



EV CHARGING ⚡

Masterplug Smart EV Charger Installation Guide

EVCM3SS7B - 7.4 kW, Type 2 Socket with Auto-lock, Black

EVCM3ST7B - 7.4 kW, Tethered with 5M Type 2 Lead, Black

EVCM3SS7W - 7.4 kW, Type 2 Socket with Auto-lock, White

EVCM3ST7W - 7.4 kW, Tethered with 5M Type 2 Lead, White

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www.masterplug.com

Introduction

This guide is intended for use by competent electrical installers to explain basic requirements and options to be considered when installing a Masterplug EV 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 EVCM3Sx7 chargers and should not be used with other EV chargers.



Box contents

- EV Charger with Type 2 Socket or 5M Tethered lead
- Installation template & quick start guide
- Accessories pack containing:
 - » Power connector
 - » Cord grip and screws
 - » M25 gland
 - » 25mm blind grommet
 - » Bonded sealing washers
 - » Assembly screws
 - » Anti-tamper bit
 - » x1 CT clamp (EVA120CT1)
 - » x1 CT clamp connector (For load balancing and Integrated SolarCharge feature)

Tools required

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

Safety information

Warning: The supplied Masterplug EV 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 EV Charger is suitable for use with a single phase (for up-to 7.4kW charging) 220-240V 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.
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 two 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. If such a condition is encountered the charge cycle is ended or prevented and the EV charger indicator flashes red and effectively becomes a double insulated (class II) device. The vehicle becomes isolated in accordance with Regulation 543.3.3.101(ii) 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. Recommended 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 two 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 requirements

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 recommend of the BG SyncEV stand, EVASTAND12S (single) or EVASTAND12T (twin).

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 included 25mm rubber grommet is used to maintain the IP rating.

If using SWA cable the included 25mm compression gland is NOT suitable, an alternative gland will be required.

When using SWA please supply the charger from the bottom left cable entry point.

A maximum hole size of 32mm is acceptable at this location. Its advisable to earth the SWA armouring at the supply end of the cable.

Do not drill alternative cable entries into the charger housing, except marked cable entry location for rear or bottom entry.

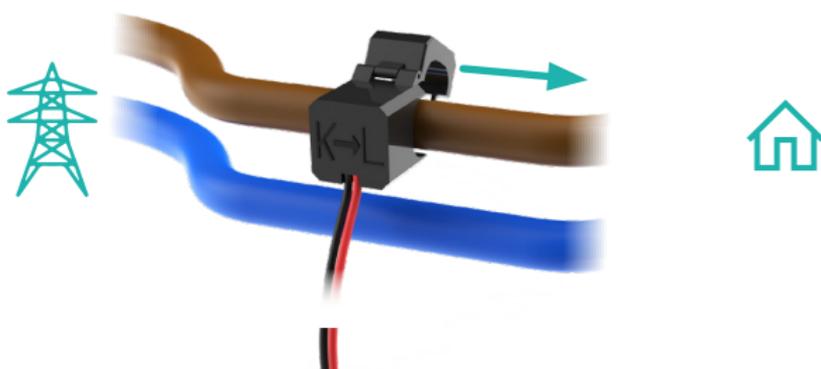
All of the cables that are to be connected in to the supply connector should have their insulation striped back 18-20mm. Connectors supplied are suitable for cables of 4-10mm².



Load balancing / Integrated Solar Charge Feature

If load balancing and/or Integrated SolarCharge feature is required, a single CT clamp should be used for correct balancing. One CT Clamp is supplied in the box with this charger. 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.

- 1 Locate the main incoming power cable into the property. The CT Clamp needs to be fitted before any of the tails are split for correct measurement.



- 2 Open the CT Clamp and fit around the incoming Live power cable, this is typically marked brown for most installations.

**Ensure the Arrow is pointing into the property from the incoming fuse.
K towards Source, L towards Load.**

- 3 CT Clamp current and voltage readings can be checked via the Bluetooth EV installer App to ensure correct connection and orientation.

External Mid Metering - RS485

If using an external Mid Meter connected via a RS485 connection the Dip switches need to be set. Dip 3 Up/On is required for external Mid Meter use.

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 Masterplug EV 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, Installation Mode can be enabled in the Bluetooth installer App.



Electrical Installation

- 1 Isolate the power



- 2 Use the included hole template to drill fixing holes



3

Drill base for required cable entry.
Suitable for 16-32mm hole size.
If using rear entry, ensure
included 25mm grommet is used



Left for 20mm
gland for coms
cables and
ethernet

Right for Flex
and SWA Cable

4

Ensure the supplied washers are
used to maintain IP rating



5

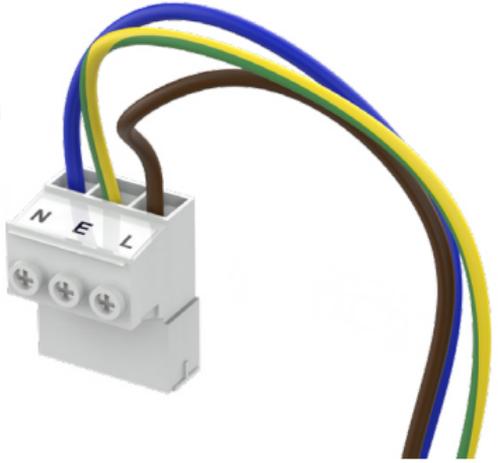
Ensure correct polarity when making incoming power connections

3 pin plug:

N - Blue

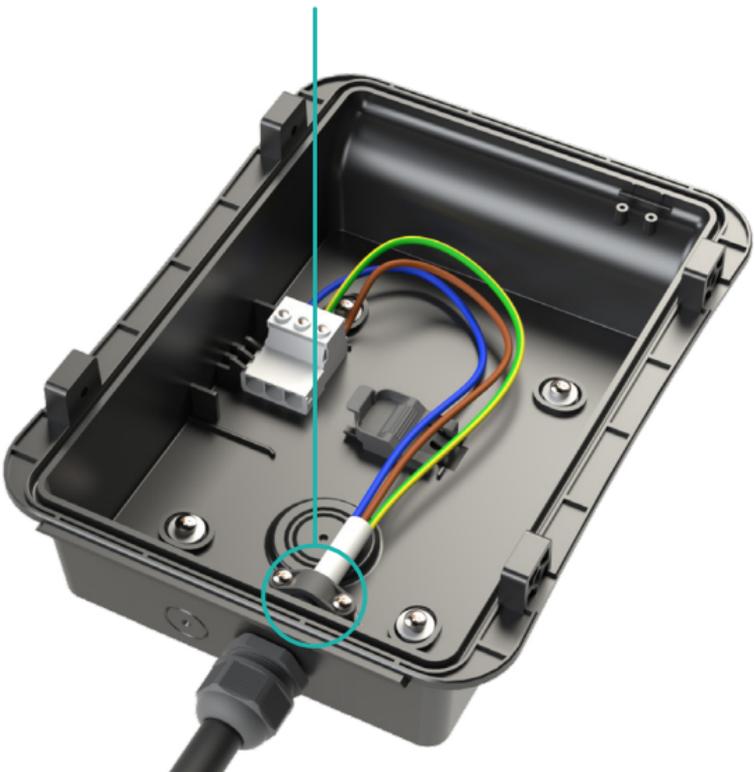
E - Yellow/Green

L - Brown



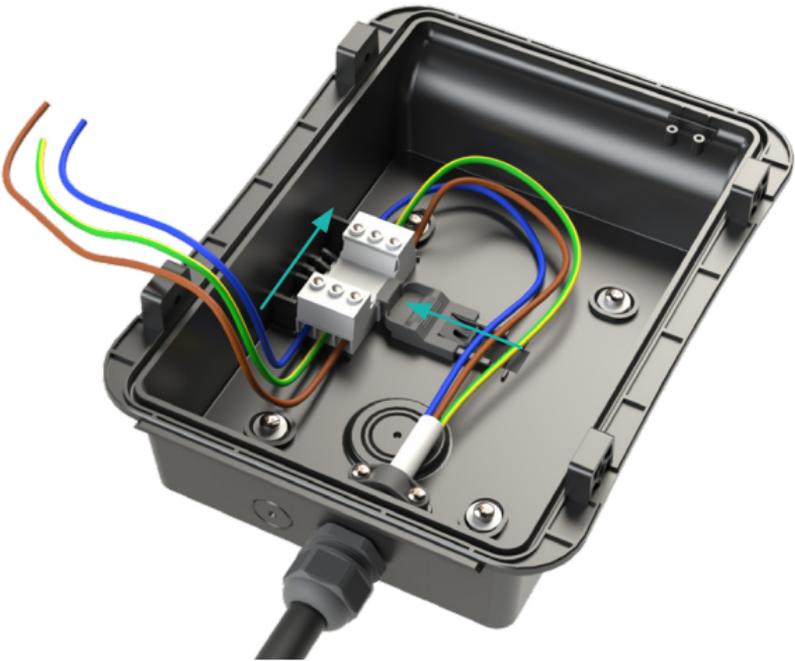
6

Ensure supplied cord grip is fitted on incoming power cable if using bottom cable entry location



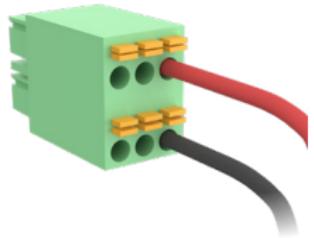
7

Ensure Power connector is fully inserted then slide clip to secure

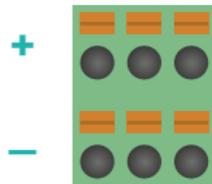


8

For dynamic load balancing, insert wires into the small connector



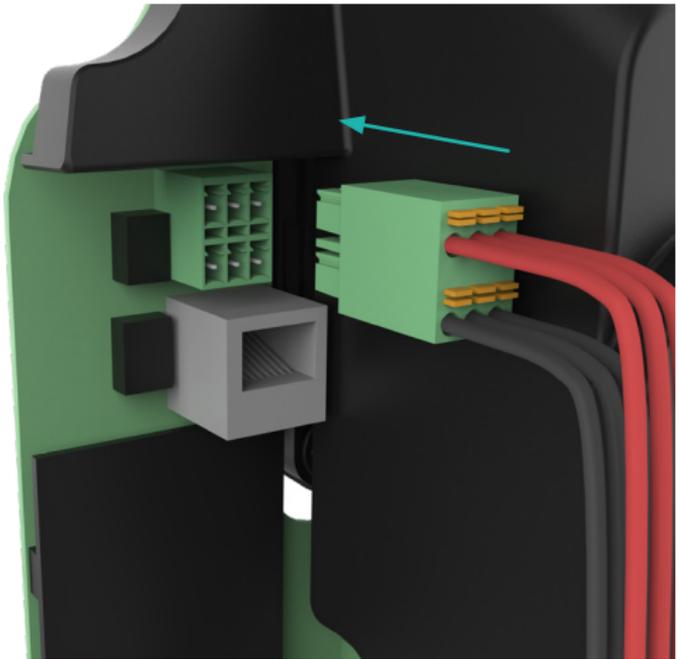
485 PV CT1



	485	PV	CT1
+	485A		CT+
-	485B		CT-

9

Plug connector into PCB, ensure correct polarity



10

Fix charger to the base ensuring correct torque settings



T25S Security Torx



2.5 Nm



Domestic Commissioning

INSTALLER APP – [Download the 'Sync Energy' app by clicking this link](#)

Also available from the Installer Portal on the [sync.energy website](https://sync.energy), or using the QR code opposite.



Intuitive Interface: The revamped interface is designed with the installer in mind. Everything you need is available through a new side-menu.

Effortless Setup: seamlessly configure your EV Chargers and Balancer devices with just a few taps. Get up and running in no time.

Account Management: Create and manage your account effortlessly. Keep a history of all your installed Chargers.





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. These steps are still required for 4G connected versions for setting of Dynamic Load Management.

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

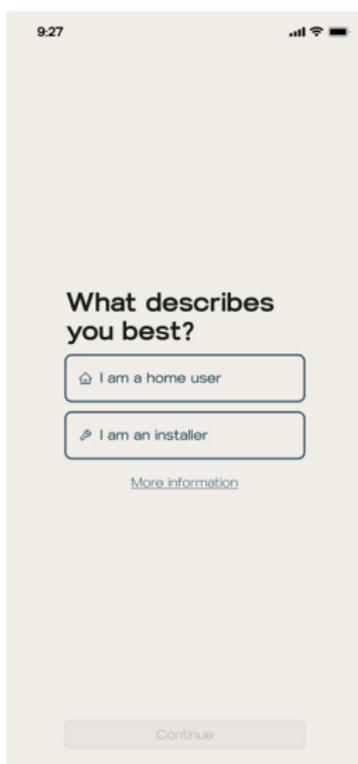
Open the Sync Energy App. If this is the first time you will be required to create an account.



2

Select account type:

The installer should choose the Installer account type. The customer / user of the charger should also download the app, and select "Home User" as their account type.



3

The installer should ensure Bluetooth is activated on your device and select set up new product.

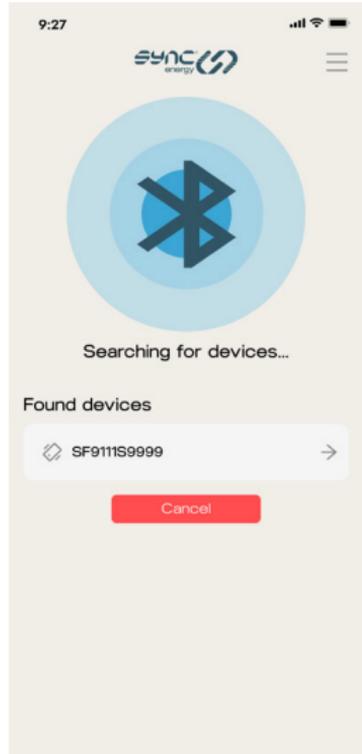
- If the EV charger does not show up under EV Charger option, go back and select show all Bluetooth devices.
- If no Bluetooth devices are shown, please check Bluetooth is turned on and the permission was granted in the app.



4

Select the correct EV Charger that matches the Charger ID code as shown on the charger identification label.

Then enter the password/PIN shown on the identification label.

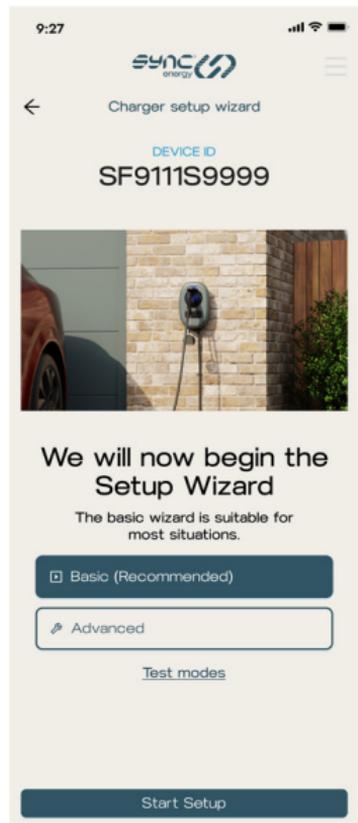


5

Select the Basic wizard, and press "Start Setup"

Select advanced if you need to:

- Set up multiple chargers with balancer
- Change the OCPP server and app



6

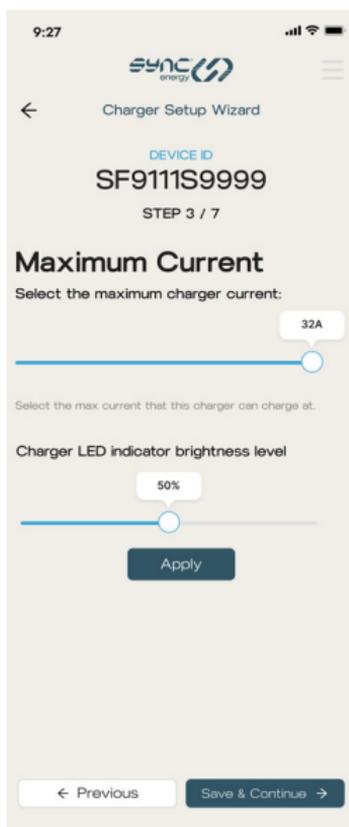
Max Charger Current:

Set to max current supported by installation if less than the default 32A.

7

Indicator Brightness:

Adjust from 1 to 100% to change the brightness of the status indicator.



8

Dynamic Load Management:

If Dynamic Load management or Auto Solar Charge is required, then select "Yes" to the CT clamp being fitted.

9

CT Clamp:

Set the configuration as either a Single or a Three Phase CT Clamp.

10

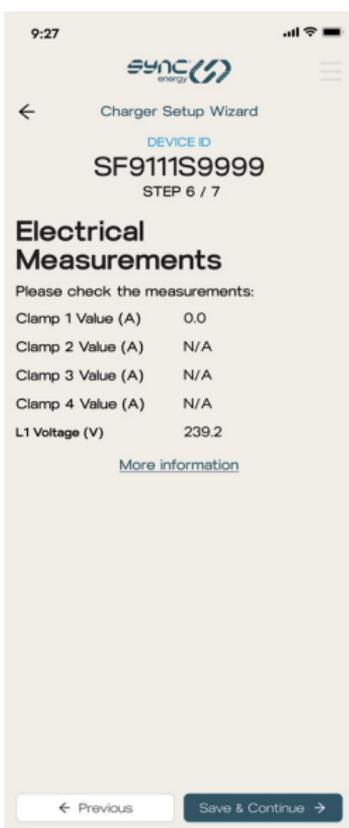
Max Circuit Rating:

Set the maximum circuit rating. This will reduce the charge rate if the property is near the set limit.

The screenshot shows the 'Charger Setup Wizard' interface for a SYNC energy device. The device ID is SF9111S9999. The current step is 'CT Meter', which is Step 4 of 7. The screen asks 'Is the CT clamp being fitted?' with two radio button options: 'Yes (recommended)' (selected) and 'No'. Below this, it explains that selecting 'Yes' allows for dynamic load management. The 'Configuration' section has two radio button options: 'Single CT Clamp (most common)' (selected) and 'Three Phase CT Clamp'. The 'Maximum home current' is set to 80A, shown on a slider. A note below the slider states: 'This is typically the rating of the main home fuse'. At the bottom, there are two buttons: 'Previous' and 'Save & Continue'.

Electrical Measurements:

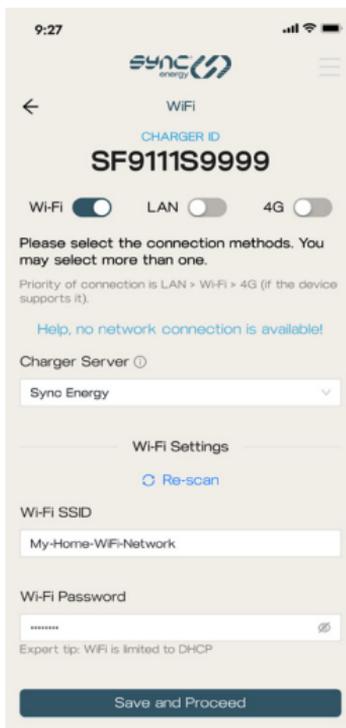
Check the shown electrical measurements match the measured readings. This will allow checking the load management CT is fitted in the correct orientation and location. A negative value indicates reverse direction of power due to, e.g Solar surplus, but could also indicate that the clamp has been installed in a reversed (incorrect) orientation or polarity wiring. If it shows up as "Check CT Clamp", check connections.



Network Setup:

For connecting to the network, ensure the required connection method is enabled. Choose between Wi-Fi, 4G (where supported) and LAN.

- For Wi-Fi, select the SSID network name and enter password.
- For LAN, ensure that "Manually Set Static IP Address" is disabled (unless advanced settings are required).
- For 4G, the settings will have been pre-configured where supported.
- Multiple options can be selected if required, this will allow a fall-back, e.g from Wi-Fi to 4G if fitted in case of network loss.



The screenshot shows the 'WIFI' configuration screen in the Sync Energy app. At the top, the time is 9:27 and the Sync Energy logo is visible. Below the logo, the text 'WIFI' and 'CHARGER ID SF9111S9999' are displayed. There are three toggle switches for 'Wi-Fi' (checked), 'LAN', and '4G'. A message states: 'Please select the connection methods. You may select more than one. Priority of connection is LAN > Wi-Fi > 4G (if the device supports it). Help, no network connection is available!'. Below this, the 'Charger Server' is set to 'Sync Energy'. Under 'Wi-Fi Settings', there is a 'Re-scan' button. The 'Wi-Fi SSID' is 'My-Home-WiFi-Network' and the 'Wi-Fi Password' is masked with asterisks. An 'Expert tip: WiFi is limited to DHCP' is shown at the bottom. A 'Save and Proceed' button is at the very bottom.

13

On LAN, the charger will default to DHCP. If static IP is required for the network connection, set the option "manually Set Static IP Address" to On and a manual IP address can be entered.

14

Press Save and Proceed to start network connection.

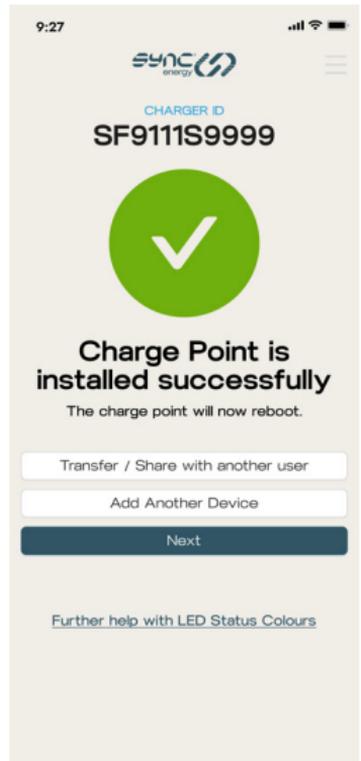
15

The Charger will attempt a network connection, if successful will then reboot to complete a RCD and safety function check.



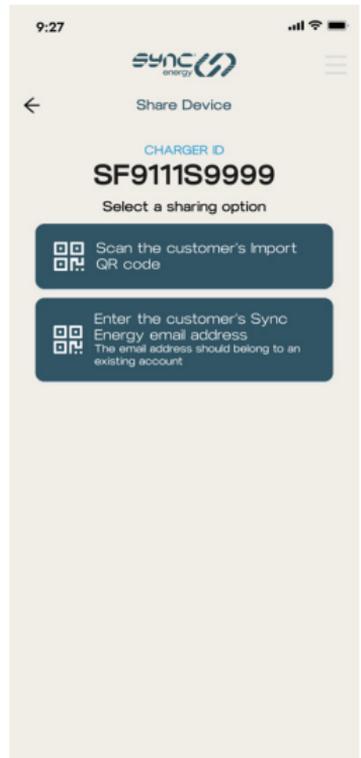
16

Once the charge point has been installed, select "Transfer / Share with another user".



17

You can now transfer the charger to the home user by scanning their import QR code, or entering their Sync Energy account email address. You can alternatively transfer it from Installation History screen. If the customer / home user is not present, they will simply need to scan the QR code on their "Getting Started Guide", when it is convenient to them.

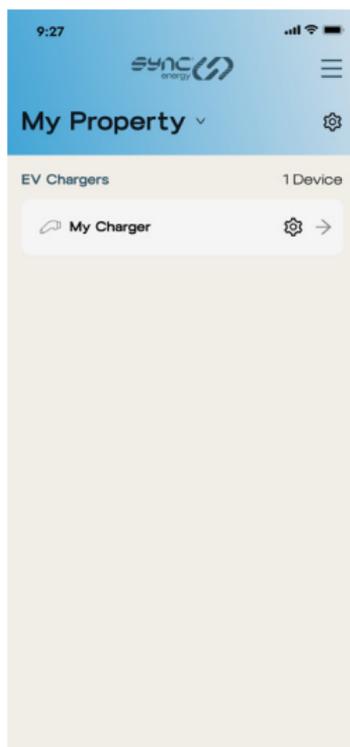


How the Home User Gets Their QR Code

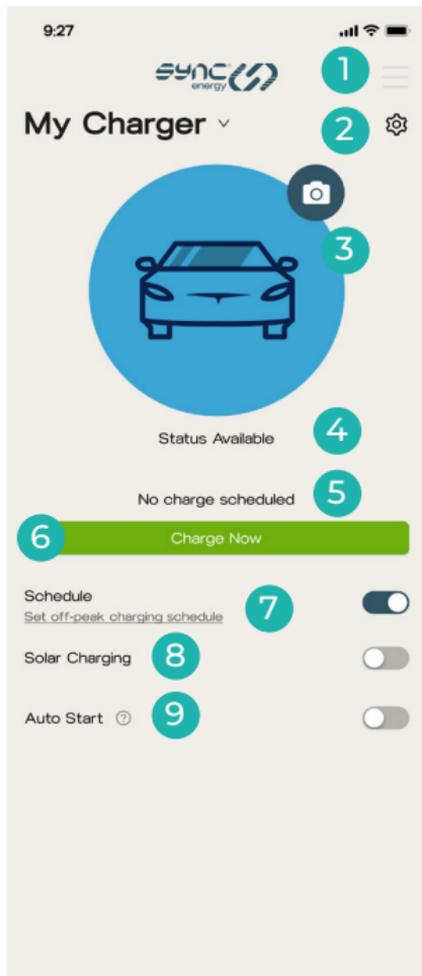
Press the menu > Add a device > EV Charger and then follow the in-app instructions

Home User EV Charger Control

1. Ensure the EV Charger has been imported to the home-user's Sync Energy app, by following the previous step(s) (refer to the numbering on the previous final step).
2. The home screen shows the available EV Charger(s). Press on it to start controlling it.



- 1 Main Menu
- 2 Charger Settings
- 3 Add an of your car (optional)
- 4 Charger Status
- 5 Start time of the next scheduled charge
- 6 Charge immediately*
- 7 Enable a schedule
- 8 Enable solar charging
- 9 Start charging automatically when a car is connected*



*Randomised starting delay will be applied, and it can be overridden if required.

Need help?

Contact Sync Energy technical support at:

support@sync.energy

or via the website at:

www.sync.energy

Technical information

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

Masterplug products are guaranteed against faulty materials and workmanship for a period of 3 years from date of delivery: products will be repaired or (at Masterplug’s discretion) replacements will be supplied or (at Masterplug’s discretion) a credit note will be issued.

This guarantee is subject to Masterplug’s conditions of sale and in particular to the following conditions being met:



1. Notification of any defect is given to Masterplug as soon as reasonably practicable after becoming apparent, and the products then returned to Masterplug.
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 Masterplug'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 Masterplug.
5. The defect has not arisen from an item manufactured or supplied by a person other than Masterplug.
6. 3 year warranty as standard, optional product registration can be completed on the Masterplug website.

[Follow this link to visit our Warranty web-page](#)



Technical data

RANGE FEATURES

CODES :	S7 SOCKET BLACK EVC3SS7B S7 SOCKET WHITE EVC3SS7W T7 5M TETHERED BLACK EVC3ST7B T7 5M TETHERED WHITE EVC3ST7W
SOCKET / PLUG :	TYPE 2 CONNECTOR
CHARGE CURRENT :	CONFIGURABLE 6-32A
INPUT VOLTAGE :	220-240V 50-60HZ SINGLE PHASE
COLOUR :	OPTIONAL: BLACK OR WHITE
IP / IK RATING :	IP65 / IK08
MATERIAL :	UV RESISTANT POLYCARBONATE
WALL FIXING :	4 POINT FIXING WITH HORIZONTAL AND VERTICAL ADJUSTMENT. SUPPLIED WITH FIXING HOLE TEMPLATE. FIXING CENTRES - 110MM X 145MM
CABLE MANAGEMENT :	INTEGRATED CABLE STORAGE
OPERATING TEMP :	-25°C TO + 50°C, INTEGRATED THERMAL PROTECTION
INCLUDED ACCESSORIES :	LOAD MANAGEMENT CLAMP, 1X25MM COMPRESSION GLAND, 1X25MM BLIND GROMMET, ANTI-TAMPER DRIVER BIT, POWER CONNECTORS AND 5X BASE FIXING WASHERS

NETWORK AND CONNECTIVITY

WI-FI :	2.4GHZ 802.11 B/G/N
WI-FI SECURITY :	WPA/WPA2/WPA2-ENTERPRISE



ETHERNET :	RJ45, SUPPORTS DHCP AND MANUAL STAIC IP ADDRESS
CONNECTION PROTOCOL :	OCPP 1.6J
BLUETOOTH :	EASY SET UP VIA BLUETOOTH INSTALLER APP, 4.2BR/EDR AND BLE
APP :	POWERED BY SYNC ENERGY APP

ELECTRICAL AND SAFETY

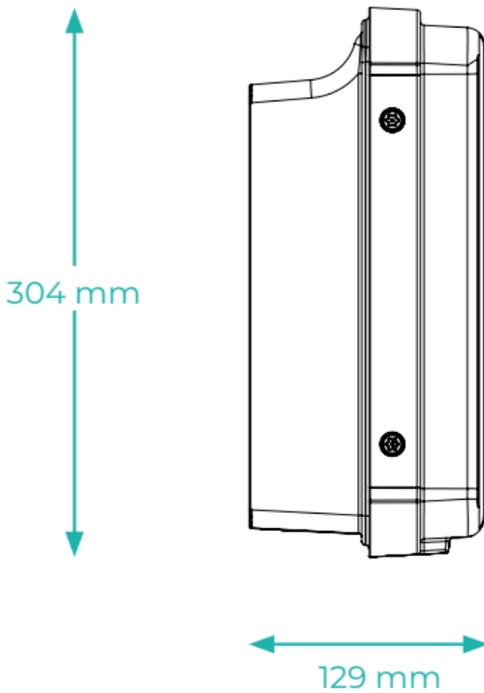
PEN PROTECTION :	YES, INTEGRATED EARTH DISCONNECTION
EARTH ROD :	NOT REQUIRED, SUPPORTS TT, TN C-S, PME
RCD PROTECTION :	YES, INTEGRATED 6MA DC AND 30MA AC TYPE A
ELECTRICAL CLASS :	CLASS 1, WITH CLASS 2 HOUSING FOR PEN FAULT PROTECTION
LOAD MANAGEMENT :	SUPPLIED WITH LOAD MANAGEMENT CLAMP, SUPPORTS UPTO 120A CIRCUITS
METER ACCURACY :	2% CLASS C EQUIVILANT INTERNAL METER, SUPPORTS EXTERNAL RS485 MODBUS METER
CONSUMER UNIT REQUIRMENTS :	40A MCB OR 30MA TYPE A RCBO (DEPENDENT ON CABLE TYPE AND/OR ROUTE)
TERMINALS :	COMBI SCREW FIRST FIX POWER PLUG
INDICATOR :	RBG LED AND BUZZER BLUE - STANDBY FLASHING BLUE - PREPARING GREEN - CHARGING FLASHING GREEN - CHARGE FINISHED YELLOW - NO NETWORK RED - ERROR
WARRANTY :	3 YEAR STANDARD WARRANTY



STANDARDS AND APPROVALS :

IEC61851-1, IEC61439-7, IEC 62955, IC 61851-21-2, BS EN62196, EN301 511, EN 301 908-1/2/13, EN 301 489-3, EN 300 330, EMC COMPLIANT, THE ELECTRIC VEHICLES (SMART CHARGE POINTS) REGULATIONS 2021 INCLUDING SCHEDULE 1

DIMENSIONS



Technical support

Need help with the app?

Contact Sync Energy customer support through the app or via the website www.sync.energy

Need help with the charge-point?

Contact Masterplug technical support at: technical.support@masterplug.com or via the website at www.masterplug.com

Masterplug is a trading name of Luceco plc.

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