

Powerverse Installation Guide

Purpose

This guide is intended for use by competent electricians to assist with the requirements of installing equipment to our expected quality and standard. It is designed to be used alongside any existing manufacturer guidance and documentation and does not preclude such guidance.

Scope

The procedures that follow in this guidance are designed for installation partners contracted to install Electric Vehicle charging equipment on behalf of Powerverse.

Checklist

Please ensure all items are completed.

Please read the below risk assessment and method statement points carefully and confirm below:

- I have read, understood and will follow any of the guidance/procedures within the company RAMS assigned to me by my employer as well as any other relevant party.
- I have completed a risk assessment of the site to identify any hazards and assessed the risks they may pose. Any findings have been raised to my supervisor and the hazards and the presented risks have been controlled as appropriate.
- I will document the hazards and presented risks along with the control measures.
- I will apply the same approach as detailed above to all future hazards or risks should they arise, for the duration of my time on site.
- I will continue to review the suitability of the controls throughout the duration of my time on site.

By checking this confirmation I acknowledge that before commencing works that I agree with and will take action on the above.

Please read and confirm the installation below.

- Installation specifics have been agreed with the customer prior to installation.
- Installation completed as per all sections of this document, manufacturer specifications and all applicable local, regional, and national regulations.
- VCHRGD installer App used to commission the charger and the charger has been confirmed as successfully connected to the customers Wi-Fi.
- The customer has acknowledged that they have registered their charger.
- All testing has been completed in accordance with BS7671 and all results are satisfactory.
- Images have been captured at all required stages throughout the installation for auditing processes.
- The customer has access to the Powerverse App and has witnessed the correct operation of the EVCP.
- The installation is fully completed and the site left tidy and secure.

Responsibilities

Compliance

All installations shall be designed to conform to the most current version of BS7671 at the time of installation, as well as any guidance from the relevant IET Code of Practice, manufacturer's instructions, and any approved document guidance.

This electrical device should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this device. A qualified person is one who has the skills and knowledge related to the construction, installation and operation of electrical device and who has received safety training to recognise and avoid the hazards involved.

All applicable local, regional, and national regulations must be respected when installing, repairing, and maintaining this device.

The existing electrical installation shall be checked, deemed suitable, compatible and safe to proceed with the addition of the electric vehicle charging equipment.

Safe Isolation

Circuits will be de-energised and locked off before any work is completed.

Enclosures with accessible live parts will not be left unattended without the cover being replaced.

Consumer units will be isolated before any work is carried out.

Tools

Only use approved and appropriate tools and equipment for the installation. Do not use PPE, tools, or equipment if it is damaged.

Procedure

Location of Equipment

The contractor should consult and establish a suitable location for the installation of the unit with the customer, taking into consideration the requirements specified in the Code of Practice for Electric Vehicle Charging Equipment Installations as well as any other guidance as above. The Contractor should confirm that the location of the installation is appropriate and should select suitable fixings to use based on the location substrate.

Communications

Where the device is Wi-Fi or 4G enabled. The strength at the chosen location will be confirmed for suitability before installation.

Electrical Supply Cable

The routing and location of the electrical supply cable will vary with every installation, care will be taken to choose a route best to minimise impact severity, as well as visual impact.

The cable selection and CSA shall be calculated by the installation contractor taking into consideration; The load, circuit length, external influences, impact severity, effects of insulation, manufacturer's recommended rating for any protective device and installation methods in accordance with the most current version of BS7671.

The voltage drop will be considered when the cable is selected.

Detail: It is recommended that cable installation underground, behind any extensive fauna, or subject to increased likelihood impact such as near walkways/entrance ways, be done using an armoured cable. Care will be taken not to introduce a PME potential into the EVCP by ensuring the armour sheath is isolated from the EVCP.

Installation

Once the desired cable routing has been identified the unit can be installed.

Identify mounting point; we recommend the device be mounted at a height between 750 mm -1200 mm when possible. Any socket should not be below 500 mm to comply with regulations.

Once the location and height of the unit have been confirmed, make sure the surface is flat and level. Use a level template and mark the position of the fixing holes. Take the plate away and drill the required holes. Do not drill through the backplate or rear of the charger to avoid damage.

A 6mm masonry drill bit is suggested if affixing to brickwork etc.

Important: Always check for hidden/buried services using a suitable detector before commencing any drilling on any part of the installation

An Area of 400mm from the Edge of the EVCP will be kept clear of other equipment.

Utilise the fixings supplied with the charger or alternative fixings of equal diameter and ensure the rubber gaskets provided are used. Tighten the fixings sufficiently whilst ensuring the rubber gaskets integrity is retained. This will maintain the units IP rating

The charger shall be mounted to a permanent structure only.

Wiring the unit

The charger has integral RCD protection rated at (AC 30 mA DC 6 mA). 6mA DC fault current disconnection device was verified to IEC 62955 standard. Taking selectivity into account, a Double Pole Type A 30mA RCD/RCBO will be installed upstream of the unit. 40A overcurrent protection is recommended. If retrofitting, ensure that any circuit protective devices installed match the destination manufacturer.

Note: As per industry guidance. No RCD/RCBO of type AC will be downstream of the Type A RCD/RCBO circuit protection for the EVCP.

Note: Where the EV charging circuit is housed within an existing consumer unit, care will be taken to ensure that it is not grouped alongside existing large loads used for long durations >30 mins. (Air source heat pumps for example) Where unavoidable a rated diversity correction factor must be applied.

Ferrules. All terminations using braided or multicore cable or when specified by the manufacturer shall be terminated using appropriately sized ferrules.

Care will be taken to ensure all terminations are not under or over-tightened - Powerverse recommends the use of a **torque-rated screwdriver** set to the required torque as per manufacturer recommendations. All terminations shall be checked as secure and tested before being energised.

When preparing cables for termination, ensure manufacturer guidance is followed when removing insulative material to ensure the correct depth of bare conductor is exposed and that any insulation is not trapped within the terminal which could affect the adequacy of the connection and result in thermal damage.

10mm² maximum Conductor Size

The total rating of any existing consumer unit should be observed and not exceeded.

Wiring the CT clamp

The charger may have connections for **both** solar PV and grid current monitoring.

Loosen the terminals and terminate the CT lines accordingly, ensuring a tight fit.

The connectors pull up to tighten, so ensure they are fully loosened before making the connection. Check that connections are tight once secured.

Should the CT cable be required to be extended this will be done using a twisted pair connection such as CAT5e or a suitable EV cable that integrates a shielded twisted pair. The terminations will be made with suitable connections such as appropriate-sized lever connections or gel crimps. Such termination will be housed within an appropriate enclosure suitable for the environment.

If extending the CT only one twisted pair should be used per CT connection.

Ensure the selected cable will be suitable for the environment. Factors such as the UV rating and internal shielding against electromagnetic interference may need to be addressed. Any unused cores and internal braiding will be insulated against accidental contact/short.

Positioning the CT clamp

Grid CT

This will be placed on the incoming supply tails, at a point that will ensure all energy flow can be monitored.

The arrow always faces the direction of current, for the grid CT face the arrow towards the charger.

Positioned The CT so that it can measure the entire demand of the property by placing it on the

line conductor only of the supply tails.

We recommend placing on the section after the DNO fuse and before the energy supply meter. If this is not accessible, then on the supply tail leaving the meter to the supplier's isolator or consumer unit. (See Fig.1. Below)

When the supply meter is a 5 wire type, place the CT on the supply cable terminated into terminal 1 of the meter in order to measure On and Off peak loads.

Note: The Grid CT must be placed before any branches have been made via “Lucy” terminal blocks or “Henley” termination blocks.

Solar CT

The Solar CT can be placed at any point of the supply circuit to the inverter on the line conductor only. The arrow will face the flow of generated current and so will point away from the inverter. (See Fig.1. Below)

Ensure the conductor on which the solar CT is placed remains inside an enclosure.

The CT must only be placed on the line conductor.

Battery Storage Systems

When a battery storage system exists, the owner should consider if they want the EVCP to utilise this energy. If they do not or wish not to deplete any existing battery storage, position the existing inverter CT after the split in the meter tails, As shown in the Fig.1 Below. Conversely to utilise the stored energy the CT should be place on the same line and the Grid CT for the EVCP (See Fig. 2)

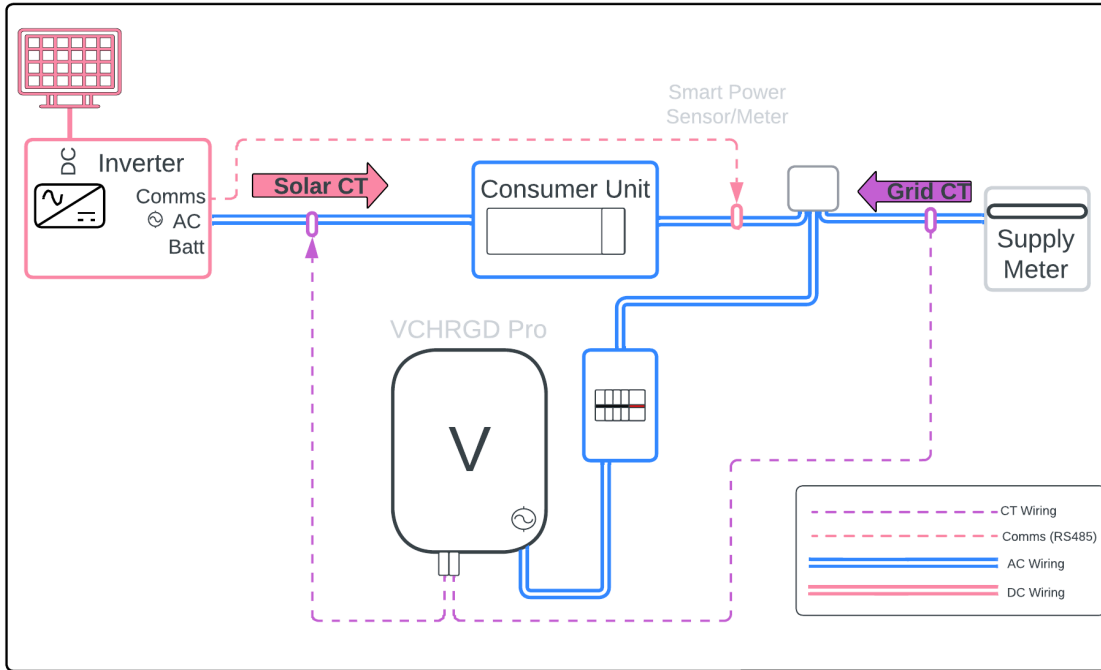


Fig.1

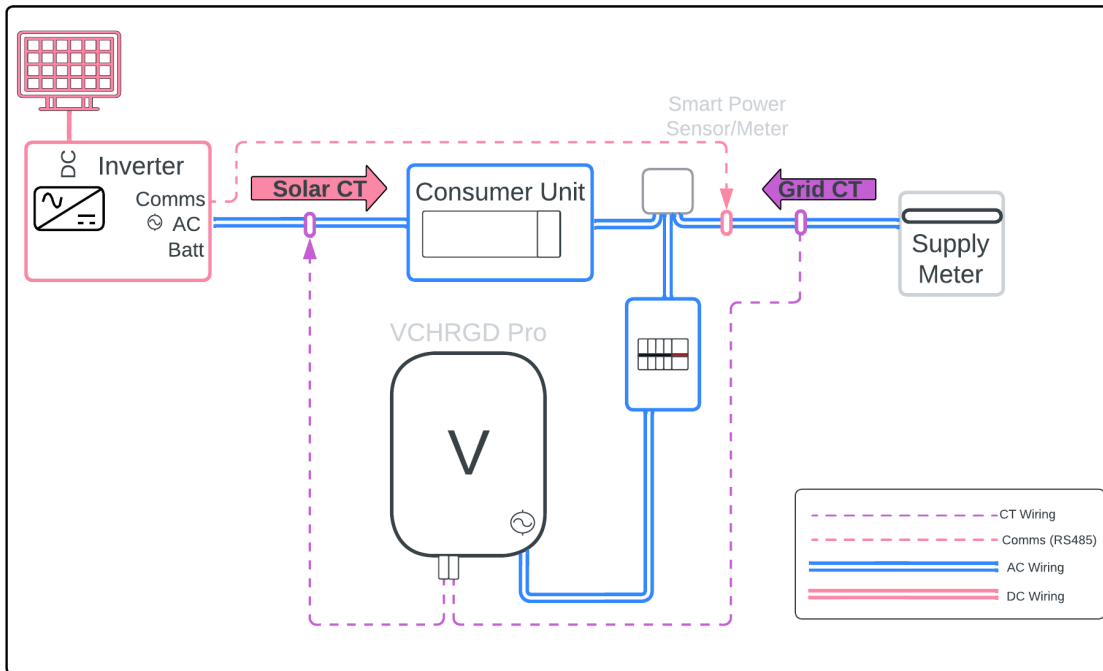


Fig 2.

Electrical Testing

All electrical testing must be carried out before the circuit is energised and in accordance with BS7671. Ensure testers are calibrated and in an operational condition with leads complying with GS38. All equipment must be inspected before use.

An Electrical Installation Certificate (EIC) must be completed. Ensure that the full details are captured on the EIC. Perform all checks required to ensure that the circuit is safe to be energised and will remain safe.

Commissioning (VCHRGD Installer App)

NOTE: This may be subject to change. Please ensure you are using the latest version of the App and associated guidance.

1. Download the VCHRGD installer app from the IOS App or Google Play store.
2. Allow Bluetooth connection to the charger (ESXXXXX or VPXXXXXX).
3. Select the correct Bluetooth device (Charger) to connect to for example ES00XXX.
4. Once connected via Bluetooth enter the Installer password XXXXXXXX found in the keep me guide or the Quick Installer guide and click confirm.
5. Enter Full Configuration.
6. Enter The Wi-Fi SSID for the property and request the password from the customer, or allow them to enter it.
7. Ignore 4G Fields.
8. Set Server URL to the Powerverse.
9. Set the Output current of the chargers (This is preset to 32A).
10. Charge mode is APP.
11. Enable Power Distribution (Load Management).
12. Sampling method will be CT.
13. Home Power Current is the setting for the Load management and should be set to 60A unless in line with apply to connect and authorised by the DNO or where site conditions require a lower value.
14. Click save and close the installer app.

Complete Customer Handover

The unit will run through a power-up sequence once energised. Complete a final check of installation to ensure the expected quality standards have been achieved. It is recommended that a walk-through is completed with customers detailing all aspects of the installation as well as instruction and demonstration on how to use the unit and the app must be completed for the customer. If possible, this should be completed with the customer's car connected. Make sure to include guidance on the Solar charging features where applicable.

Technical Support

Should onsite assistance be required beyond the scope of the contractors' knowledge, please contact +44 (0) 20 4586 6768 (Option 5) Or Email Support@Powerverse.com.

Office hours

Monday - Friday, 9am - 5pm (excluding National and Public Holidays)

House-Keeping

All equipment and waste brought to the site which do not form part of the installation should be removed from the premises. Care should be taken to dispose of such waste correctly, appropriately, and in accordance with WEEE directives where applicable. Efforts should be made to ensure waste, where possible, is recycled appropriately.

The Packaging, RFID Cards and Keep-Me-Guide shall remain on site.

Thank you for installing on Behalf of Powerverse