

OCULAR



OCULAR IQ WALLBOX & IQ SOLAR

INSTALLATION GUIDE

IOCAW13-7S/7T & IOCAW13-22S/22T

IOCAW13-7S/7T- SOLAR & IOCAW13-22S/22T- SOLAR

OCULAR CHARGING AUSTRALIA

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OCULAR IQ WALLBOX INSTALLATION

Follow steps 1-4

OCULAR IQ SOLAR INSTALLATION

Follow steps 1-10

IMPORTANT !

READ THIS ENTIRE DOCUMENT BEFORE INSTALLING OR USING THE CHARGER. FAILURE TO DO SO OR TO FOLLOW ANY OF THE INSTRUCTIONS AND WARNINGS IN THIS DOCUMENT CAN RESULT IN FIRE, ELECTRICAL SHOCK, SERIOUS INJURY OR DEATH.

THE CHARGER MUST BE INSTALLED BY A QUALIFIED ELECTRICIAN.

THE ENTIRE INSTALLATION MUST COMPLY WITH THE LATEST AS 3000 STANDARDS

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For information on how to charge your electric vehicle, refer to the documentation provided with your vehicle.

SPECIFICATIONS

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at Ocular Charging, we reserve the right to make product modifications at any time.

Model	IOCAW13-7S / 7T IOCAW13-7S / 7T-SOLAR	IOCAW13-22S / 22T IOCAW13-22S / 22T-SOLAR
Voltage and Wiring	230V AC single-phase: LIVE, NEUTRAL ,and EARTH.	400VAC three-phase:L1,L2,L3,NEUTRAL,and EARTH.
Current and Power	Maximum 32A and 7kW	Maximum 32A and 22kW
Frequency	50-60 Hz	
Internal RCD	AC 30mA, DC 6mA	
Data Protocol	OCPP 1.6J, 2.0	
Charging Connector	SAE J1772, IEC62196 Type-2	
Buttons	1 x Physical Button	
RFID	ISO 14443 A/B	
Display	2.8" LCD	
Network Connectivity	Ethernet, WLAN	
Working Temperature	-30°C to 50°C	
Storage Temperature	-40°C to 70°C	
Working Humidity	5% - 95% without condensation	
Enclosure Dimensions	380 x 288 x 141 mm	
Shipping Dimensions	495 x 375 x 330 mm	
Shipping Weight	6.7Kg	7.7Kg
IP Rating	IP55	
Certifications	EN IEC 61851-1, EN IEC 61851-21-2, EN 61008-1, IEC 62955	

SELF-MONITORING AND RECOVERY

The charger will automatically resume charging after a minor fault such as OVP, UVP, OTP or OCP, with no user intervention required.

OCPP 1.6J, 2.0 FULL PROFILES & SMART CHARGING SUPPORT

The charger supports OCPP 1.6J, 2.0 including the latest smart charging profile to balance the load of charging stations with limited power supply.

PRODUCT OVERVIEW



No	Item
1	LED indicator
2	2.8" LCD screen
3	Status indicator, Fault, Online, Charging
4	RFID card reader
5	Physical button
6	Type-2 charging socket

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS

This document contains important instructions and warnings that must be followed when installing and maintaining the workplace pedestal charger

WARNINGS:



Do not install or use the charger near flammable, explosive, harsh, or combustible materials, chemicals, or vapors.

Turn off input power at the circuit breaker before installing or maintaining.

Do not use or stop using the charger if it is defective, appears cracked, frayed, broken or otherwise damaged, or fails to operate.

Do not attempt to open, disassemble, repair, tamper with, or modify the charger. The charger is not user serviceable. Contact iocharger or authorized service provider for any repairs.

Do not touch the charger sockets with sharp metallic objects, such as wire, tools or needles.

Do not put fingers into the charger sockets.

Do not use this charger if the EV charging cable is frayed, has broken insulation, or displays any other indication of damage.

Do not use this charger if the enclosure or the EV charging connector is broken, cracked, open, or shows any other indication of damage.



**Ferrules must be used to
ensure warranty is valid**

CAUTIONS:



The charger should be installed only by a qualified approved technician.

Make sure that the materials used and the installation procedures follow local building codes and safety standards.

Incorrect installation and testing of the charger could potentially damage either the vehicle's Battery and/or the charger itself. Any resulting damage is excluded from the warranty for both the vehicle and the charger.

Do not operate the charger in temperatures outside its operating range of -30°C to +50 °C.

Ensure that the EV charging cable is positioned properly to the charging sockets.

Do not use cleaning solvents to clean any of the charger's components.

NOTES BEFORE INSTALLATION

The charger should be protected by an external Residual Current Device (RCD) to be installed in the upstream circuit which complies with the following:

- Rated residual operating current not exceeding 30 mA
- Type-A

TOOLS REQUIRED

- Philips #2 screwdriver
- Electric drill

OVERVIEW OF STEPS

TURN OFF THE POWER SUPPLY. Then follow these steps to install the Charger:

1. Check box contents
2. CT Clamp Spec Requirements
3. Wall mounting & wiring
4. Install the charger
5. Internet connection
6. CT Clamp installation & wiring
7. CT Clap Configuration
8. CT Single phase setup
9. CT Three phase setup
10. Verify the installation

STEP ONE - CHECK BOX CONTENTS

If any of these components are damaged or missing, contact Ocular Charging.



EV Charger with backplate



User Manual x 1



Ferrule crimps x 4



Ferrule crimps x 3

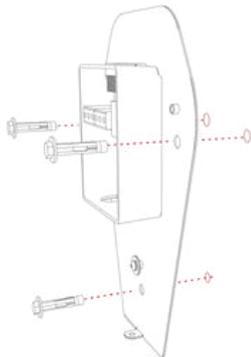


Expansion screws x 3

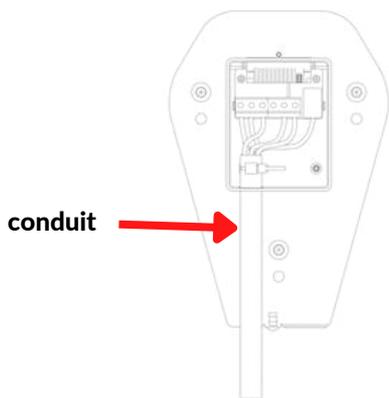
Ferrule crimps must be used to ensure warranty is valid

STEP TWO- WALL MOUNTING & WIRING

1. Remove the backplate from the charger and mount the backplate to the wall

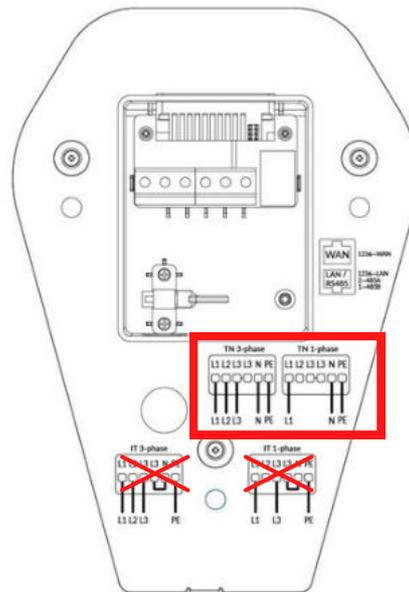


2. Connect the cable through the bottom of the junction box ensure **conduit** is connected to the bottom of the power box



3. Electrical Connection

In Australia only the TN network is used, as shown on the label on the back plate.



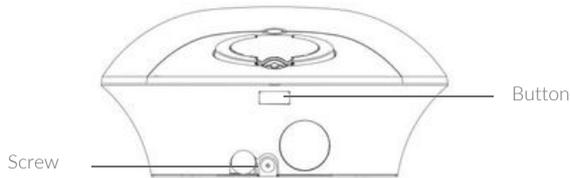
Ferrule crimps must be used to ensure warranty is valid

STEP THREE – INSTALL THE CHARGER

1. Install the charger to the backplate



2. Fix the charger and backplate with screw



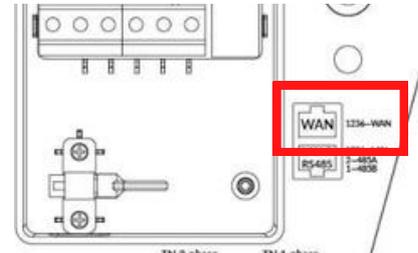
STEP FOUR – INTERNET CONNECTION

Ethernet - *Commercial, Apartment or Home installations*

Please connect the ethernet cable to the WAN port this should connect automatically to the internet if there's no IT restrictions,

(if static IP address is required please refer to the Ocular Configuration manual)

(See Ocular or local supplier for manual)



Wi-Fi

(Not recommend in commercial installations or apartments.) Please note: unstable/weak WI-FI connection may cause undesired operational issues. Please call installer if Wi-fi signal is insufficient.

Wi-Fi Connection Guide-

Do not change settings other than outlined below as this may affect operations.

Step 1: Find the chargers' local hotspot

This hot spot will have the following SSID: IOC - 2.4GHz - *****

The password for this Hotspot is: IOC12345

Step 2: Navigate to the web-interface of the Ocular Charger

After being connected to the Hotspot, open Microsoft Edge or Google Chrome and navigate to: 192.168.10.1:8900

The web interface will ask for Username and Password, the information is:

Username : install

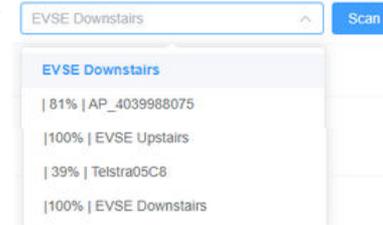
Password : installer123

Step 3: Navigate to the Network and set up WIFI configuration

Ocular charger support connection via WiFi. Simply press the "Scan" button to start scanning for available WiFi network



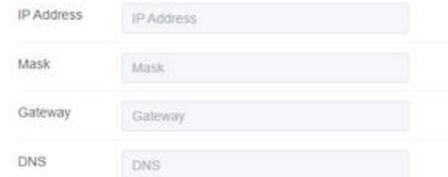
After this, press the down arrow in the drop list to see all the available WiFi networks



Choose the Wi-Fi SSID that you prefer, and then input the Wi-Fi Password



If Static IP address is required, simply disable DHCP under WiFi section and put in the Static IP Address for the device

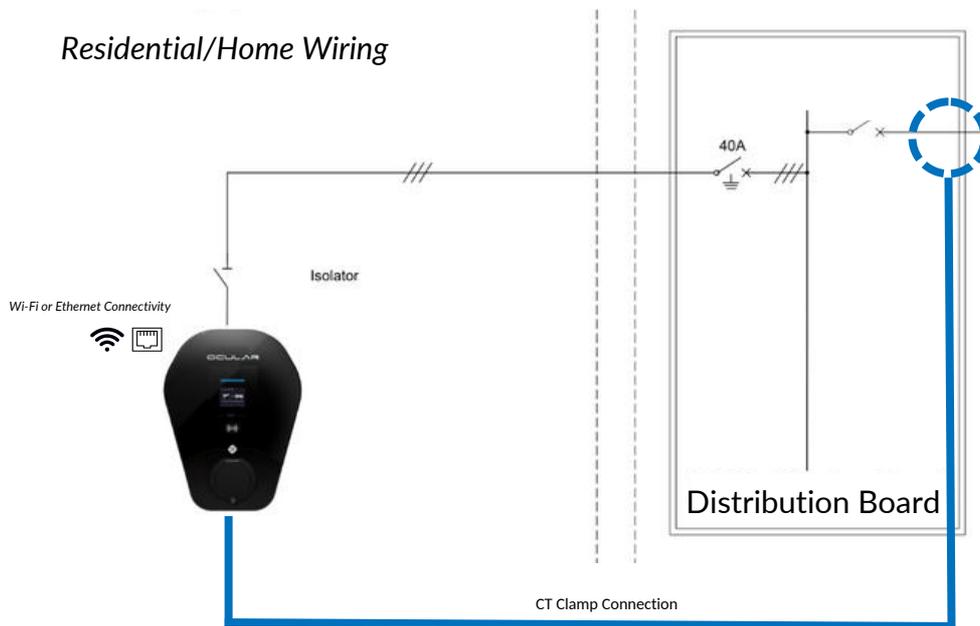


Step 4: Submit then reboot the charger to apply changes

Please note:

**Step 5 and onwards
is for Ocular IQ Solar
Installation only.**

Residential/Home Wiring



Regarding the installation of the Ocular IQ Solar, each charger will need a power connection and an additional internet connection to allow smart charging with energy tracking, smart control and load management.

- Power connection
- Internet connection (required for smart functions)

Regarding the power connection of the chargers, each charger will have its own designated circuit from the distribution board as per required in Appendix P, AS 3000:2018 Australia Standard for EV charging stations. We recommend 40A type A RCBO for the IQ Solar to avoid nuisance tripping

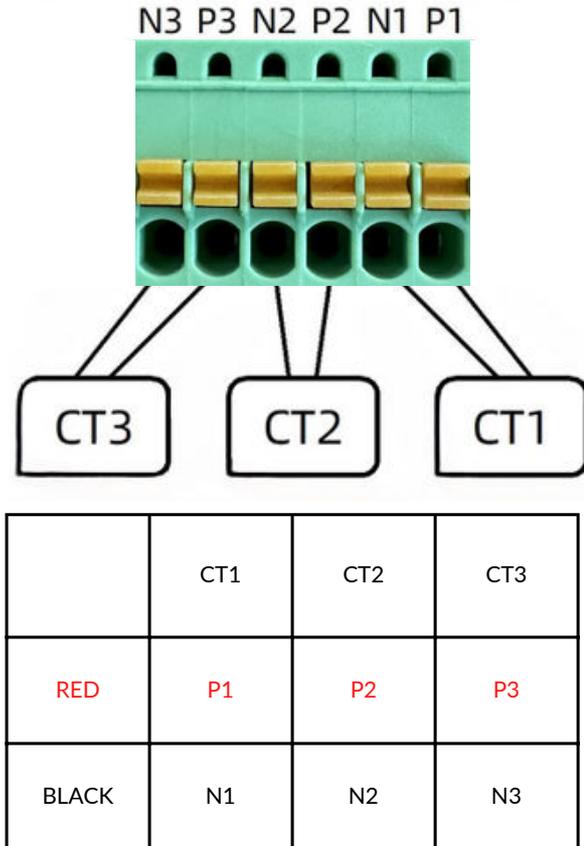
Regarding the Internet connection, we recommend running an Ethernet cable from the communication infrastructure comms cabinet to the charger for internet connection. Wi-fi can be used when the signal is strong. Above 3 bars

STEP FIVE- CT CLAMP INSTALLATION & WIRING

1. Please run the CT clamp wires through the grey gland/hole located at the bottom of the charger.



2. Please connect internally following this diagram:

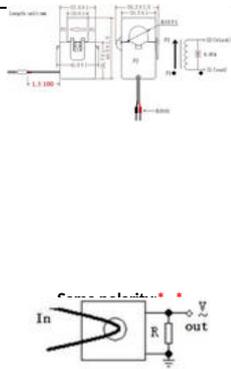


STEP SIX – CT CLAMP SPEC REQUIREMENTS

Prior to setting up the CT clamps, please ensure that you have the correct CT and CT Ratio setup.

Only use CT clamps provided by Ocular – The wrong CT clamps will cause a misreading and void warranty. If you must use your own CT please speak to Ocular and confirm suitability.

The Rate Transformation Ratio **must be 2000:1** or **the CT clamps will generate incorrect readings.**

Description	Current Transformer		
Rated Current Ratio	100A:50mA		
TYPE	IOCCT100		
Electrical Specifications			
Rated Primary Current (A)	100A		
Secondary Current (mA)	50mA		
Maximum Current I _{max} (A)	120A		
Rate Transformation Ratio	2000:1		
Power-Frequency Withstand Voltage	4000 V _{rms}		
Current Error	±0.5%		
Rated Phase Displacement	≤80'		
Rated Frequency	50/60Hz		
Rated Short-Time Thermal Current	400A (≤1s)		
Rated Resistive Burden (Ω)	≤ 20Ω		
Insulation Resistance (MΩ)	> 500MΩ		

Mechanical Specifications	
Encapsulant	Epoxy Resin
Weight (g)	110g
Tolerance (mm)	±1.5
Storage Temperature (°C)	-40°C<T<+85°C
Working Temperature (°C)	-25°C<T<+75°C
Working Humidity	0-90% (no condensation)
Enclosure Flame Retardant Grade	UL94 V-0

STEP SEVEN – CT CLAMP CONFIGURATION

Do not change settings other than outlined below as this may affect operations.

Step 1: Log in to the configuration page of the web page.

Step 2: Go to the 'Advanced' section

Step 3: Navigate to the balance page.

Step 4: In 'Mode', select 'Master TCP Server'.

Step 5: In 'Data Format', select 'Modbus RTU' and the TCP port will automatically allocate the default address of **22401**.

Step 6: In 'Power Type', select 'Gateway'

Step 7: Set 'SelfGroupId' to **1**

Step 8: Set 'JoinGroupId' to **-1**

Step 9: Set Basic Broadcast Port to **10000**

Step 10: Turn on the "Solar" switch and set the energy mode to "Full" by default customer will be able to change this on the APP. Do not change on the backend

The screenshot shows the 'Balance' configuration page with the following settings:

- SN: M_12345678
- Model: TEST
- Vendor: OCULAR
- Mode: Master TCP Server
- Data Format: Modbus RTU
- Tcp Port: 22401
- Power Type: Gateway
- SelfGroupId: 1
- JoinGroupId: -1
- Basic Broadcast Port: 10000
- Solar:
- Energy Mode: Full

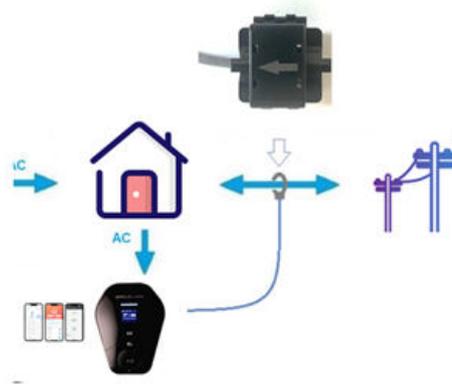
At the bottom, there is a 'HUB1' toggle switch (checked) and an 'Address' field with the value '254'. A dropdown menu is open for the 'Energy Mode' field, showing options: Full, Solar Assist, and Solar Only.

STEP EIGHT (A) – CT SINGLE PHASE SETUP

The CT clamp is connected to the P1-N1 terminals using the red and black signal wires.

The CT clamp is installed in the main MCB input terminal at the L1 position, with the direction pointing from the grid to the home as below.

The CT Arrow should align with the image below. The arrow should be from the Grid to the Home



Do not change settings other than outlined below as this may affect operations.

Step 1: Turn on the HUB1 switch.

Step 2: Set the address to 254.

Step 3: Turn off the 3-Phase switch.

Step 4: Set the CT1 position to "Main." Set the ratio to 2000:1 and set the phase to default to "L1."

HUB1

Address

3-Phase

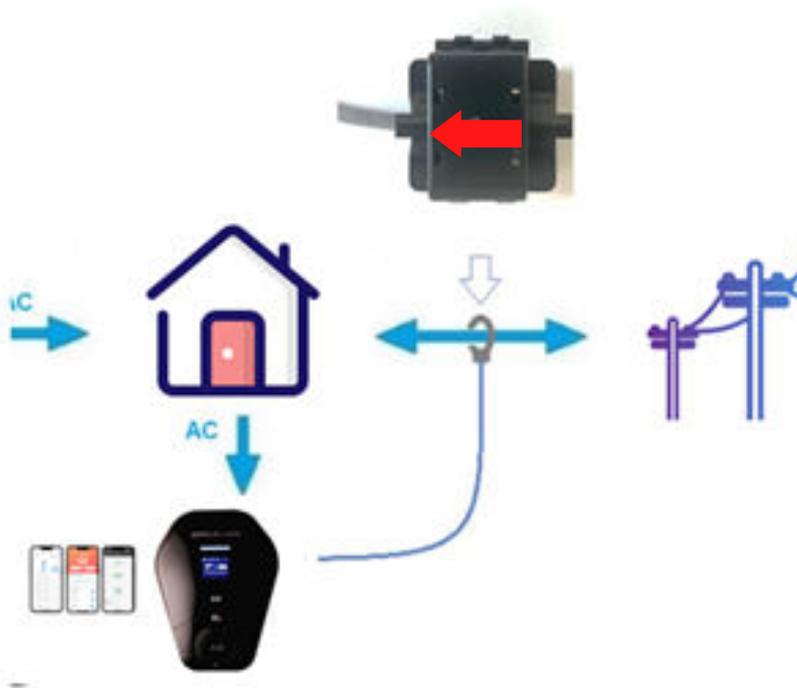
CT	Position	Ratio	Phase
1	Main	2000 : 1	L1
2	N/A	2000 : 1	L1
3	N/A	2000 : 1	L1

HUB2

HUB3

SINGLE PHASE CT INSTALL

The CT Arrow should align with the image below. The arrow should be from the Grid to the Home

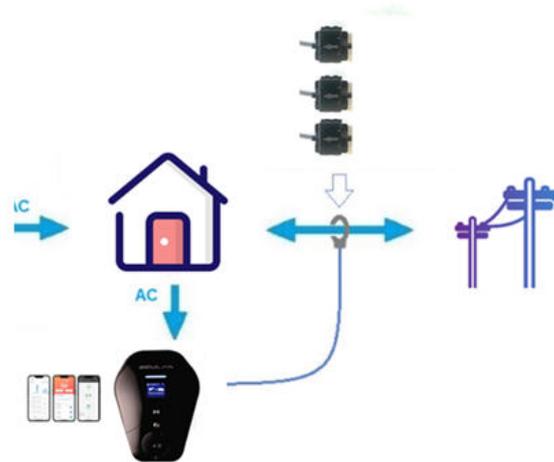


STEP EIGHT (B) – CT THREE PHASE SETUP

CT Clamp 1, CT Clamp 2, and CT Clamp 3 are connected to the P1-N1, P2-N2, and P3-N3 terminals respectively using the red and black signal wires.

CT Clamp 1, CT Clamp 2, and CT Clamp 3 are installed in the main MCB input terminals at the L1, L2 and L3 positions respectively, with the direction pointing towards the direction pointing from the grid to the home as below.

The CT Arrow should align with the image below. The arrow should be from the Grid to the Home



Do not change settings other than outlined below as this may affect operations.

Step 1: Turn on the HUB1 switch.

Step 2: Set the address to 254.

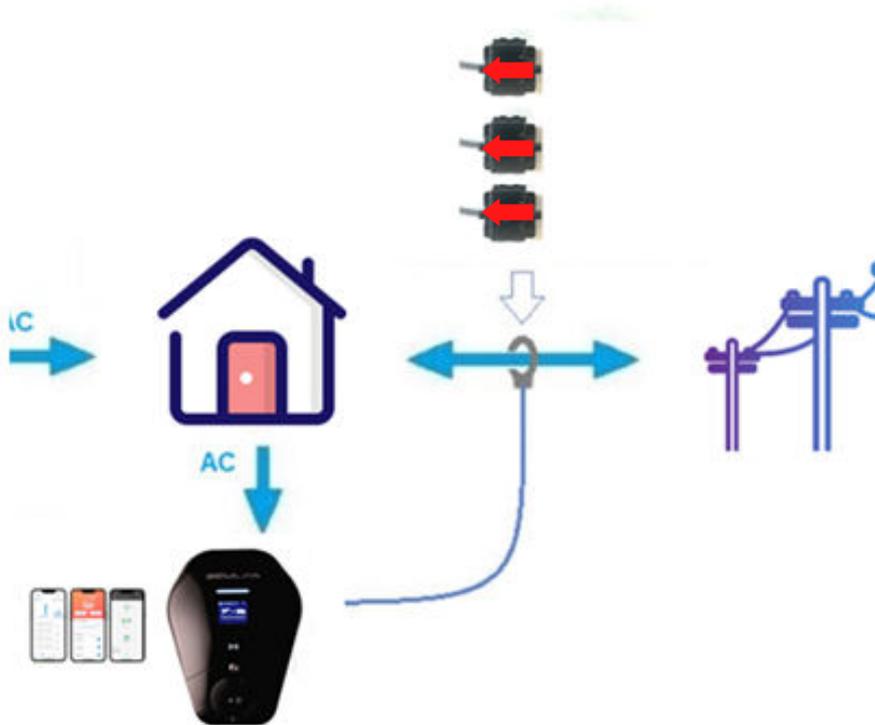
Step 3: Turn on the 3-Phase switch.

Step 4: Set the CT1 position to "Main." Set the ratio to 2000:1 and set the phase to default to "L1."

HUB1	<input checked="" type="checkbox"/>		
Address	254		
3-Phase	<input checked="" type="checkbox"/>		
CT	Position	Ratio	Phase
1	Main	2000 : 1	L1
HUB2	<input type="checkbox"/>		
HUB3	<input type="checkbox"/>		

THREE-PHASE CT INSTALL

The CT Arrow should align with the image below. The arrow should be from the Grid to the Home



STEP NINE – CT CLAMP CONFIGURATION (Continued)

Grid Current (*please note scale is 0.1A so 1 Amp is a value of 10*)

1. **Rated Current:** This is the maximum current that the main MCB can handle.
2. **Safe Current:** This is the safe current reserved to prevent the circuit from overloading. The actual available current for the charging station is calculated as follows: Actual available current = Rated current - Safe current - Load current.
3. **Limit Total Charger Current:** This is the actual available current in the circuit, which is equal to the rated current plus the solar power generation current. The default maximum value is usually 65535. This should not be changed.

For example, a 80Amp distribution board should have

Rated Current – 800

Safe Current – 80 (10% safety is recommended as a minimum This can be higher is required. The charger will load manage and stop charging completely if it sees load above 720 which is 72 Amps.)

HUB2

HUB3

Grid Current

Rated Current (0.1A)	800	Update values
Safe Current (0.1A)	80	
Limit Total Charge Current	65535	Do not change

Energy Management Server

Offline

STEP NINE – CT CLAMP CONFIGURATION (Continued)

Data Reporting Interval

Idle: Interval for reporting status when idle (Default is 30 seconds)

Charging: Interval for reporting status when charging (Default is 30 seconds)



The screenshot shows a configuration window titled "Data reporting interval". It contains two rows of input fields. The first row is labeled "Idle (1 - 3600 sec)" and has a text input field containing the number "30". The second row is labeled "Charging (1 - 3600 sec)" and also has a text input field containing the number "30".

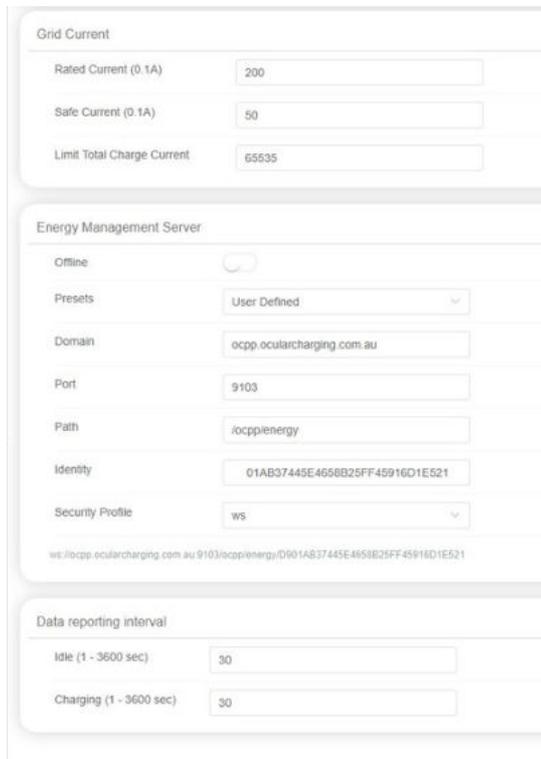
Data reporting interval	
Idle (1 - 3600 sec)	30
Charging (1 - 3600 sec)	30

STEP TEN – VERIFY THE INSTALLATION

1. Verify the power cables are wired properly
2. Close the upstream RCD to power on the charger unit, and you should see the LED lights sequentially illuminate blue.
3. If the LED red light illuminates or flashes, refer to the troubleshooting table on page 13.
4. Check on the screen display whether internet is available and the back office is connected, refer to page 17-19.
5. Verify the settings on the backend (specifically energy management server) match settings in image to right
6. Test the live charging process with simulator or electric vehicle if the installation is completely verified. 

Provide these details to the charger owner to login to the back end of the charger

username: useradmin
password: 12345678



The screenshot displays the configuration interface for the Ocular Charging system, divided into three main sections:

- Grid Current:** Contains three input fields: "Rated Current (0.1A)" set to 200, "Safe Current (0.1A)" set to 50, and "Limit Total Charge Current" set to 65535.
- Energy Management Server:** Contains several settings: "Offline" is a toggle switch currently turned off; "Presets" is a dropdown menu set to "User Defined"; "Domain" is "ocpp.ocularcharging.com.au"; "Port" is "9103"; "Path" is "/ocpp/energy"; "Identity" is "01AB37445E4658B25FF45916D1E521"; "Security Profile" is a dropdown menu set to "ws". Below these fields is the URL: "ws://ocpp.ocularcharging.com.au/9103/ocpp/energy/01AB37445E4658B25FF45916D1E521".
- Data reporting interval:** Contains two input fields: "Idle (1 - 3600 sec)" set to 30 and "Charging (1 - 3600 sec)" set to 30.

Server Settings: By default, the offline mode is turned off which means it's online.

You should not need to change these setting unless advised by Ocular Charging

USER LOGIN

After being connected to the Hotspot, open Microsoft Edge or Google Chrome and navigate to:
192.168.10.1:8900

The web interface will ask for Username and Password, the information is:

username: useradmin
password: 12345678

INSTALLER LOGIN

After being connected to the Hotspot, open Microsoft Edge or Google Chrome and navigate to:
192.168.10.1:8900

The web interface will ask for Username and Password, the information is:

Username : install
Password : installer123

LCD SCREEN DISPLAY DETAILS



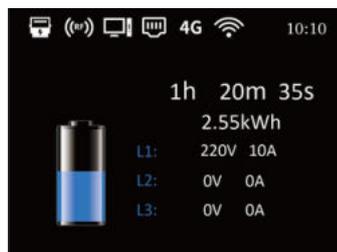
Welcome Screen



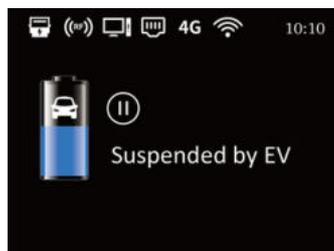
Scan the QR code or swipe the RFID card to start charging



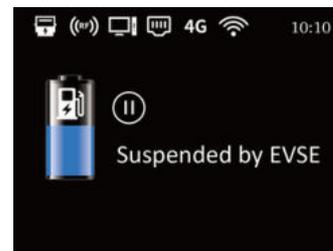
Connect the charging plug



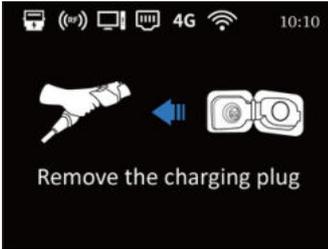
Charging in process



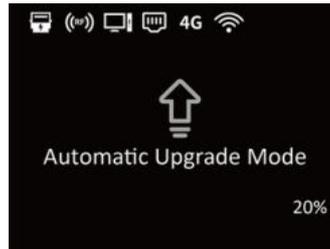
Suspended by EV



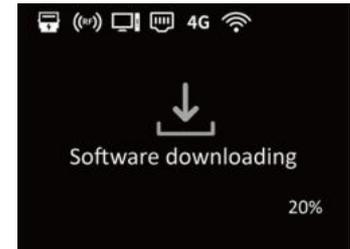
Suspended by EVSE



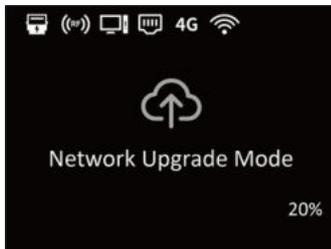
Remove the charging plug



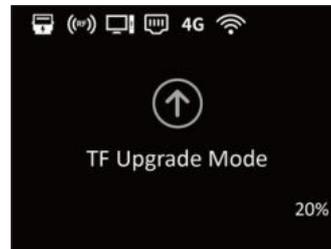
Automatic upgrade mode activated



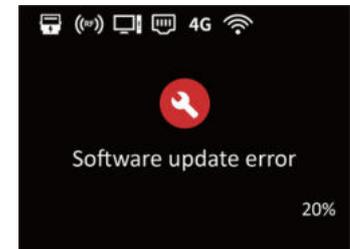
Software downloading and upgrading automatically



Network upgrade mode



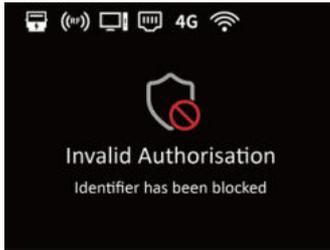
Micro SD card upgrade mode



Software update error



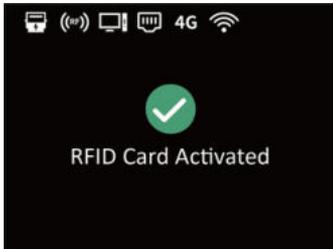
Factory Reset



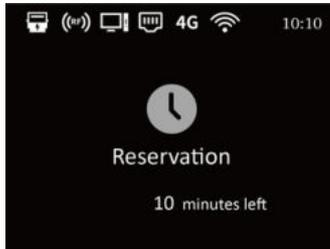
Invalid Authorisation



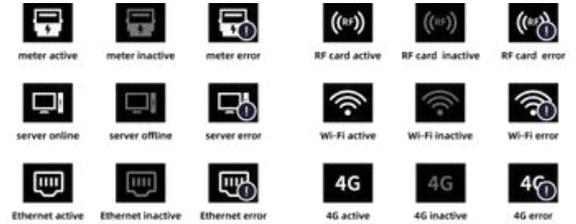
Service not available



RFID Activated



Reserved Mode



Explanation of ICONS

TROUBLESHOOTING

Situations	Actions	
Status indicator is not blue after the charger is powered on	1	Make sure the AC power input is connected correctly.
	2	Turn OFF the charger and then back ON using the switch.
	3	If the problem persists, contact your installer for Technical Support.
Status indicator does not flash blue when the charger is connected to the EV	1	Unplug the charging plug and reconnect it fully to the receptacle on the EV.
	2	Inspect the cable and plug for damage.
	3	Inspect the EV and its receptacle for damage.
	4	If the situation persists, contact your installer for Technical Support.
Status indicator flashes red while charging	1	There is a temporary error.
	2	Wait until the temporary error is resolved and the charger returns to normal condition. It usually takes less than 10 seconds.
	3	If the status indicator doesn't return to blue, turn OFF the charger and then back ON.
	4	If the situation persists, contact Ocular Charging for Technical Support.
Status indicator is solid red	1	There is a critical error.
	2	Unplug the charging plug from the EV immediately.
	3	Turn OFF the charger and then back ON.
	4	If the situation persists, contact your installer for Technical Support.

MAINTENANCE AND REPAIR

Regularly inspect the Charger components for damage. If damage is found, contact Ocular Charging

The Electric Vehicle Charger contains no user-serviceable components. If the unit is not operating correctly, contact your installer. Wipe the outside of the Charger regularly with a clean damp cloth to remove any accumulation of dust and dirt.

OCULAR



OCULAR CHARGING AUSTRALIA

Email: sales@ocularcharging.com.au

Web: www.ocularcharging.com.au