

EV Charger

Type 2 Tethered, 7.4kW

EVT77G



Tools needed:

4mm Hex bit/allen key; PZ2 and flat blade screwdrivers; suitable drill bit and fixings

BOX CONTENT

- EV charger
- Decorative trim
- Installation template
- Accessories pack containing:
 - » Power connector
 - » Cord grip and screws
 - » M25 gland
 - » 25mm blanking plug
 - » Fixing screw caps
 - » Assembly screws

IMPORTANT NOTICE

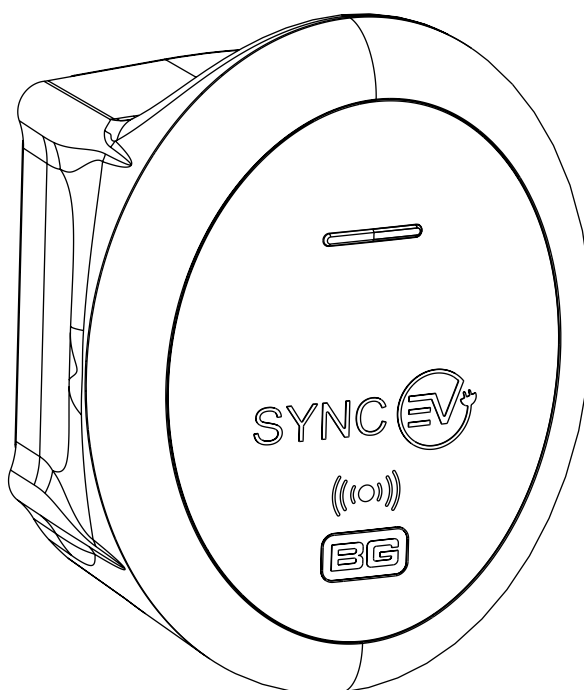
To commission your charger and register for the 3 year warranty, please visit:
www.sync-ev.co.uk/portal/login
 or use the QR code.



3 year warranty available as long as charger installation is registered, otherwise standard warranty is for a period of 1 year.

INTRODUCTION

This guide is intended for use by competent electrical installers to explain basic requirements and options to be considered when installed a SyncEV BG Charger. The unit is designed for installations inside or outside, the advanced safety technology we have built into the unit ensures its safe usage. This guide provides information to assist when installing the EVT7 charger and should not be used with other EV chargers.



IDENTIFICATION LABEL



SAFETY INFORMATION

Warning: The supplied SyncEV BG charger is manufactured to be safe without risk provide they are installed correctly, used, and maintained in accordance with the manufacturers recommendations and installed by a competent electrical installer in accordance with national and local regulations and legislation applicable at the time of installation, e.g. BS7671:2018 amendment 2.

The single phase EV charger should be connected to a 230V/240V nominal AC supply. The supply should run from a dedicated 40A circuit breaker. We recommend the use of a Type B curve circuit breakers. The EV charger features an integral 30mA type-A RCD with 6mA DC leakage detection and therefore an external RCD is not usually required:

1. For cables without earthed metallic covering installed in walls or partitions at a depth of less than 50mm and also within walls and partitions with metal parts, and not protected by steel conduit or similar then RCD protection is required. This can be achieved by using the BG IP65 EV protection enclosure (CFEV1A) when mounted next to the existing consumer unit as it includes a double pole 40A 30mA Type A RCD device to protect the circuit. This can be used if the cable has no mechanical protection where it passes through walls and partitions and if the cable is buried within the ground before reaching the EV charger. This will be in compliance with the current BS7671 Amendment 2 Wiring Regulations.
2. If the cable is clipped directly to the surface of a wall and does not pass through a wall or partition to the EV charger then a standard B type 40A MCB may be installed into the Consumer unit, however RCD protection may be required for other reasons such as if it forms part of a TT system and the earth fault loop impedance values cannot be met. This will be in compliance with the current BS7671 Amendment 2 Wiring Regulations.

To conform with BS 7671, on occasions a double pole MCB/RCD or other means of isolation may be required.

Important note: A DC Leakage fault in the vehicle may “blind” a type “AC” RCD and render it ineffective, never feed any EVSE From an upstream Type “AC” RCD.

The EV Charger is pre-wired with 7.5M of cable, this should not be extended with the use of adapters and only used with the cable provided.

EARTHING REQUIREMENTS

The supplied EV charger features an on-board safety monitoring system to detect low or high voltage supplies and potential earth-neutral faults, this in accordance with regulation 722.411.4.1 (iv) of BS7671 2018 (Compliant on single phase supplies only). If such a condition is encountered the charge cycle is ended or prevented and the EV charger indicator goes red and effectively becomes a double insulated (class II) device. The vehicle becomes isolated from incoming supply and poses no risk to touch. This feature removes the requirement for an

earth electrode where it may be ineffective or introduce further risk.

The EV charger may be connected directly to a TN-C-S (PME) earthing system without any special arrangements. It remains the responsibility of the installer to conduct a risk assessment of the immediate area to a range of 10 meters (equipotential zone) to ensure no other conductive metal fixings pose risks (mixture of TT/TN-S and TN-C-S), this is important where cable length may enable charging inside or outside of a building/garage where the vehicle is within touch distance. Where certain conditions dictate an earth electrode must be used it shall be independent from the distributors earth system with no direct interconnection (the incoming supply SWA protective earth should be isolated from the housing and/ or earth electrode). The electrical installer shall install a suitable electrode complete with termination housing and covers where appropriate, warning labels should be visible and close to the unconnected SWA protective earth, e.g. inside the charger.

The earth connection shall be made from the electrode to the charger via copper conductor earth wire of an appropriate CSA for the installation. The earth wire shall be installed in conduit where there is a risk of mechanical damage or UV exposure. Additional note: SyncEV BG recommend Earth electrode impedance to be <100 ohms.

SURGE PROTECTION

Guidance on requirements for surge protection devices given In BS7671: section 443.

The EV charger is protected against transient over voltages (+/-2kV Line-Earth and +/-1kV Line-Line as a requirement of EN 61000-6-1), a direct lightning strike carries a current of 30~200kA the EV charger's internal protection would provide little or no protection in such an event, likewise nor would an SPD rated less than 30kA. If life support equipment or business operations could be affected by a lightning strike central SPD protection is advised if it does not already exist.

The guidance on risk calculation in section 443.5 of BS7671 in most cases is not possible due to unknown location of any SPD already fitted, length of cables to calculate LP etc, it is therefore recommended a common sense approach is used on choice of SPD (or if required).

ISOLATION AND SWITCHING FOR SAFETY AND MAINTENANCE

To ensure the EV charger can be “turned off” to enhance security and enable maintenance activities, a double pole isolator (or DP RCD or RCBO) suitably rated must be installed within the customer's property. An isolator switch is a mandatory requirement for “new builds”, but optional for existing dwellings (at customer's request), the switch should be mounted between 500mm and 1500mm above finished floor level to comply with regulations. The switch should be rated at 45 Amps. All installations must comply to BS7671: 2018.

INSTALLATION

The EV charger is suitable for installation inside and outside on a solid wall or structure. The installer should consult with the building owner to establish their preferred installation location. This should take into consideration the length of charging cable and risk of vehicle impact etc.

It is recommended the charger is installed at a height of 500mm-1500mm as per building regulations BS8300:2018.

If no suitable permanent structure is available, the EV charger can be mounted to a stand. We suggest of the SyncEV BG Stand, EVASTAND12S.

Ensure suitable fixings are used depending on the mounting surface. To avoid unnecessary dust inside the enclosure, it is recommended to use the included fixing hole template drill the surface, before fitting the enclosure.

Ensure installation wall has been checked for electric cabling or pipework with a suitable detector.

NOTE: if any groundworks are required e.g. cable trenching or earth electrode fitment, it is advisable to check if underground services could be present before commencement. Plans may be available at: www.linesearchbeforeudig.co.uk (free to domestic users).

The EV charger is suitable for bottom or rear cable entry, if using rear cable entry ensure the blanking plug supplied is fitted to the open bottom cable entry hole. If using SWA cable the included 25mm compression gland is NOT suitable, and an alternative gland will be required. Do not drill alternative cable entries into the charger housing, except marked cable entry location for rear entry.

SyncEV BG recommends using EV-Ultra™ – Power & Data Combined cable on installs that require a CT clamp to use the chargers dynamic load management capabilities. Please see: www.doncastercables.com/uploads/EV-Ultra_Datasheet.pdf

All of the cables that are to be connected into the supply connector should have their insulation striped back 18-20mm. Connectors supplied are suitable for cables of 4-6mm² and suitable for solid and stranded cores.

LOAD BALANCING

If Load Balancing is required, we suggest of the SyncEV BG CT clamp, EVA120CT1. This should be fitted around the incoming power to the main fuse and the correct max load (A) to be entered during setup and installation steps.

FINAL ELECTRICAL TESTING

To meet the BS7671:2018 (18th edition) requirements for testing of an electrical installation, the following tests and checks shall be performed by a competent electrical installer before during and after a SyncEV BG charger is installed:

- A visual inspection of the installation including the existing electrical installation.

- Verification of the characteristics of the electrical supply at the origin of the installation to confirm the supply is suitable for the additional load.
- A test to confirm the continuity of the circuit protective conductors.
- A test to confirm the integrity of the circuit insulation resistance.
- A test to confirm the polarity of the installation is correct.
- Where applicable a test to confirm the earth electrode resistance is within acceptable tolerances.
(or)
- An earth loop impedance test.
- A test of the mechanical operation of residual current devices (RCD's).
- A test to confirm the operation of residual current devices (RCD's) is within stipulated time scales (at the rated current and at five times the rated current operating current).
- A test or calculated measurement of the prospective fault current.
- A verification of the functional operation of the EV charger.

An electrical installation certificate must be completed.

Ensure electrical testing is done before EV charger commissioning and network setup is performed.

For this testing, the Charger can be set to “Plug and Charge” Mode in the installation App.

TROUBLESHOOTING

For further information, or to refer to our FAQs, please visit our website – www.syncbev.co.uk

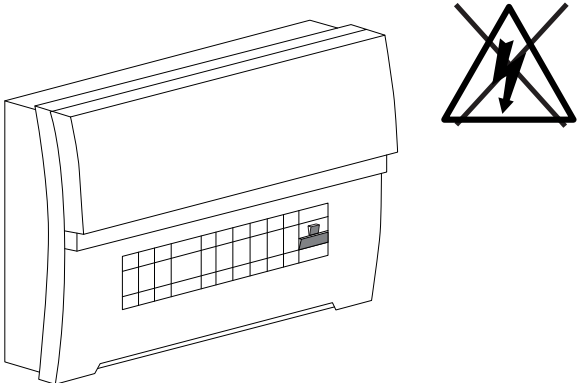
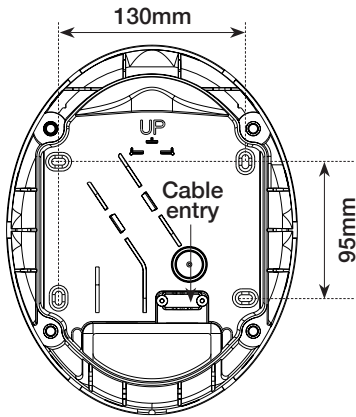
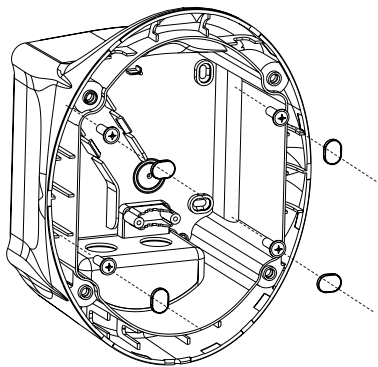
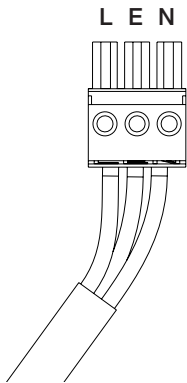
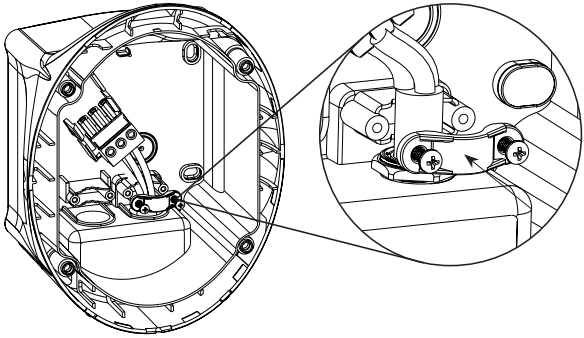
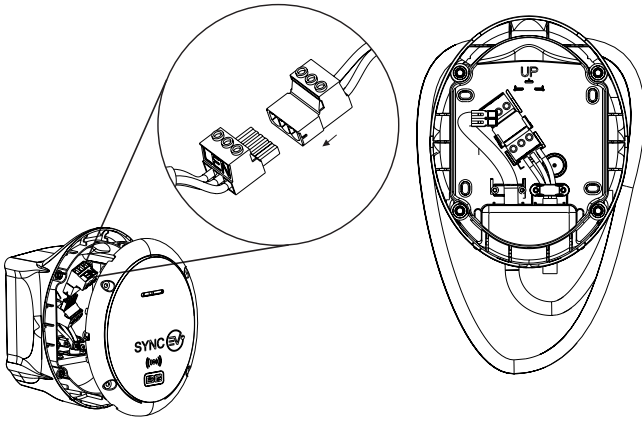
The status of the EV charger can be identified by referencing the colour shown on the LED indicator

- **SOLID BLUE** – Standby – Charger has power and is connected to the network. Or, if in ‘plug and charge’ mode is not connected to the network, is ready to charge.
- **FLASHING BLUE** – Charger is connected but not charging, awaiting confirmation of charge in APP or scheduled start time
- **SOLID DARK GREEN** – Charger is active and Charging
- **SOLID YELLOW** – Charger is offline from network, check local network is active and Wi-Fi is working on the 2.4Ghz band
- **FLASHING RED** – Indicates the charger is in fault mode and has stopped charging for users safety

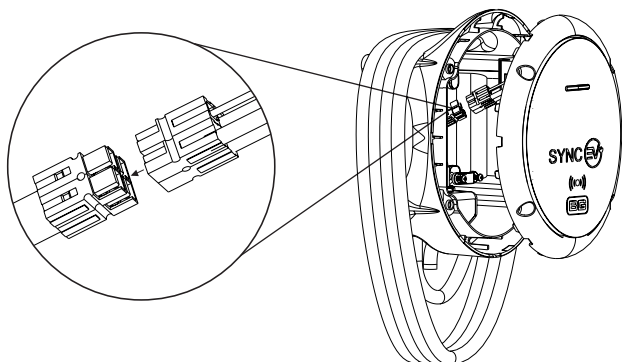
Potential causes:

- » Internal RCD has tripped
- » Vehicle fault
- » Under or over suitable charging voltage

Remove connection to EV vehicle and reset power to the EV charger.

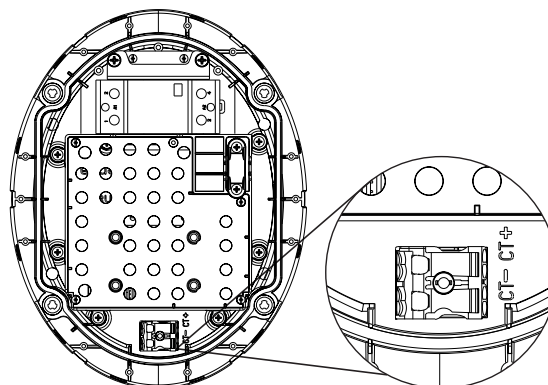
<p>①</p> 	<p>②</p>  <p>Use included hole template to drill fixing holes</p>
<p>③</p>  <p>Ensure the supplied caps are fitted over installation screws to maintain IP rating</p>	<p>④</p>  <p>Ensure correct polarity when making incoming power connections</p>
<p>⑤</p>  <p>Ensure supplied cord grip is fitted on incoming power cable if using bottom cable entry location</p>	<p>⑥</p>  <p>Ensure 3-pole power connector is fully inserted, then clip power connector into the base</p>

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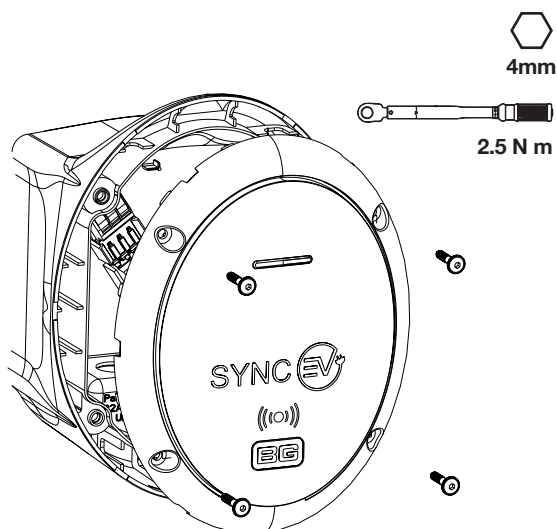
Ensure 4-pole output connector is fully inserted, then tuck into the base on the left side

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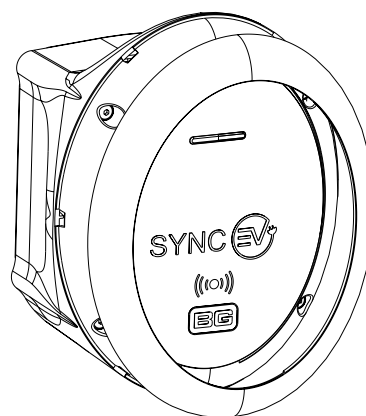


For dynamic load balancing, ensure connections are made in correct polarity to CT+ and CT- terminals

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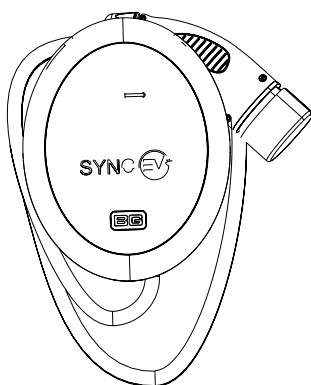


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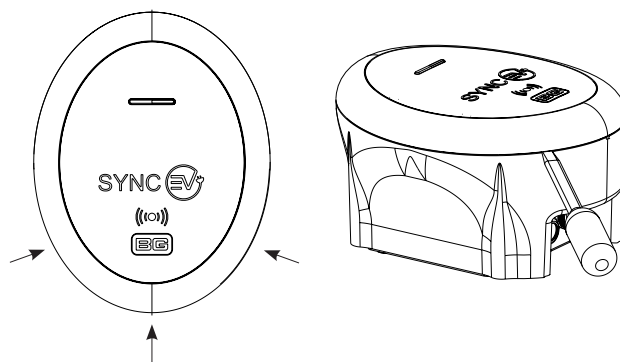
Snap front cover trim into place

11



We recommend cable is wrapped securely around the charger, with the gun placed at the top with its rubber cover fitted

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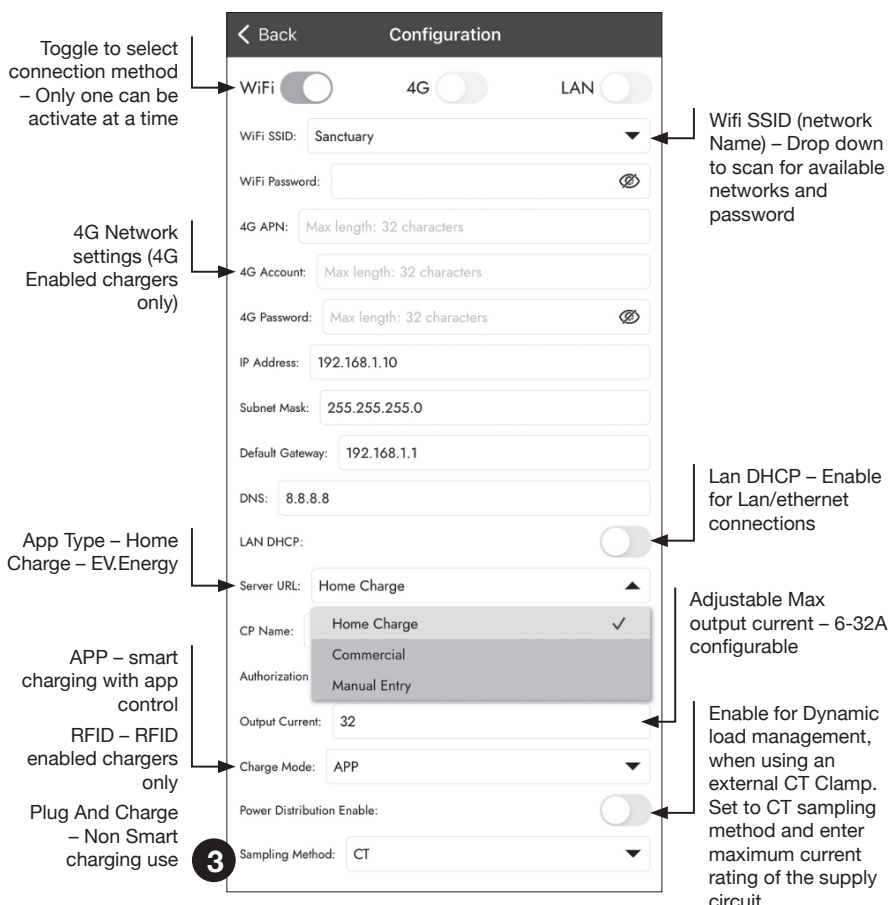
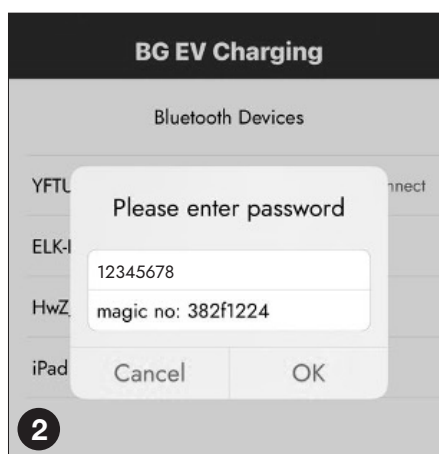
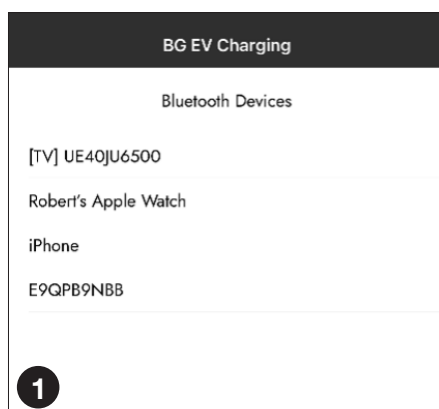


To remove trim, pry at shown points with a flat tool

INSTALLER APP - Download the BG EV Charging app via the Installer Portal on the sync-ev.co.uk website, or using the QR codes opposite.

Upon powering the charger, the status indicator light will show Yellow. This indicates that the charger is ready for network setup but is not yet connected to the internet.

For Wi-Fi connection we recommend that the router is set to only 2.4GHz band to reduce the risk of possible conflicts. Once setup the router can be restored to both 2.4GHz & 5GHz bands.



1. Ensure Bluetooth is active on your device. Open the BG_EV_Charging App and select the Charger ID Code as shown on the charger identification label.
2. Then enter the default charger password **12345678**. We recommend this is changed during setup and noted on the identification label.
3. Choose between Wifi, 4G and LAN (only one can be set).
For Wi-Fi select the SSID network name and enter password.
For LAN ensure that "LAN DHCP" is enabled.
For 4G the setting will have been pre-configured.
4. Server URL: 'Home Charge' for home charging or 'Commercial' for other'.
5. Output Current: set to max current supported by installation if less than default 32A.
6. Charge Mode: 'APP' for smart charging via the consumer App (see next page); 'Plug and Charge' for non-smart charging; or 'RFID' for RFID authorised charging. Use 'Plug and Charge' if connection to server cannot be established and car charging is required.

7. Power Distribution Enable: If dynamic load management is required then toggle right and set sampling method to CT.
8. Maximum Current Limit: For load balancing this should be the same or less than the main fuse rating. EV charger will reduce its charging rate to limit the total home load to be under the limit. If the available current is under the minimum of 6A the EV charger will pause the charging session.

Press 'Set' to upload correct settings and the charger will beep to confirm.

'Get' will read current settings from the charger.


In less than 2 minutes, the indicator should turn from Yellow to Blue to confirm network connection. If the charger continues to show yellow, power cycle (switch off/on at fuse board) and reconnect via the app to check the settings are correct.

If still unable to connect to the network but need to use the charger then change Charge Mode to 'Plug and Charge' and press 'SET' again to re-update settings.

If unable to establish network connection call (0330) 311 8388.

IMPORTANT!

THE INSTALLER MUST CONNECT THE CHARGE POINT TO THE SMART CHARGING APP AFTER INSTALLATION. SMART CHARGING WON'T WORK UNLESS YOU COMPLETE THE PROCESS BELOW:


1 

SyncEV Commissioning

Enter Charge Point Serial Number:

Next

To optimise smart charging and save the most money, a recent energy bill is required that to get the customers MPAN (this step can be skipped during commissioning). Also needed to commission the app is the customer's email, postcode and first line of address.

2 

SyncEV Commissioning

Customer email:

Confirm customer email:

Postcode:


Installation site postcode

Address:


First line of the installation site address

Next

This is the Homeowner email address

3 

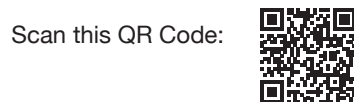
SyncEV Commissioning

 **Disconnected**
Car disconnected: light solid blue

Last Update 20/06/2022, 09:55:50	Charging Status Car disconnected
Load 0.0 kW	Firmware AC7K-88071-AT2.12

Enable Disable Refresh

Next



or visit the webpage at:
<https://app.ev.energy/commissioning/syncev>

1. Enter the Charger ID – Found on the front of the installation manual. This is a 9 Character alpha-numeric code. Follow the on-screen instructions as shown in steps 2 & 3 above, and that's it!
The process should take ~ 2 minutes

Problem connecting to the app? Contact us: support@ev.energy
Alternatively, for business-hours support call 01202 068000.

APP SETUP

Download the ev.energy App using the QR code or follow the link in your 'setup your smart charger' Email.



Important - The charger is linked to an email address stored on the ev.energy server, it is imperative that this email address is correct otherwise the charger will need to be recommissioned.

Three Simple steps to set up smart charging:

1. Create an account in the app using the same email you gave to the installer
2. Have your car registration number and your energy supply details ready.
The car information is used to maximise the amount of money that can be saved from smart charging according to your car battery size
3. Follow the steps within the app to set up your car, charger and energy supply

If the required car or energy information cannot be obtained you can skip these features.

ENVIRONMENTAL PROTECTION



This symbol is known as the “Crossed-out Wheelie Bin Symbol”. When this symbol is marked on a product or battery, it means that it should not be disposed of with your general household waste. Some chemicals contained within electrical/electronic products or batteries can be harmful to health and the environment. Only dispose of electrical/electronic/battery items in separate collection schemes, which cater for the recovery and recycling of materials contained within. Your co-operation is vital to ensure the success of these schemes and for the protection of the environment.

GUARANTEE

SyncEV BG products are guaranteed against faulty materials and workmanship for a period of 3 years from date of delivery: products will be repaired or (at BG Electrical’s discretion) replacements will be supplied or (at BG Electrical’s discretion) a credit note will be issued. This guarantee is subject to BG Electrical’s conditions of sale and in particular to the following conditions being met:

1. Notification of any defect is given to BG Electrical as soon as reasonably practicable after becoming apparent, and the products then returned to BG Electrical.
2. The products have only been operated under normal operating conditions and have only been subject to normal use.
3. No work (other than normal and proper maintenance) has been carried out to the products without BG Electrical’s prior written consent.
4. The products have been assembled, or incorporated into other goods, by a qualified and recognised electrician and only in accordance with any instructions issued by BG Electrical.
5. The defect has not arisen from an item manufactured or supplied by a person other than BG Electrical.
6. 3 year warranty available as long as charger installation is registered, otherwise standard warranty is for a period of 1 year.

TECHNICAL

Voltage	220-240V ac
Frequency	50-60Hz
Rating	6-32A output
Wi-Fi	2.4GHz Band b/g/n/e/i
RCD protection	6mA DC and 30mA AC Type A
Wi-Fi security	WPA/WPA2/WPA2-Enterprise/WPS
Bluetooth	4.2 BR/EDR
Fitted Cable	7.5m H07BZ5-F

STANDARDS

Approval standard	IEC 61851-1
Communication protocol	OCPP1.6J

If you have any further technical assistance you can get in touch with our Support Team:
support@syncev.co.uk