EVBox Troniq Modular

Installation manual

EVBox
Troniq Modular

Installation manual

Contents

EN

1. Revision

Validation

Created by	Verified by	Validated by
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Change history

Revision	Date	Description
D002186AA1	2021/12/03	Add delivered components Safety messages update Update of plinths installation Add Plastic cover removal Add heater connection
D002186AA2	2022/01/13	Update bottom plate installation
D002186AA3	2022/05/24	Add safety labels Product rating update Add related documents chapter Add symbols used in this manual chapter Add AC socket type 2 technical data

2. Safety instructions

Read and observe the following safety precautions before you install, service, or use your EVBox Troniq Modular charging station. The installer must ensure that the charging station is installed in accordance with the relevant country-specific standards, and local regulations.

2.1. Symbols used in this manual

Symbol	Explanation
	**DANGER:** Indicates and imminently hazardous situation with a high risk of level which, if the danger is not avoided, will cause death or serious injury.
	**WARNING:** Indicates a potentially hazardous situation with moderate risk level which, if the warning is not obeyed, can cause death or serious injury.
	**CAUTION:** Indicates a potentially hazardous situation with a medium risk level which, if the caution is not obeyed, may cause minor or moderate injury or damage to the equipment.
	**Note:** Notes contain helpful suggestions or references to information not contained in the manual.

2.2. Save these instructions

This manual contains important instructions for EVBox Troniq Modular that need to be followed during installation, operation and maintenance of the unit.

2.3.  WARNING: Risk of electric shock

- Switch off input power to your charging station before you install or service the charging station. Keep the power off until the charging station is fully installed with its covers secured.
- In the event of danger and/or an accident, a certified electrician must immediately disconnect the charging station from the electrical supply.
- Do not operate the charging station if it is physically damaged or if the charging cable has cracks, excessive wear, or other visible damage. Contact EVBox or your distributor if you suspect that the charging station is damaged.
- Do not direct powerful jets of water toward or onto the charging station. Never operate it with wet hands. Do not put the EV charging plug into any liquid.
- Do not place fingers or other objects inside the charging port or plug port.

- Read the user instructions delivered with your EVBox charging station and the User Manual for your electric vehicle before charging.

2.4. WARNING: Accumulation of gases

Some electric vehicles require an external ventilation system to prevent the accumulation of hazardous or explosive gases when charging indoors. Refer to your vehicle User Manual to check if your vehicle releases hazardous or explosive gases when charging.

2.5. CAUTION

- Use this charging station to charge Level 3 and Level 4 compatible electric vehicles only. Refer to your vehicle user manual to check if your vehicle is compatible.
- This charging station may affect implanted electronic medical devices. Before you charge your vehicle, consult the supplier of the electronic medical device to determine if it can be affected by charging effects.
- This charging station contains no user-serviceable parts. The user must not attempt to service, repair, or relocate the charging station. Contact EVBox or your distributor for more information.
- Make sure that the charging cable cannot be damaged (kinked, jammed, or driven over) and that the plug(s) do not come into contact with heat sources, dirt, or water.
- Only use the charging station under the specified operating conditions.
- Do not use explosives or flammable substances near the charging station.
- If you are unsure about how to use a charging station, ask for help.
- Do not allow children to operate a charging station. Adult supervision is required when children are near a charging station that is in use.
- For T2 plug, while charging, the cable must be completely unwound and connected to the vehicle without overlapping loops. This is to avoid the risk of the charging cable overheating.
- For T2 plug, only pull on the charging plug hand grip and never on the charging cable itself.
- Adapters, conversion adapters, or cord extensions must never be used on this charging station.

2.6. Charging station safety precautions

CAUTION:
Do not open the charging station doors when:

- It is raining, snowing.
- The charging station is exposed to direct sunlight.
- Weather conditions are wet (fog, ...).

Failure to follow these instructions can result in danger to the user and may void the warranty and liability.

CAUTION:
Electrostatic discharge.

This device contains components that can be damaged or destroyed by electrostatic discharge.

- When handling this device, observe the necessary safety measures regarding electrostatic

discharge (ESD) according to EN61340-5-1 and 61340-5-2.

CAUTION:

- This charging station must be stored and transported according to the specifications described in this manual.
- Even if the charging station can be used by a non-qualified person, the charging station may only be installed, commissioned, serviced, relocated, repaired and decommissioned by qualified persons. Failure to follow these instructions can result in danger to the user and may void the warranty and liability.
- Modification of the product is prohibited. It can result in danger to the user and may void the warranty and liability.
- This charging station contains no user-serviceable parts. The user must not attempt to service, repair, or relocate the charging station. Contact EVBox or your distributor for more information.
- Make sure that the charging cable cannot be damaged (kinked, jammed, or driven over) and that the plug(s) do not come into contact with heat sources, dirt, or water.
- Only use the charging station under the specified operating conditions.
- Do not use explosives or flammable substances near the charging station.
- Do not use peripherals, consumables or accessories that do not conform or are unsuitable for the charging station.
- Do not use anti-graffiti treatment that may damage the charging station.
- Do not modify the features of the charging station (data settings, cabling, …).
- This charging station must be protected against animals, object intrusion or water ingress even if they do not alter charging station operation.

Failure to follow these instructions will result in damage to the charging station.

2.7. Safety labels on the packaging

Label	Location	Description
	On the packaging	Tip over hazard. Packaging to be handled with a mechanical unloading device or forklift.

Label	Location	Description
	On the packaging	ATTENTION! Content to be checked in the presence of the carrier Packaging not to be handled without a mechanical unloading device of forklift

3. Introduction

This Installation and User Manual outlines the installation requirements and steps for EVBox Troniq Modular, as well as how to use the station.

These instructions are valid for several models of the charging station. Some features and options described may not apply to your charging station.

3.1. Important information

The document is produced for information purposes only and does not constitute an offer binding upon EVBox. EVBox has compiled the contents of this document to the best of its knowledge. No express or implied warranty is given for the completeness, accuracy, reliability, or fitness for particular purpose of its content and the products and services presented therein. Specifications and performance data contain average values within existing specification tolerances and are subject to change without prior notice. Prior to ordering, always contact EVBox for the latest information and specification. EVBox explicitly waives liability for any direct or indirect damage, in the broadest sense, arising from or related to the use and/or interpretation of this document.

3.2. Scope of the document

Keep this manual for the entire lifetime of the EVBox Troniq Modular**.**

CAUTION:

This manual is intended as a resource for qualified personnel with experience in working on High Voltage projects who are capable of identifying the requirements and taking all necessary precautions to safely complete a EVBox Troniq Modular installation.

All EVBox manuals can be downloaded from www.evbox.com/manuals.

www.evbox.com/support

3.3. Related documents

Below the list of related documents:

Document	Number	Location
EVBox Troniq Modular maintenance manual	D002211	EVBox Partner portal(1)
EVBox Troniq Modular installation report	D002484	evbox.com/manuals
EVBox Troniq Modular commissioning report	D002371	EVBox Partner portal(1)

Document	Number	Location
EVBox Troniq Modular preventive maintenance plan	D002378	evbox.com/manuals
EVBox Troniq Modular preventive maintenance report	Q000478	EVBox Partner portal[1]
EVBox DC products software user guide	D002625	EVBox Partner portal[1]
[1]The EVBox Partner portal is accessible via your local EVBox certified partner.		

3.4. Product classification

This product is classified as follows:

Table 1. Classification

Power supply input	EV supply equipment permanently connected to the AC supply network.
Power supply output	DC and AC EV supply equipment.
Normal environmental conditions	Outdoor and indoor use.
Mounting method	Stationary equipment, surface-mounted on the ground.
Protection against electric shock	Class 1 equipment.
Charging modes	Level 3 and Level 4.

3.5. EVBox Troniq Modular - Product presentation

Electric vehicle charger with a modular and scalable architecture and power output ranging from 90 kW to 240 kW.

Optimize the use of space by charging up to three vehicles simultaneously using CCS2 (dry or cooled), CHAdeMO, or AC Type 2.

Field-upgradeable, easy to maintain architecture that improves uptime thanks to multiple power converters that ensure service continuity.

Built-in smart load management technology that helps you to reduce peak demand charges.

Best-in-class driver experience with auto-retractable cables, 15" screen, LED guiding lights, and charging indicators.

3.6. List of tools

CAUTION:
Some operations described in this manual may require a ladder or a stepladder.

Refer to your local regulation regarding the working height and relevant safety instructions.

Below is the list of the tools required (not included) to install the EVBox Troniq Modular:

- 1/2" ratchet
- 1/2" drive wobble extension
- 1/2" metric 6-point socket, 13 and 16 mm
- 1/4" ratchet
- 1/4" metric 6-point socket, 7 and 8 mm+ socket holder drive
- PZ2 screwdriver
- 2 mm hex screw
- Torque wrench (50 Nm)
- Torque wrench (14 Nm)
- Drill
- Concrete drill bit, 12 mm
- Door key (type 455)
- Ladder or stepladder (maximum working height: 2.4 m)
- For Payter option: PZ1 screwdriver, USB type B to type A cable

4. Transport and storage

4.1. Storage

WARNING:
Condensation inside the cabinet damages the charger.

- Only transport and store the charging station in its original packaging. No liability can be accepted for damage incurred when the product is transported in non-standard packaging.
- Store the charging station **away from exposure to the sun** and in a dry environment in the temperature range stated in the specifications (see storage conditions on page 29).
- Disconnect input power before removing the charging station for storage or relocation.

Failure to follow these instructions will result in waiver of warranty and product damage.

EVBox Troniq Modular has a built-in heater, with dedicated power supply (see Upstream requirements on page 38), to prevent condensation inside the cabinet.

1. **Before installation**, the heating system must be connected when the charging station:
   - is stored outside,
   - is stored in an interior location that does not meet the storage conditions on page 29.
2. **During installation**: the heating system must be activated immediately when the charging station is installed.
3. **After commissioning**: the heating system must always be activated.

Failure to follow these instructions will result in waiver of warranty and product damage.

4.2. Transport

WARNING:

Damaged product

After any transportation, make a detailed visual inspection of the charger **with its packaging opened**. Reject the product if there is any visible damage. Make all damage claims to the transport operator immediately and also immediately inform the sender regarding transport insurance.

Failure to follow these instructions can result in death, serious injury or equipment damage.

Visual inspection

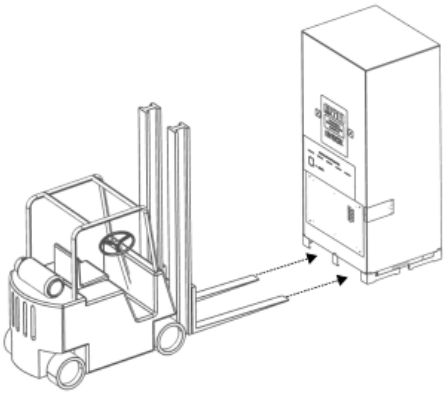
Check if:

- The exterior packaging has been damaged.
- The exterior panels of the charger are damaged (shock, scratch, ...).
- The doors are working properly.
- The interior of the charger is clean and undamaged.

4.3. Packed product handling

Handling with a forklift

Handle the packed product with a forklift.

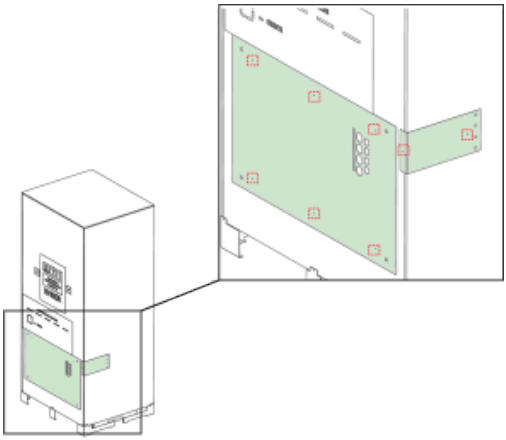


4.4. Packaging removal

CAUTION:
Some operations described in this manual may require a ladder or a stepladder.

Refer to your local regulation regarding the working height and relevant safety instructions.

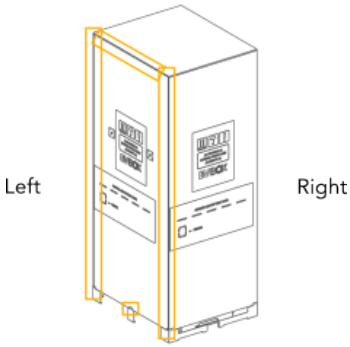
1. Remove the screws that hold the installation template and cable bracket on the packaging.



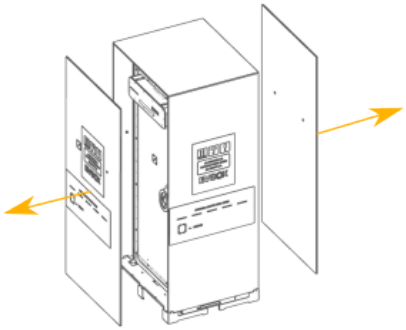
2. Put them aside.
3. Remove the screws that hold the left and right sides.

Note:
The left and right sides are the largest.

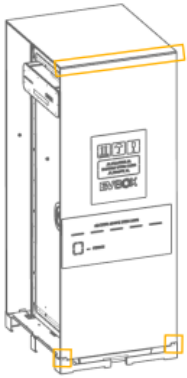
Tool: PZ2 screwdriver



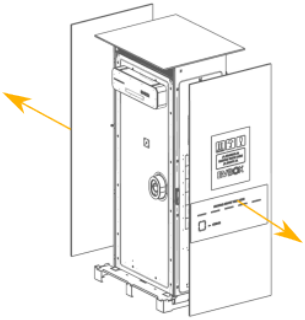
4. Remove the left and right side covers.



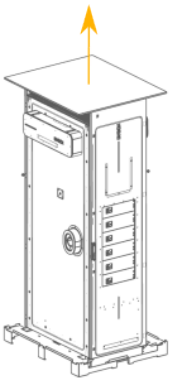
5. Remove the screws that hold the front and back sides.
Tool: PZ2 screwdriver



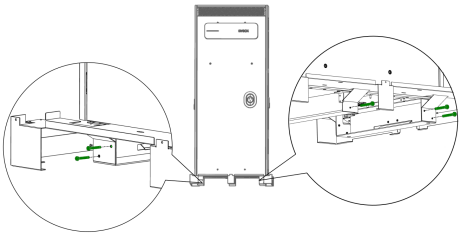
6. Remove the front and back covers.



7. Remove the roof cover.



8. Remove the base protections.
Tool: 8 mm wrench



4.5. Supplied components

The packaging includes the following components:

- Charging station
- 2 x side plinths with 4 screws
- 4 x lifting screws
- Installation template (on the outside of the packaging)

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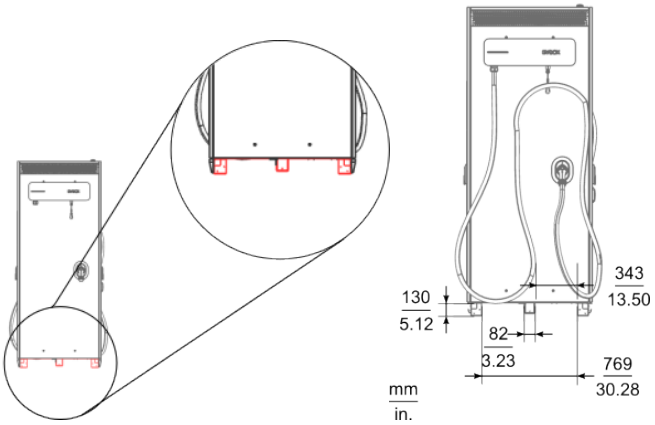
5. EVBox Troniq Modular handling

5.1. Handling with a forklift

The EVBox Troniq Modular can be handled using a forklift.



5.2. Handling by crane

The EVBox Troniq Modular can be handled by a crane.

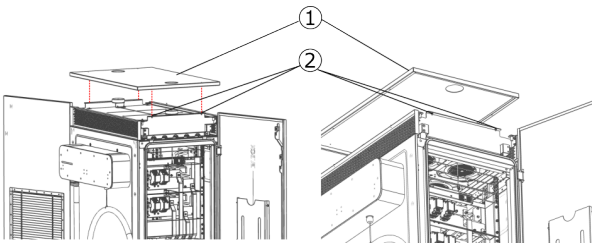
CAUTION:
Some operations described in this manual may require a ladder or a stepladder.

Refer to your local regulation regarding the working height and relevant safety instructions.

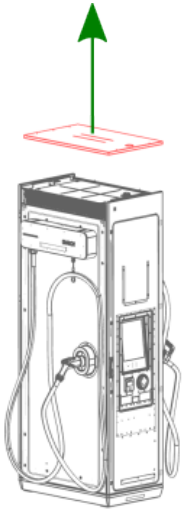
Before inserting the lifting rings, it is necessary to remove the roof.

Two people and two stepladders are required for this operation.

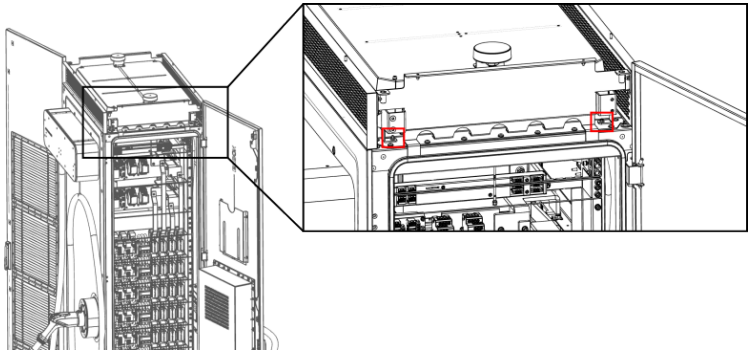
1. Open the front and the rear door (see Open the door of the EVBox Troniq Modular on page 40).
2. Remove the 4 M4 nuts (1) that hold the roof (2) and remove the roof itself.
   Tool: 7 mm wrench.



3. Remove the roof:

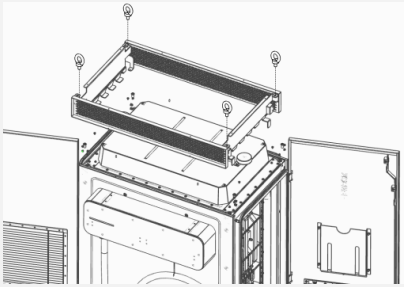


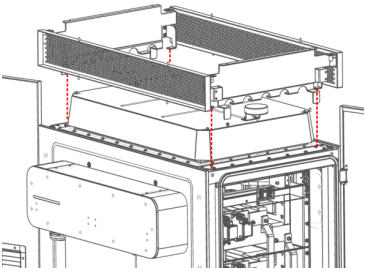
4. Remove the 4 M4 nuts that hold the roof support (front and rear side).
Tool: 7 mm wrench.



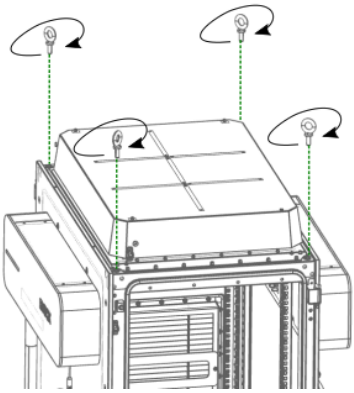
5. Remove the roof support.

Note:
The roof support can be handled with lifting rings (included):

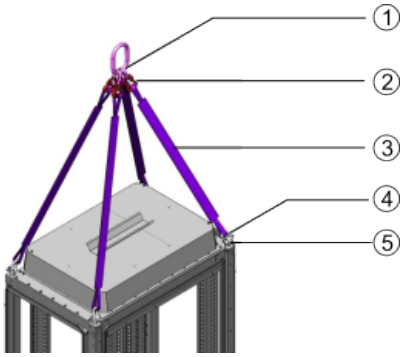




6. Screw in the 4 lifting rings (included):



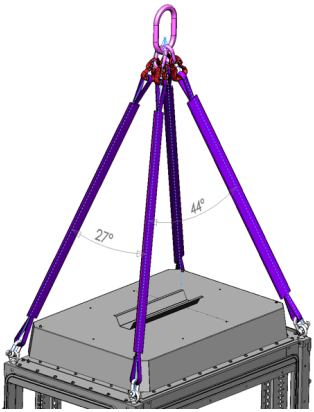
7. Install the hooks and slings:



Item	Description
1	Head link, 4 pieces (not included)

Item	Description
2	Connecting link for sling (not included)
3	Sling with two loops (at least 1 m) (not included)
4	Straight shackle or D-shaped (not included)
5	Male eyelet (lifting ring) M10 (1.5mm), internal diameter 25 mm (included).

8. ⚠ **CAUTION:**
Maintain the hoisting angle as below:



6. Product features

6.1. Product parts

Table 2. External view

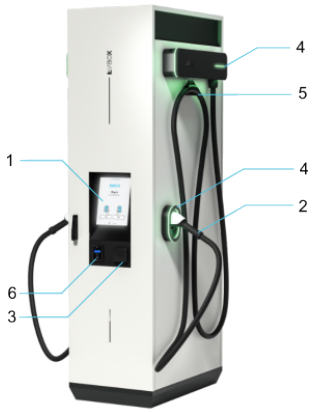
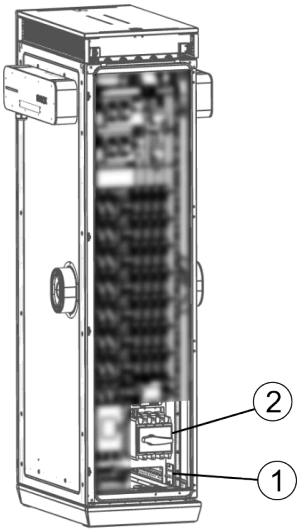
Illustration	Description
	1. 15" touchscreen 2. Charging cable (CCS2, CHAdeMO, depending on the configuration) 3. T2 outlet (depending on the configuration) 4. LED indicators 5. Auto-retractable system 6. Payment terminal (depending on the configuration)

Table 3. Internal view

Illustration	Description
	1. Protective Earth connection plate 2. Circuit breaker

Product type guide

EVBox Troniq Modular

DC 18-A B C-D E F-G H I

STATION	MODEL	CABLE (RIGHT SIDE)	CABLE (LEFT SIDE)	AC	POWER MODULES/ OUTPUT	BATTERIES	EMV PAYMENT	DC METER	COOLING	N/A
DC: DC Charger	**18:** Troniq Modular	**2:** CCS2 500 A dry **3:** CCS2 500 A cooled	**2:** CCS2 500 A dry **3:** CCS2 500 A cooled **5:** CHAdeMO 125 A	**1:** No AC socket **2:** AC socket (with AC MID meter)	**3:** 90 kW **4:** 120 kW **5:** 150 kW **6:** 180 kW **7:** 210 kW **8:** 240 kW	**1:** No batteries	**1:** Not included **2:** Payter Payment Terminal	**1:** Uncertified DC meter **3:** 2 x Eichrecht certified DC meters	**1:** No cooling	**1:** N/A

LEGEND:
Light blue: Will be available as an option in the future

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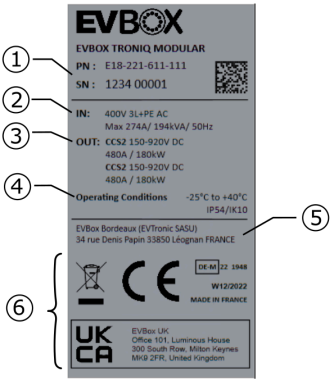
6.3. Nameplate

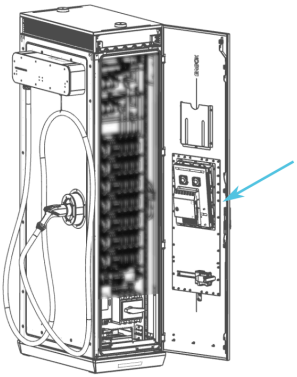
There are two nameplates on the product:

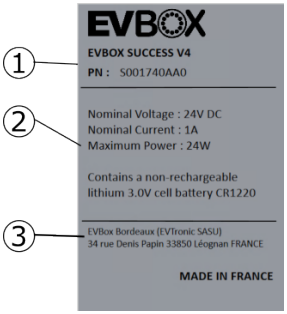
- Above the screen, inside the front door
- On the right side, at the bottom

Nameplate	Description
	1. Product number 2. Input power characteristics 3. Output power characteristics 4. Temperature operating conditions 5. Place of manufacture 6. Conformities

6.4. SUCCESS V4 screen - Nameplate

The SUCCESS V4 nameplate is located on the SUCCESS, behind the HMI cover.



Nameplate	Description
	1. Product number 2. Technical data 3. Place of product manufacture

7. Technical data

Electrical properties

Table 4. AC input

Technical data	Characteristics					
Voltage range	400 Vac +/- 10%					
Number of phases	3P + PE 3P + N + PE (with AC Socket option, DC 18-XX2-XXX-XXX products).					
Nominal input current without AC socket option	**M90**	**M120**	**M150**	**M180**	**M210**	**M240**
	139A	184A	229A	274A	320A	365A
Nominal input current with AC socket option[1]	**M90**	**M120**	**M150**	**M180**	**M210**	
	171A	216A	261A	306A	352A	
Maximum input current[2] without AC socket option	**M90**	**M120**	**M150**	**M180**	**M210**	**M240**
	162A	215A	268A	321A	374A	427A
Maximum input current[2] with AC socket option	**M90**	**M120**	**M150**	**M180**	**M210**	
	194A	247A	300	353	406A	
Power factor	> 0.99					

Technical data	Characteristics
Reactive power (generated / capacitive)	-10.1 kvar for 8 modules (240 kW) at 20°C
Peak efficiency	95%
Grounding system	TT or TN-S

[1]: Maximum 210 kW (7 power modules) with AC socket option (DC 18-XX2-XXX-XXX products).
[2]: Depends on the grid voltage.

Table 5. Standby power consumption (estimated values at 20°C)

Number of Power Module	Reactive Power (generated / capacitive)	Active power
3	- 3.5 kvar	129 W (+ 1 kW in heating mode)
4	- 4.0 kvar	141 W (+ 1 kW in heating mode)
5	- 5.0 kvar	154 W (+ 1 kW in heating mode)
6	- 6.0 kvar	166 W (+ 1 kW in heating mode)
7	- 7.0 kvar	178 W (+ 1 kW in heating mode)
8	- 8.0 kvar	190 W (+ 1 kW in heating mode)

Note:
Non contractual, subject to change.

Table 6. DC output

Technical data	Characteristics
Output power	Up to 240 kW (8 modules). Maximum 210 kW (7 power modules) with AC socket option (DC 18-XX2-XXX-XXX products).
Output power per module	30 kW
Output voltage range	150 Vdc - 920 Vdc
Output current range	Up to 500 A per DC output (80 A per power module)
Note:The power delivered by the charger depends on several factors, such as: • Vehicle batteries voltage • Vehicle batteries temperature • Vehicle state of charge • Ambient temperature	

Table 7. AC output

Technical data	Characteristics
Output power	22 kW maximum
Output voltage range	400 Vac +/-10%
Maximum output current	32 A single-phase 16 A three-phase
Metering	AC MID certified meter included with AC Type 2 Socket version

General specifications

Table 8. Charging modes

Technical data	Characteristics
Mode 4 (DC charging)	CCS2, up to 500 A / 920 Vdc and CHAdeMO, up to 125 A / 500 Vdc
Mode 3 (AC charging)	Type 2 socket (22 kW)

Table 9. Connector type

Technical data	Characteristics
Mode 4	• CCS2 500A dry (limited in time and temperature). • CCS2 500A cooled cable, optional • CHAdeMO 125 A
Mode 3	Type 2 socket (22 kW)

Table 10. Cable reach

Technical data	Characteristics
Mode 4	Cable Management activated: 5 m reach*
* Cable Reach: from the front of the charger to the end of the connector, 1 m height.	

Table 11. Structure and physical properties

Technical data	Characteristics
Enclosure material	Power coated steel
Enclosure ratings	IP54 / IK10
Operating temperature	-25°C...+40°C (+55°C with derating)
Storage temperature	-40°C...+70°C
Operating humidity	20%...95% relative humidity, non-condensing
Storage humidity	20...85% relative humidity, non-condensing
Cooling	• Forced ventilation for the charger • Air for the dry cables • Active cooling unit for the cooled cable version
Maximum installation height	2000 m

Technical data	Characteristics
Dimensions in mm (W x D x H)	• Floor space: 600 x 1050.2 x 2479 • Projected space: 866 x 1050.2 x 2479 mm 600 x 1050.2 mm, floor space (also taking into account cables connectors and cable management projected on the floor)
Packaging dimensions in mm (W x H x D)	960 x 2500 x 1200 Wooden box (+/- 20 mm)
Weight	680 kg - 240 kW
Weight, including packaging	780 kg - 240 kW
Colors	Body: Traffic white (RAL 9016) Other parts: Black grey (RAL7021), Jet Black (RAL9005)
Pollution degree	3
EMC classification	Environment B, according to 61000 series
Mechanical resistance	Medium (according to 61439-7)

Table 12. Connectivity

Technical data		Characteristics
Authorization		• Contactless reader, RFID/ NFC (ISO 14443, ISO 18092, ISO 15693, ISO 18000-3, Calypso, Mifare Ultralight C, -Classic, -Desfire) 9.67 dBµA/m @10 meters • App • Mac Adress
HMI	Screen size	15" anti-vandalism LCD color touchscreen
	Nominal voltage	24 Vdc
	Nominal current	1 A

Technical data		Characteristics
	Maximum power	24 W
Communication standard		4G/LTE 4G Modem, frequency band: 850 (22.99 dBm) / 900 (23.06 dBm) / 1800 (23.31 dBm) / 1900MHz (22.72 dBm), Ethernet
Communication protocol		OCPP 1.6J, ready for update to OCPP 2.0.1

Table 13. Conformities

Technical data	Characteristics
Conformities	CE, UKCA, EMC Directive 2014/30/EU, Low Voltage Directive 2014/35/EU Directive RED 2014/53/EU Directive RoHS 2011/65/EU

8. Prepare for installation

The following recommendations are intended as a guide to help you prepare for the installation of the EVBox Troniq Modular charging station.

8.1. Safety precautions

You must read and observe the Safety instructions on page 6 at the beginning of this manual before you install, service, or use the EVBox Troniq Modular charging station. The installer must ensure that the charging station is installed in accordance with the relevant country-specific standards and local regulations.

8.2. Plan installation

- Calculate the existing electrical load to determine the maximum operating current for the charging station installation.
- Calculate the distance from the local power supply panel to the charging station installation to find the voltage drop. Local regulations may apply and can vary depending upon the region or country.
- Obtain all necessary permits from the local authority that has jurisdiction.
- PE grounding connectors must be not spliced.
- Refer to local regulations, maximum current and voltage drop to select the conductor sizes.
- Use the correct tools and ensure sufficient material resources and protection measures.
- Make sure that there is good cellular reception where the charging station will be installed.
- Prepare the installation areas with the correct power wiring and data cabling.
- Prepare the upstream electric switchboard according to local regulations and the EVBox recommendations in Upstream requirements on page 38.

Ethernet network

To connect several EVBox Troniq Modular(for network sharing), it is necessary to install an Ethernet network.

8.3. Select location

The charger is intended for outdoor or indoor areas.

Position the charging station, where possible, in surroundings where it is not exposed to extreme sunlight and vulnerable to external damage.

The charger is intended for location in a non-restricted area.

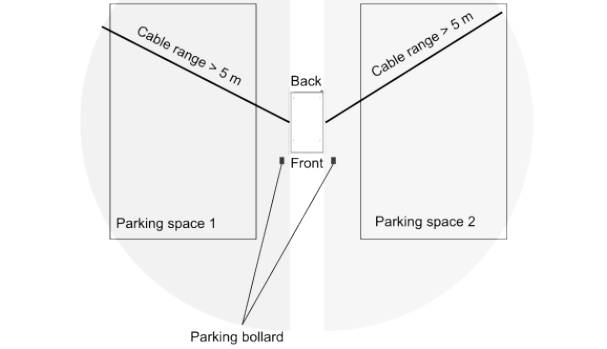
Note:
In locations with harsh weather conditions (high temperatures, snow, strong sun conditions,...), it is recommended to ensure additional protection such as canopy or roof protection.

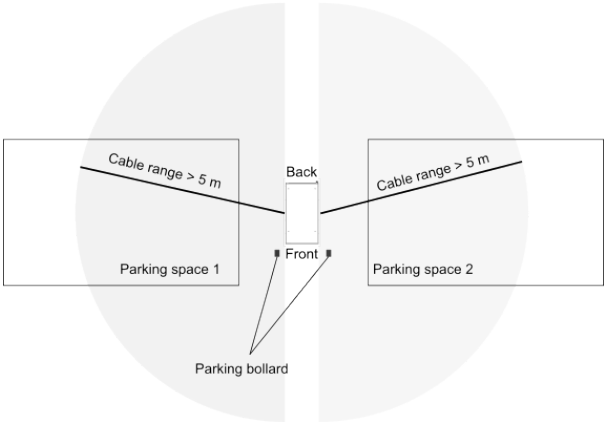
8.4. Parking space placement

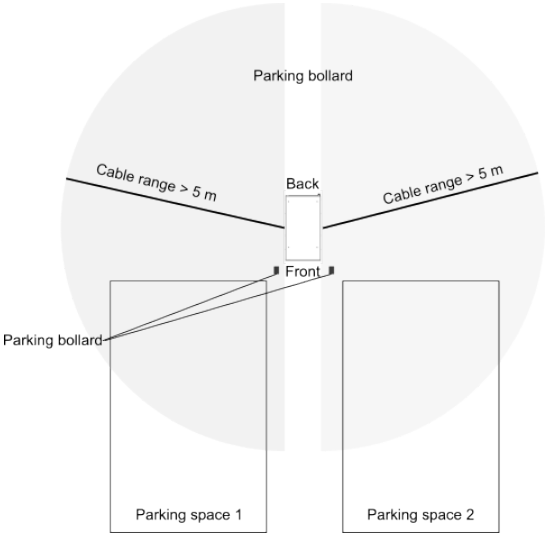
To achieve the maximum cable length, it is recommended to place the EVBox Troniq Modular as described below.

Note:
Leave adequate free space in front of the charging station to ensure that users can interact with the touchscreen and other interfaces safely and comfortably.

Note:
Leave at least 600 mm on both side of the charger in order to ensure the connector is accessible.







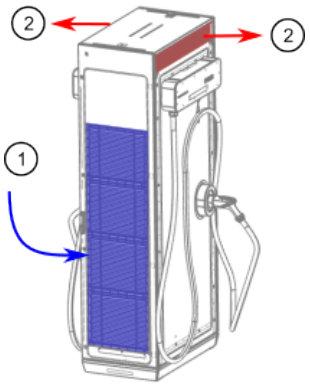
Note:
For people with reduced mobility (wheelchairs, etc.) see Disabled access on page 66. It is recommended to install the EVBox Troniq Modular on plain ground (no sidewalk).

Note:
Bollards should not interfere with the clearance around the charger (see Clearance on page 35).

8.5. Cooling

The air inlet is located at the back door of the charger and the air outlet is on the roof of the charger.

For indoor use, the room must have a ventilation exceeding 3000 m^3/h.

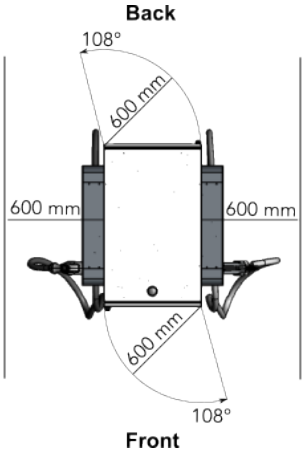


1. Air inlet
2. Air outlet

8.6. Clearance

The EVBox Troniq Modular requires the following space for cable handling by users and for maintenance operations.

Note:
As the ventilation outlet is located at the back of the charging station, the free space at the back must be ventilated accordingly.



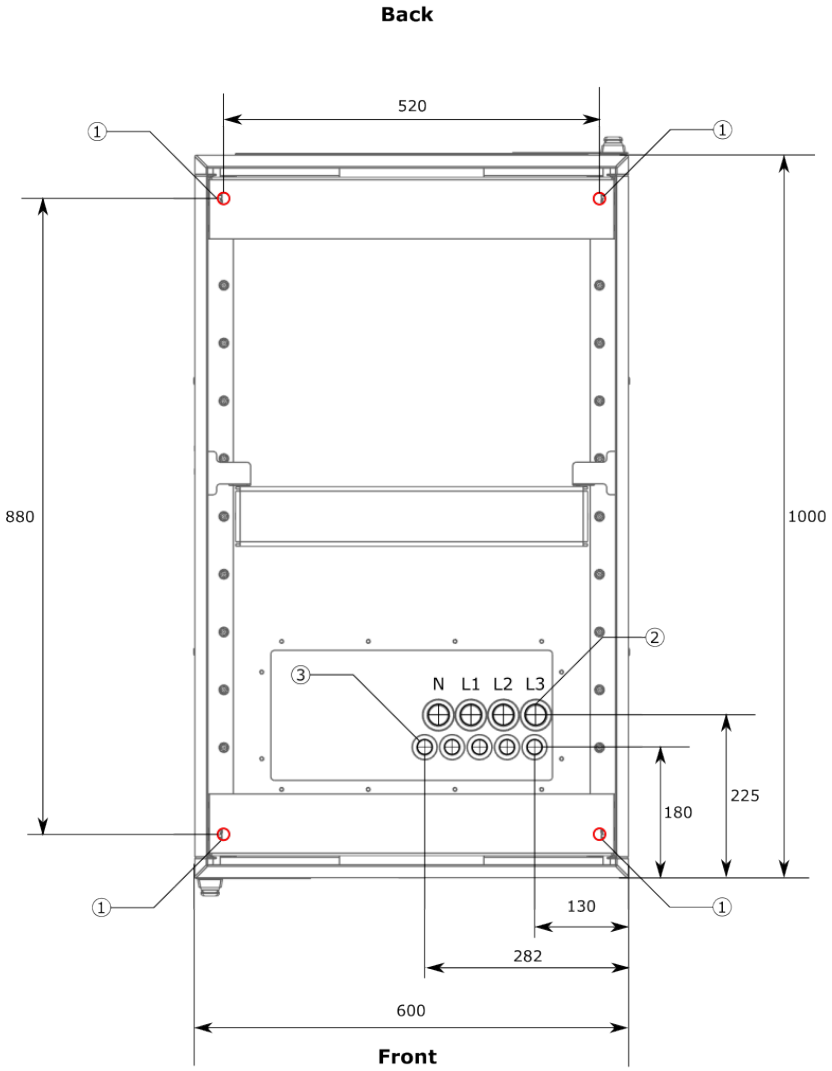
8.7. Foundations

Observe the following rules regarding the foundations:

- Foundations must be carried out in accordance with local regulations.
- Concrete characteristics must be calculated based on the technical data of the charging station.
- The concrete should be frost-proof.
- Thickness of the foundations must be calculated in accordance with the weight of the system and the installation site.
- The foundation must be flat and leveled.
- A slope deviation to the left/right or front/back may cause infiltration of water and damage the charging station.
- Foundations must be under the ground.
- Charger must be installed on the ground.

8.8. Implantation plan

Prepare the foundations according to the diagram below:



EVBox Troniq Modular: Top view

①: Fixation holes x 4. Diameter: 16 mm.

②: 4 grommets (3P + N) for power supply (neutral for AC socket option).

③: 2 grommets for protective earth, 2 grommets for Ethernet cables, 1 grommet for heater.

8.9. Route power supply cables

The cables come from the bottom of the charger through rubber grommets.

Note:

- Diameter of the cable is to be defined as per Plan installation on page 32.
- Only one cable per grommet is allowed.

Failure to adhere to these instructions will result in the ingress of water, dust, or worse—animals entering the charging station—thus leading to premature malfunction.

The size of the rubber grommets is defined as below:

- 4 grommets for power supply (3P + N); (Neutral for AC socket option only). Maximum diameter: 29 mm.
- 2 grommets for protective earth. Maximum diameter: 21 mm.
- 2 grommets for Ethernet cables. Maximum diameter: 21 mm.
- 1 grommet for the heater. Maximum diameter: 21 mm.

8.10. Protection against electric shock and short circuits

Protection against electric shock

The charging station contains the following devices to protect against electric shock:

- IMD (Insulation Monitoring Device). One on each outlet on CHAdeMO and CCS2.
- RCD (Residual Current Device) on 24 Vdc power supply
- Surge protector
- RCD (Residual Current Device) for AC option
- MCB (Miniature Circuit Breaker) for AC option

The following device is not included in the unit and must be installed in the switchboard upstream:

- Refer to local regulations, maximum current and voltage drop to select the device against electric shock in switchboard upstream.

Short circuit protection

The charging station contains the following devices to protect against short circuit:

- CCS2 and CHAdeMO outlet is protected by fuse.
- Each power converter is protected by 63A circuit breaker.
- 24 Vdc power supply is protected by circuit breaker.

8.11. DC Smart Charging

If the DC Smart Charging feature is used at the site to dynamically share the power loads between several EVBox DC Chargers, an Ethernet network must be installed to connect up the chargers.

Ethernet cables must be separated from high voltage cable by:

- A distance barrier of 5 cm,

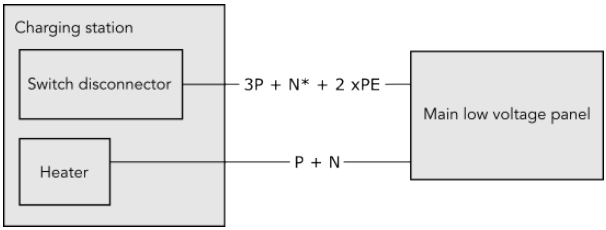
- Or, isolation barrier.

For Ethernet port location, see SUCCESS V4 - Ports on page 55.

8.12. Electrical requirements

8.12.1. Upstream requirements

Charging station must be supplied with power according to the diagram below:



Charging station

Electrical connection must be carried out by a professional electrician according to the local regulations.

Charging station must be connected to an electrical network with the following characteristics:

- 3 Phases (3P + PE +N*) (*Neutral required in case of AC socket).
- 400 Vac +/- 10%
- 50 Hz

The main switch disconnector, located upstream of the charger power supply, must be rated by the installer.

Refer to local regulations, maximum current and voltage drop to select the upstream protection.

Heater

The heating system must be connected independently to an electrical network with the following characteristics:

- 1P + N (Class II)
- 230 Vac +/- 10%
- 50 Hz
- Maximum input current: 5.2 A

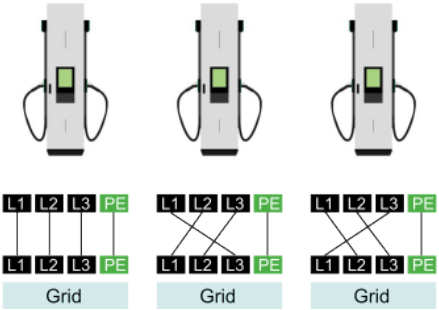
Refer to local regulations, maximum current and voltage drop to select the upstream protection.

Note:
A RCD 30mA type A is required as minimum.

8.12.2. Phase rotation - AC socket option only

This section does not apply to an EVBox Troniq Modular only equipped with DC plugs, which observes the balance of phase. It is required for the AC socket option (DC 18-XX2-XXX-XXX products), to help observe the grid phase balance with single phase and dual phase charging cars.

In the case multiple EVBox Troniq Modular stations with T2 plugs are installed in one site location, it is recommended to rotate the phase, as illustrated below, to avoid overloading the first phase.



8.12.3. Grounding instructions

Observe the following rules for the grounding instructions:

- Ground impedance must be lower than 20 ohms in dry conditions where the charging station is installed.
- The charger needs 2 separate PE connections (in case of one PE loss).

9. Install the EVBox Troniq Modular

9.1. Handling

WARNING:

- Always transport the charger in an upright position.
- Do not manipulate the charger when it is connected to the power supply.
- Do not use a crane type hoist that is unable to support the weight of the charger.
- The center of gravity of the charger is high, take care when handling.
- Do not place your hand underneath the charger or inside the feet through the side openings.
- The charger must be protected against overturning. This protection must be maintained until final mounting.

9.2. Open the door of the EVBox Troniq Modular

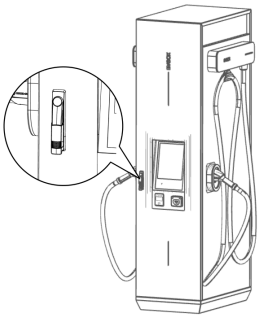
CAUTION:
When opening the door, pull the handle firmly and completely, to prevent the cylinder touching the door.

Failure to follow this instruction will result in visible damage to the product.

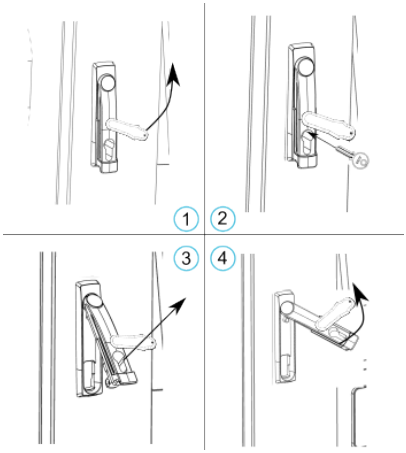
Note:
It is possible to replace the locking cylinder. Use only half cylinders 40 mm

Tool: door key (type 455).

Locate the handle.



Open the door:



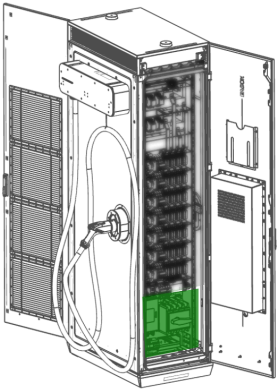
1. Turn the handle cover.
2. Use the key to open the lock.
3. Pull the handle firmly and completely, to prevent the cylinder touching the door.
4. Turn the handle clockwise while making sure the cylinder does not dent the paint.
5. Open the door.

9.3. Remove the lower plastic cover

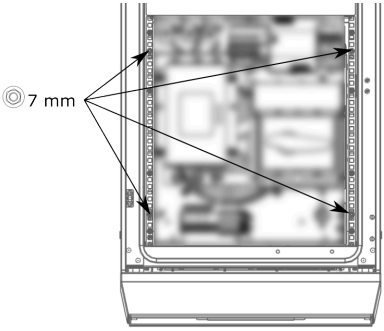
Tool:

- 7 mm wrench

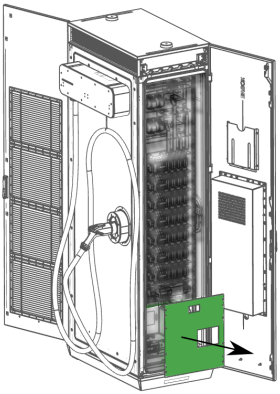
1. Locate the lower plastic cover.



2. Loosen the 4 M5 nuts that hold the plastic cover.



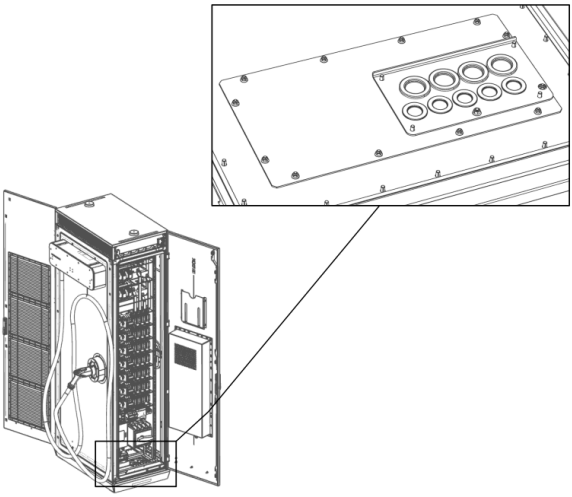
3. Remove the plastic cover.



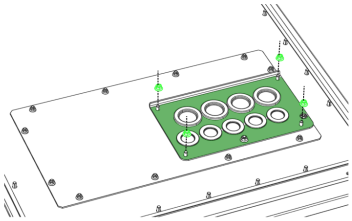
Note:
Store in place not exposed to the sun

9.4. Remove the bottom plate

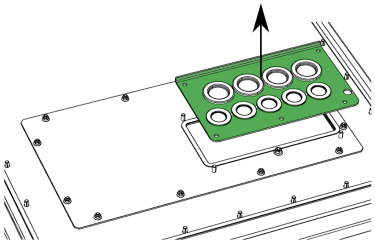
1. Open the front door.
2. Locate the bottom plate:



3. Remove the four M5 nuts that hold the bottom plate.
   Tool: 8 mm wrench



4. Remove the plate:

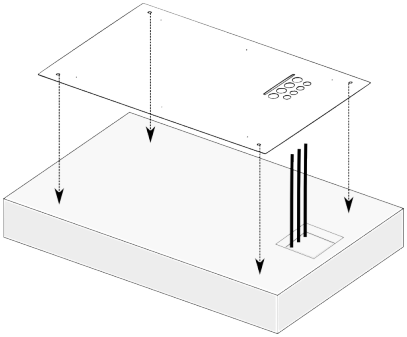


9.5. Placing

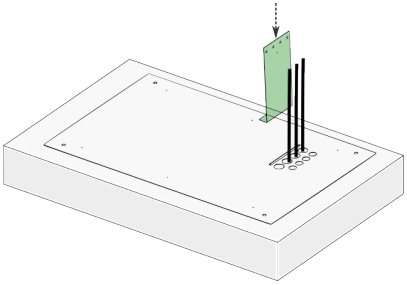
When the installation area is prepared, you can install and connect the charging station.

Note:
To properly position the plate, the cable ducts must be cut at floor level.

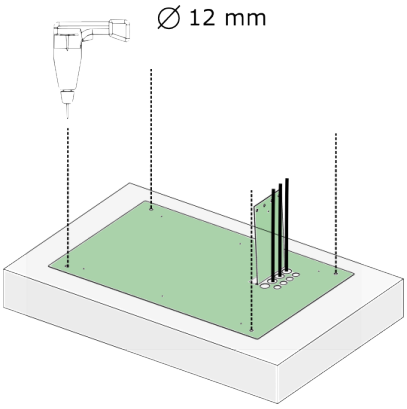
1. Use the cable bracket and the installation template removed in Packaging removal on page 14.
2. Place the installation template:



3. Place the cable bracket on the foundation:



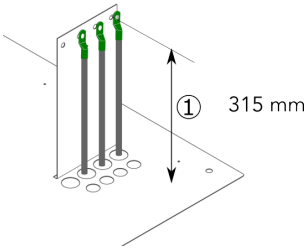
4. Drill the four holes according to the installation template:
   Drilling diameter: 12 mm.



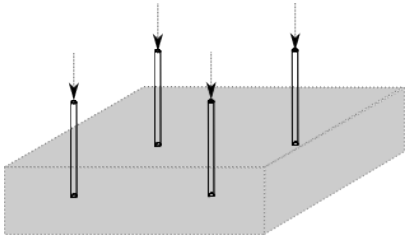
5. Prepare the cables (cutting, tubular lug, ...) according to the cable bracket template (1) (see Power terminal on page 49).

Note:
The holes in the cable bracket represent the height to fix the lugs fixation of the

disconnector.

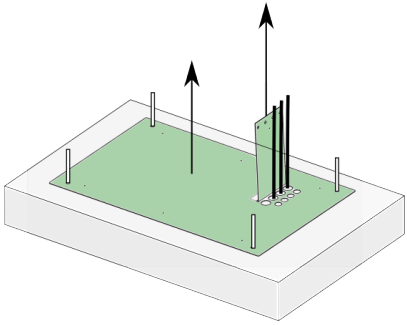


6. Insert the anchor bolts in the four holes.
7. Screw the four threaded rods in the anchor bolts.
   Recommended threaded rods: M12 stainless steel, length outside of the ground : between 30 mm and 60 mm.



8. Remove the cable bracket and installation support.

Note:
The installation support should be removed without any effort. This ensures that the anchor bolts are straight.

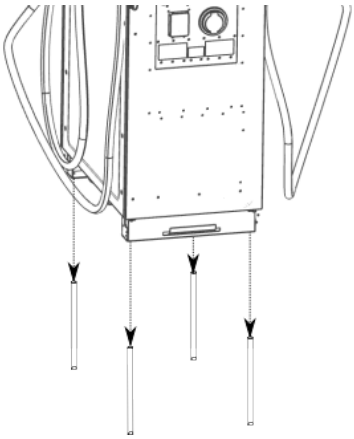


9. Maneuver the Troniq Modular to its location.
10. Place the charging station on the four threaded rods using the view through the opening on the side of the charger feet as a guide.
    Note: Check that the charging station is level.

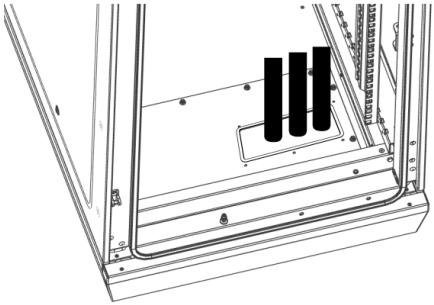
WARNING:
Heavy load, pinch point.

Do not place your hand underneath the charger or inside the feet through the side openings.

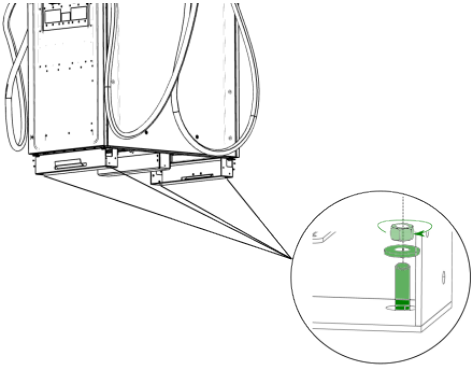
Failure to follow this instruction will result in serious injury.



Pass the cables through the opening:

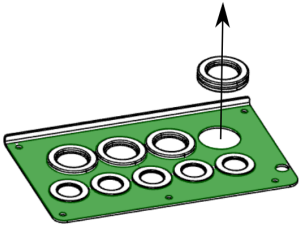


11. Affix four nuts and large washers (stainless steel recommended) to the exposed threaded rods and tighten until secure.

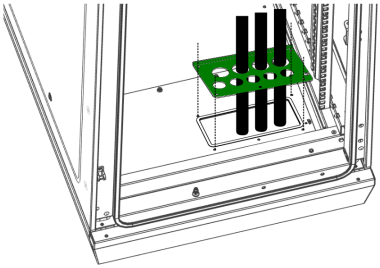


12. Tighten the four nuts according to the specified torque of the anchor bolts and nuts. Check that the charging station is stable.

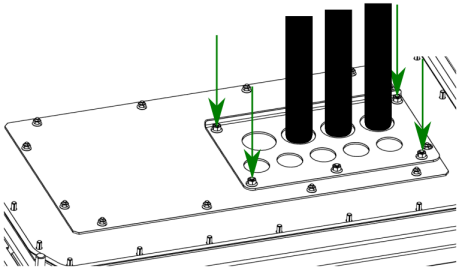
13. Remove the grommets from the bottom plate:



14. Pass the cables through the bottom plate holes:



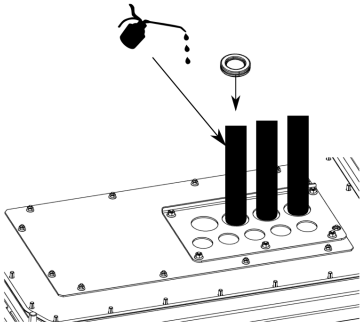
15. Tighten the four nuts on the bottom plate:



16. Cut the grommets according to the cable diameter:

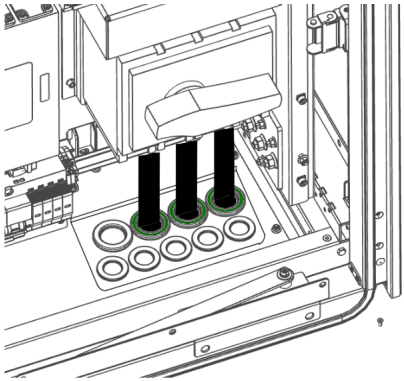
17. Insert the grommets through the cables:

Note:
Use lubricant (Yellow 77 type) to help insertion of the grommets.



18. Check that the rubber grommet is well inserted in the bottom plate.

CAUTION:
Failure to observe this instruction will result in the ingress of water, dust or animals entering the charging station.



1: Rubber grommet
2: Bottom plate

19. Remove the lifting rings from the roof.

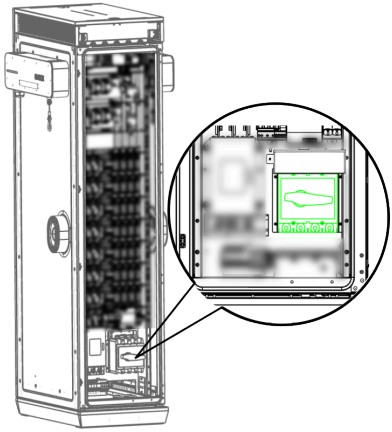
20. Put back the roof, follow the installation steps listed in reverse order (see Handling by crane on page 17).

9.6. Electrical connections

9.6.1. Power terminal

Power terminal location

The power terminal is located, when opening the front door, at the bottom of the charger.



Power connection

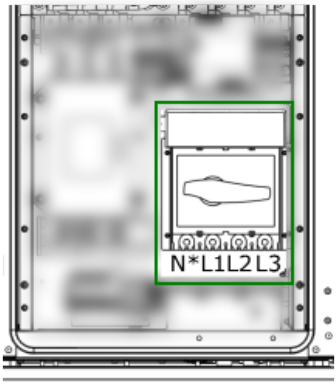
Terminal: N, L1, L2, L3

Table 14. Power connection

Conductor	Terminal	Size	Terminal diameter	Maximum terminal width	Tightening torque	Hex
Extra flexible multicore	Tubular lugs	Up to 300 mm² (600 kcmil)	10 mm (0.4 in.)	32 mm (1.25 in.)	50 Nm (442 lb-in)	16 mm

Recommended crimp lugs

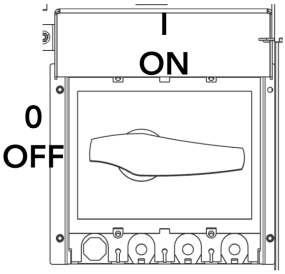
Reference	Number of pieces included in the set	Maximum cable size
LV432500	3	240 mm² 450 kcmil
LV432501	4	
LV432502	3	300 mm² 600 kcmil
LV432503	4	



Note:
Neutral is needed for AC socket only.

Switch state positioning

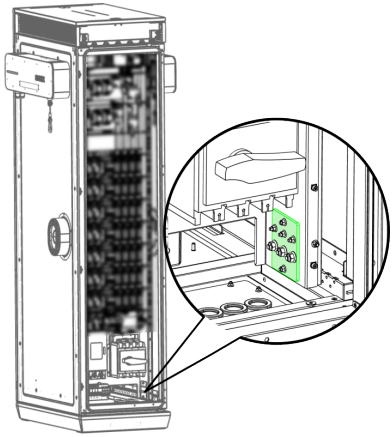
Below the positioning of the state (ON, OFF) of the switch



9.6.2. Protective earth terminal

Protective earth terminal location

The protective earth terminal is located, when opening the front door, at the bottom of the charger.



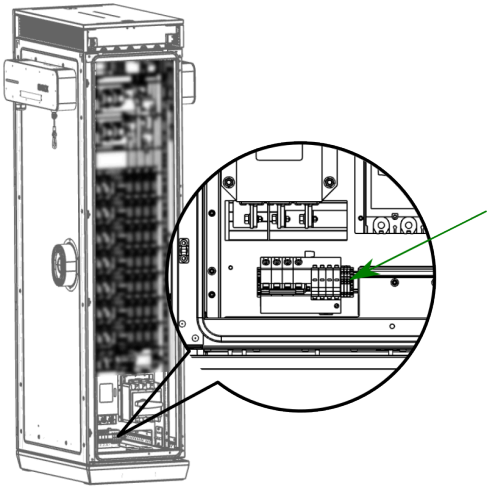
Protective earth connection

Terminal	Terminal diameter	Tightening torque	Hex
Tubular lugs	8 mm	14 Nm	13 mm

9.6.3. Heater terminal

Heater terminal location

The heater terminal is located, when opening the front door, at the bottom of the charger.



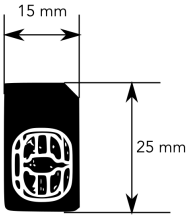
Heater connection

Legend	Description	Size
L	Phase	2.5 mm² max
N	Neutral	2.5 mm² max

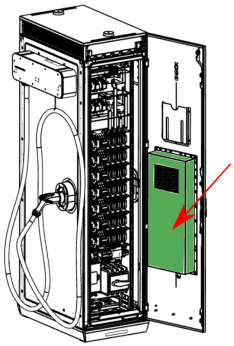
9.7. SUCCESS V4 - Connections

9.7.1. SIM card - Installation

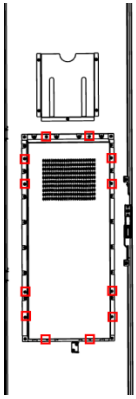
NOTE: only mini size SIM cards are supported (no pre-cutted SIM).



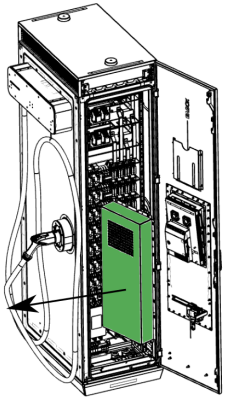
1. Open the front door.
2. Locate the SUCCESS cover:



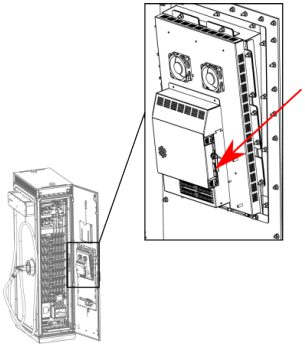
3. Remove the twelve M5 nuts that hold the cover:



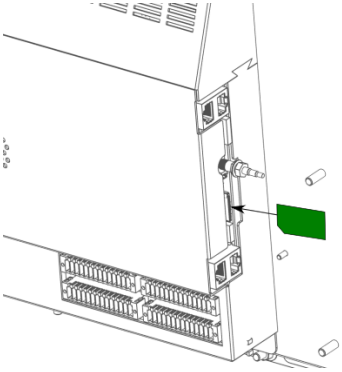
4. Remove the cover:



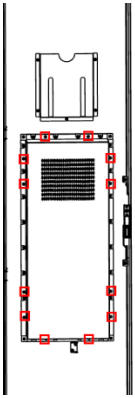
5. Locate the SIM slot:



6. Insert the SIM card:



7. Install the cover.
8. Screw the twelve M5 nuts that hold the cover:

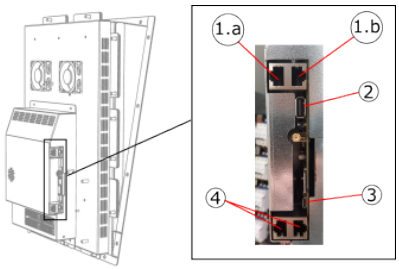


9.7.2. SUCCESS V4 - Ports

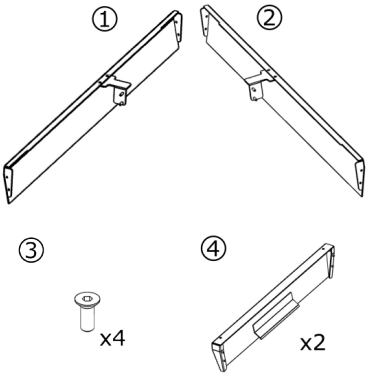
The SUCCESS V4 screen has the following communication ports.

Note:
To share network between EVBox Troniq Modular, it is necessary to use the Ethernet port 1.b

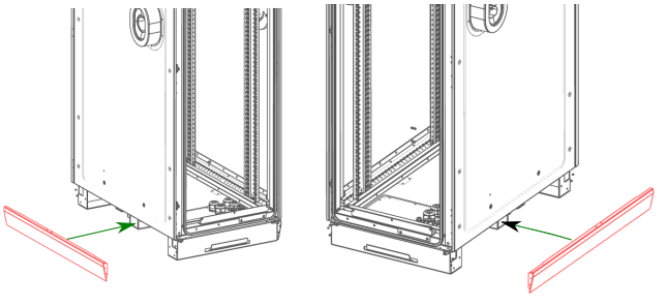
CAUTION:
Do not use the Ethernet switch located at the bottom of the door.

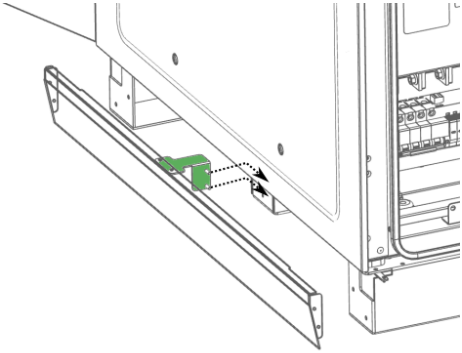
Legend	Description
	1.a. **Ethernet**: RJ45 port used for Ethernet access. For internal connection. 1.b. **Ethernet**: RJ45 port used for external communication. This port has to be used for network sharing between EVBox Troniq Modular. 2. **USB Type A**: used to connect an USB key for firmware update, or to connect another module. 3. **Micro USB**: Used for programming. 4. **CAN**: 2 RJ45 ports used for CAN communication between boards.

9.8. Install the plinths

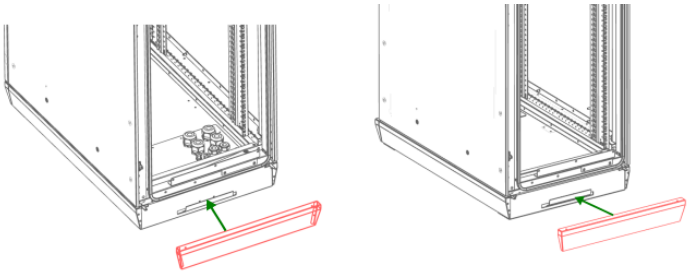
Illustration	Description
	1. Left side plinths 2. Right side plinths 3. FHC 4. Front and rear plinths

1. Place the side plinths at the bottom of the Troniq Modular.

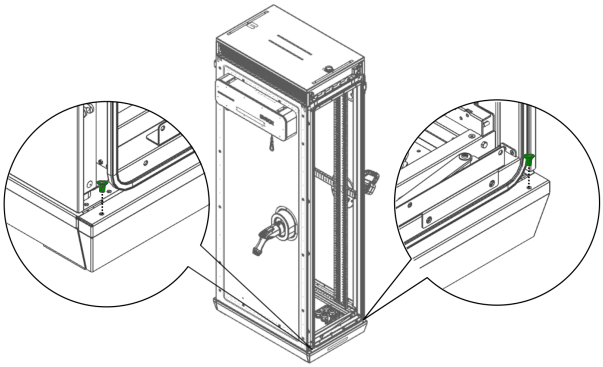




2. Place the front and back plinths.



3. Screw the 2 x FHC M3 screws to hold the front and back plinths.



9.9. Installation report

Once the installation is completed, fill the Installation report document (see EVBox Partner Portal).

10. Commissioning

To start the charging station, follow the commissioning report (see EVBox Partner Portal).

10.1. Danger: risk of electric shock

DANGER:
Risk of electric shock.

Even if SW1 is OFF, power supply is still present on the charger. Before servicing, switch off the power at the main breaker.

The heater is supplied by an independent power supply. Before servicing, switch off the power at the main breaker.

WARNING:
Hazardous voltages

Before servicing:

Electrical charge may be stored for up to 5 min after switching off!.

Discharge and make sure it is voltage-free.

Note:
The unit must be properly assembled in accordance with the assembly instructions.

11. Use the EVBox Troniq Modular

The charger can be used by ordinary people (no special qualification or training is needed).

The owner of the charging station shall provide to the customer with all the procedure, security and warning related information.

The user interface description is described in the *D002625 EVBox DC products software user guide* (see EVBox Partner Portal).

WARNING:
Risk of electric shock:

- Do not operate the charging station if it is physically damaged or if the charging cable has cracks, excessive wear, or other visible damage. Contact EVBox or your distributor if you suspect that the charging station is damaged.
- Do not direct powerful jets of water toward or onto the charging station. Never operate it with wet hands. Do not put the EV charging plug into any liquid.
- Do not place fingers or other objects inside the charging port or plug port.
- Read the user instructions supplied with your EVBox charging station and the User Manual for your electric vehicle before charging.
- Make sure that the charging cable cannot become damaged (kinked, jammed, or driven over) and that the plug(s) do not come into contact with heat sources, dirt, or water.
- When the cable is connected on the charging station, do not leave the cable lying around on the floor.

11.1. Charger and LED status

LED color	What it means	What to do
 LED is green	EVBox Troniq Modular is ready for use.	• Activate the touchscreen. • Select the charging cable to use. • Select the payment method (for example, charge card or QR code). • Extend the selected charging cable and plug it into the vehicle.
 LED is blue	EVBox Troniq Modular is charging the vehicle.	• Charging can be stopped at any time. • Wait until the vehicle has been charged.

LED color	What it means	What to do
 LED is red	The connector is unavailable.	• Contact your local support.

12. Decommissioning

Remove and dispose of the charging station in accordance with applicable local disposal regulations.

DANGER: Risk of electric shock

Before the charging station is removed, switch off all power at the power supply cabinet. Secure the power supply cabinet and put up warning signs to prevent accidental supply of power.

To remove the EVBox Troniq Modular station, follow the installation steps listed above in reverse order (see Install the EVBox Troniq Modular on page 40).

Dispose of the charging station in a responsible manner.

	Do not dispose of this charging station in household waste. Instead, dispose of this charging station at a local collection point for electric/electronic devices in order to enable recycling and thus avoid negative and hazardous environmental impact. Ask your city or local authorities for the address of your local facility.
	Recycling materials saves raw materials and energy, making a major contribution to conservation of the environment.

13. Preventive maintenance

For safe operation of the charger and to ensure a continuous and adequate level of service for users, regular maintenance and control of the equipment is required.

In addition to these regular maintenance operations, in case a fault or suspected fault, a corrective maintenance operation must be performed.

These maintenance operations are described:

- In the preventive maintenance plan attached to this document.
- In the maintenance manual and its annexes.

This documentation as well as the complementary technical notes and software updates are regularly published and must be followed. The actions concerned must be performed by an EVBox-approved service provider..

The owner of the EVBox Troniq Modular is responsible for the condition of the charging station, thus the laws concerning the safety of persons, animals, and property must be observed, as well as the installation regulations in force in the country of use.

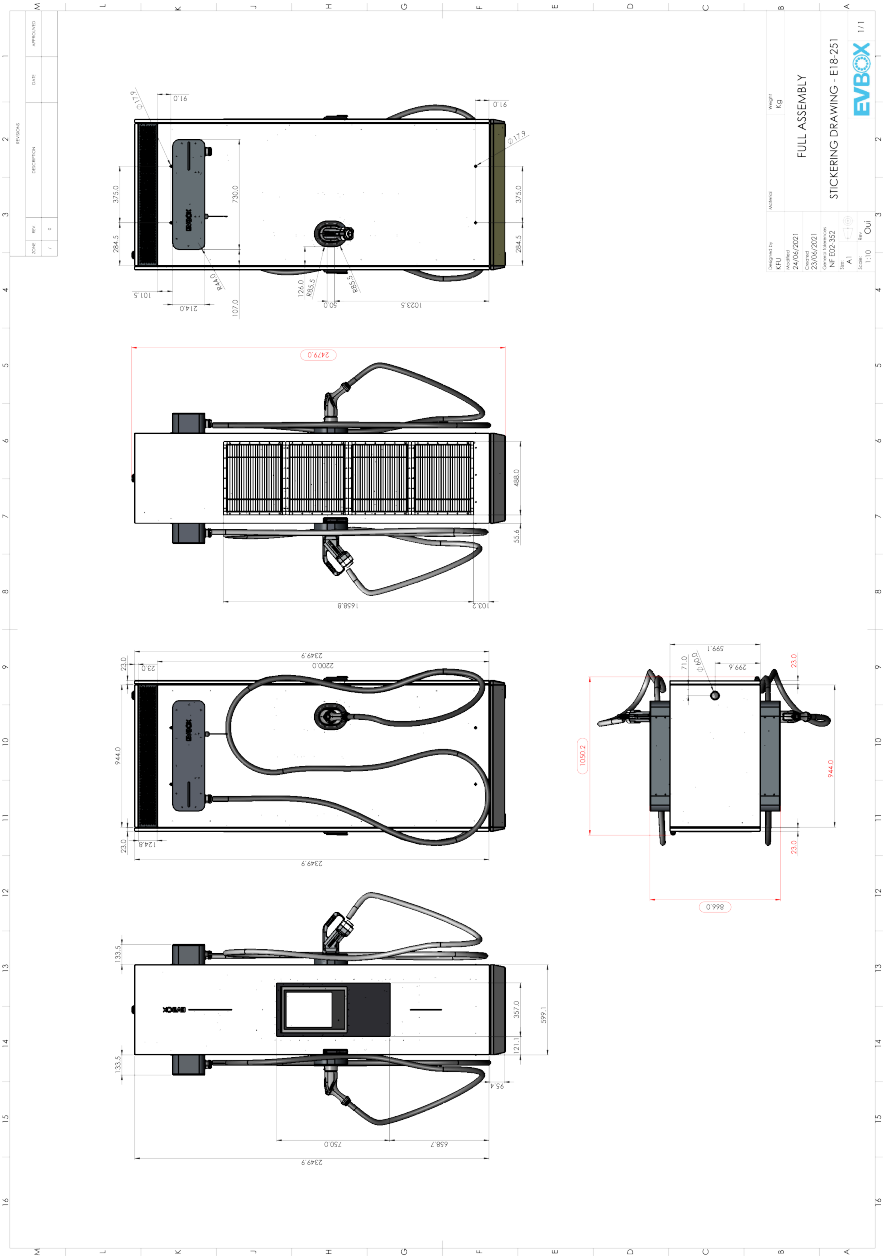
These documents can be found on the EVBox partner portal (see EVBox Partner Portal).

14. Appendix

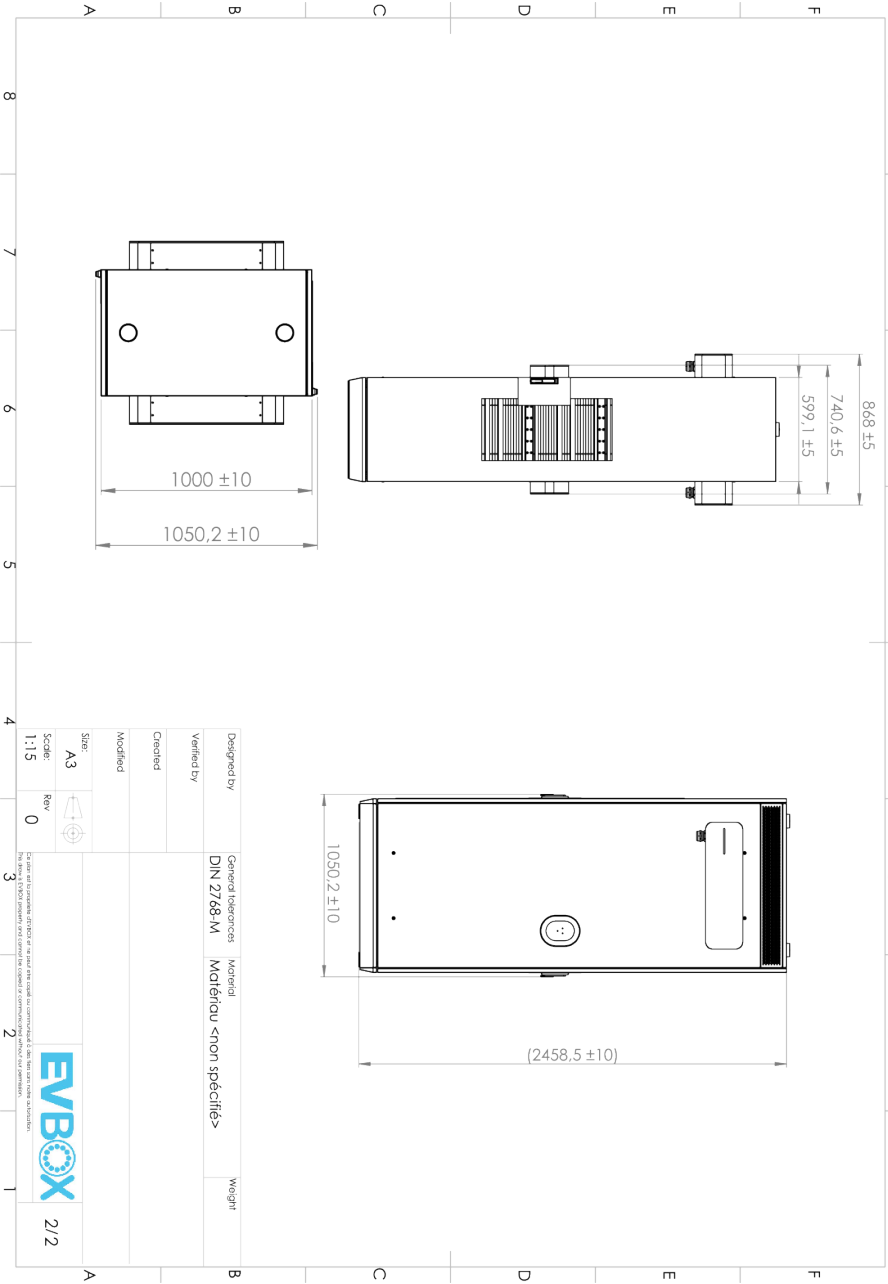
14.1. Glossary

Abbreviations and acronyms	Meaning
AC	Alternating Current
DC	Direct Current
EMC	Electromagnetic Compatibility
EV	Electric Vehicle
HMI	Human Machine Interface
IMD	Isolation Monitoring Device
LED	Light Emitting Diode
MCB	Miniature Circuit Breaker
NFC	Near Field Communication
PE	Protective Earth
RCD	Residual Current Device
RFID	Radio Frequency Identification

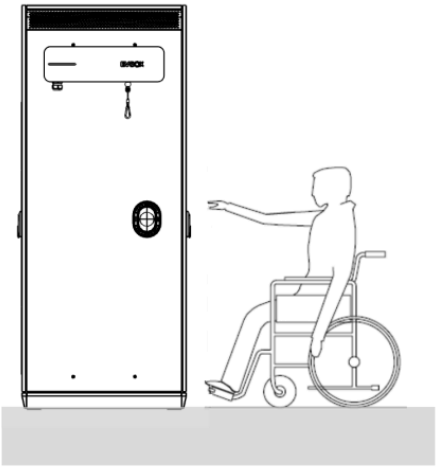
14.2. EVBox Troniq Modular - Dimensions

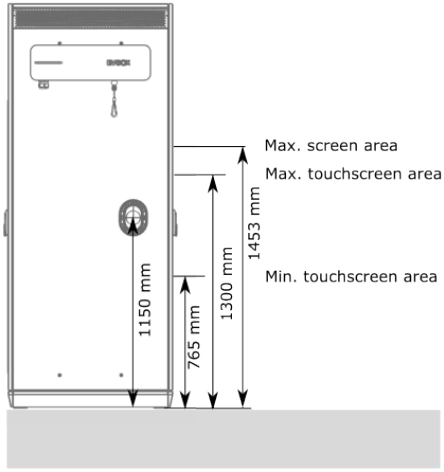

FULL ASSEMBLY
STICKERING DRAWING - E18 251
EVBOX

EN


868 ±5
740,6 ±5
599,1 ±5
1000 ±10
1050,2 ±10
1050,2 ±10
(2458,5 ±10)
Designed by
Verified by
Created
Modified
General tolerances
DIN 2768-M
Material
Matériau <non spécifié>
Weight
Size
A3
Scale:
1:15
Rev
0
2/2

14.3. Disabled access





14.4. Preventive maintenance plan

D002378AA6

EVBox Troniq Modular preventive maintenance plan

EVBox Troniq Modular												
Module	Frequency	months	6	12	18	24	30	36	42	48	54	60
Base	Charger body		I	I	I	I	I	I	I	I	I	I
	Inside the charger			I		I		I		I		I
	Screen external face		I	I	I	I	I	I	I	I	I	I
	CCS cable and plug		I	I	I	I	I	I	I	I	I	I
	CHAdeMO cable and plug		I	I	I	I	I	I	I	I	I	I
	Type2 socket*		I	I	I	I	I	I	I	I	I	I
	Payter payment terminal*											
	CHAdeMO / CCS cable retriever			I / C		I / C		I/C		I/C		I/C
	Foam filters		I	I / R	I	I / R	I	I / R	I	I / R	I	I / R
	Cables (cable ducts, connectors, rust, heating)		I	I	I	I	I	I	I	I	I	I
Type 2*	Type2 output socket power terminals			T		T		T		T		T
Power Module	Power module fans			C		C		C		C		C
Input box	RCD / Surge arrestor / Main AC switch disconnector		I	I / T	I	I / T	I	I / T	I	I / T	I	I / T
	AC EMC filter			T		T		T		T		T
	Input voltage			M		M		M		M		M
	Earth resistance			M		M		M		M		M
	24 Vdc terminal blocks			I / T		I / T		I / T		I / T		I / T
AC Rack*	RCD / Circuit breaker		I	I / T	I	I / T	I	I / T	I	I / T	I	I / T
Switchgear	MCB		I	I / T	I	I / T	I	I / T	I	I / T	I	I / T
	Switchgear power terminals			T		T		T		T		T
	Contactor switchgear			T		T		T		T		T
Output box	DC output cable terminals			T		T		T		T		T
	DC EMC filter			T		T		T		T		T
	DC fuse			R		R		R		R		R
HMI	SUCCESS V4 module fan			I/C		I/C		I/C		I/C		I/C
	Software			I		I		I		I		I
	Network			M		M		M		M		M

Note: maintenance cycle restarts after 60 months

I : Inspect (Check, clean, tighten, change or update if necessary)
R : Replace
C : Clean
T : Tighten
P : Purge
M : Measure
CS : CANSpy
*: If the option is present

15. Disclaimer

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