually around 50cm long with a **NEGATIVE** battery terminal at one end and an M10 eye at the other) often seat bolts or unused seat belt mountings are good earth points.

Tip: If you have two many terminals for one earthing point you can make multiple earth connections to the body of the vehicle

Tip: Clean up the face of the earth point with some abrasive paper until you can see bare metal then apply some electrical terminal grease for best results.

For more information on creating a good earthing point please see '**Creating a good earthing point**' in the Additional Information, Schematics & How To's section.

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Step 5 -

Auxiliary fuse box

Mount your auxiliary fuse box using suitable screws and allowing space for safe wire routing.

Step 6 -

Control panel

Each control panel as standard is fitted with a 12v socket, a dual USB and voltmeter and 6 switches (5 are available for use and one will operate the 12v socket and USB/Voltmeter)

Please note: the 3 digit voltage readout will only appear between the USB ports when connected to 12v and the top right-hand switch is turned ON. It's not visible at all until it's turned on.

We will provide power from the fuse box to each switch however we will only provide power from the switches to the appropriate components marked on your layout sheet meaning you may not necessarily have output looms on each switch as standard.

To add extra looms beyond what we have supplied (this should be accompanied by a minor works certificate), ensure you have correctly sized the wire and taken into account the loads of the other components running through the switch panel. Then you can put the live spade into a spare point on the live connector plug corresponding to an unused blue wire. The earth wire from your added loom should be added to a spare terminal in the 8 pin plug that is wired with the black wires. These connections are made using 6.3mm female locking spade terminals.

Mounting -

(this does not apply to c-line modular panels)

If your control panel has screw holes then simply use the template provided to cut a hole in the desired location then use the screws provided to fix the panel in place (in some cases it may be necessary to drill pilot holes for the screws) **Be careful NOT to overtighten the screws as this may crack the panel.**

Step 7 -

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Wiring looms

In systems where we have pre-built the wiring looms, care should be taken to route these as per the wire routings section above.

The looms attached to the control panel plugs should be routed from the control panel towards the component, fuse box looms can be routed in either direction.

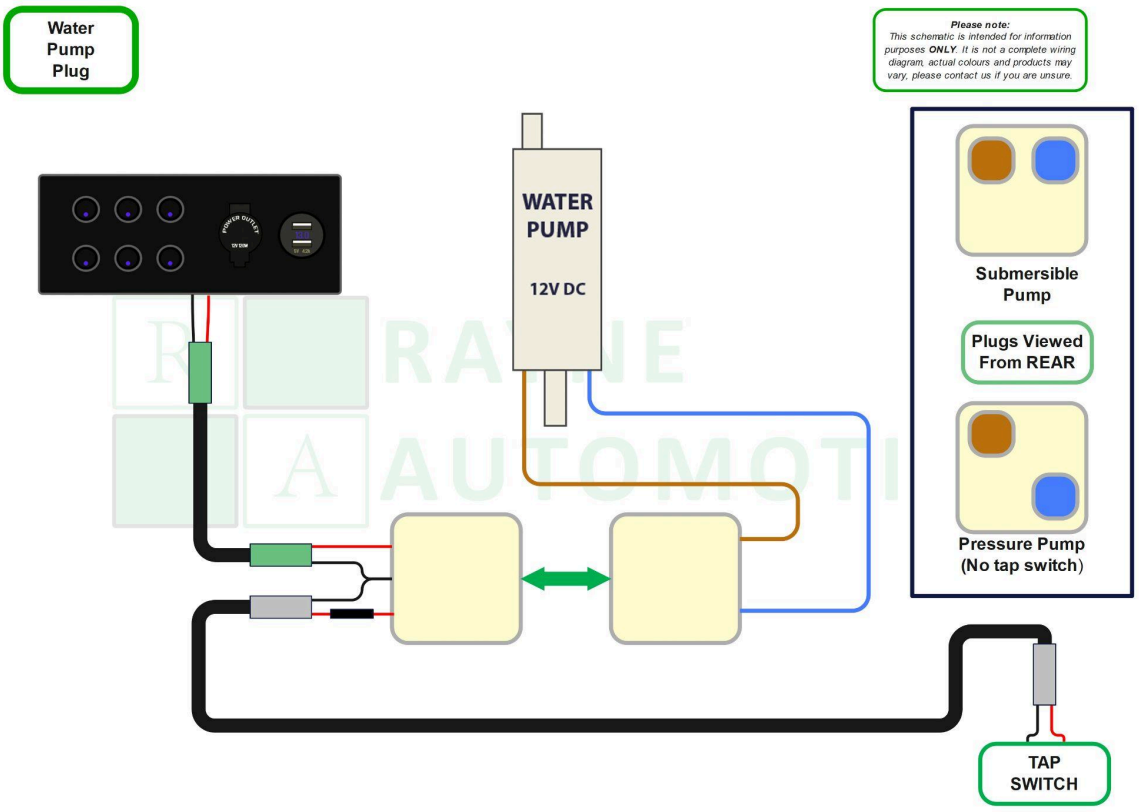
Once your looms are routed in place the wires should be joined to the component using a suitable crimp terminal applied with a ratchet crimping tool. We advise against using bullet terminals, they are prone to connection issues. In the looms provided, the BLACK wire should be joined to the NEGATIVE connection of your component and the coloured wire of the loom should be joined to the positive of your component.

If you have a water pump, they are generally wired in series with the tap switch as per the diagrams below.

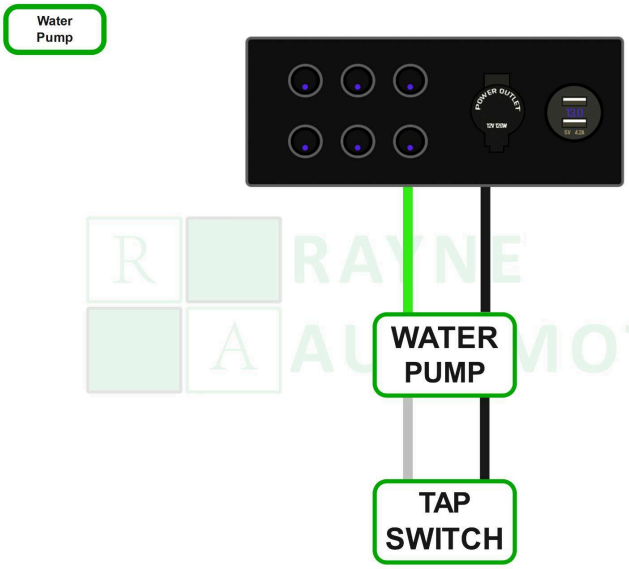
If you have a pressure pump system (rather than a tap switch operated system) then you can simply join the GREY and BLACK wires labelled ‘Tap Switch’ together and the loom will function correctly for that type of pump/system.

Water pumps after August 2024:

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Tip: It can be a good idea to use spade connectors to join to your 12V components as they are removable if you ever need to remove your fridge, etc.



After routing and connecting your looms to the component, you should now connect to the fuse box and earth connection or earth block as labelled.

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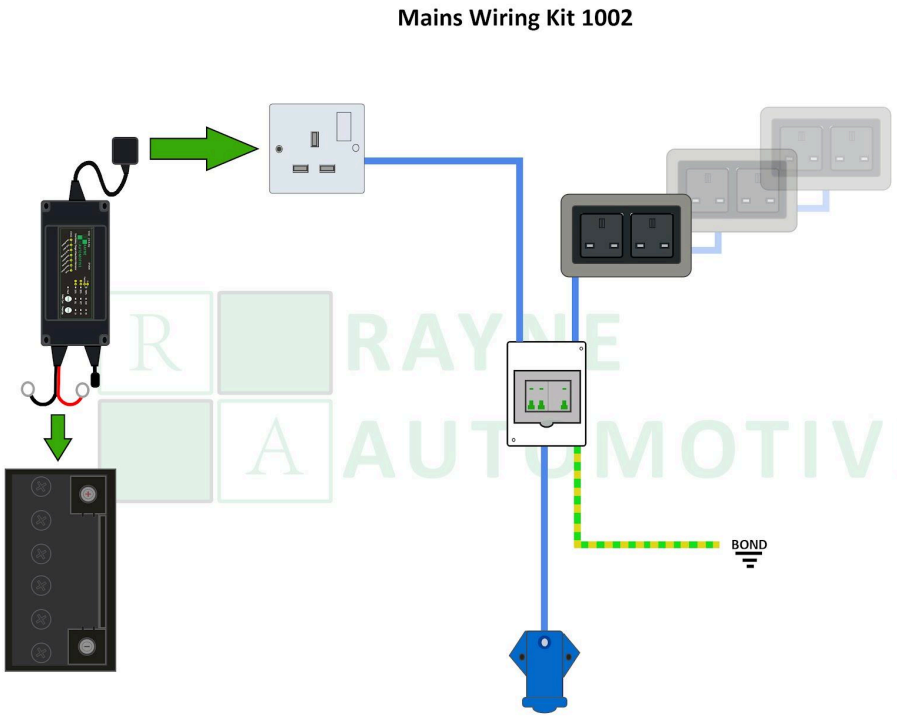
If you are not adding any more elements to the system, you can now begin to make your final connections. Before connecting the terminals to the battery, you should have your 12V system inspected. Then the final connections can be made, positive first negative last, followed by the tests detailed below.

If you are connecting your terminals to the battery and you have a Lithium leisure battery, you should have an MRBF fuse in the system (pictured below). This bolts through the hole onto the leisure battery positive terminal bolt and then the cartridge fuse drops over the threaded post and all positive connections are made on top of the cartridge fuse, this ensures the battery has secondary protection against short circuits.



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Mains wiring kit (1002) Stand alone



Please note: This diagram is for illustrative purposes only. Actual specification may vary based on products ordered and availability. **Electricity can be dangerous**. installation /maintenance should only be carried out by a competent individual following the relevant guidelines. If at any point you are unsure, stop immediately and seek the relevant assistance.

Step 1-

Consumer unit

Select the desired location for mounting your consumer unit, this should be somewhere it is accessible in case you have to reset the RCBO or RCD device. You should be able to reset this without the need for any specialist tools.

Tip: The MCBs/RCDs are in their "ON" position when the breaker is up towards the brand printed on the top of the device

To mount the consumer unit, remove the cover and screw securely using the 4 screw holes in the base plate. Then reattach the cover using the screws provided. *Do not tamper with the connections that have been made inside the consumer unit*.

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The cables from the consumer unit should be securely clipped in place using a cable tie and cable tie mount or another suitable fixing within 5cm of the consumer unit.

Step 2-
From the consumer unit, run the cables labelled “Double socket” and “Inlet socket” where each component will be. These cables should be kept 100mm away from any 12V cables where possible and should be fixed every 400mm on vertical runs and 250mm on horizontal runs. *Leave the last clip or two until you have made your electrical connections for an easier installation.*
You can now connect the double socket and inlet socket using the guides below in Additional Information, Schematics & How To’s

If you have multiple double sockets, please see our radial socket guide here.

Step 3 -
For the single socket, select the desired entry point for the cable into the backbox and then knock the break-out out, screw the box down securely and then feed the cable labelled “Single socket” into the backbox. Strip back the outer insulation by approx 6cm and make the electrical connections

Tip: We recommend using ferrule terminals for all screw terminal connections.

Step 4 -
Take the **GREEN/YELLOW** bonding wire from the consumer unit and attach this to a cleaned chassis point, this is an essential safety connection. Ensure the bonding point is prepared as with a good earthing connection. This connection should then be preserved with either a wax spray to prevent corrosion or a suitable conductive terminal grease. The connection should then display the wording “Safety electrical connection, do not remove”.

Step 5 -
If you have fixed gas pipes in your installation. From this chassis bonding point, a single conductor should be run to your gas pipe bonding connection. This should also have the wording “Safety electrical connection, do not remove”.

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Step 6 -

Battery charger

Mount your mains battery charger (if supplied) using suitable screws and allow at least 10cm all around for ventilation and cooling.

The 3 pin plug on the charger will need to be plugged into the single plug socket provided and left turned on (this is usually white and will also need to be securely mounted in an accessible place).

The 12v output wires will need to be placed onto your leisure battery or busbars if you have them, (as before: do not make any final connections until the system is in place and it is safe to do so) the **RED** wire is the live and will need to go to the positive terminal on the leisure battery, the **BLACK** wire is the earth and will need to go to the negative terminal on the leisure battery.

Step 7 -
If you are not adding any more elements to the system, you can now begin the testing and inspection as below.

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Mains wiring kit (1002a) with inverter charger (Multiplus)

Step 1-

Consumer unit

Select the desired location for mounting your consumer unit, this should be somewhere it is accessible in case you have to reset the RCBO or RCD device. You should be able to reset this without the need for any specialist tools.

Tip: The RCBOs are in their "ON" position when the breaker is up towards the brand printed on the top of the device

To mount the consumer unit, remove the cover and screw securely using the 4 screw holes in the base plate. Then reattach the cover using the screws provided. *Do not tamper with the connections that have been made inside the consumer unit.*

The cables from the consumer unit should be securely clipped in place using a cable tie and cable tie mount or another suitable fixing within 5cm of the consumer unit.

Step 2-

From the consumer unit, run the cables labelled "Double socket" and "Inlet socket" where each component will be. These cables should be kept 100mm away from any 12V cables where possible and should be fixed every 400mm on vertical runs and 250mm on horizontal runs. *Leave the last clip or two until you have made your electrical connections for an easier installation.*
You can now connect the double socket and inlet socket using the guides below in Additional Information, Schematics & How To's

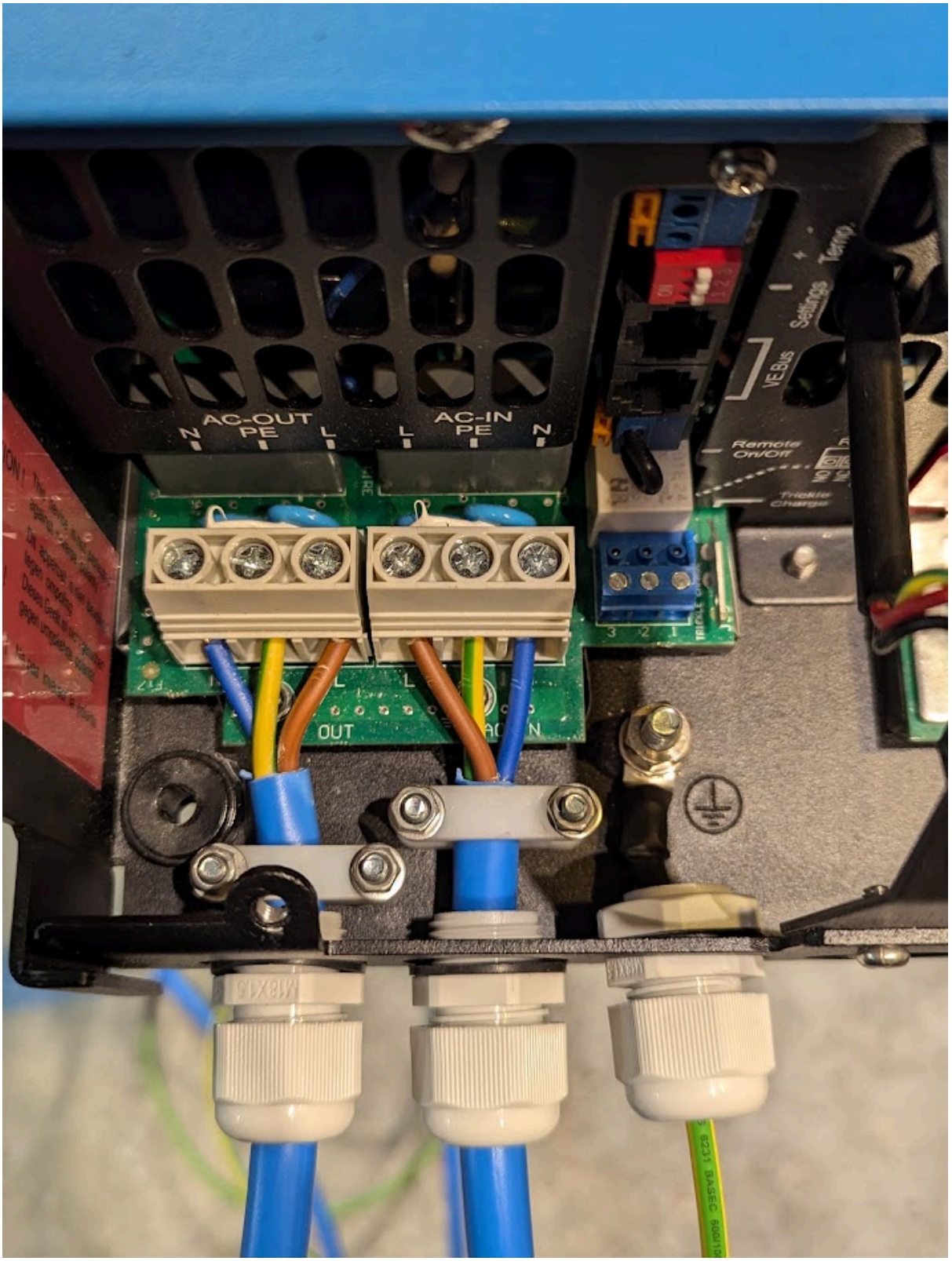
If you have multiple double sockets, please see our radial socket guide here.

Step 3 -

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Run the two cables from the consumer unit to the multiplus in and out.
Connect the multiplus in to the AC IN and the Multiplus out to the AC OUT.

Tip: We recommend using ferrule terminals for all screw terminal connections.



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Step 4 -
Take the **GREEN/YELLOW** bonding wire from the consumer unit and from the multiplus body and attach this to a cleaned chassis point, this is an essential safety connection. Ensure the bonding point is prepared with a good earthing connection. This connection should then be preserved with either a wax spray to prevent corrosion or a suitable conductive terminal grease. The connection should then display the wording “Safety electrical connection, do not remove”.

Step 5 -
If you have fixed gas pipes in your installation. From this chassis bonding point, a single conductor should be run to your gas pipe bonding connection. This should also have the wording “Safety electrical connection, do not remove”.

Step 6 -
If you are not adding any more elements to the system, you can now begin the testing and inspection as below.

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Inverters (1003)

Inverters are designed to provide a low power 240v supply by converting the DC current from your leisure battery into AC current (and as such should be treated with the same caution as any other 240v appliance). Please see the information, precautions and maintenance section of this document for more information.

It is worth remembering that inverters are rarely suitable as a substitute for a mains hook up. You should never plug in an appliance which exceeds the inverters maximum wattage rating, nor should you plug in a device which is not suited to your type of inverter. Always switch the unit off after use to preserve battery power and reduce wear.

Your inverter is supplied with an additional safety device (such as a plug-in RCD or a plug socket blank) these **MUST** be used, failure to do so will invalidate any warranty and may be dangerous. All inverters should be protected with an RCD device.

Step 1-

Mounting

When mounting your inverter you must always do so in a location which allows for safe cable routes in and out, adequate ventilation and airflow as well as being accessible for switching the unit on and off before and after use.

The inverter should be securely mounted using suitable screws and the mounting points/feet built into the unit. Do not mount the inverter so that it is in direct contact with the body of the vehicle.

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Step 2 -

Connecting

Please connect the RED ended positive cable(s) to the positive connection of the inverter, the black cable(s) to the negative 12V connection on the inverter. Then leaving any isolator switches off, run the cables back to the battery and connect the positive to the leisure battery first, then the negative last (only do this when you're ready to test the system).

Not all inverters have reverse polarity protection so please ensure you connect the **RED** cable to the positive/leisure battery + and the **BLACK** cable to the leisure battery - / earth. **Reversing the polarity can be dangerous and can cause the unit to fail**.

If you have a plug-in RCD device with your inverter, these are a non-latching device. Once you've turned the inverter on, you will need to press the reset button to engage the RCD and enable its use.

If your inverter is supplied with a separate '**Chassis Bond**' cable this must be attached to the inverter body earth terminal and to a suitable earthing point on the vehicle and labelled **'Electrical safety connection do not remove'**.

If you are not adding any more elements to the van electrical system, you can now begin to make your final connections detailed below. If you are, please move onto the relevant section of the instructions and continue with your install before making your final connections.

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Solar panels (1004)

When fitting solar panels into your system you should always adhere to the advice (this can be found under the information, precautions and maintenance section) on safe routing and protection of the cables (particularly where they pass through the body of the vehicle)

Step 1 -
You must test if a solar panel is functioning correctly before you fix it to the roof as it can be very tricky to remove once it's up there, especially flexible solar panels. To do this, simply set it up using the wiring, controller and battery and using the display on your controller, see that the panel is charging the battery. This is only a very basic test, but it will catch most panel faults that would occur in new panels.

It is recommended that all rigid panel mounts are fixed down using both a mechanical fixing (nut & bolt, rivnut etc) **AND** a suitable adhesive, make sure that any fixings you choose are suitable to use in an outdoor environment where they will be constantly exposed to the elements.

Flexible panels should have a bead of adhesive all the way around the outside apart from a few small gaps at the back to prevent pressure build up. Without this the panel may flex too much in the wind as you drive and it can cause a premature failure of the panel.

Step 2 -
It is always best to do a 'dry run' and check that your chosen wire routing and panel locations are compatible **BEFORE** drilling any holes or securing anything in place.

The wiring will need to be passed through the cable glands from the inside out **BEFORE** connecting the plastic MC4 housings to the terminals, once the wiring is in place with sufficient slack you can then tighten the gland nuts until the rubber seal gently grips the outer of the solar wire, take care not to overtighten these nuts. The MC4 connectors are designed to be located outside of the vehicle.

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For more information on fixing solar panels, see the guides below.

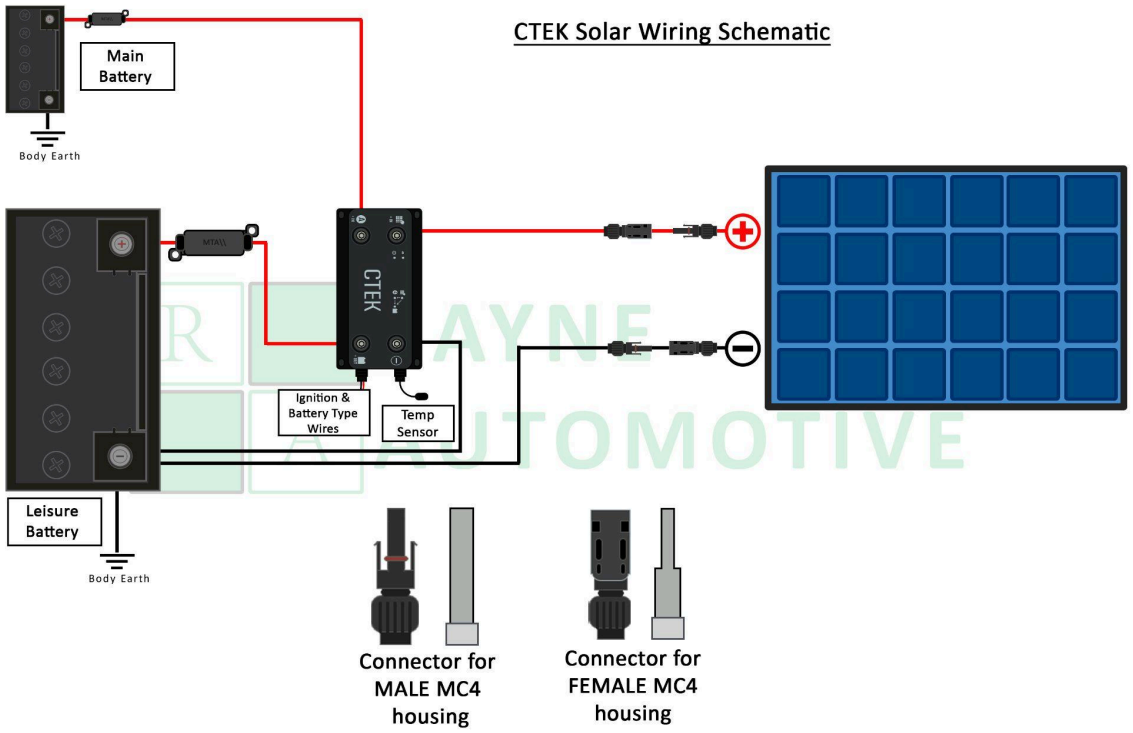
Full fitting instructions for rigid solar panels	Full fitting instructions for flexible solar panels

If you are not adding any more elements to the van electrical system, you can now begin to make your final connections, detailed in the diagrams below and the manuals above, always leave your leisure battery negative disconnected until last. If you are adding more elements, please move onto the relevant section of the instructions and continue with your install before making your final connections.

Below you will find examples of how to wire solar panels into a system:

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Using a CTEK -

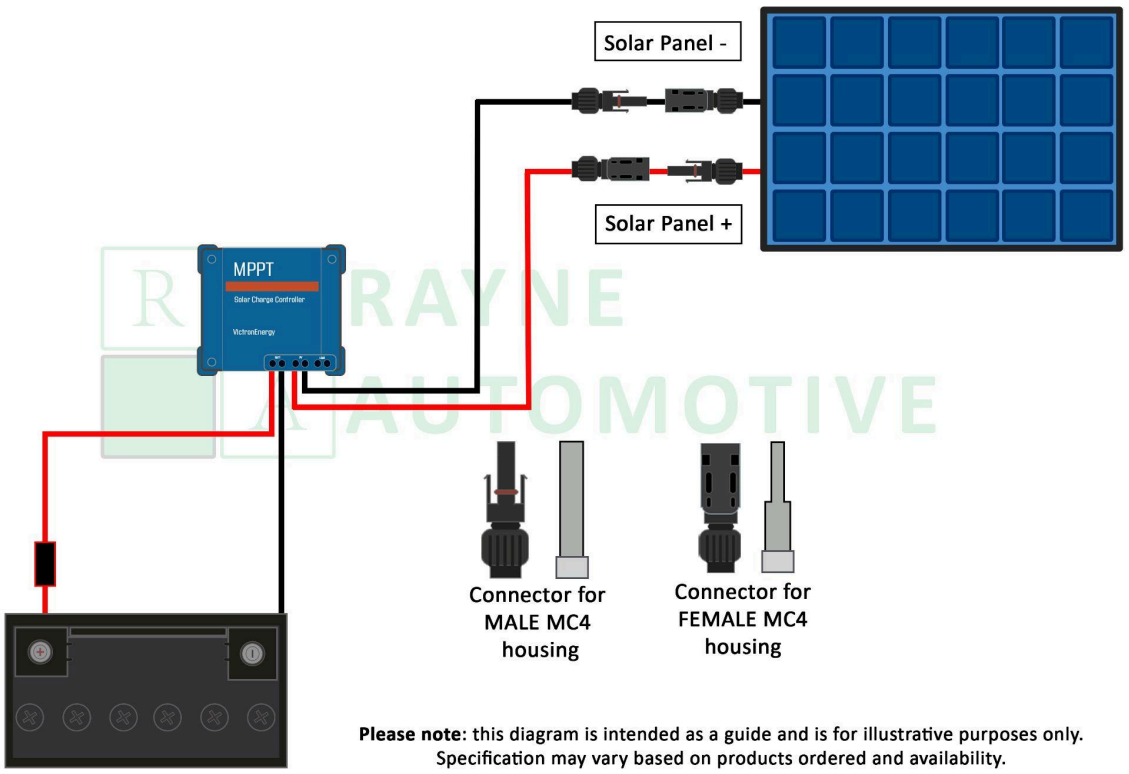


Please note: this diagram is intended as a guide and is for illustrative purposes only. Specification may vary based on products ordered and availability.

When using the built-in MPPT solar controller of a CTEK D250SE it is important to use a solar panel that has a maximum rating of less than 23.3vOC and is under 200w to avoid damage to the unit and ensure correct functionality.

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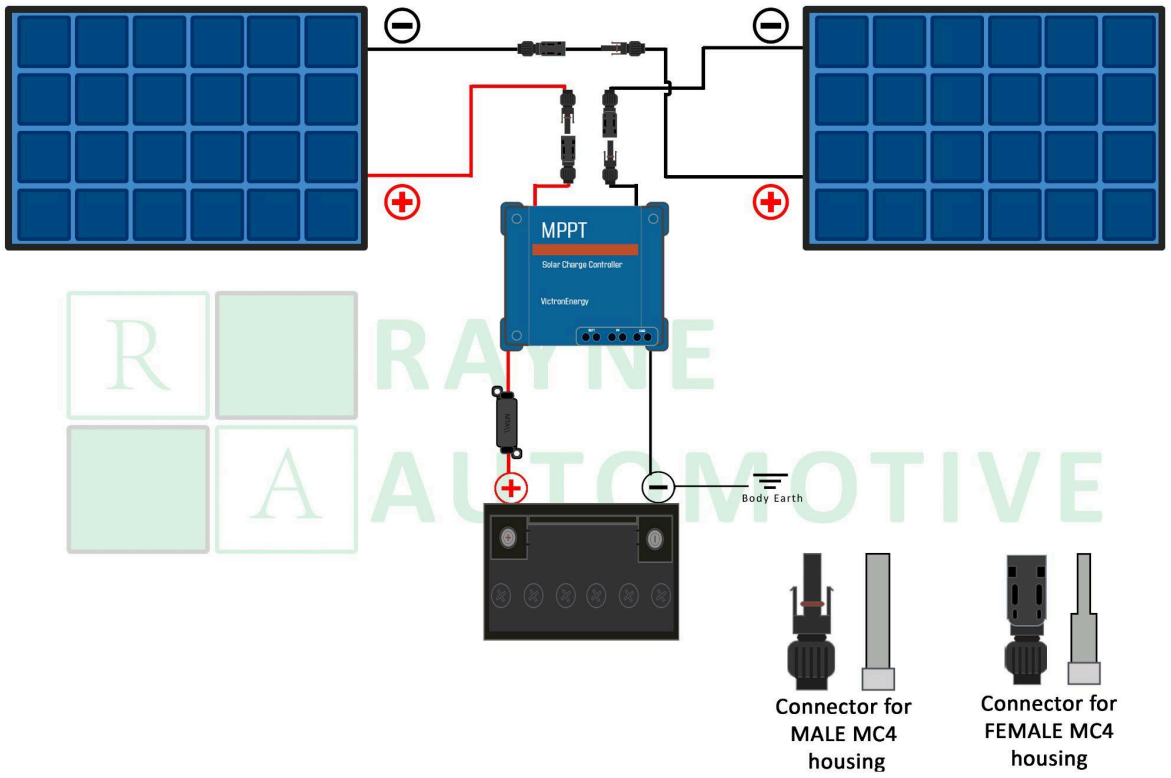
Using a stand-alone solar controller



Please note: this diagram is intended as a guide and is for illustrative purposes only. Specification may vary based on products ordered and availability.

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Using a stand-alone controller to wire multiple panels in series -



Please note - This diagram is for illustrative purposes only.
Specification may vary based on products ordered and availability.

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Testing and Certification

All testing and inspection should be carried out in accordance with the BS7671:2018 (18th edition) requirements by a competent person. This would include, but not be limited to the following;

- Visual inspection and report of the installation suitability for its intended purpose.
- The completion of an electrical installation certificate (EIC) completed and filled out by the installer. (*If you're having the testing performed by a third party, they should issue you with a report on the testing showing the relevant data*).
- The completion of a schedule of test results.
- An analysis of the likelihood and severity of damage to any of the components or wiring in the installation.

Documents for these can be downloaded online for personal use and we will have our own formatted versions available shortly for you.

Basic charger functioning test	
12V Load resistance test (optional)	More info coming soon...
Earth continuity test	More info coming soon...
RCD Testing	More info coming soon...
Mains polarity testing	
Bonding continuity test	More info coming soon...

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Now you've finished all of your testing and certification, you're free to enjoy your van and the adventures it brings you. Thank you for choosing Rayne Automotive.

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Additional Information, Schematics & How To's

Here you will find additional information and specific guides to aid the installation process.

Please note: this information is intended as guidance only and the contents of your kit may differ based on products ordered and availability.

Creating a good earthing point

Use the QR link below (either click here or scan it to see our guide for creating a good earth. All earths should have a resistance of under 1 ohm, the same technique should be used for bonding connections, they should have a resistance of under 0.5 ohms.

Batteries -

Please note all liquid filled, wet lead-acid batteries must be housed in a suitable tray to comply with the BS regulations.

All batteries housed within the habitation compartment MUST be in a sealed compartment, with ventilation to the outside only. No electrical equipment except the battery should be in this compartment. A sealed battery box is a good way of achieving this.

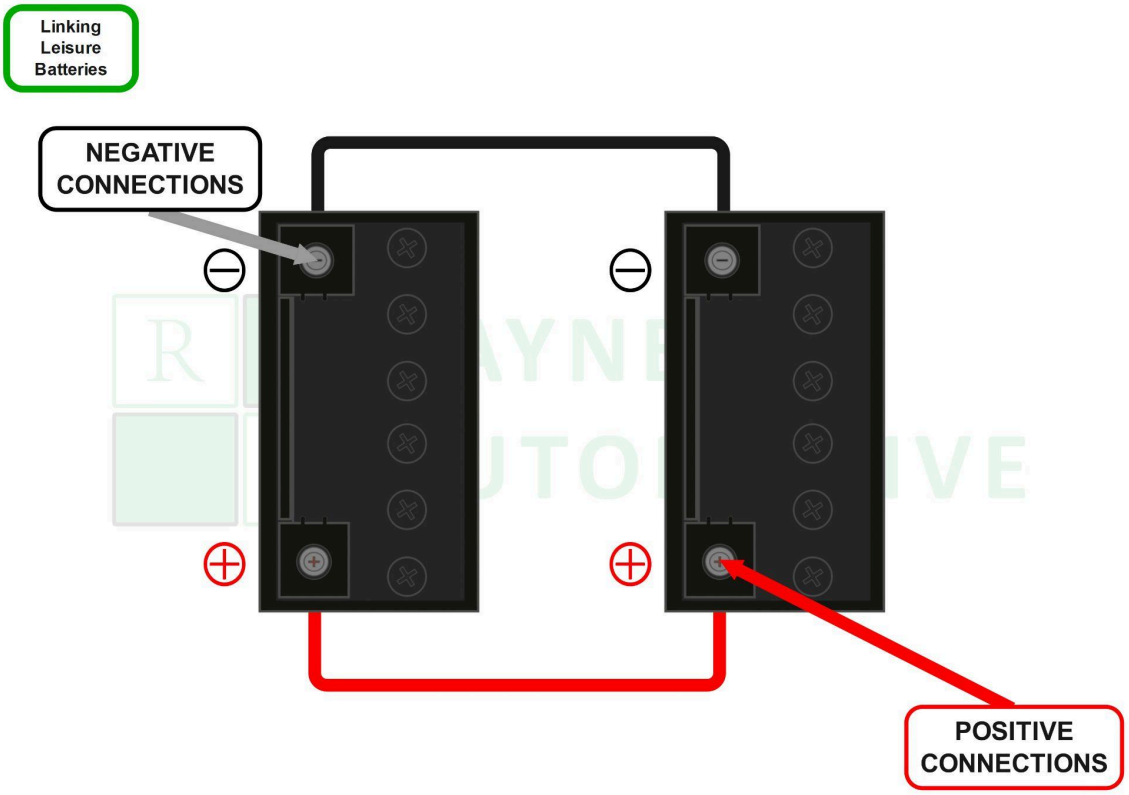
If your battery is fitted with a conductive strap or bracket, we recommend insulating it with a suitable protective cover to prevent shorting to the battery strap.

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Linking Leisure Batteries -

For systems with more than one leisure battery in parallel, it is important that they are joined in the right way and that you make the live and earth connections as shown to minimise the risk of imbalance or uneven charging/discharging to one of the batteries.

When joining multiple leisure batteries they must always be the same type (Wet lead-acid, AGM, Gel, Lithium etc) and the same specification (capacity, model, age, etc) using two different batteries joined together is likely to result in damage to the batteries and the system itself.



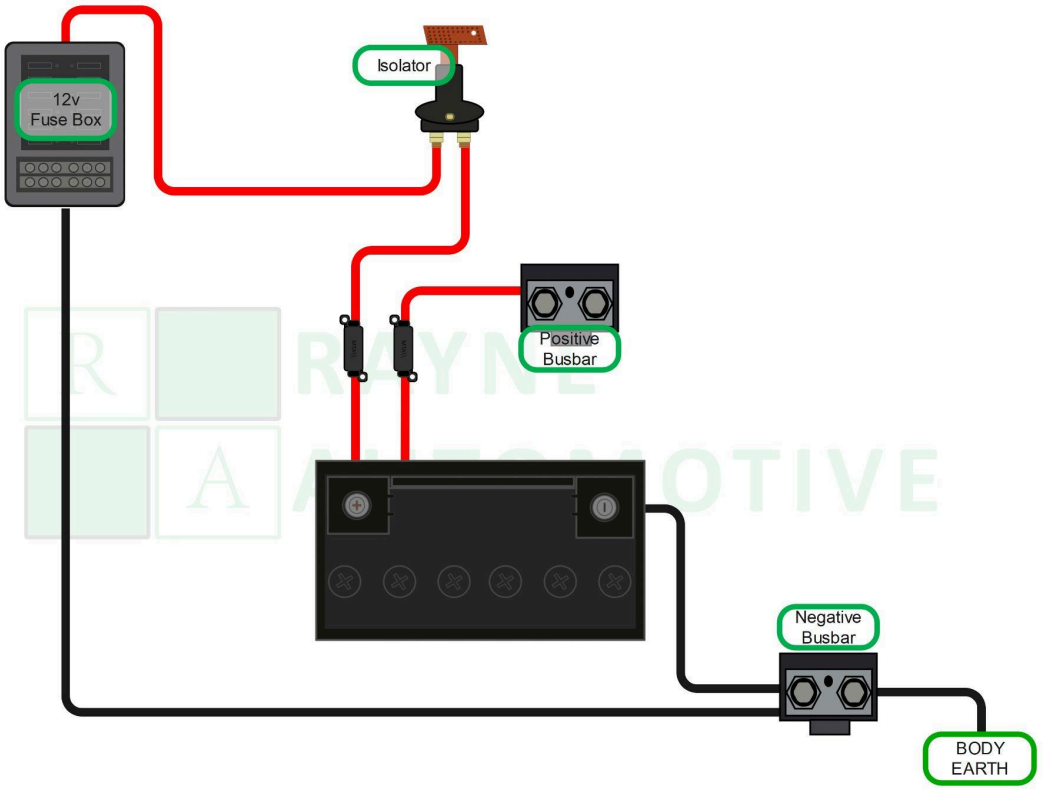
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Busbars -

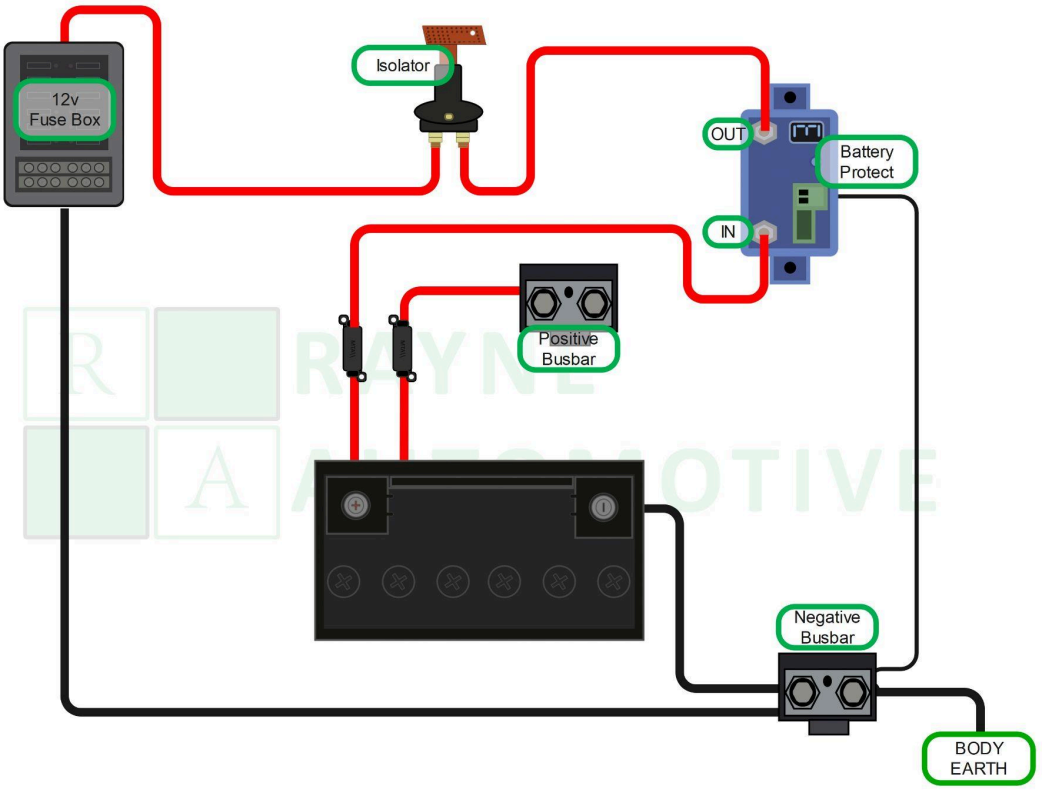
A busbar is often used in more complex systems where there are more inputs and outputs than are likely to fit safely onto standard battery terminals or where the possibility of completely isolating the leisure circuits is requested.

Where a busbar or positive/negative jointing bar is used it should be connected as shown below (the isolation switch is an optional extra)

The connections to the battery should be left until last.



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Battery isolation.

For more information on battery isolation and the different results you can achieve from different power configurations, please see our isolation guide here.

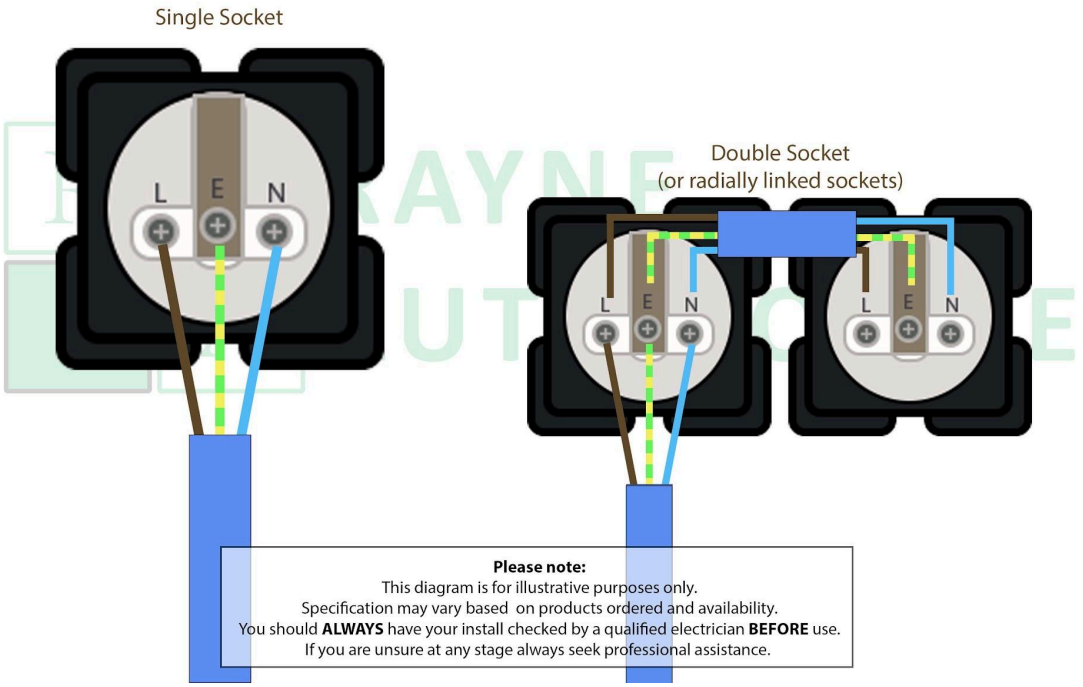
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C-Line Socket Wiring (240v) -

Below is an example of how to wire one or multiple C-Line or modular sockets.

Please note: ***electricity can be dangerous****. installation /maintenance should only be carried out by a competent individual following the relevant guidelines.* ***If at any point you are unsure, stop immediately and seek the relevant assistance.***

C-Line 240v Socket Wiring



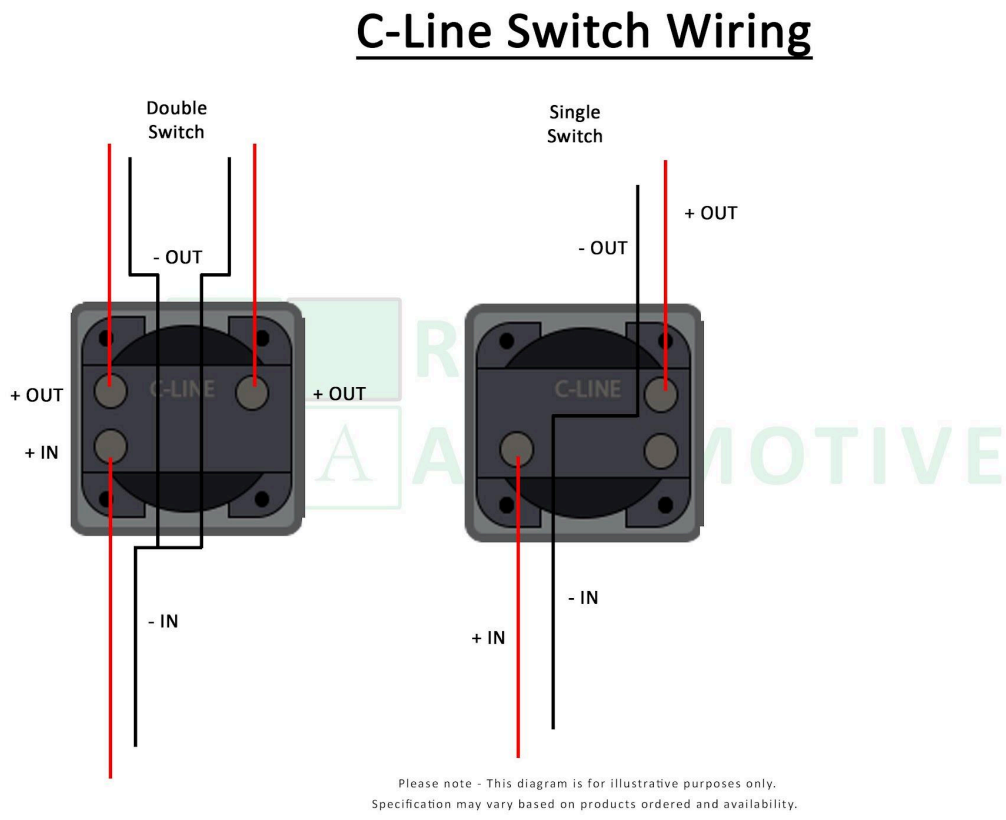
If you are wiring in more than 1 double socket in a radial circuit, please repeat this process, wiring from the second part of the double socket onto the next socket location. (never leave the wire without properly terminating it if you are going to connect the power).

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C-Line Switch Wiring (12v) -

Below is a schematic on how to wire the C-Line switches (please note this is NOT applicable to two-way switching)

The earth wires will have a connection that can be separated for routing but must be reconnected in order for the switch to function correctly.



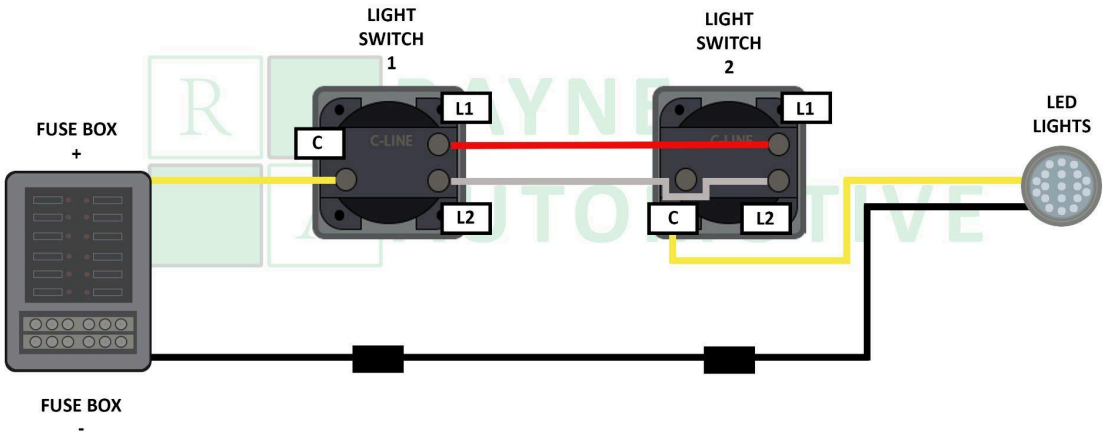
C-Line Two-Way Switch Wiring (12v) -

Below is a schematic on how to wire the C-Line switches for two way switching (Please note that this is only possible in certain circumstances and will require specialist wiring which we will only provide as part of an agreed quotation)

The earth wires will have a connection that can be separated for routing but must be reconnected in order for the switch to function correctly.

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Two Way Switching Schematic



Please note: This diagram is for illustrative purposes only.
Actual specification may vary based on products ordered and availability.

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C-Line ‘Modular’ Control Panel -

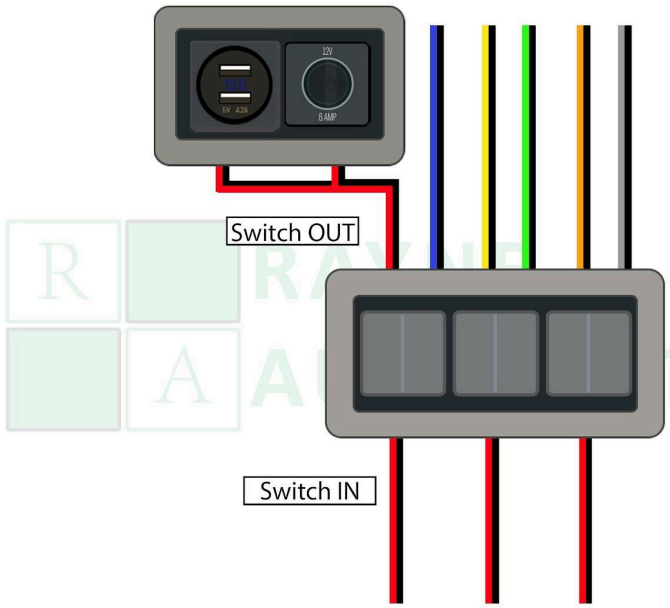
Below is an example of how the standard ‘modular’ control panel should be laid out.

The switch wiring can be found above in the ‘C-Line Switch Wiring’ guide.

The USB and 12v sockets have two terminals that are marked ‘+’ and ‘-’ the **RED** wire should be plugged onto the + terminal and the **BLACK** wire should be plugged onto the - terminal.

The fuse box end of the ‘Switch IN’ wiring loom should be connected to the labelled fuses and the earth wire(s) should be connected to a suitable earth.

C-line ‘Modular’ Control Panel Schematic



Please note: This diagram is for illustrative purposes only, actual specification may vary based on products ordered and availability.

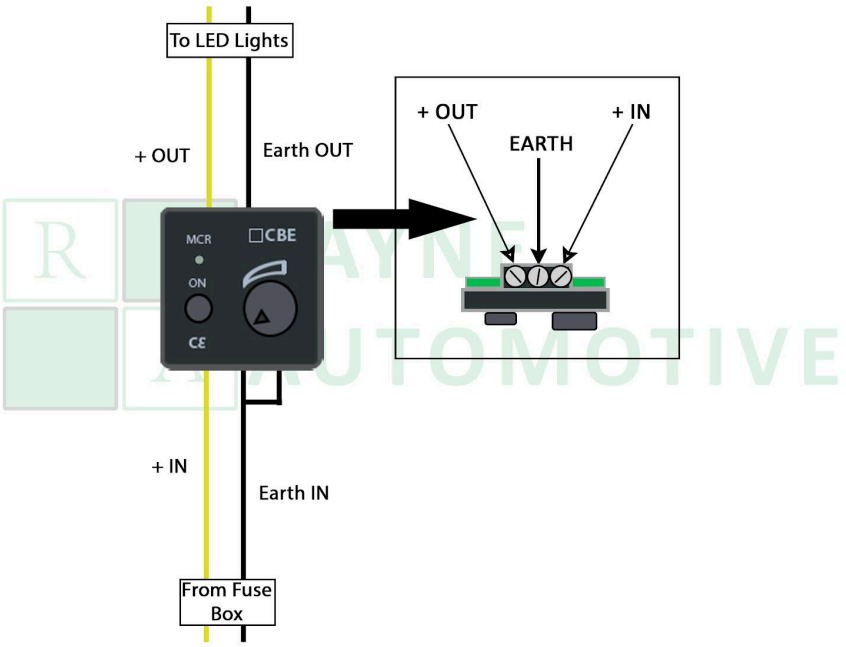
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CBE Dimmer Switch -

Please note the circular back cover will need to be removed in order to access the terminals for wiring.

The earth wires will have a connection that can be separated for routing but must be reconnected in order for the switch to function correctly.

Dimmer switch wiring schematic

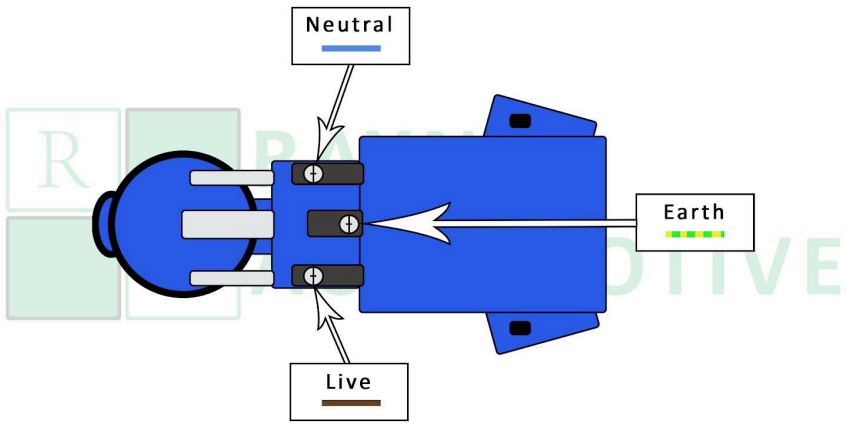


Please note: This diagram is for illustrative purposes only.
Specification may vary based on products ordered and availability.

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Inlet Socket Wiring -

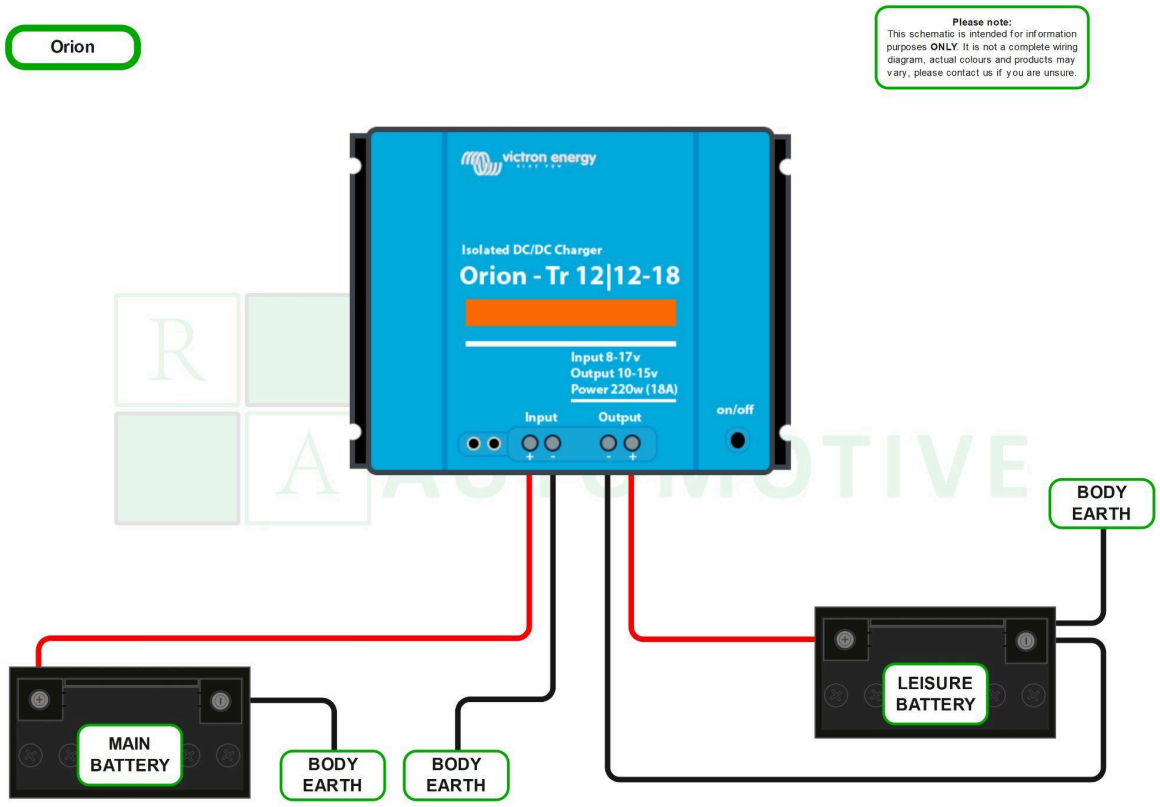
Inlet Socket Wiring Schematic



Please note: This diagram is intended as a guide and is for illustrative purposes only.
If at **ANY** point you are unsure in **ANY** way you must consult a qualified professional immediately.

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[Victron Orion DC-DC Charger Wiring -]



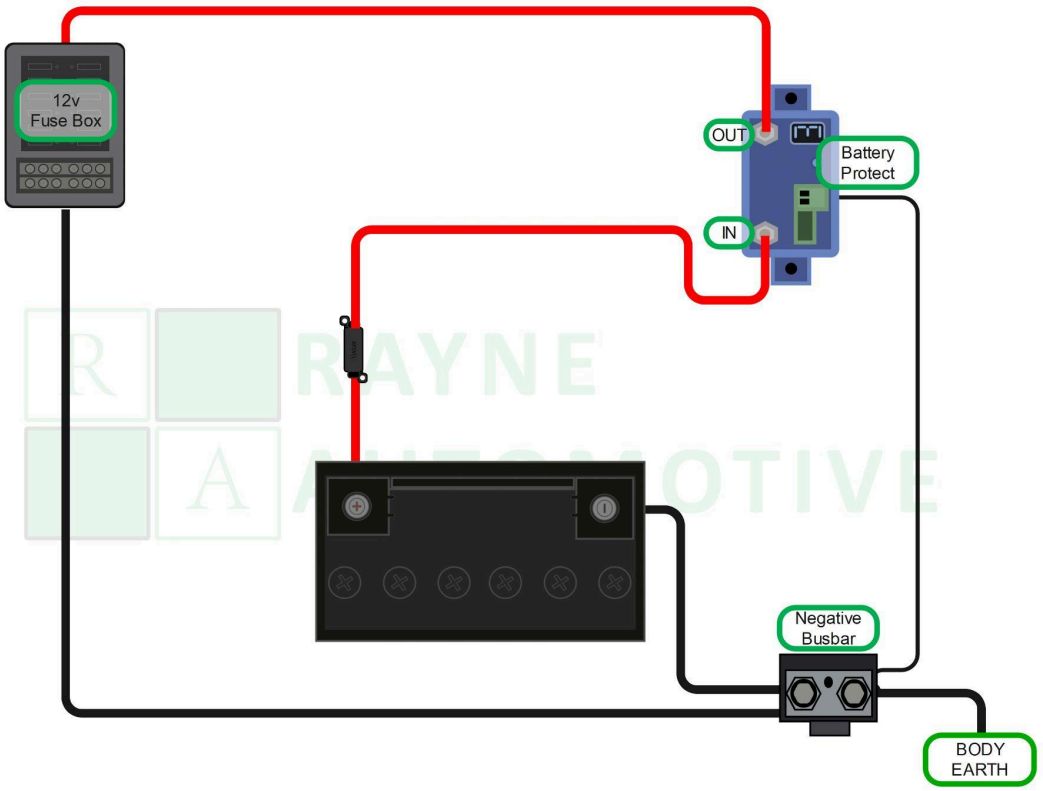
Please refer to the Victron Orion manual and the split charge section of this walkthrough above for specifics of the installation. Also you will need to change the settings in the video below, you will need to be set in charger mode NOT power supply mode. (click for a video)

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Victron battery protect wiring



If you have a Victron battery protect in your system, It is important to wire it as per the above diagram. There is also a negative cable from the battery protect that should be connected to your common earthing point. All chargers and the input should be connected to the IN side of the battery protect and the fuse box and the load, should be connected to the OUT.

For further information and fitting help and advice on products, please visit our help centre using the QR code below.

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Troubleshooting

FAQ’s

I’m getting a voltage coming from an empty spot on my 12V fuse box. Why is this?

This is a signal voltage read by a multimeter as a very small amount of current >5Ma passes through the fuse blown LED, This isn’t dangerous and can’t power anything more than a multimeter reading or a tiny glow in an LED switch.

(Coming soon) For troubleshooting guides see here;

Solar panel troubleshooting guide

Inverter troubleshooting guide

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