

EV Charger

Type 2 socket, 7.4kW

EVS7GGR - COMMERCIAL / RFID



Tools needed:

Hex bit holder, PZ2 and flat blade screwdriver, suitable drill bit and fixings

BOX CONTENT

- EV charger
- Decorative trim
- Installation template
- Accessories pack containing:

- » Power connector
- » Cord grip and screws
- » M25 gland
- » 2x 25mm blanking plug
- » Fixing screw caps
- » Assembly screws
- » Anti-tamper bit

INTRODUCTION

This guide is intended for use by competent electrical installers to explain basic requirements and options to be considered when installed a BG SyncEV 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 EVS7GGR charger and should not be used with other EV chargers.



SAFETY INFORMATION

Warning: The supplied BG SyncEV 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.

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: BG SyncEV 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 +/-1 kV 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 BG SyncEV 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.

BG SyncEV 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 BG SyncEV CT clamp, EVA 120CT1. 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 BG SyncEV 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

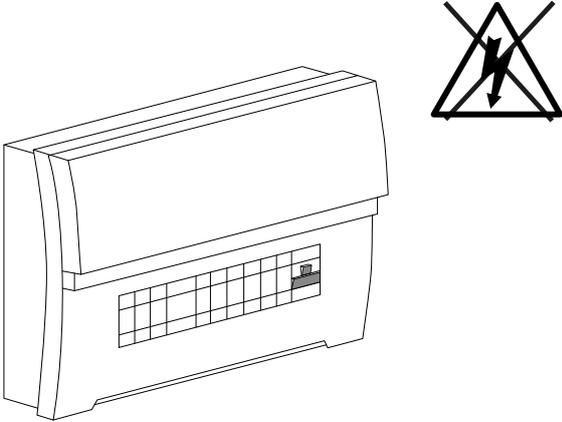
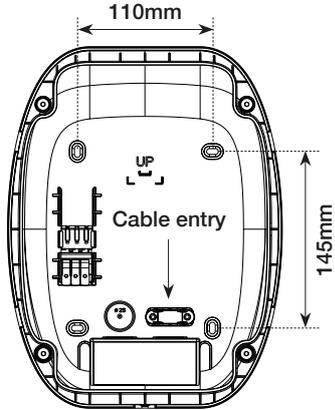
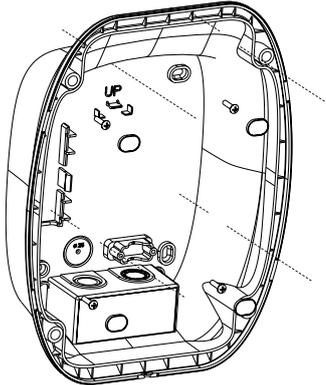
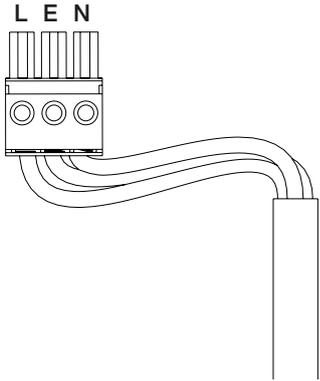
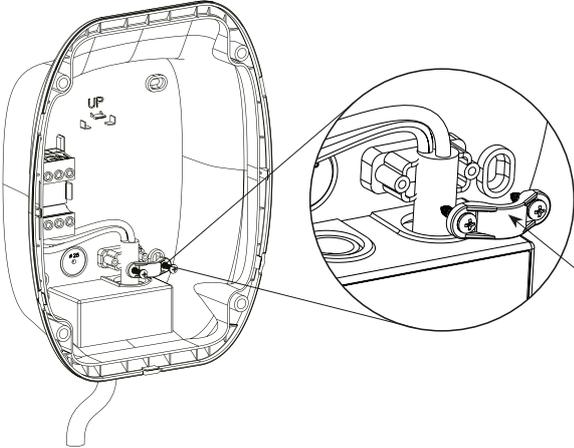
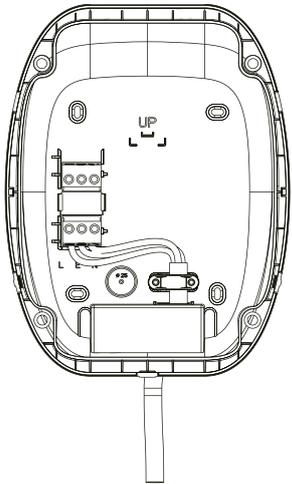
The status of the EV charger can be identified by referencing the colour shown on the LED indicator

- **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>

<p>7</p> <p>For dynamic load balancing, ensure connections are made in correct polarity to CT + and CT - terminals</p>	<p>8</p> <p>T25S Security Torx 2.5 N m</p> <p>We recommend completing electrical installation testing and network set up at this stage</p>
<p>9</p> <p>Snap front cover trim into place</p>	<p>10</p> <p>To remove trim, pry at shown points with a flat tool</p>

Commercial Partner account

The charger can be upgraded to suit a commercial application with multiple chargers and users sharing a fleet management account. - requires additional monthly and initial set up costs.

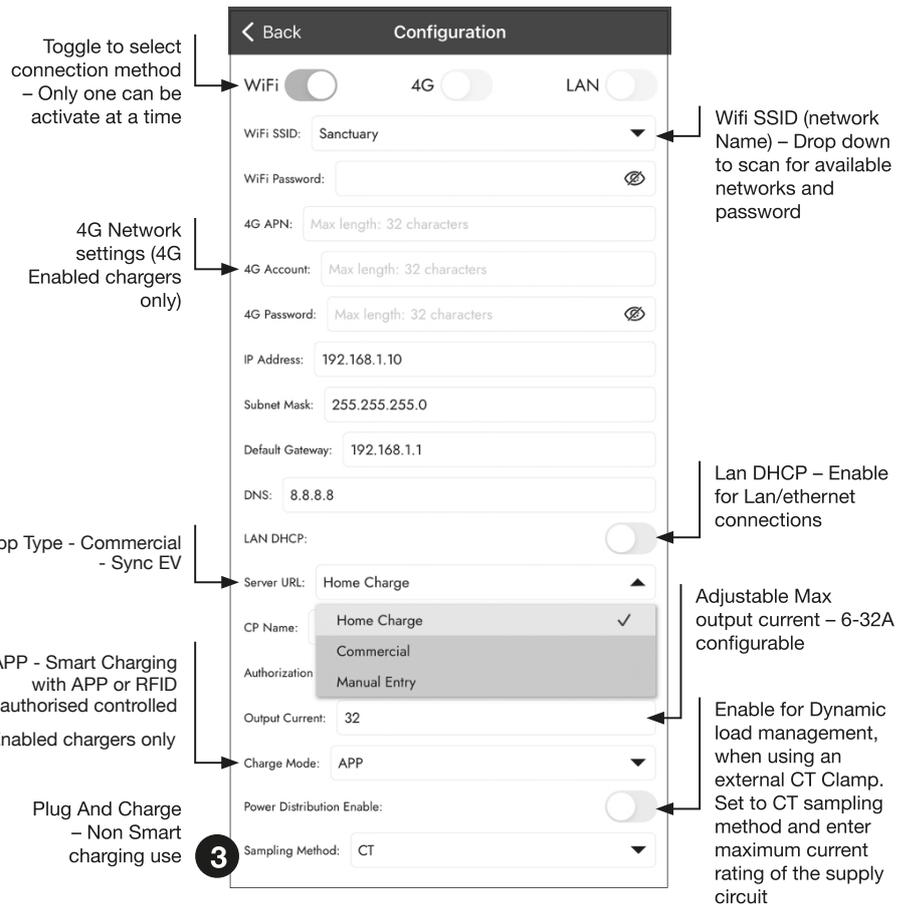
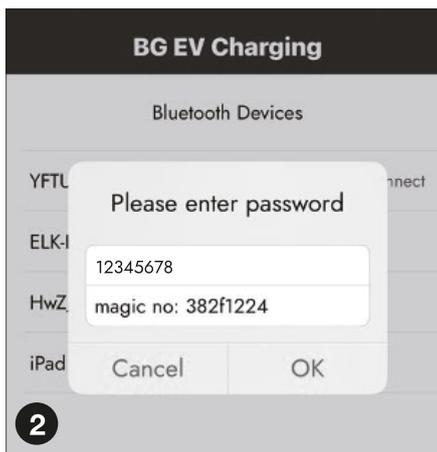
Contact workplace@syncev.co.uk for details.

- Scalable Software with lifetime OTA updates
Create, Add and Remove your own unlimited User Profiles. Cloud based Load Management options and OCPP integration allowing remote OTA updates through the lifetime of the product.
- Customisable Tariffs/User Groups
Multiple Tariff options such as Pay-To-Charge, Free-To-Charge, Corporate Billing/BiK/Virtual Wallet, options to set Connection Fees and/or Pre-Authourisation and ability to restrict operational hours and/or restrict charging sessions by maximum import/duration to allow charge points on your network to be tailored to any Private or Public requirement and each individual user.
- Fleet Management
Create and assign unlimited number of RFID Tags, specific to Users or Vehicles, offering the perfect means to monitor usage, cost and revenue generation within your business and export all historical data via CSV.
- Smart Reporting
Full visibility of charge point and user activity in real time, including fault notification to ensure minimal disruption to your network.

INSTALLER APP - Download the 'BG EV Charging' app here: [Apple Version](#) or [Google / Android Version](#). Also available from the Installer Portal on the syncev.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 password shown on the identification label. 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.

When connected to Wi-Fi, 4G enabled chargers will auto connect to a fall back 4G network when Wi-Fi network is lost.
4. Server URL: 'Home Charge' for home charging or 'Commercial for other'. 'Manual Entry' is for Monta or similar alternative back offices.
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. 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 (01952) 983 940 or email support@syncev.co.uk

Note: The network connection from the device to the Internet is fully encrypted and secure. Additionally, no user data is stored on the charger.

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:



SYNC EV APP

You will now need to inform your customer to download the SYNC EV Application



apps.apple.com/gb/app/sync-ev/id1528884639

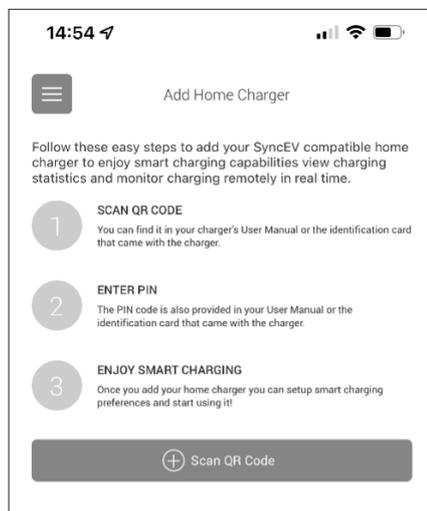


play.google.com/store/apps/details?id=syncev.co.uk&hl=en_GB&gl=GB

- Once downloaded, please register an account, the chargers QR code ID and Pin code can be found on the charge point identification label on the EV charger and enclosed on the cover of the installation and user guide.

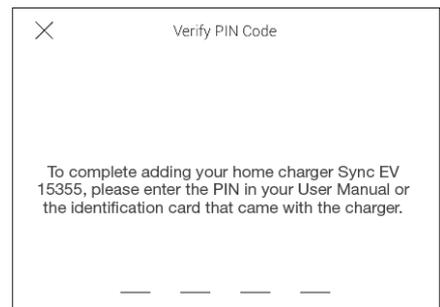
NOTE: The final step during the sign up process presents you with an option to input payment card details for Sync EV future public charging network. This is not mandatory and it can be skipped by pressing the "X" in the top left corner.

- Scan the QR code within the app, or enter the QR code number as shown on the Charger ID label to register this EV charger to the customers account.



- Once scanned, enter the PIN code to confirm set up.

Problem connecting to the app? Contact us at support@syncev.co.uk Alternatively, for business-hours support call (01952) 983 940



RFID Set up

To enable RFID and app authorised charging:

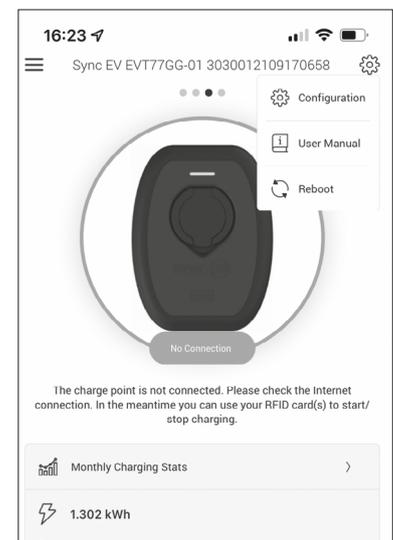
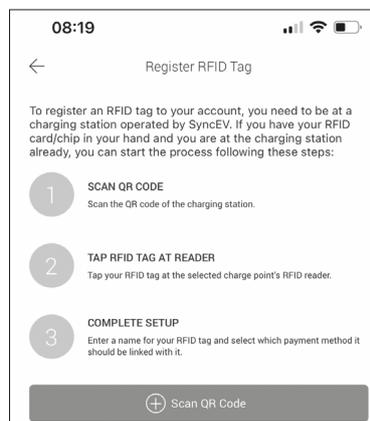
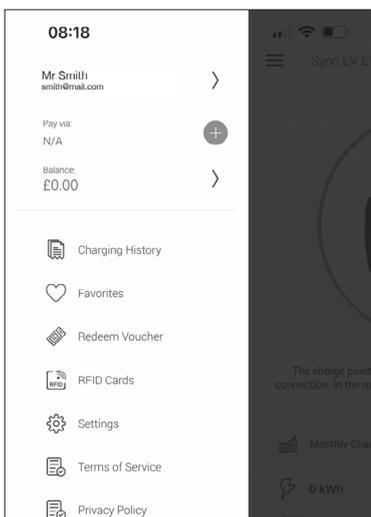
- Go to app options and select RFID Cards

- Scan QR code of charger, then when prompted tap the RFID FOB to the front of the charger to link the fob to the charger. RFID cards can be shared over multiple chargers.

- Authorised charging - Needed for the RFID function.

Select the gear symbol on the charger-configuration

Select Authentication and change to Required to start charging and "Save Changes"



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

BG SyncEV 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 SyncEV’s discretion) replacements will be supplied or (at BG SyncEV’s discretion) a credit note will be issued. This guarantee is subject to BG SyncEV’s conditions of sale and in particular to the following conditions being met:

1. Notification of any defect is given to BG SyncEV as soon as reasonably practicable after becoming apparent, and the products then returned to BG SyncEV.
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 SyncEV’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 SyncEV.
5. The defect has not arisen from an item manufactured or supplied by a person other than BG SyncEV.
6. 3 year warranty as standard.
7. 3 years of 4G data included when used for commercial charging with the standard SyncEV smart charging app. Other smart charging apps and premium services may incur additional data costs. Top-up online to continue 4G service after 3 years.

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
RFID	M1 compatible 13.56Mhz

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

BG SyncEV is a trading name of Luceco PLC.

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