

Vchrgd



VCHRGD SEVEN POWERVERSE INSTALLATION & POWERVERSE COMMISSIONING GUIDE

Introduction.

This manual, and the functions described in it, are valid for the installation of VCHRGD Technologies domestic, tethered and socketed, 7kW AC chargers.

This manual is designed exclusively for trained, qualified personnel. These are people who, due to their training, skills and experience, and knowledge of the relevant standards, can assess the work assigned to them and identify possible dangers.

The illustrations and explanations contained in this manual refer to a typical version of the device.

Your device version should not, but may differ from this.

Please refer to the manual for information and instructions for operating the device.



Introduction.

Product Appearance.

Untethered.



Tethered.



Features.



Charge Session
History



Dynamic Load
Control



Smart Scheduling
Integration



Solar Integration



Tap & Charge



OTA Updates



Introduction.

Packaging.

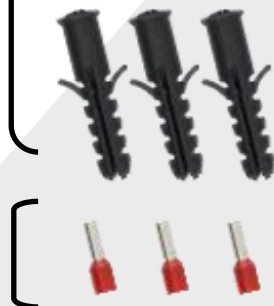


Install Kit.

Screws & Wall
plugs for affixing
bracket



Insulated crimp
terminals for
incoming power



CT Clamp for smart
home & solar
compatibility



Quality Control
Sticker



Installation.

Introduction.

- a) 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 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.
- b) All applicable local, regional, and national regulations must be respected when installing, repairing, and maintaining this device.
- c) 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.
- d) The existing electrical installation shall be checked, deemed suitable, compatible and safe to proceed with the addition of the electric vehicle charging equipment.
- e) Follow safe working practices. Ensure that all control measures based on the outcome of a risk assessment and subsequent dynamic risk assessments are recorded and implemented throughout the installation
- f) 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.
- g) An Electrical Installation Certificate (EIC) must be completed for the installation. 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.



Installation.

Introduction.



SDS or appropriate power drill
6mm Masonry Drill Bit.



Appropriate test equipment
(EV test adapter may be required).



Crimping tools for
incoming power line.



Suitable mobile device for back-end
commissioning & app setup

An additional small flat head screwdriver will be required for adjusting the CT terminals. And a Phillips head screwdriver for the mounting bracket & power line access.



Installation.

Protection.



RCBO

RCD



Safety precautions for installation

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 by TUV SUD. Taking Selectivity into account, It is necessary to install a double pole 40 A or 63 A RCBO and RCD Type A in line before the charger, for multi level safety protection.

Surge protective devices shall be installed unless the customer formally enters into an opt out agreement.

40A overcurrent protection is recommended when separate from RCD protection

When retrofitting, it is recommended that any circuit protective devices installed match the manufacturer of the destination enclosure.

Note

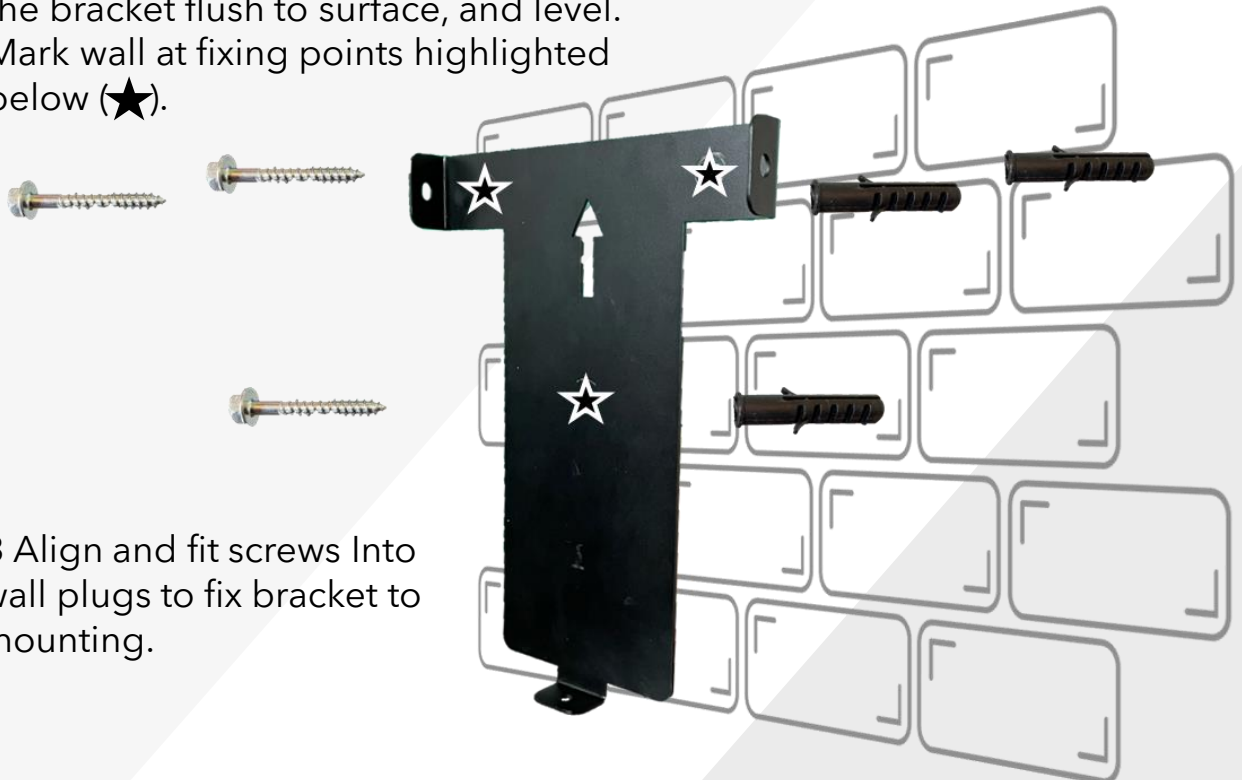
No RCD/RCBO of type AC shall be up or downstream of the Type A RCD/RCBO circuit protection for the charger.

Installation.

Bracket Mounting.

1 Identify mounting point; the unit should be mounted so that the socket is at a height of 750 mm-1200 mm to comply. Once the location and height of the unit have been confirmed, hold the bracket flush to surface, and level. Mark wall at fixing points highlighted below (★).

2 Drill holes (6mm diameter) into the wall at the marked points, & push wall plugs into place. *



3 Align and fit screws into wall plugs to fix bracket to mounting.

NOTE

1. As the power line is fed into the charger from the bottom of the case, please leave sufficient clearance from the mounting point to the desired termination point for the cable run.
2. The charger shall be mounted to a permanent structure only.
3. An area of 400mm from the edge of the charger should be kept clear of obstruction.
4. The charger is Wi-Fi enabled. The Wi-Fi Strength at the chosen location should be confirmed for suitability before installation.

*It is important to check for hidden/buried services using a suitable detector before commencing any drilling on any part of the installation.



Installation.

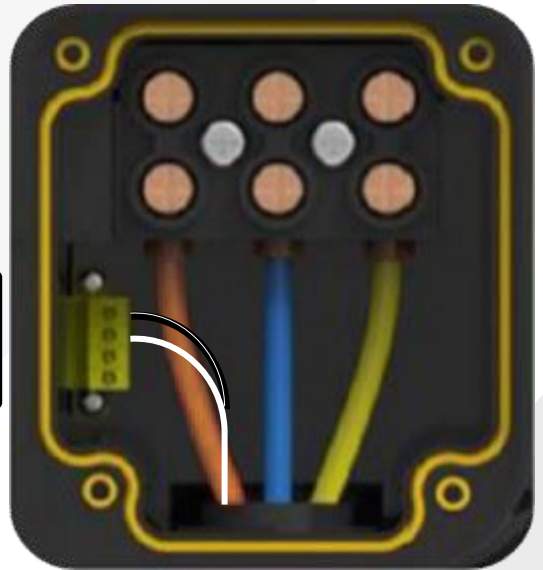
Wiring.



Incoming Power Line

Case internals are labelled accordingly

- L** - Live (brown)
- N** - Neutral (blue)
- PE** - Earth (green & yellow)



Energy Management Line

Case internals are labelled accordingly

- 3** - To S1 of CT Clamp (white)
- 4** - To S2 of CT Clamp (black)

The cable selection and cross sectional area shall be calculated taking into consideration: the load, circuit length, volt drop, external influences, impact severity, effects of insulation, and installation methods in accordance with the most current version of BS7671.

When terminating into the charger do not loosen the top three terminals of the supply terminal connection block.

Please use the supplied ferrules for terminations

Ensure all incoming power line terminations are not under or over-tightened. The use of a torque-rated screwdriver set to 5.6Nm is recommended.

All terminations should be checked as secure before being energised. Care should be taken to ensure that no conductor insulation is "pinched" within the termination which could affect the adequacy of the connection and result in thermal damage.



Installation.

Wiring.

If DLM is being implemented, and the CT requires extension, then we recommend using an EV Cable that integrates a shielded twisted pair.

If extending the CT clamp for dynamic load management and solar functions, please use a twisted pair connection such as CAT 5 E or a suitable EV cable. Match the polarity of the CT accordingly, ensuring that the coloured and white connections of the twisted pair correspond to S 1 and S 2 and terminate accordingly. (see images)

The clamp for the Current transformer (CT) shall be orientated to always point towards the load.

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

When the supply meter is a 5 wire meter, place the CT on the supply cable terminated into terminal 1 of the meter

Note

When the EV charging circuit protective devices are housed within an existing consumer unit, care should be taken to ensure the devices are not installed alongside those designated for existing large loads used for long durations, for example an air source heat pump where they typically operate for periods exceeding 30 minutes. Where this is unavoidable, a rated diversity correction factor must be applied.

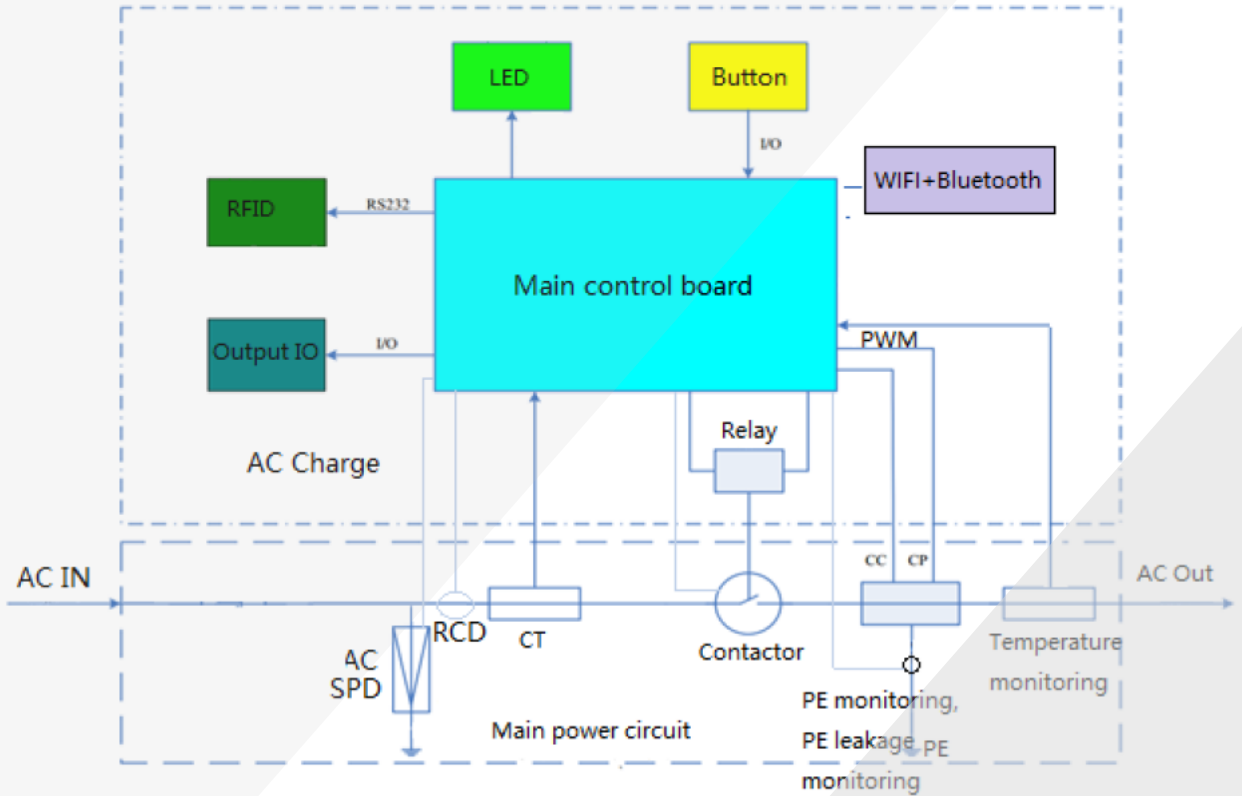
The total rating of any existing consumer unit should be observed and not exceeded.

It is recommended that cable installation underground, behind any extensive fauna or where impact severity is increased, be done using armoured cable. Ensuring the armour sheath is isolated from the charger, it is not necessary to use an earthing tag at the charger, only at the consumer unit. The charger does not require the SWA armouring to be used as a CPC.



Installation.

Wiring.



Terminal Number	1	2	3	4
Definition	RS485A	RS485B	CT+	CT-
Type	Meter		CT (Current Transformer)	
Wiring				

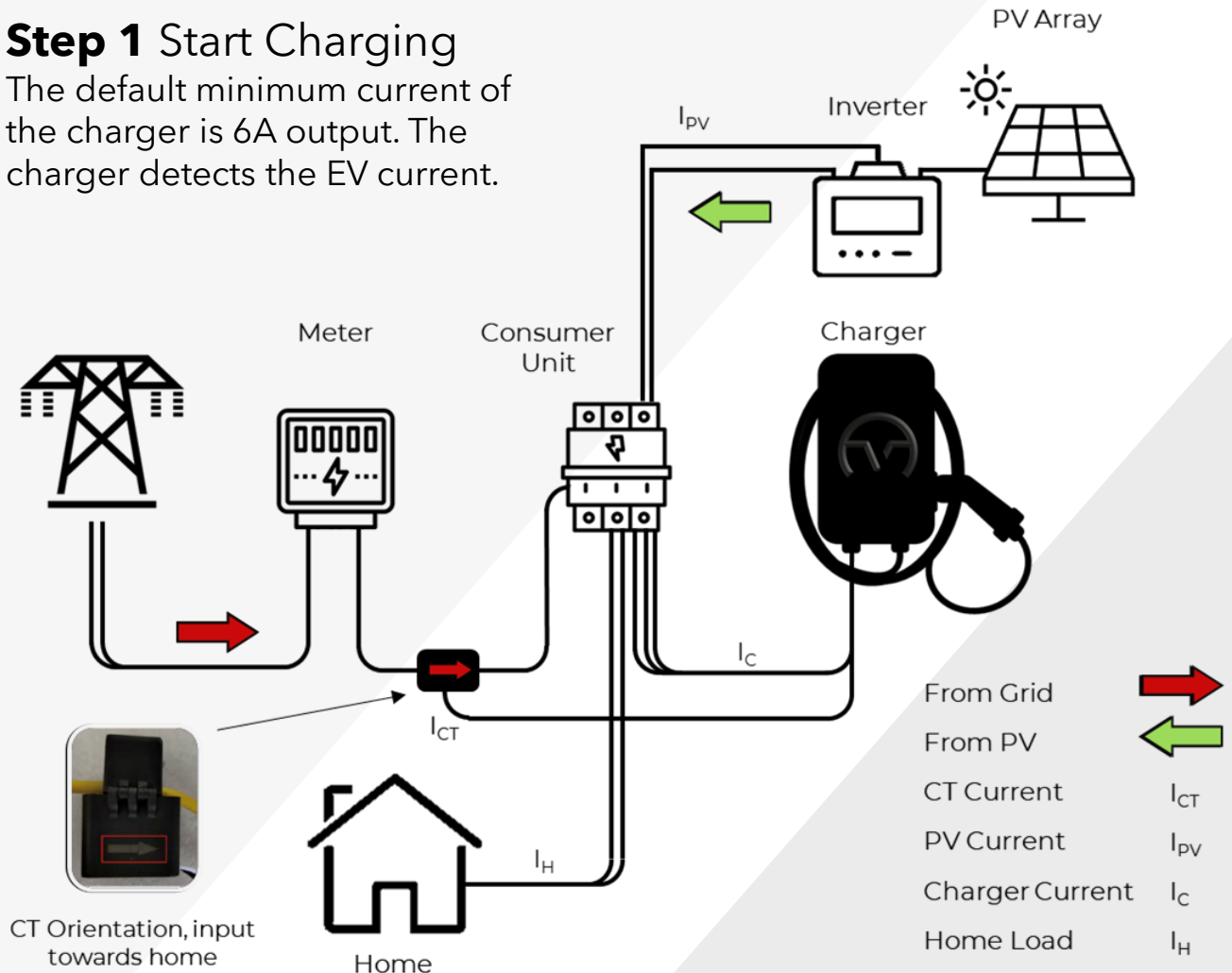


Installation.

Solar & DLM.

Step 1 Start Charging

The default minimum current of the charger is 6A output. The charger detects the EV current.



Step 2 Detect & Adjust

A $80A > I_{CT} > 6A$, Prioritise the use of household loads, even if the PV has current, it is used by I_H

I_{CT} is from the grid to the home, and is greater than 6A, the charger always maintains 6A output

B $I_{CT} = 80A$, The charger always has a minimum 6A output.

C $I_{CT} = 4A$, So $I_{PV} > I_H + 2A$, At this time, I_C increases 2A , So I_{CT} will remain at 6 A. As I_{PV} keeps increasing , I_C will continue to increase in 2A increments.

Solar charging power = $(I_C - I_{CT}) \times V \times T$

D $I_{CT} < 0A$, The I_{PV} is high, and the charger I_C continues to output at full power.

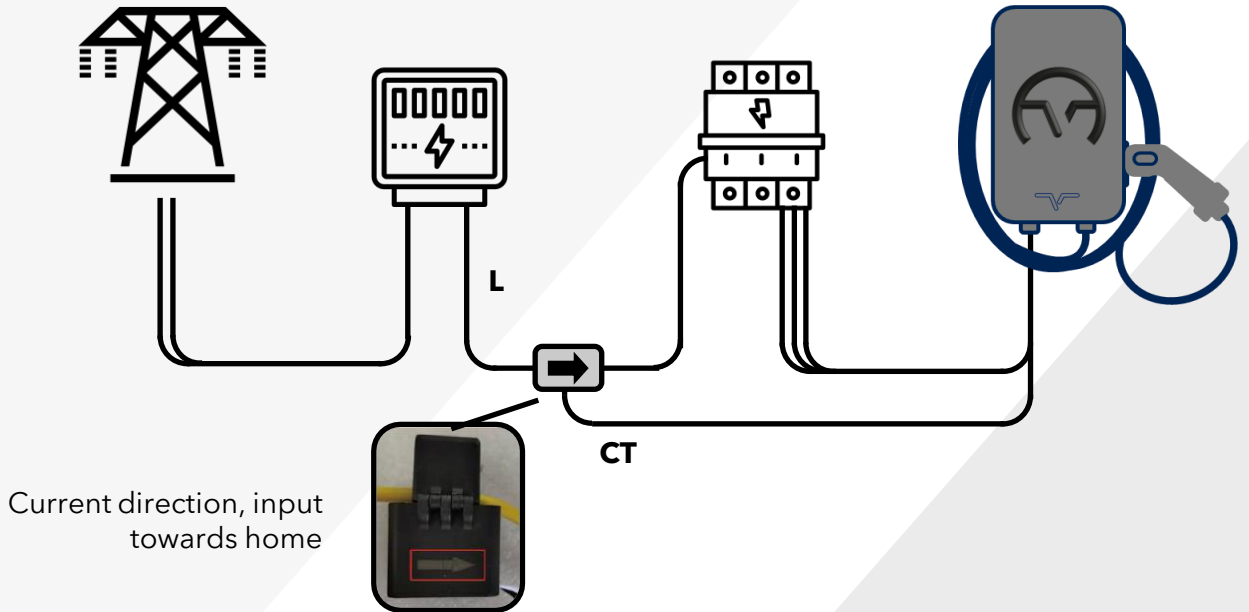
Solar charging power = $I_C \times V \times T$



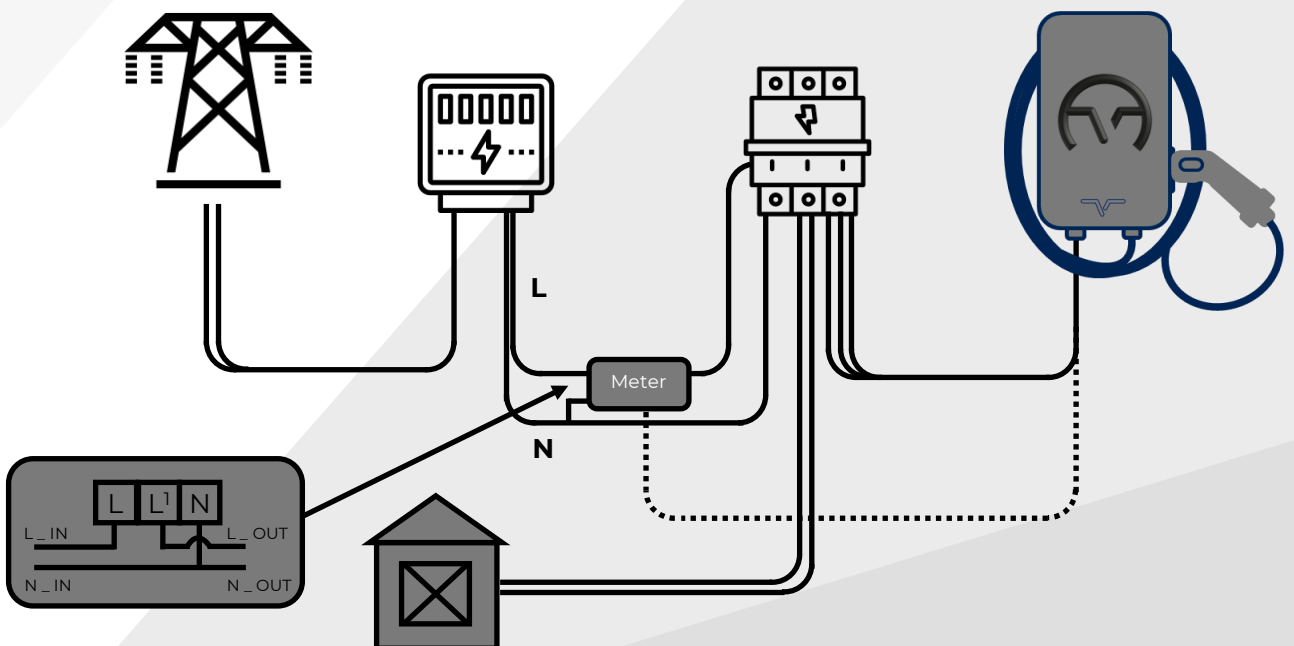
Installation.

CT Connection.

This is the **primary and preferred method** for dynamic load management installations. Extend CT clamp cable using a twisted pair, such as CAT5E.



Meter Connection.



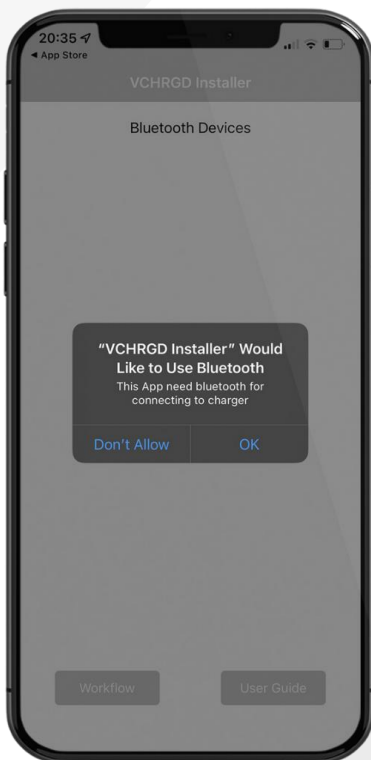
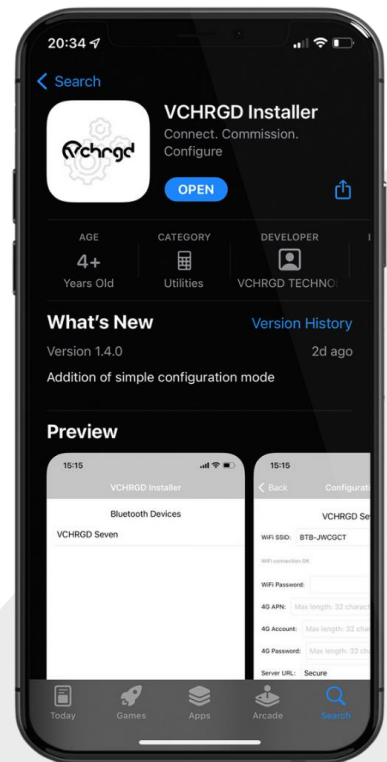
Connect.

The VCHRGD installer commissioning mobile app is a tool designed to enable charge point installers to quickly and easily set-up the VCHRGD Seven.

Connecting to the charger via Bluetooth, it allows installers to input WiFi credentials, set charge modes, set and change charger passwords define maximum output current & configure load management.

Download.

Download and install the App from the Google Play or Apple store. Search VCHRGD Installer or VCHRGD. To find the app.



Install.

Find and tap the VCHRGD Installer Icon on your mobile phone or tablet. When prompted, enable Bluetooth or location permissions (required for Bluetooth scanning).



Connect.

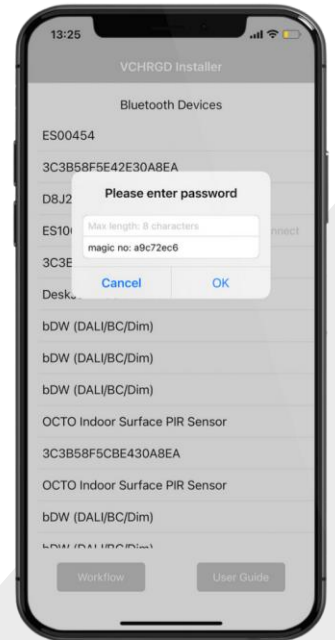
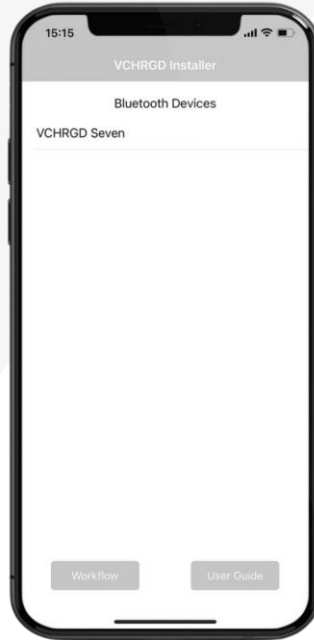
Open VCHRGD Installer, and the available Bluetooth device list page appears, you should see your charger here.

NOTE: If the connection attempt times out before connecting, wait and select the charger again once visible.

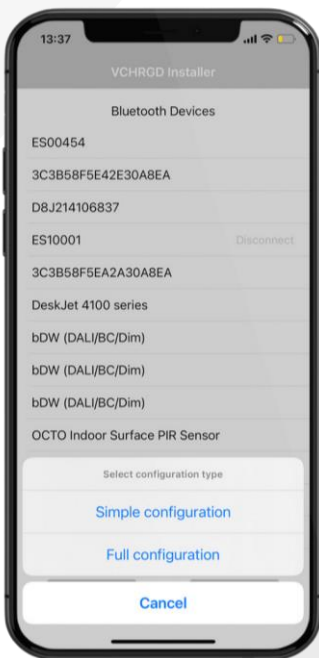
Enter Password.

1. Select your charger from the list of devices
2. Enter the password from the install kit
3. Tap **OK** to connect

If you have lost the installer password then please call VCHRGD technical support and quote the **Magic No.** for a temporary password.



ES00000 - APP ID: XXXX PIN:XXX
Installer Password: XXXXXXXX



Select Mode.

The installer app will now give you the option of **Simple** or **Full Configuration**.

Simple configuration allows you to connect the charger to WiFi and select the charge mode only.

Please select Full Configuration to give you access to all configuration settings, including load management & back-end settings as required for Powerverse commissioning.



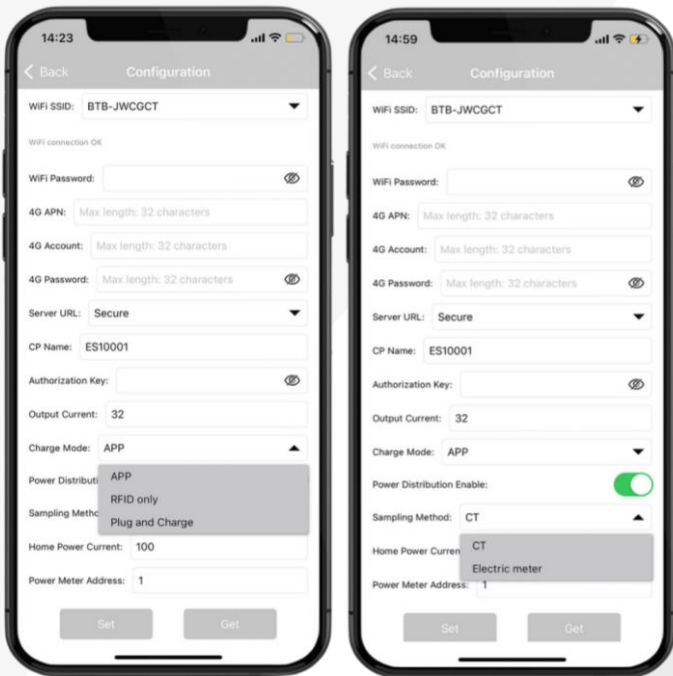
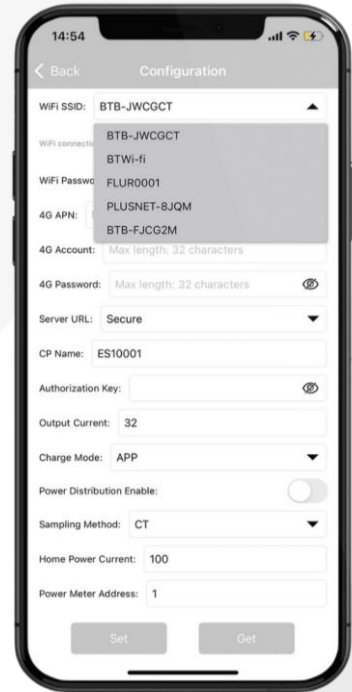
Configure.

Connectivity.

Select customer WiFi from the area scan list.

Once selected, enter the WiFi password into the field below.

Please note password is case sensitive



Charge Mode.

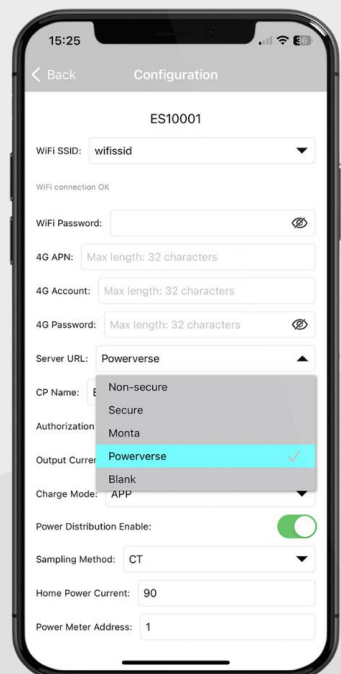
Configure the output current for the charger, **32A** is the default.

Select the charge mode from the drop-down list

- **App** - Full mobile app control

Set Server URL.

From the Server URL drop down list please select '**Powerverse**'.



Commission.

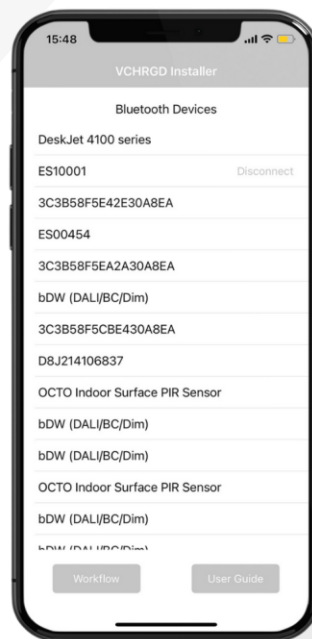
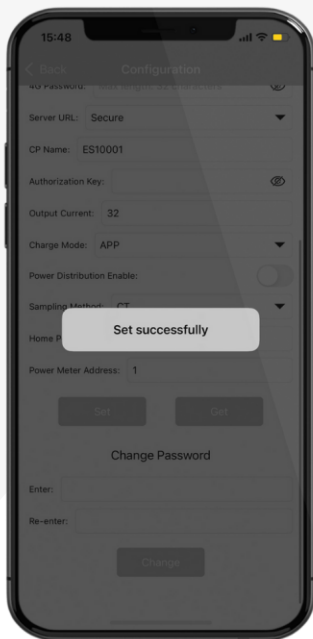
Load Management.

Set the Power Distribution Enable to ON (switch green), and set the home power current 60A unless approval has been sought from the DNO.

Sampling method on **CT** and Power meter Address at **1**.

Use these settings if CT clamp connected.

Confirm.



After modifying the page parameter information, click the SET button to send it to the charging point.

You will then see **Set Successfully** and should then disconnect automatically from the charge point.

If automatic disconnection doesn't occur.

Tap the **< Back** button in the top left hand corner of the app.

You will return to the **Bluetooth Devices** screen, here you should see **Disconnect** next to the charger ID. Tap this to disconnect and complete the commissioning process.

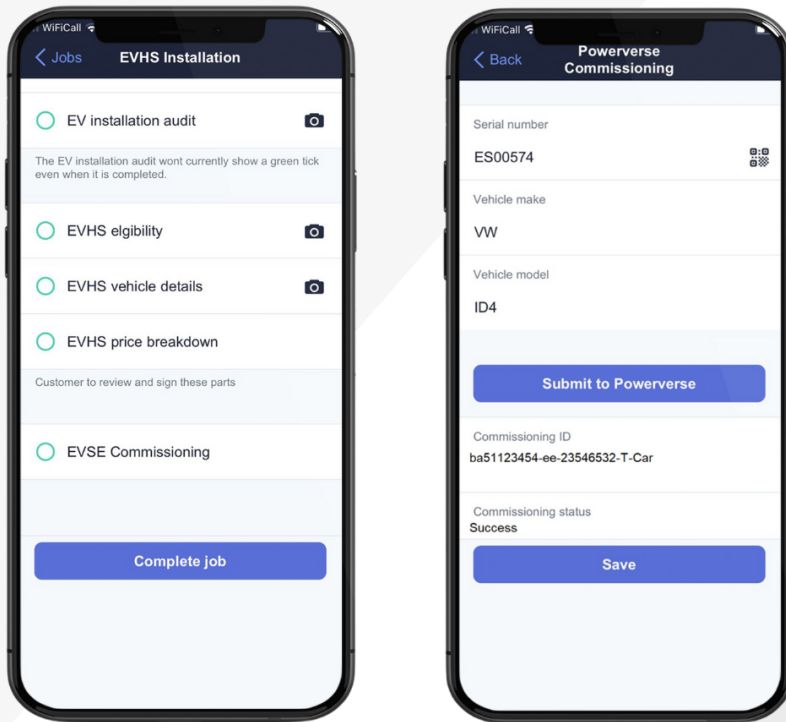
Once complete the charger will reboot, flash blue and beep.



Commission.

Onroute Installer App.

Once the charger is enabled and online, please ensure to commission the installation using the Onroute installer app.



1. Open Onroute Installer APP
2. Complete all necessary sections
3. Select Additional EVSE Commissioning section
4. Scan the serial number of the charger once installed (serial number located on the left side of the unit) - DO NOT scan the packaging serial number
5. Confirm vehicle Make/Model is correct
6. Click Submit to Powerverse
7. Await response (Fail/Success)
8. Successful jobs need to be saved
9. Complete Job



Home App

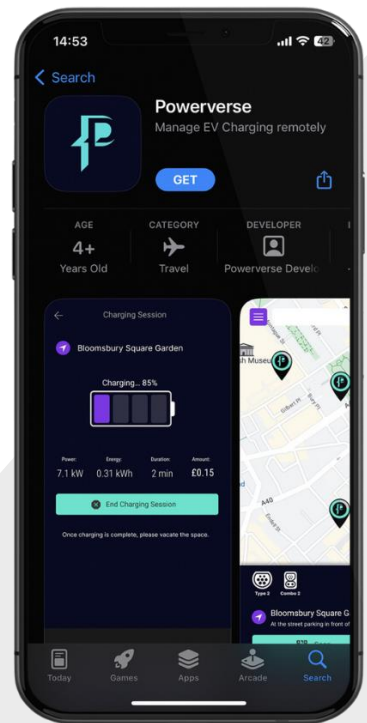
Once the charger is installed, the customer can follow the link in their "Welcome to Powerverse!" email to download the Powerverse app. They can then log-in to the Powerverse app using the credentials found in their "Welcome to Powerverse!" email.

If the customer has not received their email please contact Powerverse support on +44 (0)3333 055674.

Our working hours are Monday - Friday, 9am - 5pm (excluding National and Public Holidays)

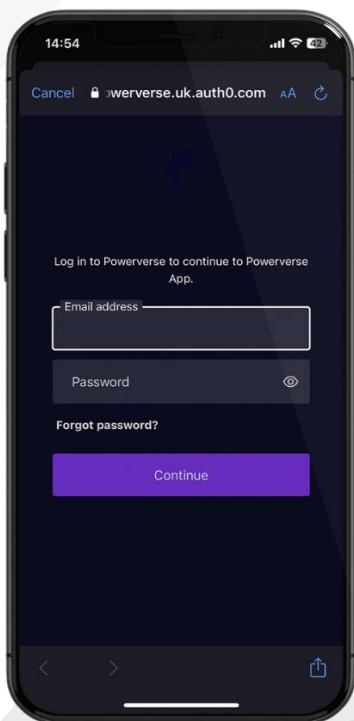
Download.

The customer can also download and install the App from the Google Play or Apple stores. Search Powerverse to find the App



Install.

Find and Tap the Powerverse Icon on your mobile phone or tablet. When prompted, enable App permissions including location and camera access to make the most of the Powerverse App.



After Sales.

Fault Indication.

LED Status	Status Description	Resolution
All lights off / No LED status	Power down	Check L1/L2/L3/N/PE wiring
Blue light on	Power on standby	Normal
Flashing green	Car connected, pending charge authorisation	Normal
Green light on	Car charging	Normal
LED Status Red		
Flash 1 time	Fault, RCD leakage protection, or PE has current	Disconnect charge connector and wait for the fault to be eliminated
Flash 2 times	Fault, Overcurrent Fault	Disconnect charge connector and wait for the fault to be eliminated
Flash 3 times	Fault, Ground (PE) Disconnect Fault	Check incoming power line, to see if PE is connected
Flash 4 times	Fault, Overvoltage	Check incoming power line, to see if L and N are connected incorrectly
Flash 5 times	Fault, Contactor Welded Fault	Check if contactor control line is loose, or the contactor is damaged, replace the contactor .
Flash 6 times	Fault, Emergency stop press, or emergency stop is broken	Check if the red emergency stop button on the side is pressed
Flash 7 times		
Flash 8 times	Fault, Under voltage	Check if the incoming line is loose
Flash 9 times	Fault, Over temperature	Stop charging and wait for normal temperature
Flash 10 times	Fault, Tamper Detection	Replace and secure front cover

Recycling.

The box that the VCHRGD Seven is shipped in can be recycled or reused. Please ensure you separate all plastic packaging used prior to recycling the cardboard.

Bag recycling.

The packaging bag and any plastics used are also 100% recyclable in accordance with your local authority.



After Sales.

Please make sure prior to leaving the site that customers have been able to log in to the app with the credentials they received on email, and that they can see their charger is functioning correctly

Thank you for installing the VCHRGD Seven Charger and commissioning it to the Powerverse platform.

If you need any support during the installation and commissioning process, please give us a call on the number below:

+44 (0)3333 055674

Office Hours

Monday to Friday, 9:00 - 17:00PM
(except national and public holidays)

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.

