

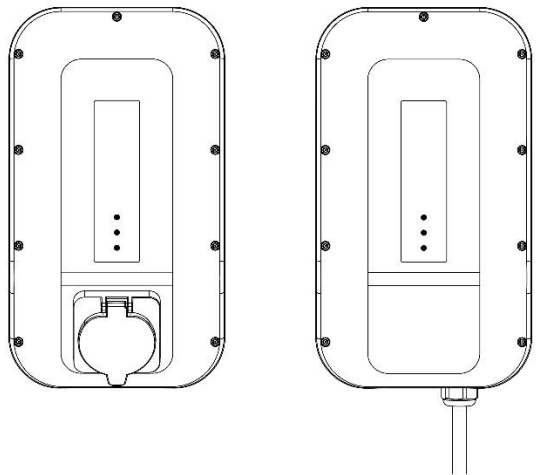


## Installer & Operator Manual

Intelligent EV Charging Station  
E7, X7 & X22 Series

V230317

# E & X Series



---

As well as standard installation tools, the following is required:

- T20 TORX SECURITY BIT
- NO.2 SQUARE DRIVE BIT
- 7MM MASONRY BIT (FOR SOLID WALLS)

## Please note

---

- Read all instructions before installing or using this product.
- This document is current at the time of printing. Please ensure you have the latest version. See [www.evnex.com/resources](http://www.evnex.com/resources) or scan this QR code:
- Evnex Ltd. reserves the right to make changes to this document or the products described without notice.
- For questions relating to this product, its use or installation, please refer to contact details below:



Phone: +64 800 395 007  
Email: [support@evnex.com](mailto:support@evnex.com)  
Web: [www.evnex.com](http://www.evnex.com)

Address:  
121 Wrights Rd  
Addington  
Christchurch  
8024  
New Zealand

© Evnex Limited  
All rights reserved.

# Contents

---

Introduction ..... 5

    Product description ..... 5

    General dimensions ..... 5

    About this document ..... 6

    Scope of this document ..... 6

    Symbols ..... 6

Safety information ..... 7

    General information ..... 7

    Risk of electric shock ..... 8

Disclaimer ..... 9

Installation ..... 10

    Installation notes ..... 10

    Site selection ..... 10

    Mounting notes ..... 12

    Fasteners ..... 13

    Opening the unit ..... 14

    Mounting the unit ..... 15

    Timber framed wall mounting example ..... 16

    Solid wall mounting example ..... 17

Wiring connection ..... 18

    Single phase wiring example ..... 19

    Three phase wiring example ..... 20

    Upstream protection ..... 21

    Power sensor terminal block ..... 22

    Earthing the unit ..... 23

Setting the maximum charge current.....	23
Closing the unit .....	24
Checklist .....	24
Installing the front cover .....	25
Operation.....	26
Status display.....	26
Initialisation .....	26
Charging process .....	27
LED modes / fault conditions.....	28
Technical information .....	29
Troubleshooting.....	33

# Introduction

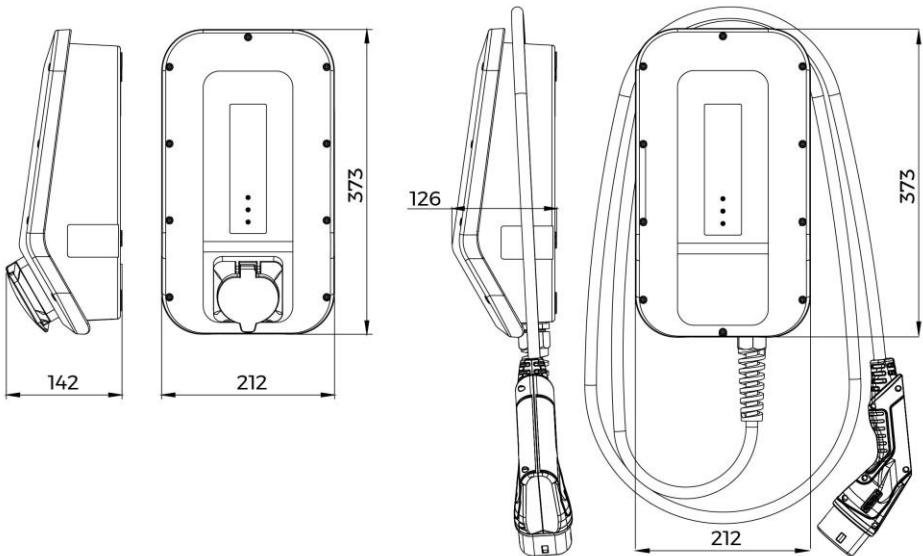
---

## Product description

The Evnex E & X Series charging stations are a cost effective connected charging solution, available in both single phase 7.4kW, and three phase 22kW configurations.

When connected to a compatible OCPP (Open Charge Point Protocol) server, the Evnex E & X Series charging stations become an excellent choice for smart-grid managed charging or public charging, where energy metering or access control is required.

## General dimensions



## About this document

The following document describes the functionality and installation procedures for the Evnex E & X Series of electric vehicle charging stations.

## Scope of this document

This document only refers to the following E & X Series charging stations, please refer to the correct documentation if this does not apply.

Three phase: X22-T2T, X22-T2S

Single phase: E7-T1T, E7-T2T, E7-T2S, X7-T1T, X7-T2T, X7-T2S

## Symbols

You will find the following symbols throughout this document. Please pay attention to the recommendations.



CAUTION – Failure to follow these directions may cause minor injury or damage to equipment.



WARNING – Failure to follow these directions may cause serious injury or death.

## Safety information

---

### General information

- This unit should only be installed by those who are appropriately qualified and skilled to do so.
- This unit has been designed and tested in accordance with IEC 61000-6-3 and IEC 61000-6-2, however the installer is responsible for ensuring that all local regulations and standards are complied with.
- This product is to be serviced only by Evnex approved technicians using only Evnex supplied parts
- There are no user serviceable parts inside the charging station.
- Do not attempt to repair or modify the product
- It is the user's responsibility to ensure that the cable is stored safely, and not left where it could become a tripping hazard, or subject to stress or damage.
- This charging station should only be used to charge a vehicle with a compatible J1772 socket, or IEC 61851 type 1 or type 2 socket.
- Only cables which comply with IEC 62196-1 and IEC 62196-2 may be used with this product
- Vehicle and charging cable shall be used as per the manufacturers instructions
- Vehicle on-board charger required to comply with IEC 61851-1 and IEC 61851-21-1
- Avoid excessive application of moisture to charging cable connectors, e.g. washing with hose

- Do not use harsh chemicals to clean this product. Periodic cleaning may be done with a damp cloth and mild detergent if required
- Warning labels must not be removed

## **Risk of electric shock**

- Read all instructions before installing or using this product
- If this product appears to be damaged in any way, it should be electrically isolated and repaired or replaced. Damage includes fraying or broken insulation on the power cable or any signs of cracking or separation on the connector or charging unit
- This product should not be operated while in a "Fault" state and should be electrically isolated until serviced by a qualified technician
- Appropriate upstream protection is required as per local regulations
- Never insert foreign objects in the charging cable connectors or charging station socket
- Do not use extension cords or any kind of adapter with this product
- This product should not be used by children
- Avoid installing this product in locations that are prone to flooding



## Disclaimer

---

Evnex Limited shall not be liable in any way for damage or injury that occurs when using the product, and all warranties will be void where:

- The installation instructions have not been followed correctly
- The product has been installed by an unqualified person
- The product has been tampered with or modified
- The product has been used for a purpose other than it was designed and intended for

# Installation

---

## Installation notes

- Installer advised to follow anti-static procedures and to avoid touching exposed electronic components
- Take extra care to avoid damage to internal components during installation
- Product requires an upstream RCD to be installed with wiring as per applicable local legislation.
- Product must be installed with appropriately rated wiring and upstream circuit breaker
- Installation to be performed without charging cable attached for non-tethered units
- Installer to use appropriate installation equipment and protective safety clothing as per local legislation
- All exposed metal components such as pedestals shall be earthed as per local legislation requirements

## Site selection

- Where possible, protect the charging station from direct sunlight to prevent charging speed reduction or charging interruption due to overheating
- Do not cover unit or install in an area with poor airflow, such as a cupboard

- Consider pedestrians and other traffic, ensure that the charging cable does not pose a tripping hazard
- If possible, avoid installing the charging station in a place where it can be damaged by falling objects, doors, vehicles or machinery
- Although this charger is designed for indoor and outdoor installations, it is recommended that exposure to rain, snow, hail and direct sunlight is minimized where reasonable to increase lifespan
- Do not allow this charging station to be subject to water spray such as water blasters or high-pressure hoses
- The attachment surface must be sufficiently strong to withstand normal use, non-tethered versions are subject to extra forces when plugging and unplugging
- Ensure that the attachment surface is flat - an uneven surface may warp the enclosure and prevent installation of the front cover
- Install trip hazard warning sign where appropriate or as required by local legislation
- Install live electrical cable warning sign where appropriate or as required by local legislation
- Product to be installed with adequate clearance to prevent operator injury while using product. This includes inserting and removing charging connector, wrapping and unwrapping cable and operating the RFID card reader

## Mounting notes



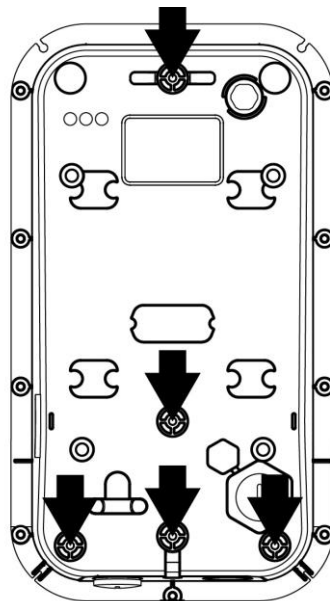
All charging stations (or the storage means for the vehicle connector in tethered lead models) should be mounted at least 800mm above ground level. The lowest point of the vehicle connector when stored shall be at a height between 0.5m and 1.5m above ground level.



The sides of the unit are not vertical and should not be used to find level. The template has flat sides suitable for placing a level against before drilling. When screwing the unit to the wall, use the top face of the unit to place a level against. The unit must be mounted vertically as per illustrations. Horizontal installation is not allowed.

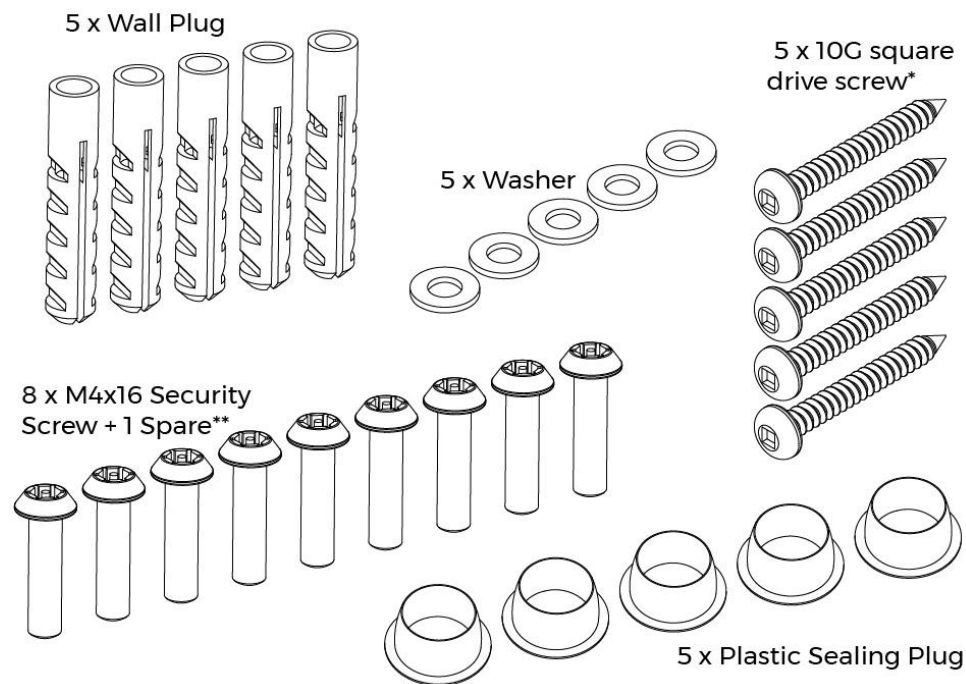


Mounting holes must only be drilled in the 5 locations specified. It is the installers responsibility to ensure proper sealing of any drilled holes, including installation of provided sealing plugs. See arrows showing the 5 drilling locations.



## Fasteners

Locate the packet labelled **INSTALLATION MANUAL & FASTENERS** containing the following:



*\*No.2 square bit required*

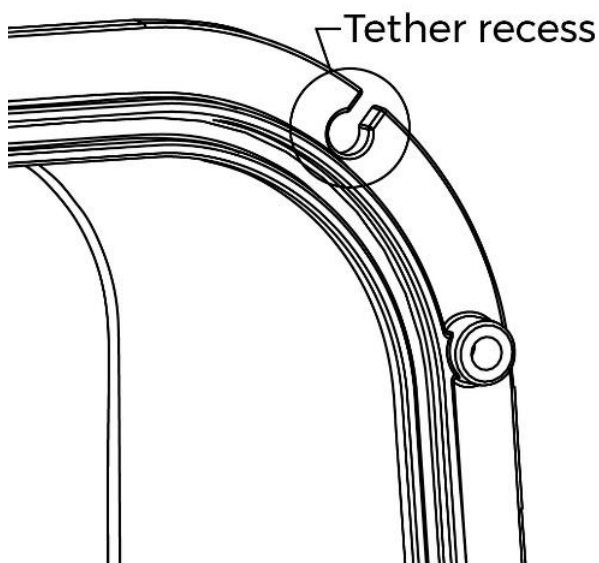
*\*\*Torx T20 security bit required*

## Opening the unit

Remove the fasteners securing the front cover.



The cover has a tether to decrease risk of wire strain. This tether can be looped into the recess in the top right corner of the enclosure to keep the cover out of the way during installation.



## Mounting the unit

5 x 5mm holes must be drilled in the unit for the mounting screws.

Place the unit on a soft surface to prevent marking the unit while drilling the holes.



Drilling too deep into the unit may cause the chuck of the drill to damage wires. Remove any plastic swarf from the unit as it could prevent water-tight installation of the sealing plugs and the front cover.

The mounting surface must be flat to ensure that the unit is not twisted as it is fixed against the chosen wall.

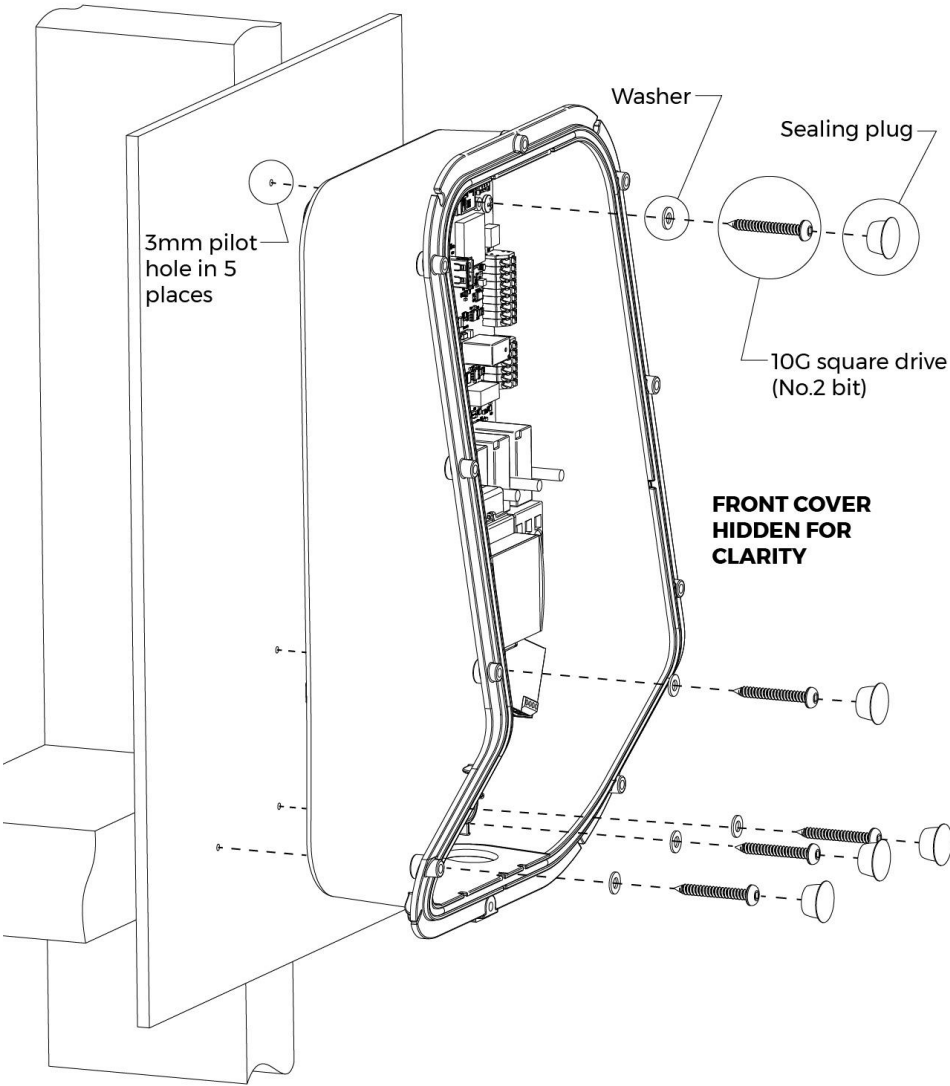
A cardboard drilling template is provided to allow easy marking out of the 5 mounting holes.

For timber framed walls, 3mm pilot holes are recommended.

For concrete walls, a 7mm masonry bit is required to allow insertion of the supplied wall plugs.

The location of the optional rear entry hole (M25 or M32) is also provided, along with the optional M12 hole location. M12 and M32 holes need to be drilled by the installer if required.

Timber framed wall mounting example





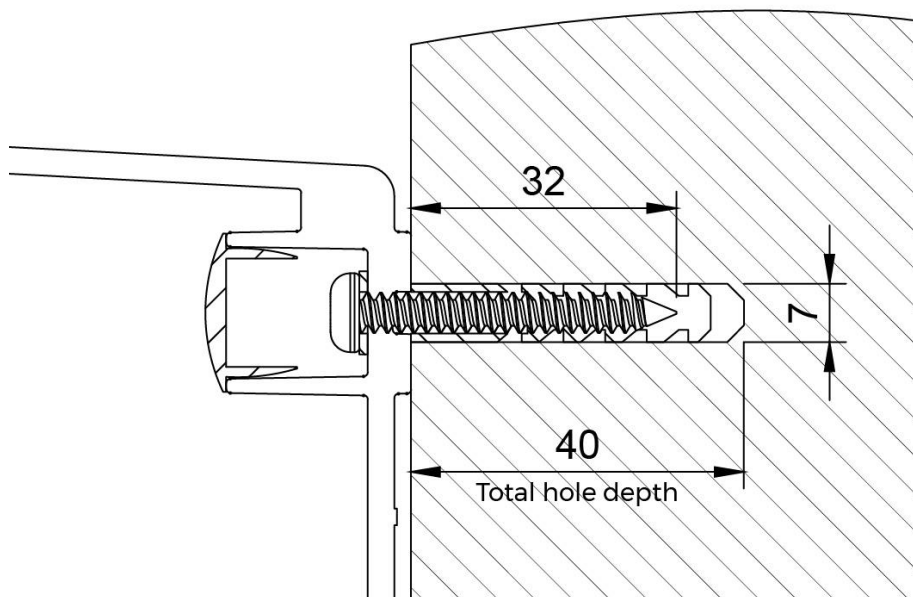
## Solid wall mounting example

The diagram below shows a cross section of one of the five mounting holes in a solid wall such as concrete.

For timber framed walls, the screws should enter solid structural framing inside of the wall. If this is not possible, proper anchoring hardware, suitable for the wall material and thickness, should be used.

For concrete or other solid walls, use the supplied wall plugs. Recommended hole depth is 40mm with a 7mm masonry bit.

For all types of installation ensure that the washers are installed on the screws and that the sealing plugs are installed after the screws are firmly tightened.



## Wiring connection

---



Always ensure that the main supply is isolated before beginning work on the charging station installation.



The installer must ensure that the charging station is correctly earthed.



The E & X Series are 'mode 3' charging stations. Due to their high current consumption, they must be connected to a dedicated feed from the main distribution board.

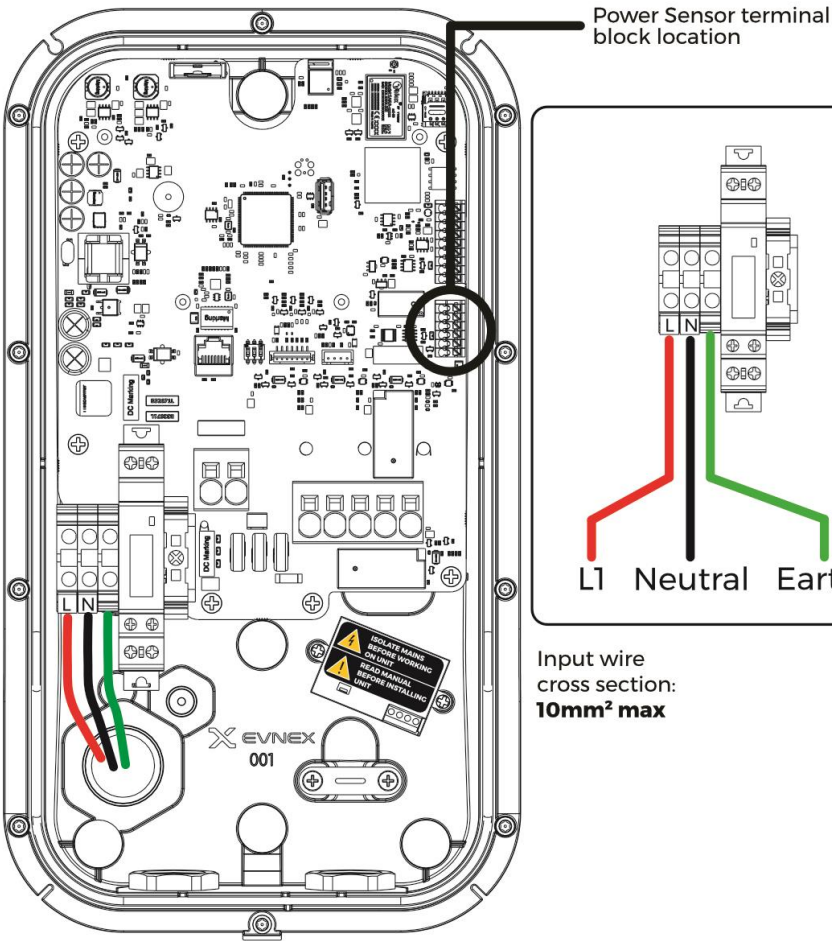


The E & X Series of charging stations are not designed to charge vehicles that require ventilation systems during charging.



Charging station is not to be powered on while the front cover is open

Single phase wiring example

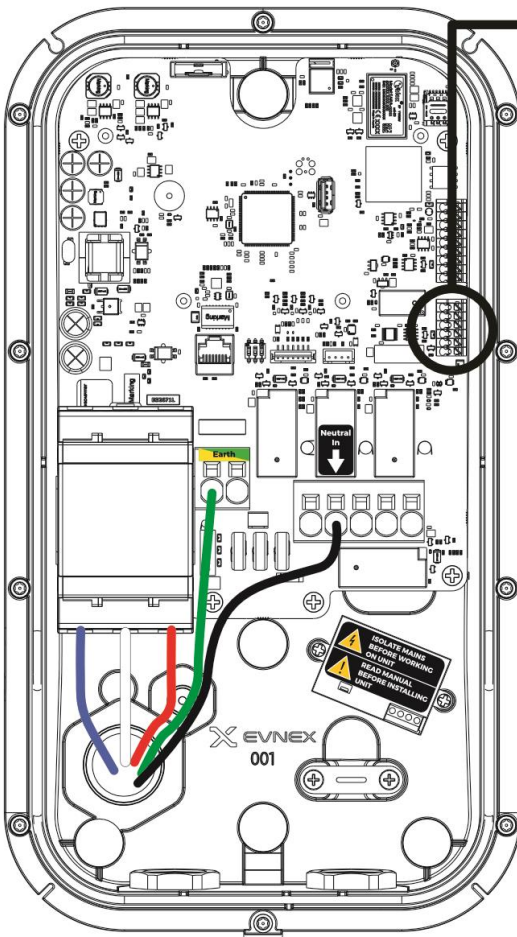


Input wire  
cross section:  
**10mm<sup>2</sup> max**

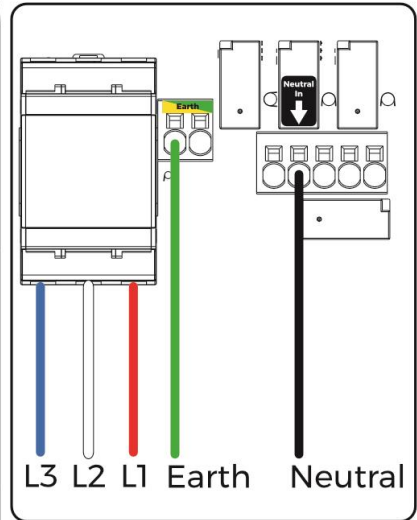
## Three phase wiring example



Extra care is required with 3 phase wiring to ensure that the input wires do not interfere with the front cover or charging socket when the unit is closed. Excess wire may cause interference and prevent the unit from being properly closed



Power Sensor terminal block location



Input wire cross section:  
**10mm<sup>2</sup> max**

## Upstream protection



The following recommendations are provided as a guide. However, upstream protection should be installed in accordance with local regulations.



Residual current protection **and** a suitably rated means of overcurrent protection should **always** be installed upstream of the charge point at the distribution board. This could be an MCB installed alongside an RCD or an RCBO.

The maximum current draw of the product is determined by DIP switch setting shown in page 23 of installation manual.

The tables below are advisory and based on the common availability of protection devices.

### Short Circuit Protection: Circuit breaker

#### Single-phase

- For  $\leq 16A$ : 1 x 20A, 1P, Energy Limiting Class 3, type C
- For 16A to 24A: 1 x 25A, 1P, Energy Limiting Class 3, type C
- For  $\geq 24A$ : 1 x 32A, 2P, Energy Limiting Class 3, type C

#### Three-phase

- For  $\leq 16A$ : 1 x 20A, 3P, Energy Limiting Classes 3, type C
- For 16A to 24A: 1 x 25A, 3P, Energy Limiting Classes 3, type C
- For  $\geq 24A$ : 1 x 32A, 3P, Energy Limiting Classes 3, type C

#### Notes

- *The MCB or RCBO should not be installed side by side with other high load circuit protective devices to prevent thermal deration when considering grouping factor of devices.*

- The maximum rated short-circuit capacity ( $I_{cn}$ ) is 6000 A.
- The circuit breaker must comply with one of the following standards: IEC 60898-1, IEC 60947-2, or IEC 61009-1.

## Residual Current Protection: RCD

### Single-phase

- For  $\leq 16A$ :  $1 x \geq 20A$ , 2P, Rated Residual Current 30mA, type A or B
- For 16A to 24A:  $1 x \geq 25A$ , 2P, Rated Residual Current 30mA, type A or B
- For  $\geq 24A$ :  $1 x \geq 32A$ , 2P, Rated Residual Current 30mA, type A or B

### Three-phase

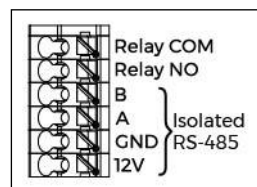
- For  $\leq 16A$ :  $1 x \geq 20A$ , 4P, Rated Residual Current 30mA, type A or B
- For 16A to 24A:  $1 x \geq 25A$ , 4P, Rated Residual Current 30mA, type A or B
- For  $\geq 24A$ :  $1 x \geq 32A$ , 4P, Rated Residual Current 30mA, type A or B

### Notes

- The RCD must comply with one of the following standards: IEC 61008-1, IEC 61009-1, IEC 60947-2, or IEC 62423
- The RCBO can be used instead of RCD and Circuit breaker. It must meet all RCD and Circuit breakers requirements as shown above.
- To avoid the requirement for more expensive type B RCDs, all E & X Series charge points have a 6mA DC current detection device (Residual Current Monitor) built in. This is to prevent the blinding of type A RCDs from potential DC leakage currents. In the event of detecting a DC leakage current, the charge point will immediately stop the charging session and transition into a fault state, requiring a reboot to clear the state.

## Power sensor terminal block

This terminal block is reserved for installation of the Evnex Power Sensor. Refer to the Power Sensor Installation Manual.



## Earthing the unit



For minimum cross-sectional area of the protective conductor please refer to Table B1 of current version of ASNZS3000.

## Setting the maximum charge current

All E & X Series charging stations are set to 32A charge current as default. This maximum charge current is set via DIP switches on the PCB.

Depending on the capacity of your upstream supply, the maximum charging current can be set lower than 32A via the DIP switches during installation.

Current	Switch 1	Switch 2	Switch 3
10A	DOWN	DOWN	DOWN
13A	DOWN	DOWN	UP
16A	DOWN	UP	DOWN
20A	DOWN	UP	UP
24A	UP	DOWN	DOWN
28A	UP	DOWN	UP
30A	UP	UP	DOWN
32A	UP	UP	UP

### DIP SWITCH EXAMPLES



The DIP switches set the maximum allowable current that the charging station will draw.

## Closing the unit

---

### Checklist

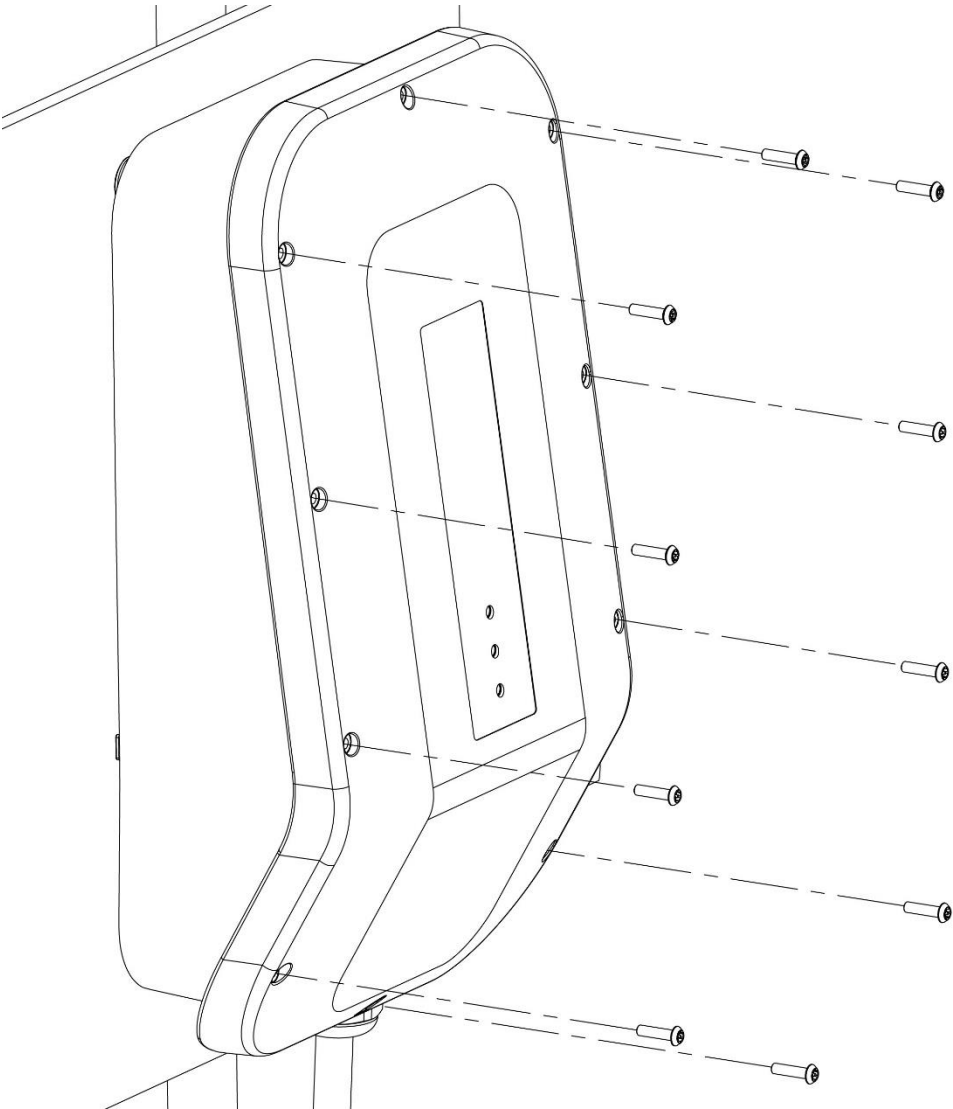


Follow the checklist below before reinstalling the front cover:

- 1) Ensure all 5 mounting screws are installed with their sealing plugs and the unit is fixed securely against the wall.
- 2) Install M25 blanking plugs wherever there are unused 25mm holes. Ensure there are no other water ingress paths.
- 3) Check that the enclosure seal is properly pushed into the groove all the way around and that there is nothing preventing the cover closing or sealing properly.
- 4) Ensure that the input wires from the mains supply are arranged in the enclosure with minimal excess length – too much extra wire can interfere with the front cover or charging socket and prevent the cover closing or sealing properly.
- 5) Install the cover, tightening the ten cover fasteners to 2.5 N-m using a T20 Torx security bit.

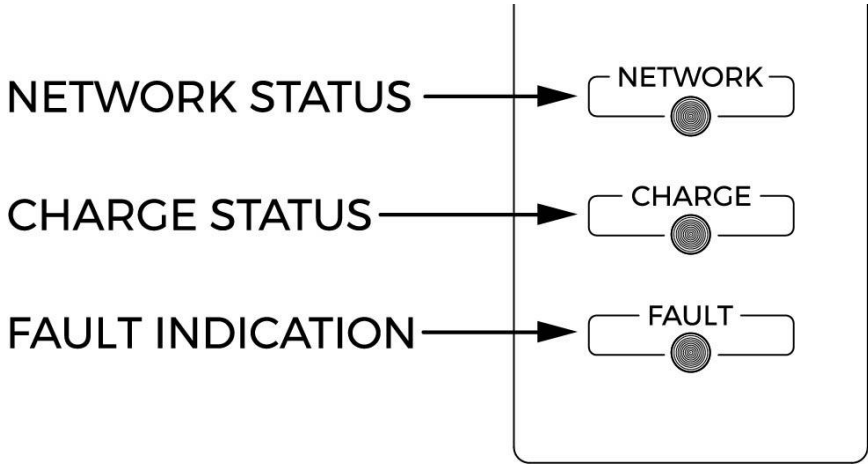


Installing the front cover



# Operation

## Status display



## Initialisation

When first connected, or when rebooting, the blue (NETWORK) light will begin to flash slowly. This indicates that the unit is attempting to connect to the cellular network. When the NETWORK light flashes quickly (10 per second), this indicates that the unit has connected to the cellular network, and is attempting to establish a connection with an OCPP server. When the NETWORK light begins to fade in and out slowly, the charging station has successfully established a connection with the server.

## Charging process



Cables on non-tethered units are locked during charging. Excessive force must not be applied to remove charge cable. If cable is unexpectedly locked



Product is not to be operated when there is debris in charging connector

For non tethered models, connect the type 2 end of the cable to the charging station, and the other end (depending on the make and model of your vehicle) to the charging socket of your vehicle.

For tethered models, simply connect the attached cable to your vehicle charging socket.

Under normal circumstances, your vehicle should request a charge immediately.

During the charge, the CHARGE light on the unit will glow green.



After charging, tethered cable should be stored safely by wrapping it around unit. Non-tethered cables may be removed or wrapped around unit.

## LED modes / fault conditions

Blue LED	Green LED	Red LED	Condition
Slow flash (2 per second)			Establishing connection with cellular network
Fast flash (10 per second)			Connected to cellular network, establishing connection with OCPP server
Slow pulse			Connected to server
	Slow flash (2 per second)		Vehicle plugged in, not charging
	On		Charge in progress
		On	Fault, consult app or back-office software for details
Single flash	Single flash	Single flash	RFID tag detected
		5 flashes	RFID tag not recognised



Do not use the charging station if the plug and lead or socket are cracked, frayed, or damaged in any way

## Technical information

---

### General

Charging mode.....	Mode 3 in accordance with IEC 61851-1
Protection against Electric shock... Class I equipment in accordance IEC 61851-1	
Overvoltage category.....	III in accordance with IEC 61851-1
Protection class.....	IP54
Protection against mechanical impact.....	IK08
Residual direct current detecting device.....	6mA (characteristic in accordance with IEC 62955)
Rated diversity factor (RDF).....	1
Pollution degree.....	III
Earthing system.....	TT/TN/TI
Installation.....	Indoor/ outdoor
Type of construction.....	Stationary
Intended for use.....	Ordinary persons
Rated short-time withstand current (Icw) .....	< 6kA (effective value in accordance with EN 61439-1)
External design.....	Enclosed assembly

### Power supply

#### E7 and X7 series

Nominal supply voltage.....	230VAC
Acceptable operating range.....	220 – 240VAC
Frequency.....	50/60 Hz
Rated Current.....	Adjustable (max 32A)

#### X22 series

Nominal supply voltage.....	230/400VAC (3P+N)
Acceptable operating range.....	400±10% VAC (3P+N)
Frequency.....	50/60 Hz
Rated Current.....	Adjustable (max 32A)

\*Note that actual current draw may be less, as the vehicle may not request the full amount of current, depending on conditions.

**Environment**

Mounting environment.....Indoor/Outdoor IP54  
Installation altitude.....≤ 2000m above sea level  
Operating temperature range.....-25C° to 55C°

**Cellular modem (X Series only)**

X(7 or 22)-TXX  
LTE bands (LTE-M)..... 1, 2, 3, 4, 5, 8, 12, 13, 18, 19, 20, 25, 26, 28 (R410M-02B)

**Communication and protocols**

OCPP version.....1.6J (JSON)  
Mobile app configuration.....Bluetooth LE  
RFID (X Series only).....ISO/IEC 14443, 13.56MHz  
Energy metering.....Yes, MID certified  
WiFi.....802.11b/g/n  
Ethernet.....Yes

**Protection & safety features**

Over voltage cut-off.....	264V
Under voltage cut-off.....	190V
Over temperature cut-off.....	70 °C
Ground fault detection.....	Yes
Over current cut-off.....	Current/time curve*

\* for example, If the vehicle draws 1.25A over the target current set by the charge point for a period exceeding 6 minutes, then an over current fault will be triggered and the charge session stopped. Alternatively, if the vehicle draws 0.25A over the target current, then the time that passes before an overcurrent fault is triggered will be greater than an hour.

**Connections / terminals**

Mains input.....	10mm <sup>2</sup> max
SIM card.....	Nano SIM (4FF)

**Dimensions**

Height.....	373mm
Width.....	212mm
Depth.....	142mm

## Regulatory

The product complies with the following standards:

- Radio Equipment Directive 2014/53/EU
  - EN 300 330 V2.1.1
  - EN 300 328 V2.1.1
- Low Voltage Directive 2014/35/EU
  - IEC 61851-1:2017
- EMC Directive 2014/30/EU
  - IEC 61000-6-3:2011
  - IEC 61000-6-2:2005
- RoHS Directive 2011/64/EU
  - IEC 63000:2016
- WEEE Directive 2012/19/EU
  - EN 50419:2006

## EV supply equipment classification

Power supply input	EV supply equipment connected to AC supply network
Electric connection method	Permanently connected
Power supply output	AC EV supply equipment as per IEC61851-1. Case B Type 2 Socket or Case C Type 1 Plug or Case C Type 2 Plug
Access	Locations with restricted and non-restricted access
Protection against electric shock	IEC61851-1 Class I equipment
Mounting method	Stationary equipment (Surface mounted on walls, poles or equivalent positions)
EVSE charging mode	EC61851-1 Mode 3



## Troubleshooting

---

Problem	Solution
Blue NETWORK indicator continuously flashing slowly (2 per second)	<p>The charge point cannot connect to the internet. Check the following:</p> <ul style="list-style-type: none"> <li>• Network is available at the installation location</li> <li>• A SIM card is correctly installed</li> <li>• The SIM APN is configured correctly</li> </ul>
Blue NETWORK indicator continuously flashing fast (10 per second)	<p>The charge point has connected to the internet, but cannot establish a connection to the OCPP server. Ensure that the OCPP endpoint settings have been configured correctly.</p>
The charging lead is plugged in, but the vehicle is not charging and the green CHARGE indicator is flashing or not illuminated	<p>Check the following:</p> <ul style="list-style-type: none"> <li>• Make sure the charging plug is properly inserted into the vehicle and the charging station (if using a removable lead).</li> <li>• Ensure that the vehicle is not fully charged, or not requesting a charge for another reason e.g. charge timer set</li> <li>• Check that charging is enabled on the mobile app or back office software</li> </ul>
The unit responds with 5 red flashes when swiping an RFID card	<p>Ensure that the RFID card is recognised and correctly loaded in the back office software</p>

Problem	Solution
Red FAULT indicator on	Check the mobile app or back office software for the cause of the fault
Cable is locked into charge point	If charging is not in progress but the cable is still locked into the charge point then you will need to contact your charge point provider

If any issues persist, please contact customer support.

SDoC available on request.

# evnex