



Twin 5



EV Charging Stations

Installation and User Manual



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1.1 Purpose and intended audience

This manual applies to the Twin 5 (the charging station) produced by Alfen ICU B.V., Hefbrugweg 28, 1332AP Almere, the Netherlands, reg. no. 64998363 ("Alfen"). The Alfen Twin 5 is intended exclusively for charging electric vehicles and, when installed correctly, may be used by untrained individuals. Follow this manual to install and commission the charging station correctly.

Installation, commissioning and maintenance of this charging station may only be performed by a qualified electrician. It is essential that the qualified technician has:

- Expertise on all relevant general and specific rules regarding safety and incident prevention
- Comprehensive knowledge of applicable electrical regulations.
- The ability to identify risks and avoid potential hazards
- Received and read these installation and operation instructions

1.2 Explanation of text instructions used

Safety warnings and precautions regarding Twin 5 are indicated in this document as follows:

DANGER

Signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury

CAUTION

Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTE

Signal word used to provide additional information or information on possible product damage.

1.3 General safety

Make sure to follow the stated safety aspects at all times:

DANGER

Do not use the charging station in the vicinity of explosive or highly flammable substances.

DANGER

Do not use the charging station if it is partially submerged in water.

DANGER

Do not use the charging station if it is damaged or plugs and cables are defective. Contact the charge point operator to repair the defects immediately.

DANGER

Keep away children or individuals who are not able to assess the risks associated with using this product.

More extensive safety information is available in the relevant sections of this document.

1.4 Disclaimer

This document has been subjected to rigorous technical review before being published. It is revised at regular intervals, and any modifications and amendments are included in the subsequent issues. Although Alfen has made its best efforts to keep the document as precise and up-to-date as possible, Alfen does not assume any liability for defects and damage which results from the use of the information contained herein.

NOTE

This manual is subject to updates and changes. The latest version will always be available for download on <https://knowledge.alfen.com> or Alfen.com. Errors and omissions excepted.

Any deviation to the products as assembled by Alfen including, but not limited to, customer-specific modifications to the product such as the placement of stickers, SIM cards or the usage of different colors (all referred to as 'Customization') may affect the final product, its experience, appearance, quality and / or lifespan (the Customized Product). Alfen is not liable for any damage to, or caused by, the Customized Product if this damage is caused by this applied Customization.

1. SAFETY AND USAGE INSTRUCTIONS

Alfen ICU B.V. shall not be liable in any way, for any kind of damage, and the (carry in) warranty for the product and the accessories shall not apply in the following cases:

- Failure to comply with the instructions in this manual in general and with the operating conditions specifically.
- Improper use.
- External damage.
- Installation, commissioning or faulty repair or maintenance by unqualified persons.
- Failures from the grid or the GPS / GPRS provider.
- Modification or configuration of the product or accessories without the knowledge of Alfen ICU B.V.
- Use of spare parts not approved or manufactured by Alfen.
- The charging station is used outside its operating conditions as stated in this manual.
- Situations have occurred that are beyond the control of Alfen ICU B.V. (force majeure).
- Malfunction of an open charge point back office.
- Damage to the electrical vehicle.

FIN: SFS-EN 61851-1
FR: NF-EN 61851-1
NL: NEN-EN-IEC 61851-1
NO: NEK-EN-61851-1
UK: BS-EN 61851-1

NOTE

The EU declaration of conformity can be requested from Alfen. Please refer to the contact data on the backpage of this manual.

1.5 Copyright

Copyright ©2022 Alfen ICU B.V. All rights reserved. The disclosure, duplication, distribution and editing of this document, or utilization and communication of the content are not permitted, unless authorized in writing by Alfen. All rights, including rights created by a patent, grant or registration of a utility model or a design, are reserved.

The English version of this manual is the original source document. Manuals in other languages are translations of this source document.

Twin 5 is a trade mark by Alfen ICU B.V. Any unauthorized use of the trade mark is therefore illegal.

1.6 Service

The Alfen Twin 5 charging stations are serviced by the local charge point supplier. Your charge point supplier provides support to you. When contacting your charge point supplier, always have the serial number of your charging station available to facilitate quick support. Optionally you can find support for all our products on <https://knowledge.alfen.com>.

1.7 EU Declaration of Conformity

The Twin 5 complies to the following directives:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- Harmonized standards: IEC 61851-1 ed. 3 (2017) - Electric vehicle conductive charging system - General requirements, on national level implemented under:
 - AT: ÖVE/EN 61851-1
 - BE: NBN EN 61851-1
 - DE: DIN-EN 61851-1

2.1 Exterior view

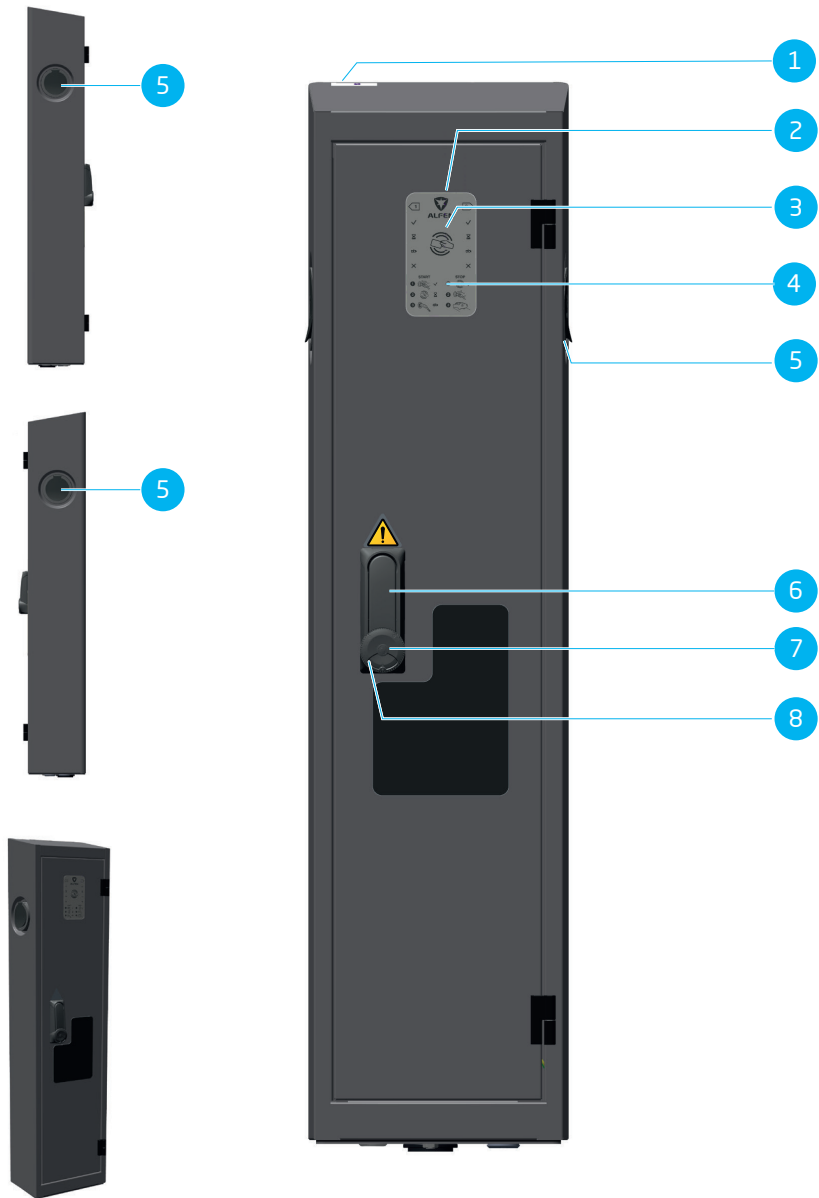


Figure 2.1: Overview of the exterior (legend see following pages)

2. PRODUCT OVERVIEW

2.2 Interior view

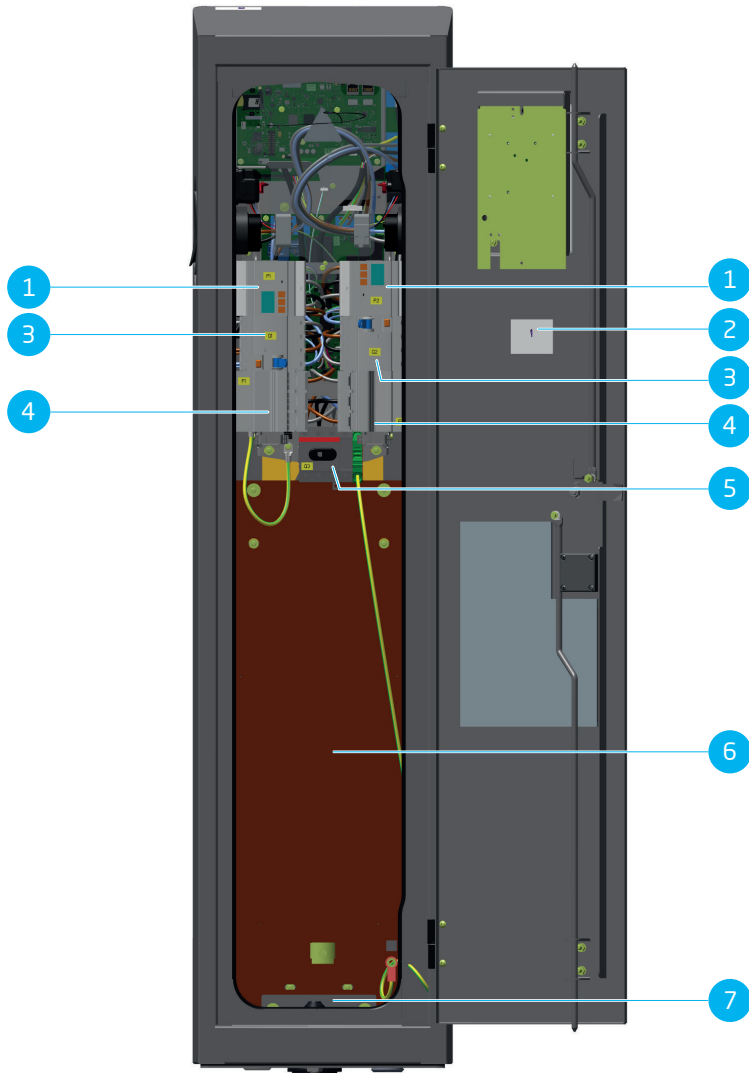


Figure 2.2: Overview of the interior (variant A) (legend see following pages)

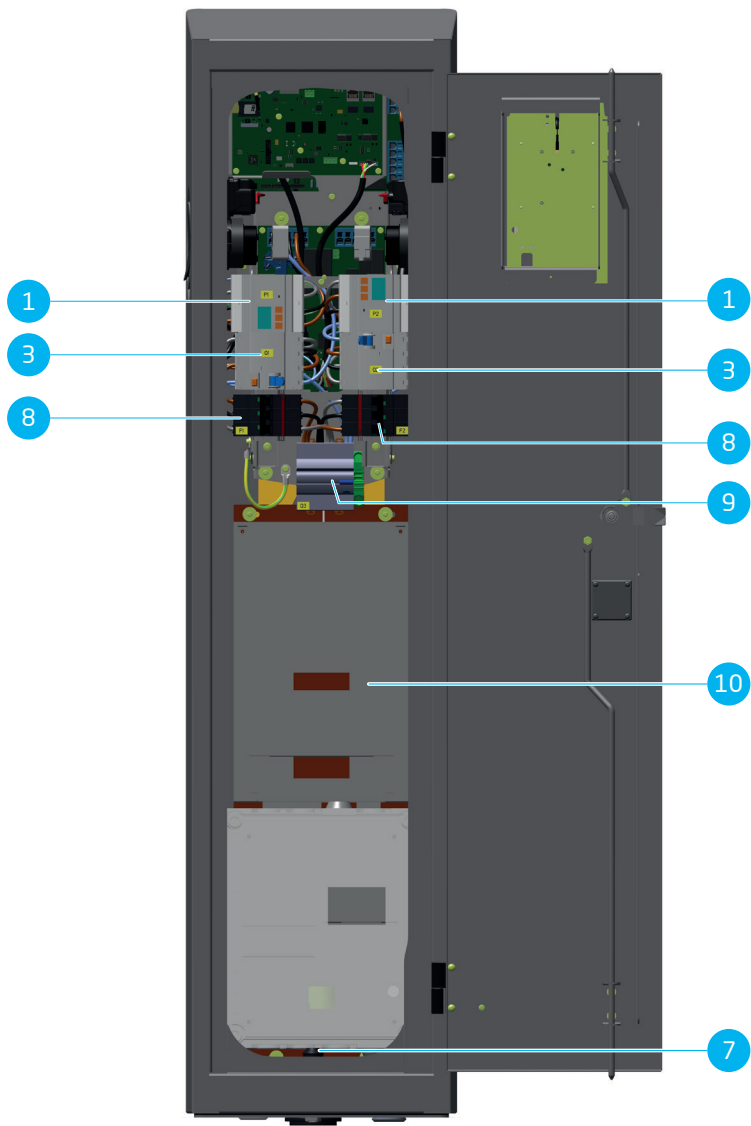


Figure 2.3: Overview of the interior with grid connection box (variant B) (legend see following pages)

2. PRODUCT OVERVIEW

2.3 Legend product overview

Exterior view

- 1 Charge point Identifier (customer specific label)
- 2 LED / charge card (RFID) interface
- 3 Charge card reader
- 4 Quick start instructions
- 5 Type 2 socket
- 6 Door handle
- 7 Cylinder for grid operator
- 8 Cylinder for end customer

Interior view

- 1 Power meter
- 2 Identification label
- 3 Type B residual current device (RCD)
- 4 Fuses
- 5 Main switch
- 6 Space for installation of grid connection box
- 7 Strain relief
- 8 Miniature circuit breaker (MCB)
- 9 Residual current circuit breaker (RCCD)
- 10 Grid connection box

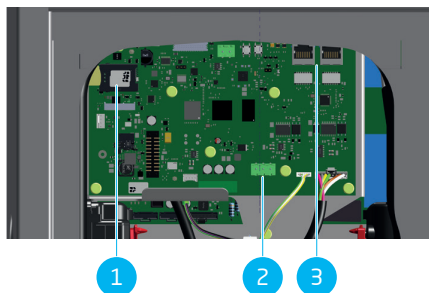


Figure 2.4: Detailed illustration of component location

No. Description

- 1 SIM card holder
- 2 External power meter connection (RS-485)
- 3 UTP / Ethernet connections

2.4 Identification label

The identification label shows the following information:



Figure 2.5: Identification label

No. Description

- 1 Type number (consisting of the platform name and the last five digits of the article number)
- 2 Article number
- 3 Unique number (per charging station)
- 4 Technical specifications (such as the number of phases, maximum charging current and voltage)

NOTE

When contacting your charge point supplier / operator, always have your serial number available to facilitate quick support.

2.5 Operating conditions

Operating temperature	-25°C tot 40°C
Relative atmospheric humidity	5 - 95%
Protection category	I

Degree of protection (cas- ing)	IP54
IK protection	IK10

2.6 Operation

2.6.1 Start and stop charging with charge card

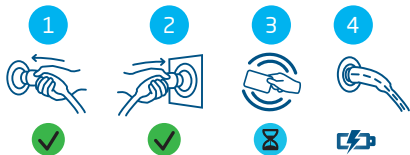


Figure 2.6: Starting the charging process with user authorization. Symbols shown on the user interface

No.	Description
1	Plug the charging cable into the car
2	Plug the charging cable into the charge point
3	Scan the charge card on the charging stations RFID-interface
4	Charging in progress

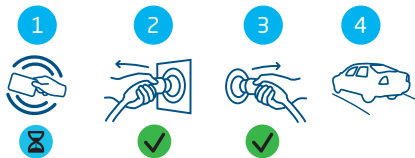


Figure 2.7: Stopping the charging process. Symbols shown on the user interface

No.	Description
1	Scan the charge card on the charging stations RFID-interface
2	Remove the charging cable from the charge point
3	Remove the charging cable from the car
4	Leave the charging place

2.6.2 Start and stop charging with Plug&Charge

Figure 2.8: Starting the charging process without charge card. Symbols shown on user interface

No.	Description
1	Plug the charging cable into the car
2	Plug the charging cable into the charge point
3	Charging in progress

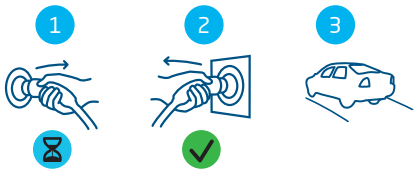


Figure 2.9: Stopping the charging process without charge card. Symbols shown on user interface

No.	Description
1	Remove the charging cable from the car
3	Remove the charging cable from the charge point
4	Leave the charging place

2.7 User interface

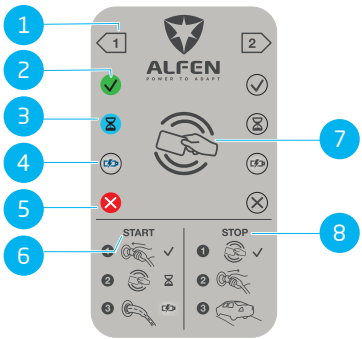


Figure 2.10: Display of with LED's (left socket active in this illustration)

2. PRODUCT OVERVIEW

No.	Description
1	Charging station indication
2	Charge card accepted, cable connected
3	Communication with vehicle or charging completed
4	Charging in progress
5	Error message
6	Operating steps to start the charging process
7	Charge card reader (RFID interface)
8	Operating steps to stop the charging process

3.1 Safety announcements

DANGER

Installing the charging station incorrectly may result in fatal injury! When working with electricity, failure to comply with relevant regulations can lead to dangerous and life-threatening situations.

DANGER

The electrical system must be disconnected from every power source before performing any installation or maintenance work!

DANGER

The charging station contains electrical components that still contain a charge after being disconnected from the system. Always wait 10 seconds after powering down before commencing to work.

DANGER

Never install in a potentially explosive atmosphere.

DANGER

Never install in areas prone to flooding without implementing compensatory measures.

WARNING

This work may not be carried out during rain or if air humidity exceeds 95%.

WARNING

The installation must be performed by a qualified electrician who has read this manual and will execute the installation in accordance with the IEC 60364 (Electrical Installations for Buildings) standard.

WARNING

A charging station must always be installed on separate power circuit.

WARNING

Local conditions may influence the installation requirements. Your installation must comply with the standards and regulations of the location (country) where it is installed.

WARNING

The installer is always responsible for choosing the correct cable diameter and complying with the relevant standards and legislation.

WARNING

The installation and cables should be installed to match the maximum charging current to the input of the charging station. This should assume continual load.

WARNING

Protect Alfen products installed in public areas and car park sites from mechanical impact and/or collisions which can cause damage to the equipment.

WARNING

Adapters or conversion adapters are not allowed to be used.

CAUTION

Installation, commissioning and maintenance of the charging station may only be performed by a qualified electrician.

3.2 Assembly and installation requirements

When selecting a location to install the charging station, the following criteria must be met:

- Always fully comply with local technical requirements and safety regulations
- An on-site connection has been prepared that complies with the specifications of the charging station.
- The installation site must have a leveled and solid foundation or, if the charging station is installed into the ground, preparing the foundation is part of the installation process.
- A maximum temperature difference within 24 hours of < 35 °C

3. INSTALLING AND CONNECTING

Please refer to the following table for safety options and cable cross-sections advised.

Power supply cable: minimum advised cable cross-section (based on assumed max. 50 m cable length)

- 11kW charging, 16A selected per phase: 5 x 4 mm²
- 22kW charging, 32A selected per phase: 5 x 6 mm²
- Maximum cross-section: 35 mm²

Short-circuit protection:

- Integrated in grid connection box (in case of direct installation to grid), or
- Installation on the local low-voltage distributor:
- With circuit breakers: 80A, 3P, type B or C
- With fuses: 3 x 80A gG. In case of gG fuses it is possible to apply 64A (minimum)

Earth leakage protection: (possibly in combination with circuit breaker)

- Integrated in charging station, with grid connection box (in case of direct installation to grid), or:
- Optional residual current device: 100mA S (Selective), type A, 4P. Applicable for: 22kW charging: 80A

Nominal input voltage:

- VL₁-N: 230V (+/-10%)
- VL₂-N: 230V (+/-10%)
- VL₃-N: 230V (+/-10%)
- VL₁-L₂: 400V (+/-10%)
- VL₁-L₃: 400V (+/-10%)
- VL₂-L₃: 400V (+/-10%)
- VPE-N: ≈ 0V

Nominal frequency:

- 50 Hz

Grounding:

- TN system: PE cable TT system: separately installed
- grounding electrode < 100 Ohm spreading resistance
- IT system: connected to a shared reference (common earth) with other metal parts

3.4 Scope of delivery

The scope of delivery provides:

- charging station
- Installation manual and assembly supplies
- Charge cards (depending on selected options).
- Charge point password

3.3 Preparation prior to installation

- View the site and determine the installation location.
- Check the scope of delivery and required parts.
- Read this installation manual before hand.
- Download the data sheet on Alfen.com for product-specific information.
- Download the Smart Charging Implementation Guide on knowledge.alfen.com for detailed information on configuring Smart Charging options.

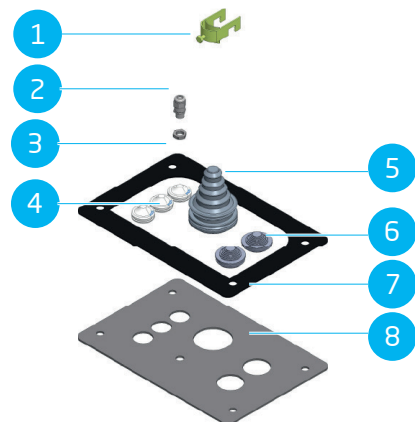


Figure 3.1: Bottom plate with mounting material

No.	Description	Quantity
1	Cable clamp	1
2	Grommet for ground cable	1
3	Connection nut	1
4	Grommet for Ethernet Smart Charging network cable	1
5	Grommet for main power supply	3
6	Grommet for power supply Smart Charging Network	1
7	Base plate gasket	2
8	Base plate	1

3.5 Accessories

Item / Article no.	Dimensions	Weight
Concrete base 833829300-ICU	570 x 350 x 220 mm	42 kg
Metal base 803828601-ICU	598 x 204 x 300 mm	7.8 kg
Extra RFID-card 203120010-ICU		

3.6 Installation tools

- Level
- Shovel
- Stanley knife
- Phillips screwdriver
- Wire stripper
- Socket set / spanners

3.7 Installation prerequisites

Verify the delivery scope regarding the locks:

The door handle of the charging station is provided with 2 locks:

- the left lock is for the owner of the charging station,
 - the right lock is for the grid operator.
1. Slide the protection from the lock: the charging station may contain 1, 2 or no cylinder lock(s).
 2. Open the lock with the key(s) (or passkey provided if no cylinders are installed).

3. Pull out the handle.
4. Turn the handle counter-clockwise to open the door.

3.8 Mechanical installation procedure

3.8.1 Foundation for ground mounting

1. Dig a hole of approx. 500 x 500 mm and 550 mm deep and level out horizontally.
2. Position the base and level it.
3. Place the supplied cable glands and cutting glands on the sealing plate. Place the whole assembly on the bottom of the charging station
4. Provide an earth electrode or earth pin, depending on the local regulations.

3.8.2 Inserting ground cable and earth cable

1. Make a provision in the form of a main grounding rail right at the bottom of the charging station to ground the charging station. (This applies to both: a PE cable and an earthing pin)
2. Pass the ground cable through the conduit, concrete base and tulle in the sealing plate.
3. Leave an overhang from the top of the base of at least 250 mm. Due to the mounting of the strain relief it is recommended to cut the cable only when the charging station is mounted on the base.
4. Pass the earthing cable, coming from the earthing pin, through the base and swivel into the sealing plate (see position 3 in figure 3.2).

3. INSTALLING AND CONNECTING

3.8.3 Mounting the charging station onto the base

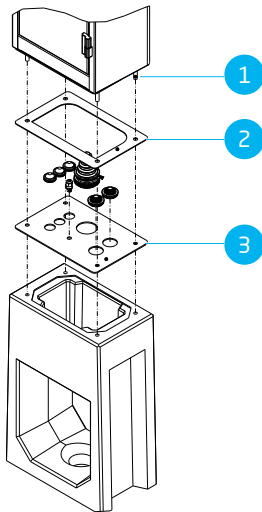


Figure 3.2: Exploded view of charging station to be mounted on base

1. Insert the four threaded M10x80 mm rods supplied into the sockets on the base (see position 1 in figure 3.2).
2. Place the gasket over the threaded ends and the sealing plate (see position 2 in illustration).
3. Place the charging station on the base over the wire ends and over the power supply cable and ground cable.
4. Cut the cable grommet to size, so that the power supply cable is firmly clamped in place.
5. Guide the power supply cable through the bottom plate. Pull the power supply cable to the outside of the charging station to fit the strain relief provided.
6. Mount the strain relief.
7. Guide the power supply cable back into the charging station / base. Make sure that 250 mm cable length remains in the charging station.
8. Fasten the charging station to the base as shown in figure with the provided 4 M10 nuts including lock and V-rings.
9. Secure the charging station to the base with 4 M10x80 mm studs.

3.9 Electrical installation procedure

1. Remove the sheath from the power cable with a Stanley knife and remove the sheaths from the loose wires with a wire stripper.
2. Connect the earth pin.
3. The earthing sleeve / earthing wire of the distribution system operator may only be used as an earthing device with the written consent of the system operator;
4. According to your installation requirements, make sure the grounding resistance of the system is set to one of the following values:
 - a. < 100 Ohm (requirement by EV/ZE Ready 1.4I certification);
 - b. < 167 Ohm (requirement Dutch NEN1010 directive);
 - c. according to the values stated in the legal regulations of your country.
5. According to product variant disconnect the charging station from voltage source:
 - a. Make sure the main switch is in the OFF (0) position, or
 - b. Make sure the main residual current circuit breaker (RCCB) is in the OFF (0) position
6. According to product variant disconnect the charging station from voltage source:
 - a. Remove the fuses in the distribution system operator cabinet of the charging station, or
 - b. Switch the circuit breakers (MCB) to the OFF (0) position;
7. According to product variant:
 - a. Connect the wires of the phases to the fuse holders, or
 - b. to the circuit breakers (MCB) in the distribution system operator cabinet of the charging station including standard grid connection, (PE on separate rail)
8. Connect the provided cable clamp to the plate provided at the back wall inside of the charging station (see figure 2.2 and 2.3 position 7) ensuring strain relief on the cable.

-
9. According to product variant connect the charging station to voltage source:
 - a. Place fuses (if supplied) in the fuse holders and close the holders, or
 - b. Switch the circuit breakers (MCB) to the ON (I) position.

 10. According to product variant connect the charging station to voltage source:
 - a. Make sure the main switch is in the ON (I) position, or
 - b. Make sure the main residual current circuit breaker (RCCB) is in the ON (I) position.

 11. If a transparent cover is supplied for the internal components, fit it with the bolts supplied.

 12. Close the door and make sure it is securely locked.

4. COMMISSIONING

4.1 Safety instructions before use

Carry out the following safety instructions before commissioning your charging station:

1. Make sure the charging station is properly connected to the power supply as described in this manual.
2. Make sure the distribution of the power supply is separately protected by an appropriate breaker (automatic or fuse cartridges)
3. Make sure the charging station is installed in accordance with this manual.
4. Make sure the casing is always closed during normal operation.

4.2 Commissioning Twin 5

1. Turn on the local power supply.
The charging station will now run self diagnostics. All interface LED's will flash briefly. The following background operations will occur within a few seconds:
 - The sockets are tested one by one (locking and unlocking).
 - The internal relays are tested: audible by clicking noise.
 - The  symbols will flash twice.

The charging station is now ready for testing.

4.2.1 Testing the socket(s)

1. Put the test charging cable in one of the sockets.
The  symbol illuminates. The hourglass symbol  flashes.
2. Hold the charge card in front of the (RFID) card reader to start charging.
The  symbol flashes. Then the hourglass symbol  illuminates and the charging symbol  illuminates. The socket is now functional.
3. Hold the charge card in front of the (RFID) card reader to stop charging.
The hourglass symbol  illuminates. The  symbol illuminates.
4. Pull out the test charging cable.
The socket is now ready for use.
5. Do the same procedure for the other socket.

5.1 Preparation prior to configuration

1. Make sure the charging station is equipped with the newest firmware.
2. Download the MyEve app in Google Play, Apple Store or Windows Store to your laptop, tablet or smartphone.



Google Play



Apple Store



Microsoft Store

3. Create an account.
4. If you have the MyEve app already installed, make sure you have the latest version. Use the above QR-codes to see if your app needs to be updated.
5. Make sure the Firewall settings on your laptop, tablet or smartphone are not blocking the MyEve app.

5.2 Configuring the charging station

The charging station can be accessed and configured with the MyEve app via a wireless or a wired network connection.

NOTE

Currently the communication between the MyEve app and the charging station is only possible via a wired connection.

The MyEve app will guide you step-by-step through the configuration process.

5.2.1 Wired network connection

How to establish a wired network connection by connecting the charging station to your laptop, tablet or smartphone using an UTP (Ethernet) cable:

The minimum requirement is a CAT5 UTP (Ethernet) cable

NOTE

For the use of a smartphone or tablet an adapter such as a USB-C to Ethernet or Lightning to Ethernet is required.

1. Log into the MyEve app.

2. According to product variant disconnect the charging station from voltage source:
 - a. Make sure the main switch is in the OFF (0) position, or
 - b. Make sure the main residual current circuit breaker (RCCB) is in the OFF (0) position
3. Connect the UTP (Ethernet) cable to your router or directly to the charging station.
4. Connect the UTP (Ethernet) cable with the corresponding port.
5. Connect your laptop, tablet or smartphone to the switch or router or directly to the charging station.
6. According to product variant connect the charging station to voltage source:
 - a. Make sure the main switch is in the ON (I) position, or
 - b. Make sure the main residual current circuit breaker (RCCB) is in the ON (I) position.
7. Select your charging station from the list in the MyEve app.

NOTE

If the charging station(s) is (are) not detected automatically, the MyEve app might be blocked by the Firewall on your laptop, tablet or smartphone. Check the settings and try again.

8. Enter the provided password.
The network connection has now been established. Via the MyEve app you can configure the settings
9. After finishing the configuration, hand over the card with password (recovery) information to the customer.

5.2.2 Back office management systems

If additional services by a back office provider have been purchased, the charging station has been configured ex-factory to connect to the selected back office management system.

NOTE

A connection with a backoffice management system can only be established if arrangements with the supplier of this system have been made. The service of third parties is not provided by Alfen.

5. CONNECTIVITY

NOTE

If the charging station is set to connect with a backoffice management system, it will do so directly and automatically.

NOTE

Manually configuring and connecting to a backoffice management system can be done with the MyEve. A SIM card needs to be installed during installation. If you do not have a SIM card, please contact your backoffice provider.

NOTE

If a mobile communication (SIM card) Internet connection has been purchased, the charging station is already equipped with a SIM card and will automatically connect, once the charging station is being commissioned.

6. WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)



Electrical and electronic equipment contains materials, components and substances that may be hazardous and present a risk to human health and the environment if not handled correctly.

Equipment marked with the illustrated crossed out wheeled bin is electrical and electronic equipment. The crossed out wheeled bin indicates that this waste must be collected separately and must not be discarded together with household waste.

Refer to your local authority for collection schemes under which residents can dispose waste electrical and electronic equipment at a recycling center or other collection points.

Contact

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Tel. Service:	+31 (0)36 54 93 402
Website:	alfen.com

Art. no.:	203130172-ICU
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