

# Electric Vehicle Charger Connection Units

EVU-2-32x EVU-3-32x EVU-6-32x  
EVU-1-32x-3-32x EVU-1-100TP

## Installation Manual

V1.12 Mar 2021



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### **PRODUCT ADVISORY NOTICE**

**This product must be installed by a competent person in accordance with the IET Wiring Regulations, BS7671 (18<sup>th</sup> Edition or later) and current Building Regulations.**

**Ensure the electrical supply is disconnected before installation or removing the cover of the unit.**

## Product Description

The **matt:e** Electric Vehicle Charger Connection Units (EVCCU) are designed for use in commercial applications where 3 phase PME supplies are feeding Electric Vehicle Chargers.

This manual covers the EVU-2-32TP-M, EVU-2-32TP-R, EVU-3-32TP-M, EVU-3-32TP-R, EVU-3-32-R & EVU-3-32-M units.

The units are not intended for any purpose other than that defined within this document.

## **WARNINGS**

Please read and observe the following notices carefully. These warnings must be observed when installing and operating the Electric Vehicle Charger Connection Units.

**All relevant supplies must be isolated or disconnected before commencing any work. This product must be installed by a competent person in accordance with the IET Wiring Regulations, BS7671 (18<sup>th</sup> Edition or later) and any relevant Building Regulations and/or Installation Regulations.**



**Electrical  
hazard**

**Once installed, the unit has a Live Mains Supply (400v or higher) within the enclosure. The cover must not be removed until the supply to the unit has been isolated or disconnected.**

## Safety Advice

The unit must be installed in a dry ventilated location; it must never be covered or have restricted ventilation.

The EVU-3-32-x and EVU-1-32-x units are rated for a maximum 32A.  
The EVU-3-63-x and EVU-1-63-x units are rated for a maximum 63A.

For any information not contained within this document, please contact our technical support team on 01543 227290 or [info@matt-e.co.uk](mailto:info@matt-e.co.uk).

## Introduction

The **matt:e** range of Electric Vehicle Charger Connection Units are fitted with O-PEN technology designed to protect Electric Vehicle Charging equipment when installed onto 3 phase PME infrastructures.

The unit incorporates one or two 5 pole isolator(s) with a built-in under-voltage release mechanism. On detection of fault conditions the O-PEN electronic circuit de-energises the under-voltage release mechanism which disconnects all poles of the supply including CPC. The 5 pole isolator is manually resettable in line with IET Wiring Regulations and code of practice.

If the O-PEN monitor detects a fault and activates the isolator the monitor must be reset by cycling power to the unit. It does NOT automatically reset.

The **matt:e** O-PEN technology does not require earth rods or measuring electrodes to function correctly.

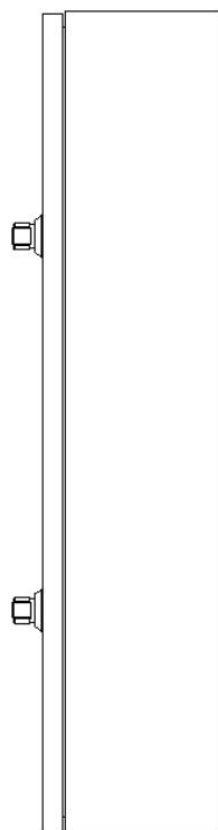
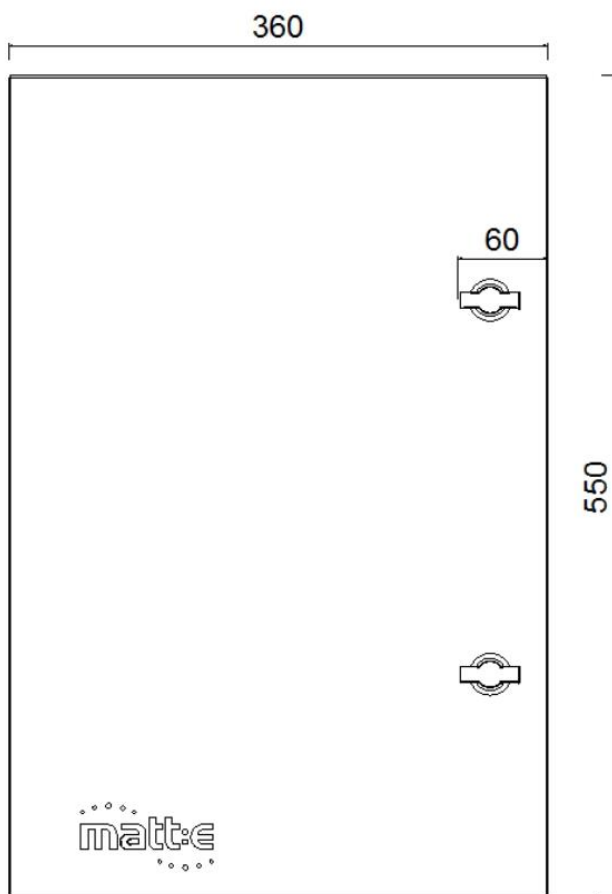
The units are designed to be installed indoors between the distribution board and the Electric Vehicle Charger. The unit must be mounted securely to a solid surface with the lid hinges on the left.

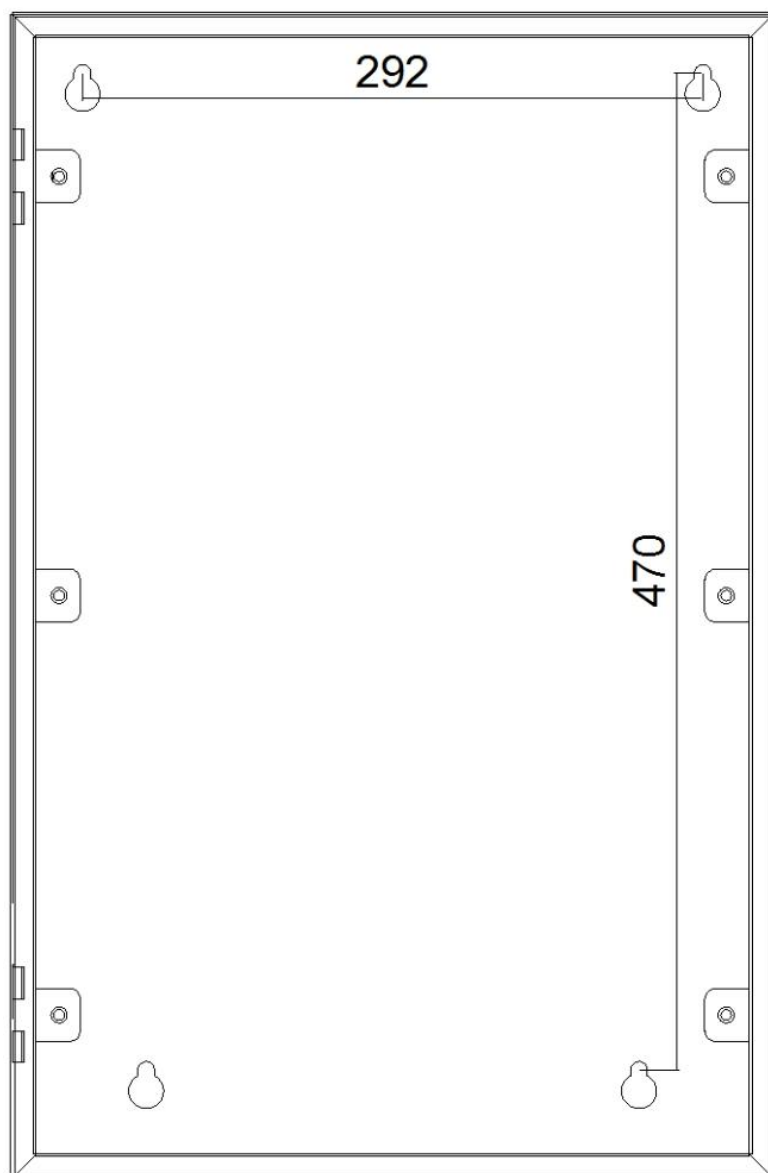
**The installation location should be clean, dry and well ventilated.**

Please refer to the diagrams on the following pages for the dimensions and mounting arrangement of the units



EVU-2-32x  
 EVU-3-32x  
 EVU-6-32x  
 EVU-1-32x-3-32x  
 EVU-1-100TP

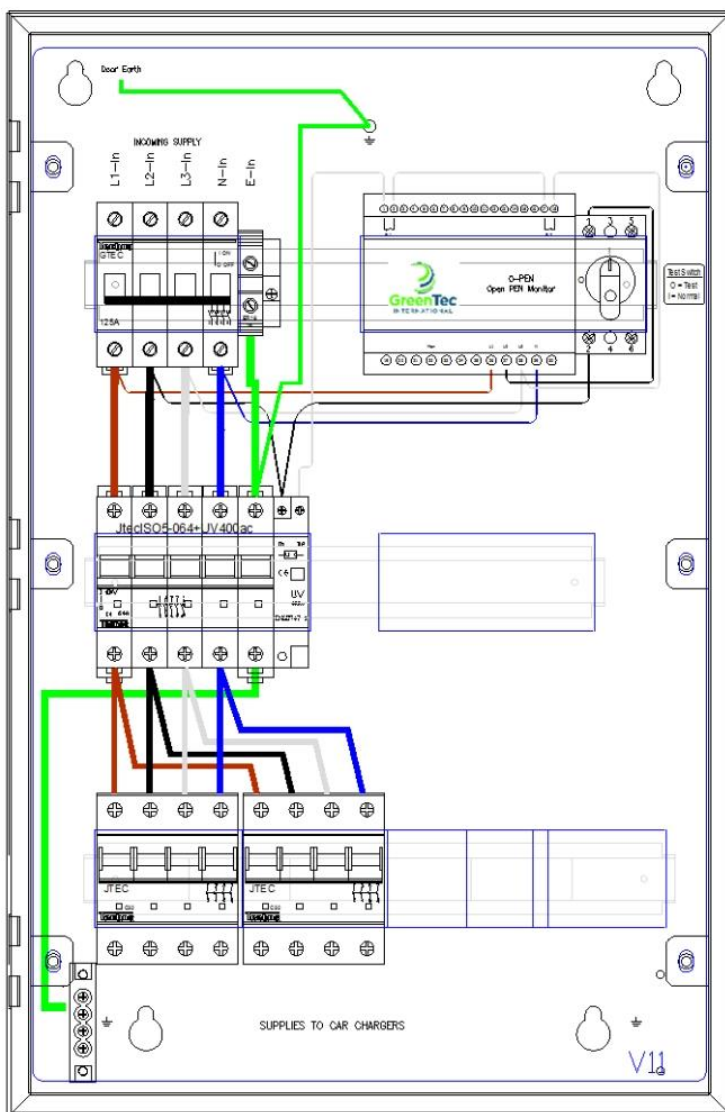




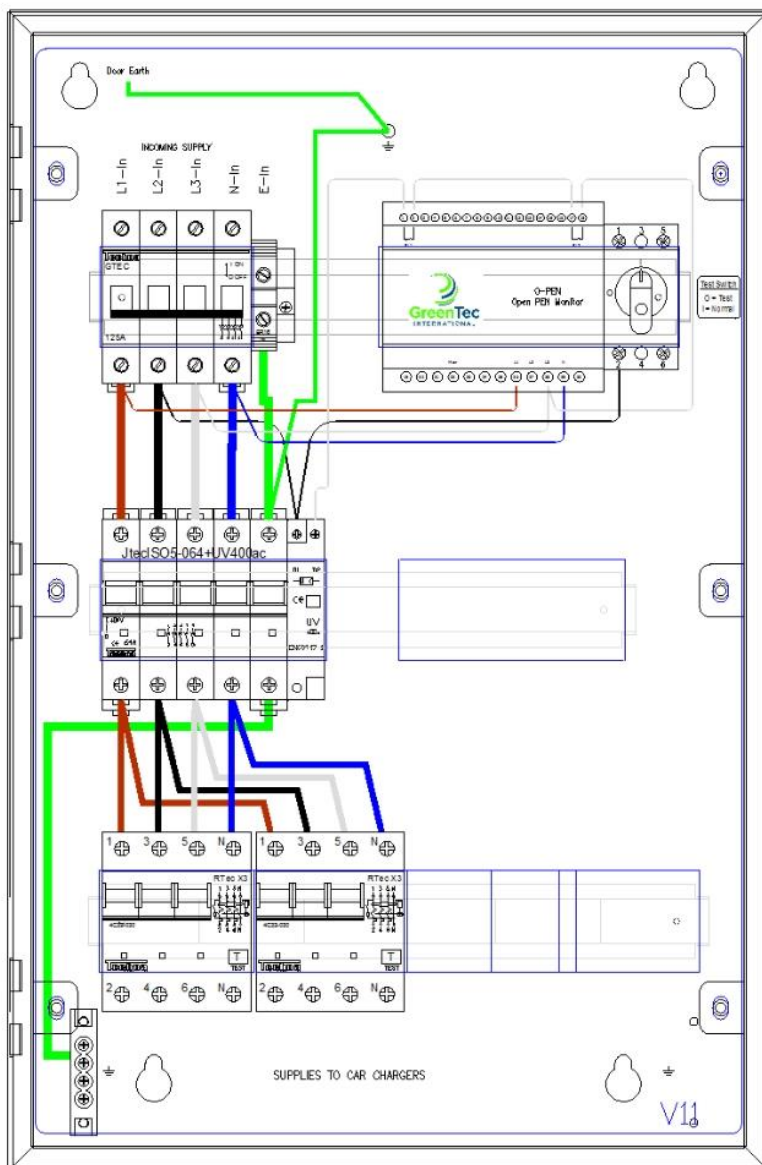
Mounting details

## Electrical Connections

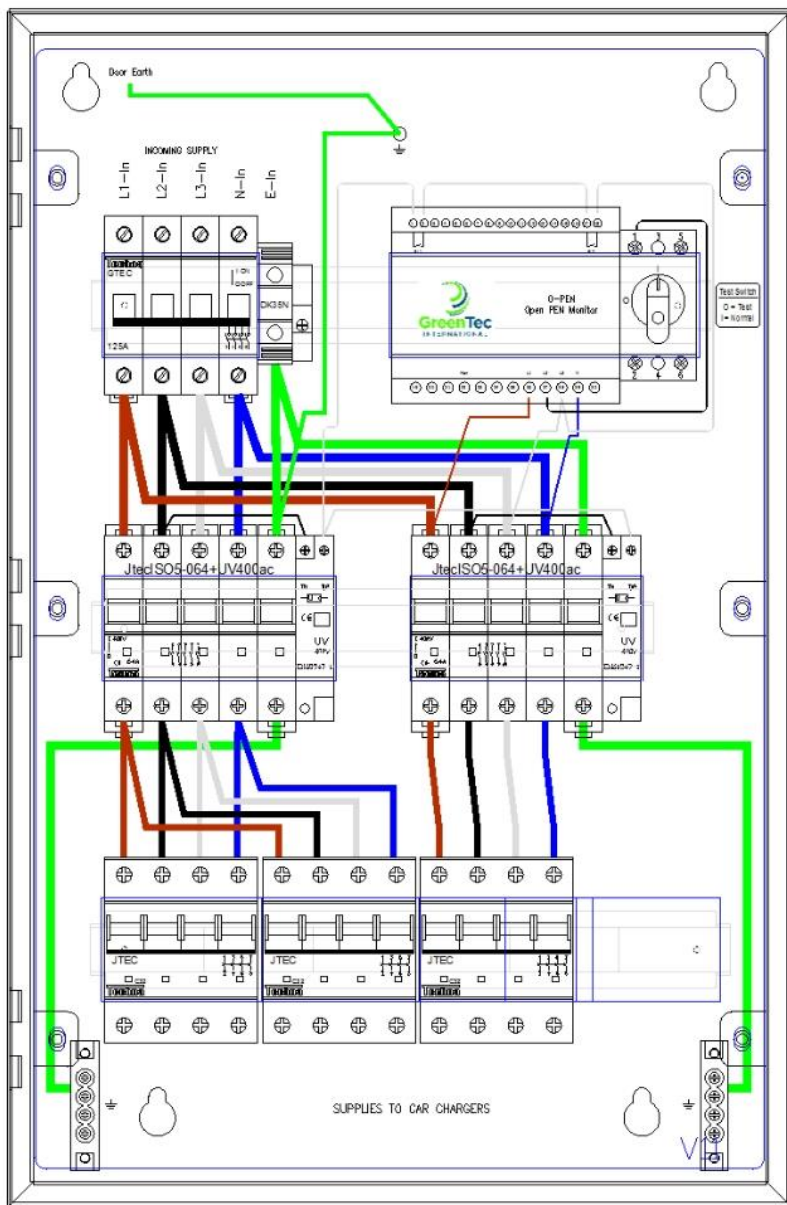
The user wiring connections are indicated in the diagrams below.



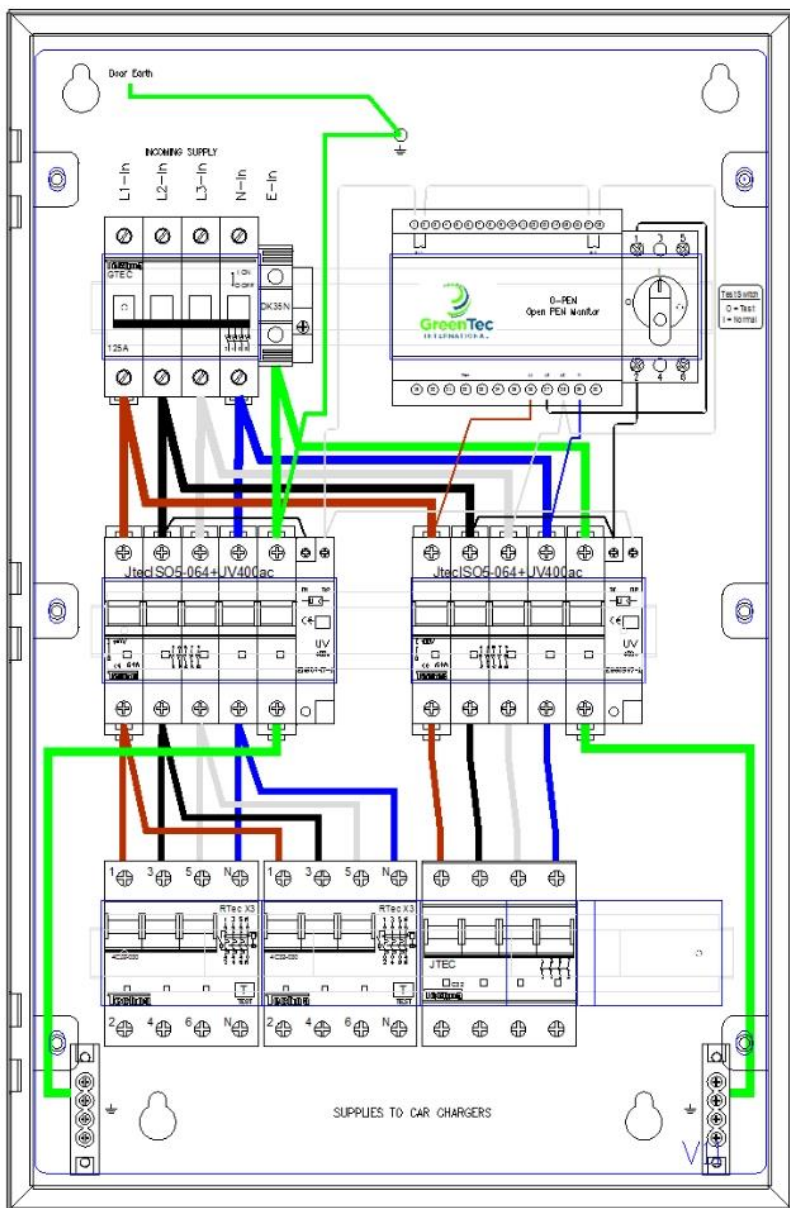
# EVU-2-32TP-M



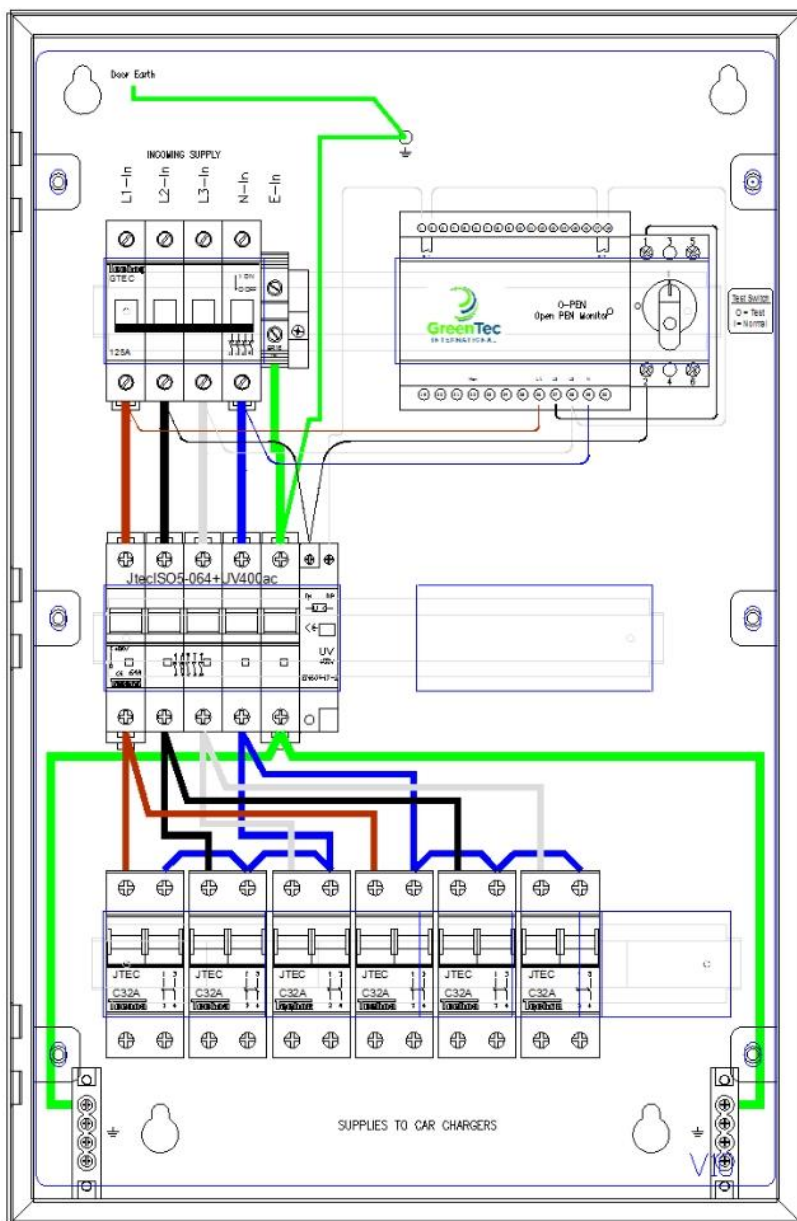
# EVU-2-32TP-R



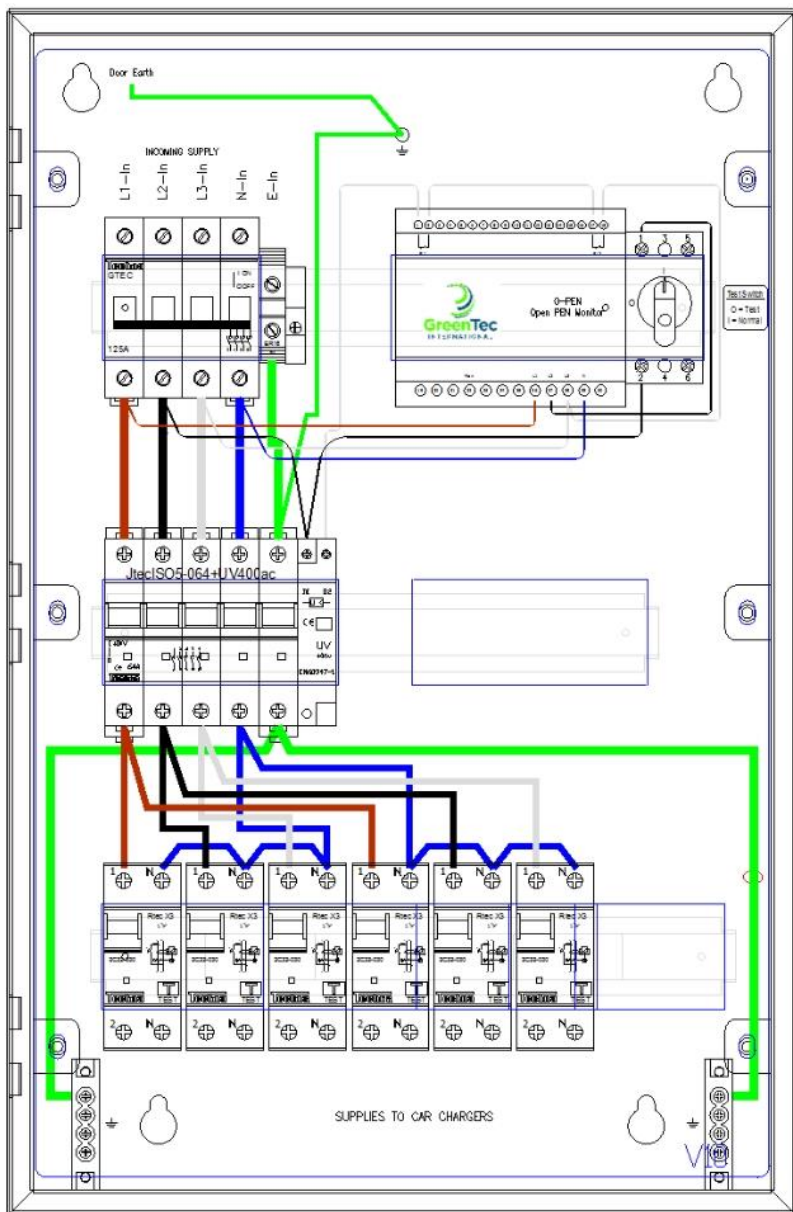
# EVU-3-32TP-M



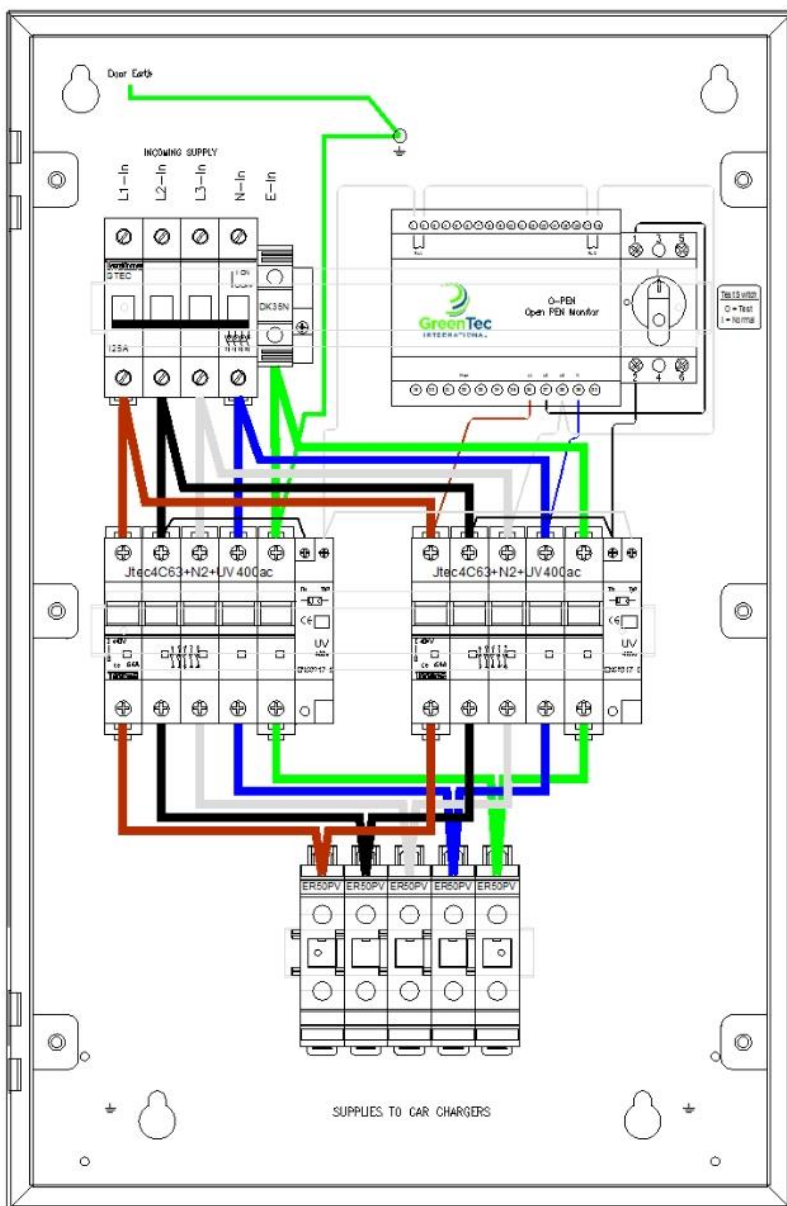
# EVU-3-32TP-R



# EVU-6-32-M



# EVU-6-32-R



# EVU-1-100TP

Connect the incoming cable from the distribution board directly to the 4 pole isolator. The CPC should be connected to the terminal block

Connect the outgoing cable(s) to the MCB, RCBO or terminal blocks depending on the unit being installed. The outgoing CPC should be connected to the isolated earth bar except for the EVU-1-100TP.



**THIS PRODUCT IS DESIGNED FOR AN ISOLATED  
EARTHING ARRANGEMENT. CHECK BEFORE USING  
SWA CABLE**

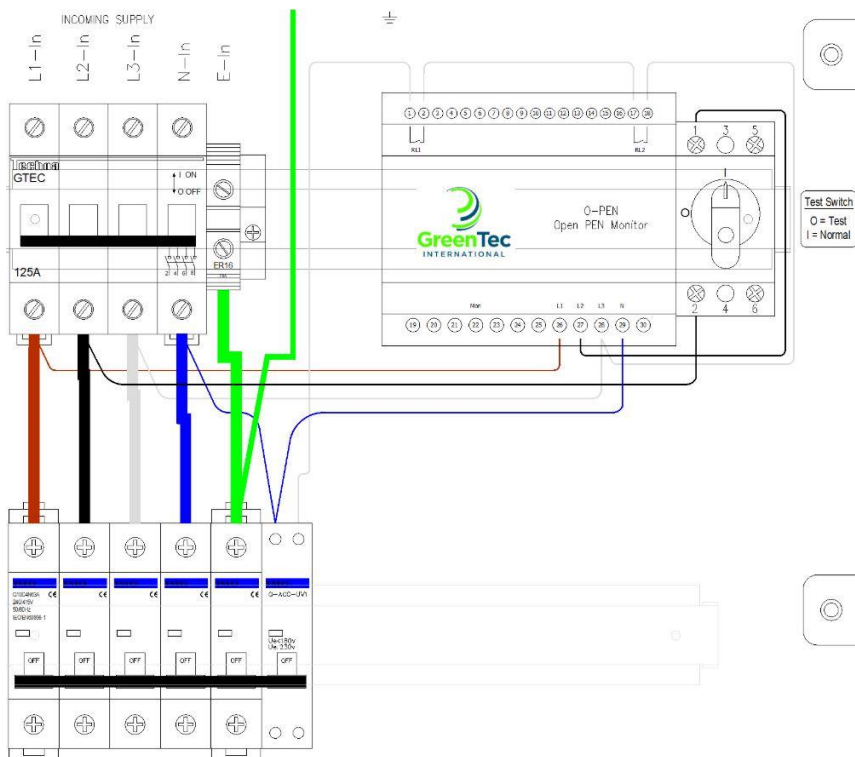
**On completion of installation the tightness of all electrical connections should be checked before energising the unit.**

**See specifications for tightening torques.**

## Alternative 230v UV release wiring.

Some units are fitted with a 230v Undervoltage release mechanism.

The internal wiring for this variation is shown below.



## Operating Instructions

With the incoming isolator closed the unit will monitor the incoming supply. Approximately 1 second after closing the incoming isolator the O-PEN monitor will energise the under-voltage release mechanism of the 5 pole isolator. At this point the 5 pole isolator can be closed to connect the load to the incoming supply.

In the event the O-PEN unit detects a fault condition on the neutral of the monitored supply for a period of 4 seconds the internal relays will de-energise and remove the supply to the under-voltage release mechanism of the 5 pole isolator. This will cause the 5 pole isolator to open disconnecting all phases, neutral and CPC from the load.

After any fault condition is detected causing the monitor to enter a tripped condition the monitor must be reset by cycling power to the unit via the 4 pole incoming isolator.

## Test Function

A diagram of a test switch with two positions. The top position is labeled 'O = Test' and the bottom position is labeled 'I = Normal'. The switch is shown in the 'O' position.

Test Switch  
O = Test  
I = Normal

A Test Switch is provided to allow the functionality of the units to be checked. With the unit powered and the 5 pole isolator closed rotate the Test Switch anti-clockwise to position O to initiate a test. This will disconnect L1 from the O-PEN monitor and create a fault condition. After 0.7 seconds the O-PEN monitor will trip the 5 pole isolator by de-energising the under-voltage release mechanism. We recommend the unit is tested on a 6 monthly basis.

## Specifications

| Description               | Electric Vehicle Charger Connection Unit                                                 |
|---------------------------|------------------------------------------------------------------------------------------|
| <b>Input (Volts)</b>      | Nominal input voltage 400v, 50Hz, 3 Phase AC                                             |
| <b>Max Load</b>           | EVU-2-32x 64A   EVU-3-32x 96A<br>EVU-1-32x-3-32x 64A<br>EVU-6-32x 64A   EVU-1-100TP 100A |
| <b>Dimensions (HxWxD)</b> | 550mm x 360mm x 140mm                                                                    |
| <b>Weight</b>             | Approximately 7 kg                                                                       |
| <b>Operating Temp</b>     | -5°C to +40°C                                                                            |
| <b>Enclosure</b>          | Mild Steel Powder Coated                                                                 |
| <b>Power Consumption</b>  | 12VA                                                                                     |
| <b>Ingress Protection</b> | IP4X                                                                                     |
| <b>Document Revision</b>  | V1.12 Mar 2021                                                                           |

| Terminal Capacities                              | Min                          | Max                        |
|--------------------------------------------------|------------------------------|----------------------------|
| Incoming Isolator cable size & tightening torque | 2.5 mm <sup>2</sup><br>1.5Nm | 25.0mm <sup>2</sup><br>2Nm |
| Outgoing MCB cable size & tightening torque      | 2.5 mm <sup>2</sup><br>1.5Nm | 25.0mm <sup>2</sup><br>2Nm |
| Outgoing RCBO cable size & tightening torque     | 2.5 mm <sup>2</sup><br>1.5Nm | 25.0mm <sup>2</sup><br>2Nm |

## Warranty

The EVU is guaranteed for a period of 1 year from the date of manufacture.

This warranty is limited to the replacement of faulty components only.

t: 01543 227290 e: [info@matt-e.co.uk](mailto:info@matt-e.co.uk) w: [www.matt-e.co.uk](http://www.matt-e.co.uk)

matt:e Ltd, Unit 5, Common Barn Farm, Tamworth Road, Lichfield WS14 9PX

## EU Declaration of Conformity (DoC)

Ref : EVCC-32/63-2019

### We

Company name: matt:e Ltd  
 Postal address: Unit 5 Common Barn Farm Tamworth Road  
 City: Lichfield  
 Postcode: WS14 9PX  
 Telephone number: 01543-227290  
 E-Mail address: info@matt-e.co.uk

### Declare that this DoC is issued under the sole responsibility of the manufacturer.

Apparatus model/Product: EVU-2-32x EVU-3-32x EVU-1-100TP  
 EVU-6-32x EVU-1-32x-3-32x  
 Type: EVCC

### Object of the declaration

|                          |                               |
|--------------------------|-------------------------------|
| Electric Vehicle Charger | EVU-2-32x EVU-3-32x EVU-6-32x |
| Connection units         | EVU-1-32x-3-32x EVU-1-100TP   |

### The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Low Voltage Directive (2014/35/EU)

### The following harmonised standards and technical specifications have been applied:

EN60255-1 2010 Emissions standard for Measuring Relays and Protection Equipment  
 EN55011 Class A 2011 + A1:2017 Emissions Standard for ISM Equipment

EN60255-26 2013 Immunity standard for Measuring Relays and Protection Equipment,  
 EN61000-4-2 2009 ESD Requirements  
 EN61000-4-3 2006 + A1 + A2 Radiated Susceptibility  
 EN61000-4-4 2012 Electrical Fast Transient Burst Requirement  
 EN61000-4-5 2006 Surges Requirements  
 EN61000-4-6 2009 Conducted Susceptibility  
 EN61000-4-11 2004 Voltage Dips and Interruptions

EN61439-1&2 2011 Low-voltage switchgear and controlgear assemblies.  
 EN60947-3 Low-voltage switchgear and controlgear  
 EN61095 Electromechanical contactors  
 EN61009-1 Residual current operated circuit-breakers with integral overcurrent

Signed for and on behalf of: matt:e Ltd



Place of issue

Lichfield, England

Date

3 July 2019

J Charlton, Director