CTEK

USER MANUAL

CHARGESTORM® CONNECTED 2

*MULTILINGUAL
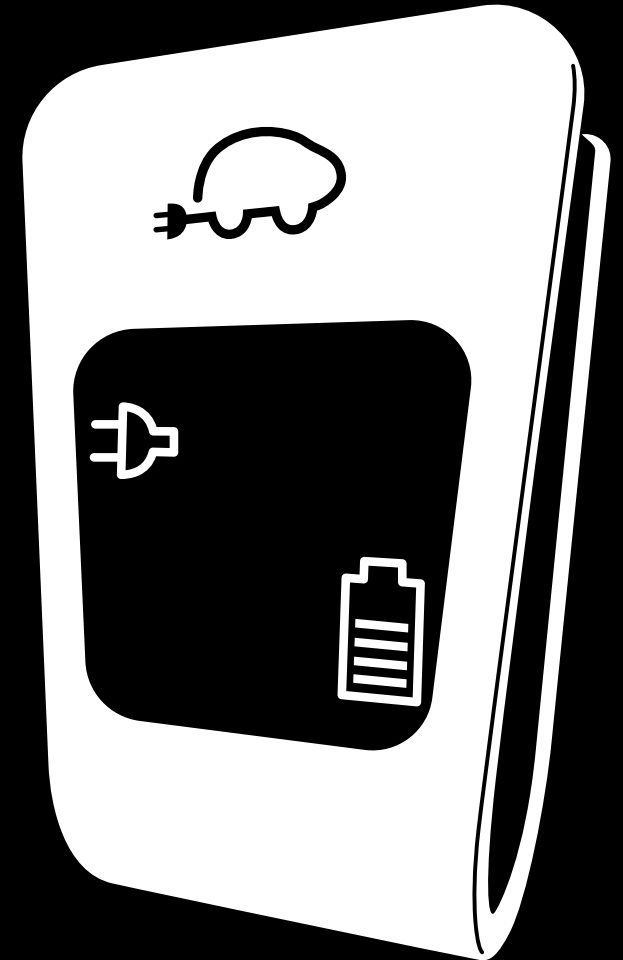MANUAL*

Content

CHARGESTORM® CONNECTED

Product description

CHARGESTORM® CONNECTED is a multi usage station for electrical vehicles.
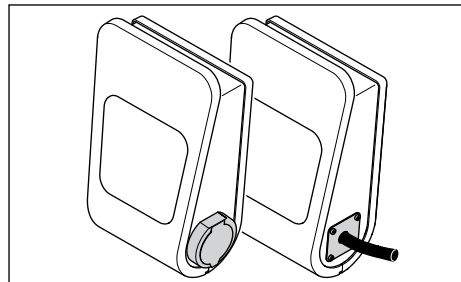
The charging station comes in several variants, such as for different output power and number of outlets. For a complete list of article numbers, download datasheet at www.ctekmobility.com.

NOTE: Refer to the top of the charging station for model information.

CHARGESTORM® CONNECTED 2 is an improved and updated version of our advanced EV charger with a range of functions and built in safety features. It has a powerful charge controller, which can handle dual type 2 outlets/charging cables and offers load balancing support through NANOGRID™.

Overheating protection

At high temperatures the charging station's algorithm will determine the optional current. This reduces the risk of overheating and damaging the charging station without preventing the use of the device.

Intended use

This charging station is intended for wall-mounted or pole-mounted use.
The charging station is intended for both restricted and non-restricted locations.

In the box
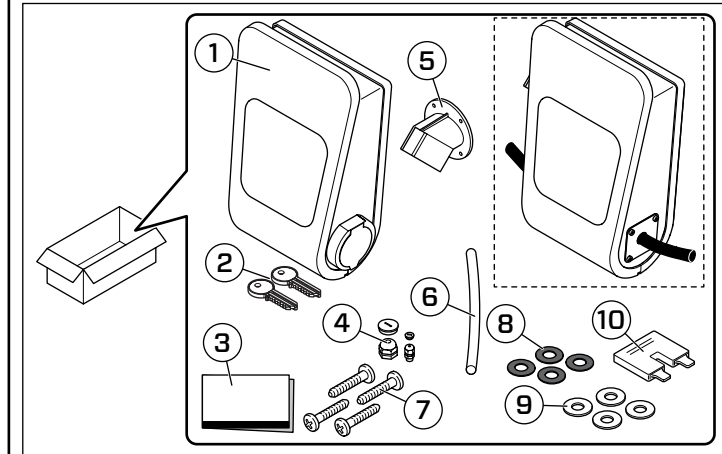
1. The charging station CHARGESTORM® CONNECTED.
2. Two keys.
3. User and installation instructions.
4. Cover for cable inlet and cable glands (M25 and M12).
5. Holder for charging connector (for variants with fixed cable).
6. Insulation tube.
7. Four mounting screws.
8. Four rubber gaskets.
9. Four metal gaskets
10. Jumper (for variants with one phase)

Overview
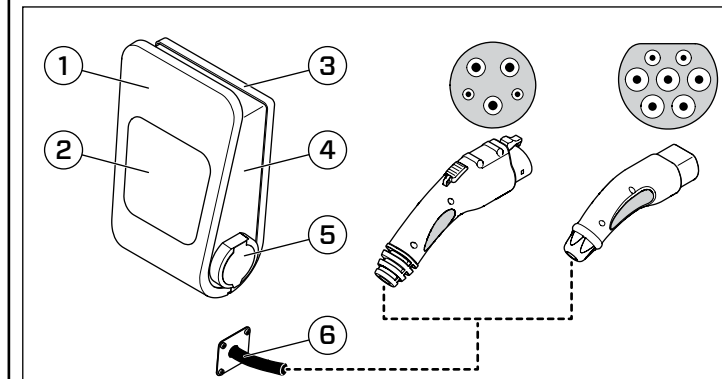
1. Front panel.
2. Display with charging status symbols.

3. Back cover.
4. Technical box.
5. Electrical Vehicle outlet.
6. Electrical Vehicle outlet (fixed cable).

Status symbols

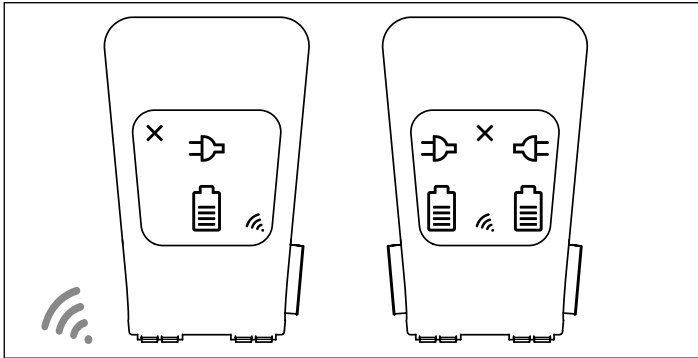| SYMBOL	COLOR	MODE	EXPLANATION
		Open	RFID symbol not active.
	Solid green	RFID	Waiting for RFID tag.
	Flashing Yellow	RFID	Authentication in progress. Please wait!
	Flashing Green	RFID	RFID tag approved. Charging will now start.
	Flashing red once	RFID	RFID tag access denied (user not authorized for charging).
	Solid green	RFID/ Open	Available and ready for charging.
	Flashing green	RFID	Waiting for cable connection or authentication.
	Solid Blue	RFID/ Open	Vehicle connected but not charging (for example, the vehicle is fully charged or the charging session is paused).
	Flashing Blue	RFID/ Open	Charging in progress.

SYMBOL	COLOR	MODE	EXPLANATION
✕	Solid Red	RFID/ Open	Alarm active. Most likely a fuse has tripped. Open the technical box and reset the fuse. Outlet has a temporary fault. The fault could be one of the following: • Time limit for authentication reached. • PP-signal cannot be read from cable (Only applicable for type 2 outlet). • Outlet motor could not lock cable.
	Solid Blue	-	The charging station has connected to cloud backend. Only displayed during boot up. The flashing will take place for 5 seconds.
	Solid Red	RFID/ Open	The charging station has failed to connect to the cloud backend during start up. Only displayed during boot up.

NOTE: If the charging station has no active symbols, the charging station is inactive. This may be because it has been configured in that way, because the charging station is restarting, or because the charging station has been deactivated for planned maintenance.

To charge the vehicle

Open access & RFID access
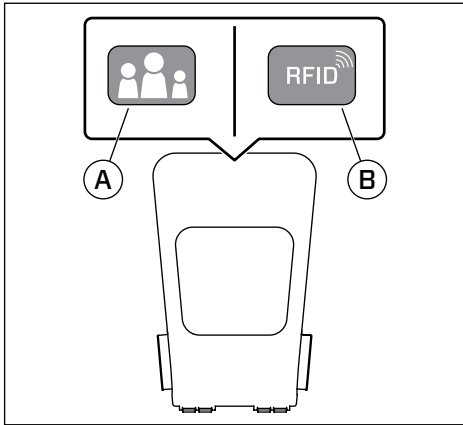
The charging station can operate in two different authentication modes, open access (A) and RFID access (B). Open access means that the charging starts immediately when the vehicle is connected to the charging station. RFID access means that the charging does not start until a RFID tag has been used for authentication. Some operators also offers additional authentication, such as a mobile app.

NOTE: There are many different RFID formats. Contact CTEK E-Mobility if your RFID tags are not original CTEK E-Mobility RFID tags to make sure that your RFID tags are compatible with the charging station. The supported RFID standard is ISO1443A/Mifare.

To connect CHARGESTORM® CONNECTED to the vehicle
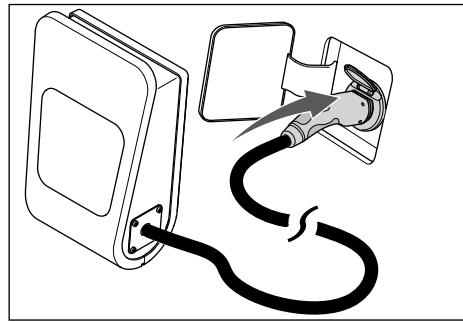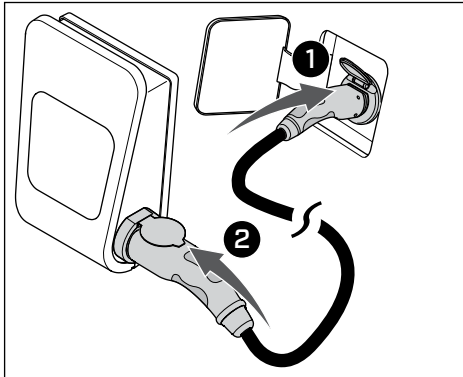
To start charging with open access
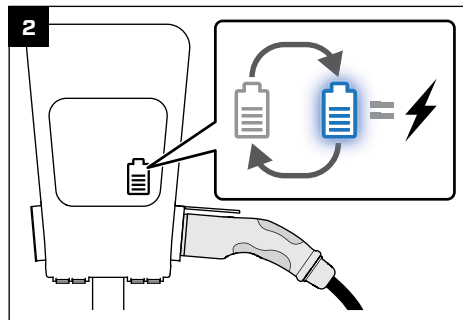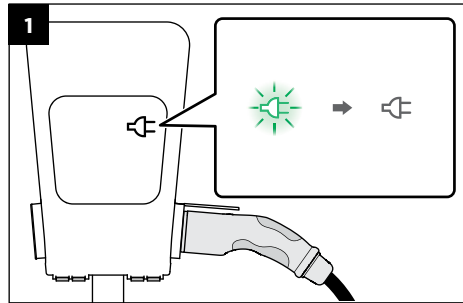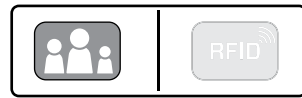
To start charging with RFID access
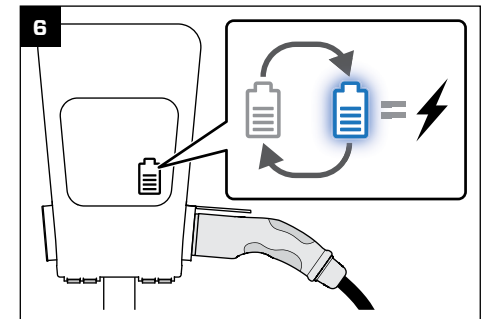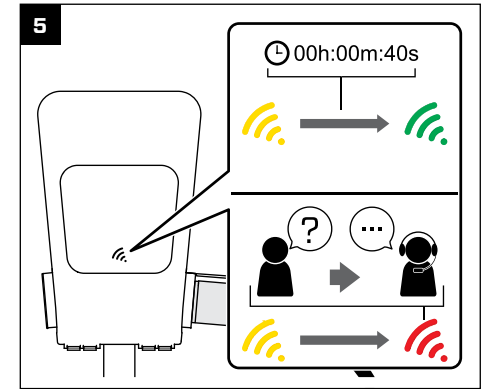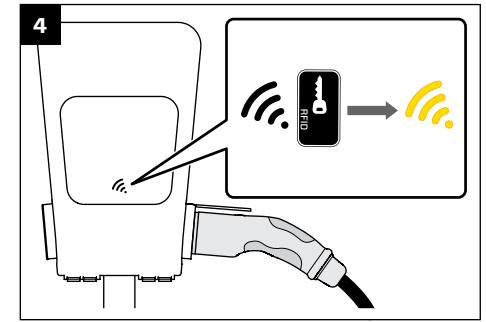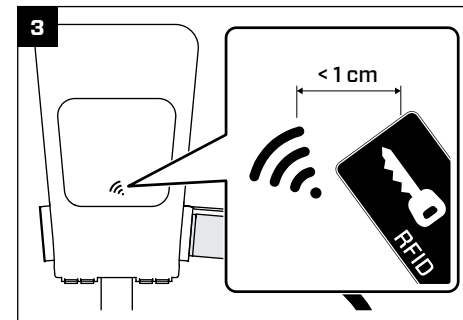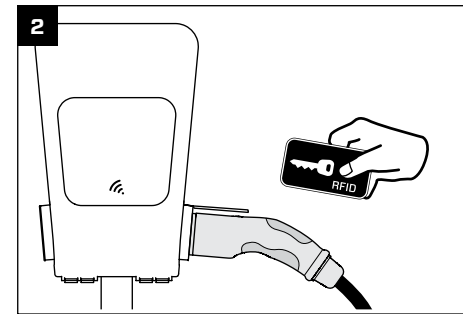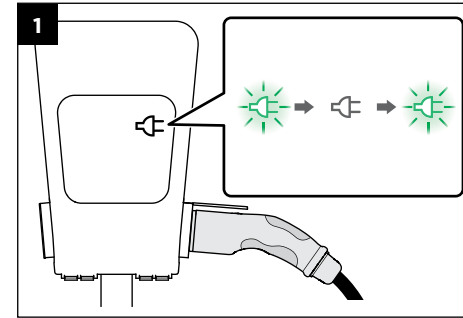
Installation

Introduction

This part of the instructions shows how to install the charging station CHARGESTORM® CONNECTED.

Safety

- Only an accredited electrician is allowed to perform the installation described in this document.
- Read and obey the instructions in this document before installation and operation of the product.
- Installation must fulfill local safety regulations.
- Do not use adaptors or conversion adapters with this product, according to IEC61851 standard requirements.
- This charging station does not have ventilated charging.
- Make sure the cables in the charging station are not loose due to vibrations during transport. If any cables are loose, reconnect the cables and tighten the screws.
- The installation is recommended to be carried out by two persons.
- Use safety shoes during installation.

Tools
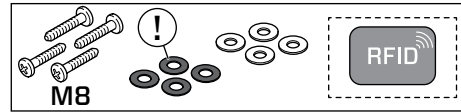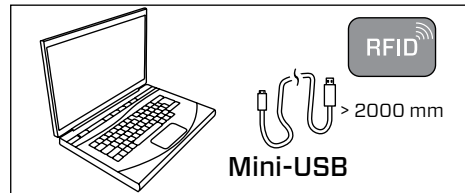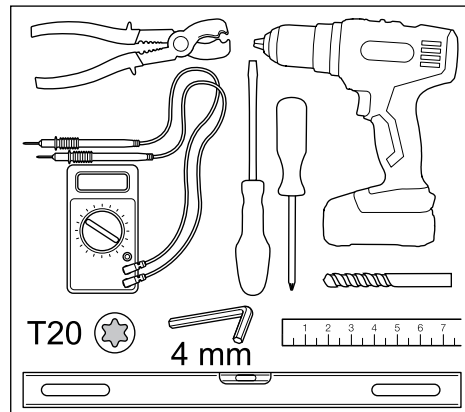
- Mifare Classic/IEC 14443 Type A and compatible RFID tag (in case RFID shall be used).
- Computer/Laptop (OS: Linux or OSX is recommended, Windows 10 requires USB driver installation).

Optional equipment
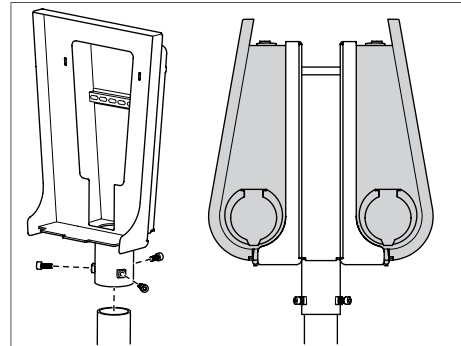
- Pole mount kit for a pole diameter of 60 mm. Article number 920-00010 (only if added).
- Pole mount kit for two boxes, to enable maximum four EV connectors from one pole. Article number 922-00018.

To check before installation

Do the checks that follow before you do the cable installation.

1. Avoid installation of the EV charger in direct sunlight. If the product is installed in direct sunlight, symbol visibility is decreased and the temperature of the product increases. This will trigger the overheating protection and limiting the charging current.
2. Decide if the unit should be installed outdoors or indoors.

   a   For outdoor installation, the power cable and network cable are recommended to be installed from below to prevent water from entering the technical box from the top.
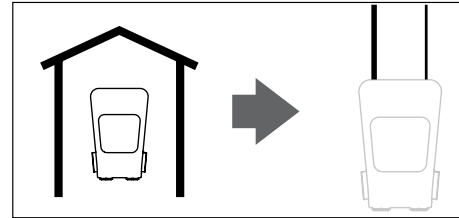
   b.   For indoor installation, the power cable and network cables can be installed either from the top or from the bottom of the technical box.
   NOTE: For installations with a power cable diameter greater that 17 mm, the power cable must be installed from below.

To prepare the location for installation

1. Decide mounting position of the charging station.

   a.   Make sure that there is enough space available for normal operation.
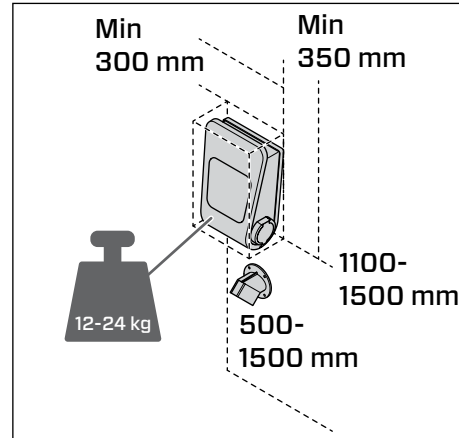
   b.   For installation on a wall, make sure that the wall material is suitable for mounting of the box. The wall must withstand the weight of the charging station.
   c.   For installation on a pole, refer to the manual for the pole mount kit.

To install the charging station on a wall
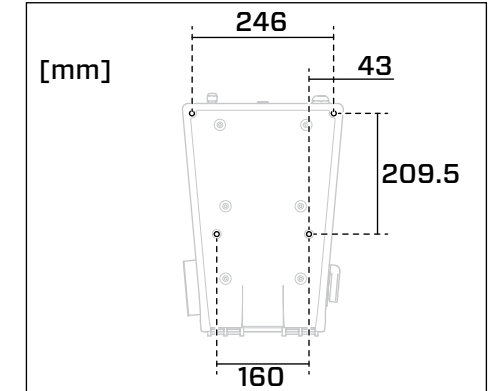
1. Locate the four screw holes in the back cover.
2. Drill four holes in the wall that align with the holes in the back cover.
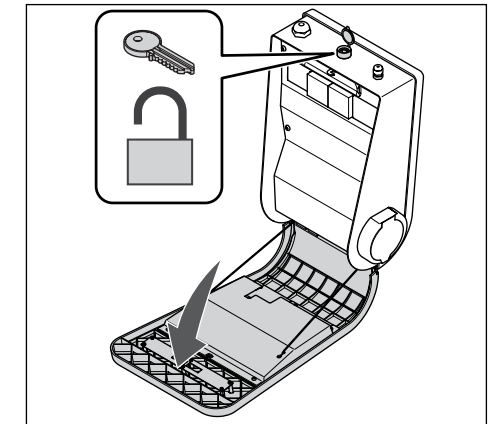
3. Unlock and open the technical box with the key.
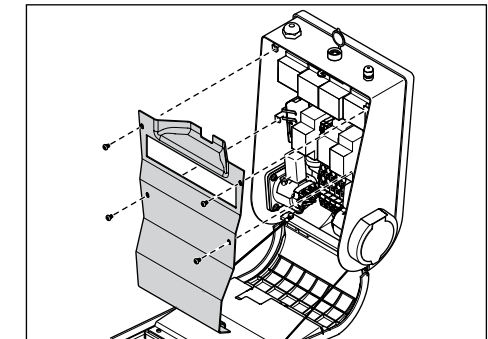
4. Remove the protection cover.
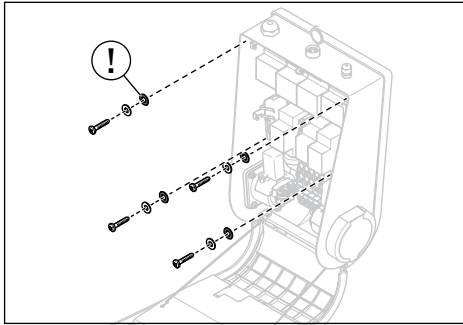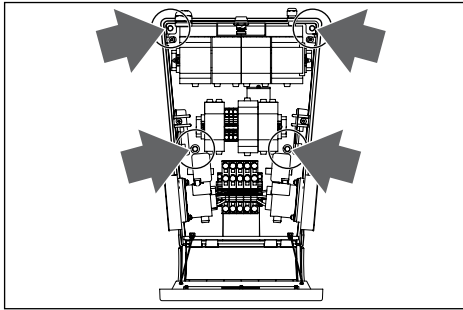
5. Install the charging station on the selected location with the rubber gaskets first and then the washer and the four M8 screws.

CAUTION: Do not install the charging station without the rubber gaskets. Otherwise it can leak in water and cause damage to the EV charger.
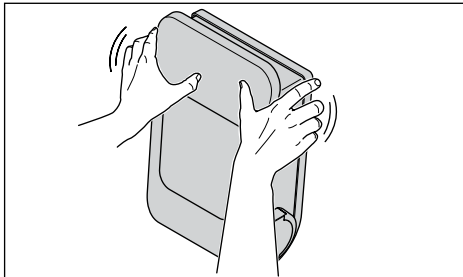
6. Make sure that the charging station is firmly installed on the wall.
7. Make sure to cover all open holes with silicon or rubber gaskets to protect the charging station against water.

To install the charging station on a pole
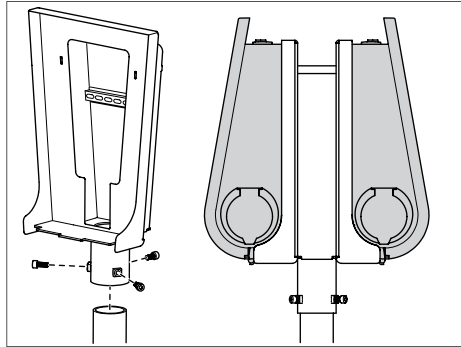
- For installation on a pole, refer to the manual for the pole mount kit.

To do the cable installation
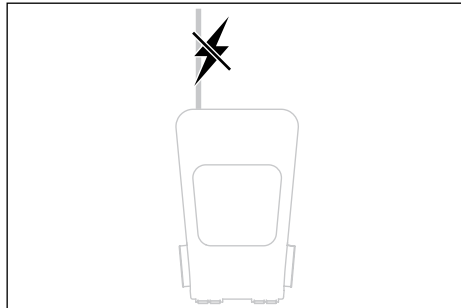
1. Make sure that the power is off.

$A \leqslant 16 \text{ mm}^2$
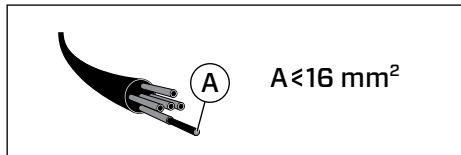
2. Make sure that the cable installation is dimensioned (A) for the charging station.

CAUTION: The cable glands must be replaced if the cables are outside this specified range.
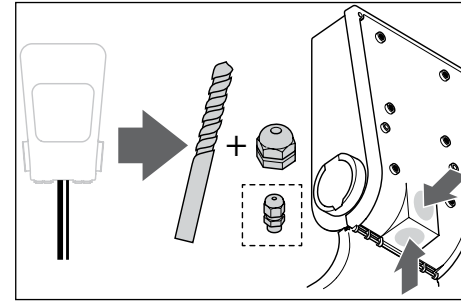
3. If the power cable and network cable should be installed from below or from the back, drill holes in the unit according to the illustration.
CAUTION: Make sure not to damage the content inside the unit when you drill the holes.
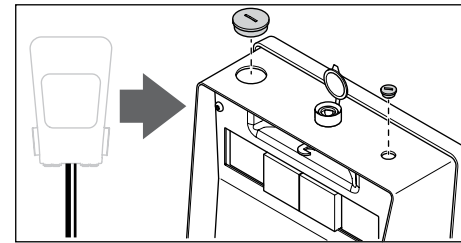
4. Install the cable glands in the holes to protect the unit from dust and water penetration.

NOTE: The cable gland for the power cable that is delivered with the product supports cable dimensions between 11-17 mm and the gland for the network cable supports cable dimensions 3-6 mm.
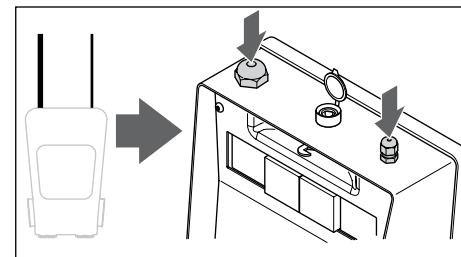
5. If the power cable and network cable are installed from the top, there are two holes on the top of the unit. Install the power cable to the larger hole (M25) and the network cable to the smaller hole (M12).

To install the power cable

1. Pull the power cable through the cable gland.

Min 500 mm

A B C

A B C

L1	L2	L3	N	PE
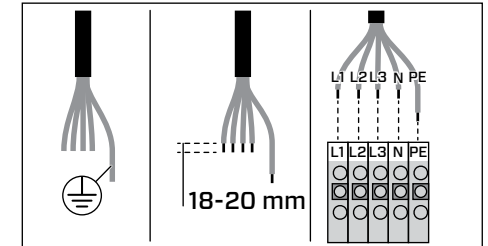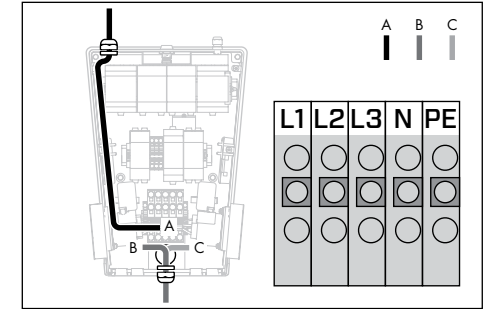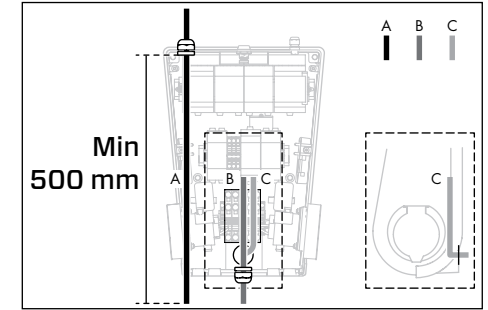
18-20 mm

2. Make sure that the protected ground wire is longer than the other wires so that it will be the last wire to detach if it is pulled.
3. Strip the wires approximately 18-20 mm at the end of the power cable. The cross-sectional area of the power cable must not exceed 16 mm². Follow the instructions on the previous page.
4. Connect the supply wires to the terminal blocks.

NOTE: The terminal blocks are of push-in type. Make sure that the cables are properly connected.

NOTE: For regional differences of the grounding system, such as IT-Nett, refer to the supply input schematic on page 13.

To install the network cable and the 3G-modem (optional)
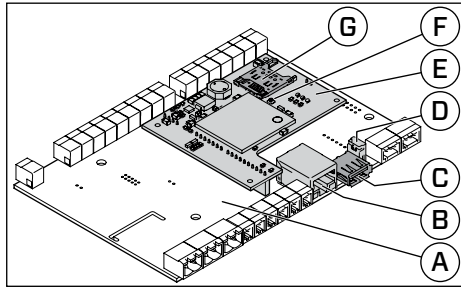
A	Controller board	E	3G-modem
B	RJ45	F	U.FL Antenna contact
C	USB	G	SIM-card slot
D	Mini-USB		

If the charging station shall be connected to NanoGrid™ - Load balancing, or to the Charge Portal - The cloud based charging portal online, do the steps that follow.
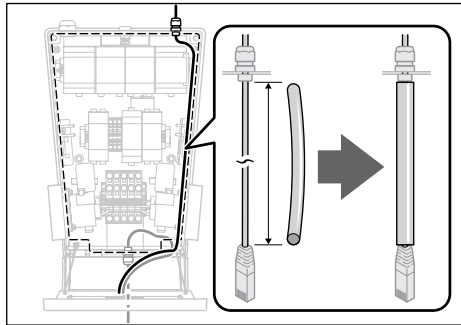
- Enclose the network cable with the attached insulation cable. The network cable in the powerbox needs extra insulation for electrical safety reasons.
- If the charging station is behind a firewall and will be connected to a backend system, open DNS (port 53) and https/wss (port 443) in the firewall. Open ftp to allow remote firmware upgrades.
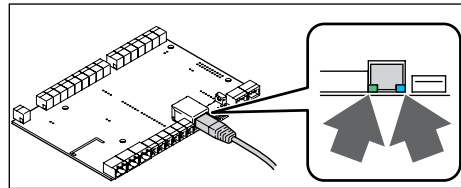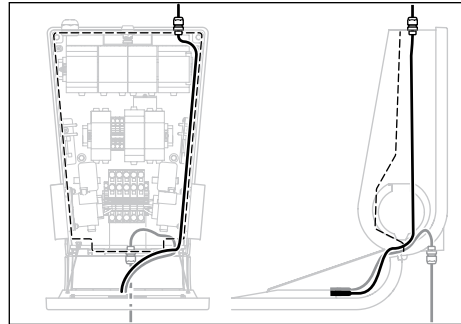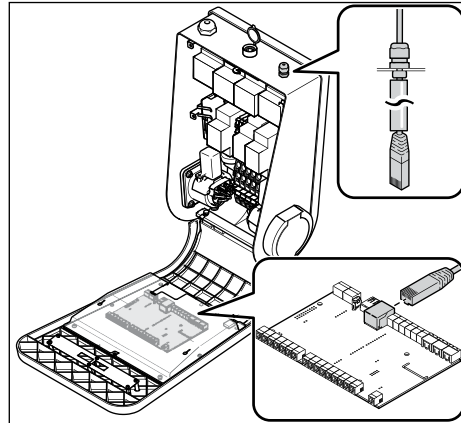
- If Ethernet shall be connected, use a network cable of type Cat5 or better. Connect the network cable to the RJ45 connector on the control board. The control board is located on the front panel. When the network cable is connected the activity LED in the RJ45 connector activates.

Mini SIM 15x25mm
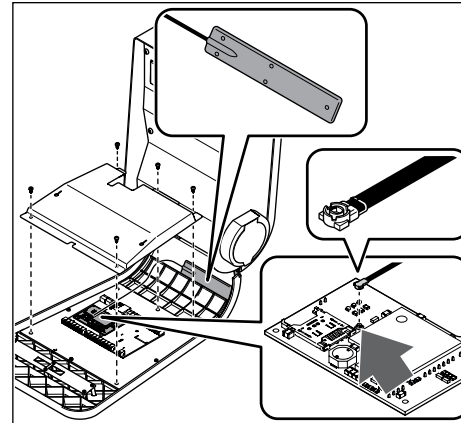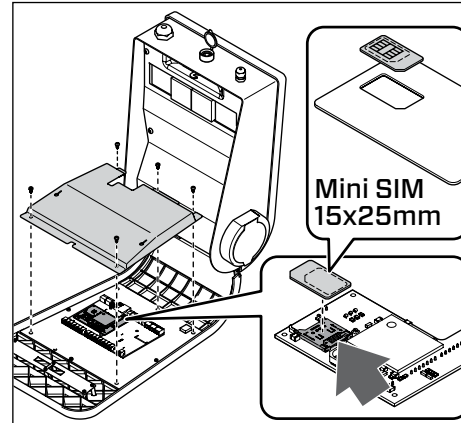
- If 3G shall be connected, install an activated SIM card in the charging station. The PIN must be disabled and the subscription with recommendation of a minimum of 2 GB/month depending on the OCPP protocol communication from the operator. Make sure that the antenna cable is attached in both ends.

NOTE: Some operators have installed the SIM card at the factory.

To finish the installation
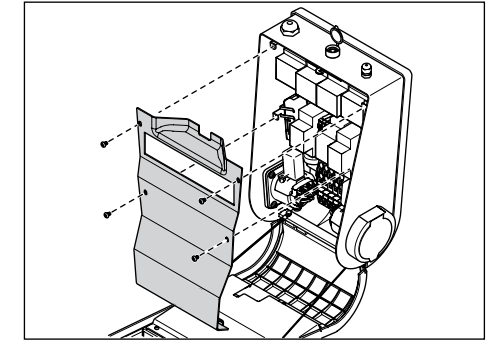
1. Install the protection cover.

2. Close and lock the technical box with the key.
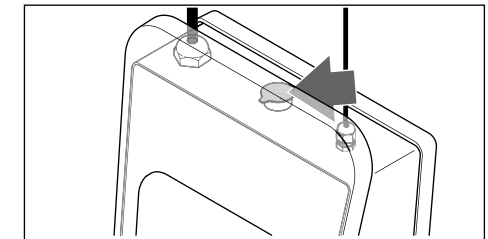
3. Put the cover on the key lock.
4. Turn on the power from the distribution panel.

NOTE: It may take one to two minutes for the charger to start.

EN
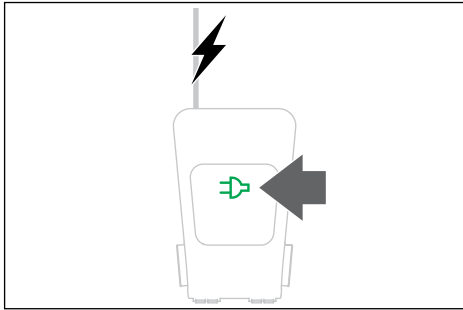
5. Make sure that the green connector symbol on the front panel activates.

To change the configuration settings

NOTE: For most installations no change of the configuration is needed.

NOTE: CTEK E-Mobility recommends that the installation technician documents the result of the configuration tests in the dedicated protocol.

1. If the computer runs on Microsoft Windows, Download the CCU Drivers from the webbsite. Follow the instructions given on the webbsite.

NOTE: For Linux, Android and Mac OSX, the USB driver is part of the operating system.
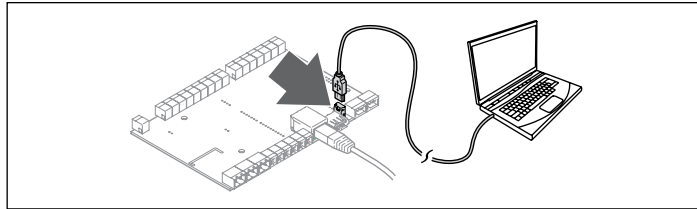
2. Connect the USB cable between the computer and the mini USB port on the controller board.
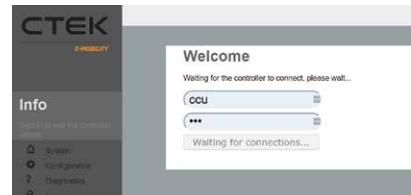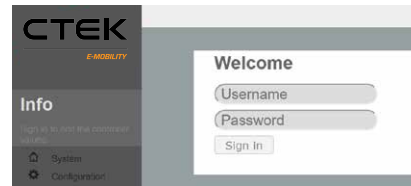
3. Open the web browser and log in to the local web interface at http://192.168.7.2
    The user name and password are both "ccu".

NOTE: CTEK E-Mobility recommends web browser Chrome for this action.

To configure the network interface (Ethernet)
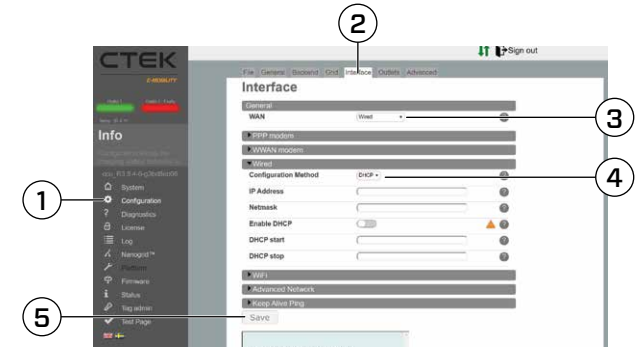
1. Navigate to Configuration>Interface>General and select WAN = Wire.
2. Navigate to Configuration>Interface.
3. Select Wire.
4. Select DHCP or Static. If Static is selected, also enter IP address, netmask and gateway.
5. Press Save at the bottom of the page.

To configure WWAN (3G)
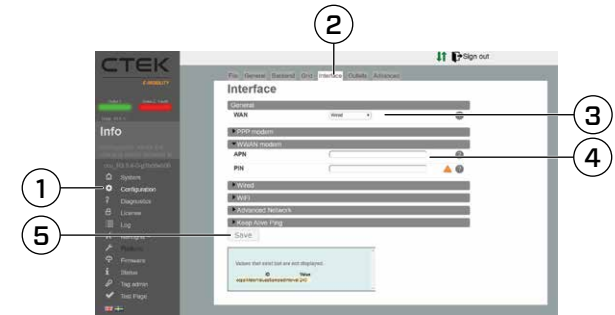
NOTE: WWAN is a specific 3G mode and is usually more robust than PPP.

1. Navigate to Configuration.
2. Select Interface.
3. General and select WAN = modem (WWAN)
4. Navigate to Configuration>Interface>WWAN and enter APN applicable for the selected 3G operator. Leave remaining fields empty.
5. Press Save at the bottom of the page.

To configure PPP 3G/4G
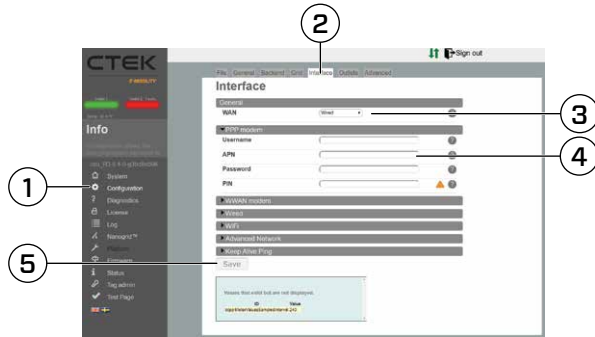
1. Navigate to Configuration.
2. Select Interface.
3. General and select WAN = modem (PPP).
4. Navigate to Configuration>Interface>PPP modem and enter APN applicable for the selected 3G/4G operator. Leave remaining fields empty.
5. Press Save at the bottom of the page.

To configure current limit
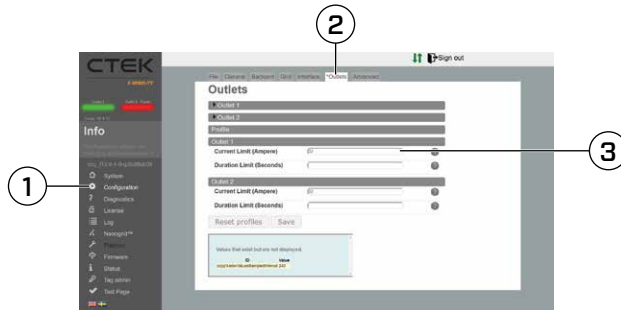
NOTE: Change the settings of the current limit if the current limit must be lower that the charging status fuse level.

1. Navigate to Configuration.
2. Select Outlet.
3. Change the settings for the current limit.

To configure URL and charging station identity (ChargeboxID) to the portal

1. Do a check of the status page to make sure that the internet access operates correctly.
2. Make sure that the OCPP ChargeboxID and server address is known. This information should be provided by the portal operator. If CTEK E-Mobility's portal "Charge Portal" is used, the URL to the portal has the format that follows: wss://<companyname>.oamportal.com/Ocpp/websocket.

NOTE: The ChargeboxID must be unique and not contain more than 22 characters. The selected portal must support OCPP v1.5 or v1.6.

3. Navigate to Configuration>Backend and enter the ChargeboxID.
4. Set the communication protocol to OCPP v1.5 or v1.6.
5. Enter the backend address. Usually the other parameters may remain unchanged.
6. Press Save at the bottom of the page.
7. Navigate to the status page and verify that the portal communication is established.

To configure RFID
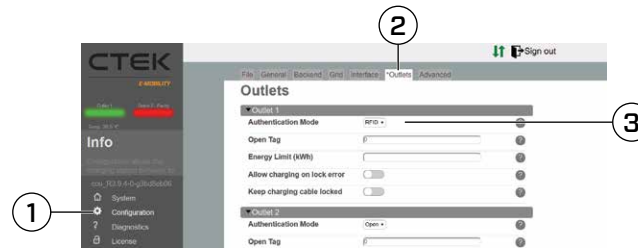
NOTE: For chargers without portal connection you can only add and remove RFID tags from the web interface in the charger. For connected chargers you can only change in the portal.

1. Navigate to Configuration>Outlet>Authentication and select RFID for all outlets to activate RFID authentication with RFID tag before charging.
2. Add and delete approved RFID tags under Tag admin.

To do a installation tests

- Make sure that the charging station is firmly mounted on the wall/pole.
- Check the connection of the power cable and network cable. Tighten the cable gland if it is necessary.
- If the installation is a Nanogrid Home setup, check the Communication between the external EM and the Charger
- Charge a vehicle. Check the current and make sure that charging symbols on the display operate correctly.
    - Function control RFID
    - Internet connection (3G/4G/Router/Ethernet)
- Make sure that the weather protection of the lock is sealed correctly.
- Make sure that the display is lit.

To do maintenance tests

Maintenance on the product must be done once a year.

- Ensure that the charging outlet/charging cable is in good condition.
- Replace the charging outlet/charging cable if it is necessary.
- Check the rubber gaskets. Remove any possible dirt from the rubber gasket.
- If necessary, update the software.
- Check the cable gland. Tighten if it is necessary.

To recycle the product

The product must be recycled as electronic equipment. Follow the local requirements for recycling of electronic equipment.

Technical data

POWER

Power input	TN-S: 230/400 V AC 50Hz IT: 230 V AC 50Hz Max 63 A (depends on model)
Power output	AC
Connected to AC supply network	Yes
Permanently connected to the mains	Yes
Charging current	Up to 32 A (depends on model)
Supply Connection	TN-S: L1,L2,L3,N,PE IT: L1,L2,PE
Fuses	C-Characteristics. Breaking capacity 6kA Mode 3: 32A
Standby-usage consumption	18-20 W
Rated frequency, f_n	50 Hz
Rated diversity factor, RDF	1
Rated insulation voltage, U_i	250/400 V
Rated impulse withstand voltage, U_{imp}	4 kV
Rated peak withstand current, I_{pk}	6 kA
Rated short-time withstand current, I_{cw}	6 kA
Max prospective short-circuit current, I_{cp}	6 kA
Overvoltage category	III
Technical data for RCD	
Rated making and breaking capacity, I_m	200 A

MECHANICS

Weight	Up to 24 kg (depends on model)
Dimension H x W x D	449 x 282 x 160 mm
Material	Front and back cover in ABS plastic. Colored zinc oxide metal box for electronics.

MECHANICS

Ingress Protection	IP54
Ambient operation temperature	-30°C to +50°C
Altitude	< 2000 m
Relative humidity	Up to 100 % at +25°C
Storage temperature	-30°C to +50°C
External mechanical impact	IK10

INTERFACES

EV connector	One or two outlets Type 2 or fixed cable of Type 1 or Type 2
Display	LED symbols
Enclosure lock	Mechanical lock with key.
Energy meter	Internal or MID-approved depending on option.
RFID tag standard	Milfare 1k, Milfare 1k+, Milfare Classic.
Connectivity	3G: Frequency band: 00/850/900/1700/1800/1900/2100 MHz, Power class 3: +24 dBm, Power class 4: +21 dBm (EN 301 908-2 v11.1.1). 4G: Frequency band: LTE Cat-1, B3 B8 B20 power class: 23 dBm. Fallback GSM/GPRS/EDGE 900 MHz (Max: 2W) 1800 MHz (Max: 1W).

COMPATIBILITY

Compliance	IEC 61851-1, IEC 62196-2, IEC 61439-7, CE
Approval	Download the Declaration of Conformity from www.ctekemobility.com
Charging method	Mode 3
Electric shock protection	Class I equipment
Communication protocol	OCPP 1.5 and 1.6
Pollution degree	3
Intended for use in EMC Environment	B

SAFETY

Ground fault detection	Residual Current Device of type A. 30 mA. DC-detector. 6 mA.

Overcurrent and short-circuit protection

PROPERTY	VALUE
Rated current, I_n	See part specific data
Characteristic	C
Rated short-circuit capacity, I_{cn}	6 kA
Rated service short-circuit breaking capacity, I_{cs}	7.5 kA
Let-through energy, I^2t	36000 A^{2}s

Part specific data

ART.NO	RATED VOLTAGE, U_n	RATED CURRENT, I_{nA}	LEFT OUTLET	RIGHT OUTLET
910-17049	230 V	16 A	-	Outlet, 1 ph, 230 V, 16 A
910-17062	230 V	32 A	-	Outlet, 1 ph, 230 V, 32 A
910-17050	230/400 V	16 A	-	Outlet, 3 ph, 230/400 V, 16 A
910-17028	230/400 V	32 A	-	Outlet, 3 ph, 230/400 V, 32 A
910-17045	230 V	16 A	-	Cable, 1 ph, 230 V, 16 A
910-17046	230 V	32 A	-	Cable, 1 ph, 230 V, 32 A
910-17047	230/400 V	16 A	-	Cable, 3 ph, 230/400 V, 16 A
910-17048	230/400 V	32 A	-	Cable, 3 ph, 230/400 V, 32 A
910-17042	230/400 V	16 A	Cable, 1 ph, 230 V, 16 A	Outlet, 1 ph, 230 V, 16 A
910-17051	230/400 V	16 A	Outlet, 1 ph, 230 V, 16 A	Outlet, 1 ph, 230 V, 16 A
910-17063	230/400 V	32 A	Outlet, 1 ph, 230 V, 32 A	Outlet, 1 ph, 230 V, 32 A
910-17059	230/400 V	32 A	Outlet, 3 ph, 230/400 V, 16 A	Outlet, 3 ph, 230/400 V, 16 A
910-17060	230/400 V	64 A	Outlet, 3 ph, 230/400 V, 32 A	Outlet, 3 ph, 230/400 V, 32 A
910-17040	230/400 V	16 A	Cable, 1 ph, 230 V, 16 A	Cable, 1 ph, 230 V, 16 A
910-17091	230/400 V	32 A	Cable, 1 ph, 230 V, 32 A	Cable, 1 ph, 230 V, 32 A
910-17086	230/400 V	32 A	Cable, 3 ph, 230/400 V, 16 A	Cable, 3 ph, 230/400 V, 16 A
910-17092	230/400 V	64 A	Cable, 3 ph, 230/400 V, 32 A	Cable, 3 ph, 230/400 V, 32 A

CTEK E-Mobility warranty statement

Limited warranty

CTEK issues a limited warranty to the original purchaser of the product. Depending on the product, the limited warranty period will vary. The limited warranty is not transferable. The warranty applies to manufacturing faults and material defects. The warranty is void if the product has been handled carelessly or repaired by anyone other than CTEK or its authorized representatives. CTEK makes no warranty other than this limited warranty and is not liable for any other costs other than those mentioned above, i.e. no consequential damages. Moreover, CTEK is not obligated to any other warranty other than this warranty.

Circumstances that will void the limited warranty

If the seal of the product is broken, purposely damaged, or in any way modified or altered; including cables, electronics, mechanics or other parts of the product; products that have been repaired by anyone other than CTEK or its authorized representatives; products that have been subject to the use of supplies and accessories other than those approved in writing or supplied by CTEK; improper use or non-compliance with installation, commissioning, operation or maintenance instructions (i.e. not according to the operation and installation manual); unauthorized modifications, changes or attempted repairs; vandalism, destruction through external influence and/or persons/animals; failure to observe applicable safety standards and regulations; faults caused by fire, water, snow, moisture, or other liquids except as specified for normal use; products where the serial number is defaced, altered or removed; any utilization of a product that is inconsistent with either the design of the product or the way CTEK intended the product to be used; any installation and/or modifications that prevent normal service of the product; normal wear and tear and cosmetic damage such as, but not limited to, corrosion, scratches, dents, rust, stains, non-functional parts such as, but not limited to, plastics and finishes; damage, fault, failure and/or imperfection caused by abuse, tampering, illegal use, negligence, prolonged use or operation; or faults in any other way caused by the customer/retailer/user.

Additional information

CTEK makes no other warranty than as set out herein and CTEK shall in no event be liable for any indirect or consequential damages. The faulty product shall be returned with the receipt to the retailer/place of purchase together with a fault description. Goods returned to CTEK will be at CTEK's discretion and only valid with an approved Return Material Authorisation (RMA) Reference Number issued by CTEK to the purchaser. Products sent directly to CTEK without an RMA will be returned to the sender at the sender's cost. The warranty period for a product is stated in the applicable product user manual supplied with the product. The warranty is only valid if the warranty period has not expired. If the warranty claim of a faulty product is not approved by CTEK, the product will be returned only if the sender explicitly so requests. The customer/retailer/place of purchase will pay the freight. Faulty products will be repaired, or replaced with an exchangeable product, and returned at CTEK's cost. If the warranty period has expired, the product will be returned without further investigation at the cost of the customer/retailer/place of purchase. Faulty products will be scrapped by CTEK if deemed not repairable. CTEK reserves the right to vary, modify or change the terms and conditions herein due to change(s) in availability of services, products and/or spare parts, or for the purpose of complying with applicable policies, rules, regulations and law, without notice.

National usage restrictions

Some countries, states or provinces have other electrical codes and standards than stated in this manual. The installation and usage of the product shall follow local regulations. The product is intended for use by general public. The product is intended for locations with both restricted access and non-restricted access.

This product is only allowed for use in the following regions: CZ, DE, DK, GR, ES, FI, FR, IS, NL, NO, PL, SE, UK, AT, BE, CY, IE, LU and MT.

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Revisions

The descriptions, information and specifications contained in this manual were in effect at printing. To make sure that the maintenance instructions are complete and up to date, always read the manual published on our website.

Abbreviations

- APN   Access Point Name.
- CP   Control Pilot.
- CCU   Charge Controller Unit
- DHCP   Dynamic Host Configuration Protocol.
- OCL   Outlet Controller Light.
- OCPP   Open Charge Point Protocol.
- PP   Proximity Pilot.
- PPP   Point to Point Protocol.
- RFID   Radio Frequency Identification.
- WWAN   Wireless Wide Area Network.

Electrical schematics

EN

LEFT

F1

⌷ W16-W18 have ferrules here

X15

Optional

OR

Optional

EM1

2U / 2L — 1U / 1L ⌷
4U / 4L — 3U / 3L ⌷
6U / 6L — 5U / 5L ⌷

Curve C 32A

W1 BN 6
W2 BN 6

X1
2016-1301

J1*

W3 BK 6
W4 BK 6

X2
2016-1301

W46 BK 1.5

W47 BU 1.5

Optional Heater

W5 GY 6
W6 GY 6

X3
2016-1301

Distr. Rail

1 L1 ... 4   W11 BK 6   W16 BK 6
2 L2 ... 5   W12 BK 6   W17 BK 6
3 L3 ... 6   W13 BK 6   W18 BK 6

W14 BU 1.5   N / N

Energy Meter

Choose one of two options,
Energy Meter: X15, EM1 & W11-W14 or
Transformer: CAB13 & W16-W18.

U3C

J302
1 1 L1P
2 2 L1N
3 3 L2P
4 4 L2N
5 5 L3P
6 6 L3N

CAB13

OCL Left

X6 X7 X8

W19 BU 6
W8 BU 6

X4
2016-1304

X9   W33 BU 6

SUPPLY INPUT

	Single phase 230V~	IT-nett Line-to-line 230V~	TN-system Line-to-line 400V~	
	L1	L1	L1	X1
	no connect	no connect	L2	X2
	no connect	L3	L3	X3
	N	L2	N	X4

⊗ X ↓

RIGHT

F2

⌷ W30-W32 have ferrules here

X16

Optional

OR

Optional

EM2

2U / 2L — 1U / 1L ⌷
4U / 4L — 3U / 3L ⌷
6U / 6L — 5U / 5L ⌷

Curve C 32A

Distr. Rail

1 L1 ... 4   W27 BK 6   W30 BK 6
2 L2 ... 5   W28 BK 6   W31 BK 6
3 L3 ... 6   W29 BK 6   W32 BK 6

W15 BU 1.5   N / N

Energy Meter

Choose one of two options,
Energy Meter: X16, EM2 & W15, W27-W29 or
Transformer: CAB14 & W30-W32.

U4C

J302
1 1 L1P
2 2 L1N
3 3 L2P
4 4 L2N
5 5 L3P
6 6 L3N

CAB14

OCL Right

LEFT

K1

W57 BK 1.5

Wire used for models with 3ph output.   W23 BK 6

Wire used for models with 3ph output.   W24 BK 6

W22 BK 6   L1

W23 BK 6   L2

W24 BK 6   L3

W25 BU 6   N

See next page

1 2
3 4
5 6
7 8
A1 A2

Contactor

RC1

SNUBBER

W59 BU 1.5
W26 BK 1.5
W53 BK 1.5
W54 BK 1.5

W35 BU 1.5

W20 BK 1.5

U3A

P41   J301

1	1	L3_IN
2	2	L2_IN
3	3	L1_IN
4	4	NEUTRAL
5	5	RELAY_OUT
6	6	FUSE_FB

J502

HIGH	1	1
LOW	2	2
ERR	3	3
TEST	4	4
X6	5	5
X30	6	6
GND	7	7
VCC	8	8
PWM	9	9
NC	10	10

DF11

OCL Left

CAB6

U5

J1001

1	1	ERR
2	2	TEST
3	3	X6
4	4	X30
5	5	GND
6	6	VCC
7	7	PWM
8	8	NC

EN

RIGHT

Used by Dual output models.

K2

Wire used for models with 3ph output.   W38 BK 6

Wire used for models with 3ph output.   W39 BK 6

W37 BK 6

W40 BU 6

Phase rotation

L1
L2
L3

See next page

1 2
3 4
5 6
7 8
A1 A2

Contactor

RC2

SNUBBER

W58 BK 1.5

W60 BU 1.5
W56 BK 1.5
W55 BK 1.5
W36 BK 1.5

W21 BU 1.5

W34 BK 1.5

U4A

P42   J301

1	1	L3_IN
2	2	L2_IN
3	3	L1_IN
4	4	NEUTRAL
5	5	RELAY_OUT
6	6	FUSE_FB

J502

HIGH	1	1
LOW	2	2
ERR	3	3
TEST	4	4
X6	5	5
X30	6	6
GND	7	7
VCC	8	8
PWM	9	9
NC	10	10

DF11

OCL Right

CAB7

U6

J1001

1	1	ERR
2	2	TEST
3	3	X6
4	4	X30
5	5	GND
6	6	VCC
7	7	PWM
8	8	NC

* Jumper J1 is needed to run with single phase input. P/N 2016-403.

BK=black
BN=brown
BU=blue
GN=green
GY=grey
OG=orange
PK=pink
RD=red
TQ=turquoise
VT=violet
WH=white
YE=yellow
YEGN=yellow-green

— Ferrule

U2

AC/DC

W10 BK 1.5 **P1**
W7 BU 1.5
W9 YEGN 1.5

K1: L, N, PE — 230 / 24

K2: + 1 2 / − 2 | 1 2
K3: + 1 2 / − 2 | 1 2

Power Supply

EARTH X5

U1A

J29
+24V 1 | 1
RTN 2 | 2
GND

J6
+A2 1 | 1
−B2 2 | 2

CCU

CAB12

CAB5

Used by Dual output models.

U4B

J305
4 | 4
2 | 2
3 | 3
1 | 1

+24V

J306
4 | 4
2 | 2
3 | 3
1 | 1

A+
B−

J304
1 | 1 A+
3 | 3 B−
2 | 2
4 | 4 ADDR

OCL Right (dual models)

CAB4

U3B

J305
4 | 4
2 | 2
3 | 3
1 | 1

+24V

J306
4 | 4
2 | 2
3 | 3
1 | 1

A+
B−

J304
1 | 1 A+
3 | 3 B−
2 | 2
4 | 4 ADDR

OCL Left (always)

CAB11*

* For external MBUS connection
CAB11 is replaced by the external cable.

EM1A
7 T
8 B+   120R
9 A−
10 GND

EM Left (Always)

Optional and only used
by Dual output models.

EM2A
7 T
8 B+   120R
9 A−
10 GND

EM Right (dual models)

CCU

U1

Left pins		Right pins

GF/CFB2 — 1
GF/CFB1 — 2 — **J32**
FFB2 — 1
FFB1 — 2 — **J31**
N — 1
GND — 2 — **J33**
RLY1 GND — **J23**
RLY2 GND — **J24**
B1- A1+ — **J5**
B2- A2+ — **J6**
GND +24V — **J4**
SDA SCL — **J30**

STATION		GCU
J5	RFID1	RFID	RS485
J6	RFID2	RS485	RS485

CCU

J2 ETH

J1 USB HOST

J3 USB DEVICE

RD1 GN1 BU1 +12V — **J7**
RD2 GN2 BU2 +12V — **J8**

1v98 & higher

J29 +24V RTN
J16 CP1 CP2
J17 CT1- CT1+
J18 CT2- CT2+
J19 CT3- CT3+
J20 CT4- CT4+
J21 CT5- CT5+
J22 CT6- CT6+
J25 +12V PULSE1
J26 +12V PULSE2
J12 M1+LOCK M1+UNLOCK
J13 M2+LOCK M2+UNLOCK
J27 +12V CONS1
J28 +12V CONS2
J15 PP1 GND10R
J14 PP2 GND10R
J11 LOCKFB2 LOCKFB1

3G/4G/RADIO MODEM

U1C   U8

JP4 / J4
+24V — 1 / 1
2 / 2
GND — 3 / 3
4 / 4

JP2 / J2
+3V3 — 1 / 1
GND — 2 / 2

JP9 / J9
+3V3 — 1 / 1
GND — 2 / 2

CCU

U1D

J7 / JP7
1 / 1 — M_TX
2 / 2
3 / 3 — M_RX
4 / 4 — +3V3
5 / 5 — HDPB
6 / 6 — HDMB
7 / 7 — M_RESET
8 / 8 — ON/OFF
9 / 9
10 / 10

RADIO MODEM

J3 / JP3
1 / 1 — SCLK
2 / 2 — GND
3 / 3 — MOSI
4 / 4 — MISO
5 / 5 — SEL
6 / 6 — Z_RESET
7 / 7 — IRQ

CCU

CAB18
U9

P11 U.FL.   **J11**

Modem   CCU

Antenna

CAB10

U1B

J30
SCL — 1 / 1
SDA — 2 / 2

J4
+24V — 1 / 1
GND — 2 / 2

J7
+12V — 1 / 1
BU1 — 2 / 2
GN1 — 3 / 3
RD1 — 4 / 4

CCU

CAB10

U7
1 — SCL
2 — SDA
3 — GND
4 — +12V

UI Board

3PH OUTLET LEFT

L1 — W22 BK 6 — OUT1 L1
L2 — W23 BK 6 — L2
L3 — W24 BK 6 — L3
N — W25 BU 6 — N

CP
PP

U3D

J503		
CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

X11
W41
YEGN 6
PE

Outlet

M1

CAB8   Lock Solenoid

OCL Left

1PH OUTLET LEFT

L1 — W22 BK 6 — OUT1 L1
L2
L3
N — W25 BU 6 — N

CP
PP

U3D

J503		
CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

X11
W41
YEGN 6
PE

Outlet

M1

CAB8   Lock Solenoid

OCL Left

3PH CABLE LEFT

L1 — OUT1 L1
L2 — L2
L3 — L3
N — N

X13
CP
PE

U3D

J503		
CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

X11

CAB15

Cable

OCL Left

1PH CABLE LEFT

L1

N

U3D

J503

CP	1
PP	2
GND	3
GND	4
SOL LOW	5
SOL SENS	6
12V	7
12V	8

CAB15

OCL Left

X13

X11

OUT1

L1
L2
L3
N
CP
PE

Cable

3PH OUTLET RIGHT

L1 — W37 BK 6

L2 — W38 BK 6

L3 — W39 BK 6

N — W40 BU 6

U4D

J503

CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

CAB9

OCL Right

X12

W42
YEGN 6

M2

Lock Solenoid

OUT2

L1
L2
L3
N
CP
PP
PE

Outlet

1PH OUTLET RIGHT

L1 — W37 BK 6

N — W40 BU 6

U4D

J503

CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

CAB9

OCL Right

X12

W42
YEGN 6

M2

Lock Solenoid

OUT2

L1
L2
L3
N
CP
PP
PE

Outlet

5002306 5B

3PH CABLE RIGHT

L1
L2
L3
N

OUT2
L1
L2
L3
N
CP
PE
Cable

U4D
J503

CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

X14

X12

CAB16

OCL Right

1PH CABLE RIGHT

L1

N

OUT2
L1
L2
L3
N
CP
PE
Cable

U4D
J503

CP	1	1
PP	2	2
GND	3	3
GND	4	4
SOL LOW	5	5
SOL SENS	6	6
12V	7	7
12V	8	8

X14

X12

CAB16

OCL Right

OCL

J304
Address Termination

U3/U4

J302
Current Trafos

Fail SW
J501

VAC Sensor
J502

J305 J306
2 X Mod/Pwr

OCL

EV Outlet
J503

L3_IN	1
L2_IN	2
L1_IN	3
NEUTRAL	4
RELAY_OUT	5
FUSE_FB	6

J301

CTEK

50022553