

T-Series Movable Charger

Charging Station



OPERATING MANUAL

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1 IMPORTANT SAFETY INSTRUCTIONS





1.1 General

SAVE THESE INSTRUCTIONS.

This manual contains important safety instructions for the T-Series Movable Charger, that shall be followed during installation, operation and maintenance of the unit.

Items in the manual that require particular attention in order to minimize damage and harm are indicated with the below symbols. Read these sections carefully and follow their instructions.

Table 1. Safety signs.

	Note symbol: Gives useful information to the user.
	Mandatory symbol: Describes a mandatory action.
	Caution symbol: Describes a situation that may result in damage to the equipment or system.
	Warning symbol: Describes a potentially dangerous situation. If not avoided, it will result in wounds or fatal injury.

1.2 Main risk factors

Warning! Do not turn OFF the charger if charging is ongoing as it may cause issues to the vehicle. Follow user guide instructions for correct ending of the charging.

Warning! Only qualified service personnel are allowed to carry out maintenance or installation work.

Warning! Only an authorized electrician is allowed to carry out electrical work.

Warning! Never release the charging cable from your hand when moving it to or from the vehicle to prevent damaging the plug or vehicle. After charging place the plug back onto its holder.

Caution! Do not use the device before it is properly installed and approved for use on the site in question.

Caution! Always follow local and general safety regulations and procedures.

Caution! Do not use any pressure washing devices or compressed air to clean the device.

Warning! Never disconnect the T-Series Movable Charger from the mains power supply while charging. The unit must be always switched to "0" (OFF) prior to disconnection of the mains power supply.

Caution! Use caution when moving the equipment. The device weight is approximately 135 kg, depending on the configuration.

Caution!

Do not lift the T-Series Movable Charger from its top handles.

Warning! In case of a charging device malfunction after several charging session start attempts or other unrecognized error, please turn the operation switch to "0" (OFF) but keep the charger powered UNLESS THERE IS IMMINENT DANGER FOR OPERATOR SAFETY such as a risk of electrical shock by damaged cables ! Contact MANUFACTURER dealer, service workshop or sales representative.

Warning! Before opening or removing hatches or cover plates, turn the main switch to OFF position, disconnect the charging device from the mains and wait about 2 minutes before continuing.

Warning! Disconnecting the C-Series Charging Power Unit does not cut the AC supply to the AC Satellite!

1.3 Operational Safety

- It is mandatory to read this operating manual and follow its instructions.
- The charging voltage is not present at the charging connector pins when the device is not charging.
- The user interface of the T-Series Movable Charger provides the selection of the charging current according to the power supply source available.
- Any electrical work on the charging unit is only allowed to be carried out by an authorized electrician.

Important notes for safe use

- Straighten any loops in the cables.
- Do not wrap the cables around the body.
- Make sure that faulty and damaged cables and charging connectors are changed immediately as they can cause risk of electrical shock or fire.

- The cable, plugs and other electric devices may be installed or replaced only by an authorized electrician.
- In case of any abnormal behavior of the equipment, such as smoke coming from the CPU during normal use, stop the use instantly, turn the charger off and contact a MANUFACTURER service representative to arrange an inspection.

1.4 Electrical safety

These safety instructions are for all personnel using MANUFACTURER's charging stations for charging electric vehicles. Read these instructions carefully. The T-Series Movable Charger combines a Charging Power Unit (CPU) and a cable handling system with the user interface. Furthermore, the installer and user of the device must follow the instructions given in the international standards regarding the installation and use of the device type in question. Always follow your local rules and legislation regarding the installation and use of high-voltage units.

Follow these instructions to prevent injury or death, or damage to the equipment. Only qualified electricians are allowed to do electrical installation and maintenance work on the charging system. Read the installation and service instructions before you start installation or maintenance work on the T-Series Movable Charger. If you are not a qualified electrician, do not perform electrical installation or maintenance work.

Important notes for safe use:

- Straighten any loops in the cables.
- Do not wrap the cables around the T-Series Movable Charger body.
- If the charging device is used inside a container, vehicle, or similar confined space make sure of proper cooling air circulation.
- Ensure that the cables are not squashed by heavy objects and that they are not exposed to sharp edges.
- Make sure that faulty and damaged cables and charging connectors are changed immediately as they can be lethal and may cause electrocution or fire.
- Remember that the cables, plugs and other electric devices may be installed or replaced by authorized persons only.
- In case of any abnormal behavior of the equipment, such as smoke coming from the CPU during normal use, stop the use instantly, turn the charger off and contact a MANUFACTURER service representative to arrange an inspection.
- Never release the charging cable from your hand when moving it to or from the vehicle to prevent the plug or vehicle to be damaged. After charging always place plug back to its holder.

1.5 Environment

- The device shall be installed in a location whereas the ingress protection (IP) classification and ambient operating conditions are within the limits to that of the device.
- Do not expose the device to high temperatures, as this may cause damage to the device.
- If possible, the charger unit should be mounted in such a location that protects it from direct sunlight to prevent overheating and ageing of the technical parts.
- Make sure the airflow to and from the CPU is unrestricted.

2 INTRODUCTION

2.1 Disclaimer on products and services

Disclaimer

While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. MANUFACTURER reserves the right to change the specification of the product described at any time without prior notice. Do not copy, record, reproduce or transmit the contents of this guide without prior permission from MANUFACTURER.

2.2 Notice

This manual provides information on the MANUFACTURER's charging station and may refer into one or more standards that may generally apply to charging systems.

Such a reference does not always equal that all of the MANUFACTURER solutions adopt that standard.

On the component level the reader should refer to the component specifications for the particular components.

MANUFACTURER may have one or more patents or pending applications protecting the intellectual property rights mentioned on this operating manual.

All of the information in this manual is subject to change without notice and should not be constructed as a commitment by MANUFACTURER. This manual is originally written in English. Other language versions are translated from that document and MANUFACTURER cannot be held liable for errors in translation.

MANUFACTURER assumes no responsibility for any errors that may appear in the charging system if local rules and demands have been neglected. In no event shall MANUFACTURER be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this manual, nor shall MANUFACTURER be liable for incidental or consequential damages arising from use of any software or hardware mentioned in this manual.

2.3 Warranty

The warranty Period is defined in purchase Agreement. Warranty is related to delivered product (parts) only. Any other material, labor, accommodation and traveling costs are not included. See more detailed information in the MANUFACTURER warranty terms and conditions.

MANUFACTURER's T-Series Movable Charger delivery typically consists one or more T-Series Movable Charger with connectivity tools. Charging hardware and software together with power grid, data communication network, multiple electric vehicles and users comprises a complex entity. Neither supplier liability nor warranty does not include any consequential damages, see warranty and disclaimer on products and services.

Consumable parts, like cables and connectors are not included in the warranty.

2.4 Manufacturer

Kempower Oy

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15810 Lahti, Finland

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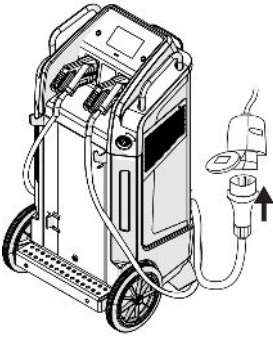
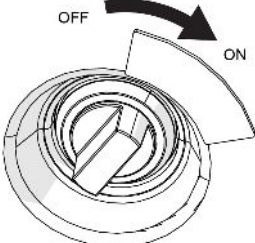
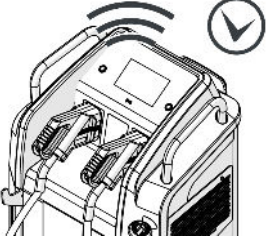
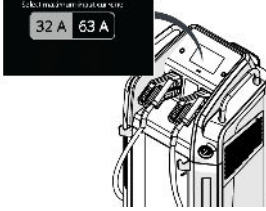
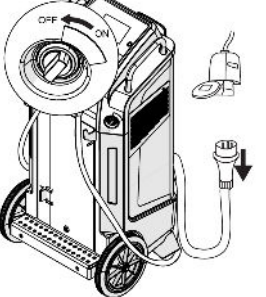
info@kempower.com

3 INSTALLATION

This section describes how to take the T-Series Movable Charger into use.

Refer to the Chapter "Technical data" for the power supply requirements.

Table 2.

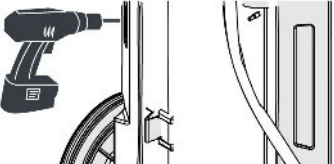
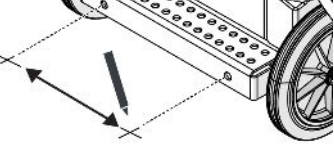
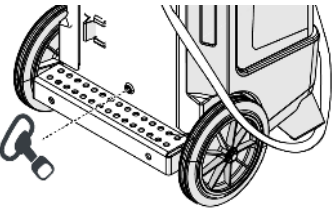
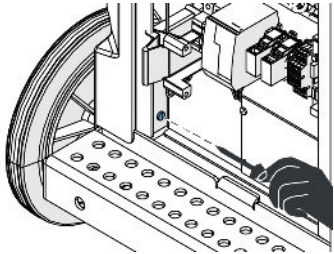
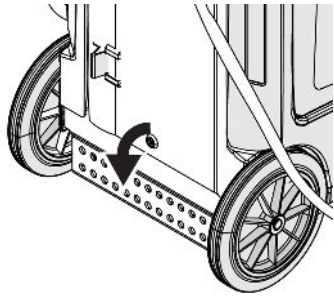
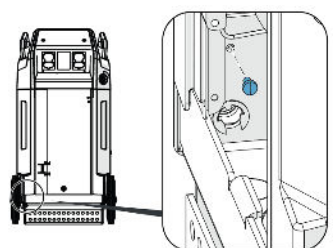
1		<p>Connect the T-Series Movable Charger to the power supply outlet.</p>
2		<p>Turn main switch "1" (ON) and wait until the T-Series Movable Charger is ready for use. The status is indicated on the display.</p>
3		<p>The T-Series Movable Charger connects automatically to the mobile data network using the built-in 3G/4G/Wi-Fi function.</p> <p>NOTE! The wireless mobile data network and the internet connectivity rely on your local service provider's network and its settings. For network specifications, refer to "Technical data".</p>
4		<p>When the unit is ready to use, please select the power supply source from the T-Series Movable Charger touch screen, 32 A or 63 A, according to the site supply. This selection can be found after pressing the "info" button in case this feature is activated.</p> <p>NOTE! this feature can be activated from the ChargeEye backend system. As default this function is not activated.</p>
5		<p>When the unit is not to be used for a longer period of time - first turn the "1"/"0" (ON/OFF) start switch, to "0", wait until all lights are off. Then disconnect the T-Series Movable Charger from the power supply outlet.</p>

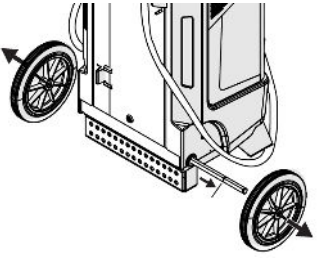
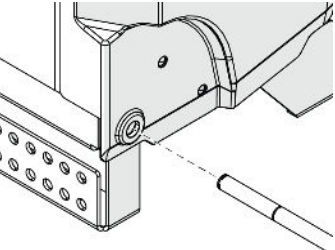
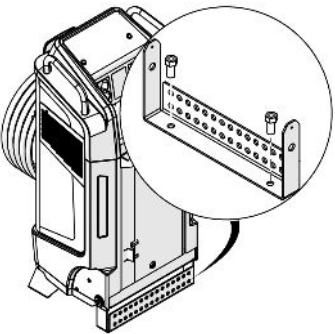
3.1 Fixed installation (optional)

The T-Series Movable Charger can be fixed in place by securing it with bolts to a mounting pad or other suitable fixing surface. The fixed installation requires the removal of the wheels. Site-specific variations in the fixing method may occur.

Ensure that the installation surface is suitable for drilling and bolt fixing, or that it is otherwise prepared for the fixed installation.

Table 3. Fixed installation.

1		<p>Mark the fixing hole locations on the mounting surface.</p> <p>Move T-Series Movable Charger aside before drilling.</p>
2		<p>Drill the fixing holes to the mounting surface.</p> <p>The hole depth and diameter depend on the fixing accessory dimensions. The distance between the holes is 350 mm.</p> <p>Unit can be installed with a total of 4 anchors, with the distance between fixing hole rows being also 350 mm.</p> <p>The hole diameter on front support is 18 mm, the back support has open hole grooves, use appropriate anchors and washers.</p>
3		<p>Open the front maintenance hatch with the triangle key (*).</p>
4		<p>Release the front support securing screws behind the hatch edge on both sides.</p>
5		<p>Flip the front support down.</p>
6		<p>Fix the front support securing screws behind the hatch edge on both sides.</p>

7		<p>Remove the wheels and start removing the axle rod.</p> <p>Caution! Make sure that the trolley cannot tilt or fall forward once the wheels are removed.</p> <p>At first, remove the axle rod only partially (only from the axle rod hole on the first side).</p>
8		<p>Remove the axle rod fully.</p>
9		<p>Using suitable bolt plugs, washers and bolts, secure the T-Series Movable Charger in place. The fixing accessory dimensions and specifications depend on the installation surface and site conditions.</p>

3.2 Setting up the Wi-Fi

1. Insert one end of the ethernet cable into the network jack of your laptop and other end to the into the charger cabinet.
2. Configure your laptop's ethernet port's IP address manually to **192.168.100.10** (netmask 255.255.255.0, no gateway or DNS settings).
3. Go to the address **https://192.168.100.200:8443/** with your web browser (e.g. Google Chrome) to access the Maintenance Tool. The charger must be powered.
4. Copy and paste the customer or charger-specific key to the text box which is received separately.

5. Click "Log in".

Note! Do not touch anything on device configuration page.

6. Go to menu (button on left side of kempower text) and network config page.
7. There should be nothing enabled.
8. Enable Wi-Fi and scan network.
9. Type in your password.

10. Press save and connection to the cloud is established.
11. Disable all other.
12. Enable legacy modem.
13. Press "save".

Note! Network status is not currently in use.

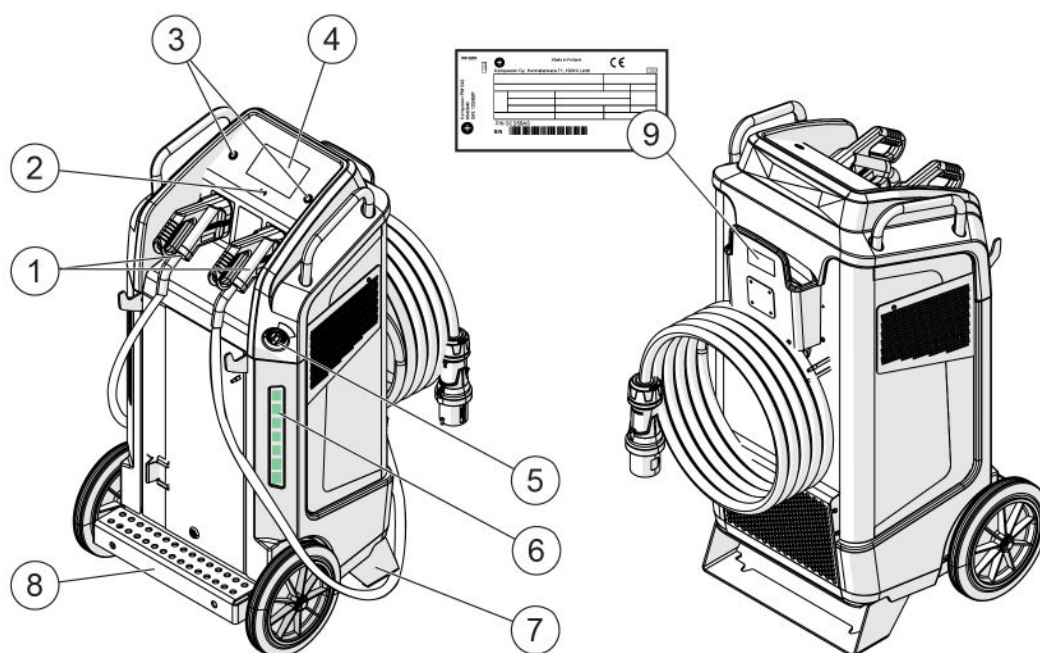
4 DEVICE

The T-Series Movable Chargers are movable and modular charging solutions for commercial use. They can be used for charging passenger cars as well as other compatible machinery. Due to the modular design along with replaceable power modules and charging connectors, the same T-Series Movable Charger can be customized to provide the best possible charging result according to your specific preferences and needs. The T-Series Movable Charger provides 40 kW of pure charging power and allows simultaneous dual charging with 20 kW from both channels.

Features:

- Movable, with wheels in the front.
- Front support can be used for fixed installation.
- Maximum output power 40 kW (or optionally 2x20 kW in simultaneous dual charging).
- Output voltage 500 V or 800 V (depending on the power module used).
- CCS Type 2 or CCS Type 1, CHAdeMO and charging protocols available.
- 7" touch screen with on-screen user guidance.
- User authentication via RFID (Radio-Frequency Identification).
- Internet cloud connection via built-in Wi-Fi and mobile data (3G/4G) connection.
- Charge status LED indicators.

4.1 Main parts



1. Charging connectors *
2. RFID reader (RFID = Radio Frequency Identification)
3. Function button
4. 7" touch screen
5. "1"/"0" (ON/OFF) start switch
6. Charge level indicator **
7. Rear support
8. Front support
9. Rating plate

Figure 1. Main parts of the T-Series Movable Charger.

Charge level indicator logic:

- LEDs are green: the charger is ready to charge
- LEDs are blue: charging operation ongoing
- LEDs are red: an alarm is active.

4.2 Identification

Serial number

Serial number of the device is marked on the rating plate or in another distinctive location on the device. It is important to make correct reference to the serial number of the product when ordering spare parts or making repairs for example.

Quick Response (QR) code

The serial number and other device-related identification information may also be saved in the form of a QR code (or a barcode) on the device. The QR-code is marked on the rating plate. Such code can be read by a smartphone camera or with a dedicated code reader device providing fast access to the device-specific information.

4.3 Connector types

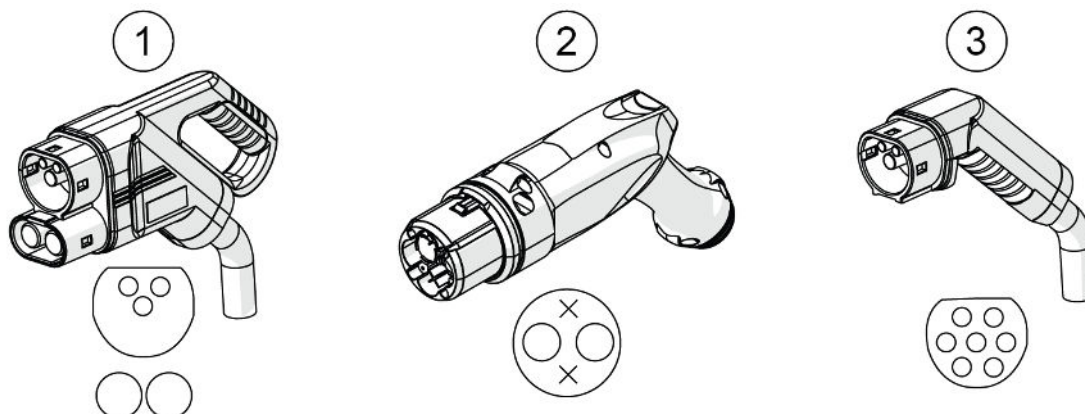


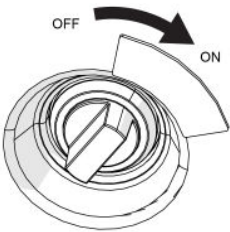
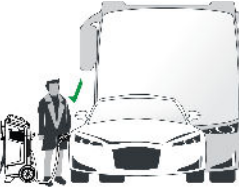
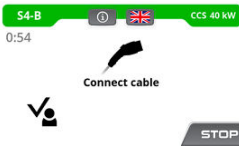
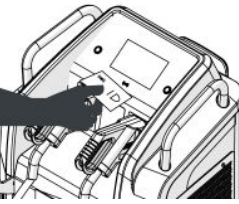
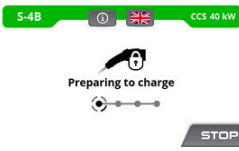
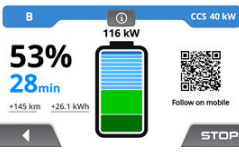
Figure 2. 1 = CCS (Type 2), 2 = CHAdeMO, 3 = Type 2

5 OPERATION

This section describes how to start using the T-Series Movable Charger once the installation and initial setup are completed. For using the charging device, follow the device's on-screen instructions.

Refer to the "Installation" section for starting up the T-Series Movable Charger.

Table 4. Start-up and charging of the T-Series Movable Charger.

1		<p>Start-up</p> <p>Turn on the charging function, by turning operation switch to “1” (ON) position.</p>
2		<p>Charging</p> <p>Ensure that you have read and understood also the instructions of the vehicle to be charged.</p> <ul style="list-style-type: none"> • Select the correct charging connector type. Refer to chapter “Parts” for connectors. • Attach the connector to the vehicle. Ensure that the charging connector is properly in place. <p>(This initiates the T-Series Movable Charger's charging process. When not charging, the device will remain in standby.)</p>
3		<p>Follow the charging device's on-screen instructions.</p>
4		<p>Identification, if enabled:</p> <p>Use your RFID-enabled (RFID = Radio-frequency identification) identification card on the device. The RFID reader is located just below the touch screen.)</p> <p>The identification is asked when the cable is plugged to the vehicle.</p>
5		<p>When the cable is connected, the following screen will appear and the communication to the vehicle starts.</p>
6		<p>When the actual charging has started, following screen shall appear.</p>

You can scan the QR -code with eg. mobile phone and follow the progress of charging remotely! (This function will open a secured webpage on Your device)

The touch screen user interface of T-series provides information on the charging session.

When the unit is not to be used for longer period of time, the operator may turn operation switch from "1" (ON) to "0" (OFF) to have it on safe standby. The charger is still accessible via the ChargeEye Backend for e.g. reading error messages and also software updates are possible.

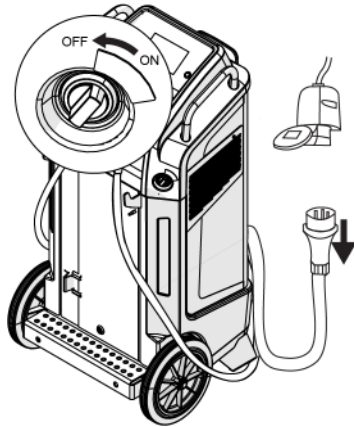


Figure 3. When the mobile charger is to be moved to another location first turn the operation switch to "0" (OFF) and then unplug the mains supply cable.

6 TROUBLESHOOTING

See maintenance manuals for more information regarding troubleshooting.

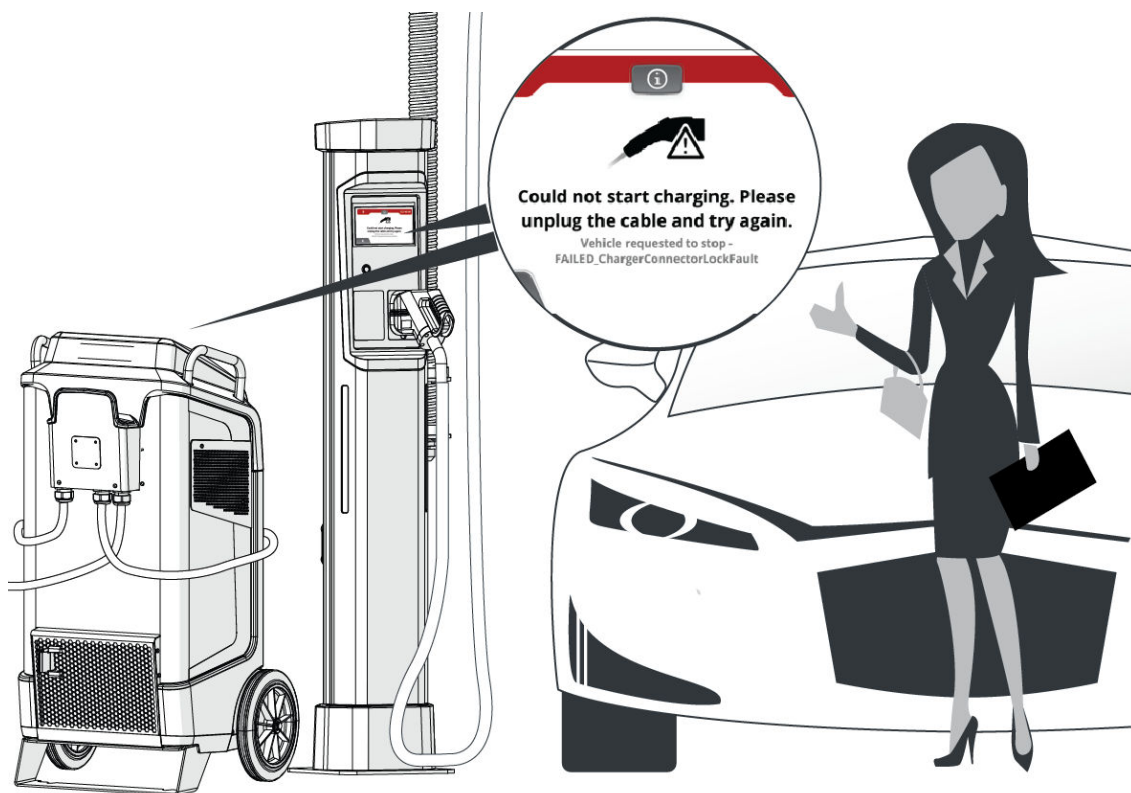


Figure 4. The charger display shows the error codes that help your service partner to fix the problem. These Error codes are also available in ChargEye back-end.

7 MAINTENANCE

7.1 General maintenance

Follow these maintenance procedures to maintain the proper function of the charging system:

- Check that all covers and components are intact.
- Check all the cables and connectors.
- Do not use them if they are damaged and contact MANUFACTURER service for replacements.

T-Series Movable Charger can be wiped clean with a moist cloth. Do not use detergents. Also clean the ventilation grilles and filters on the sides and in the rear of the unit.

7.2 Periodic maintenance and service workshops

The MANUFACTURER service partners do the charging system maintenance according to the MANUFACTURER instructions.

The main points of the service workshop maintenance procedure are:

- Cleaning the machine, including the ventilation grilles and filters
- Maintenance of the charging tools/accessories
- Checking the connectors and switches
- Checking all electric connections
- Checking the charging device mains cable and plug
- Repairing and replacing defective components
- Test and calibration of operation and performance values if needed.

To find your closest service partner, Contact your MANUFACTURER dealer.

7.3 Troubleshooting and error codes

The charger display shows the error codes that help your service partner to fix the problem. These Error codes are also available in ChargEye back-end.

8 TECHNICAL DATA

Table 5. Technical data.

Feature	Description	Value
Input	AC power connection	3~, 380...480 V (+/-10%)
	Nominal input current	63 A
	Input frequency	50...60 Hz
	Power factor (@ full load)	0.94
	Efficiency	94% @ nominal output power
Output	Maximum output power	40 kW (or 2x20 kW in simultaneous dual charging)
	Maximum output current (@ 500 V)	125 A
	Maximum output current (@ 800 V)	60 A
	Output voltage range with 500 V module	150...500 V (max 580 V DC @400 VAC)
	Output voltage range with 800 V module	200...800 V (max 920 V DC @400 VAC)
General	Charging cable length	5 m
	Charging connection type	CCS1 or CCS2, CHAdeMO
	Protection class	IP54
	Operation ambient temperature	-30 ... +50 °C, over 40 °C according to IEC derating
	Maximum humidity	< 95% relative humidity
	Cooling	Forced air (fan)
	Dimensions (WxDxH), ca.	640x670x1220 mm
	Weight (without cables) *	122 kg
	Weight (with cables), approx. *	135 kg
	User interface	"1/0" (ON/OFF) switch, two function buttons 7" touch screen, RFID reader **
	Wireless connection specification	4G/LTE modem, Wi-Fi FDD: DD800 / 900 / 1800 / 2100 / 2600 UMTS: 900 / 2100 GSM: 850 / 900 / 1800 / 1900

Standards	Electrical safety	IEC 61851-1, -23
	Electromagnetic compatibility (EMC)	IEC 61851-21-2

* The total weight of the T-Series Movable Charger includes the power module weight (43 kg).

** *RFID = Radio Frequency Identification.*

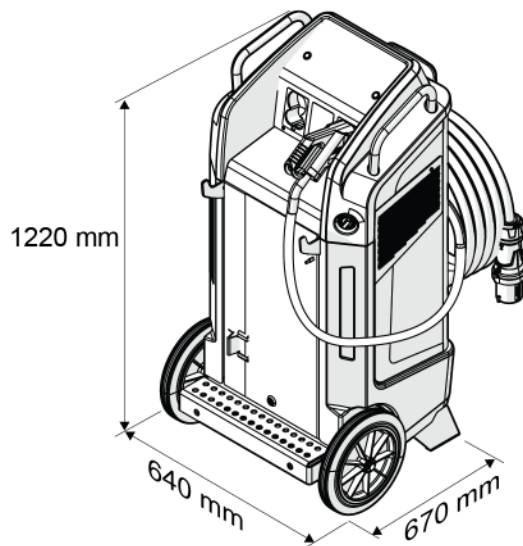


Figure 5. Overall dimensions.

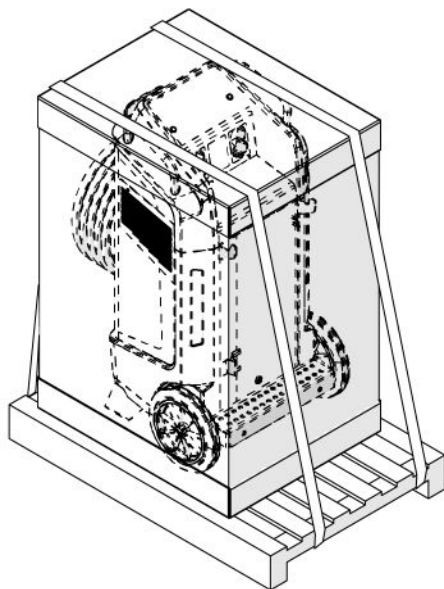


Figure 6. Package information.

The T-Series Movable Charger is delivered on a pallet.

9 GLOSSARY

AC = Alternative Current

CPU = Charging Power Unit

DC = Direct Current

PCB = Printed circuit boards

QR-code = Quick response code

RFID = Radio-frequency identification

SOC = State Of Charge – battery's charging level

UI = User interface

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