ENSURING A SAFE MAINS SUPPLY

Before plugging your camper in to a 230 Volt Mains Supply (if you need to), consider the source of power and take precautionary steps to ensure that it is safe to use. This is necessary given some sources of mains supply are not always regularly checked and tested or perhaps have been damaged due to negligence or other circumstances. Without testing and proving that the supply is safe to use first, you are putting your own life at risk, and you are putting the equipment in the camper at risk also. It is highly recommended that you test and prove every source of power that you intend to connect your camper to, which include the 15A supply at powered sites at caravan parks, the 10A supply from a GPO (usually residential supply), and the supply from a generator.

Off The Grid Campers will supply all our customers with a testing device, including a hardcopy of the operating manual for the device. It is highly recommended that you use this device to check the power source, before connecting your camper to it, so that you have peace of mind, knowing that the source of power is safe to use. The tester that we have supplied for you, gives you the ability to…

- Check the line voltage of the source of power that you are intending to connect to.

- Check the RCD of the source of power that you are intending to connect to.

- Check the GPOs and the RCD Duo Safety Switch, inside of your camper.

- Check your extension leads.

- Check your 15A to 10A adaptor.

It is imperative that you read and understand the manual for this tester, before you attempt to use it. Do not use this tester, if you do not understand how it works. You also need to understand, that if you do not test a source of power that you intend on connecting to, that is unsafe, or the 15A to 10A adaptor is unsafe, or the extension leads are unsafe – using unsafe sources of power and unsafe equipment may result in personal injury or death to yourself or others, and / or, equipment failure.

The Australian Standard for line voltage, is 230 VAC.

For the lower voltage… 230 – 6% = 216 VAC. If the line voltage is lower than this, it is unsafe to use. For the upper voltage… 230 + 10% = 253 VAC. If the line voltage is higher than this, it is unsafe to use. Do not connect to a source of power, that is outside of these voltages, as this may result in personal injury or death to yourself or others, and / or, equipment failure. For added safety, we program our inverter chargers to disconnect if the AC current is lower than 215 VAC or higher than 255 VAC. For them to connect or reconnect, they will do so only between 220 to 250 VAC.

All power outlets are required to be RCD protected by Law. An RCD must trip at no more than 30mA. If the RCD fails to trip, the source of power is not safe to use, and using this source of power may result in personal injury or death to yourself or others, and / or, equipment failure.

Failure to set the AC input current limit on the Ekrano GX Touchscreen correctly, may result in nuisance tripping, and / or, equipment failure. Setting the input current limit is explained in the following procedures.

PROCEDURES

It is imperative that you read and understand the manual for this tester, before you attempt to use it. Do not use this tester, if you do not understand how it works. Please follow the outlined instructions below, that are relevant for the source of power that you are intending to connect to.

Powered Park Sites (15A)

To check that the mains supply is safe: -

1. **Test the Power Source**: Plug the tester into the 15A outlet, that has been assigned for you to use for your site, located in the 'mushroom', and turn on the power at the switch.
2. **Verify Polarity**: Looking that the lights on your tester, ensure that the tester indicates "correct" polarity. If the tester does not indicate correct polarity you will need to inform the park manager, so that they can organise a licensed electrician to come to site, to verify and fix the fault.
3. **Test RCD Function**: Use the tester to ensure that the RCD in the mushroom is functioning correctly, and trips at the correct current. If the RCD fails to trip, or does not trip at the correct current, you will need to inform the park manager, so that they can organise a licensed electrician to come to site, to verify and fix the fault.
4. **Check Extension Leads**: Do not use an extension lead that has had the earth pin modified. Modifying the earth pin is illegal to do. Extension leads with modified earth pins are illegal to use and are unsafe to use.

   Do not use an extension lead that has a 10A male plug fitted on one end, and a 15A female / receptacle fitted on the other end. These extension leads are illegal make, they are illegal to use, and they are unsafe to use.

   Do not use an extension lead that has be modified in any other way, as these modifications are illegal, and are unsafe for use.

   Do not use an extension lead that has any obvious damage to it, or if any part of the extension lead looks deformed or has exposed internal cores (i.e. you can see the brown, blue and green wires).

   If you have any doubts regarding your extension lead(s), do not use it, and get a licenced electrician to inspect the extension lead, to ensure that it is safe to use. We also strongly recommend having your extension leads regularly tested and tagged, as this may be a requirement, at the caravan park, due to workplace safety obligations. If the caravan park states that you can only use extension lead that have be tested and tagged, you will need to have your extension lead tested and tagged, before you can connect to the Mains 230 Volt Supply.

   Once you have confirmed that you extension lead looks safe, plug the extension lead into the 15A outlet at the mushroom, and then plug your tester into the other end of the extension lead. The tester needs to show the correct polarity lights. If your tester is not showing the correct polarity, do not use this extension lead, and have the have the extension lead inspected by a licenced electrician, or, you will need to replace the extension lead.

5. **Setting the AC Input**: On the Ekrano GX Touchscreen homepage, the AC input current limit must be set to no more than 15 Amps, so to not overload the supply. We would recommend that you set the AC input current limit for a little less than 15 Amps, as the inverter charger is capable of drawing this set current limit continuously, and may cause the breaker in the mushroom to trip, if it is a little sensitive to current. This small reduction in current will help prevent nuisance tripping, and prevent damage to your camper, and the electrical equipment that is fitted to it. Under no circumstance should you ever set the current higher than what the supply is rated for, as this will cause nuisance tripping, and will result in damage to equipment.

6. **Turn On**: If the mains power socket and the extension lead both show "correct" polarity on the tester, the RCD test was successful, and the Inverter chargers AC Input limit has been set appropriately, it is now safe to connect to your camper to the Mains 230 Volt Supply, from the mushroom.

Residential Supply (10A)

To check that the mains supply is safe: -

1. **Test the Power Source**: Plug the tester into the 10A GPO and turn on the power at the switch.
2. **Verify Polarity**: Looking that the lights on your tester, ensure that the tester indicates "correct" polarity. If the tester does not indicate correct polarity you will need to inform the owner of the property, so that they can organise a licensed electrician to come to the property, to verify and fix the fault.
3. **Test RCD Function**: Before you check the RCD for the GPO that you are plugging into, please inform the owner of the property, of what you are wishing to do, as they may have other equipment connected to that circuit, that will be interrupted, if you perform the RCD test. Once you have the owner's permission to test the RCD, use the tester to ensure that the RCD that is protecting this circuit, is functioning correctly, and that it trips at the correct current. If the RCD fails to trip, or does not trip at the correct current, you will need to inform the owner of the property, so that they can organise a licensed electrician to come to site, to verify and fix the fault. The owner of the property will also need to reset the RCD in their switch board, so that there is power available at the GPO again.
4. **15A to 10A Adaptor**: Do not make a 15A to 10A adaptor, as this is illegal to do.

   

   Do not use a "home-made" 15A to 10A adaptor, as it is illegal to use, and it is unsafe to use.

   Do not use a 15A to 10A adaptor that has been modified in any way, as it is illegal to use, and it is unsafe to use it.

   Do not use a 15A to 10A adaptor that is damage in any manner, as it may not function correctly, making it unsafe to use.

   Always use an approved and manufactured 15A to 10A adaptors. We also highly recommend having your 15A to 10A adaptor tested and tagged, to ensure that it operates correctly, and that it is safe. Once you have confirmed that your 15A to 10A adaptor looks safe, you can plug it into the 10A GPO and then plug your tester into the 15A outlet, of the 15A to 10A adaptor. The tester needs to show the correct polarity lights. If your tester is not showing the correct polarity, do not use this 15A to 10A adaptor it, and have it inspected by a licensed electrician, or you will need to replace the 15A to 10A adaptor, with an approved and manufactured 15A to 10A adaptor.

   Most of the approved and manufactured 15A to 10A adaptors, will have a built in RCD. It is highly recommended, that you test the RCD with your tester, to ensure that the RCD in your 15A to 10A adaptor, operates correctly. Follow the instructions in point three above, to test the RCD, in your 15A to 10A adaptor
5. **Check Extension Leads**: Do not use an extension lead that has had the earth pin modified. Modifying the earth pin is illegal to do. Extension leads with modified earth pins are illegal to use and are unsafe to use.

   Do not use an extension lead that has a 10A male plug fitted on one end, and a 15A female / receptacle fitted on the other end. These extension leads are illegal make, they are illegal to use, and they are unsafe to use.

Do not use an extension lead that has be modified in any other way, as these modifications are illegal, and are unsafe for use.

Do not use an extension lead that has any obvious damage to it, or if any part of the extension lead looks deformed or has exposed internal cores (i.e. you can see the brown, blue and green wires).

If you have any doubts regarding your extension lead(s), do not use it, and get a licenced electrician to inspect the extension lead, to ensure that it is safe to use. We also strongly recommend having your extension leads regularly tested and tagged, as this may be a requirement, at caravan parks, due to workplace safety obligations.

Once you have confirmed that you extension lead looks safe, plug the extension lead into the 15A outlet of the 15A to 10A adaptor, and then plug your tester into the other end of the extension lead. The tester needs to show the correct polarity lights. If your tester is not showing the correct polarity, do not use this extension lead, and have the have the extension lead inspected by a licenced electrician, or, you will need to replace the extension lead.

6. **Setting the AC Input:** On the Ekrano GX Touchscreen homepage, the AC input current limit must be set to no more than 10 Amps, so to not overload the supply, including the 15A to 10A adaptor. We would recommend that you set the AC input current limit for a little less than 10 Amps, as the inverter charger is capable of drawing this set current limit continuously, and may cause the breaker in the 15A to 10A adaptor to trip, and or the breaker in the switch board to trip, if either of them are a little sensitive to current. This small reduction in current will help prevent nuisance tripping, and prevent damage to your camper, and the electrical equipment that is fitted to it. Under no circumstance should you ever set the current higher than what the supply is rated for, as this will cause nuisance tripping, and will result in damage to equipment.

7. **Turn On:** If the GPO, the 15A to 10A adaptor, and the extension lead all show "correct" polarity on the tester, the RCD tests were successful, and the Inverter chargers AC Input limit has been set appropriately, it is now safe to connect to your camper to the Mains 230 Volt Supply, from the GPO.

Portable Generator Supply

Most of our customers do not use portable generators, because our campers are fitted with DC-to-DC chargers and solar, for recharging the batteries in the camper. If you are wishing to take a generator with you, you will need to stow it in safe and secure location, while you are not using it. While you are using the generator, it will need to be used in a well-ventilated environment, that is outside of the camper. Never operate a generator inside of your camper, as this may result in personal injury or death to yourself or others, and / or, equipment failure. You also need to be aware, that the use of portable generators in National Parks and protected area / habitats, will have restrictions, or, they are prohibited. You will need to confirm that you are permitted to use your portable generator in these areas, before you do so.

If you still intend on using a portable generator as a mains supply or as a backup, please understand that most portable generators are considered to be a 'floating supply', as they are not earthed. Using a 15A to 10A adaptor, that has a built in RCD, that has not been designed for use with 'floating supplies', will typically fail the RCD test, and therefore will offer no protection against earth leakage. It is highly recommended that you use the "PowerSafe Inline RCD DUO Adaptor", (as pictured) to provide the required safety, for a 'floating supply', supply.

How to select an appropriate generator: The size of generator that you can use, will be determined by the size of the inverter charger, that has been installed into your camper. These inverter chargers have a minimum input / supply current, that they will draw from an AC source.

If your inverter charger size is 3KVA, you cannot use a generator that is smaller than 1KVA.

If your inverter charger size is 5KVA, you cannot use a generator that is smaller than 2KVA.

Using a generator that is smaller than what has been stated above, will cause the generator to be overloaded, and may cause equipment failure, for the generator, and / or, the inverter charger.

Caution: Using noninverting generators, that are smaller than about 4KVA, typically result in the inverter charger have difficulty connecting to, and / or, remaining connected to them, as a source of power. If the inverter charger does not connect to the generator, you will need to have the generator serviced or replaced. If the inverter charger will not remain connected to the generator, you can try reducing the input current on the Ekrano GX Touchscreen, or, you will need to have the generator serviced or replaced. If you persist with this generator, the inverter charger will eventually fail.

If you intend on using a generator that is smaller than about 4KVA, it is recommended that you use a good quality inverting generator, like the Honda or a Yamaha inverting generator.

Because these portable generators are 'floating' power supplies, they typically will not…

- have a functional earth.

- show the correct polarity.

- have built in RCD protection.

For the above reasons, it is highly recommended that you use the "PowerSafe Inline RCD DUO Adaptor". PowerSafe have three versions of this product. If your generator only has a 10A outlet on it, you will need to use the "RCD DUO IL 10-15". If your generator has a 15A outlet on it, you will need to use the "RCD DUO IL 15-15". The "PowerSafe Inline RCD DUO Adaptor", will provide the correct protection against earth leakage, when they are used with a portable generator.

PowerSafe Inline RCD DUO Adaptor can be purchased from https://www.PowerSafe.net.au/

To check for a safe mains supply: -

1. **Test RCD Function**: Once you have plugged in the correct PowerSafe Inline RCD DUO Adaptor that suits your generator outlet, then start your generator. There are two orange test buttons on the RCD DUO, one of the DUO ESD and one of the Breaker. Press the test button on the DUO ESD to trip its breaker and to ensure that the RCD DUO protecting this circuit is functioning correctly. Reset the breaker and press the test button, this time on the breaker itself. If either test button fails to trip, stop using the RCD DUO Adaptor and the Generator immediately. Contact PowerSafe or organise for a licensed electrician to come to site, to verify and fix the fault.

2. **Check Extension Leads**: Do not use an extension lead that has had the earth pin modified. Modifying the earth pin is illegal to do. Extension leads with modified earth pins are illegal to use and are unsafe to use.

   Do not use an extension lead that has a 10A male plug fitted on one end, and a 15A female / receptacle fitted on the other end. These extension leads are illegal make, they are illegal to use, and they are unsafe to use.

   Do not use an extension lead that has be modified in any other way, as these modifications are illegal, and are unsafe for use.

   Do not use an extension lead that has any obvious damage to it, or if any part of the extension lead looks deformed or has exposed internal cores (i.e. you can see the brown, blue and green wires).

If you have any doubts regarding your extension lead(s), do not use it, and get a licenced electrician to inspect the extension lead, to ensure that it is safe to use. We also strongly recommend having your extension leads regularly tested and tagged, as this may be a requirement, at caravan parks, due to workplace safety obligations.

Once you have confirmed that you extension lead looks safe, plug the extension lead into "PowerSafe Inline RCD DUO Adaptor".

3. **Setting the AC Input:** On the Ekrano GX Touchscreen homepage, you will need to set the AC input current limit, to the smallest ratting, of the next three points.

I. The “RCD DUO IL 15-15” has a 15A limit.
II. The “RCD DUO IL 10-15” has a 10A limit.
III. The size of your generator, as per the list below: -

If your inverter charger is 3KVA, you cannot use a generator that is smaller than 1KVA
If your inverter charger is 5KVA, you cannot use a generator that is smaller than 2KVA

If you’re using a 1KVA inverter generator, the AC input current limit must be set to no more than 3.5A
If you’re using a 2KVA inverter generator, the AC input current limit must be set to no more than 7A
If you’re using a 2.2KVA inverter generator, the AC input current limit must be set to no more than 7.6A
If you’re using a 2.4KVA inverter generator, the AC input current limit must be set to no more than 8.3A
If you’re using a 2.8KVA inverter generator, the AC input current limit must be set to no more than 9.7A
If you’re using a 3KVA inverter generator, the AC input current limit must be set to no more than 10.4A
If you’re using a 3.2KVA inverter generator, the AC input current limit must be set to no more than 11.1A

Under no circumstance should you ever set the current higher than the smallest of the three ratings, as may result in nuisance tripping, and / or, equipment failure. If your generator is the smaller of the three ratings, setting the current limit just a little lower, so as to not work the generator quite so hard, will promoting the life of the generator.

4. **Turn On:** After you have plugged the "PowerSafe Inline RCD DUO Adaptor" into your generator, and your extension lead into the "PowerSafe Inline RCD DUO Adaptor", and you have programmed the AC input current limit appropriately, it is now safe to connect the generator to your camper's power receptacle and start the generator.

A HARDCOPY OF THIS INFORMATION IS PROVIDED TO ALL CUSTOMERS AT HANDOVER IT IS ALSO AVAILABLE FROM OUR WEBSITE

WWW.OTGCAMPERS.COM.AU/INFO