



CT MODULE & CLAMP

EXCLUSIVELY DESIGNED FOR THE OPTI EV CHARGER



7KW SINGLE-PHASE
SV-EVACC-CT7-SEM1



22KW THREE-PHASE
SV-EVACC-CT22-SEM3

SEVR

EV CHARGING SOLUTIONS
SEVR.AU

SECTION / CONTENT DESCRIPTION	PAGE
1. Overview	3
1.1 Safety Warning	3
1.2 System Overview	3
1.3 What's in the Box	3
2. Installation	3
2.1 Install the Meter	3
2.2 Install the CT Clamp	4
3. Communication Configuration	4
3.1 Choosing your Connection Method	4
3.2 Configuring the Meter via Wi-Fi	4
3.3 Configuring the Meter via RS485	8
3.4 Definition of button and LEDs	8
4. Software Configuration	10
4.1 Connecting to the charger in the Ecosolex App's	10
4.2 Configure CT Module via Wi-Fi	11
4.3 Configure CT Module via RS485	12
5. Introduction to DLB Network	15
5.1 Single-Charger DLB Network	15
5.2 Multi-Charger DLB Network	16
6. Safety Precautions	19

1. Overview

1.1. Safety Warning

- Installation must only be performed by a licensed and qualified electrician.
- Disconnect and isolate all power before installation or maintenance.
- Install in accordance with all applicable local electrical codes and regulations.
- Failure to follow these instructions may result in electric shock, serious injury, death, or equipment damage

1.2. System Overview

The CT (Current Transformer) Module forms part of the Dynamic Load Balancing (DLB) system for the EV charger. Installed at the property's main electrical supply, it continuously measures real-time current consumption and communicates this data to the charger via Wi-Fi or RS485. Using this information, the charger automatically adjusts its charging power based on the available electrical capacity, helping to prevent overloads, optimise energy usage, and ensure safe operation alongside other household loads such as air conditioning, appliances, solar systems, and battery storage.

The CT Module can be configured for both single-charger and multi-charger installations. It also enables solar integration by monitoring power flow at the grid connection point. When a negative value is detected, it indicates that excess solar energy is being exported to the grid. The charger uses this data to calculate available surplus solar generation and adjust charging behaviour accordingly, maximising the use of renewable energy.

1.3. Whats in the Box



Single Phase Kit

- Eastron CT Module,
- CT clamps (1-single phase, 3-3 phase)
- Power connector
- Antenna

Three Phase Kit

2. Installation

2.1. Install the Meter

(Replace these steps with 5 images)

Ensure power is off prior to installing the meter and wiring in. The meter must be installed at the main incoming electrical supply to the switchboard to ensure accurate system monitoring.

Step 1: Locate a suitable 35mm DIN rail. Pull down the rear mounting clip on the meter to release the locking mechanism.

Step 2: Hook the upper mounting slot of the meter onto the top edge of the DIN rail, ensuring it is correctly aligned and seated securely (see Figure 1).

Step 3: Press the lower section of the meter towards the DIN rail until it clicks into position (see Figure 2).

Step 4: Push the rear mounting clip upward to lock the meter securely onto the DIN rail (see Figure 3).

Step 5: Connect the Aerial

Fig 1

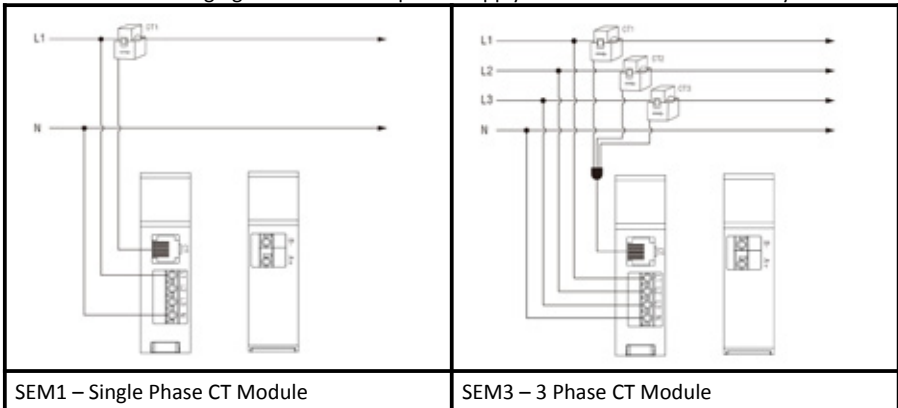
Fig 3

Fig 2



2.2. Install the CT clamp

Refer to the following figure to install the power supply line and CT for the electricity meter:



Note:

- No Protective Earth connection is required for Single Phase or 3 phase CT Modules.

Caution:

- If the voltage or current sampling lines are connected in the incorrect phase sequence, all indicator lights on the meter will illuminate simultaneously to indicate a wiring fault. If this occurs, check and correct the phase wiring sequence until the meter returns to normal operation and the indicator lights no longer remain fully illuminated.
- If the EV charger is installed as a three-phase system (connected to L1, L2, L3, Neutral (N), and Protective Earth (PE)), the electricity meter and CT clamps must also be installed in a three-phase configuration. Failure to do so may result in incorrect operation of the load balancing function.

3. Communication Configuration

3.1. Choosing your Connection Method

There are 2 ways to connect your CT clamp and Charger – either through Wifi or RS485.

A – Wifi

This is the easiest and recommended connection method. Please ensure that the CT Module and the Charger are connected to the same Wi-Fi SSID for successful connectivity.

B – RS485

If you have poor or no wifi signal at the charger or CT clamp, or need load balancing for multiple connected chargers then you should setup via RS485.

Load balancing via Wi-Fi currently supports configuration for only one charging station. For multiple chargers, RS485 must be used to connect all chargers, see section 5.2.

3.2. Configuring the Meter via Wi-Fi

Entering AP Mode

To configure the meter unit you will first need to get it to enter AP (Access Point) Mode.

When the meter is powered on:

(Replace these steps with pictures)

- 1 The three LEDs on the front panel flash during self-test.
- 2 The Power indicator LED will light up red
- 3 Then the Wi-Fi indicator LED lights up constant blue and the meter enters Access Point (AP) mode.

Caution:

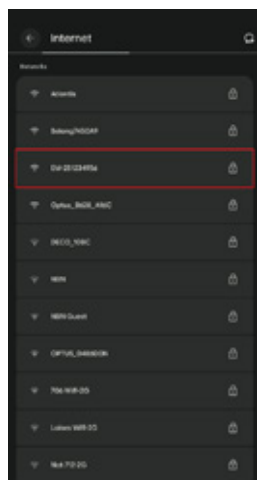
If the Wi-Fi indicator light does not turn on a constant blue light after startup, please press and hold the AP button for 3-4 seconds. After releasing your hand, the Wi-Fi indicator light will flash a yellow light once and then remain on a constant blue light, indicating that the AP mode has been successfully switched.



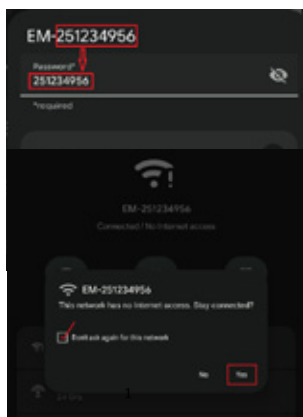
Using the Web Interface

Once in AP mode, to connect the CT module to wifi for configuration users can use a computer or mobile device to search for the modules's AP hotspot in Wi-Fi networks.

For example, on an Android mobile device



Select the
meter's AP Wi-Fi



hotspot (e.g. EM-123456789) from the available wireless networks and enter the password to connect. By default, the password is the serial number and matches the hotspot name excluding the "EM-" prefix (e.g. 123456789).

It's likely your mobile device will advise that the Wi-Fi you've connected to doesn't have internet access. If your device detects no internet connection when connected to the AP Wi-Fi Hotspot, tap Yes to stay connected whilst programming the CT Module. Your device needs to remain connected to CT Module Wi-Fi Hotspot to be able to provision the CT Module. A mobile phone will use mobile data as a failover if the mobile phone doesn't detect internet access when connected to the Wi-Fi Hotspot.

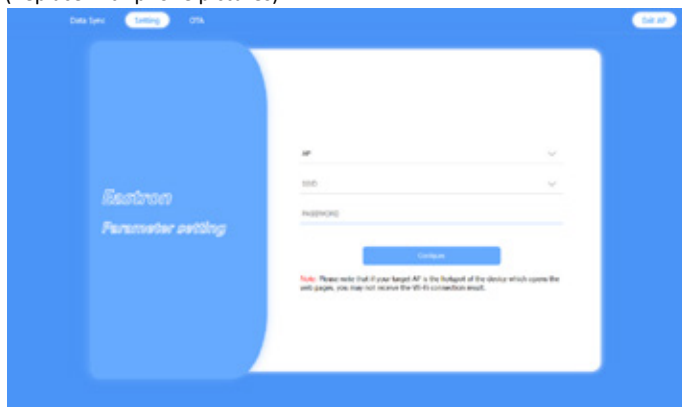
Transitioning from AP mode to Station mode

After AP mode has been used to connect the CT module to the internet it will then need to be switched to Station mode and connected to another available Wifi network. Please remember to provision or select a 2.4ghz Wi-Fi network.

Once connected, open a web browser on your computer or mobile device and enter 192.168.4.1 into the address bar to access the meter's built-in web interface.

The web interface contains three different sections which are shown up the top: Data Sync, Settings, and OTA. For Wi-Fi setup and configuration, use the Settings section.

(Replace with phone pictures)



The steps are as follows:

- 1 Select Station Mode: In the settings page, choose “Station” mode.
- 2 Select Wi-Fi Network (SSID): Choose your Wi-Fi network
- 3 Enter Wi-Fi Password: Enter the password
- 4 Tap Exit once complete. The CT Module will reboot into Station Mode.

Wi-Fi Status Indicator

The Wi-Fi status LED on the CT Module indicates the current network operating mode and connection status.

(Replace with pictures)

LED Status	Description
Solid Blue	The module is operating in AP Mode (Access Point mode).
Flashing Blue	The module is operating in Station Mode and is attempting to connect to a Wi-Fi network.
LED Off with intermittent Green flashes	The module is operating in Station Mode and is successfully connected to a Wi-Fi network. Occasional green flashes indicate network activity/data communication.

Troubleshooting – Switching Back to AP Mode from Station Mode

(Show a pic of the AP button on the CT module)

If you find out you need to change something back in AP mode after configuring to Station Mode, press and hold the **AP** button for approximately 3 seconds.

When released, the Wi-Fi indicator will briefly flash yellow to confirm that the operating mode has changed successfully.

The Wi-Fi indicator will then:

- 1- Flash steady blue while searching for a Wi-Fi network
- 2- Turn off once connected successfully or if the connection attempt times out

And allow you to reconfigure AP mode.

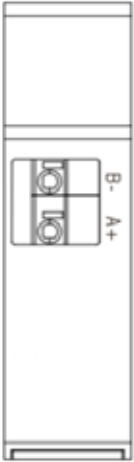
3.3 Configuring the Meter via RS485

Meter Configuration for Single-Charger

Connect the RS485 Communication Cable to the CT Module

Note:

If the CT Module is connected to the EV charger via RS485 communication, Wi-Fi configuration is not required for normal operation. The charger can communicate with the module via the RS485 connection regardless of whether the module is operating in AP Mode or Station Mode. The image on the left shows the RS485 communication terminals on the CT Module, labelled



A+ and B-.

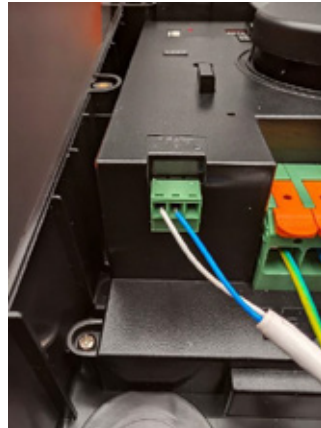
Step 1: Prepare a suitable two-core signal cable rated for outdoor installation.

To ensure reliable communication and minimise electrical interference, the use of a shielded twisted-pair communication cable is recommended.

Step 2: Connect one end of the communication cable to the CT Module as follows:

- a) Connect the white wire to the A+ terminal
- b) Connect the blue wire to the B- terminal

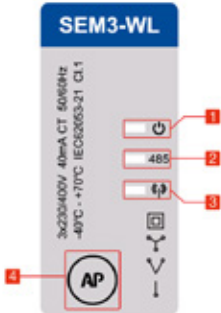
Step 3: Strip the wire insulation as required, then insert each conductor into the corresponding terminal using the push-down clamping terminals on the CT Module. Ensure the wires are securely retained before proceeding.



Connect the RS485 Communication Cable

- 1- Remove the male RS485 connector plug from the charger accessory kit (refer to the figure above).
- 2- Using a screwdriver, loosen the terminal screws on the connector plug.
- 3- Refer to the markings on the charger chassis to identify the **A** and **B** RS485 terminals.
- 4- Prepare the communication cable:
 - a. Strip the **white wire** and connect it to terminal **A**
 - b. Strip the **blue wire** and connect it to terminal **B**
 - c. Tighten the terminal screws securely to retain the wires.
 - d. Insert the assembled male connector plug into the RS485 socket in the EV charger.

3.4 Definition of button and LEDs

Interface	Definition	Introduction
	Power Light	The red power indicator light stays on when the meter is powered on with no load, and flashes at 1-second intervals when a load is connected..
	RS485 Light	When the electricity meter is communicating normally, the RS485 green light flashes; during an OTA upgrade, the indicator light remains steadily on.
	Wi-Fi Light	In AP mode, the Wi-Fi indicator light remains constantly on; it flashes when not connected to the network, and turns off after a successful connection. The Wi-Fi indicator light flashes during wireless communication and stays on when the module malfunctions.
	Abnormal Status Light	All LEDs ON: Phase sequence fault detected. During communication reset, all LEDs illuminate for 3 seconds before turning off. Note: A phase sequence fault indicates mismatched voltage and current sensing connections between phases. For example, an A-phase CT connected to a C-phase voltage input.
	AP Button	Press and hold for 3 seconds to toggle between AP and Station Modes; press and hold for 10 seconds to factory reset communication parameters.

4. Software Configuration

There are 2 apps available for the Opti EV Chargers

1 – EcoSolex Home App

Which gives full control of the charger and every function other than OCPP connections. User settings including charging options, charging schedules, and RFID card configuration can only be configured through the Ecosolex Home app.

2 – Ecosolex Connect App

If you are installing for a customer and their phone is not available then this is the recommended app to use. It can be used for provisioning using the chargers PIN and does not require user name and PW. This will allow the Installer to be able to configure Device Parameters, Networks, CT Module settings and OCPP without having to involve the end user for most provisioning settings.

4.1 – Connecting to the charger in the Ecosolex App's

To be able to configure the CT clamp then you need to connect to either App.

1. Installers can use the Ecosolex Connect app as a one-off to provision the Opti Charger using the Bluetooth scan option.
2. Open the Ecosolex Connect app. At the login screen, tap the ●●● menu in the upper-right corner.
3. Select Login Device.
4. Choose the charger you wish to control (device will scan for EV charger using Bluetooth)
5. Enter the charger's 8-digit PIN code (available for inside the unit, remove clip able cover and the face plate this should also be recorded on page 3 of the charger manual or alternatively scan the QR code using the icon on the right) then tap Next.

Step 1 – Configure Charger Network Settings:

If not already configured, tap Charger Settings then tap Network and configure the charger's Wi-Fi connection.

Important: The charger must be connected to the same Wi-Fi network as the CT Module.

Step 2 – Enable Load Balancing:

From the charger device page, select Load Balancing.

Overload Current: To be set to the site's main circuit breaker maximum size (eg. 63A, 80A)

Enable the following options:

- Load Constraints
- Main Device Settings

Step 3 – Configure CT Module Meter Communication:

Select Meter & CT Configuration to open the meter settings page.

Select the correct model of CT Module – SEM3-WL for 3-Phase model, SEM1-SL for Single Phase model.

Set the Meter Communication Mode to Wi-Fi.

Step 4 – Configure the CT Module:

Locate the serial number printed on the side of the CT Module: Example;

240199
999999999

Enter the serial number into the **Meter Serial Number** field manually. If adding the serial number in manually, please ensure to add a comma to separate the top line and bottom line. Example: 240199,999999999. Alternatively, tap the **Scan** icon and scan the QR code on the CT Module label to automatically fill in the field.

Step 5 – Verify Communication:

Return to the Load Balancing Settings page.

If communication has been established successfully, the CT Module's live power reading will be displayed on the screen at the bottom, shown as **"DLB Meter"**.

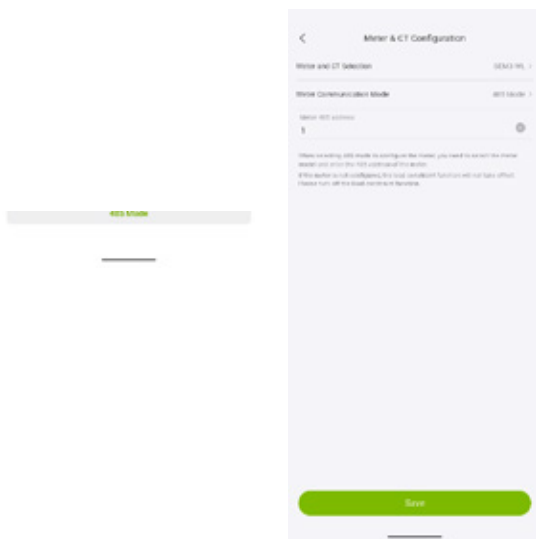
If communication fails, the LED lamp on the EV charger will flash red to indicate no connection.

Tap Load Balancing	Enable Load Constraints, tap on Meter Configuration	Enter serial number of CT Module, or scan using your device's camera.



Note: As shown in the figure above, the arrow indicates the position of the serial number and QR code on the side of the meter.

4.3 – Configure CT Module via RS485



1. From the Home Screen, tap Load Balancing.
2. Click Load Balancing Settings to enter the load balancing settings page, enable the Load Constraints switch, and enable Main Device Settings.
3. Click Meter Configuration to enter the meter configuration page and select RS485 mode as the meter communication mode and tap Confirm.
4. Meter 485 address: 1 (default)

Note: No additional settings are required here.

Overload Current: To be set to the site's main circuit breaker maximum size (eg. 63A, 80A)

Charging Mode Options:

Once set-up, all charge mode options provide DLB, ensuring that the EV chargers do not cause any overload. The charger will automatically reduce its charging current to ensure the overload current limit is not exceeded. If the available capacity falls below 7A (i.e. the difference between the overload current setting and the actual site current is less than 7A), charging will pause. Charging will automatically resume once the available capacity increases above 7A. This dynamic load balancing functionality prevents the EV charger from contributing to an overload condition, significantly reducing the risk of the building's main fuse or circuit protection device tripping.

Max Power Mode: Provides the fastest possible charging rate while ensuring the site's configured current limit is not exceeded. Available electrical capacity is allocated to the charger after accounting for the current being used by other loads on the installation.

Example: If the site overload current limit is set to 60A and household loads are currently consuming 52A, the charger will be limited to approximately 8A.

Eco+ Mode: Prioritises charging using excess solar generation while minimising electricity imported from the grid. The charger will draw up to 7A from the grid to maintain continuous charging while utilising all available solar energy. When solar export exceeds 7A, no grid power will be used. This mode allows the vehicle to continue charging with minimal, to no grid consumption, regardless of fluctuations in solar generation.

SEVR recommends this mode for customers who want to maximise the use of solar energy when charging their EV. This mode eliminates the charger stopping and starting due to lack of solar export.

Example: In Eco+ mode, the charger can draw up to 7A from the grid to maintain charging when solar export is insufficient. For example, if the home is exporting 4A of solar power, the charger will use the available 4A of solar power and supplement it with 3A from the grid, allowing charging to continue at the minimum 7A charge rate.

If the home is importing 10A from the grid, the charger will still charge at the minimum 7A rate, increasing the total grid import to 17A. Conversely, if the home is exporting 10A of excess solar power, the charger will charge at 10A using only solar energy, with no grid power consumed.

Solar Only Mode:

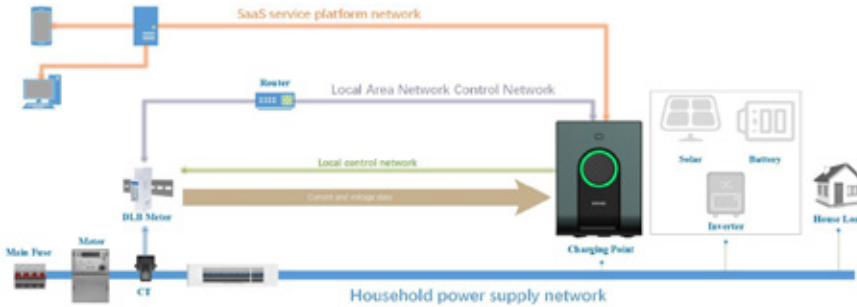
The charger will only use available solar energy for charging. In this mode, the overcurrent setting is forced to 0A, meaning a minimum solar export of 7A is required before charging can commence. If available solar generation falls below this level, charging will pause until sufficient excess solar power is available.

Example: In Solar only mode, the charger will only use solar power. If 20A of power is being exported, the charger will charge at 20A. If export is reduced to 5A, the charger will pause and stop charging, until a minimum 7A of export power is available.

To eliminate the potential of constant stopping and starting, ECO+ mode is recommended as the best setting for most solar setups.

5. Introduction to DLB Network

5.1 Single-Charger DLB Network



As shown in the above figure:

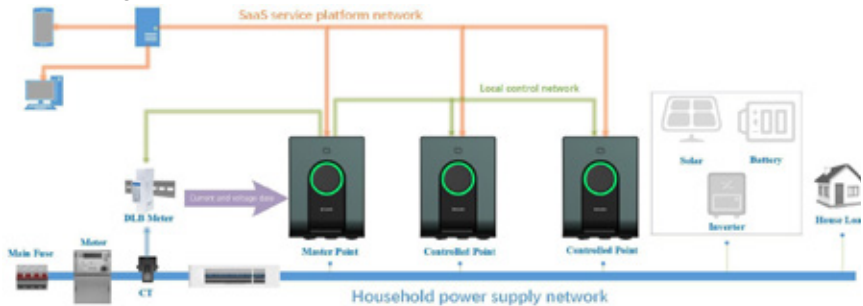
The bottom blue line represents the power supply network, which goes through the main power switch, the household main electricity meter, and connects to the household distribution box. On the connection line between the main electricity meter and the distribution box, a CT for load balancing is installed. The household distribution box is connected to the charging pile, household appliances, inverter, and photovoltaic storage equipment.

The middle green line represents the local control network, which connects the DLB electricity meter and the charging pile through a 485 signal line.

The middle purple line represents the local area network control network, which connects the charging pile and the DLB electricity meter to the same Wi-Fi router to form a local area network, allowing the two to establish a connection.

The upper orange line represents the SaaS service platform control network. We provide a complete SaaS service platform, which can remotely control the charging pile and view charging data through the Internet.

5.2 Multi-Charger DLB Network



As shown in the above figure:

The bottom blue line represents the power supply network, which goes through the main power switch, the household main electricity meter, and connects to the household distribution box. On the connection line between the main electricity meter and the distribution box, a CT meter for load balancing is hung. The household distribution box is connected to the charging pile, household appliances, inverters, and photovoltaic storage devices.

The middle green line represents the local control network, which connects the DLB meter to the charging pile through a 485 signal line.

The upper orange line represents the SaaS service platform control network. We provide a complete SaaS service platform, which can remotely control the charging pile and view charging data through the Internet.

Note: The arrows in the above two figures indicate that the DLB meter transmits household grid data to the charging pile through local control or local area network control functions. After receiving the data, the charging pile can perform autonomous regulation. Once deployed, it does not rely on external networks and does not require manual intervention.

Commercial installation: Multiple Chargers



NOTE:

When multiple chargers form a load balancing network through 485, a master charger is required, with a maximum of 31 slave chargers, which means there can be a total of 32 charging chargers in the network.

NOTE:

In the entire RS485 communication link, special handling is required for both the first and last devices: a 120-ohm resistor must be connected between the port A and port B of the RS485 communication cable attached to these two devices.

Prepare a long signal cable. When in use, cut it according to the distance between each device. This cable should contain two signal wires, one red and the other black, and be covered with a rubber sheath on the outside to meet the requirements for outdoor use.

NOTE:

To ensure stable communication without interference, it is recommended to use shielded twisted-pair cables.

The positions of the electricity meter and the main charger are not fixed and can be placed at any location, but it is necessary to ensure that the connection line length between the device farthest from the main charger within the networking range and the main charger does not exceed 1 km.

The two wires can be crimped together at the joint position, as long as the A and B terminals are correct. If underground wiring is used and the site is large, it is recommended to set a joint at the connection position of the charging charger underground. This can avoid wasting the length of the connection line between the main charger and the terminal equipment.

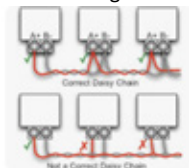
Load balancing screen Physical wiring

Connect RS485 cabling between CT module to the nearest charger, this first unit becomes the Master unit. This first RS485 connection needs a 120ohm resistor installed between cables.

Purchase part (xxx) that comes with 2 connectors and 10m of cable to simplify this resistor connection for the master and last slave chargers, or alternately wire in this resistor in yourself. See diagram below

Master Charger connector**Last Charger connector**

Slave units must be connected to the Master unit via RS485 cable. Run a RS485 bus using shielded twisted pair cabling from master unit to all other chargers, for best outcome daisy chain the cable as per below picture. Total cable RS485 length cannot exceed 1KM, ensure Master charger and last charger in the network have a 120ohm resistor installed.

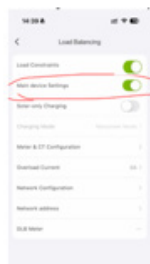


Connection setup

Open the Ecosolex Connect app, available [here](#):-

Set up the master unit as per section 1.1, the same as a single unit DLB connection, ensure the meter is connected and functioning, you should be able to see the actual current in the Load balancing screen:

Connect to the master charger via Bluetooth, ensure Main device Settings is enabled for the Master charger (green), and set load constraints with the Maximum building load current.



For slave chargers, device Settings is

log into each via Bluetooth, and ensure the Main disabled,

Go into network configuration, and Set the RS485 communication address of the slave, which can be any number within 11~41, but the same address cannot be reused to ensure that each slave's address is unique.

This completes setup, and now all chargers in combination will not exceed the set overcurrent limits.

Safety Precautions

This manual does not cover all safety measures required for operating the equipment (modules or devices) under varying conditions. However, it contains essential information you must know to ensure personal safety and prevent damage. Potential hazards are indicated using warning symbols that reflect the level of risk.



Warning

This symbol indicates that failure to follow the operating instructions may result in death, serious injury, or significant property damage.



Caution

This symbol indicates a risk of electric shock. Failure to take necessary safety precautions may result in death, serious injury, or significant property damage.

Qualified Personnel

Operations involving the equipment (modules or devices) described in this manual must be performed by qualified personnel.

“Qualified personnel” refers to individuals who, according to safety regulations and standards, are certified to handle equipment, system, and circuit commissioning, start-up, grounding, and labelling.

Correct Operation

Safe and reliable operation requires proper transportation, storage, installation, operation, and maintenance. Some components of electrical equipment carry hazardous voltages during operation. Improper handling may cause serious injury or property damage.

Use only insulated tools.

Never connect while the circuit is energized.

Place instruments only in dry environments.

Do not install instruments in explosive atmospheres or expose to dust, mould, or insects.

Ensure wires match the rated maximum current of the instrument.

Confirm AC wiring connections before applying current/voltage to the instrument.

Do not touch terminals with metal, bare wires, or bare hands to avoid electric shock.

Always install protective covers after installation.

Do not break seals or open front covers, as this may affect instrument functionality and void warranty.

Avoid dropping or impact to prevent damage to internal components.

Designed for DIN rail installation in distribution or control cabinets.

Multi-function meters must be equipped with circuit breakers and lines rated for the instrument's current.

Install a disconnect device (circuit breaker) near the instrument.

The disconnect device must be labelled as “Dedicated Disconnect for Multi-Function Meter”.

Disclaimer

We have reviewed the contents of this publication and strive for accuracy. However, deviations from the descriptions cannot be completely excluded. We are not responsible for any errors in the information. Data in this manual is periodically reviewed, and necessary corrections will be included in future versions. Feedback and suggestions for improvement are welcome.



CT MODULE & CLAMP

EXCLUSIVELY DESIGNED FOR THE OPTI EV CHARGER

At SEVR we pride ourselves on unrivalled customer service and technical expertise. If you have any questions regarding your installation, operation, or maintenance, our local team is ready to help.



sales@sevr.au



1800 007 387



Have serial number &
purchase date ready

SEVR