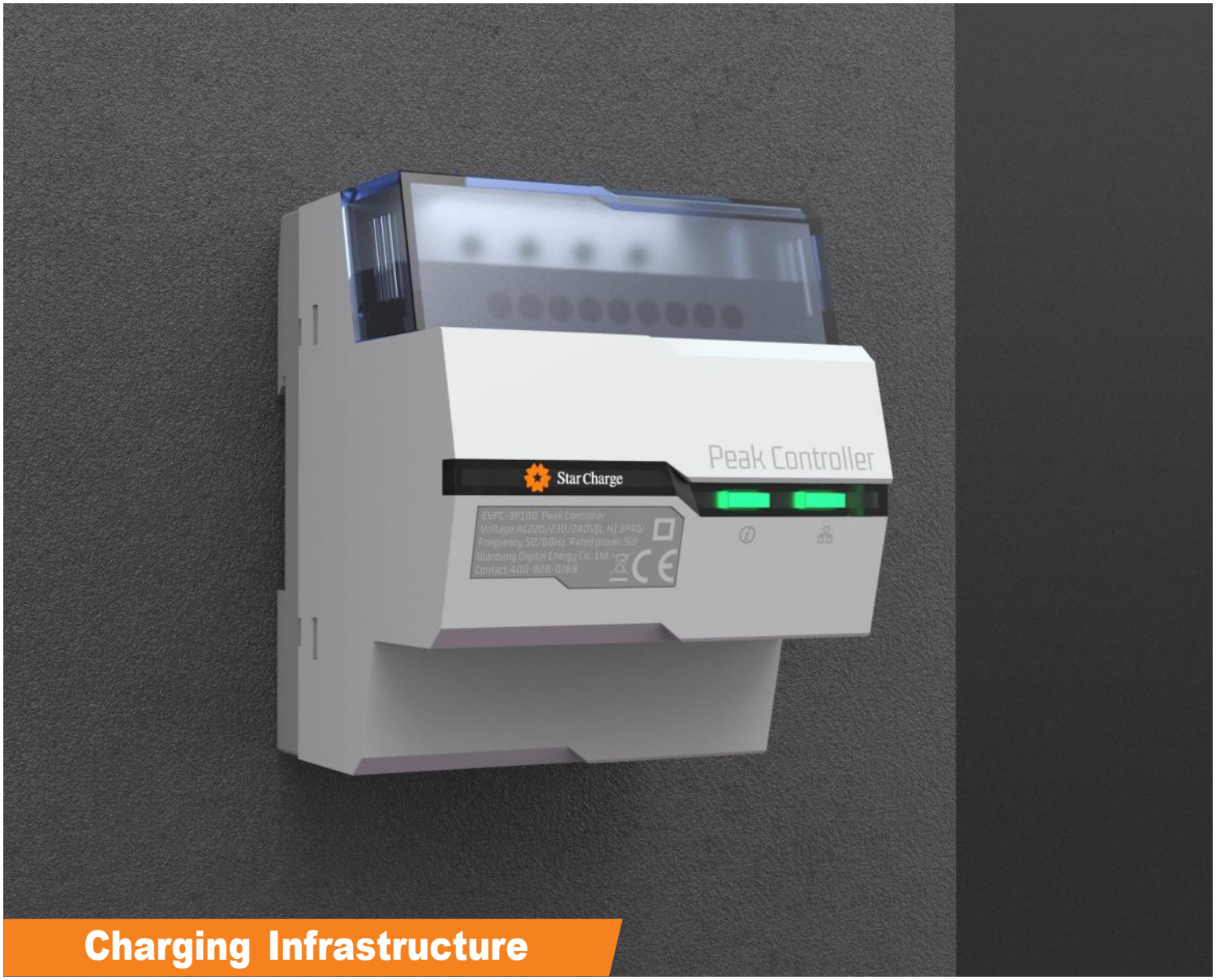
Star Charge



Peak Controller

User Manual

EVPC-3P100
11/2022

Legal Notice

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Contents

1 Introduction / Description

1.1 Purpose of this documentation

These operating instructions contain the information required for installing, commissioning, AC charging station. The operating instructions contain information on proper use of the charging station

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Warning
Failure to comply with the information in these operating instructions may result in the following:

- Personal injury
- Material damage
- Dangerous situations
- Loss of warranty

1.2 Conventions

Figures in these operating instructions may deviate from the delivered device. Observe the notes labelled for the following information.

Note

- Important product information
- Information on how to handle the product

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2 Copyright and Disclaimer

2.1 Disclaimer

- This document has been subject to rigorous technical review before being published. It will subsequently be revised at regular intervals. Any modifications or amendments will be included in the future. Content of this document is compiled for information purposes only.
- Although StarCharge has put its best efforts to keep the document as precise and up-to-date, StarCharge shall not assume any liability for defects and damage which may result from the use of information contained herein.
- In no event will StarCharge be liable for direct, indirect, special, or consequential damages (incl. loss of profits) resulting from any errors or omissions in this manual. All obligations of StarCharge are stated in the relevant contractual agreements. StarCharge reserves the right to revise this document from time to time.
- Any deviation to the products including, but not limited to, customer-specific modifications (like placing stickers, SIM cards or the usage of different colours), hereafter referred to as *'Customization'*, can alter the final product's user experience, appearance, quality and/or lifespan.
- StarCharge is not liable for any damage to or caused by the product Customization is the main cause.
- Contact your dealer for more information on Customization versus the default product.

2.2 Copyright

2.3 Warranty

StarCharge shall not be liable in any way for damage. All warranties on both the product and accessories shall become void under the following circumstances:

- The ambient temperatures during are below -30°C or above 50°C.
- The products have been installed wrong, subject to misuse or badly maintained.
- The instructions in manuals associated with operation and maintenance for the products(or parts provided at the time of purchase) of the device have not complied.
- The products are used in the vicinity of explosive, highly flammable substances or in or near water.
- There is a failure of the distribution network.

Attention
Extensive safety information is available in the relevant sections of this document. The safety instructions are intended to ensure proper practical usage. If the user does not comply with these safety regulations and instructions, the user may expose herself/himself to the risk of electric shock, fire and/or severe injuries.

2.4 Validity

This document is valid for the Peak Controller (EVPC-3P100). When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

2.5 Standards

- IEC/BS EN 61010-1:2010+A1:2019 safety requirements for electrical equipment for measurement, control and laboratory use.
- IEC/BS EN 61326-1-2013 measurement, control and laboratory electrical equipment, electromagnetic compatibility requirements.

3 Safety and Usage instructions

3.1 General safety information

StarCharge equipment is intended exclusively for charging Electric Vehicles (EV). To ensure proper usage of the charging station, the instructions in this manual must always be complied with. Installing, Commissioning, and Maintaining this equipment may only be performed by a qualified electrician (*StarCharge certified partner*).

Electrician involved in commissioning, maintaining and servicing the device must:

- Be suitably qualified and competent.
- Experienced and knowledgeable in dealing with electrical installations.
- Comprehend and adhere to the instructions in the manual carefully.
- Safely disconnect the device from the supply before removing the cover

Using this product is prohibited in the following situations

- Near explosive or Highly flammable substances.
- If the product is in or close to water sources.
- If the product as a whole or individual components of the product are visibly damaged.
- Usage by children or individuals with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the device by a person responsible for their safety

Incorrect/Negligent usage of the product may case

- Injury or death to the operators or associated parties.
- Device and property damages to the operator.
- Inefficient operation of the device.

3.2 Regulations and guidelines

The section indicates hazards and precautions, which you must observe during planning, assembly, installation, operation, and maintenance of the device. You must also adhere to regional and national guidelines and regulations on electrical safety and accident prevention / occupational safety. Make sure you also follow the following documents and regulations:

- Regional standards and connection conditions
- Building regulations
- Guideline of the electricity supplier

The instructions in the documentation do not replace statutory safety instructions

3.3 Target group

The sequence of the following safety instructions is based on the use stages of the product life cycle. The description is addressed to the following groups of people:

- Trained in the installation and debugging of electrical devices
- Trained in electrical hazards and local safety regulations
- Knowledge of all applicable standards and directives
- Fully understood and complied with all safety information within these documents

Qualified electricians are persons who can demonstrate a professional electrician qualification. These persons are authorized to commission, ground, and label devices, systems, and circuits in accordance with established safety practices and standards.

3.4 Disposal

In accordance with the European Directive 2002/96/EC, Waste Electrical and Electronic Equipment (WEEE) and its implementation in national law, the electrical devices including chargepoints which are used must be collected separately and recycled in an environmentally responsible manner. We recommend that you return your used device to your dealer or obtain information regarding a local, authorised collection and disposal system. Failure to comply with this EU Directive may result in a negative impact on the environment.

3.5 Package Items

The items inside the box are as shown in figure 1

- 1 x Peak Controller (EVPC-3P100)
- 3 x Current Transducer
- 1 x user manual

If any damage is observed in the components, please contact the installation teams.

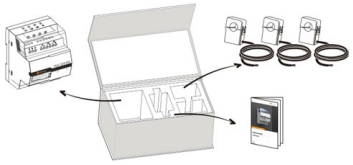


Figure 1: Inside the Box

3.6 Summary of safety symbols on the equipment

Symbols	Meaning
	**“Warning”, which indicates a hazard**. Pay attention to personal injuries or death caused by operation steps, practice or incorrect implementation. The operation after the "warning" sign can only be performed when the conditions are fully understood and satisfied.
	**“Caution”, which indicates a hazard**. Pay attention to the damaged or destroyed product caused by the operation steps, experiments or incorrect execution. Only after fully understanding and satisfying the indicated conditions, the operation after the “caution” mark can be performed
	**"Hint", which indicates skill or useful information**. Skills and useful information are marked as “Hint”. It does not contain information that warns of dangerous or harmful features.
	**"Waste disposal”, which indicates electrical and electronic waste**. This symbol is located on the product, in the instruction manual or on the packaging, indicating that the electrical and electronic equipment and its Materials can be reused based on their markings. By reusing old equipment materials and other forms of reuse, you can make a significant contribution to the environment

4 Technical Data about the Product

4.1 Product Functions

This product is designed for use with the charging station of Star Charge, e.g. Aurora 7/11/22 kW, Artemis 7/11 kW.

Attention
The Peak Controller cannot be used with any other electrical devices.

Peak Controller limits the maximum power drawn by the charging station to ensure the continuity of the electrical distribution under all conditions. It accomplishes this task by sensing the total current drawn by the local installation. Depending upon the Maximum Current threshold set by the user, it reduces the current drawn by the charging station.

- Monitor voltage and current of the distribution grid and data collection of power consumption.
- Real-time charging power control of charging equipment, ensuring electricity safety usage.
- Set maximum power load.
- Running status indication & fault indication.

4.2 Technical Specifications

Model name	EVPC-3P100
Dimensions	91.9mm x 71.9mm x 77.2mm
Weight	180g
Mounting Type	DIN Rail
Electrical Characteristics	**Supply voltage**: AC 220 - 240 V (10% Tolerance) **Frequency**: 50/60Hz **Rated power**: 5W **Current sampling range**: AC 1 - 100A **Voltage sampling range**: AC 187 - 264V **Commn. interface with Charger**: Ethernet **Maintenance interface**: RS485
Environmental Conditions	**Altitude**: 0-2000m **Relative Humidity**: 5% to 95% **Nominal temperature**: -30℃ to +50 ℃ **Overvoltage Category**: III **Pollution Degree**: II **Insulation Degree**: Reinforced Isolation
Standards	EN 61010-1:2010+A1:2019 EN 61326-1-2013
Environmental Regulations	RoHS (directive 2002/95/EC) REACH (EC regulation 1907/2006)

4.3 Specified Usage

- This product is a Peak Controller which is applied for charging equipment suitable for indoor and outdoor usage. When installing and connecting Peak Controller, please comply with the regulatory requirements of respective countries. The specified usage includes compliance with environmental conditions for the equipment under all circumstances.
- Storage of the Peak Controller should meet following requirements:
  - Before installing the equipment, it is necessary to store the Peak Controller and accessories indoors in a dry and ventilated place.
  - Keep storage temperature at -40℃ to+ 85℃
  - Relative humidity is not greater than 95%
  - Avoid corrosive and explosive gas storages near the devices under all circumstances
  - Avoid rain, sun exposure, condensation and frost during storage.
- After installation, the Peak Controller should be kept covered to avoid soaking in rain.
- Equipment's development, production, inspection and filing are based to relevant safety standards. Therefore, if the installation is compliant with instructions and safety tips for specified usage, products will not cause property damage or harm to personnel health under normal circumstances.
- The instructions in this manual must be strictly followed, otherwise there may be potential safety hazards or failure of safety devices. Although the safety tips are demonstrated in this manual, safety regulations and accident prevention provisions that conform to applicable conditions must be noted.
- Due to technical or legal restrictions, it is not possible to supply all models accessories to all countries and regions.

4.4 Product Description

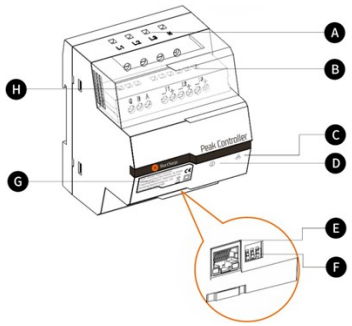


Figure 2: Peak Controller - AC

- **[A]: Power supply terminals**

  L1, L2 ,L3 connects to the three phases

  N connects to the neutral wire

- **[B]: Current sensor terminals** - I1-, I1+, I2-, I2+, I3+ and I3- connect to the black and red wires of current sensor.

- **[C]: Communication mode indicator**

  When controller communicates with the charging station by Ethernet, the indicator shows green light (constant).

- **[D]: System status indicator**

  When the controller is correctly monitoring and controlling the charging station's power, the indicator shows green, otherwise, the fault is red (refer to Troubleshooting section).

- **[E]: Ethernet port** - For Communicating with the charging station via Ethernet.

- **[F]: Maximum current limiter** - Limits the maximum current for the charging station by setting the position of 3 DIP switches.

- **[G]: Label**.

- **[H]: Maintenance interface** - For Operation and maintenance personnel only can use this.

N.B.

When the wiring is complete, slide the protective cover in.

4.5 Configuration

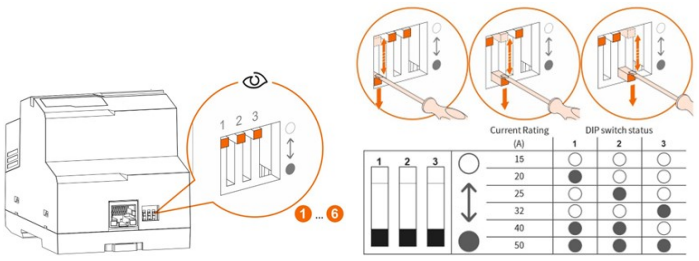
4.5.1 Definition of "Max. current per phase"

Max. current per phase is the rated current of the main circuit breaker (MCB) of your electrical installation. This value determines the maximum current your installation can withstand. This value can usually be found marked on the MCB enclosure.
E.g. An MCB with rated current of 40 A will usually have the text "C40" or "40A" marked on it.

Warning
Contact your installer in case of doubt about the rated current of the MCB installed in your property. Only values of Max. current per phase greater than 15 A are acceptable for a correct performance of the Peak Controller functionality.

4.5.2 Configuring the current value

The relationship between the DIP switches and the maximum current shows in following figure. Set the Maximum Current value (15/20/25/32/40/50 A) just beneath or equal to the Current Rating of the home's electrical installation by changing the position of the DIP switches as shown in Figures 3.



(a) Peak Controller - DIP Switch location

(b) Peak Controller - DIP Switch settings

Figure 3: Function of DIP Switch

Warning
Only qualified commissioning and service technicians are allowed to work on setting these values. Care must be exercised to configure the controller before installation.

4.5.3 Guidelines of wiring equipment

For Three phase operation, please follow the wiring diagram shown in the figure 4.

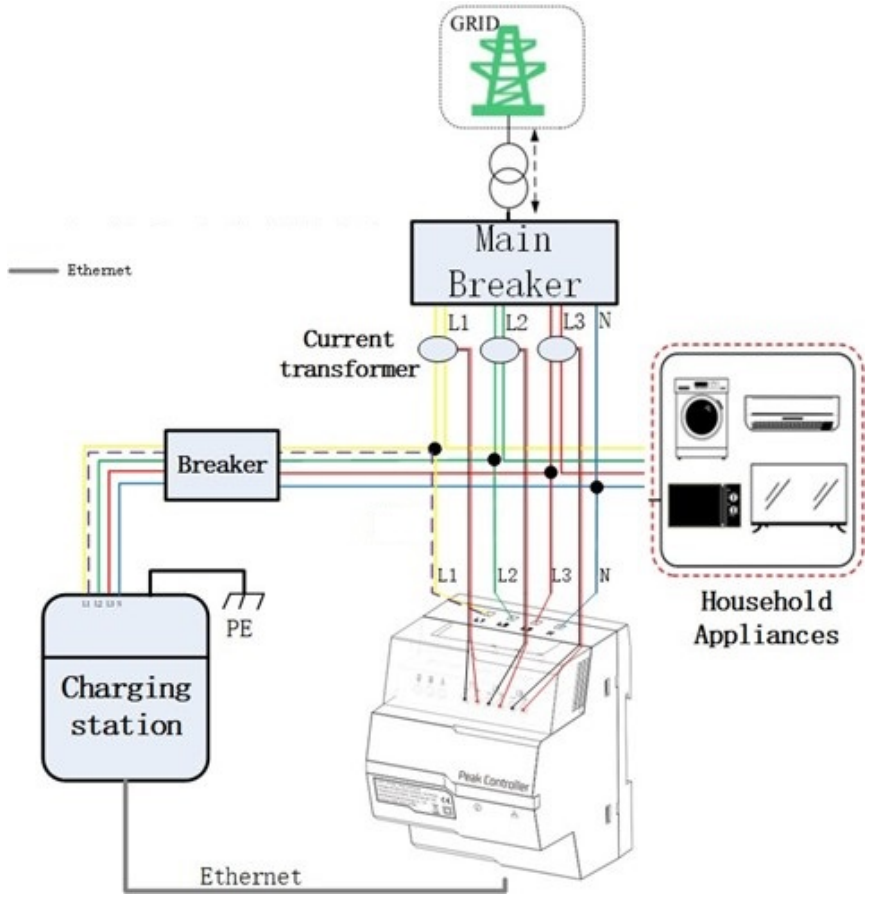


Figure 4: Wiring for Three-Phase operation

For Single phase operation, please follow the wiring diagram shown in the figure 5.

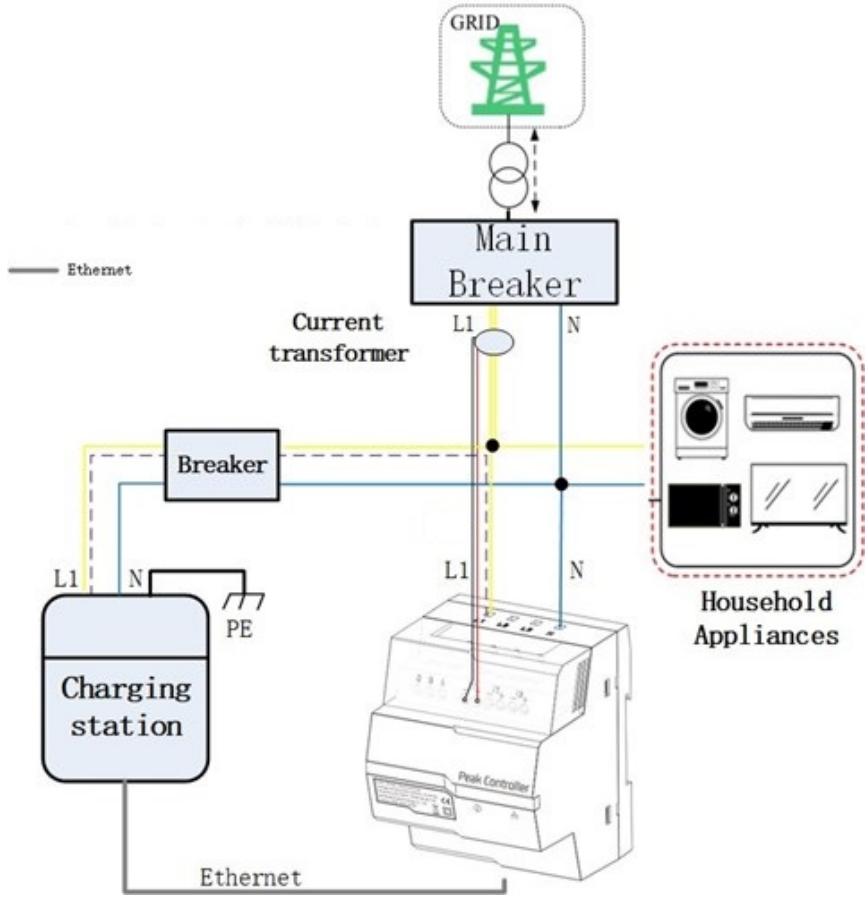


Figure 5: Wiring for Single-Phase operation

N.B.
Turn off the electrical power supply before starting work.

4.5.4 Procedure to install the peak controller

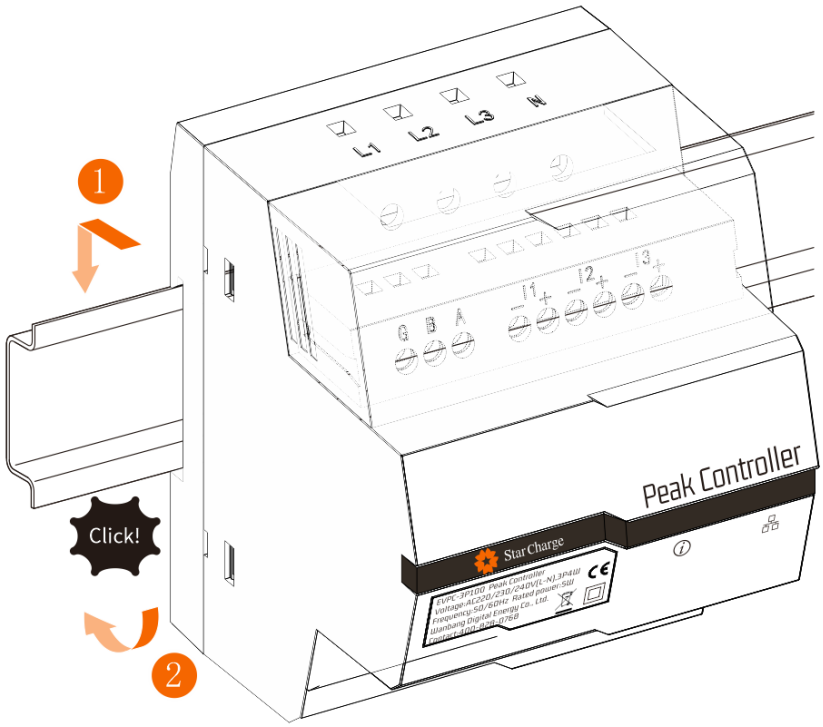


Figure 6: Installing the peak controller on DIN Rail

- Before mounting on the module on a DIN rail, pull the tab at the module's rear to unlock the clip.
- After mounting the module on a DIN rail, push the tab at the module's rear to lock the clip.
- Check the phase order of the wiring.
- Do not leave any wires unconnected.
- The Current Transducer must be located after the Main Breaker and before the split of power for the house.

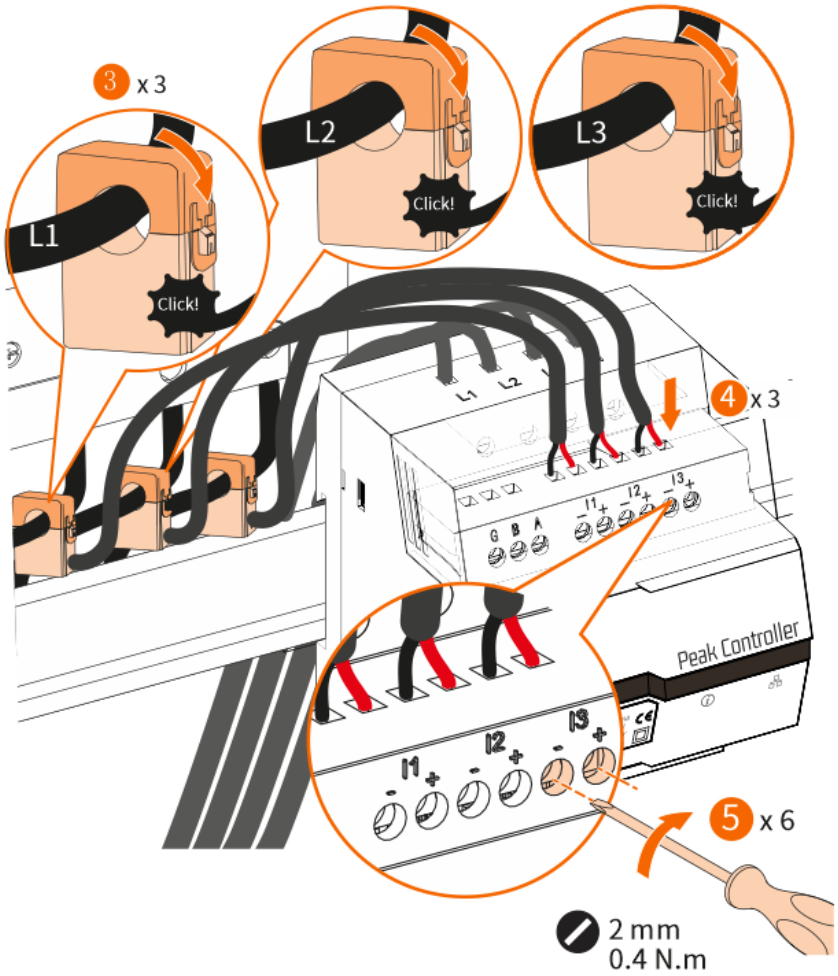


Figure 7: Current transducer connections of the peak controller

After the Peak Controller has been installed according to its Installation Guide on the correct positioning, it must be connected to the main power and charging equipment.

4.6 Wiring

- Connect the Peak Controller to the Distribution Board using wires with a diameter equal to or greater than 1.5 mm² but no longer than 30 metres.
- Connect the Peak Controller to the Distribution Board via the screw terminals N and L1, L2, L3, where L1, L2, L3 are for the 3 Live wires and N is for the Neutral wire.
- Connect the Peak Controller to the Current sensor using wires with a diameter equal to or greater than 1.0 mm² but no longer than 10 metres.
- Connect the Peak Controller to the charging station with an Ethernet cable.

4.7 Troubleshooting

Status Indicator	***Possible Causes and Corrective measures***
Red	1. The current drawn exceeded 1.5 times the Maximum Current threshold defined by the user on the Peak Controller. Check if the Maximum Current threshold can be increased to just beneath or equal to the Current Rating of the home's electrical installation. 2. The Peak Controller has detected that voltage supply is under or over the designed limit. Verify that the installation's electrical distribution is within 187-253 V AC. 3. The DIP switch position is not correct, set the right current rating.
Off	1. Power supply is not properly connected, check the wiring. 2. No communication between the Peak Controller and the charging station, check if the Peak Controller and the charging station are correctly connected as per electrical diagram and check if the Ethernet cable is reliably connected. 3. The current mode of communication does not match the set mode of communication, check the wiring.

ABOUT US

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