

Instruction manual

Auto ➔ **nterprise**

CHARGE COMPLEX «|K»»



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Autoenterprise cannot be held liable for any direct or indirect damages resulting from the use or operation of the electrical circuits of the equipment or software described herein. The appliance should only be used by trained and qualified personnel. Read the instructions carefully before using the product. In addition, Autoenterprise reserves the right to change any product described here without prior notice.

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1. INTRODUCTION

CHARGE COMPLEX «K» – is a high quality charging station (hereinafter referred to as «the complex»), which is made using the latest solutions in the field of power electronics and technology, based on the modern components combined with the microcontroller signal processing technology, which ensures high efficiency, functionality and reliability of the charger.

This, together with the software and accessible interfaces, provides a **flexible** and **productive** solution for electric vehicle charging that meets the highest quality standards.

The product is designed to control and convert the energy consumed from a three-phase AC 220/380V to DC voltage and to control the AC voltage for charging an electric vehicle battery.

The product is equipped with an intelligent microcontroller control system and communication devices that allow for the exchange of information with the electric vehicle and set the value of the charge current and voltage, according to the needs of the electric vehicle in real time.

2. KEY INFORMATION

2.1 INFORMATION ABOUT THE MANUAL

This manual describes how to operate the charger properly and safely. Be sure to follow the safety instructions given here, as well as any local safety regulations and general safety instructions.

Before you put the charger into use, make sure that the instructions, the «Safety» paragraph in particular, have been read through and understood completely. This manual is an integral part of the station and should therefore be kept in its immediate vicinity.

2.2 WARNING SYMBOLS

Important safety instructions in this manual are marked with symbols. These safety instructions must be strictly adhered to. Always pay attention to them and follow the safety instructions to avoid accidents, personal injury or material damage.



WARNING!

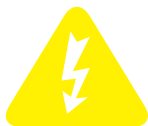
Risk of injury or death

This symbol indicates instructions that must be followed to avoid injury, trauma or death.

**WARNING!**

Risk of material damage

This symbol indicates instructions which, if not followed, may result in material damage, functional faults and/or machine breakdowns.

**WARNING!**

Danger - electrical current

This symbol alerts you to potentially dangerous situations involving electric current. Failure to follow the safety instructions increases the risk of serious injury or death. Caution should be exercised, especially during maintenance and repairs.

**ATTENTION!**

This symbol indicates tips and information that should be adhered to in order to ensure efficient and reliable operation of the product.

2.3 LIABILITY AND WARRANTY

All information, illustrations, sheets, specifications and diagrams contained in these operating instructions have been carefully compiled to the current state of the art at the time of publication. We are not liable for errors, missing information or any subsequent damages or consequential damages.

Strict adherence to the safety procedures described in these operating instructions and special care when using the equipment are essential to prevent and reduce the likelihood of injury or damage to the equipment. The manufacturer is not responsible for damage and/or malfunctions caused by non-compliance with the instructions in this manual.

Additionally, the manufacturer will not be liable for any personal injury or material damage, whether indirect or special, consequential, loss of business profits, business interruption or loss of business information resulting from the use of the equipment described in this manual.

Any software included in this equipment must only be used for the purposes for which it has been provided to the User by the Autoenterprise for which it is strictly prohibited to make any changes, conversions or copies (except for any necessary backups).

AutoEnterprise reserves the right to update any information, illustrations, sheets, specifications and diagrams contained in these operating instructions at any time without prior notice.

2.4 DISPOSAL INFORMATION



Do not dispose of the charging complex together with household waste!

Electronic devices must be disposed of in accordance with the local directives for the disposal of electronic and electrical waste. If you have any further questions, please contact your supplier.

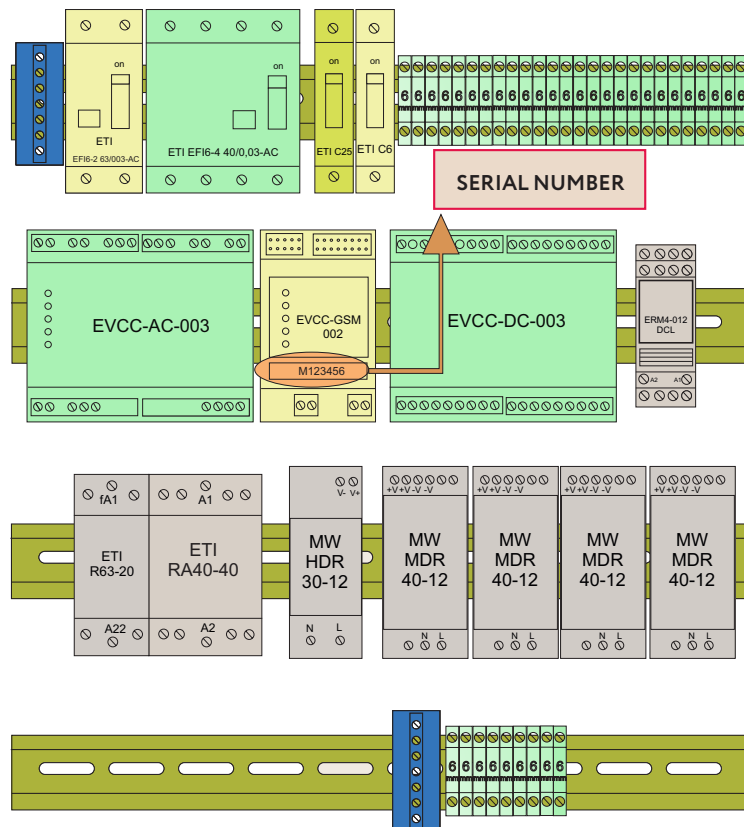
Use suitable tools if you need to disassemble the system. All individual parts must be sorted by different types of material and disposed of in accordance with the regional guidelines for the disposal of electronic and electrical waste.

2.5 MANUFACTURER'S LABEL

The marking on the charging complex is located on the GSM modem inside the complex on the side of the control panel (side 1) and consists of alphabetic and digital symbols (example: M123456).



This information is important for setting up, troubleshooting and ordering spare parts for the station.



3. APPLICATION AREA, STATION SPECIFICATIONS

3.1 APPLICATION AREA



The charger is designed exclusively for charging electric vehicles.

For information about the materials, please contact Autoenterprise sales representative or contact the Autoenterprise technical support team

The following sections should also be followed as part of the intended use:

- Only charge compatible electric vehicles.
- Failure to follow the instructions for use, maintenance and repair described in these operating instructions excludes any liability on the part of the manufacturer in the event of a defect.
- The system must only be operated, maintained and repaired by personnel familiar with the intended use and hazards!
- Carry out maintenance and repairs in accordance with the specifications in these operating instructions.
- The unit may only be operated with equipment and spare parts supplied or listed in the spare parts and consumables lists.
- Using of the system in other areas is contrary to its intended purpose. The manufacturer is not responsible for any damage to the equipment resulting from such use. The user is solely responsible for any damage resulting from improper use of the system.

3.2 COMPLEX SPECIFICATIONS

IEC61851-1 charging mode	Type 1, Type 2, CHAdeMO, CCS (Type 2)
Rated input voltage	3 phase 380V
Input voltage deviation limits, %, max	+ -10
Nominal mains frequency	50 Hz
Main ports: Chademo 	1 p. Output power, max. 60 kWh Maximum cable current 150A Maximum connector voltage 550V Cable length 6,5 m

CCS 	1 p. Output power, max. 60 kWh Maximum cable current 150A Maximum connector voltage 550V Cable length 6,5 m
Type 1 	1 p. Output power, max. 19 kWh Maximum cable current 80 A Maximum connector voltage 240V Cable length 6,5 m
Type 2 	1 p. Output power 45 kWh Maximum cable current 63A Cable length 6,5 m
Number of vehicles simultaneously connected to one Charging Station	3
Access types	RFID card Mobile application Chip tag (optional) Stand-alone operation
Delivery contents	Charging station, user manual
Charging station dimensions	314x1056x2122 mm

CHARGING COMPLEX FEATURES

Type of installation	Floor/Wall mounting
Online device monitoring	Yes
Current adjustment	Yes
Possibility to manage rates of the station	Yes
Single body version	Yes
Digital display to indicate the amount of electricity consumed	Yes
User interface management	The menu functions are controlled via the buttons on the control panel or via the application. Mechanical emergency shutdown button for the station.
Enclosure material	Steel with anticorrosive coating
Mechanical protection	IK10
Case protection class	IP65

Power cable entry from below	Yes
Gross/net weight (without DC modules), kg	180
Ambient temperature	from -50°C to +50°C

In emergency situations, the charging complex disconnects the input power circuits by means of differential relays. The charging complex control system is powered from the mains via an additional circuit breaker. The output cable is connected by the sealing sleeves/ cable glands. After the voltage is switched on, the initial availability of the charger is not more than 1 minute. The charging complex is designed for continuous operation. Switching the operation modes of the charger is carried out under the control of a communication microcontroller providing communication with the car. An emergency stop button is located on the front side of the charging station in the DC charging mode. Relative humidity should not exceed 95% without condensation.

3.3 EQUIPMENT MODIFICATIONS

It is strictly forbidden to change, modify or alter the machine in any way without the explicit consent of the manufacturer.

All signs, stickers and pictograms attached to the machine must be visible, legible and cannot be removed. Signs, labels or pictograms that have become damaged or illegible must be replaced immediately. Please contact AutoEnterprise to coordinate such questions.

3.4 GENERAL ELECTRICAL SAFETY INFORMATION

Follow the safety instructions to avoid injury and material damage when working with the device.

Failure to follow these instructions can result in injury and damage to or destruction of the product.

Ignoring the safety recommendations and instructions in this manual will relieve the manufacturer and his authorized representatives of all liability and claims.



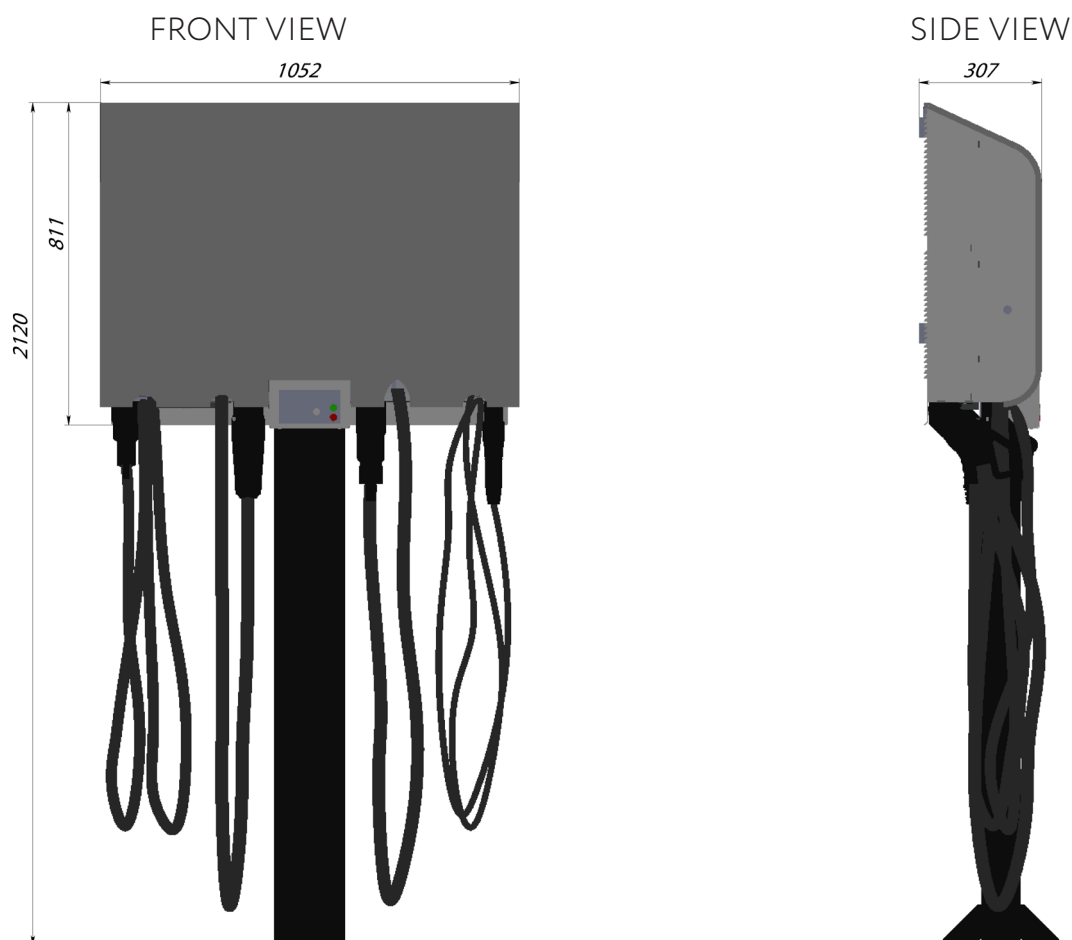
During the installation and operation of the charging complex the following should be adhered to: «Rules of electric installations», «Rules of technical operation of electric installations for consumers», «Safety rules for the operation of electric installations for consumers» in the part concerning electric installations up to 1000 V GOST 22261-94.

The method of human protection against electric shock charger corresponds to class 1 of GOST 12.2.007.0-75.

Maintenance and change of the circuit of connection of the product should be carried out after de-energizing the input circuits with the help of external disconnecting devices and disconnecting the charger from the electric vehicle. It should be noted that in the presence of voltage at the mains input, at the other terminals of the product, due to the presence of internal connections, there may also be life-threatening voltage.

4. COMPLEX SPECIFICATIONS

4.1 CHARGING COMPLEX DIMENSIONS AND PARAMETERS



The station is structurally designed as a monoblock mounted on a pillar and has the following control and management bodies:

- Encased charging station on a pillar – 1 pc.
- Connector «Type 1» (with cable) - 1 pc.
- Connector «Type 2» (with cable) - 1 pc.
- Connector «CHAdMO» (with cable) - 1 pc.
- Connector «CCS (Type 2)» (with cable) - 1 pc.
- Information display - 1 pc

All connectors are permanently installed in the charging complex case. For easy transportation, the stand is separated from the charging station and packaged separately.

DESCRIPTION OF CONNECTORS AND PARAMETERS OF THE CHARGING COMPLEX

Types of connectors for connecting the charging cable to the electric vehicle:

Type 1 (SAE J1772);
 Type 2 (Mennekes);
 CHAdMO;
 CCS (Type 2).

CHARGE COMPLEX «K»				
Socket type	Quantity	Current, A	Max power, kWh	Max voltage, V
Type 1 (SAE J1772)	1	80	19	240
Type 2 (Mennekes)	1	63	45	380
CHAdeMO *	1	150	60	550
CCS (Type 2) *	1	150	60	550

CHARGING STATION MODIFICATIONS



The charging station is available in the following configurations

CHARGE COMPLEX «K» - 3				
Socket type	Quantity	Current, A	Max power, kWh	Max voltage, V
Type 1 (SAE J1772)	1	80	19	240
Type 2 (Mennekes)	1	3x63	43	380
CHAdeMO	1	125	60	480
CCS (Type 2)	1	125	60	480

CHARGE COMPLEX «K» - 2				
Socket type	Quantity	Current, A	Max power, kWh	Max voltage, V
Type 1 (SAE J1772)	1	80	19	240
Type 2 (Mennekes)	1	3x63	43	380
CHAdeMO *	1	84	40	480
CCS (Type 2) *	1	84	40	480

CHARGE COMPLEX «K» - 1				
Socket type	Quantity	Current, A	Max power, kWh	Max voltage, V
Type 1 (SAE J1772)	1	80	19	240
Type 2 (Mennekes)	1	3x63	43	380
CHAdeMO *	1	42	20	480
CCS (Type 2) *	1	42	20	480

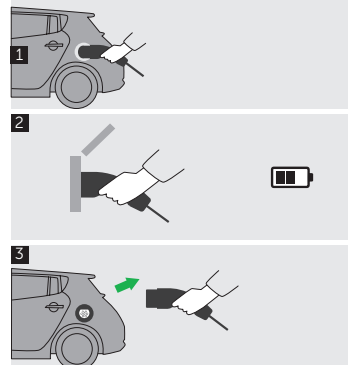
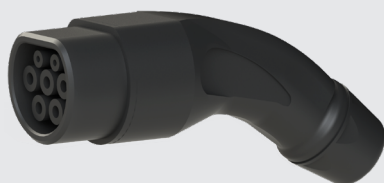
The charging complex is designed for the installation of 1 «KEHUA 20» 3 DC modules.

The emergency stop button is located at the bottom of the unit housing.

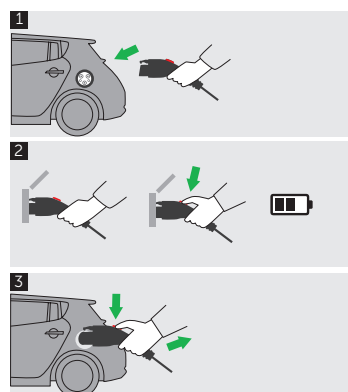
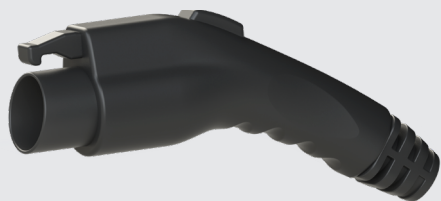
When the emergency stop button is pressed in DC charging mode, the charging station control circuit is automatically deactivated and the red LED on the information display blinks continuously at a frequency of 2 times/second.

In order to continue the operation of the automatic stop button, it is necessary to reset the button manually (pull the base of the button downwards).

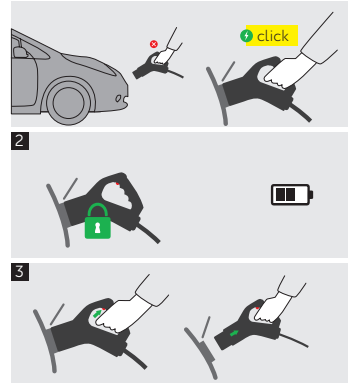
AC connector
Type2



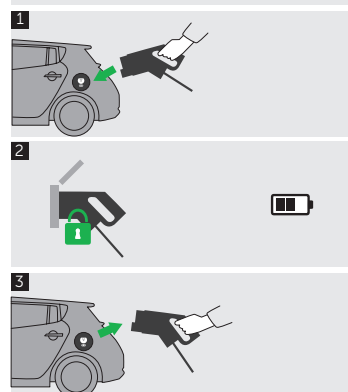
Connector AC.
Type1



CHAdEMO connector.
CHAdEMO connectors have a lock button.



CCS connector.



The charging complex is designed for installing 4 DC modules of «PRE, 12 kW» model. The emergency stop button is located at the bottom of the unit housing.

When the emergency stop button is pressed in DC charging mode, the charging station control circuit is automatically deactivated and the red LED on the information display blinks continuously at a frequency of 2 times/second.

In order to continue the operation of the automatic stop button, it is necessary to reset the button manually (pull the base of the button downwards).

4.2 TRANSPORTATION OF THE COMPLEX

WARNING



There is a risk of injury from falling parts during transport, loading or unloading of the station.

ATTENTION

The charger may be damaged or destroyed if it is mishandled during transportation.

FOR THIS REASON, THE FOLLOWING SAFETY INSTRUCTIONS MUST BE STRICTLY ADHERED TO:

Transport the charging complex with the utmost care.

Take into account the centre of gravity of the charging system during transportation (minimize the risk of tipping over).

Take measures to prevent the charger from sliding sideways.

Transport the charger as carefully as possible to avoid damaging it.

Protect the charger from damage during transportation by using belts and inserts and leave sufficient clearance between other objects to be transported.

Temperature during transportation:

Min: 10 °C

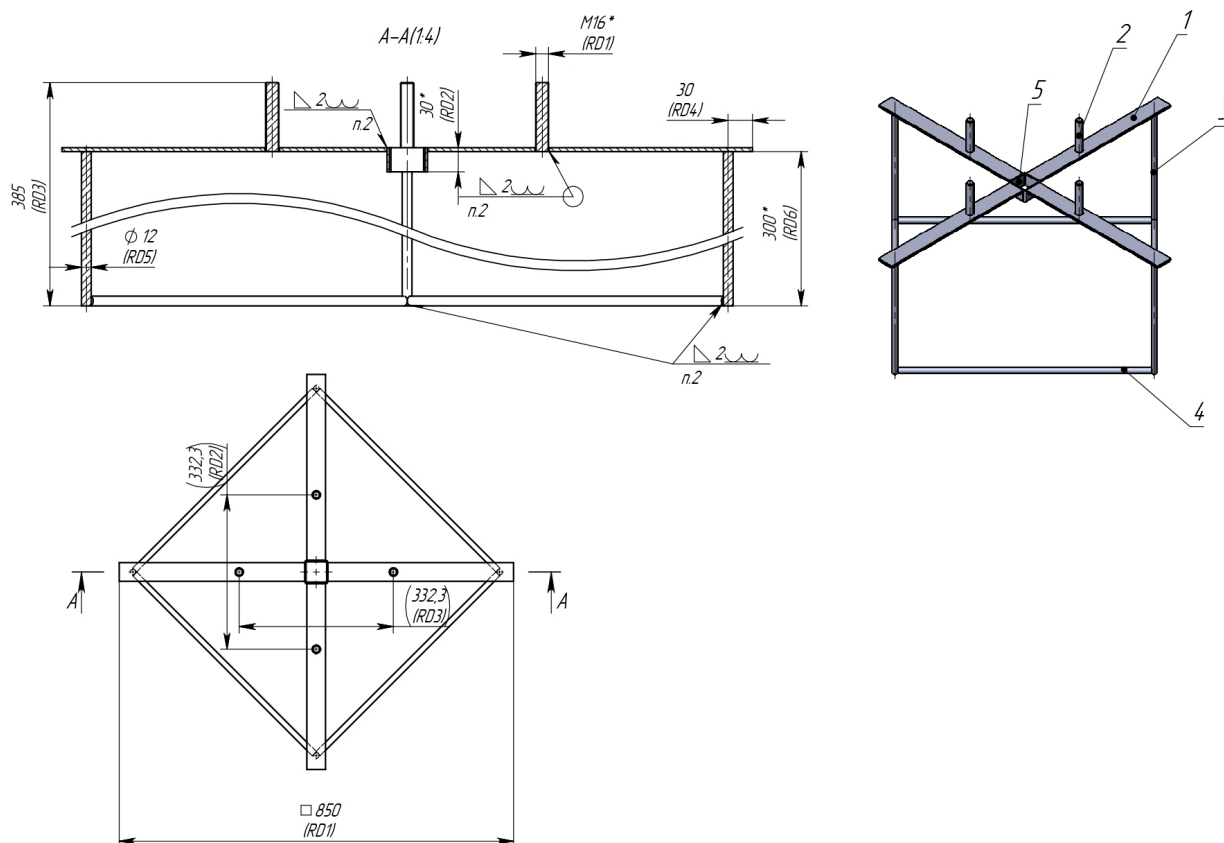
Max: 40 °C

4.3 COMPLEX INSTALLATION

When choosing the location of the charger, the following conditions must be met: there must be a distance of at least 1 meter between the charger and the wall or any obstacle. Nothing should be placed on the charger. Sufficient space must be left at the front and back of the charger for maintenance.

RECOMMENDATIONS ON THE CHARGING COMPLEX INSTALLATION.

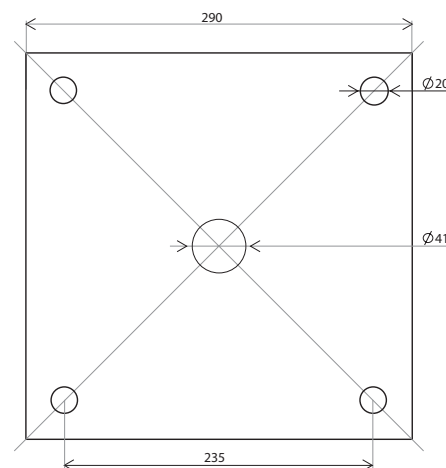
The complex is installed on a concrete base of 1300x1300x500 mm in size. It is recommended to prepare a special foundation with an installed metal base (an example of a base structure is shown in the drawing below).



The base is to be poured with concrete. The ground at the place of installation of the charging station must ensure high stability of the base. There should be no underground cables or pipes in the area around the foundation.

The foundation usually settles for about a week. Once the concrete has stood, you may proceed with the installation.

The base size of the charging station post is shown in the figure below, plate should be 8 mm thick.



WARNING

Along with the preparing of the foundation, it is necessary to lay the power cable (not included in the delivery set). When routing the power cable, appropriate insulation must be used.

It is recommended to lay and connect the power cable inside the charging station's rack before installing it on a concrete base, while removing the insulation from the station side at a distance of 300 mm in advance.

Only qualified personnel should connect the power cable to the AC mains.

The recommended cross section of the power cable is a copper multi-wire conductor with a cross section of 5x50 mm².

Before connecting the complex to the power supply, it is recommended to install an AC circuit breaker between the complex and the power supply network. It is necessary for the further maintenance of the complex. We recommended to use a 3-pole circuit breaker 160 A.

4.4 COMPLEX CONNECTION

Ensure that all internal components are properly secured after transportation.

Check the quality of wire, loop, and connector connections. Check the tightening torque of terminals, bolts, screws, and switchgear.

The charger does not require any special adjustment or tuning before it is put into operation.

Before you connect the charger, make sure that:

- The power supply cable on the mains side is de-energized by means of external disconnecting devices.
- The mains supply is connected as shown in the wiring diagram: 3 phases with separate Neutral (N) and grounding (PE) conductors
- When connecting with a 4-wire cable, carry out the protective grounding with a separate wire.

To connect the system to the electrical circuit, open the rear wall of the station (side 2), which houses the busbars for connecting the input power cable.

Next, connect the power cable to the appropriate busbars (as shown in the scheme). If the connection is made with a 4-wire cable, the external grounding should be done with a wire of a cross section of at least 16 mm² by means of a bolted connection M10 with the inscription «PE», located in the terminal compartment. It is strictly forbidden to supply voltage to the mains input of the charger when the grounding is not connected.

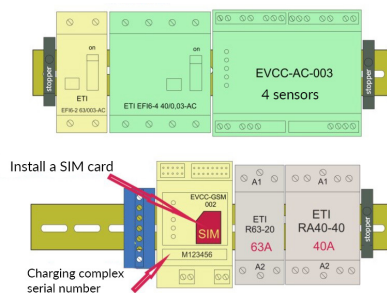
THE FIRST CONNECTION TO BE MADE IS THE GROUND WIRE TO THE GROUND BUSBAR MARKED «PE». DO NOT SWITCH ON THE CHARGER WITHOUT A CONNECTED GROUNDING!

Non-compliance with this requirement may result in the energizing the charger body, electric shock damage to the service personnel and consumers, as well as in a failure of the charger.

If the charging complex is not equipped with inverters, it is necessary to install and connect the DC modules recommended by the manufacturer (video on the order of their connection is sent on request).

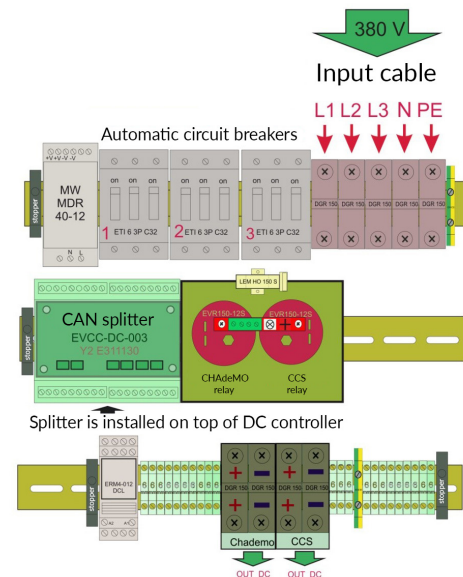
Then, with the help of external switching devices, it is necessary to connect the power cable to the AC mains and then move the three-pole circuit breakers 1, 2, 3 and 4 to the working position (up):

The operating modes of the charging complex are displayed on the LCD display, which, among other things, displays the following information: operating modes (ready to charge, the battery charge of the vehicle), the software and firmware version, the number of the complex, the status of the GSM network (signal strength, network status), vehicle authorization

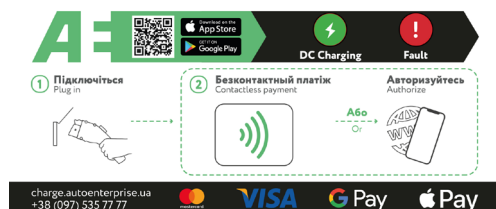


To switch the charging complex on it is necessary to:

- Install a mobile network operator's SIM card;
- Turn residual current devices (RCDs) to the working position (up);
- Move circuit breakers to working position (up).



The operating modes of the charging complex are displayed on the LCD display, which, among other things, displays the following information: operating modes (ready to charge, the battery charge of the vehicle), the software and firmware version, the number of the complex, the status of the GSM network (signal strength, network status), vehicle authorization process.



AutoEnterprise
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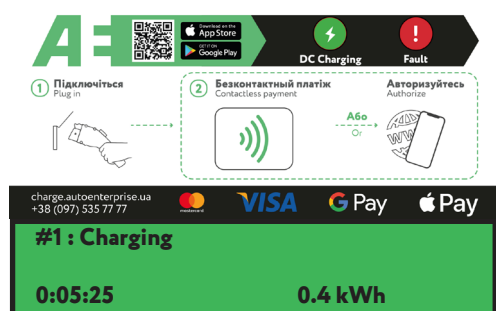
In case of any error in the charging complex, to perform diagnostics and restore the operation, please, inform the service center about the factory number of the charging complex (the number of the charging complex is shown in the pic. «M006335»).



While the vehicle charging mode is active, station displays information about the charging time, voltage level and current value



The «DC Output» indicator light flashes green frequently when the vehicle is being charged in Chademo and CCS mode, and the LCD screen displays information about the time passed since the charging started, the charging current and the voltage.



The modes and text about the operation of the charging system on the LCD display depend on the software version and may vary from version to version.

4.5 COMPLEX STORAGE

Store the charger in a sealed container until it is assembled and installed.

Charging complex storage conditions:

- The storage area should be dry, free of dust, caustic materials, vapours and combustible materials.
- Store in a storage room with appropriate weather protection.
- Do not expose the charger to impacts.

Storage conditions:

- Storage Temperature: 0 to +40 ° C (32 to 104 ° F)
- Relative humidity: max. 85%
- Avoid extreme temperature fluctuations.
- If stored for a long period of time, check the general condition of all parts and packaging regularly.

5. MAINTENANCE OF THE COMPLEX



ATTENTION

- Improper maintenance can result in serious injury or damage. For this reason, maintenance may only be carried out by authorised, trained personnel who are familiar with the product operation and strictly adhere to all safety instructions.
- The use of explosive or flammable cleaning agents presents a risk of fire or explosion.
- Do not store flammable or explosive liquids near the charging station.



ATTENTION

Before performing any kind of maintenance, make sure that the charger is disconnected from the grid.



INFORMATION

To ensure maximum availability and service life of the system, we recommend that you clean the charger on the inside on a regular basis.



ATTENTION

Improper troubleshooting may result in serious injury or damage. For this reason, it may only be carried out by authorized, trained personnel who are familiar with the system operation and strictly adhere to all safety instructions.

In the course of operation the following maintenance are carried out:

- Visual inspection for overheating of equipment; check, pulling connections;
- Identification of defective parts and assemblies, maintenance and replacement.

It is necessary to replace the filters of the complex at least once a year.

In case of increased dust in the room where the charging complex is located, it is recommended to clean out the dust from the internal elements of the complex from dust at least once in 6 months. This work should be performed by a representative of the manufacturer or a qualified specialist.

Attempting to carry out maintenance independently may cause electric shock and lead to warranty cancellation.

Internal capacitors retain their charge after the power supply is switched off.

Authorized service personnel must disconnect all AC power sources from the charger to reduce the risk of electric shock before starting any maintenance or cleaning on the charger or on any circuits connected to the charger.

Preventive inspection of the charger should be carried out at least once every 3 months. To do this, the charger must be disconnected from live circuits and its housing, contacts and vents must be thoroughly cleaned of dust and dirt, and the quality of wire fastening must be checked. Screws of terminal blocks and wire ends must be clamped, the wires must not have damaged insulation.



In the event of a malfunction, please check the device first. In case of failure, write down all the data of the device (year of manufacture, software version, etc.) and call us by phone next to the powered on device. If you have any questions or technical problems, please contact us directly at the above address.

Name of malfunction, external manifestation and additional signs	Probable cause	Possible remedy
Loss of communication with the complex	Modem failure	Replacing the modem or checking the status of the SIM card
	Bad location of the antenna that receives GSM signal	Changing the location of the antenna for the best reception of the GSM signal or the replacement of the antenna (for a more powerful with a stifter)
Damage to the charging cables	Physical wear and tear, careless handling of equipment	Disconnect the device. If the cable cannot be recovered -replace it
	Connector malfunction	If you can not fix it by yourself, send it for repairs
LCD charging indicator does not work (no power supply)	No input voltage	Contact the owner of the facility where the device is installed, and find out the reason for the lack of voltage
	Circuit breakers or RCD charging system triggered	Restore the operation circuit breakers or RCDs of the charging complex
Other malfunctions	The charging complex does not provide the set electric parameters for the EV battery charge	Contact the «Autoenterprise» technical support team

6. DISASSEMBLY



ATTENTION

Injury may occur when disassembling the system. Therefore always wear suitable protective clothing, safety shoes, etc.



ATTENTION

The system must be disconnected from the power supply by means of external disconnection devices.

IN SEQUENCE

1. Make sure that the input voltage of the charger is disconnected.
2. Carry out disassembly work.



INFORMATION

Always use suitable tools to disassemble the complex.



Follow the specific disposal instructions

TECH SUPPORT

Contacts:

1. You can write an email to tech support using the contact page on our web-site.
2. You can call on numbers listed on the web-site.

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