

E2 Installer Manual

Intelligent EV Charger
V230403

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

- T15 TORX SECURITY BIT
- NO.2 SQUARE DRIVE BIT
- 6MM MASONRY BIT (FOR SOLID WALLS)
- CT (CURRENT TRANSFORMER) CABLE

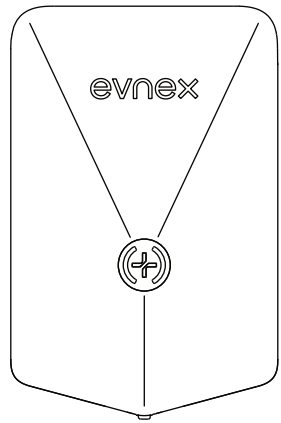
Please note

- Read all instructions before installing or using this product.
- Scan QR code to access latest manuals and datasheets:

docs.evnex.io



- Evnex Ltd. reserves the right to make changes to this document or the products described without notice.



Contact

For questions relating to this product, its use or installation, please refer to contact details below:

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Web: www.evnex.com

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Web: www.evnex.com.au

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Introduction

Product description

The Evnex E2 is an intelligent EV charger that combines driver-centric features with reliable NZ-made build quality.

The E2 has a standard 7.4kW power rating and comes with either a type 2 or type 1 tethered charging cable.

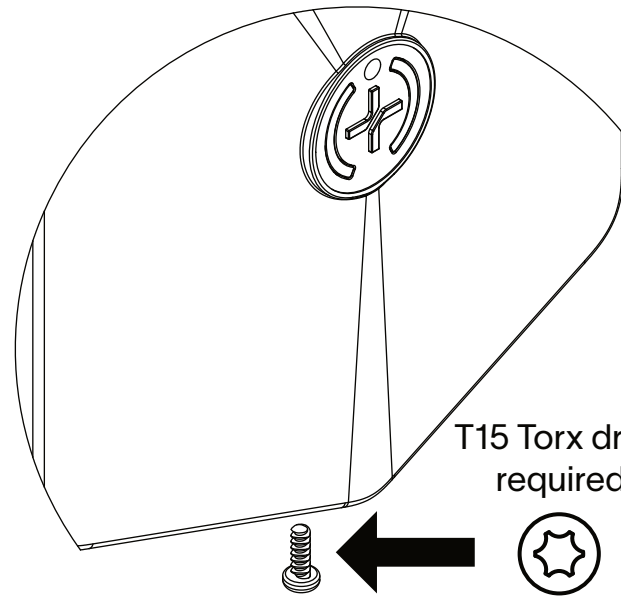
Mounting notes



This product must be installed by a trained and registered industry professional

Opening the charger

Remove the fastener at the bottom securing the Front Cover. A T15 torx screwdriver is required. Insert a small flat-head screwdriver directly behind the screw hole location and gently pry open. The Front Cover is hinged at the top and can now be lifted upwards and away.



T15 Torx drive required

Thermal limiting



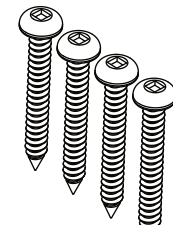
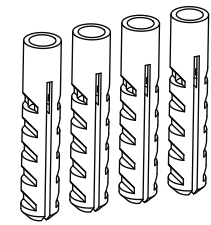
Installing the charger in a location that is subject to direct sunlight may cause a reduction in charging power in warm weather. Where practical, install in a location that is protected from direct sunlight. See "Site selection" section for other notes on choosing a suitable location for the charger.

Fasteners

The charger is supplied with the following fasteners - located in the installation kit box:

4 x 6mm Wall Plug

4 x 8G square drive screw

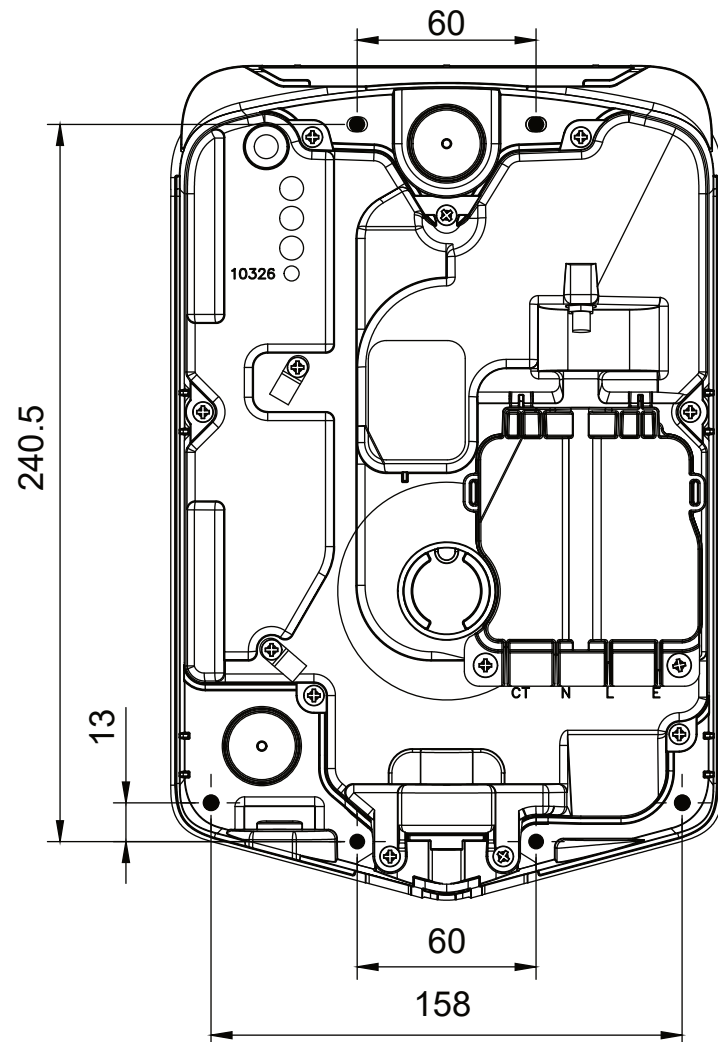


Mounting points

The sides of the unit may be used to find level. The unit must be mounted vertically. Horizontal installation is not allowed. Mounting holes should be drilled in 4 of the locations specified. The outer lower holes are alternatives which can be drilled if required.



The charger (or the storage means for the vehicle connector) must be mounted at least 800mm above ground level. The lowest point of the vehicle connector when stored should be at a height between 0.5m and 1.5m above ground level.



Mounting the charger

4 x 5mm holes are pre-made.

The mounting surface must be uniform to ensure that the charger is not twisted as it is fixed against the chosen wall. Extra care is required on weatherboard.

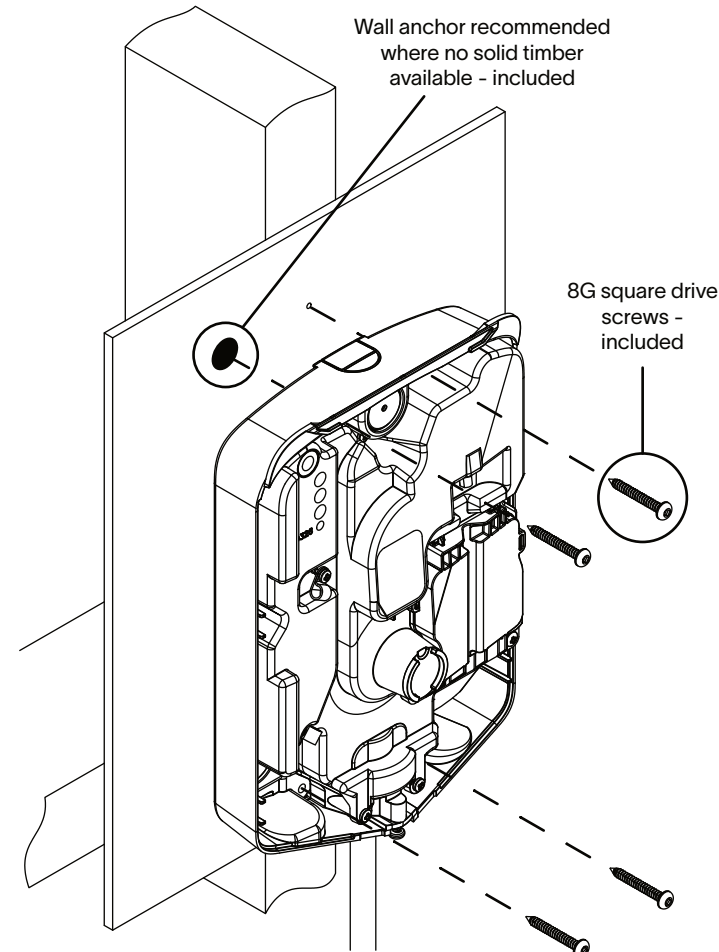
A paper drilling template is provided within the manual to allow easy marking out of the mounting holes.

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

For concrete walls, a 6mm masonry bit is required to allow insertion of the supplied wall plugs.

Timber framed wall mounting example

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.



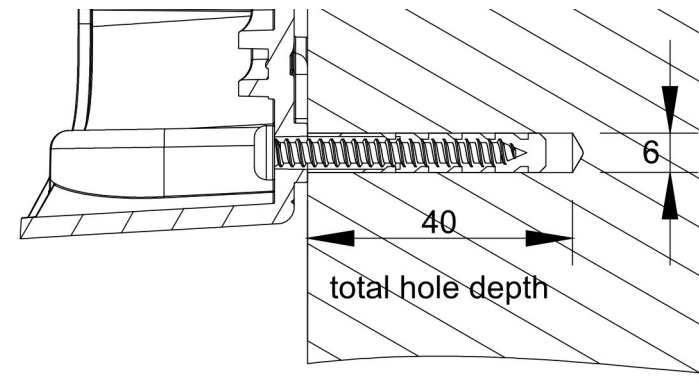
Wall anchor recommended where no solid timber available - included

8G square drive screws - included

Solid wall mounting example

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

For concrete or other solid walls, use the supplied wall plugs. Recommended hole depth is 40mm with a 6mm masonry bit.



Wiring connection



Always ensure that the main supply is isolated before beginning work on the charger installation



The installer must ensure that the charger is correctly earthed



The E2 Series are 'mode 3' chargers and must be supplied by a dedicated final sub-circuit



The E2 Series of chargers are not designed to charge vehicles that require ventilation systems during charging

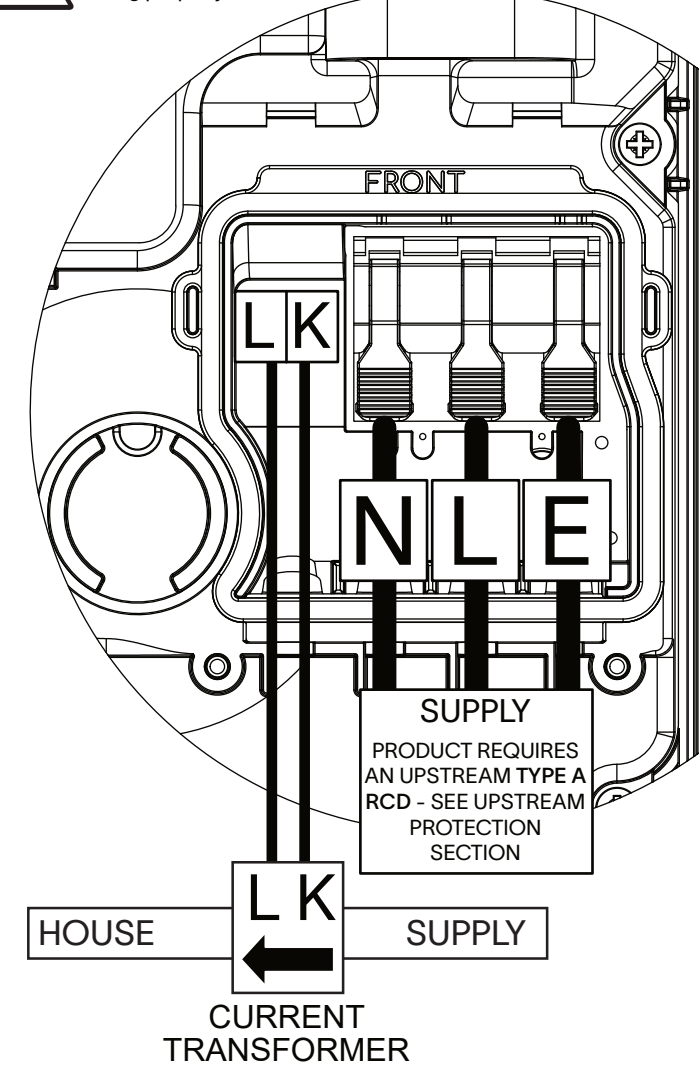


The charger must not be powered on without the Terminal Cover in place, other than for testing

Wiring example



Care is required with wire length to ensure that the input wires do not interfere with the front cover when the charger is closed. Excess wire may cause interference and prevent the unit from being properly closed



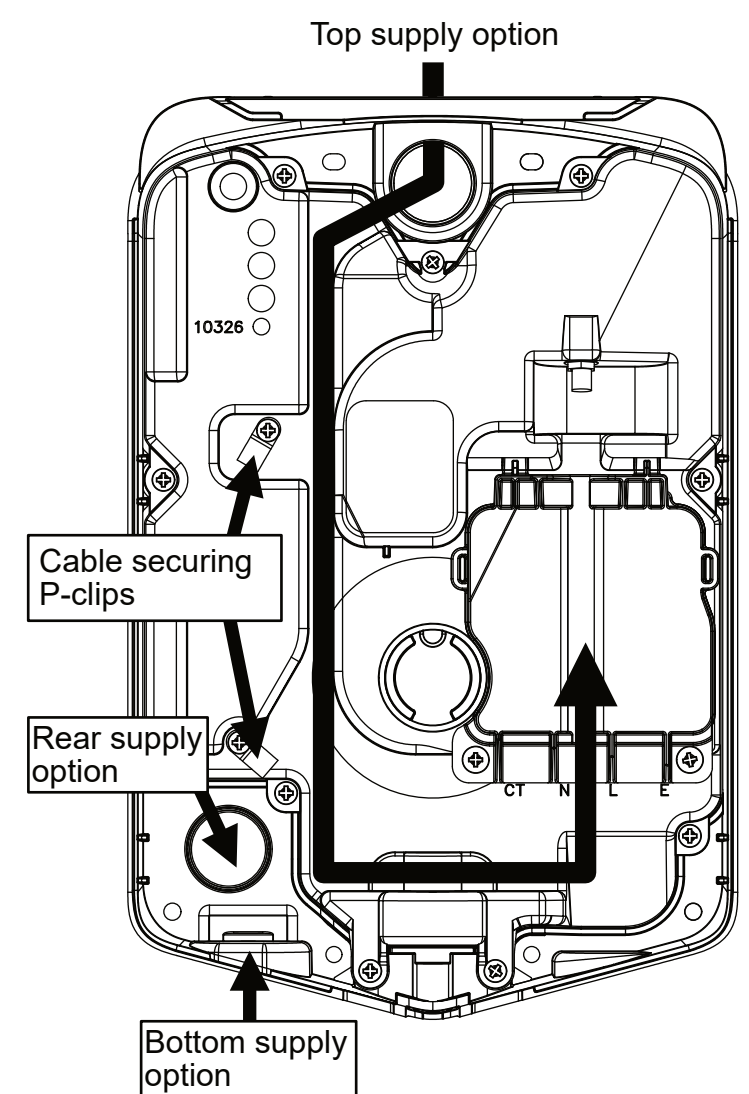
Incorrect polarity on the Current Transformer (CT) may cause overloading of the supply. The CT must be wired correctly to the charger and clamped in the correct orientation to the supply. See arrow on CT.

Top route supply example

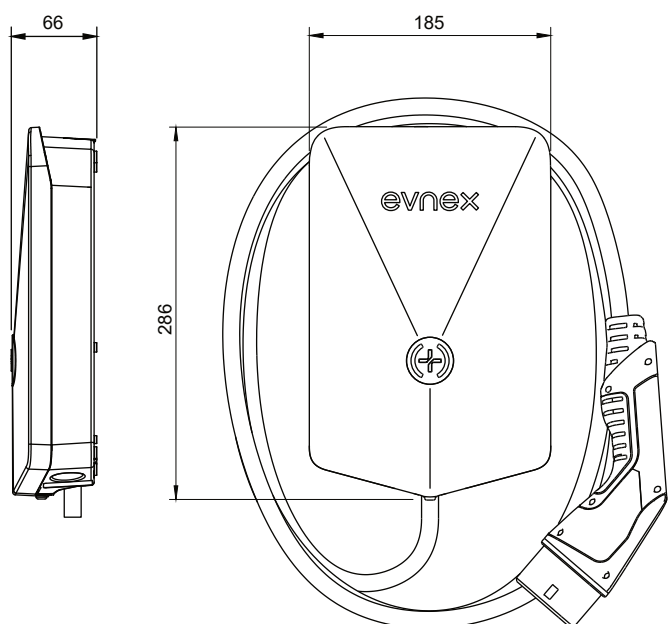
Top route of supply cable and CT cable is available by routing as shown below. Note that P-clips are provided to keep cable properly located through the use of zip ties.

The ingress protection (IP) rating of the charger is achieved through the clear PCB Cover - total sealing is not required through external knock-outs.

Bottom and rear entry options are also provided.



General dimensions



About this document

The following document describes the functionality and installation procedures for the Evnex E2 Series of electric vehicle chargers.

Scope of this document

This document only refers to the following E2 Series chargers, please refer to the correct documentation if this does not apply.

E2-xxxxx

Symbols

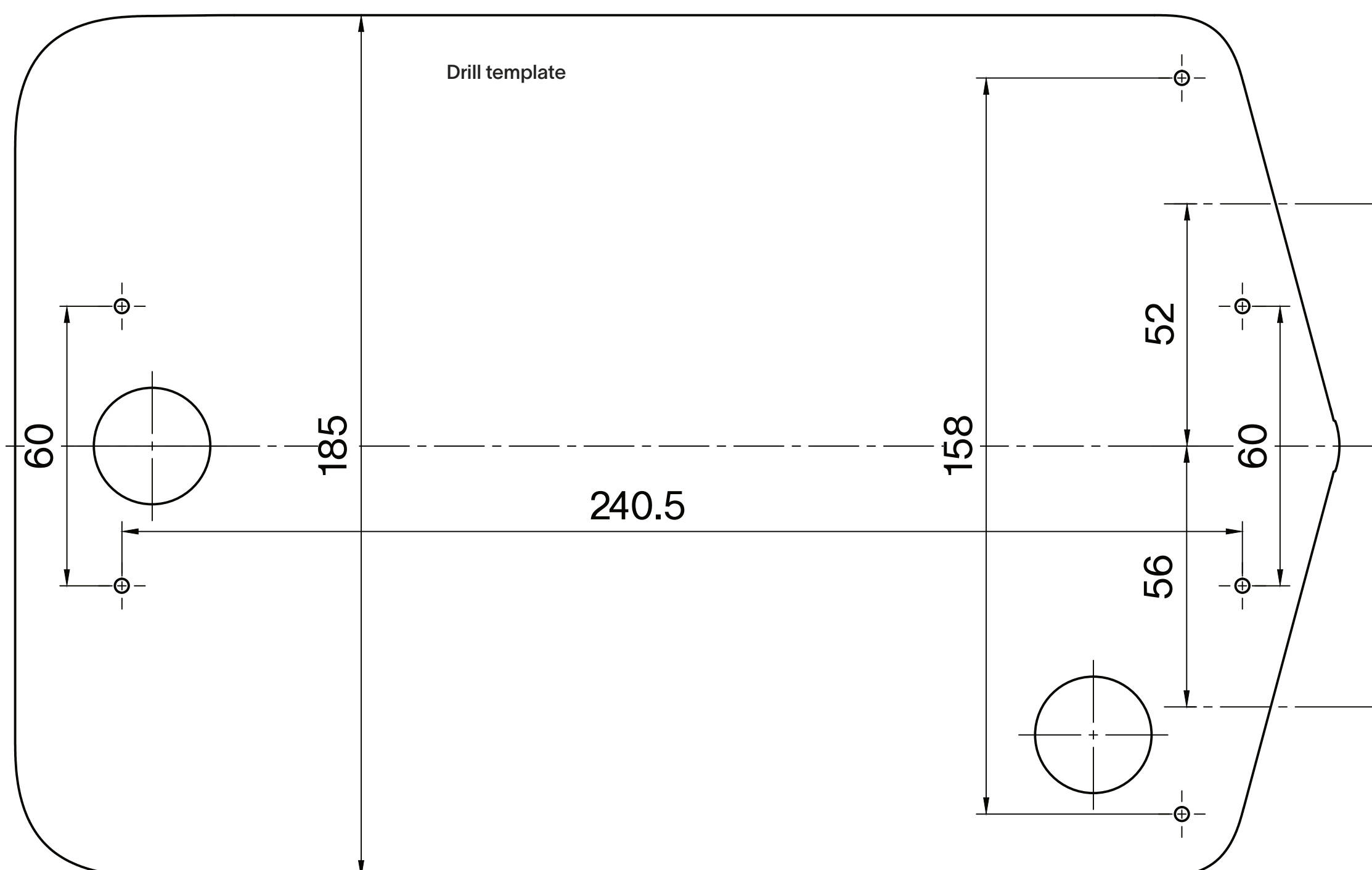
You will find the following symbols throughout this document. Please pay attention to the recommendations.



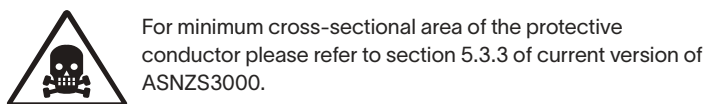
CAUTION - Failure to follow these directions may cause minor injury or damage to equipment



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



Earthing the charger



For minimum cross-sectional area of the protective conductor please refer to section 5.3.3 of current version of AS/NZS3000.

Setting the maximum charge current

All E2 Series chargers are set to 6A charge current as default. The maximum charge current is set via the installation app.

Depending on the capacity of your upstream supply, the maximum charging current can be set lower than 32A via the app during installation. With the current transformer installed the charger will dynamically adjust output depending on available supply capacity.

Closing the charger

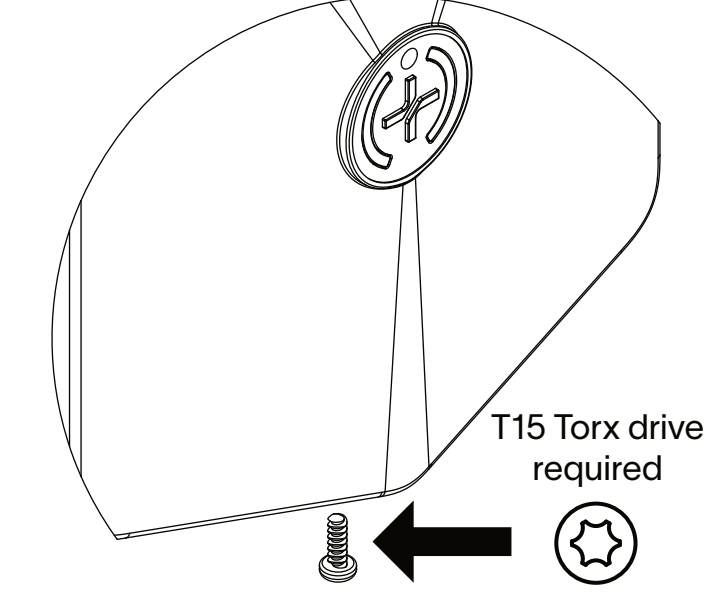
Checklist

Follow the checklist below before reinstalling the front cover:

- Ensure a minimum of 4 mounting screws are installed and the charger is fixed securely against the wall.
- Check that the terminal cover seal is properly pushed into the groove all the way around and that there is nothing preventing the terminal cover closing or sealing properly.
- 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 and prevent the cover closing or sealing properly.

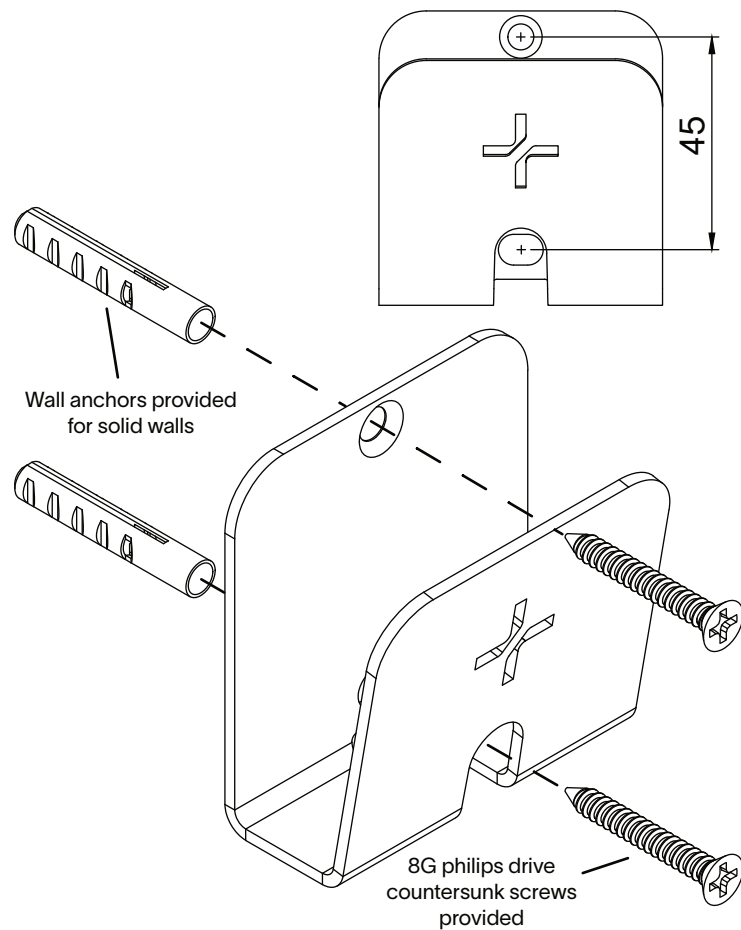
Installing the front cover

Hook the top of the front cover over the enclosure body and clip in place. Secure with the T15 torx screw to a maximum of 2.5 N-m using a T15 Torx bit. Do not over-tighten.



Cable Hook

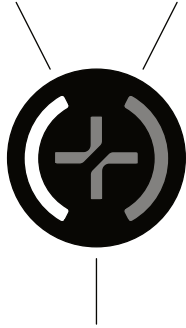
It is recommended that the cable hook is installed to one side of the charger, depending on the individual site requirements. Black phillips head screws and wall anchors are provided. The bottom hole in the cable hook is slotted to allow easy levelling.



Operation

Status display

Upon startup the default status will be DISABLED - The LED's will be white and alternate left/right sides while the charger is disabled



Note: Commissioning must be completed through the installer app to enable charging

Commissioning

It's quick and easy to commission an E2 charger installed in a typical residential home.

Our Evnex Installation app walks you through the process, and by the end the charger will be ready to go, with the driver set up to view and control the charger via their phone should they wish to do so.

The Evnex Installation app is available on Android or iOS.

For more information on commissioning, visit the Installation section online:

docs.evnex.io



Charging process



Charger is not to be operated when there is debris in the charging connector

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, the tethered cable should be stored safely by looping it around charger and / or looping it around the provided cable hook



Do not use the charger if the plug and lead is cracked, frayed, or damaged in any way

LED status and fault conditions

Explanation of LED display status can be found in the User Guide, the Installation app & online under the GETTING STARTED section through the link below:

docs.evnex.io



Upstream protection - guide only



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 over-current protection should always be installed at the origin of the final sub-circuit. This could be an MCB installed alongside an RCD or an RCBO.

The maximum current draw of the charger is determined during commissioning via the installation app and can be adjusted from 6 to 32A. The default setting is 6A. With the current transformer installed the charger will dynamically adjust output depending on available supply capacity.

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

Over-current protection: circuit breaker

Single-phase only

- 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 or 40A, 1P, Energy Limiting Class 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 de-rating when considering grouping factor of devices.
- Mode 3 chargers can be considered a fixed load
- The maximum rated short-circuit capacity (I_{sc}) 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 only

- 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

Notes

- All current carrying conductors must be interrupted
- The RCD must comply with one of the following standards: IEC 61008-1, IEC61009-1, 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 E2 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.
- Internal DC detection meets the detecting requirements of IEC 62955:2018

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
- The charger requires an upstream RCD to be installed with wiring as per applicable local legislation
- The charger must be installed with appropriately rated wiring and upstream circuit breaker
- 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
- An RCD/RCBO satisfying the relevant standards is suitable for means of isolation of the charger

Site selection

- Where possible, protect the charger from direct sunlight to prevent charging speed reduction or charging interruption due to overheating
- Do not cover the charger 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 charger 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 minimised where reasonable to increase lifespan
- Do not allow this charger 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
- Ensure that the attachment surface is flat - an uneven surface may warp the enclosure and cause damage to the product i.e bend the PCB
- 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
- The charger is to be installed with adequate clearance to prevent operator injury while using product. This includes wrapping and unwrapping cable.

Safety information

General information

- This charger should only be installed by those that hold the qualifications required by local electrical regulations for electrical installations
- This charger 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 charger is to be serviced only by Evnex approved technicians using only Evnex supplied parts
- There are no user serviceable parts inside the charger
- Do not attempt to repair or modify the charger
- 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 charger should only be used to charge a vehicle with a compatible J1772 socket, or IEC 61851 type 1 or type 2 socket.
- 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 the charger. 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 the charger
- If the charger 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 charger
- The charger 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
- Do not use extension cords or any kind of adapter with the charger
- This product should not be used by children
- Avoid installing the charger 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 charger, and all warranties will be void where:

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

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.....	IP55
Protection against mechanical impact.....	IK08
Residual direct current detecting device.....	6mA DC (characteristic in accordance with IEC 62955)
Rated diversity factor (RDF).....	1
Pollution degree.....	III
Earthing system.....	TT/TN/TTI
Installation.....	Indoor/ outdoor
Type of construction.....	Stationary
Intended for use.....	Ordinary persons
Rated short-time withstand current (Icw).....	< 6 kA (effective value in accordance with EN 61439-1)
External design.....	Enclosed assembly

Power supply

Nominal supply voltage.....	220-240 VAC 1 ϕ
Frequency.....	50/60 Hz
Rated Current.....	Adjustable (max 32 A @ 35 deg C ambient)

*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 IP55
Installation altitude.....	$\leq 2000m$ above sea level
Ambient operating temperature range.....	-25°C to 40°C

Cellular modem

LTE bands (LTE-M1).....	3, 28
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Communication and protocols

OCP version.....	1.6J (JSON)
Mobile app configuration.....	Bluetooth LE
WiFi.....	802.11b/g/n 2.4Ghz

Protection & safety features

Over voltage cut-off.....	264V
Under voltage cut-off.....	190V
Over temperature cut-off.....	70 °C
Over current cut-off.....	Current/time curve

Connections / terminals

Mains input.....	10mm ² max
SIM card.....	Nano SIM (4FF)
CT input.....	6mm OD cable max

Regulatory

The charger complies with the following standards:

- IEC 61000-6-3:2011
- IEC 61000-6-2:2005
- IEC 61851-1:2018



EV supply equipment classification

Power supply input	EV supply equipment connected to AC supply network
Electrical 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

- If this charger is not working as expected or you believe there is an issue, please review our troubleshooting guide by scanning this QR code:

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- If you can't find what you're looking for please give our support team a call

Phone: Web:

NZ 0800 395 007 NZ www.evnex.com

AU 1800 959 377 AU www.evnex.com.au

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