Twin 4XL NL

Installation and user manual

ALFEN
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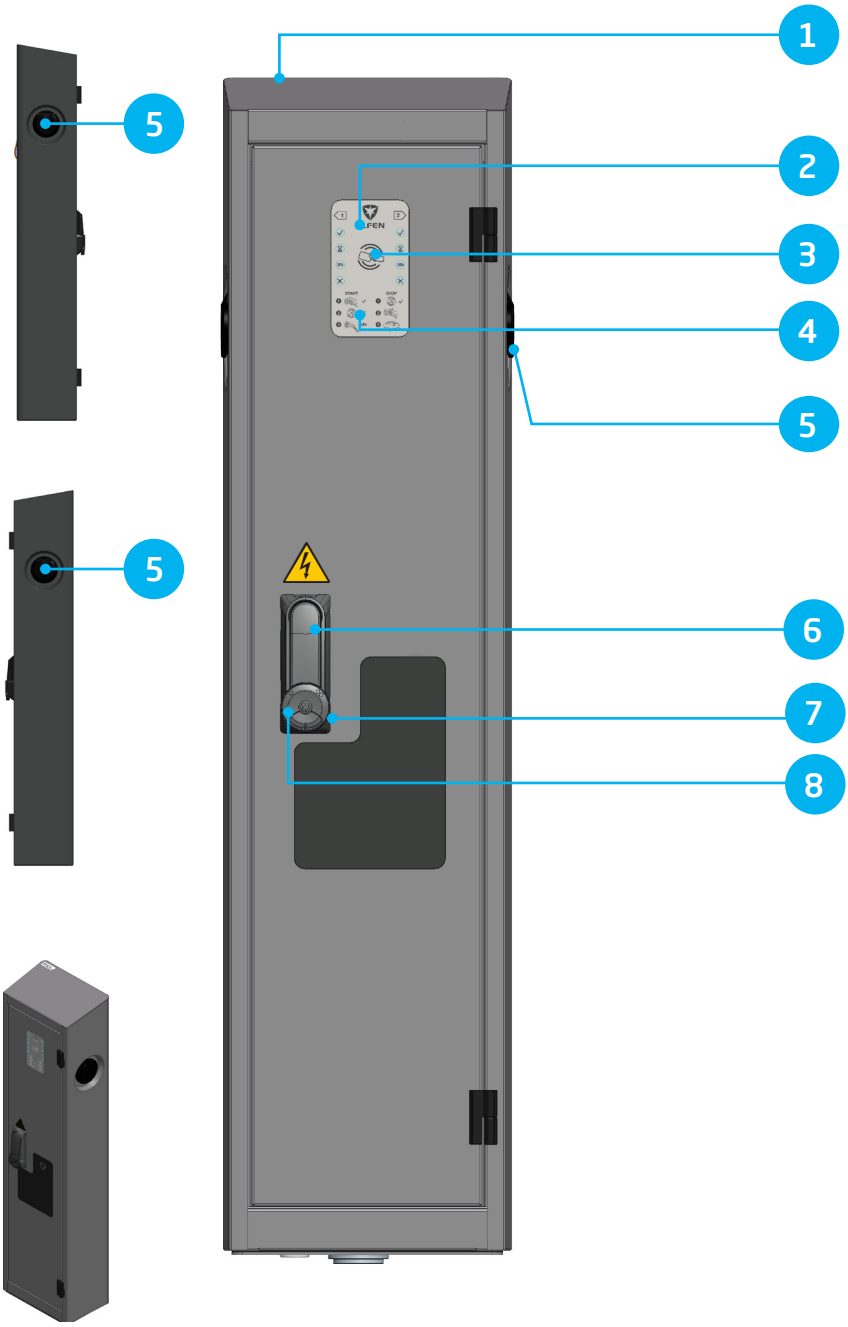
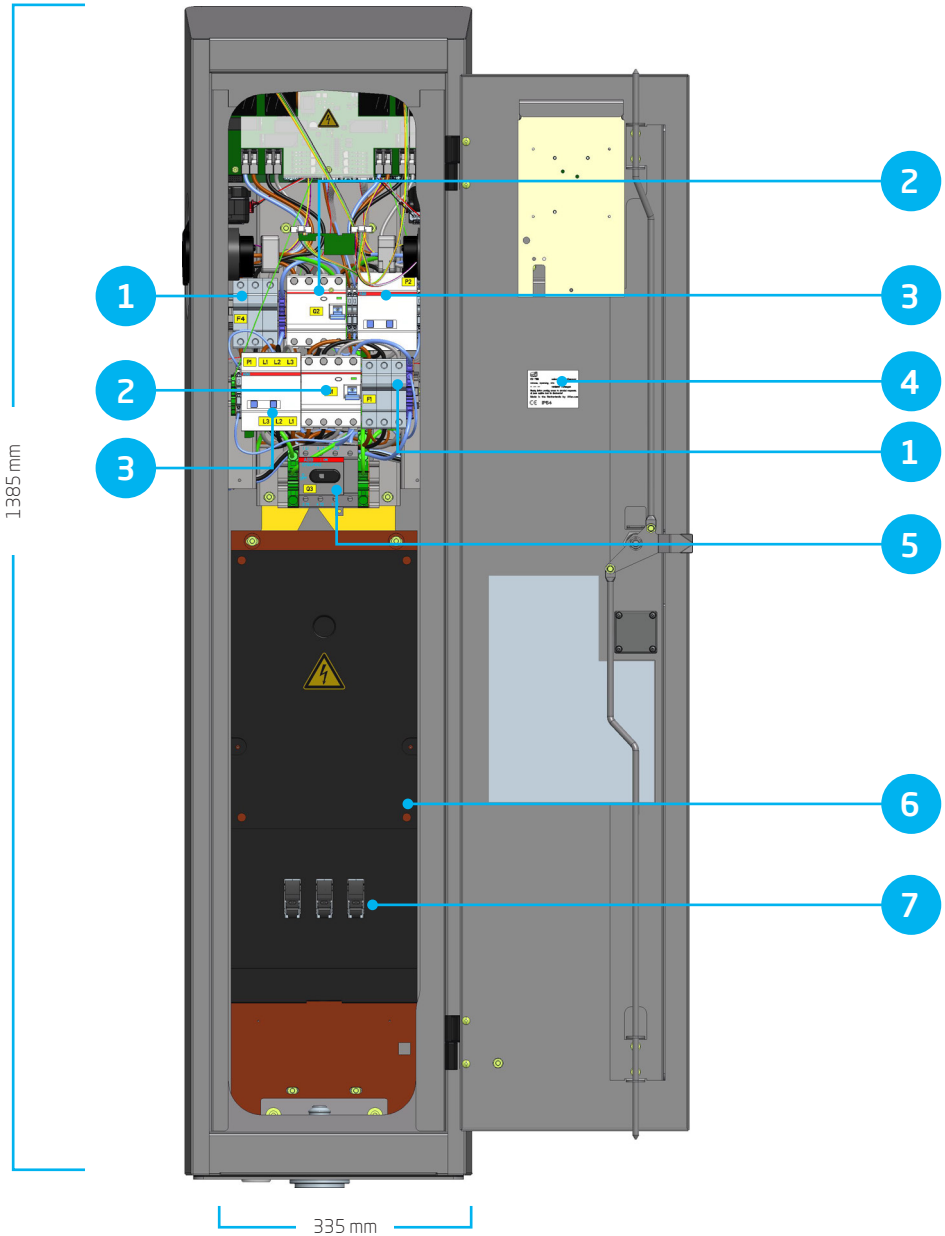
EXTERIOR



INTERIOR



ENGLISH

Step-by-step installation and commissioning Twin 4XL NL

Congratulations on your purchase of this Alfen charging station for electric vehicles!

To ensure a safe installation process and to fully utilise all advanced features of your new system, we advise you to read this manual carefully. Please keep this manual for future reference.

Though these operating instructions have been compiled with the greatest possible care, they are subject to change and improvement. For the most recent version, please refer to https://alfen.com/nl/downloads

ENGLISH

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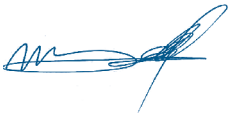
DECLARATION OF CONFORMITY

Manufacturer:
Alfen ICU B.V.
Hefbrugweg 28
1332 AP Almere
The Netherlands

Declares that the charging stations of the type **Alfen Twin 4XL,**
to which this declaration refers, comply with the provisions of the following European directives:
1) Machinery directive 2006/42/EC
2) Low voltage directive 2014/35/EU
3) EMC directive 2014/30/EU
4) And the following harmonised standards:
IEC 61851-1 ed. 3 (2017) - Charging via a conductive connection of electric vehicles -
General requirements, implemented at national level under:

- NL: NEN-EN-IEC 61851-1
- BE: NBN EN 61851-1
- UK: BS-EN 61851-1

Almere, 18 May 2021.



Mr. M. Roeleveld
Managing director

1.1 Purpose and intended audience

The Alfen Twin 4XL charging station is intended exclusively for charging electric vehicles, both in situations where there is a separate grid connection (e.g. a domestic meter cupboard) and in public situations. Follow these instructions to ensure that you use the charging station properly.

The installation, commissioning and maintenance may only be performed by a qualified technician (Alfen certified partner).

This qualified technician must meet the following requirements:

- Expertise on all relevant general and specific rules regarding safety and incident prevention;
- Knowledge of the relevant electricity regulations;
- The ability to identify risks and avoid potential danger;
- Awareness of these installation and operation instructions.

This manual is valid for the charging station Alfen Twin 4XL, equipped with firmware version 3.2.2. (or higher)

1.2 General safety

DANGER!

These safety instructions are important to ensuring safe operation. If you do not comply with the safety rules and instructions, there is a risk of electrical shock, fire and/or life threatening injury.

The use of this charging station is expressly forbidden in the following situations:

- In the vicinity of explosive or highly flammable substances;
- If the charging station is located in or close to water;
- If the charging station or its individual components are damaged;
- Usage by children or individuals not properly able to assess the risks associated with using this charging station.

In the following cases, Alfen ICU B.V. shall not be liable in any way for any kind of damage and all warranties on the charging station and accessories will become void:

- Non-compliance with these installation and operation instructions;
- Usage in ambient temperatures below -25 °C or above 40 °C;
- Improper use ;
- Improper handling ;
- Installation and/or usage by unqualified staff;
- Self-installed additions or changes to the charging station;
- Usage of replacement parts not manufactured or approved by Alfen.

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

2.1 The charging station

On the cover of this manual you will find the corresponding pictures of the charging station. Here you can find out more about the contents of the charging station and how to use it to charge your vehicle.

The charging station (outside, see page 2)

1. "Charge Point Identifier"
2. LED/RFID-interface
3. RFID reader
4. 'Quick starter' instructions
5. Type 2 socket
6. Door handle
7. Cylinder for distribution system operator
8. Cylinder for end customer

The charging station (inside, see page 3)

1. Fuses
2. Type A earth leakage circuit breaker
3. Power meter
4. Identification label
5. Work switch
6. Mains connection box distribution system operator
7. Main protection

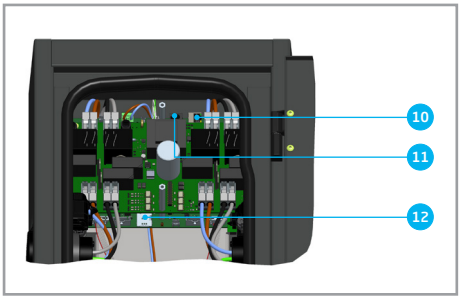


Fig. 1 Location of components

10. UTP (Ethernet) Connection
11. P1 (Smart Meter) Connection
12. SIM card holder (see figure 8 for detailed location)
13. Identification label with identification number of the charging station (see description under the heading "Identification label")
14. On/off switch 4-pole (see Figure 2 for detailed location)

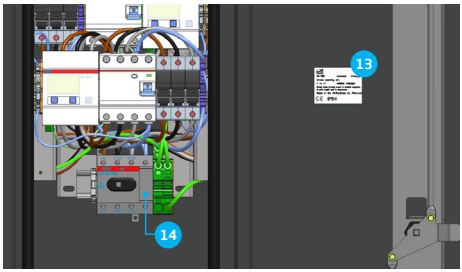


Fig. 2 Location of components

Identification label (13)

The identification label (Figure 3) specifies, among other things, the model, production date and serial number.

You will find this label on the inside of the charging station door. On the top of the charging station is a smaller sticker with the "Charge Point Identifier" (this is not the serial number) and (if applicable) the helpdesk telephone number. When contacting Alfen, always have your serial number available to facilitate quick support.

1. Type number of the charging station consisting of the platform name and the last five digits of the article number
2. Serial number, unique number issued by Alfen to the charging station
3. Day of production of the charging station
4. Technical specifications of the charging station, such as the number of phases, maximum charging current and voltage.
5. Article number of the charging station
6. Maximum charging capacity set on the charging station level

Fig. 3: Example of an identification label

2.2 Status indications on the interface

The Alfen Twin 4XL NL uses an interface equipped with LEDs to provide status indications of the charging station, and inform the user about starting and stopping the charging process.

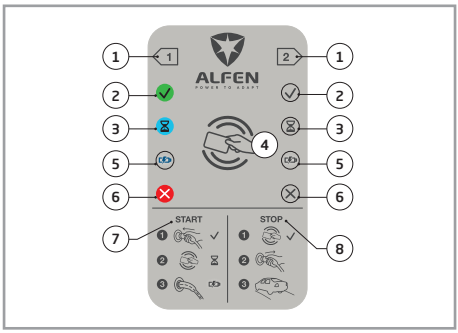


Fig. 4: Display of Twin 4XL NL during charging (charging point left)

Status and information interface;

The charging station informs the user of its current status and provides the user with a response to actions performed. The following information is available:

1. Charging side indication
2. Charge card accepted, cable connected
3. Communication with vehicle, or charging completed
4. RFID-reader
5. Active charging transaction
6. Error message
7. User steps when starting the charging process
8. User steps when charging is stopped

Charge card accepted, cable connected

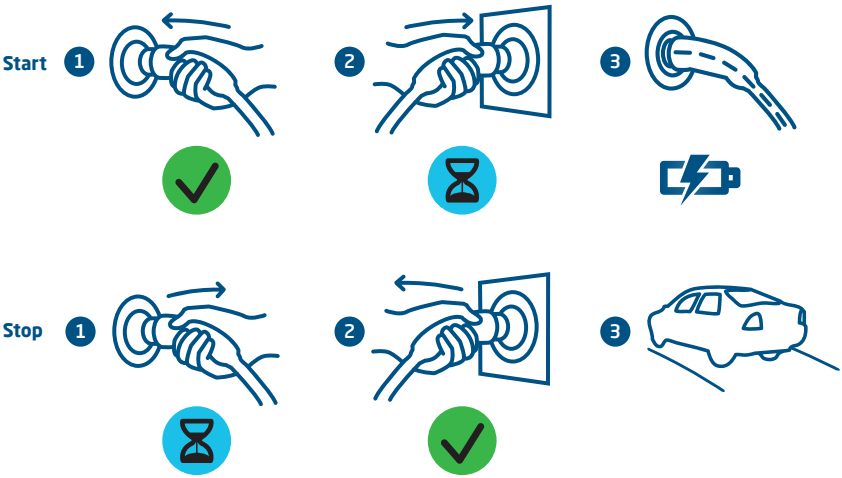
Communicating with vehicle or charging complete

Active charging transaction

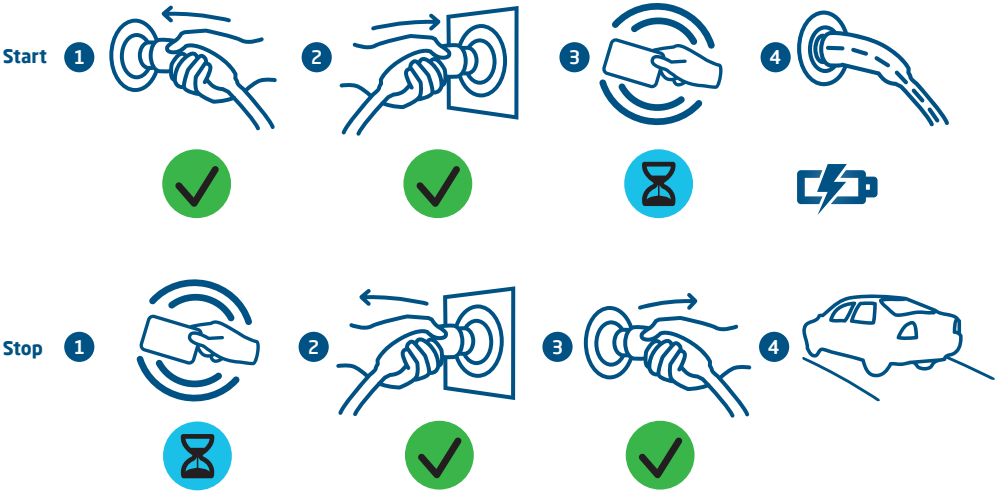
Error message

2.3 Operation

Plug & Charge – General authorization without charge card



RFID – Charging station with user authorization



2.4 Technical specifications Twin 4XL NL

2.4.1 Twin 4XL NL model overview

Model name	Article no.	OCPP Charge Point Model
2 x type 2 socket, 3 phase, max. input current 25A per phase, type A RCD, 6mA DC detection	934452501	NG920-52501
2 x type 2 socket, 3 phase, max. input current 35A per phase, type A RCD, 6mA DC detection	934452504	NG920-52504
Packing unit	1 piece	
Charging station package contents	Alfen Twin 4XL NL, installation manual, mounting accessories and RFID charging cards (depending on selected options)	

2.4.2 Input/ power supply

NOTICE!

Your installation must comply with the standards and regulations of the location (country) where it is installed. The following tables show our recommendations for charging stations to function properly, given the mentioned preconditions.

Printing errors expressly reserved

Input: minimum recommended cable diameters	3 phase 20A charging, distribution system operator connection box 3x25A 934452501: 4 mm² connection cable 3 phase 20A charging, distribution system operator connection box 3x35A 934452504: 6 mm² connection cable (assumption max. 50m cable route)
Nominal voltage	3x230V, 400V potential difference between the phases.
Security	934452501 and 934452504: all pre-protection is already present in the charging station.
Nominal frequency	50 Hz
Connection clamps	Strain relief, clamping range for cable diameter 11 mm to 29 mm Cutting modules bottom plate range 13mm - 34mm Range cable clamps: max. 16 mm² per wire
Earthing	TN system (PE cable) TT system (Earthing facilities are always the responsibility of the owner of the loading object).
Main switch	Four-pole, 80 A, 400 V Connection in the distribution system operator connection box (934452501 and 934452504)

2.4.3 Output/ vehicle supply

Vehicle connection	2 x socket type 2, according to IEC62196-2
Output voltage	400 V (934452501, 934452504)
Max. charging current	20 A per phase (13.75kW per socket) (934452501, 934452504)
Load balancing	Optional Mandatory for connections with a lower capacity than both outputs combined can supply at the same time

2.4.4 Protection/integrated components

Residual current protection	Type A 30 mA, per outlet DC current detection 6mA, per outlet
Energy meter	1x power meter per outlet, MID-certified
Activation relay	Integrated, simultaneous activation
Overcurrent protection	Integrated in firmware, switch-off at: 105% after 1,200 seconds; 112% after 100 seconds; 120% after 5 seconds; 150% after 2 seconds

REMARK

The charge point is equipped with a 6mA detection circuit per output.
The charging current is interrupted on detection of a DC leakage current of 6mA or higher.
After 5 minutes, the charging current will be switched on again; if the leakage current of 6mA DC persists, the charging point will interrupt the charging current again.
This protocol is repeated up to a maximum of 3 times, the loading transaction remains active, after which the transaction is permanently terminated.

After reinserting the charging cable, the charging station will restart the cycle

2.4.5 Charging and access

Controllers	Central unit for outputs and communication
Communication with vehicle	Mode 3
Status indication	User interface equipped with LEDs
Card reader	RFID (NFC) ISO/IEC 14443A/B, Mifare 13,56 MHz, DESFire
Internet/network possibilities	GPRS (2G) LTE Cat M1 (4G) Ethernet/LAN
Supported mobile communication bands	2G: EGPRS quad-band: 850 / 900 / 1800 / 1900 MHz 4G: LTE Cat M1 bands: 3, 8, 20
Communication protocol	OCPP 1.5 (JSON) OCPP 1.6 (JSON) 2nd edition, certified OCPP 2.0 (JSON)
Backend connection	ICU Connect (optional) or other management system (upon request)

2.4.6 User circumstances

Operating temperature	-25°C - 40°C
Relative atmospheric humidity	5 - 95 %
Protection category	I
Degree of protection (casing)	IP54
IK protection	IK10
Stand-by consumption	Ca. 9-12W

NOTICE!

The mentioned operating temperature assumes the **ambient temperature** of a product delivered in the standard casing colour RAL7043. Direct exposure to sunlight may have an adverse effect on the temperature range.

NOTICE!

The temperatures listed in the table refer to the ambient temperature for the charging station, assuming the standard housing colour: RAL7043. Other (darker) colours may have an adverse effect on the operating temperature of the charging station.

If the charging station is exposed to lower or higher temperatures, continuous operation cannot be guaranteed. In case of higher temperatures, the charging station will automatically decrease the charging current to stabilise the internal temperature. This prevents a transaction from being unexpectedly paused.

If the charging station is exposed to direct sunlight, it is possible that the automatic temperature management will be activated below the maximum ambient temperature.

2.4.7 Casing

Type	Loading pedestal
Mounting options	Directly on solid ground or on an optional metal or concrete base
Material (casing)	Cold-rolled stainless steel 304
Colour (casing)	RAL 7043 (Traffic grey)
Locking	Lockable lever with space for two cylinder locks (not included in delivery) Standard key for door operation included in delivery
Dimensions (H x W x D)	
Casing	1385 x 335 x 220 mm
Packaging	1400 x 350 x 300 mm
Weight	
Casing	Approx. 40 kg
Packaging	Approx. 2.5 kg

2.5 Optional factory settings

Factory settings	Options
Authorisation	Plug & Charge RFID *
Maximum enabled charging current per output	20A 32A *
Smart charging options	Off Standard load balancing *
User availability if temporarily offline	Accept all RFID passes Only valid passes in database Not available
Action if plug is released on vehicle side	Stop transactions and release the plug Pause charging until cable plugged back in
Choice of management system	Stand alone ICU Connect * Various management systems available on request *
Communication through *	Auto detect GPRS UTP/LAN

REMARK

Settings marked with *) may incur additional costs.
The default settings are always displayed first.

2.6 Accessories

Concrete pedestal	Art. 833829300-ICU
Dimensions (H x W x D)	570 x 350 x 220 mm
Weight	42 kg
Metal base	Art. no. 803828601-ICU
Dimensions (H x W x D)	598 x 204 x 300
Weight	7.8 kg
Packaging (H x W x D)	50 x 295 x 620
Extra RFID card	Art. 203120010-ICU

Package contents

The package of the charging station contains:
- Alfen Twin 4XL NL,
- Installation manual and assembly supplies,
- RFID charging cards (depending on selected options)

Bottom plate overview

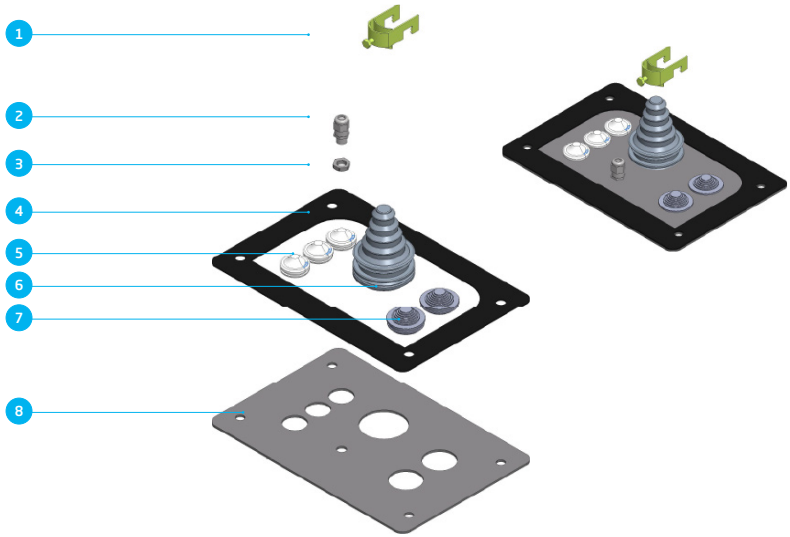


Fig. 5: Bottom plate with mounting material Twin 4 XL NL

① 1x Cable clamp k24u
② 1x Wiska stuffing box M12x1.5
③ 1x Connection nut 12 M12x1.5
④ 1x Cable entry gasket
⑤ 3x Grommet for ethernet cable
⑥ 1x Grommet for ground cable
⑦ 2x Grommet for Smart Charging Network
⑧ 1x Bottom seal

3. ASSEMBLY AND CONNECTING

3.1 Installation preparation and warnings

NOTICE!

Read these instructions carefully before installing the charging station. Alfen ICU B.V. is not liable for any consequential damage caused by failure to follow the instructions in this manual.

NOTICE!

The installation must be carried out by a qualified member of staff who has read this manual and acts in accordance with the NEN1010 and IEC 60364 guidelines. Neglecting to comply with these may lead to injury or dangerous situations when working with electricity.

DANGER!

The electric system must be entirely disconnected from every power source prior to performing installation or maintenance work!

DANGER!

The charging station contains electrical components that still contain a charge after being disconnected from the system. Wait at least 10 seconds after disconnecting before beginning to work.

DANGER!

Installing the station incorrectly may result in fatal injury! When working with electricity, not abiding by installation and environment regulations can lead to hazardous situations.

REMARK

A charging station must always be installed on a power circuit intended for that purpose.

3.2 Assembly and installation requirements

Refer to the table in paragraph 2.4.2 for the safety options and required cable thicknesses to create a proper connection.

REMARK

Wear the prescribed personal protective equipment (PPE) when working. Take national and local standards and regulations into account.

Please ensure that the following requirements for the installation of the Alfen Twin 4XL NL are met:

The pre-protection of the Twin 4XL NL with a distribution system operator connection box (934452501, 934452504) is the responsibility of the distribution system operator.

- The cable route and charging station are part of a TT/TN-S system; the unit must be earthed via the main distributor or punched earth pin.
- Earthing the charging station is the responsibility of the owner.
- It must be determined for each location whether the earthing can be provided by the distribution system operator.
- The cable trajectory must be installed in accordance with the usual local professional standards.

REMARK

Site conditions may influence the installation requirements.

REMARK

The installation and cables should be installed to match the maximum charging current to the input of the charging station. This must assume a continuous load (max. simultaneity).

The cable diameters stated in this manual are indicative. The installer is always responsible for choosing the right cable diameter and complying with the relevant standards and legislation.

When selecting an installation location, please take the following into account:

- Never install in a potentially explosive atmosphere;
- Never install in areas prone to flooding without implementing compensatory measures;
- Always fully comply with local technical requirements and safety regulations;
- The installation site must have a levelled and solid foundation;
- Maximum atmospheric humidity of 95% ;
- Ambient temperature of -25 °C - 40 °C ;
- A temperature difference within 24 hours < 35 °C ;
- Ensure that the charging station is located in such a way that users can use their charging cable (approx. 5 meters length) without tension being applied on the cable;
- Prevent other drivers from being able to drive over the cable;
- Prevent pedestrians from tripping over cables

3.3 Mechanical installation

Use the following tools and materials to install the Twin 4XL NL:

- Level, Shovel, Stanley knife
- Screwdriver for a terminal block
- Wire stripper
- Socket set/spanners

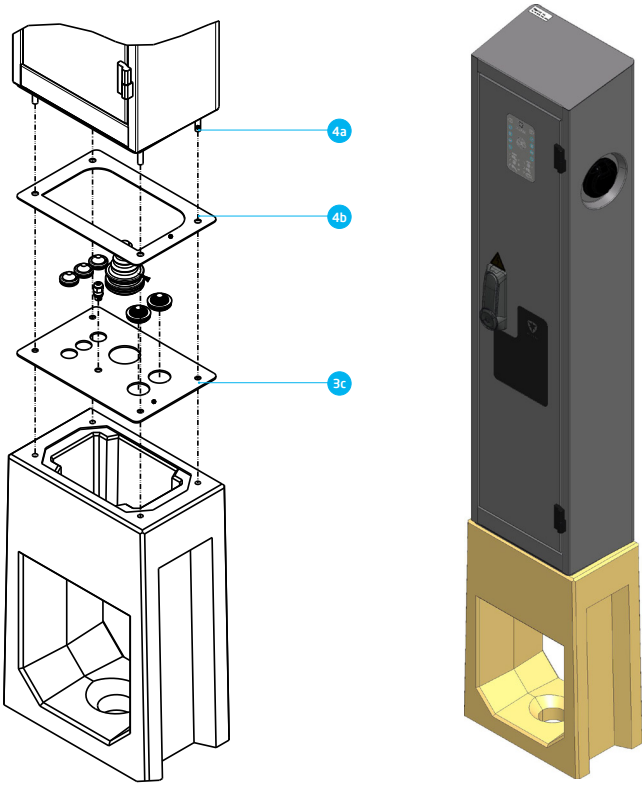


Fig. 6: Charging station on base, exploded view and reference to work steps

Preparing the charging station

1. Verify the content of the packaging based on the required parts
   a. On the door of the Twin 4XL NL:
      The charging point is provided of a lock with a lever suitable for two locks (type euro profile cylinder 17mm).
      i. Left lock is from: Owner of charging point
      ii. Right lock is from: Network company
   b. Slide the protection away from the lock.
   c. The charger may contain one, two or no cylinder lock(s).
   d. Open the lock with the key(s) provided, or the passkey provided, if no cylinders are installed;
   e. Lever can be pulled out;
   f. Turn the lever counter-clockwise to open the door .

Installing the charging station

2. Foundation for ground mounting (with concrete or metal base):
   a. Dig a hole 50x50cm - ground level depth: 55cm and level out horizontally.
   b. Position the base and level it.
   c. Place the supplied cable glands and cutting glands on the sealing plate. Then place it at the bottom of the charging station.
   d. Provide an earth electrode or earth pin, depending on the regulations in force at the location or instructions.

3. ASSEMBLY AND CONNECTING

3. Inserting ground cable and earth cable:
   a. Pass the ground cable through the conduit, concrete base and tule in the sealing plate. See specifications for suitable cable diameters.
   b. The overhang from the top of the base must be at least 25 cm. 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.
   c. Pass the earthing cable, coming from the earthing pin, through the concrete base and swivel in the sealing plate.
   See figure 6.

4. Mounting the charging station on the base
   a. Insert the four threaded rods supplied M10x80 mm into the sockets on the base.
   See figure 6.
   b. Place the gasket over the threaded ends and the sealing plate.
   See figure 6.
   c. Tilt the Twin 4XL NL, which has been laid out on the back above the base, onto the base over the wire ends and over the power supply cable and ground cable.
   d. Cut the cable grommet to size, so that the power supply cable is firmly clamped in place, and guide the power supply cable through the base plate, which will be mounted in the charging station. Pull the power supply cable to the outside of the charging station to fit the strain relief provided.
   e. After mounting the strain relief, guide the power cable back into the charging station/ concrete base, so that the prescribed 25cm cable length remains in the charging station.
   f. Fasten the charging station with the included 4 pieces of M10 nuts including lock and V-rings.
   g. Secure the charging station to the base with 4 x studs M10x80 mm on the base.

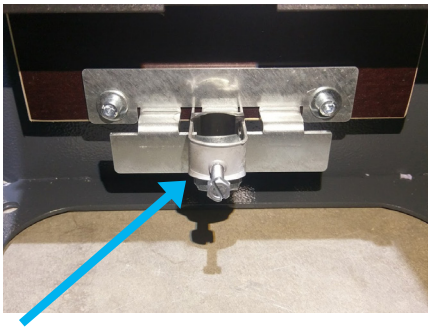


Fig. 7: Example of strain relief

3.4 Electrical installation

WARNING

Read and follow all of the safety instructions in this manual!

DANGER!

The electric system must be entirely disconnected from every power source prior to performing installation or maintenance work! After switching off the power, always wait 10 seconds before continuing the work.

1. Remove the sheath from the power cable with a Stanley knife and remove the sheaths from the loose wires with a wire stripper;

WARNING

Always attach a good earth conductor first

2. The charging point must be properly earthed. First connect the earth pin. A provision has been made 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 a grounding 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. The earth leakage resistance must be less than the prescribed value:
   - NEN1010 <167 Ohm
   - EV-Ready 1.4D <100 ohm
5. Check that the isolating switch is in the off (0) mode. Switch off the main fuse in the installation (for Twin 4XL NL without house connection box) or remove the fuses / switch the circuit breakers to the OFF mode (for Twin 4XL NL with house connection box);
6. Connect the wires of the phases to:
   i. the dispensers or cartridge holders in the distribution system operator cabinet of the Twin 4XL NL including standard grid connection. PE on separate rail.
   ii. directly to the isolating switch of the Twin 4XL NL excluding grid connection, PE on separate busbar.

7. A clamp is required for the strain relief on the cable (see figure 7);
8. Set the isolating switches and earth leakage circuit breaker to the 'IN- (1) status;
9. For types with a house connection box, place any cartridges supplied in the cartridge holders and close the holders;
10. If a transparent cover is supplied for the internal components, fit it with the plastic bolts supplied;
11. Close the door and check that it is securely closed.

NOTICE!

Ensure that cables do not become trapped when closing the door of the Twin 4XL NL.

NOTICE!

There must be absolutely no gaps between the housing parts. This is at the expense of protection against moisture and dust, which reduces the service life of the charging station.

4.1 Safety instructions before use

Please follow the safety instructions below before putting your charging station into operation:

1. Make sure that the charging station is properly connected to the power supply and properly fastened to the foundation as prescribed in this manual;
2. Ensure that the distribution of the electrical supply is separately protected by an appropriate circuit breaker (934452504 / 934452501: fuse links);
3. Make sure that the charging station has been installed in accordance with this manual;
4. Ensure that the casing is always closed during normal use.

4.2 Commissioning

1. Make sure that the earth leakage circuit breakers installed in the charger are switched on and that all fuses are in place;
2. Set the isolating switch to I (ON) mode. If necessary, use a special key to make switching easier;
3. Close the Twin 4XL NL by clicking the door into the lock.

Switch on the power at the power cable if possible. The charging station now performs a self-test. The following steps are followed:

1. The outputs are tested one by one, this is done for each user side in succession:
   - Lock testing (locking and unlocking)
   - Internal relays are being tested, you will hear them switching
2. The Interface LED flashes briefly;
3. The red crosses will flash twice;
4. The Alfen Twin 4XL NL is now ready for use. If the charging station is set up to connect to a management system, this will be done automatically and immediately;
5. If required, the charging station can be further configured. Use the Service Installer software package to access this;
6. Have you had the charging station configured for a Smart Charge functionality? Then, check the settings with the Service Installer application to optimally configure the charging station for the local situation.

REMARK

Would you like to know more about the Service Installer? Then go to our website for the latest version. http://alfen.com/en/downloads.

5. CONNECTIVITY

5.1 Backoffice management systems

You own an intelligent Alfen charging station that can communicate with a management system via an Internet connection. Management systems make it possible, for example, to monitor the energy consumption of individual users, to manage charging remotely or to maintain the charging station more easily.

If you have purchased additional services from a (backend) partner or from Alfen ICU B.V. (for the ICU EZ services,), then your charging station is configured ex-factory to connect to the selected backoffice management system. The internet connection will be established using a GPRS or a UTP (Ethernet) cable connection. If you opted for a GPRS (SIM card) connection, your charging station is already equipped with its SIM card and will automatically connect once your charging station is commissioned. If the SIM card holder (12) does not contain a SIM card, please contact your backoffice provider or Alfen.

In the next section we will explain how to connect your charging station to the internet via GPRS (SIM card) or a UTP (Ethernet) cable.

5.2 Setting up a connection

5.2.1 Wireless connection

To connect wirelessly, the charging station must be equipped with a SIM card suitable for GPRS. Furthermore, correct settings must be configured in order to connect with the preferred backoffice management system. To this end, several options (shortcuts) are available in the Service Installer. With these shortcuts, you can easily select the desired system and the accompanying settings.

REMARK

A connection with a backoffice management system can only be established if you made arrangements with the supplier of this system to start your services.
The service of third parties is not included in the service provided by Alfen.

Figure 8 shows the location of the SIM card holder and the UTP port.

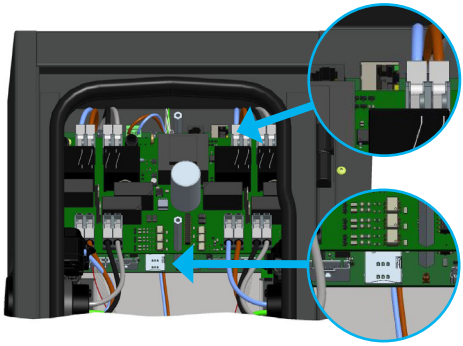


Fig. 8: SIM card holder and UTP port location

5.3 Registering your charging station within your own backoffice management system

If you use your own management system or if it is provided by a third party as a service, please make sure to register the right type of charging point.

Each model Twin 4XL NL has its own so-called Charge Point Model that is sent along with the application in accordance with OCPP specifications. This is built up with an indication of the platform, combined with a unique article identification:

- 934452501
- with Alfen NG920 platform: NG920-52501

The table below shows the possibilities. When correctly registered in the management system, the charging station can easily log on.

Article no.	OCPP Charge Point Model
934452501	NG920-52501
934452504	NG920-52504

Contact

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