



ELECTRIC VEHICLE CHARGER

EVC05 Series

User Manual



CONTENTS

1 - SAFETY INFORMATION.....	2
1.1 - SAFETY WARNINGS.....	2
1.2 - IMPORTANT SAFETY INSTRUCTIONS.....	3
1.3 - GROUND CONNECTION WARNINGS.....	4
1.4 - POWER CABLES, PLUGS and CHARGING CABLE WARNINGS.....	4
1.5 - REQUIRED UPSTREAM PROTECTIONS.....	4
2 - DESCRIPTION.....	5
3 - ELECTRICAL SPECIFICATION.....	6
4 - GENERAL INFORMATION.....	8
4.1 - INTRODUCTION OF THE PRODUCT COMPONENTS.....	8
4.2 - PLUG CHARGING CABLE to EACH SOCKET.....	9
4.2.1 - AC 22 kW SOCKET OUTLET.....	9
4.2.2 - SCHUKO SOCKET OUTLET (Optional).....	10
4.3 - CHARGING SCENARIOS (Includes all scenarios).....	12
4.3.1 - AC 22 kW SOCKET OUTLET.....	13
4.3.1.1 - VEHICLE CONNECTION & CHARGING.....	13
4.3.1.2 - STOP CHARGING.....	15
4.3.2 - SCHUKO SOCKET OUTLET (Optional).....	17
4.3.2.1 - VEHICLE CONNECTION & CHARGING.....	17
4.3.2.2 - STOP CHARGING.....	19
4.4 - BEHAVIOUR OF THE STATUS INFORMATION LED _s (for AC Type2 outlets).....	21
4.5 - RCCB RECLOSURE UNIT BEHAVIOUR (Optional)	22
4.6 - ERROR and FAULT CONDITIONS.....	22
4.6.1 - ERROR CONDITIONS.....	23
4.6.2 - TRIPPING RELAY ON PRODUCTS WITH RESIDUAL CURRENT.....	24
4.6.3 - DC 6mA LEAKAGE CURRENT SENSOR BEHAVIOR.....	24

1 - SAFETY INFORMATION



CAUTION
RISK OF ELECTRIC SHOCK



CAUTION: ELECTRIC VEHICLE CHARGER DEVICE SHALL BE MOUNTED BY A LICENSED OR AN EXPERIENCED ELECTRICIAN AS PER ANY REGIONAL OR NATIONAL ELECTRIC REGULATIONS AND STANDARDS IN EFFECT.



CAUTION

AC grid connection and load planning of the electric vehicle charging device shall be reviewed and approved by authorities as specified by the regional or national electric regulations and standards in effect. For multiple electric vehicle charger installations the load plan shall be established accordingly. The manufacturer shall not be held liable directly or indirectly for any reason whatsoever in the event of damages and risks that are borne of errors due to AC grid supply connection or load planning.



IMPORTANT - Please read these instructions fully before installing or operating

1.1 - SAFETY WARNINGS

- Keep this manual in a safe place. These safety and operating instructions must be kept in a safe place for future reference.
- Check that the voltage marked on the rating label and do not use charging station without appropriate mains voltage.
- Do not continue to operate the unit if you are in any doubt about it working normally, or if it is damaged in any way - switch off the mains supply circuit breakers (MCCB and RCCB) in upstream distribution panel. Consult your local dealer.
- The ambient temperature range during charging should be between -25°C and $+50^{\circ}\text{C}$ (without direct sunlight) and at a relative humidity of between 5 % and 95 %. Use the charging station only within these specified operating parameters.
- The device location should be selected to avoid excessive heating of the charging station. High operating temperature caused by direct sunlight or heating sources, may cause reduction of charging current or temporary interruption of charging process.
- The charging station is intended for outdoor and indoor use. It can also be used in public places.
- To reduce the risk of fire, electric shock or product damage, do not expose this unit to severe rain, snow, electrical storm or other severe weathers. Moreover, the charging station shall not be exposed to spilled or splashed liquids.
- Do not touch end terminals, electric vehicle connector and other hazardous live parts of the charging station with sharp metallic objects.
- Avoid exposure to heat sources and place the unit away from flammable, explosive, harsh, or combustible materials, chemicals, or vapors.
- Risk of Explosion. This equipment has internal arcing or sparking parts which should not be exposed to flammable vapors. It should not be located in a recessed area or below floor level.
- This device is intended only for charging vehicles not requiring ventilation during charging.
- To prevent risk of explosion and electric shock, ensure that the specified Circuit Breaker and RCD are connected to building grid.

- Charging Station bottom must be at minimum 100mm above the ground level.
- Adaptors or conversion adapters are not allowed to be used. Cable extension sets are not allowed to be used.
- The allowed current value of the service socket is maximum 10A.
- This charging station is floor mounted.



WARNING: Never let people (including children) with reduced physical, sensory or mental capabilities or lack of experience and or knowledge use electrical devices unsupervised.



CAUTION: This vehicle charger unit is intended only for charging electric vehicles not requiring ventilation during charging.

1.2 - IMPORTANT SAFETY INSTRUCTIONS



Read carefully all the instructions before starting in order ensure properly installation of the charge point.

Charging station is designed for installation in outdoor and indoor usage. For each of condition, the station must be installed safely and proper protection should be ensured.

- Charging station should be installed in areas where there is no risk of explosion.
- Charging station should be installed in areas where there is no risk of falling objects around which may damage the station.
- The installation surface of the station should be withstood against the physical and mechanical forces.
- The charging station should not be installed near areas where water or any liquid can penetrate into the unit.
- Charging station is designed for charging modes in IEC 61851, it should not be used for anything other than this.
- Do not modify the charging station which will cause rejection of warranty and responsibility of Vestel.
- Electrical safety regulations should be followed according to the county which the installation is done.
- There should not be made repairs when the unit is powered.
- Only qualified technician should have access to electrical parts inside the charging station.
- The installation should be checked periodically by qualified and trained technician.
- The station should not be used if the enclosure or charging socket/plug is cracked or damaged.
- The charging station has TYPE 2 AC outlets to be used for mode 3 charging. Also the charging station has optional schuko socket outlets to be used for mode 1 charging.

1.3 - GROUND CONNECTION WARNINGS

- Charging station must be connected to a centrally grounded system. The ground conductor entering the charging station must be connected to the equipment grounding lug inside the charger. This should be run with circuit conductors and connected to the equipment grounding bar or lead on the charging station. Connections to the charging station are the responsibility of the installer and purchaser.
- To reduce the risk of electrical shock, connect only to properly grounded outlets.
- **WARNING :** Make sure that during installing and using, the charging station is constantly and properly grounded.

1.4 - POWER CABLES, PLUGS and CHARGING CABLE WARNINGS

- Be sure that plugs and sockets are compatible on charging station side.
- A damaged charging cable can cause fire or give you an electric shock. Do not use this product if the flexible Charging cable or vehicle cable is frayed, has broken insulation, or shows any other signs of damage.
- Ensure that the charge cable is well positioned thus; it will not be stepped on, tripped over, or subjected to damage or stress.
- Do not forcefully pull the charge cable or damage it with sharp objects.
- Never touch the power cable/plug or vehicle cable with wet hands as this could cause a short circuit or electric shock.
- To avoid a risk of fire or electric shock, do not use this device with an extension cable. If the mains cable or vehicle cable is damaged it must be replaced by the manufacturer, its service agent, or similarly qualified persons in order to avoid a hazard.
- Use appropriate protection when connecting to the main power distribution cable.
- The charging station is permanently connected.

1.5 - REQUIRED UPSTREAM PROTECTIONS

- Class-I/B Lightning Protection must be connected to the upstream distribution panel. The charger contains Class II/C Type Surge Protector Device (SPD)
- MCCB (Thermic Magnetic Adjustable) must be connected to the upstream distribution box.

Model	AC Socket1	AC Socket2	Schuko Socket1	Schuko Socket2	Power Output	Input Max AC Current	Recommended Cross Section for AC Mains	Required Circuit Breaker
EVC05-AC44	22	22	NA	NA	44 kW	64A	25-35 mm2	80A Curve-C
EVC05-AC44*****S*	22	22	3,7	3,7	51,4 kW	80A	25-35 mm2	100A Curve-C

For distances of 50 meters and below, recommended cross section for AC mains can be applicable. For the distances more than 50 meters, the cable section calculation should be made by the electrical installer.

When selecting the installation location, take into consideration the minimum space needed for operating and maintenance. Note that EVC does not have hinges on the maintenance door!

When installing the unit, respect the minimum distances space for maintenance and safety reasons.

Please comply accordingly to your country specifications.

The next picture shows how it should be installed.

- Do not install near areas where water or fluids can penetrate into the unit.
- Do not install the unit in unstable terrain.

2 - DESCRIPTION

Model Name	<u>EVC05 Series (Name Coding: EVC05-AC****)</u>
	EVC05 : Electric Vehicle AC Charger (Mechanical Cabinet 05)
	1st Asterisk (*) can include Outlet Quantity and Rated Power
	44 : 22kW with dual outlet (3Phase Supply Equipment)
	22 : 11kW with dual outlet (3Phase Supply Equipment)
	2nd Asterisk (*) can include combinations of the communication module options:
	Blank : Only Ethernet and RFID
	W : WiFi module
	L : LTE / 3G / 2G module
	P : ISO 15118 PLC module
Cabinet	3rd Asterisk (*) can be mentioned for display option
	D : 10.4" Display with touchscreen
	4rd Asterisk (*) can be mentioned for MID option
	M : Charging unit with MID meter
	5rd Asterisk (*) can be mentioned for RCCB Reclosure Unit option
	Blank : No RCCB Reclosure Unit
	R : Charging unit with RCCB Reclosure Unit
	6rd Asterisk (*) can be mentioned for Schuko Unit option
	Blank : No Schuko Outlet
	S : Charging unit with Schuko Outlet
	7rd Asterisk (*) can be one of the following:
	Blank : Case-B Connection with normal socket
	T2S : Case-B Connection with shuttered socket
	T2L : Case-B Connection with LID socket
	T2P : Case-B Connection with Type-2 socket

3 - ELECTRICAL SPECIFICATION

IEC Protection class	Class - I
Socket Outlet (Vehicle Interface)	IEC 62196 AC Type-2 IEC 62196 Shuttered Socket (optional) IEC 62196 Locked Cover Socket (optional)
Schuko Socket with Lock Mechanism (Optional)	Type E Type F
Cable Outlet (Vehicle Interface) (Optional)	Cable with TYPE 2 (IEC 62196) Female Plug
Voltage & Current Rating	400 VAC 50/60 Hz - 3-Phase 32A
AC Maximum Charging Output	2 x 22kW for AC Socket outlet Total Max. Power: 44kW Total Max. Current: 64A
Serial Interface	Modbus / M-Bus over RS485
Power Level Control	WebConfig UI
Built-in DC residual current sensor	DC 6 mA
Display	Color 10.4" TFT LCD with resistive touchscreen user interface
Built-in MID meter	Class B MID meter Eichrecht conformity (optional)
Built-in RCCB	Type-A High Immunity
RCCB Reclosing Unit	Optional
Built-in MCB	40A Type C for AC outlets, 20A Type C for Schuko outlets
EV Ready, ZE Ready	Optional
Surge Protection Device	Yes
Built-in Electrical Protection	Over Current, Over Voltage, Under Voltage, DC/AC Residual Current, Over Temperature, Short Circuit, Socket Interlock, Surge/ Lightning, Earth Fault, Phase- Neutral Reverse Detection

CONNECTIVITY

Ethernet	100 Mbps Ethernet (Standard with M / W / L / P options) Daisy Chain
Wi-Fi	802.11 a/b/g/n
Mobile Connectivity (Optional)	LTE / 3G / 2G
PLC HLC (Optional)	ISO 15118
RFID Reader	ISO 14443A/B and ISO 15693 w/SAM Module

OTHER FEATURES (Connected Models)

Remote Diagnostics	Remote Diagnostics over OCPP
OCPP	OCPP 1.6
Load Management	Ethernet / Wi-Fi / RS485 OCPP Smart Charging MultiCP Local Load Balancing
Software Update	Remote software update over OCPP Local software update via USB port
USB port (internal)	USB 2.0
Sensors	ALS, Tilt Sensor

MECHANICAL SPECIFICATIONS

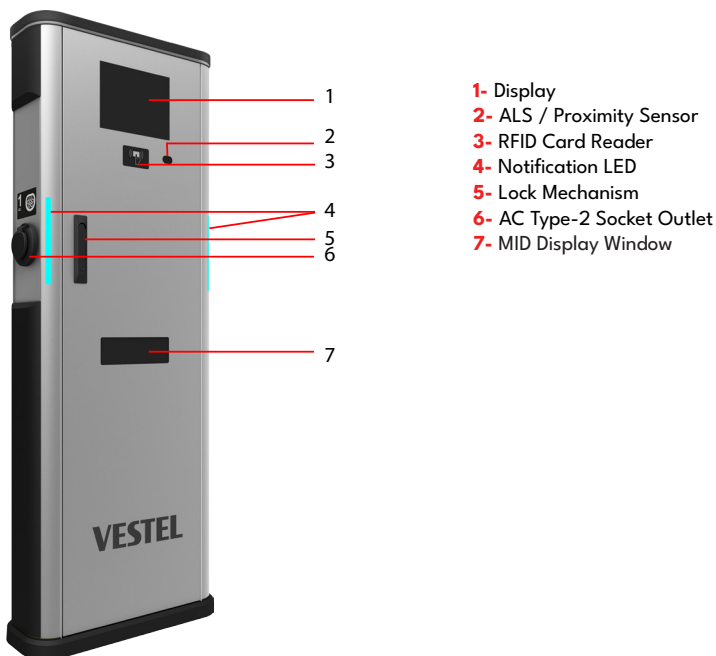
Material	Metal Panel	
Protection Degree	Ingress Protection Impact Protection	IP54 IK10 (In screen and sockets IK08)
Dimensions	1530.0 mm (Height) x 575.0 mm (Width) x 205.0 mm (Depth)	
Dimensions (with packing)	1600.0 mm (Height) x 800.0 mm (Width) x 400.0 mm (Depth)	
AC Mains Cable Dimension & Cable Gland Diameters	For 16mm ² -35mm ² AC Mains, suitable cable gland diameter interval is 22mm-32mm	
Weight	85 kg	
Weight (with packing)	95 kg	

ENVIRONMENTAL SPECIFICATIONS

Operation Condition	Temperature Humidity Altitude	-25 °C to + 50 °C 5 % - 95 % (Relative humidity, non-condensing) 0-3.000m
----------------------------	-------------------------------------	---

4 - GENERAL INFORMATION

4.1 - INTRODUCTION OF THE PRODUCT COMPONENTS



All images are given for the full version of the product.

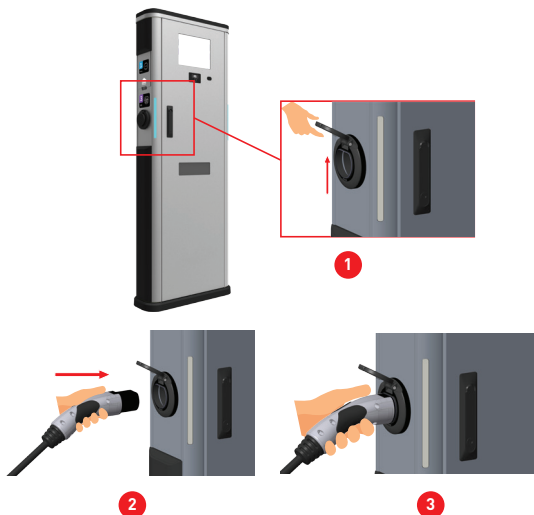
4.2 - PLUG CHARGING CABLE to EACH SOCKET

Please well note that the charging station has capacity to charge 2 EVs in the same time for Type2 AC charging outlets and 4 EVs in the same time for the charger which also has schuko option additionally. (2 EVs to charge from AC type2 outlets, 2 EVs to charge from schuko outlets)

Explanation to plug/unplug the charging socket to/from the outlet:

4.2.1 - AC 22 KW SOCKET OUTLET

Open the front cover of the available socket outlet and plug the charging cable to the socket outlet



Select the Type2 AC outlet which you connected your charging cable from the touchscreen and then tap your authorised RFID Card to the reader which is under the screen. Then the charging will be started. Details are explained in Charging Scenarios section.



Choose your connector or connect charging cable to your vehicle



4.2.2 - SCHUKO SOCKET OUTLET (Optional)

To be able to charge your EV with schuko outlet, first the lock mechanism in front of the socket should be unlocked with an authorised RFID card. Sequentially please follow the steps as below:

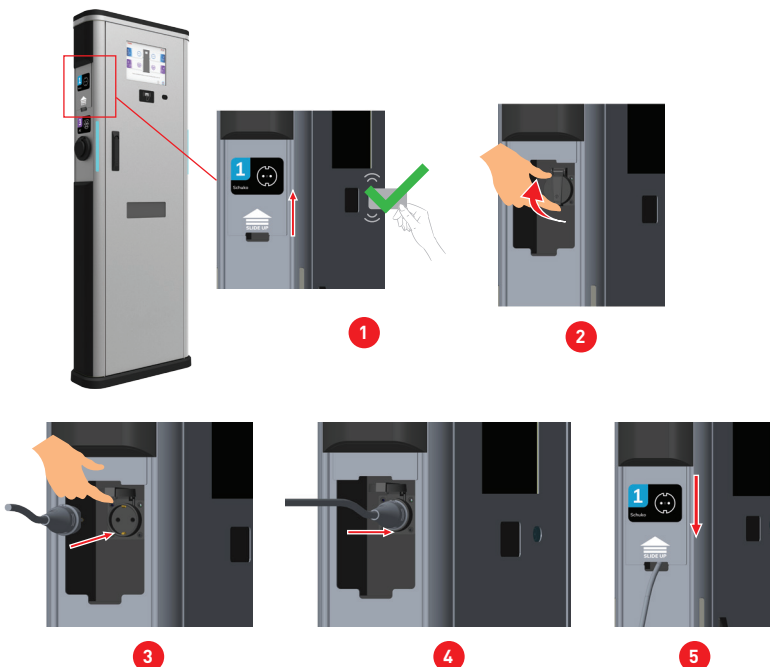
- Select the requested schuko outlet from the touchscreen.



Choose your connector or connect charging cable to your vehicle



- Tap your authorised RFID Card to the RFID reader under the touchscreen.
- The lock mechanism inside the schuko cover will be released.
- Close the schuko metal cover down and be sure that the schuko cover is closed properly. The charging cable should be passed from the hole under the cover as shown in the figure below.



Important note: If the cover is not closed properly, charging section will not be starting. When the cover is closed down, the cover will be locked automatically so that you will be able to see the charging section to be started from the display. Details are explained in Charging Scenarios section.

These steps are also shown from the display accordingly. If the cover is not closed down properly, the screen will remain in the same page to close the cover, as below:



4.3 - CHARGING SCENARIOS (Includes all scenarios)

- For AC Type2 outlets to start charging section;
 1. You may first select the socket you want to use from the touchscreen of the charging station and tap your authorised RFID card to the reader and then plug your charging cable to that selected socket of the charger within 60 seconds of timeout, or
 2. You may first plug your charging cable to the available socket of the charging station first, then select the socket you want to use from the touchscreen of the charging station and tap your authorised RFID card to the reader.
- For schuko outlets to start charging section; you need to first select the socket you want to use from the touchscreen of the charging station and tap your authorised RFID card to the reader. After the schuko cover unlocks, then lift up the cover and you may be able to connect your plug to the schuko socket.

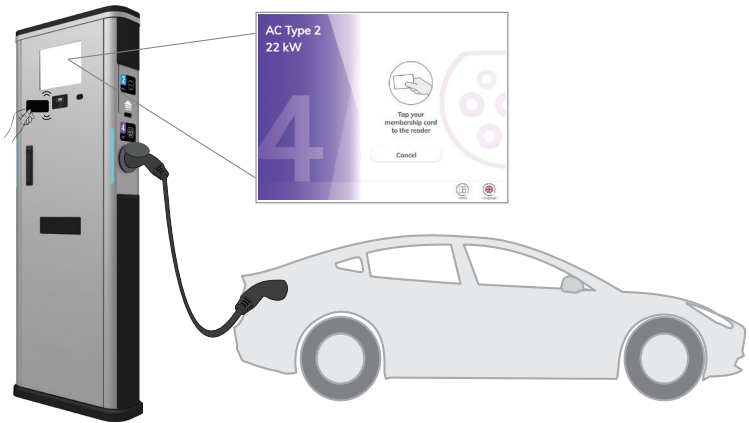
4.3.1 - AC 22 kW SOCKET OUTLET

4.3.1.1 - VEHICLE CONNECTION & CHARGING

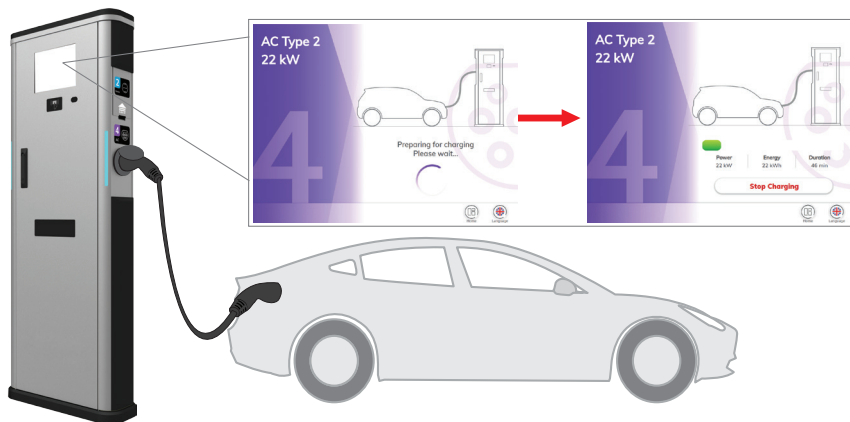
1- Connect charging cable to the available socket and select that socket from the touchscreen.



2- Tap your RFID card to start charging.



3- It may take a few seconds for charging session to start. Charging state can be seen in charging page

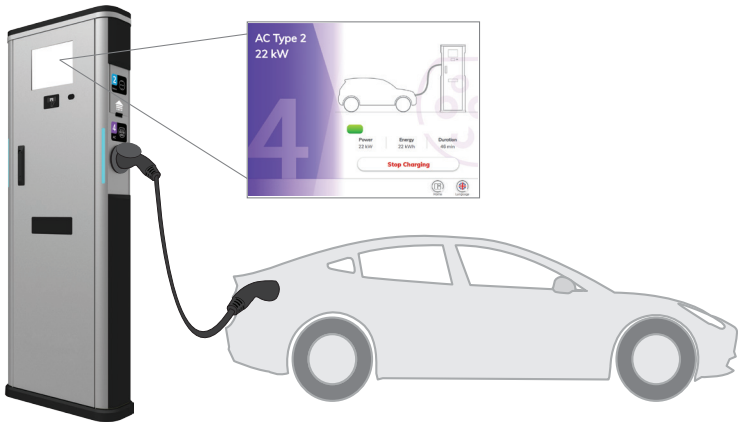


While charging, charging state can be seen in the main menu.

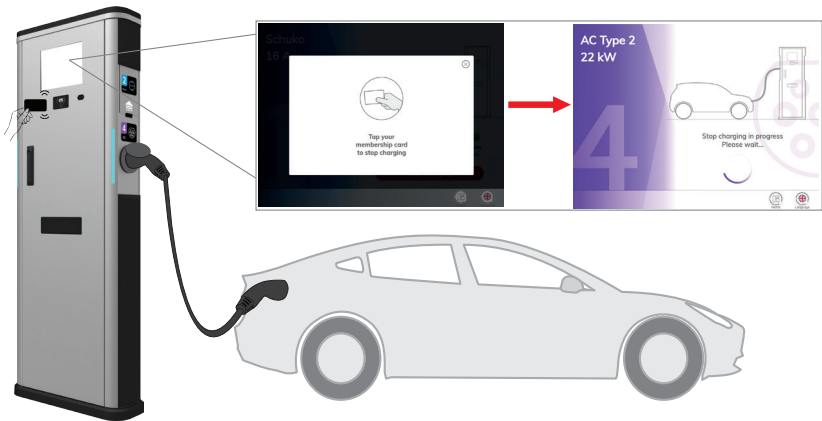


4.3.1.2 -STOP CHARGING

1- Click “Stop Charging” to end the charging session.

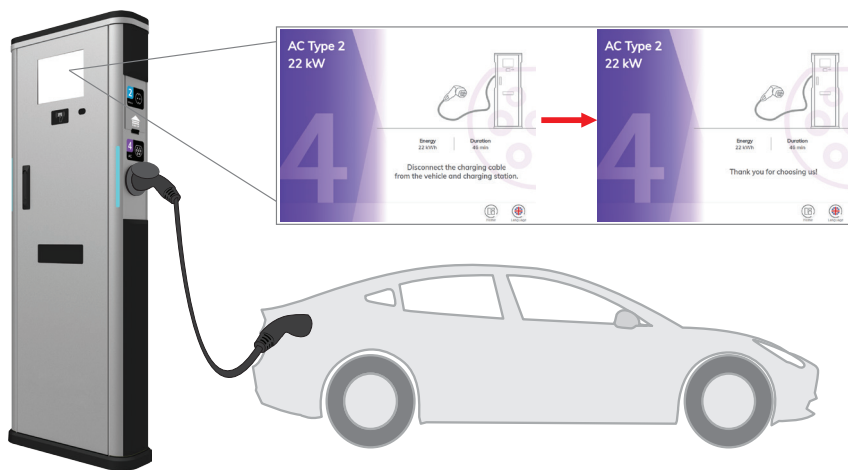


2- Tap your RFID card to stop charging.



3- Disconnect the charging cable.

After disconnection, you will automatically move to the main screen.



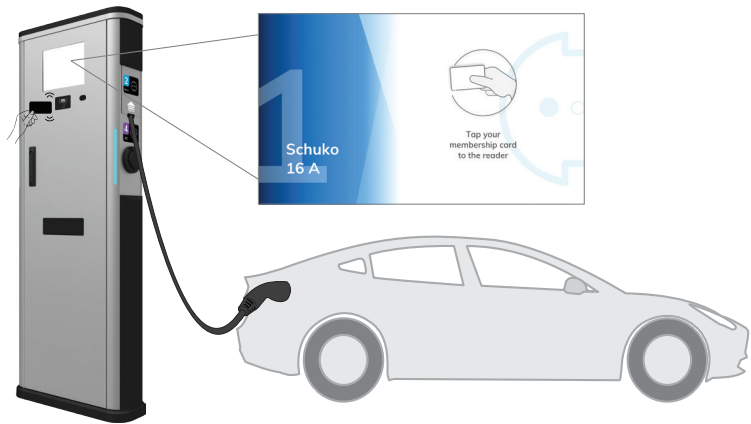
4.3.2 - SCHUKO SOCKET OUTLET (Optional)

4.3.2.1 - VEHICLE CONNECTION & CHARGING

1- Connect charging cable to the available socket and select that socket from the touchscreen.



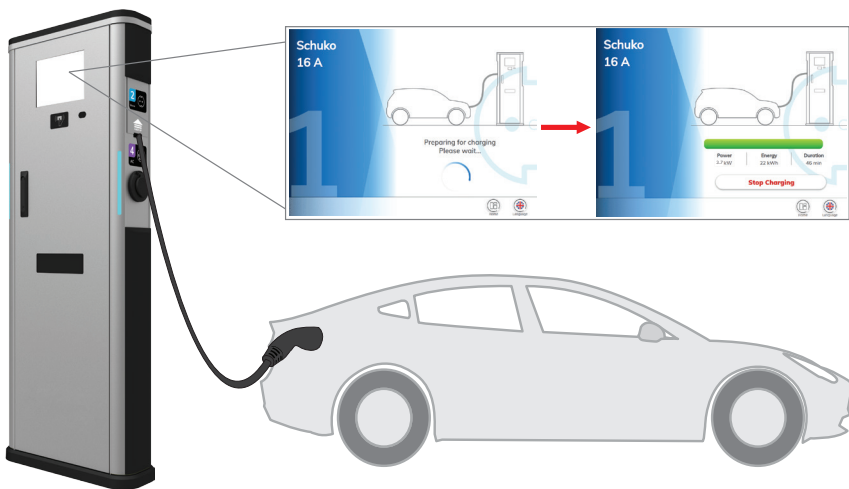
2- Tap your RFID card to start charging.



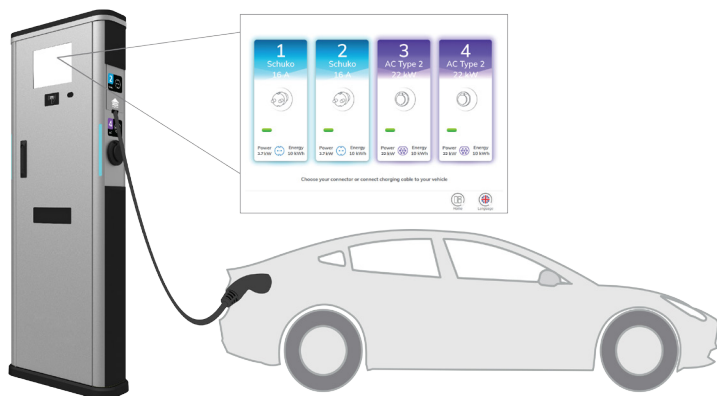
3- Slide up the schuko cover and connect the schuko charging cable. Make sure that schuko cover is closed properly after the connection to be able to start charging.



4- It may take a few seconds for charging session to start. Charging state can be seen in charging page

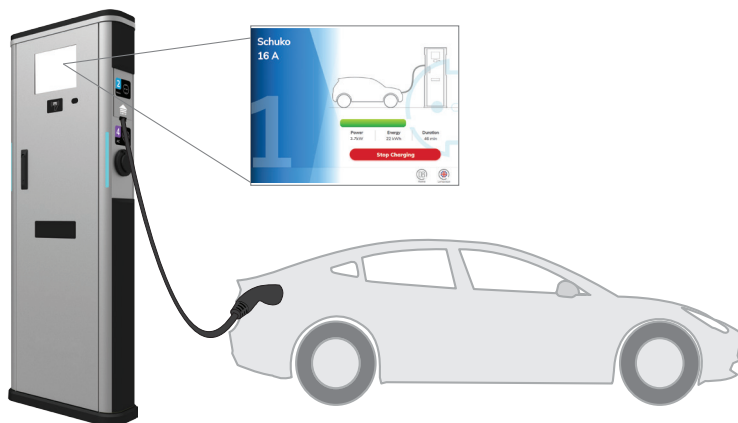


While charging, charging state can be seen in the main menu.

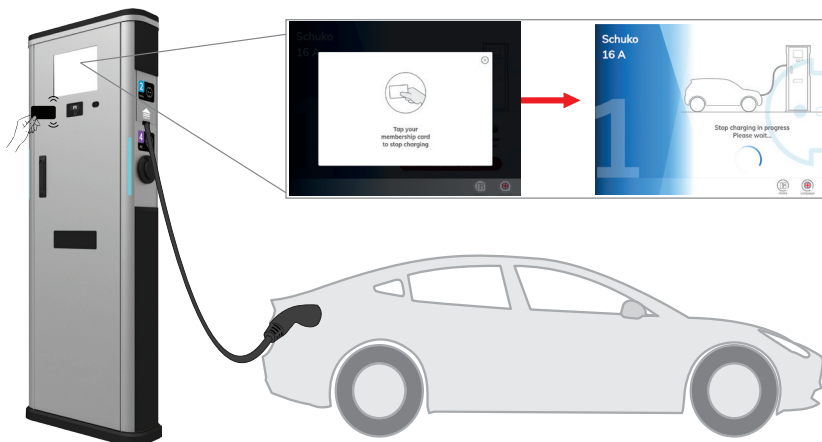


4.3.2.2 -STOP CHARGING

1- Click “Stop Charging” to end the charging session.



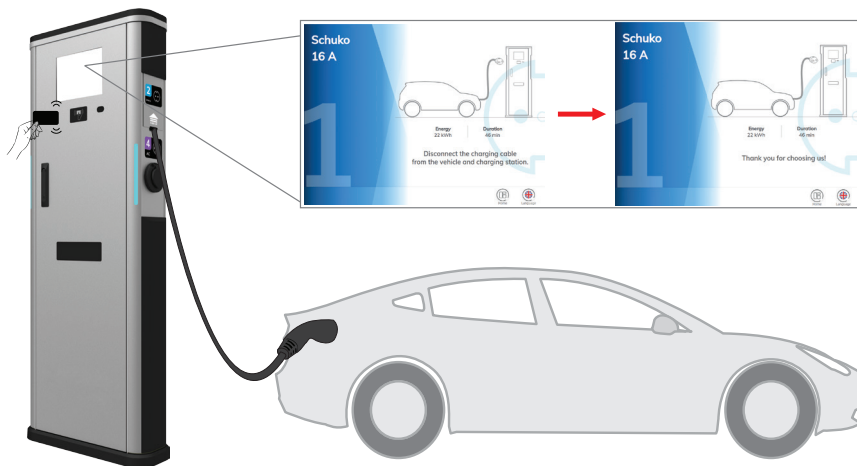
2- Tap your RFID card to stop charging.



Schuko cover will be unlocked after tapping the RFID card and you will be able to slide up the schuko cover to be able to reach and disconnect the charging cable.













3- Disconnect the charging cable.

After disconnection, you will automatically move to the main screen.



Please be sure that the schuko cover is closed properly for the next charging section's availability.

4.4 - BEHAVIOUR OF THE STATUS INFORMATION LEDs (for AC Type2 outlets)

Status of the LED		Status of the Charging Station
	No LED Indication	Standby
	Blue Glowing	Charging
	Constant Blue	Charging Suspended or Finished
	Constant Red	Fault
	Blinks Red; 2,4 seconds OFF 1,2 seconds ON	Ventilation Required
	Constant Purple	Park Automation System disabled charging
	Blinks Blue; 2,4 seconds OFF 1,2 seconds ON	Charging cable connected and waiting for authorization
	Green Glowing	Authentication while vehicle is in not connected state (timeout: 30 seconds)
	Blinks Red three times; 500 ms ON 500 ms OFF	Unregistered rfid card tapped
	Blinks Red; 1 second and Blue; 1 second	Reservation
	Constant Green	Firmware Update In Progress
	Blinks Red; 300 ms and Green 300 ms ON	Factory Reset

4.5 - RCCB RECLOSURE UNIT BEHAVIOUR (Optional)



The Residual Current Circuit Breakers (RCCB) are the safest device to detect and trip against electrical leakage currents, thus ensuring protection against electric shock caused by indirect contacts. An ideal circuit is that currents flows through the circuit via the live wire should be the same as the returning current via the neutral wire.

However, when an earth fault happens, current enters the earth wire by accident such as accidental contact with open wire. As a result, the current returning through then neutral wire is reduced. The difference in current between the live and neutral wire is called residual current. RCCB is designed such way that it continuously senses the residual current or the difference in current values between the live and neutral wires. Therefore, unless the residual current does not surpass the limit, the RCCB will disconnect the circuit.

RCCB reclosure unit is an option to re-adjust the RCCB to be able to set as ON position. RCCB reclosure unit sets RCCB 5 times mechanically and if RCCB gets OFF position again, than remains in OFF position and station passes to error mode. This function provides close support for unnecessary service calls for sudden RCCB disconnections because of temporary EV behaviours. The yellow switch in RCCB Reclosure Unit should be at “ON” position to use this functionality.

4.6 - ERROR and FAULT CONDITIONS

Errors are checked periodically in the EVC. If any fault occurs then charger enters to F state. In this state, -12 V is applied to CP line. Color of the LED on the EVC turns to constant red to indicate fault to the user. After 400ms, 61851-1 spec requires to stay at F state at least 300 msec, EVC exits from F state and enters to X1 state according to the voltage on the CP line. LED color stays in constant red if fault still exist.

WARNING: For surge protection device and welded contactor errors, the charger or the related socket outlet will remain in error mode and cannot be used until the authorised service repairs the error in the charging station.

There are two type of errors or faults:

- **General Errors:** This fault or error effects all four outputs.
- **Charging Output Errors:** Only one socket or plug effected by this fault or error condition.

If the status information LED is constant red, turn off the charging station and turn on again. If the LED is still constant red then call an authorized service.

4.6.1 - ERROR CONDITIONS

Problem	Possible Causes	Recommended Solutions
LED Indicator is constant RED	AC supply voltage may not be in the range in the operation manual, grounding connection may not be performed or the charging station may have a fault.	Please ensure that the voltage is in the specified range and that the grounding connection have been performed. If the button is still solid red, please contact authorized service.
Power Failure	Power outage or the grid voltage is not in specified range.	Check input circuit breakers are not tripped and input voltage range and rotation is as specified in installation guideline.
AC 22kW output unavailable.	RCCB and/or MCB is tripped	Check cable isolation first. Turn on MCB and/or RCCB. (See section "CIRCUIT BREAKER LOCATIONS FOR CHARGING OUTPUTS") Check functionality for the station.
All outputs unavailable	General error	Please check if there is a power outage. Then, check the upstream distribution box circuit breaker. If the outputs are still unavailable please contact authorized service.
The status information LED blinks in red	You shall see this error notification if your vehicle is equipped with a battery type that requires ventilation.	This charging station is not suitable to charge such vehicles.

4.6.2 - TRIPPING RELAY ON PRODUCTS WITH RESIDUAL CURRENT DEVICE CAUTION

You may access the residual current device by opening the front cover of your charging station. If your charging station does not have RCCB reclosure unit, ensure that there is no failure on your vehicle or on the charging plug that may cause a residual current before resetting the tripped residual current device. After ensuring that there is no problem on your vehicle or on the charging plug, unplug the charging cable from the charging station. Then reactivate your charging station by resetting the switch of RCCB.

If the problem still occurs, contact an authorized service. If the problem is solved, there may be some problem with your vehicle or charging cable. Please contact with your vehicle service.

4.6.3 - DC 6mA LEAKAGE CURRENT SENSOR BEHAVIOR

The charging station is equipped with a DC leakage current sensor that reacts a DC leakage current higher than 6mA. If the charging station goes to error state due to DC leakage current, charging cable must be unplugged from vehicle and then from the charging station to reset this error.

VESTEL
MOBILITY

