Electric Vehicle Charger Connection Units

EVU-1-63x EVU-3-63x
EVU-1-32x EVU-3-32x

Installation Manual

V1.60 Jul 2020

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Caring about your World

Contents

PRODUCT ADVISORY NOTICE

This product must be installed by a competent person in accordance with the IET Wiring Regulations, BS7671 (18th 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-1-63-TP, EVU-3-63-ISL, EVU-1-32TP-R, EVU-1-32TP-M, 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 (18th Edition or later) and any relevant Building Regulations and/or Installation Regulations.

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.

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 a 5 pole isolator 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.

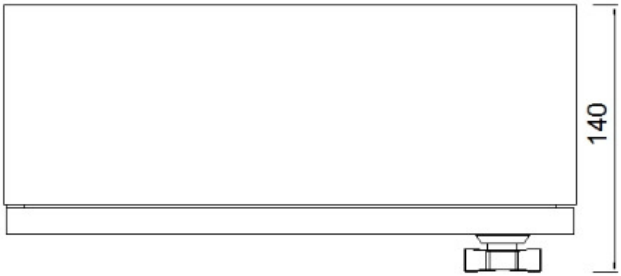
If the O-PEN monitor detects a fault and activates the isolator the monitor must be reset by cycling power to the unit. It does NOT automatically reset.

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

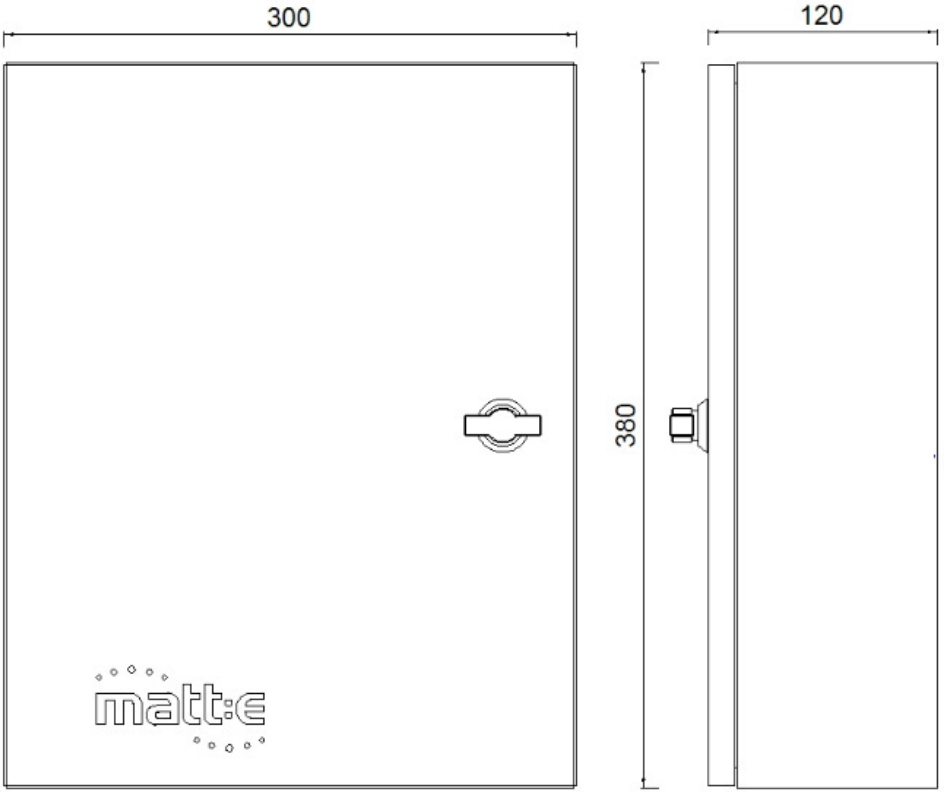
The units are designed to be installed indoors between the distribution board and the Electric Vehicle Charger. The unit must be mounted securely to a solid surface with the lid hinges on the left.

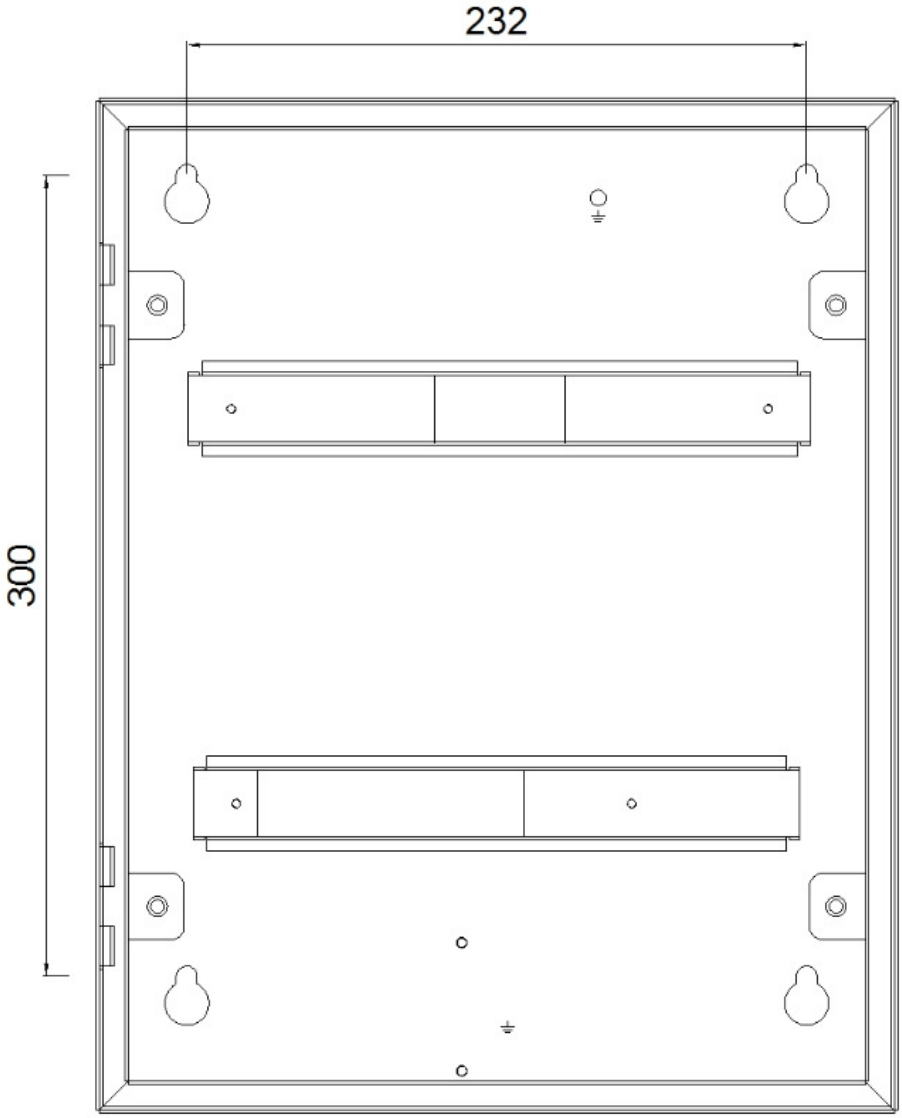
The installation location should be clean, dry and well ventilated.

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



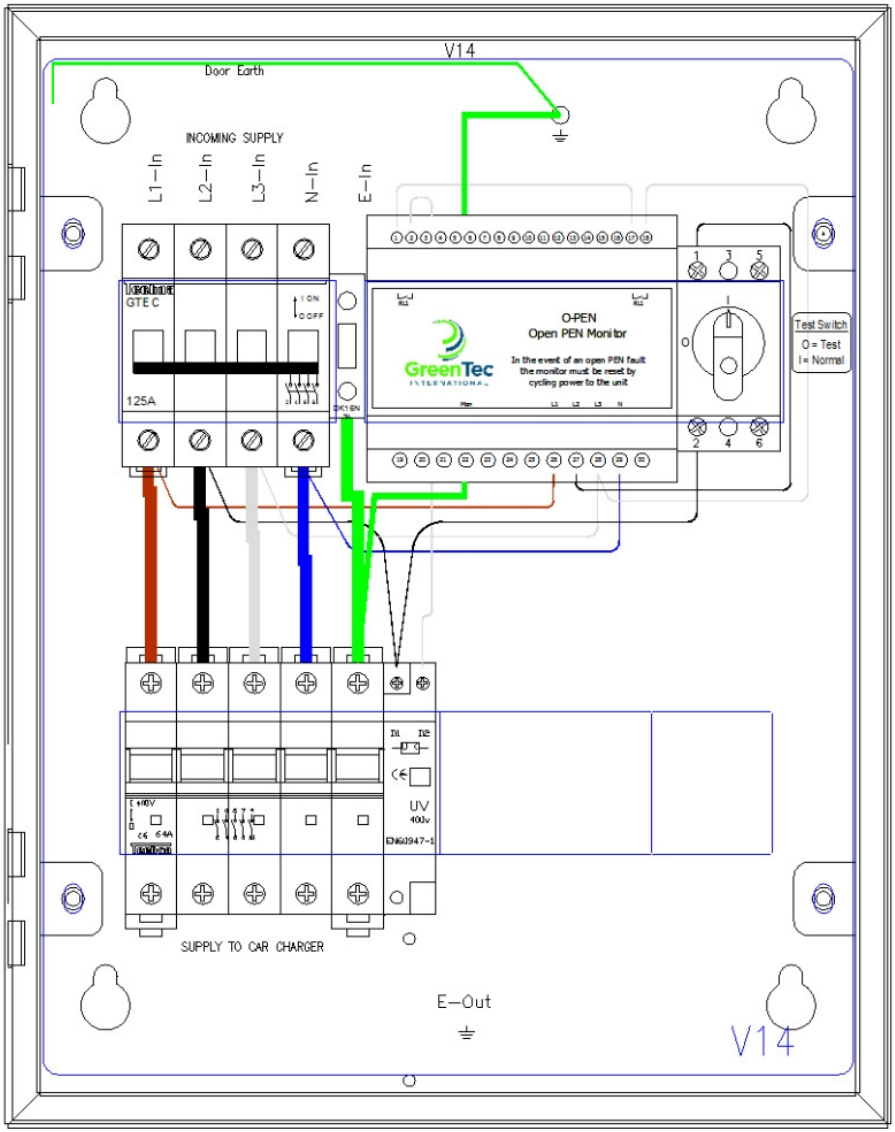
EVU-1-63-TP
EVU-3-63-ISL
EVU-3-32-R
EVU-3-32-M
EVU-1-32TP-M
EVU-1-32TP-R



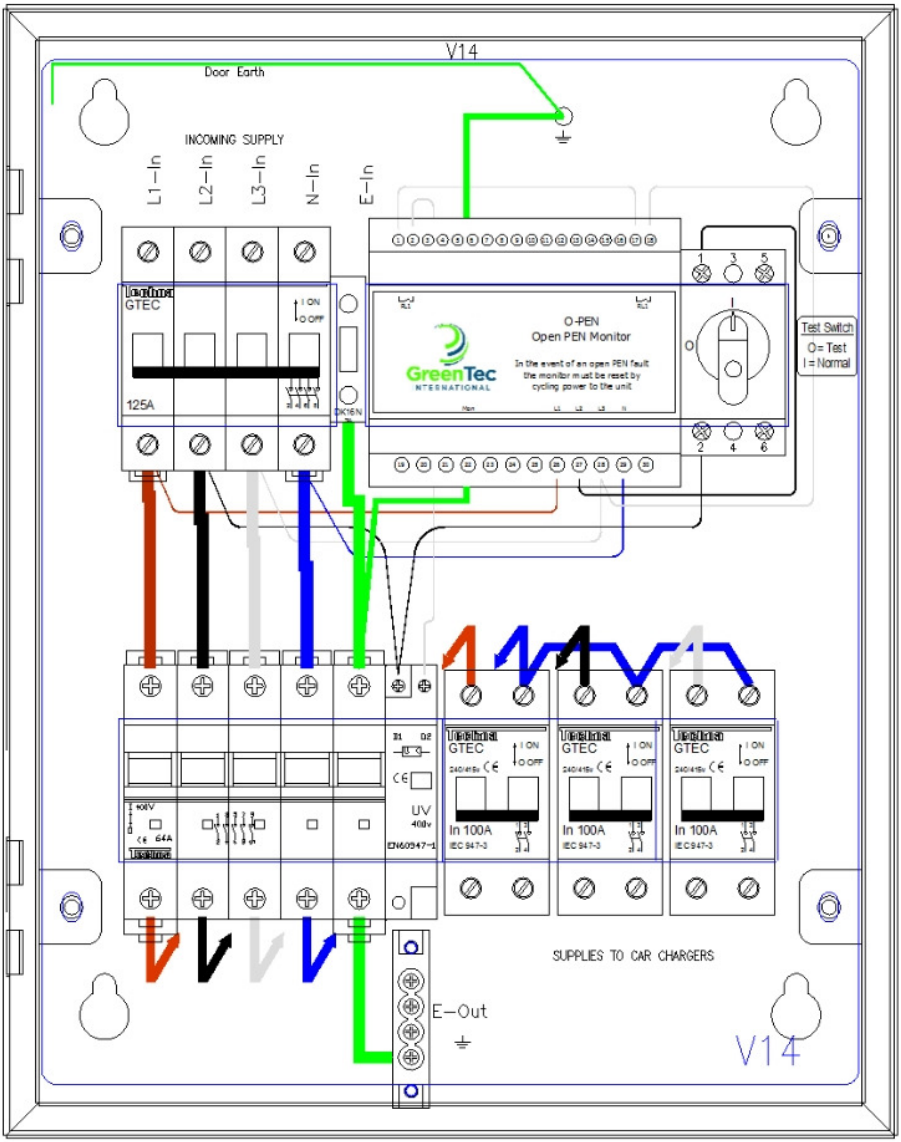

232
300

Electrical Connections

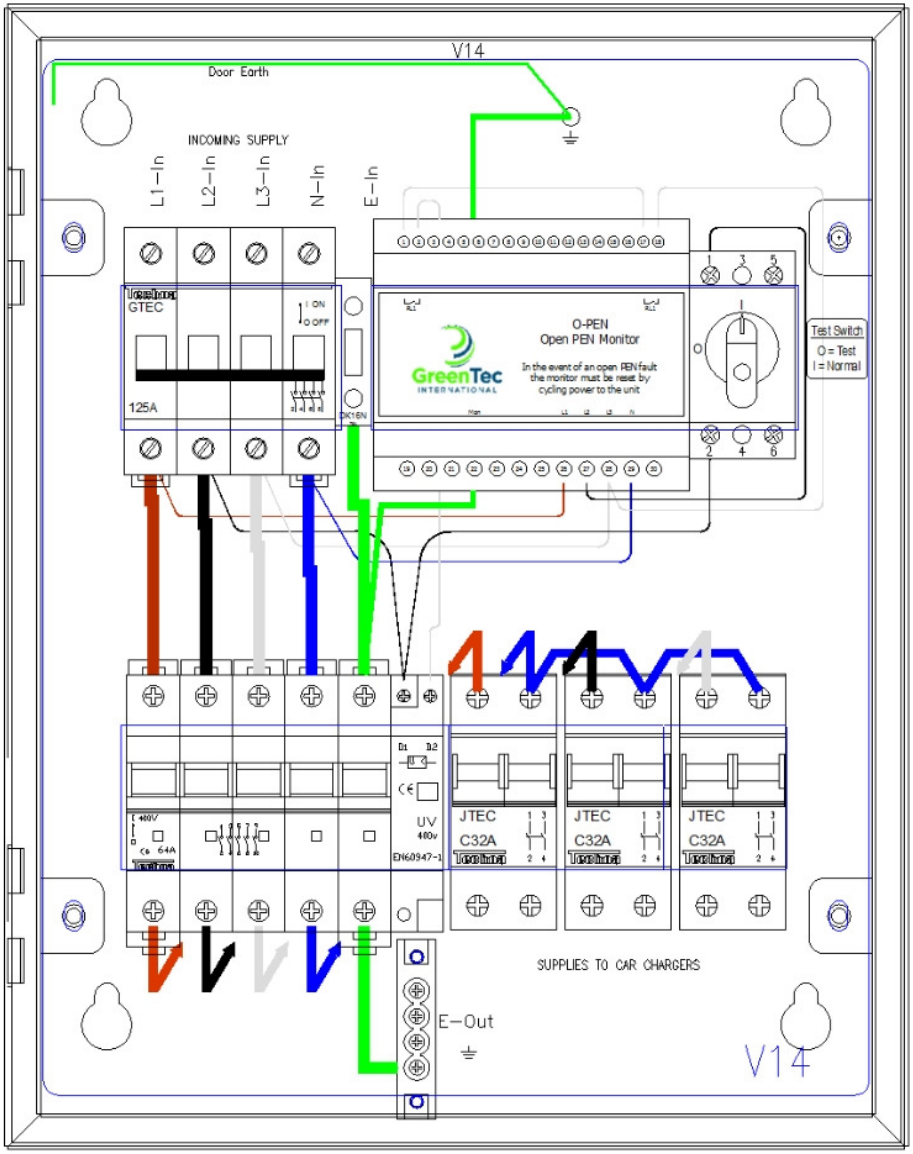
The user wiring connections are indicated in the diagrams below.



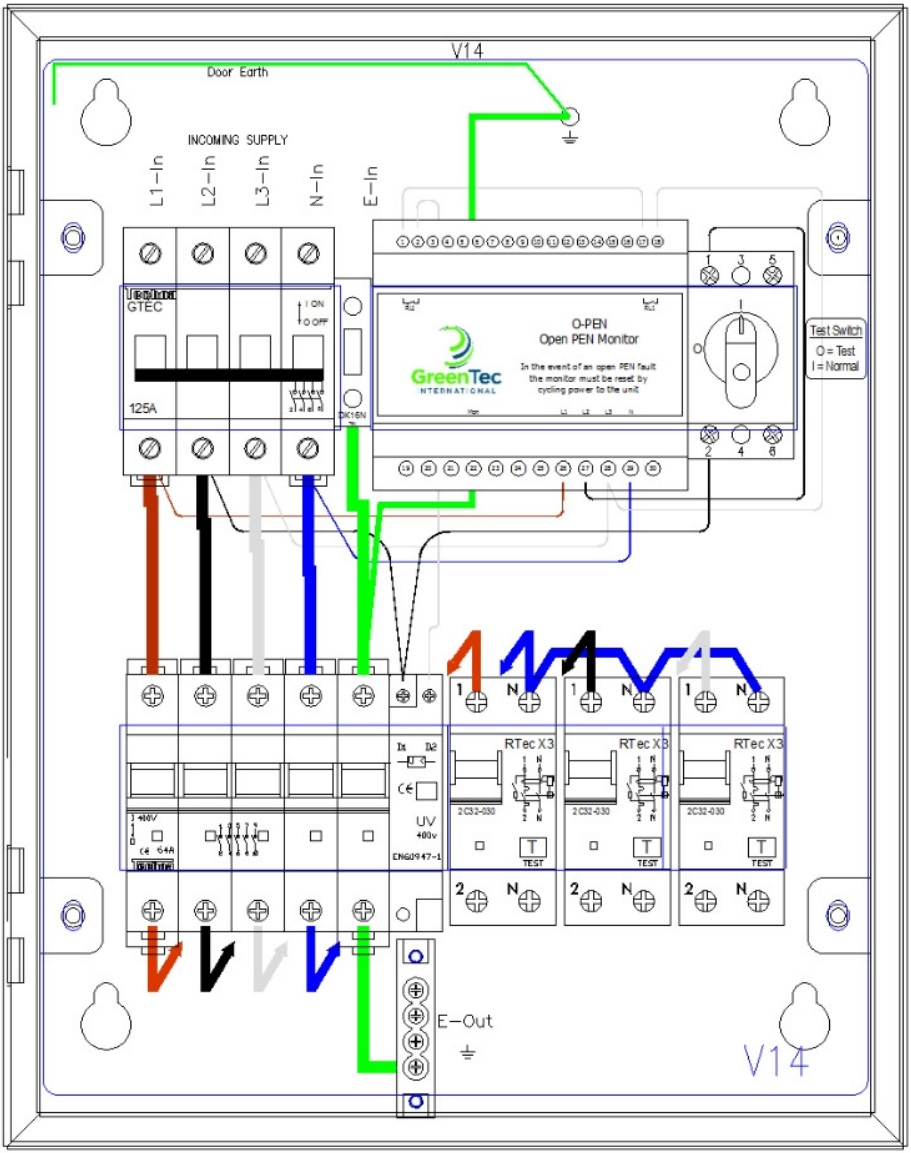
EVU-1-63-TP


V14
Door Earth
INCOMING SUPPLY
L1–In
L2–In
L3–In
N–In
E–In
GTEC
125A
O-PEN
Open PEN Monitor
GreenTec
INTERNATIONAL
In the event of an open PEN fault the monitor must be reset by cycling power to the unit
Test Switch
O = Test
I = Normal
In 100A
IEC 947-3
SUPPLIES TO CAR CHARGERS
E–Out
V14

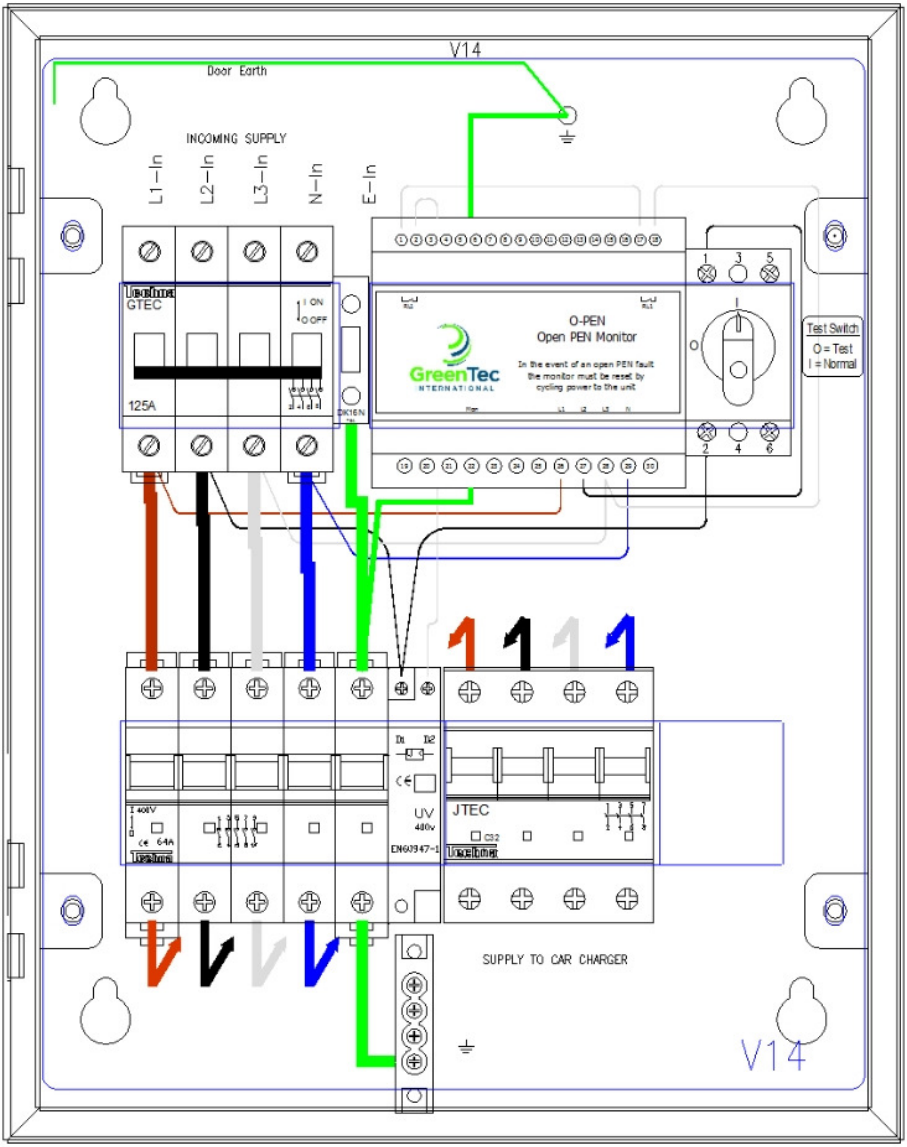
EVU-3-63-ISL


V14
Door Earth
INCOMING SUPPLY
L1 – In
L2 – In
L3 – In
N – In
E – In
GTEC
125A
O-PEN
Open PEN Monitor
In the event of an open PEN fault the monitor must be reset by cycling power to the unit
Test Switch
O = Test
I = Normal
JTEC
C32A
JTEC
C32A
JTEC
C32A
UV
400v
SUPPLIES TO CAR CHARGERS
E – Out
V14

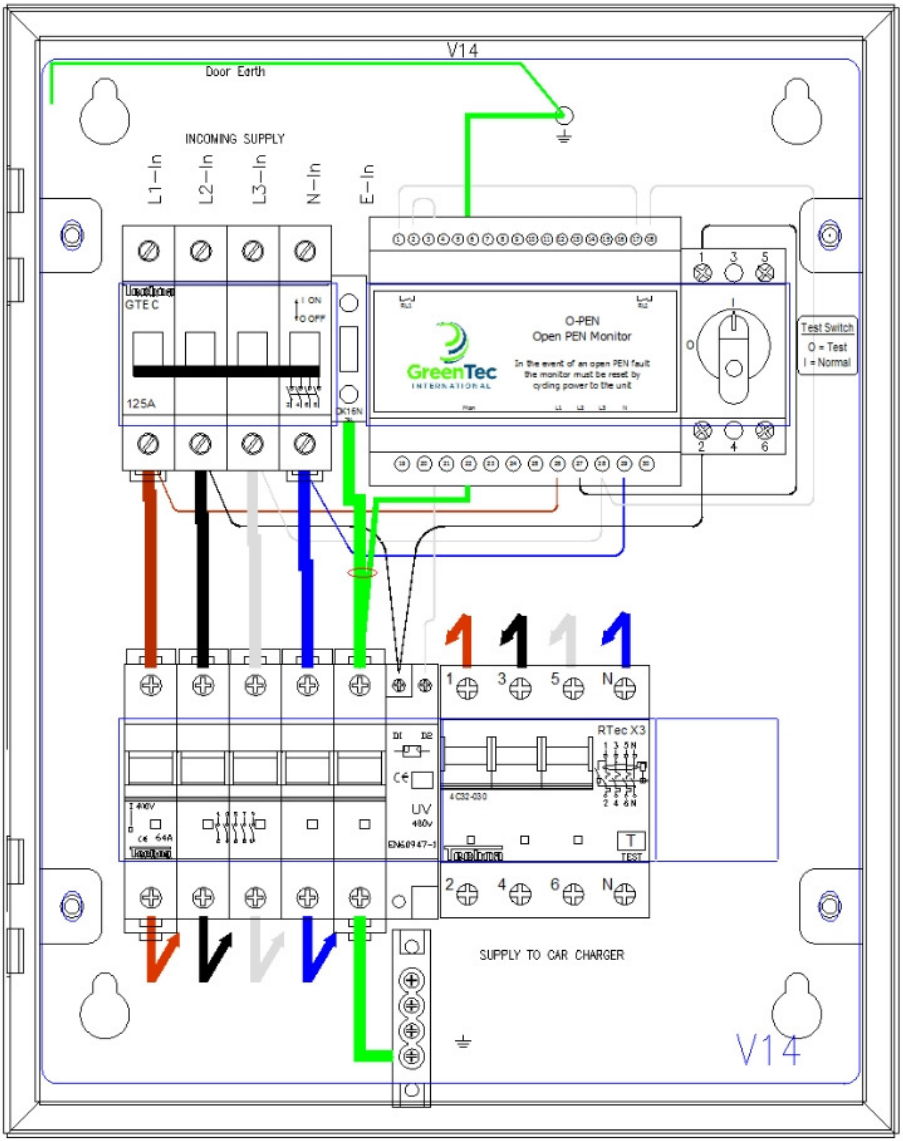
EVU-3-32-M


V14
Door Earth
INCOMING SUPPLY
L1-In
L2-In
L3-In
N-In
E-In
GTEC
125A
O-PEN
Open PEN Monitor
In the event of an open PEN fault the monitor must be reset by cycling power to the unit
GreenTec
INTERNATIONAL
Test Switch
O = Test
I = Normal
RTec X3
E-Out
V14

EVU-3-32-R


V14
Door Earth
INCOMING SUPPLY
L1 – In
L2 – In
L3 – In
N – In
E – In
GTEC
125A
O-PEN
Open PEN Monitor
In the event of an open PEN fault the monitor must be reset by cycling power to the unit
GreenTec
INTERNATIONAL
Test Switch
O = Test
I = Normal
JTEC
UV
400v
SUPPLY TO CAR CHARGER
V14

EVU-1-32TP-M


V14
Door Earth
INCOMING SUPPLY
L1–In
L2–In
L3–In
N–In
E–In
GTEC
125A
O-PEN
Open PEN Monitor
In the event of an open PEN fault the monitor must be reset by cycling power to the unit
GreenTec
INTERNATIONAL
Test Switch
O = Test
I = Normal
RTec X3
UV
480v
TEST
SUPPLY TO CAR CHARGER
V14

EVU-1-32TP-R

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 5 pole isolator depending on the unit being installed. The outgoing CPC should be connected to the isolated earth bar except for the EVU-1-63-TP.

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

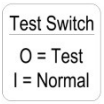
On completion of installation the tightness of all electrical connections should be checked before energising the unit.

See specifications for tightening torques.

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.



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.

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

Specifications

Description	**Electric Vehicle Charger Connection Unit**
Input (Volts)	Nominal input voltage 400v, 50Hz, 3 Phase AC
Max Load	EVU-x-32 32A | EVU-x-63 63A
Dimensions	380mm x 300mm x 120mm
Weight	Approximately 7 kg
Operating Temp	-5°C to +40°C
Enclosure	Mild Steel Powder Coated
Power Consumption	12VA
Ingress Protection	IP4X
Document Revision	V1.60 Jul 2020

Terminal Capacities	Min	Max
Incoming Isolator cable size & tightening torque	2.5 mm^2 1.5Nm	25.0mm^2 2Nm
Outgoing MCB cable size & tightening torque	2.5 mm^2 1.5Nm	25.0mm^2 2Nm
Outgoing RCBO cable size & tightening torque	2.5 mm^2 1.5Nm	25.0mm^2 2Nm

Warranty

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

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

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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-3-32 EVU-1-20 EVU-1-32 EVU-1-63
Type:	EVCC

Object of the declaration

Electric Vehicle Charger Connection units	EVU-1-63-TP EVU-3-63-ISL EVU-1-32TP-M EVU-3-32-R EVU-3-32-M EVU-1-32TP-R

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	**Date**	J Charlton, Director
Lichfield, England	3 July 2019	