Guardian

A revolution in electrical safety

We all rely on electricity to power our homes and businesses but what happens if there is a fault on the electricity network that supplies your property?

Bad connections or breakages in the supply Neutral conductor in a TN or TT system can cause excessive voltages in the electricity supply which can lead to the premature aging or even destruction of equipment, increasing electrical consumption, creating a potential fire risk.

A fault on the electricity network could lead to,

- Overheating of your electrical installation and appliances
- Premature equipment failure
- Serious damage or destruction of appliances
- Potential fire hazard
- Danger of electrocution

Furthermore, a broken Neutral on a TN system can lead to an electric shock if any metallic parts, including gas pipework and any bonded appliances, are touched by a person in simultaneous contact with general mass of Earth.
Unfortunately, MCBS and RCDS currently used do not detect this fault and **DO NOT** offer any protection.

Introducing the Guardian, a revolution in electrical safety!

An exciting new "Green Technology" helping to contribute towards reduction of "Carbon Emissions" within buildings.

The Guardian incorporates the Patented O-PEN® technology helping protect against stray voltages, open PEN and broken Neutral faults.

Simply installed next to your existing distribution boards
The Guardian constantly monitors the electricity supply to, and the electrical infrastructure of a building.
Helping to detect faults and safely isolate or warn the building owner of any potential fault before catastrophic failure occurs.

Product Features and benefits

- Simple installation and commissioning
- Visual display of alerts and status
- Ethernet connection to cloud based platform
- Modbus connection for 3rd party building management systems

c UL us LISTED Measuring and Testing Equipment E469787

UK CA CE RoHS

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Detected faults

Supply type → / Fault ↓	1P2W	1P2W + E	1P3W	3P3W	3P4W
High Line voltage	✓	✓	✓	✓	✓
Low line voltage	✓	✓	✓	✓	✓
Broken Neutral	✗	✗	✓	✗	✓
Stray voltage	✗	✗	✗	✓	✓
High frequency	✓	✓	✓	✓	✓
Low frequency	✓	✓	✓	✓	✓

Broken Neutral,

- Dangerous touch voltage (TNCS)
- Can create 400V voltage levels on single-phase 230V loads causing serious damage to appliances
- Potential fire hazard

High voltage

- Damage to connected loads
- Overheating - Potential fire risk
- Burnout of components
- Reduced equipment lifespan

Low voltage,

- Erratic performance of equipment
- Damage to appliances
- Some pumps and motors may not run.

Stray voltage

- Serious risk of electrocution
- Equipment damage
- Fire Hazard
- Interference with electronics

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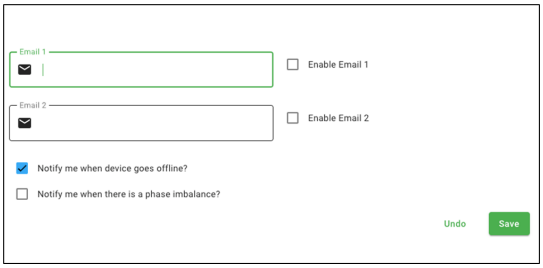
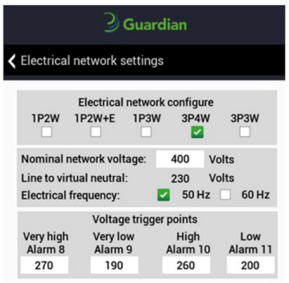
With the latest firmware update (V1.2, November 2024, Firmware 006_001_23), the Guardian introduces enhanced safety and monitoring features:

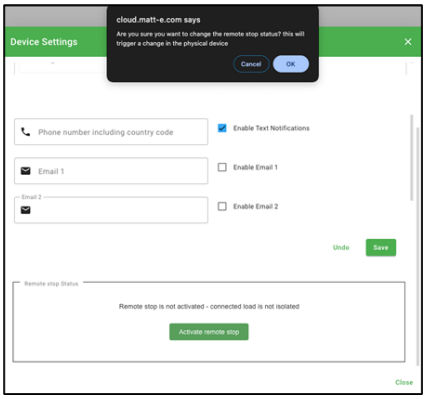
Advanced detection of loss of neutral and stray voltages in split-phase systems, with the ability to alert users and isolate the load automatically.

Monitoring of phase imbalances exceeding 3%, with actionable insights to optimize electrical installations and alerts viewable via the portal.



A screen lock function to prevent unauthorized access, complemented by a simplified, user-friendly settings interface.





Remote load isolation directly from the cloud portal for added convenience and control.

These updates significantly enhance the Guardian's functionality, providing smarter, safer, and more efficient electrical management.

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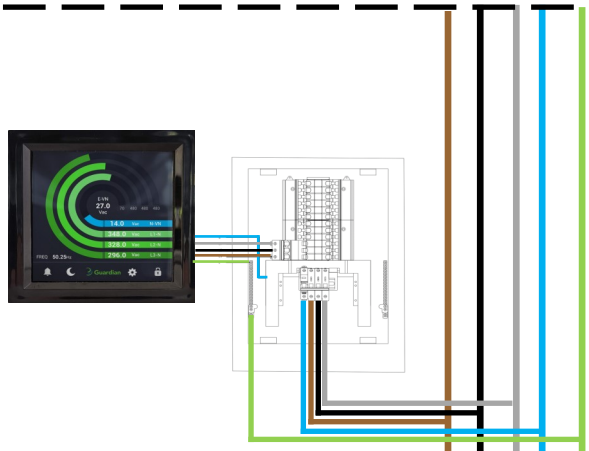
Complete building protection

Guardian can connect to our web based portal* or the existing BMS through MODBUS where each device can be viewed remotely.

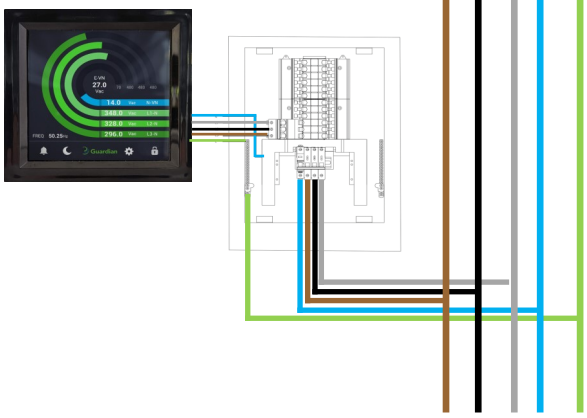
Guardian can also send alerts via SMS and email to warn the building user of faults before catastrophic failure occurs.

*hard wired ethernet connection required.



Additional Guardian devices connected at each sub distribution board helps to pinpoint the location of further faults within the electrical installation

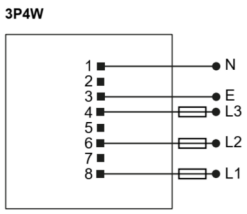
- High voltage
- Low voltage
- Broken Neutral
- Stray voltage



Guardian connected to the main incoming electrical supply to the building monitoring for faults that may occur on the suppliers network.

This will detect all faults that enter the property.

- High voltage
- Low voltage
- Broken Neutral
- Stray voltage
- High and low frequency



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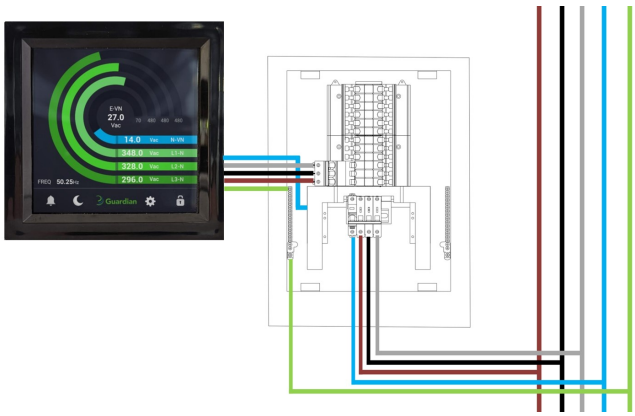
Simple Installation

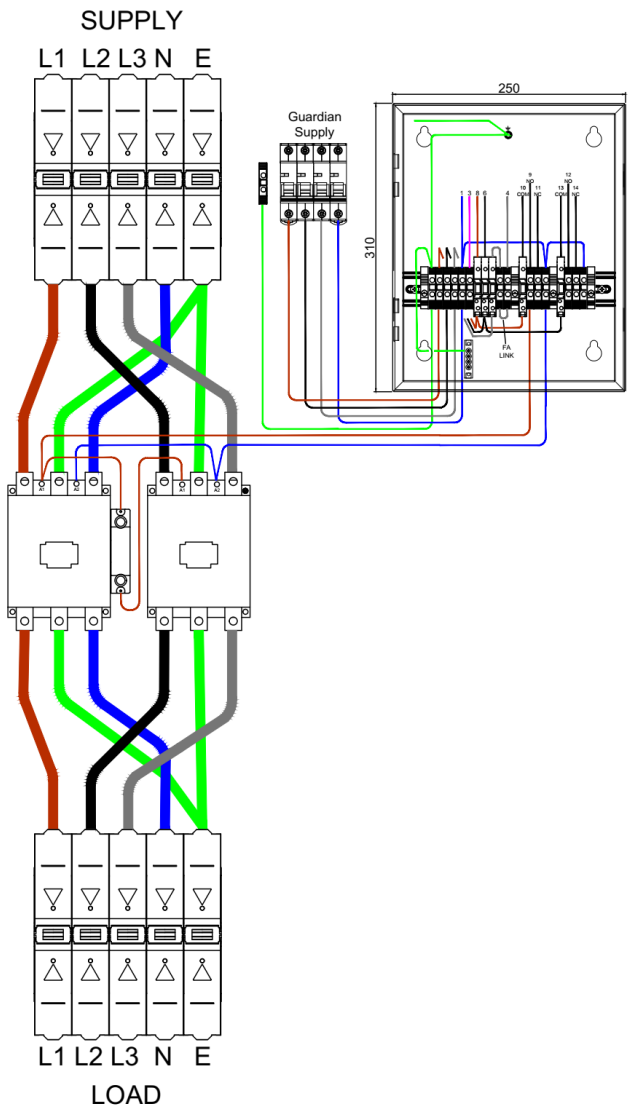
Guardian can be supplied as a stand alone panel meter or in one of our pre wired enclosures and simply connects to the buildings supply.

If connection to our cloud based portal is required the device must be hard wired through and ethernet connection to the local router.

As the device is parallel connected it is suitable for any size installation.

If isolation of critical loads is required this can be achieved through external contactors or UV release mechanisms on MCCBs





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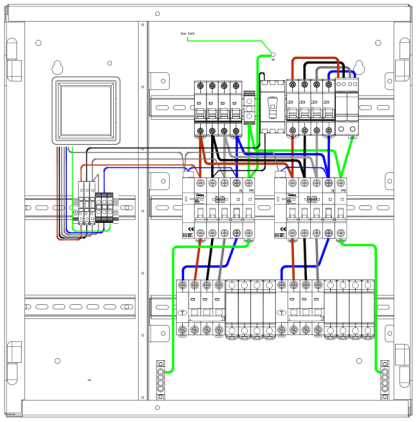
Guardian GPC

Guardian can also available in our GPC EV connection units, a cutting edge solution specifically engineered to protect EV charge point installations against the loss of Neutral on a three-phase supply.

Designed with built-in O-PEN® protection the Guardian GPC units help to facilitate compliance with BS:7671. 2018 Amendment 2, 2022 Regulation 722.411.4.1.(iii).

The Guardian units can also connect to your fire alarm system and isolate the supply to the charge points if the fire alarm is activated.

This is now a requirement for many insurance companies



Product Features and benefits

- Built in Guardian with O-PEN® technology
- NO EARTH ELECTRODES REQUIRED
- Helps reduce disruptive and costly groundworks
- Removes the risk of striking buried services
- Simple wire in wire out connection
- Complete with Type 2 SPD (Type 1+2 optional)
- With built in MCBs, RCBOs to suit most installations up to 100A maximum load.

Specifications	
Input Volts	400V 50Hz
Max load	100A
Cable Entry Facility	Top and bottom
Terminal Capacity	25mm^2
Dimensions (H x W x D)	610mm x 600mm x 160mm
Weight	Approximately 19kG
Enclosure	Mild Steel Powder Coated
Ingress Protection	IP41
Compliance	UKCA, CE, RoHS
Warranty	Guardian 3 Years

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Device only specification

SPECIFICATION

EN: ENGLISH	DE: DEUTSCHE	FR: FRANÇAIS	ES: ESPAÑOL	IT: ITALIANO	VALUE
Measurement Inputs	**Eingänge**	**Entrées**	**Entradas**	**Ingressi**	
Max Load	Maximale Belastung	Charge maximale	Carga máxima	Carico massimo	**10W**
Single Phase	Einphasen	Monophasé	Monofásico	Monofase	**100-277 VAC 50-60Hz**
Split Phase	Split-Phase	Biphasé	Bifásico	Bifase	**100-277 VAC 50-60Hz**
3 Phase	Dreiphasen	Triphasé	Trifásico	Trifase	**100-480 VAC 50-60Hz**
Outputs	**Ausgänge**	**Les sorties**	**Salidas**	**Uscite**	
Relay Contacts	Relaiskontakte	Coordonnées du relais	Contactos de relé	Contatti relè	**DC-13: 30V / 5A MAX AC-15: 277V / 5A MAX**
Min. recommended wetting current	Empfohlener Mindestbenetzungsstrom	Courant de mouillage mini	Corriente de humectación mín.	Corrente di bagnatura min.	**50mA**
Connections	**Anschlüsse**	**Connexions**	**Conexiones**	**Connessioni**	
Type	Typ	Type	Tipo	Tipo	**Spring Clamp**
Wire type	Draht-Typ	Type de câble	Tipo de cable	Tipo di filo	**Copper Solid or Stranded**
Min. cable temperature rating	Min. Temperaturfestigkeit	Température de fonctionnement mini	Clasificación de temperatura mín.	Valore temperatura min.	**65°C (149°F)**
Wire strip length	Abisolierlänge	Longueur de dénudage des câbles	Largo de pelado del cable	Lunghezza striscia filo	**6.5mm to 7mm (0.26" to 0.28")**
Wire gauge	Drahtstärke	Section des câbles	Calibre del cable	Diametro dei cavi	**0.8mm² - 3.3mm² (18AWG to 12AWG)**
Environment	**Umgebung**	**Conditions environnmentales**	**Medio ambiente**	**Ambiente**	
Temperature - operating	Betriebstemperatur	Température de fonctionnement	Temperatura - funcionamiento	Temperatura - funzionamento	**–20°C to +60°C (-4°F to +140°F)**
Temperature - storage	Lagertemperatur	Température de stockage	Temperatura - almacenamiento	Temperatura - conservazione	**–20°C to +70°C (-4°F to +158°F)**
Altitude	Betriebshöhe	Altitude	Altitud	Altitudine	**2000 metres**
Relative Humidity (non-condensing) - Continuous	Relative Luftfeuchtigkeit (nicht kondensierend) - Permanent	Hygrométrie permanente (sans condensation)	Humedad relativa (sin condensación) - Continua	Umidità relativa (senza condensa) - Continua	**1 – 85 %**
Measurement category	Messkategorie	Catégorie de mesure	Categoría de medición	Categoria di misura	**II**
Overvoltage category (IEC664)	Überspannungskategorie (IEC664)	Catégorie de surtension (CEI664)	Categoría de sobretensión (IEC664)	Categoria di sovratensione (IEC664)	**II**
Pollution Degree (IEC664)	Entstörgrad (IEC664)	Niveau de pollution (CEI664)	Grado de contaminación (IEC664)	Grado di inquinamento (IEC664)	**2**
IP rating (from the front)	Schutzklasse (an der Vorderseite)	Indice IP (face avant)	Clasificación IP (al frente)	Valore IP (dalla parte anteriore)	**IP20**

Guardian

UK Declaration of Conformity

We matt:e Ltd

Of 1 Langley Brook Business Park
Middleton
Tamworth
England
B78 2BP

In accordance with the following Directives:

The Electrical Equipment (Safety) Regulations 2016
The Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical Equipment (Amendment) Regulations 2021

Hereby declare under our sole responsibility that:

Equipment matt:e Guardian
Model number(s) APM-VT-PWR-HV-D345

Are in conformity with the applicable requirements of the following documents:

Reference	Title	Edition (Date)
IEC 61010-1 laboratory use	Safety requirements for electrical for measurement, control, and	3.0 (2010-06)
IEC 61326-1	EMC requirements for equipment designed for measurement, Control and laboratory use	2.0 (2012-07)
IEC 61000-4-2	Electrostatic discharge (ESD) immunity test	2.0 (2008-12)
IEC 61000-4-3	Radiated, radio-frequency, electromagnetic field immunity test	3.2 (2010-04)
IEC 61000-4-4	Electrical fast transient/burst immunity test	3.0 (2012-04)
IEC 61000-4-5	Surge immunity test	3.0 (2014-05)
IEC 61000-4-6	Immunity to conducted disturbances, induced by radio-frequency fields	4.0 (2013-10)
IEC 61000-4-8	Power frequency magnetic field immunity tests	2.0 (2009-09)
IEC 61000-4-11	Immunity to voltage dips, interruptions and variations	2.0 (2004-03)
CISPR-11	Conducted Emissions	6.0 (2016-06)
EN55032	Radiated Emissions	2012 + AC 2013

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all applicable Essential Requirements of the Directives.

Signed by: .....
Name: Richard Winter
Position: Director
Done at: Tamworth
On: 19/06/2023

UK CA