MaxiCharger

DH240 & DH480

Spare Part
Replacement Manual

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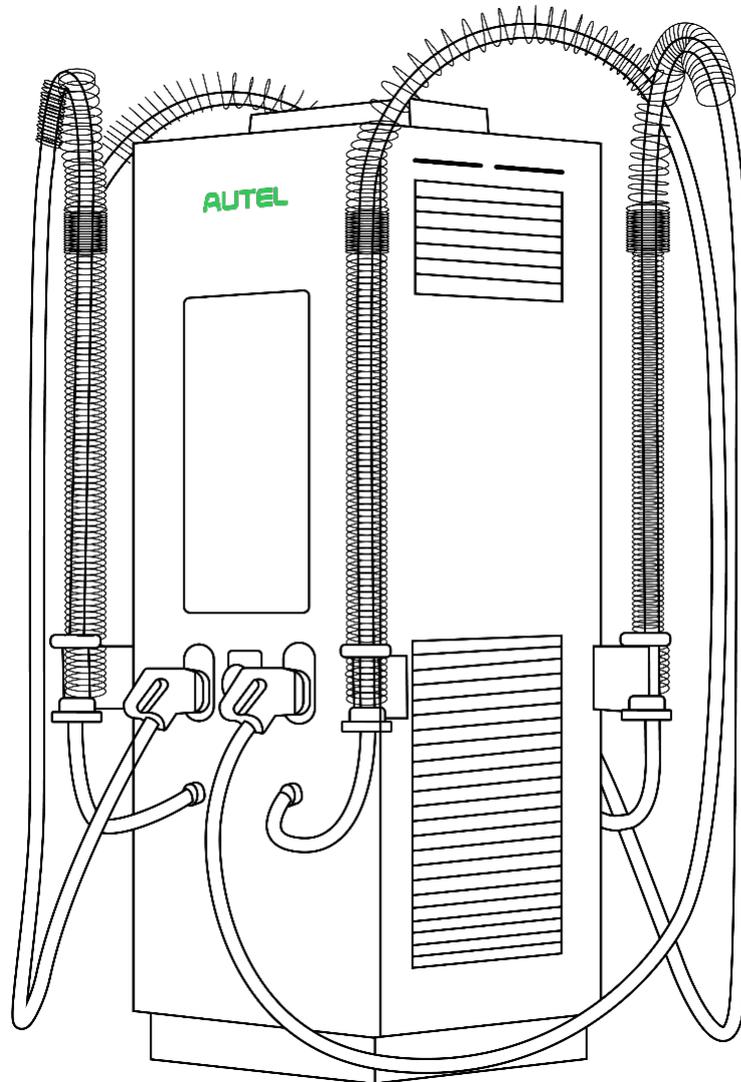
Technical Service Department

Date	Version	Writer	Description
2024-12-31	1.0	Victoria Jiang	Initiate document.

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Contents

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1. Safety and Usage Instructions

DANGER, WARNING, CAUTION, **and** *NOTICE* **statements**

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE provides helpful information such as additional explanations, tips, and comments.

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Purpose and intended audience

This manual applies to the MaxiCharger DH240 and DH480 produced by Autel, Intelligent Technology Corp., Ltd. 2004-2024. (Autel). The DH240 and DH480 are intended exclusively for charging electric vehicles and when installed correctly, can be used by untrained individuals. Follow this manual to replace parts in the charging station correctly.

Replacement of spare parts in this charging station can be performed only by a qualified electrician who has the following capabilities:

• Expertise on general and specific rules regarding safety and incident prevention.

• Comprehensive knowledge of applicable electrical regulations.

• Ability to identify risks and avoid potential hazards.

• Familiarity to the installation and operation instructions described in this document.

Improper use

Using the charging station is safe as long as it is used as intended. Any other use or changes to the charging station are considered improper use and therefore not allowed. The operator, owner or qualified technician is responsible for any personal injury or product damage arising from improper use.

Disclaimer

This document is subjected to rigorous technical review before release. It is revised at regular intervals, and any modifications and amendments are included in the subsequent chapters. Although Autel has made its best efforts to keep the document as precise and up-to-date as possible, Autel does not assume any liability for defects and damage which results from the use of the information contained herein.

NOTICE

This manual is subject to updates and changes. The latest version is available for download on Autel official website. Errors and omissions excepted.

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Any modifications to the product assembled by Autel may affect the product performance, such as the user experience, appearance, quality and lifespan. These custom modifications (customization) include but are not limited to the placement of stickers and SIM cards or the usage of different colors. Autel is not liable for any damage to, or caused by the customized product if the damage is caused by this applied customization.

Safety warnings

The safety messages herein cover situations of which Autel is aware. Autel cannot know, evaluate or advise you as to all of the possible hazards. You must ensure your personal safety before performing any service procedure.

General warnings

- Read and follow all warnings and instructions before commissioning the charging station.
- Do not attempt to operate or repair the charging station unless you have electrician qualifications. Only a qualified electrician is allowed to operate, service, repair, and commission the charging station.
- Perform a risk assessment before performing any electrical work. The assessment includes: electrical hazard identification, job analysis, risk control measures.

Power and installation

- Switch off the input power before installing the charging station. Keep the power off until it is fully installed and secure.
- Do not commission or open the charging station in wet environments (such as rain or heavy fog).
- Install and commission the charging station according to local regulations. Local regulations may vary based on different countries or regions.
- Complete the following steps before you perform O&M operations on electrical systems: inspection and testing procedures, preventive maintenance, and troubleshooting.

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Fire and explosion hazards

- Do not use explosive or readily flammable substances near the charging station.
- (Optional) Install a fire alarm system to detect fires at an early stage.
- Refer to the vehicle user manual to check if the vehicle releases hazardous or explosive gas during charging.

Handling and usage

- Do not operate the charging station if the charging cable is frayed, broken, damaged, or cannot work properly.
- Do not use the charging station if the cabinet or the connector is frayed, broken, or otherwise damaged, or cannot work properly.
- Place the charging cable where it cannot not be stepped on, tripped over, driven over, or otherwise subjected to excessive force or damage. Ensure that the charging cable is correctly stowed when not in use and that the connector does not touch the ground.
- Do not insert fingers into the charging port.
- Do not leave objects inside the charging port.
- Keep the connector away from heat sources, dirt, and water.
- Keep the charging station away from direct water flow.
- Do not operate the charging station with wet hands.
- Do not put the connector into any liquid.

Compatibility and compliance

- Use this charging station to charge only compatible electric vehicles. Refer to the technical specifications in this manual and the vehicle manual to check if the vehicle is compatible.
- Use the charging station only under the conditions specified in this manual.
- Do not use adaptors, conversion adapters, or cord extension sets.
- Ensure that the charging cable is not damaged or tangled prior to use.
- Use of the charging station may affect or impair the operation of any medical or implantable electronic devices, such as an implantable cardiac pacemaker or an implantable cardioverter defibrillator. Check with your electronic device manufacturer concerning the effects that charging may have on such electronic devices before using the charging station.

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Emergency procedures

- Disconnect the power supply of the charging station immediately in the event of danger or accident.
- Respond to the emergency by performing operations including but not limited to: emergency power shutdown and first aid and resuscitation measures.

Personal protection

- Wear PPE (Personal Protective Equipment) such as protective suit, eye protection, musk protection, cut-resistant gloves, and non-slip safety shoes before commissioning the charging station.
- Complete relevant training courses before you engage in electrical work. The training content includes: basic knowledge of electrical safety, practical operation skills, response procedures in emergency situations.

Disposal Instructions

Handling waste incorrectly can have a negative impact on the environment and human health due to potentially toxic substances. Discarding the charging station correctly can facilitate the reuse and recycling of materials and contribute to environmental protection.

- Follow local regulations when you dispose parts, packaging materials, or charging stations.
- Discard electrical and electronic equipment separately in compliance with the WEEE-2012/19/EU Directive on waste of electrical and electronic equipment.
- Do not mix the dispose of the charging station with that of household waste.

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Required tools

Adjustable Wrench		Anti-static wrist strap	
Cable Ties		Glue gun	
Slotted Screwdriver		Diagonal Cutting Pliers	
PH1/PH2 Phillips Screwdriver		8mm Open-end Wrench	
8mm/10mm Socket Wrench		Ethanol Alcohol	

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Spare part identification

1) AC input module fan
2) Air filter
3) Antenna
4) Auxiliary power
5) CCU
6) Connector socket
7) Meter
8) Control module
9) Control module fan
10) DPU
11) DC output module
12) Door lock
13) Door sensor
14) ECU
15) Emergency stop button
16) FPC
17) Meter panel
18) LED indicator
19) Light sensor
20) Matrix module
21) Meter
22) MCB & RCD
23) MIC board
24) MCCB
25) POS
26) Power module
27) Radar
28) RFID board
29) RBU
30) Screen assembly
31) Screen fan
32) Sealing strip
33) Socket LED board
34) Speaker
35) SPD
36) TCU
37) Temperature sensor

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Appearance
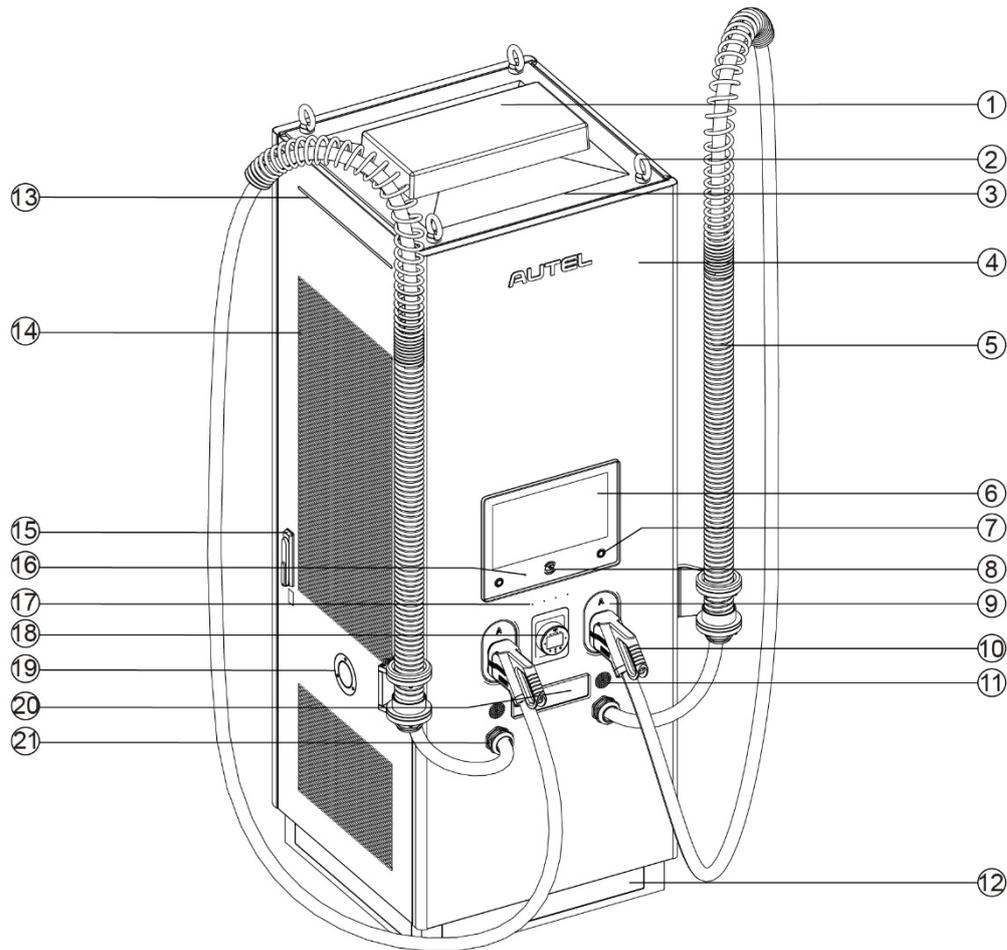
1.	Antenna	**12.**	Base
2.	Eye bolt	**13.**	LED indicator
3.	Main cabinet	**14.**	Vent
4.	Front door	**15.**	Door lock
5.	CMS	**16.**	Light sensor
6.	Touchscreen	**17.**	Microphone
7.	Operation button	**18.**	POS system
8.	RFID reader	**19.**	Emergency stop button
9.	Connector socket	**20.**	Meter
10.	Connector handle	**21.**	Cable fastener
11.	Speaker		

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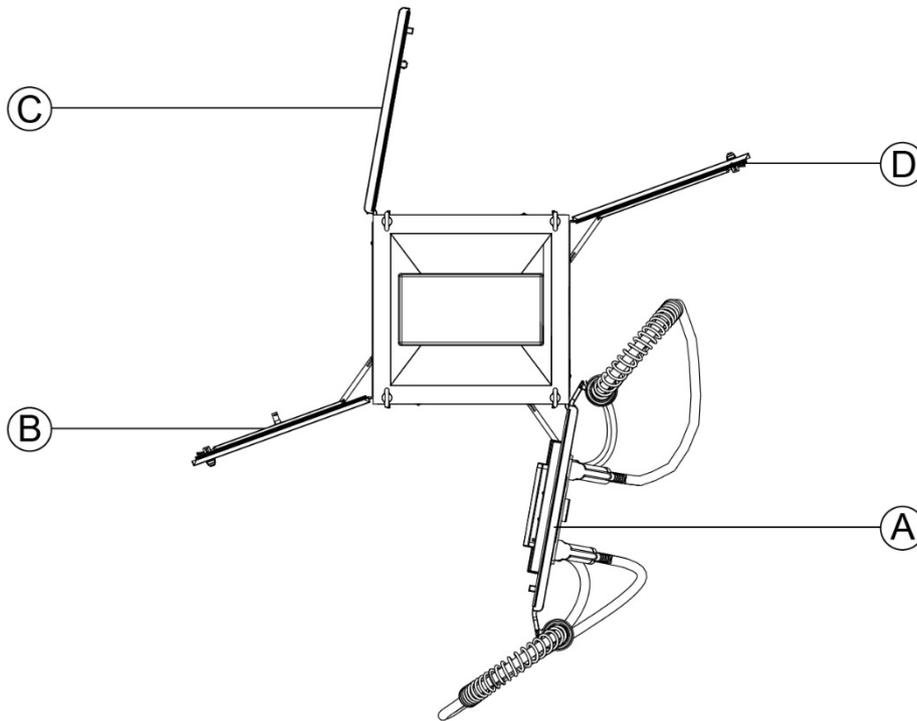
A: Front door – with the touchscreen and charging cables

B: Left door – with the emergency stop button

C: Back door – no need to open

D: Right door

Open the doors in the following order: door B, D, and then A, and C.

Close the doors in the following order: door A, C, and then B and D.

Note: You cannot close door B or D when the door A or C is opened.
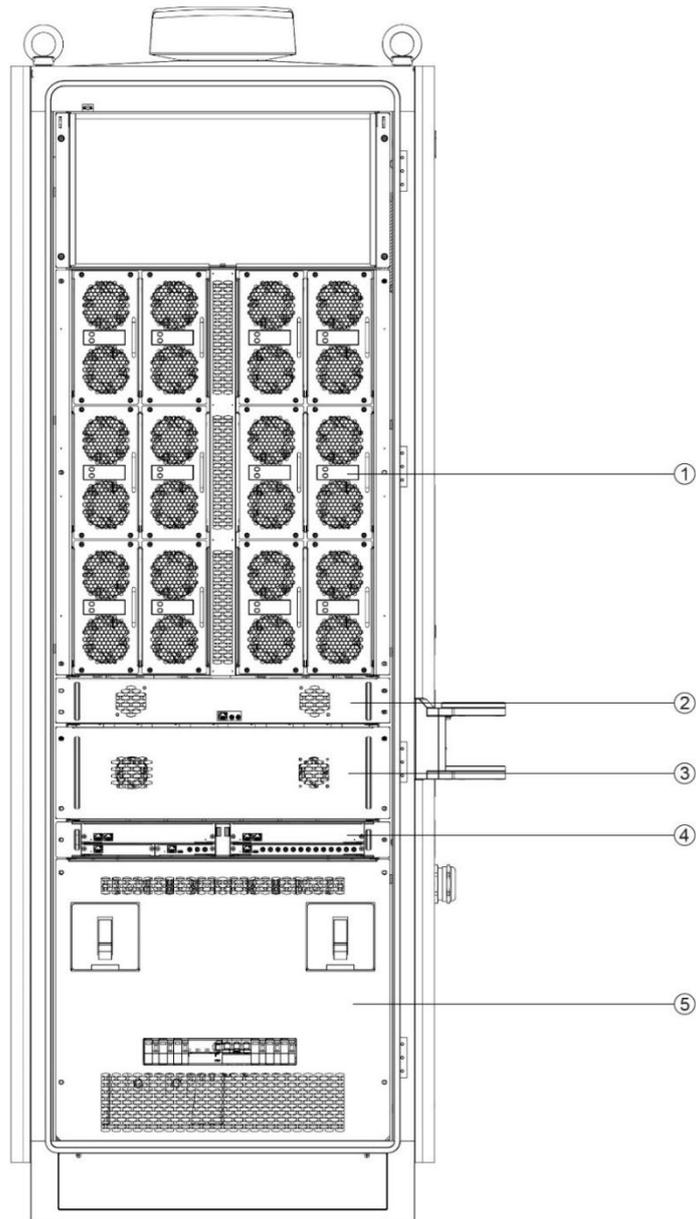
1. Power module

2. Matrix module

3. DC output module

4. Control module

5. AC input module

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2. Replacement Procedure

⚠️ **DANGER**

The following procedure introduces you to an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Note: Before you start the replacement, check whether you need to open door A or C.

If you need to open door A or C to replace parts, **open door B and door C first**. After the replacement, make sure that all doors are closed and all screws on the doors are securely tightened.

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AC input module fan

Introduction

Cooling fans are used to manage heat dispersion and airflow, prevent overheating, and facilitate component performance. It ensures stable and efficient electric vehicle charging by maintaining optimal operating temperatures within the charging station.

Tools

PH1 screwdriver

5.5 mm socket wrench

Slotted screwdriver

PH2 screwdriver

Estimated disassembly and assembly time: 13 min

Estimated debugging time: 16 min

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Steps

1. **Remove the faulty fan**

a) Use the PH2 screwdriver to loosen the four screws on the back cover of AC input module and set the metal cover aside.

b) Disconnect the terminal connecting the fans with the auxiliary power.

c) Use the PH1 screwdriver to loosen the six screws on the metal back board.

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d) Take out the metal back board together with the fan component. You can use the slotted screwdriver to pry on the edge of the board to facilitate the detachment.

e) Use the 5.5mm socket wrench to remove the four nuts on the faulty fan. Take out the fan guard and set it aside.

f) Insert the slotted screwdriver in the edge between the fan and the metal board, pry upwards and remove the fan from the metal board.

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2. Install a new fan

a) Install the new fan on the metal board, take note that the fan should be placed in a position where the cables are facing upper part of the metal board. Make sure that no gaps exist between the fan and the metal board.

b) Place the fan guard on the fan and use the 5.5mm socket wrench to tighten the four nuts.

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c) Install the metal board with the fan component back inside the cabinet and use the PH1 screwdriver to tighten the six screws on the metal back board.

d) Connect the terminal connecting the fans with the auxiliary power.

e) Install the back cover of the AC input module and use the PH2 screwdriver to tighten the four screws.

Recommended torque: 6 Nm

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Air filter

Introduction

Air filters are used to prevent dust from entering the charging station. This helps maintain the cleanliness of the internal components, ensure optimal performance and usage of the charging station, and enhances the reliability of EV charging.

Tools

Cutting plier
Cable tie

Estimated disassembly and assembly time: 3 min
Estimated debugging time: 6 min

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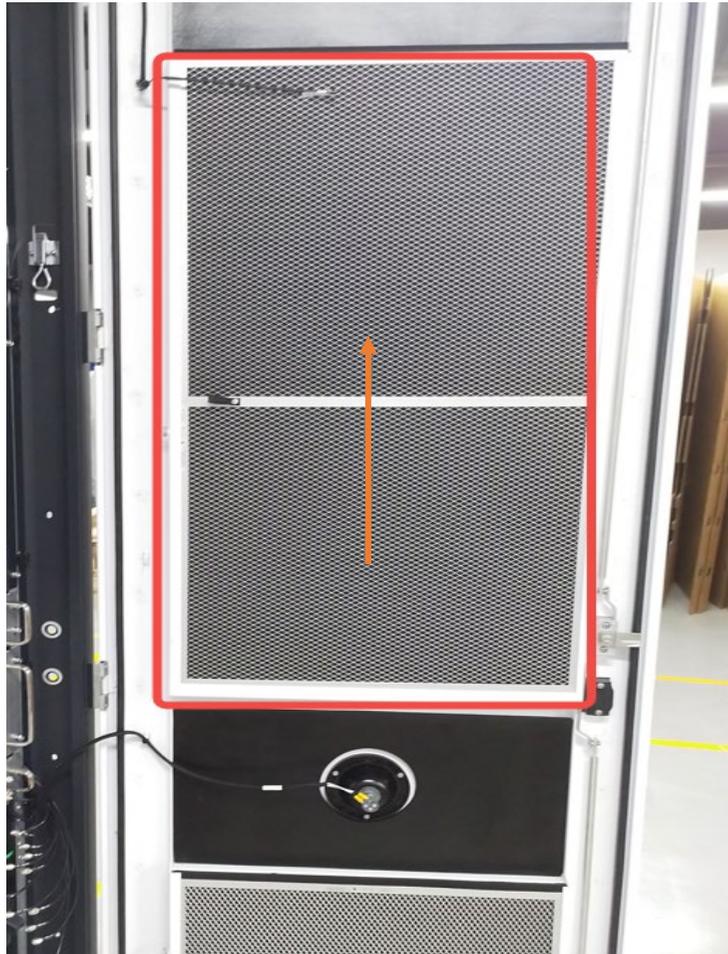
Steps

1. **Remove the old air filter**

a) Use the cutting piler to cut the cable tie binding the temperature sensor to the air filter.

b)   Twist on the screw on the right side of the filter to loosen it, hold on to the handle and lift it upwards to extract the air filter from above.

2. Install a new air filter

a) Install the new filter from above, make sure that the air filter is inserted all the way in, and twist on the screw to tighten it.

b) Use a cable tie to bind the temperature sensor to the filter.

Antenna

Introduction

The antenna in a charging station is responsible for facilitating wireless communication, enabling data exchange between the charging infrastructure and connected devices or networks.

Tools

8 mm open-end wrench

Adjustable wrench

Slotted screwdriver

Cutting pliers

Ethanol alcohol

Estimated disassembly and assembly time: 40 min

Estimated debugging time: 43 min

Steps

1. Remove the faulty antenna

a) Use the 8 mm open-end wrench to disconnect the antennas from the RBU.

b) Use the cutting pliers to cut the cable ties that bind the antennas together.

c) Use the adjustable wrench to loosen the nut that fixes the antenna cover to the top of the cabinet.

d) Insert a slotted screwdriver into the edge of the cover, then pry it upwards until the cover can be removed from the top.

e) Take out the entire antenna and the nut in the cabinet.

f) Use ethanol to clean the remaining glue on the cabinet.

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2. Install a new antenna

a) Install the new antenna on the top of the cabinet, insert the nut into the antenna and tighten it with an adjustable wrench.

b) Remove the backing of the adhesive tape on the bottom of the antenna cover, and stick the cover to the top of the cabinet. Apply some pressure on it so that the cover sticks to the cabinet tightly.

c) Use the 8 mm open-end wrench to connect the antennas to the RBU.

d) Use some new cable ties to bind the antennas together onto the cabinet as shown in the image.
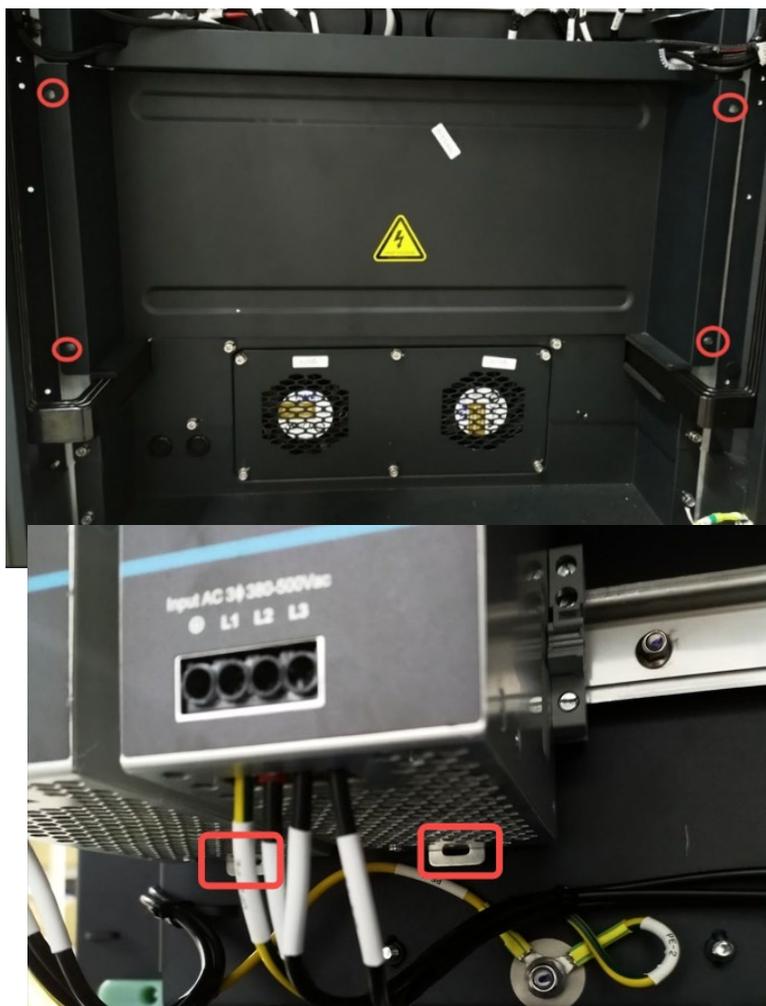
Auxiliary power

Introduction

Auxiliary power provides backup electricity supply for main electricity boards. It ensures essential functions like communication, safety, and display during power outages, maintaining operational integrity and convenience for main electric boards.

Tools

PH1 screwdriver

PH2 screwdriver

Slotted screwdriver

Estimated disassembly and assembly time: 10 min

Estimated debugging time: 13 min

Steps

1. Remove the faulty auxiliary power

a) Use the PH2 screwdriver to loosen the four screws on the back cover of AC input module and set the metal cover aside.

b) Use the PH1 screwdriver to loosen the eight screws on the auxiliary power.

c) Insert the slotted screwdriver in the buckles on the bottom of the auxiliary power and pry downwards until the buckles are loosened, then take out the auxiliary power.

2. Install a new auxiliary power

a) Place the new auxiliary power on the metal slide, insert the slotted screwdriver in the buckles on the bottom of the auxiliary power and pry downwards until you can secure the auxiliary power on the metal slide.

b) Connect the cables according to the labels on the auxiliary power and use the PH1 screwdriver to tighten the eight screws. Then, gently pull on the cables to make sure that they are securely fastened.

c) Install the back cover of the AC input module and use the PH2 screwdriver to tighten the four screws.

Recommended torque: 6 Nm

CCU

Introduction

The primary functions of CCU board include confirming charging connection with the vehicle, providing control guidance and PLC communication, controlling the closing and opening of the DC contactor, DC output overcurrent detection and protection, DC insulation detection, and connector head over-temperature detection.

Tools

PH1 screwdriver

Estimated disassembly and assembly time: 5 min
**Estimated debugging time:** 15 min
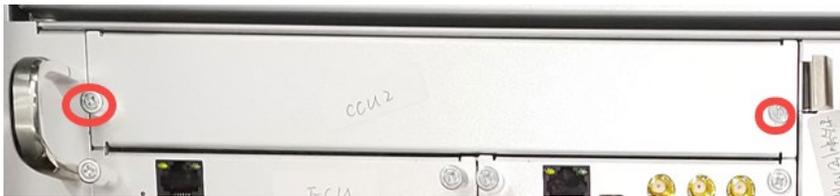
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Steps

1. **Remove the faulty CCU**

a) Before you replace the CCU component, contact Autel technical support to back up your configuration settings.

b) Use the PH1 screwdriver to loosen the screws on the CCU component.

c) Pull out the CCU component.

2. **Install a new CCU**

a) Install a new CCU component and tighten the screws.

b) Contact Autel technical support to synchronize your configuration settings to your new CCU component.
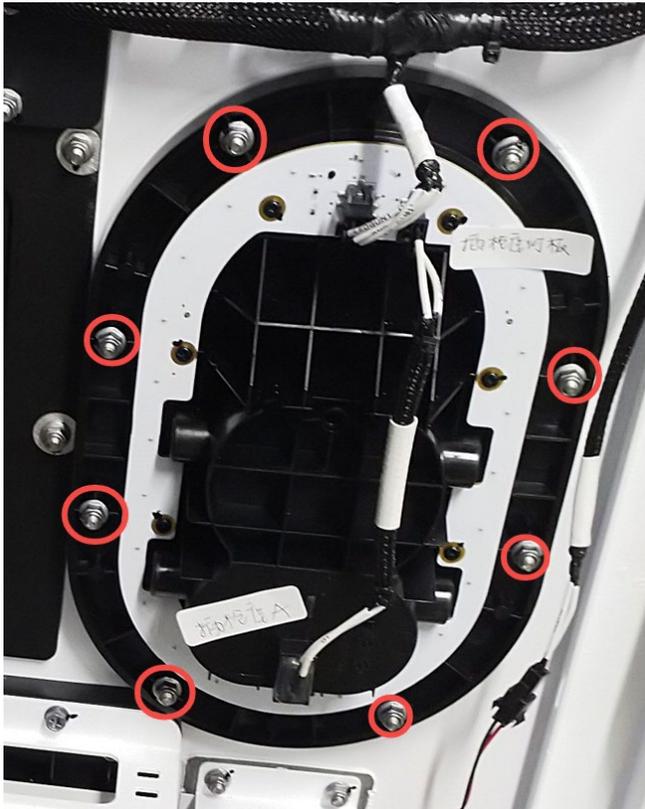
Connector socket
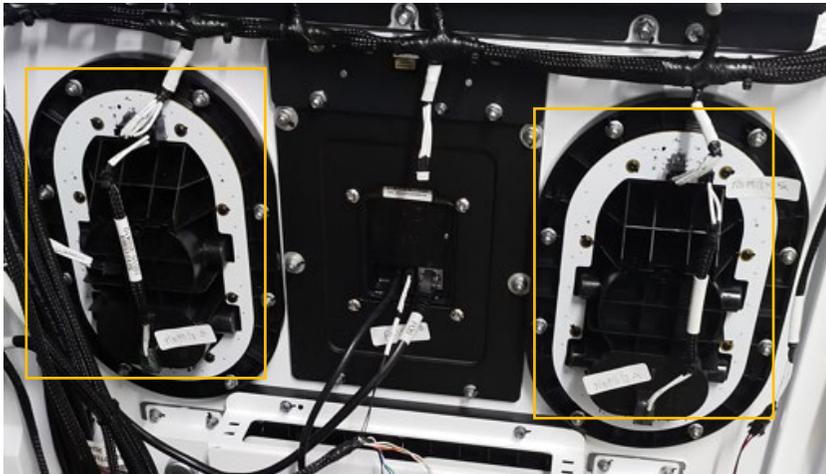
Introduction

Connector sockets provide secure connection point for the charging cable to connect with the charging station. They ensure proper alignment, power transfer, and safety during the charging process, contributing to reliable and efficient electric vehicle charging.

Tools

7mm socket wrench
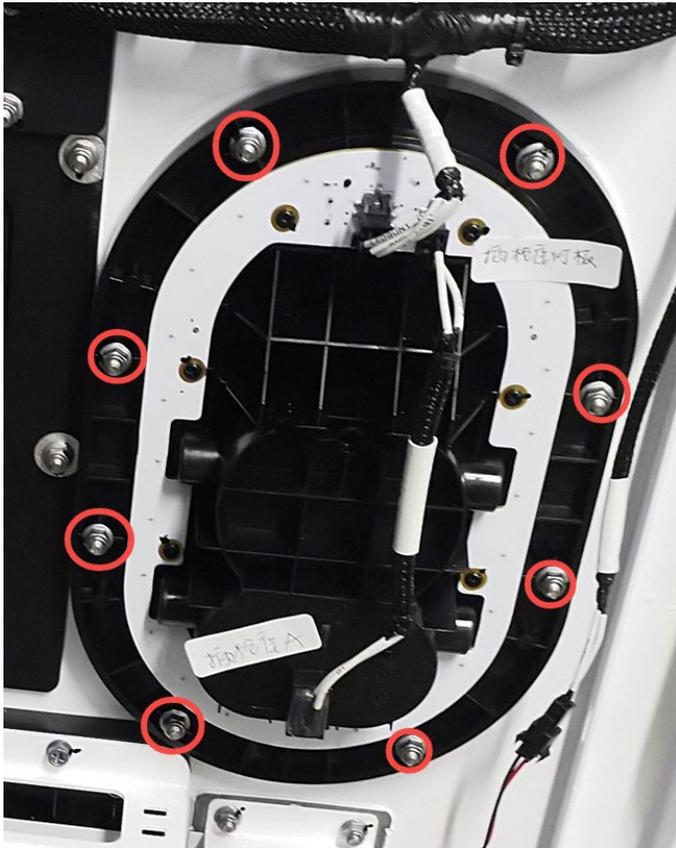PH1 screwdriver

Estimated disassembly and assembly time: 12 min
Estimated debugging time: 15 min

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Steps

1. **Remove the faulty connector socket**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Disconnect the terminals on the socket LED board, use the PH1 screwdriver to loosen the eight screws, and set the LED board aside.

c) Use the 7mm socket wrench to loosen the eight screws, and remove the faulty connector socket.

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2. Install a new connector socket

a) Install the new connector socket and use the 7mm socket wrench to tighten the eight screws.

Recommended torque: 0.6 Nm

b) Install the socket LED board, use the PH1 screwdriver to tighten the eight screws, and connect the terminals.

Recommended torque: 0.6 Nm

c) Use the 7mm socket wrench to install the protective PC cover.

Recommended torque: 0.6 Nm

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Control module

Introduction

The control center, primarily performs functions related to user interaction, external communication, internal scheduling, and charging settlement. It achieves user interaction through methods such as voice, video, and touch.

Tools

10mm, 16mm socket wrench

PH1 screwdriver

8 mm open-end wrench

Estimated disassembly and assembly time: 32 min

Estimated debugging time: 35 min

Steps

1. **Remove the faulty control module**

a) Disconnect the terminals and cables from the back of the module.

b) Use the 10 mm socket wrench to loosen the two M6 screws on the front of the module and the two M5 screws on the back of the module.

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c) Use the 8 mm open-end wrench to disconnect the antennas from the RBU.

d) Disconnect the two terminals on the right side of the module.

e) Pull out the control module and set it aside.

f) Use the PH1 screwdriver to loosen the screws on the CCU1, CCU2, ECU, TCU, and RBU, and pull the components out.

g) Pull out the fan component.

2. Install a new control module

a) Install CCU1, CCU2, ECU, TCU, RBU, and the fan component to the new control module and tighten the screws by using the PH1 screwdriver.

b) Install the new control module back inside the cabinet and use the 10 mm socket wrench to tighten the two M6 screws on the front (*recommended torque: 6 Nm*), and the two M5 screws on the back (*recommended torque: 2 Nm*).

c) Connect the two terminals on the right side of the module and all the cables and terminals on the back.

d) Use the 8 mm open-end wrench to connect the antennas on the RBU.

Control module fan

Introduction

Cooling fans are used to manage heat dispersion and airflow, prevent overheating, and facilitate component performance. It ensures stable and efficient electric vehicle charging by maintaining optimal operating temperatures within the charging station.

Tools

N/A

Estimated disassembly and assembly time: 1 min

Estimated debugging time: 3 min

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Steps

1. Pull out the fan component by the handle.

2. Insert a new fan component.
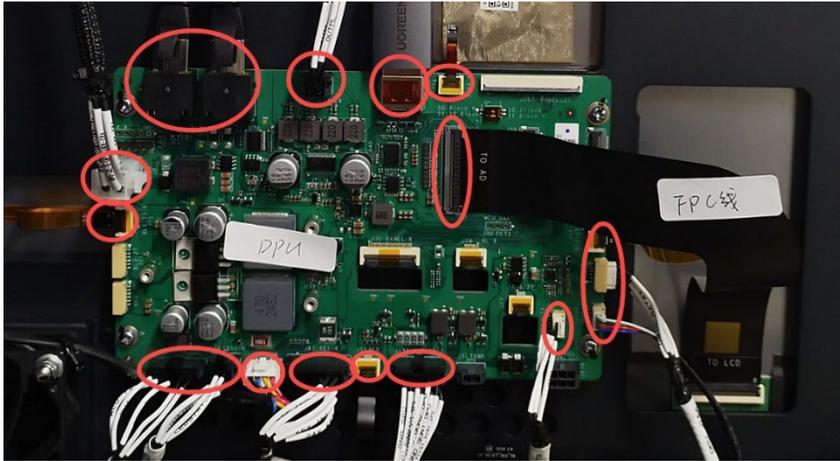
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DPU

Introduction

A data processing unit (DPU) is a programmable computer processor that tightly integrates a general-purpose CPU with network interface hardware. Serving as a specialized processor, a DPU is tasked with offloading and managing networking, security, and storage functions that traditionally burden the central processing unit (CPU).

Tools

PH1 screwdriver

anti-static wristband

7mm socket wrench

**Estimated disassembly and assembly time:** 12 min

Estimated debugging time: 22 min

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Steps

1. **Remove the faulty DPU**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Before you replace the DPU component, contact Autel technical support to back up your configuration settings.

c) Put on the anti-static wristband. Disconnect the cables and terminals on the DPU as shown in the image. Use the PH1 screwdriver to remove the four screws on the DPU and remove the faulty DPU.
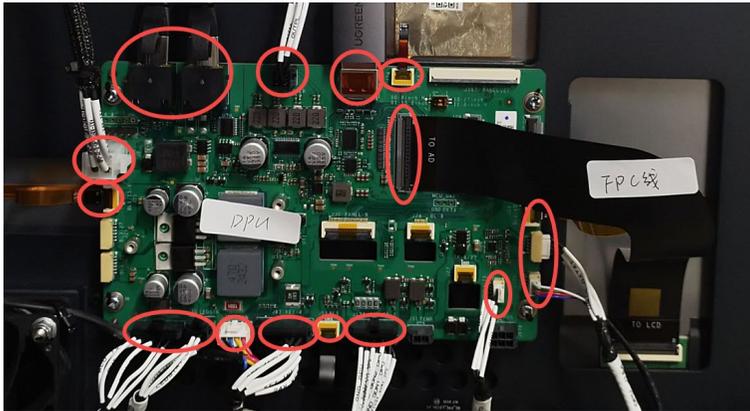
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2. Install a new DPU

a) Install the new DPU and use the PH1 screwdriver to tighten the four screws.

b) Connect the cables and terminals on the DPU as shown in the image.

c) Contact Autel technical support to synchronize your configuration settings to the new DPU.

d) Use the 7mm socket wrench to install the protective PC cover.

Recommended torque: 0.6 Nm

DC output module

Introduction

DC output module is used for controlling the DC circuit of the charging station, it enables the connection and disconnection of the charging module and connector. It possesses a certain load-breaking capability and can be operated according to control and timing sequence requirements.
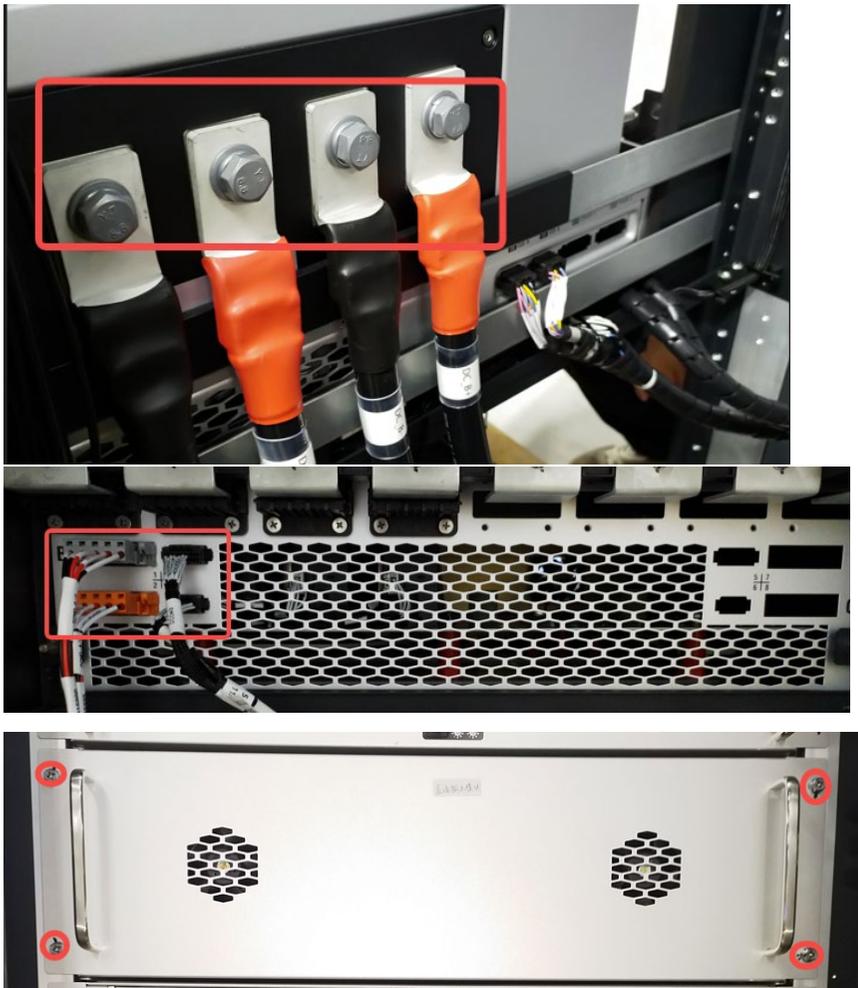
Tools

10mm socket wrench

19mm socket wrench

Estimated disassembly and assembly time: 20 min

Estimated debugging time: 23 min

Steps

1. Remove the faulty DC output module

a) Use the 19 mm socket wrench to loosen the four M12 screws on the right side of the module. These four nuts are used to connect the DC output module with cables on the front door.

b) Disconnect the four terminals from the back of the module.

c) Use the 10 mm socket wrench to loosen the four screws on the front of the module.

d) Pull out the faulty matrix module and set it aside.

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2. **Install a new DC output module**

   a) Install a new DC output module, use the 10 mm socket wrench to tighten the four screws in the front

      Recommended torque: 6 Nm

   b) Use the 19mm socket wrench to tighten the four screws on the right side of the module *(recommended torque: 55 Nm)*, and connect the four terminals on the back of the module.

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Door lock

Introduction

The door lock in a charging station secures the internal components and prevents unauthorized access or tampering. It ensures safety by restricting access to high-voltage areas, protecting both users and maintenance personnel. The lock also helps safeguard the integrity of the charging equipment, preventing theft or vandalism. Additionally, it ensures that only authorized individuals can perform maintenance or repairs, maintaining the station's reliability and functionality.

Tools

PH1 screwdriver

Estimated disassembly and assembly time: 10 min
Estimated debugging time: 10 min

Steps

1. Remove the faulty door lock

a) Use the PH1 screwdriver to remove the two screws on the black plastic cover and set the cover aside.

b) Use your fingers to pull out the latches connecting the door lock with the metal rods and set the latches aside.

c) Use the PH1 screwdriver to loosen the two screws on the door lock as shown in the image.

d) Remove the faulty door lock and replace it with a new one.

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2. Install a new door lock

a) Install the new door lock and tighten the two screws.

b) Use the PH1 screwdriver to install the black plastic cover.

c) Put back the two latches connecting the door lock with the metal rods.

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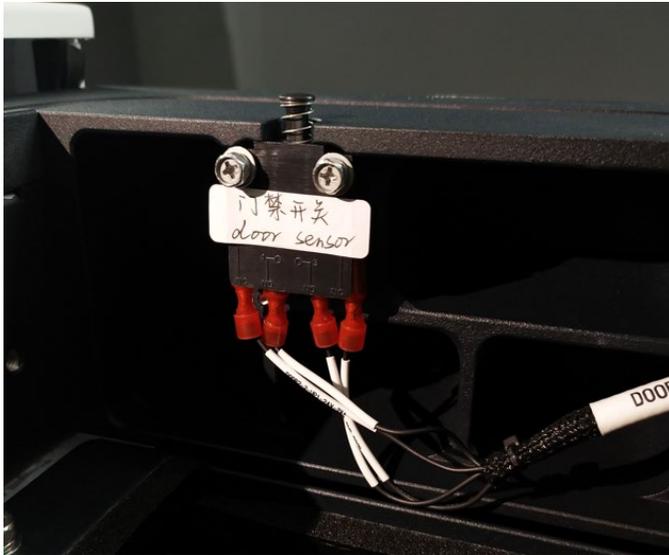
Door sensor

Introduction

A door sensor in a charging station detects when the door is opened and sends an alert if it detects an unauthorized opening.

Tools

7mm socket wrench

Estimated disassembly and assembly time: 10 min

Estimated debugging time: 13 min

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Steps

a) Use the 7mm socket wrench to loosen the two screws on the door sensor, disconnect the four cables, and remove the door sensor.

b) Install the new door sensor, connect the four cables according to the cable markings, and tighten the two screws by using the 7mm socket wrench.

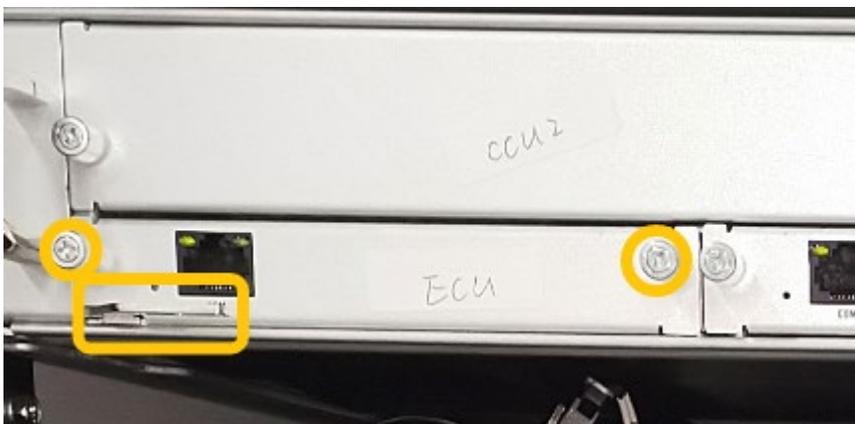AUTEL®

ECU

Introduction

The electronic control unit (ECU) is designed to realize system environment control, electrical system monitoring, system thermal control, and module communication. Its main functions include system temperature detection and heat control, power output control and protection, power input quality monitoring and power conversion system control, system environment monitoring, communication, and protection functions.

Tools

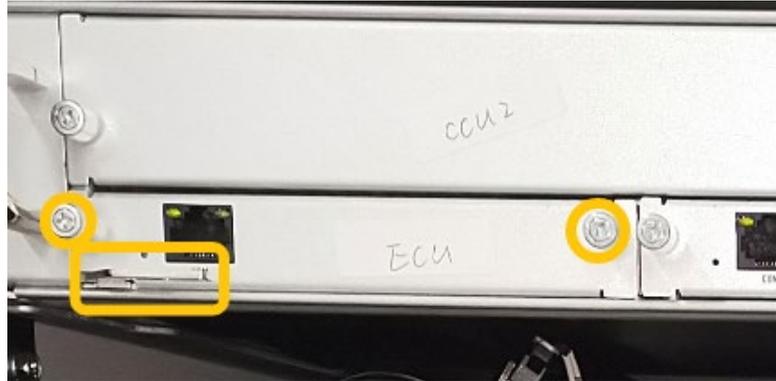PH1 screwdriver

Estimated disassembly and assembly time: 5 min

Estimated debugging time: 15 min

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Steps

1. Remove the faulty ECU

a) Before you replace the ECU component, contact Autel technical support to back up your configuration settings.

b) Use the PH1 screwdriver to loosen the screws on the ECU component.

c) Pull out the ECU component.

2. Install a new ECU

a) Install a new ECU and use the PH1 screwdriver to tighten the screws.

b) Contact Autel technical support to synchronize your configuration settings to your new ECU component.

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Emergency stop button

Introduction

The emergency stop button in a charging station halt charging and power supply by sending a signal to the control system. This action cuts off power to the vehicle, shuts down the charging circuit, and disconnects the station from the power source. Safety notifications may be sent, and a manual reset is typically needed to resume charging after the emergency is resolved.
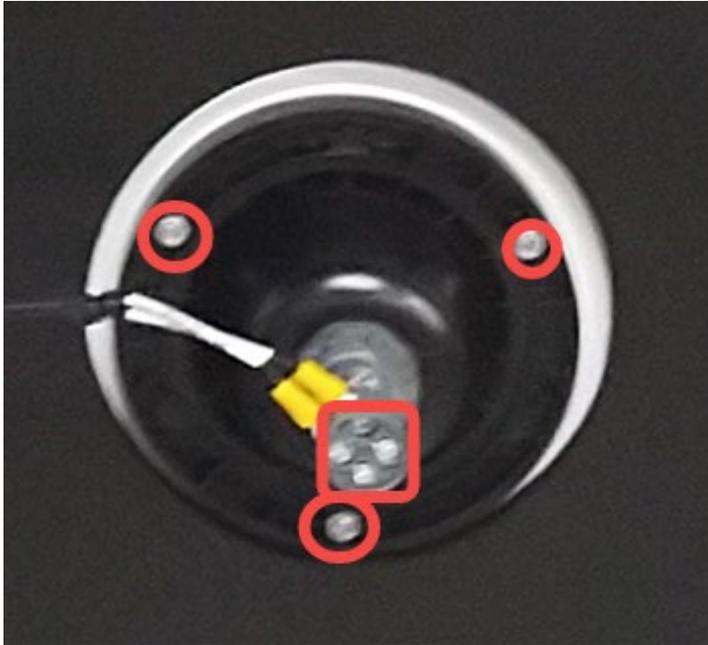
Tools

7mm socket wrench

2.5mm hex key

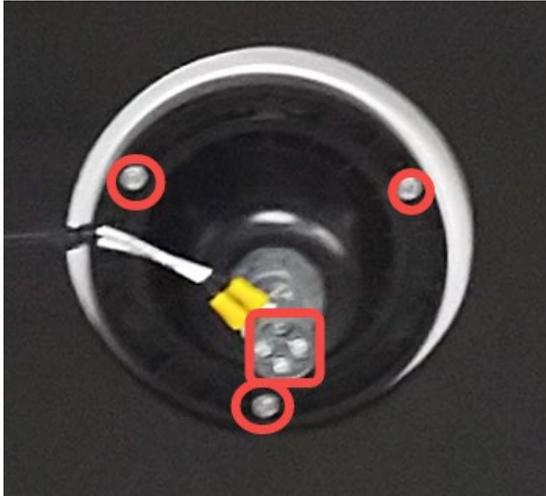PH1 screwdriver

Estimated disassembly and assembly time: 6 min

Estimated debugging time: 10 min

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Steps

1. **Remove the faulty emergency stop button**

a) Use the 2.5 mm hey key to loosen the three screws on the emergency stop button cover and set the cover aside.

b) Use the PH1 screwdriver to loosen the two screws on the back of the emergency stop button as shown in the image and carefully pull out the cables.

c) Use the 7mm socket wrench to loosen the three screws that fasten the emergency stop button on the door and remove the faulty emergency stop button.

2. Install a new emergency stop button

a) Install the new emergency stop button and use the 7mm socket wrench to tighten the three screws.

b) Use the PH1 screwdriver to tighten the four screws and secure the cables according to the cable markings.

c) Use the 2.5 mm hey key to install the emergency stop button cover.

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FPC
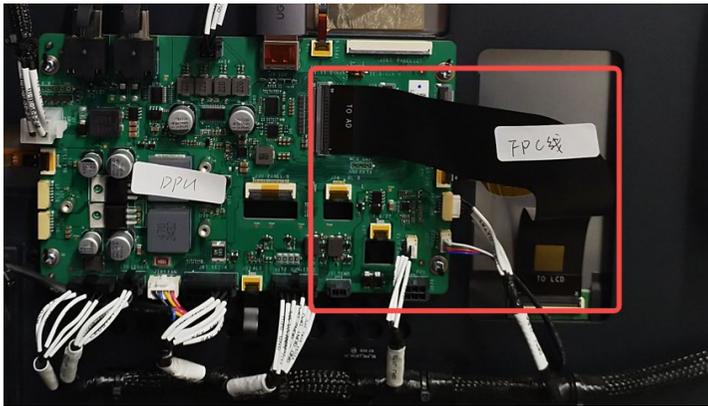
Introduction

Flexible Printed Circuits (FPC) serve a variety of crucial functions in modern electronics. Their primary role is to save space and reduce weight in electronic devices, making them ideal for compact and portable applications. FPCs offer high flexibility, allowing them to be bent, folded, and twisted, which is useful for dynamic applications and complex three-dimensional assemblies.

Tools

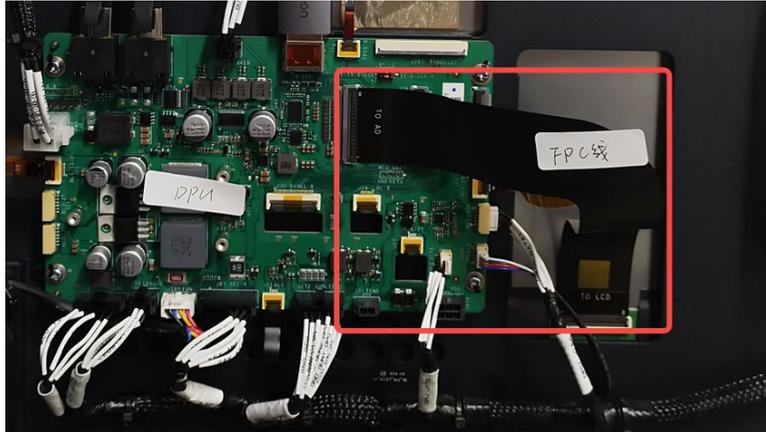7mm socket wrench

Estimated disassembly and assembly time: 5 min
Estimated debugging time: 8 min

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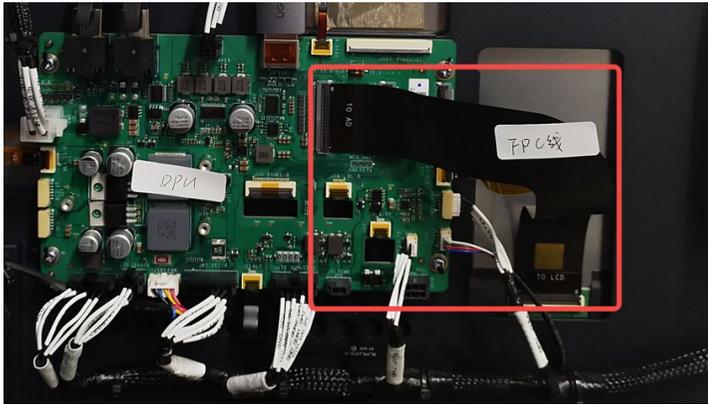
Steps

1. **Remove the faulty FPC**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Put on the anti-static wristband.

c) Use your finger to pry the rectangular buckles on the FPC sockets upwards and carefully pull the FPC cable out.

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2. Install a new FPC

a) Insert the new FPC cable into the sockets until the cable is parallel to the sockets and close the rectangular buckles.

b) Use the 7mm socket wrench to install the protective PC cover.

Recommended torque: 0.6 Nm
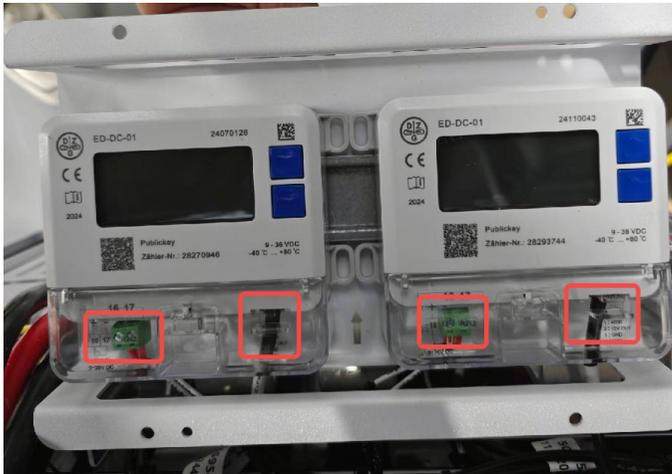
Meter panel

Introduction

The meter panel is used to protect the external display screen of the meter. It is also used to ensure that the cabinet is water tight.

Tools

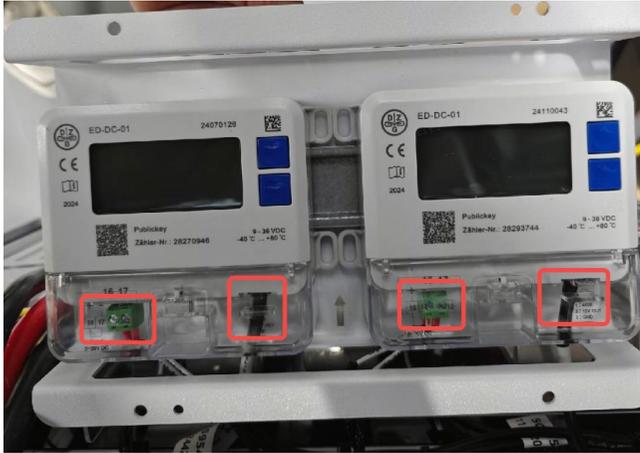PH1 screwdriver

Estimated disassembly and assembly time: 20 min

Estimated debugging time: 23 min

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Steps

1. Remove the faulty meter panel

a) Use the PH1 screwdriver to loosen the four screws on the metal cover of the external meter display.

b) Use the PH1 screwdriver to loosen the two screws on the bottom of each external meter display, unplug the terminals, and set the external meter display aside.

c) Remove the front cover of the external meter display and replace it with a new one.

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2. Install a new meter panel

a) Connect the cables to the external meter display according to the cable markings and use the PH1 screwdriver to tighten the two screws.

   Recommended torque: 0.6 Nm

b) Plug in the terminal on the bottom of each external meter display.

c) Install the external meter display back on the front door and use the PH1 screwdriver to tighten the four screws.

   Recommended torque: 0.6 Nm

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LED indicator

Introduction

The LED indicator in DH240 and DH480 is used to indicate the charging status. The LED indicator is installed on the left door and displays red when a charging error occurs.

Tools

PH1 screwdriver

Estimated disassembly and assembly time: 6 min

Estimated debugging time: 10 min

Steps

1. **Remove the faulty LED indicator**

a) Unplug the terminal on the left side of the LED indicator and disconnect the cable in the middle of the LED indicator.

b) Use the PH1 screwdriver to loosen the 6 screws on the LED indicator as shown in the image and remove the LED indicator.

2. Install a new LED indicator

a) Install the new LED indicator and use the PH1 screwdriver to tighten the 6 screws.

b) Plug in the terminal and connect the cable to the new LED indicator.

Light sensor

Introduction

A light sensor in a charging station detects ambient light levels to enhance user experience and energy efficiency. It may control indicators, adjust display brightness, and activate security lighting based on environmental conditions.

Tools

PH1 screwdriver

cutting plier

cable tie

7mm socket wrench

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 6 min

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Steps

1. **Remove the faulty light sensor**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Use the PH1 screwdriver to remove the two screws on the light sensor and remove the light sensor. Use the cutting plier to cut the cable ties if they interfere with the disassembly.

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2. Install a new light sensor

a) Use the PH1 screwdriver to install the new light sensor and use cable ties to bind the cables together.

b) Use the 7mm socket wrench to install the protective PC cover.

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Matrix module

Introduction

The matrix module allocates the power modules inside the charging station and distributes the power to the designated charging ports.

Tools

10mm socket wrench

Estimated disassembly and assembly time: 6 min
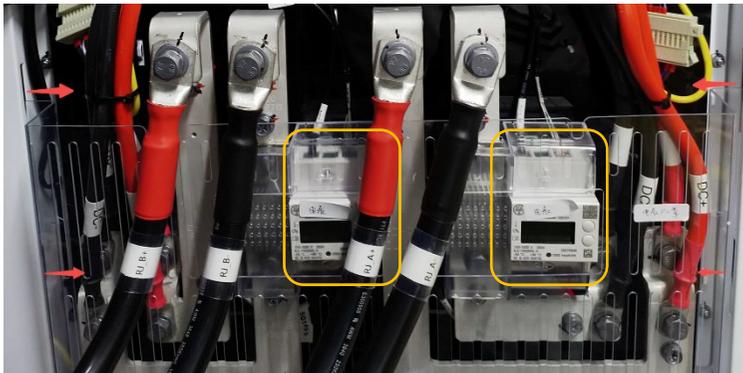
Estimated debugging time: 10 min

Steps

1. Use the 10 mm socket wrench to loosen the four M6 screws on the matrix module.

2. Pull out the matrix module, install a new one, and tighten the screws.
   Recommended torque: 6 Nm

Meter

Introduction

Electric meter measures energy consumption during vehicle charging. It provides accurate data for billing, cost monitoring, and energy management, enabling users to track their electric vehicle charging expenses effectively.

Tools

7mm, 17mm, 19mm socket wrench

PH1 screwdriver

Slotted screwdriver

Estimated disassembly and assembly time: 17 min

Estimated debugging time: 20 min

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Steps

a) Remove the faulty meter

a) Remove the protective PC covers from the door by slightly bending it inwards as shown in the image.

b) Use the 19mm socket wrench to remove the screw on the bus bar at the left of the meter. Remove the plastic cover of the meter.

c) Unplug the terminals on the top of the meter and use the slotted screwdriver to disconnect the cables from the bottom of the meter.

d) Use the 16 mm socket wrench to loosen the two M10 screws that secure the meter on the bus bar.

e) Insert the slotted screwdriver in the buckles on the bottom of the meter and pry upwards until you can take the meter out.
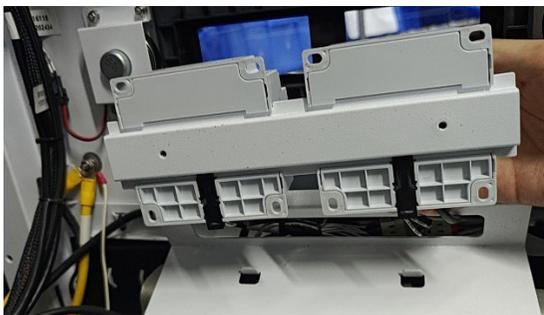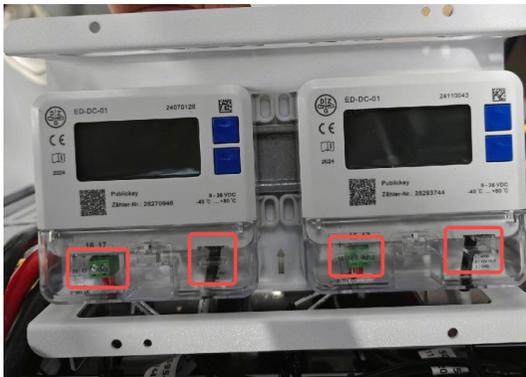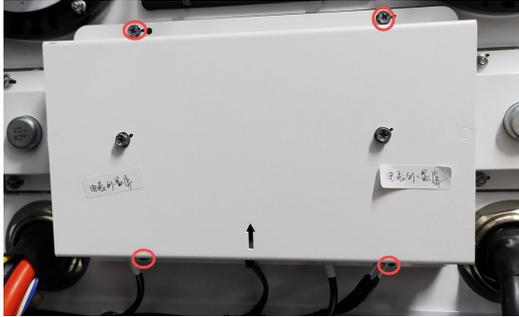
b) Remove the faulty external meter display

a) Use the 7mm socket wrench to loosen the two nuts that secure the protective PC cover and set the cover aside.

b) Use the PH1 screwdriver to loosen the four screws on the metal cover of the external meter display.

c) Use the PH1 screwdriver to loosen the two screws on the bottom of each external meter display, unplug the terminals, and set the external meter display aside.

d) Use the PH1 screwdriver to loosen the two remaining screws on the metal cover to separate the cover with the display.

e) Insert the slotted screwdriver in the buckles at the back of the faulty display and pry upwards until you can remove the faulty display from the metal slide.
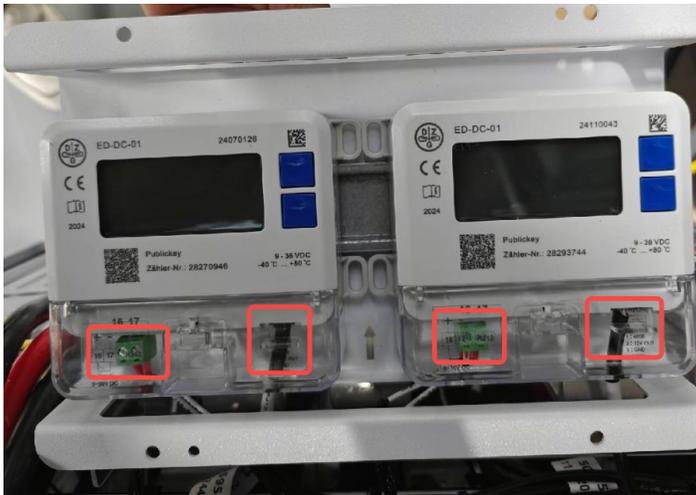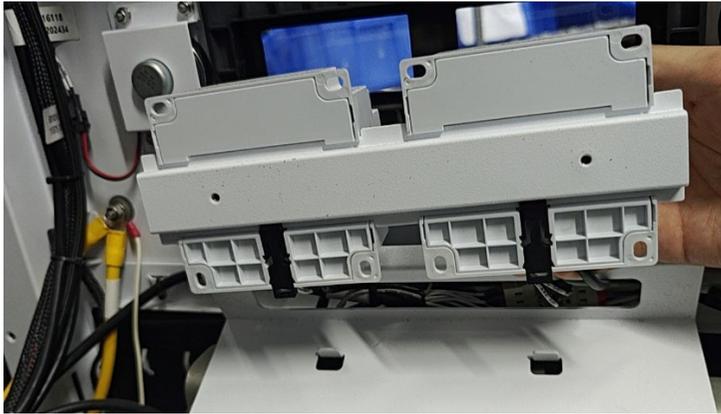
c) Install a new meter

a) Place the new meter on the metal slide, insert the slotted screwdriver in the buckles on the bottom of the meter and pry upwards until you can secure the meter on the metal slide. Use the 16 mm socket wrench to tighten the two M10 screws.

Recommended torque: 23 Nm.

b) Plug in the terminals and use the slotted screwdriver to connect the loose cables according to the cable markings.

c) Put the plastic cover back on the meter.

d) Connect the cable to the bus bar and use the 19mm socket wrench to tighten the screw.

Recommended torque: 55 Nm.

e) Put the PC covers back on the door by slightly bending it inwards as shown in the image.

d) Install a new external meter display

a) Place the new display on the metal slide, press on the buckle to secure the display on the metal slide.

b) Use the PH1 screwdriver to tighten the two screws on the metal cover *(recommended torque: 0.6 Nm)*, make sure that the metal slide is securely fastened on the metal board.

c) Connect the cables to the external meter display according to the cable markings and use the PH1 screwdriver to tighten the two screws. *Recommended torque: 0.6 Nm.* Plug in the terminal on the bottom of each external meter display.

d) Install the external meter display back on the front door and use the PH1 screwdriver to tighten the four screws.
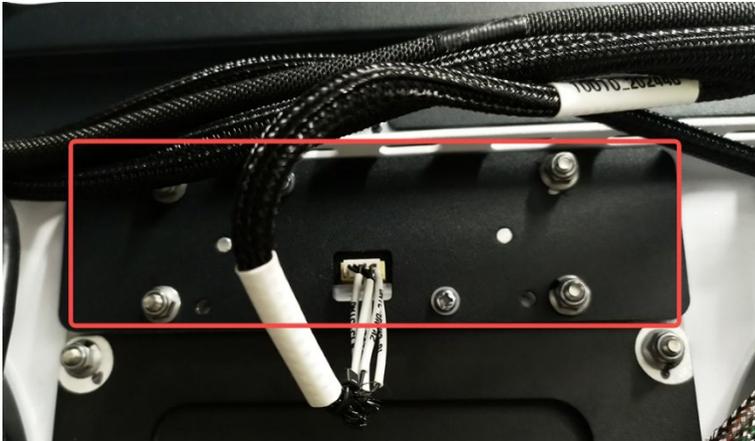
Recommended torque: 0.6 Nm

e) Install the protective PC cover and use the 7mm socket wrench to tighten the nuts.

Recommended torque: 0.6 Nm

Note: For DH240 and DH480, the meter and its external display are integrated into a set. **You must replace the meter and the external display together.**

MIC board

Introduction

The mic board is a simple microphone preamplifier which adapts the signals coming from a microphone to the line audio levels. It has two functions: convert the signal from a balanced type (hot signal, cold signal, ground) to an unbalanced type (signal and ground) and amplify the weak signal from the microphone.

Tools

7mm socket wrench

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 6 min

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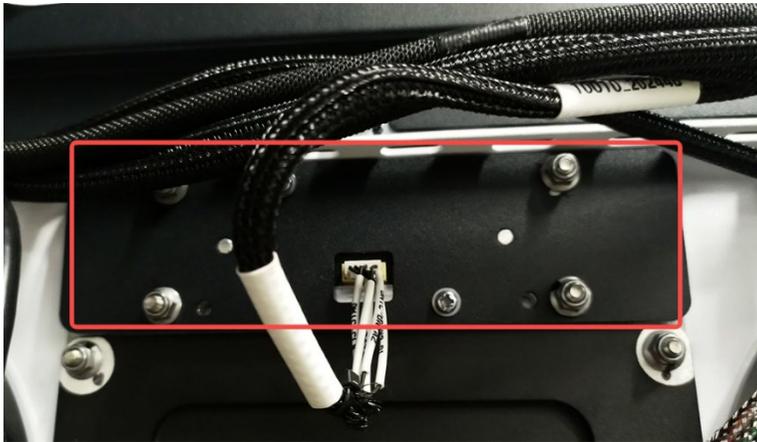
Steps

1. Use the 7mm socket wrench to remove the protective PC cover.

2. Use the 7mm socket wrench to remove the four screws on the MIC board, unplug the terminal, and remove the MIC board.

3. Use the 7mm socket wrench to install the MIC board, plug in the terminal, and tighten the screws.

   Recommended torque: 0.6 Nm

4. Use the 7mm socket wrench to install the protective PC cover.

   Recommended torque: 0.6 Nm

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MCB & RCD component
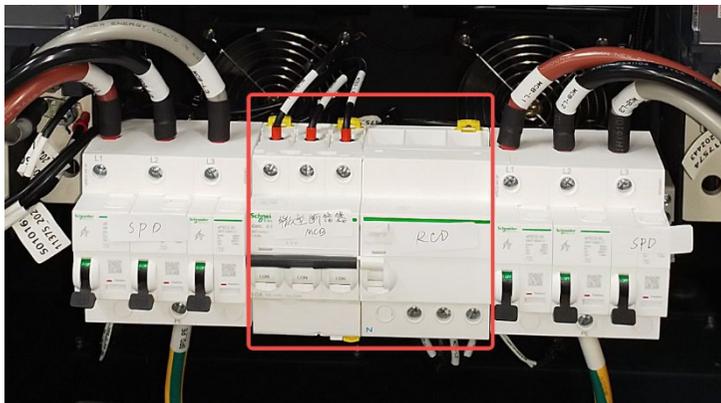
Introduction

The miniature circuit breaker (MCB) is an electromechanical device that switches off the circuit automatically if an abnormality is detected. The MCB easily senses the overcurrent caused by the short circuit.

A residual-current device (RCD) detects and responds to residual currents or leakage currents, protecting against electric shock and fire risk. It quickly cuts off the electricity supply when an imbalance is detected, preventing potential hazards.

Tools

PH1 screwdriver

PH2 screwdriver

Slotted screwdriver

Estimated disassembly and assembly time: 5 min

Estimated debugging time: 8 min

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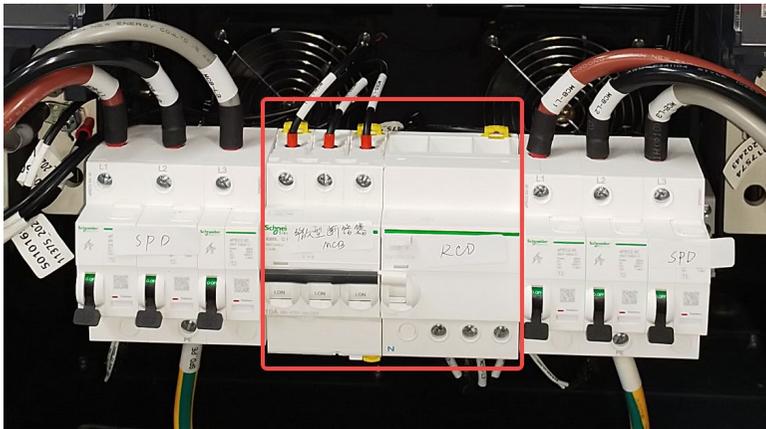
Steps

1. Remove the faulty MCB & RCD component

a) Use the PH2 screwdriver to loosen the four screws on the front cover of AC input module and set the metal cover aside.

b) Use the PH1 screwdriver to loosen the three screws on the MCB and three screws on the RCD.

c) Insert the slotted screwdriver in the buckles on the bottom of the MCB and RCD and pry downwards until the buckles are loosened, then take out the MCB with RCD.

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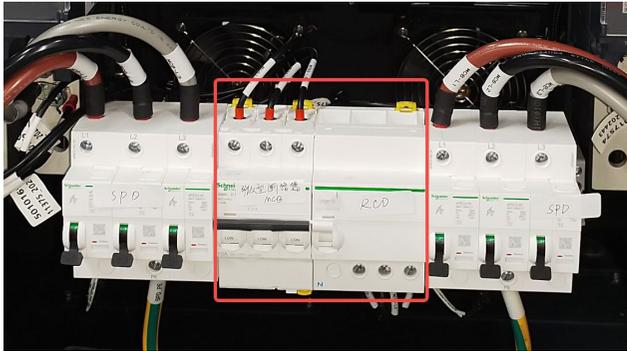
2. Install a new MCB & RCD component

a) Install a new MCB and RCD component and press on the buckles to secure the MCB and RCD on the metal track.

b) Connect the cables according to the cable markings and use the PH1 screwdriver to tighten the three screws on the MCB and three screws on the RCD.

c) Install the front cover of the AC input module and use the PH2 screwdriver to tighten the four screws.

*Note: For DH240 and DH480, the MCB and RCD are integrated into a set. **You must replace the MCB and RCD together.***

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MCCB

Introduction

MCCB (Molded Case Circuit Breaker) in a charging station protect circuits from overloads and short circuits by automatically interrupting current flow. MCCB offer manual operation for maintenance and emergency situations, and they can be reset after issues are resolved.

Tools

16mm socket wrench with an extension bar

PH2 screwdriver

PH1 screwdriver

10mm socket wrench

Estimated disassembly and assembly time: 25 min

Estimated debugging time: 30 min

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Steps

1. **Remove the faulty MCCB**

a) Use the PH2 screwdriver to loosen the four screws on the front cover of AC input module and set the metal cover aside.

b) Use the PH2 screwdriver to loosen the three screws on the bus bar under the MCCB as shown in the image.

c) Use the 16mm socket wrench with an extension bar to loosen the three nuts on the bus bar behind the MCCB, and the three nuts behind the AC contactor.

d) Disconnect the auxiliary contact.

e) Use the PH1 screwdriver to loosen the four screws on the MCCB as shown in the image.

f) Take out the faulty MCCB and set it aside.
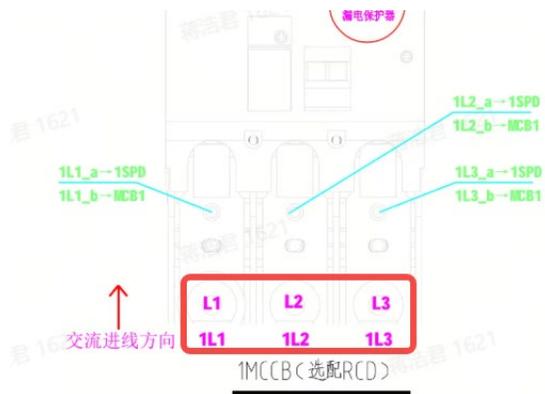
2. Install a new MCCB

a) Use the 16mm socket wrench with an extension bar to tighten the three nuts on the bus bar behind the MCCB, and the three nuts behind the AC contactor.

Recommended torque: 23 Nm

b) Use the PH1 screwdriver to tighten the four screws on the MCCB.

c) Use the PH2 screwdriver to fasten the cable lugs connecting the SPD with MCCB. Make sure that the cable lugs are installed correctly according to the images below.

Recommended torque: 23 Nm

d) Connect the auxiliary contact.

e) Install the front cover of the AC input module and use the PH2 screwdriver to tighten the four screws.

# POS
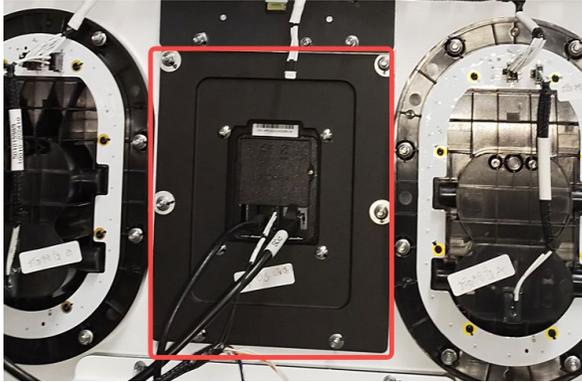
Introduction

POS (Point of Sale) enables secure and convenient transactions for charging services. It allows users to make payments, access charging data, and manage accounts seamlessly, ensuring a smooth and hassle-free electric vehicle charging experience.

Tools

7mm socket wrench

Estimated disassembly and assembly time: 5 min

Estimated debugging time: 8 min

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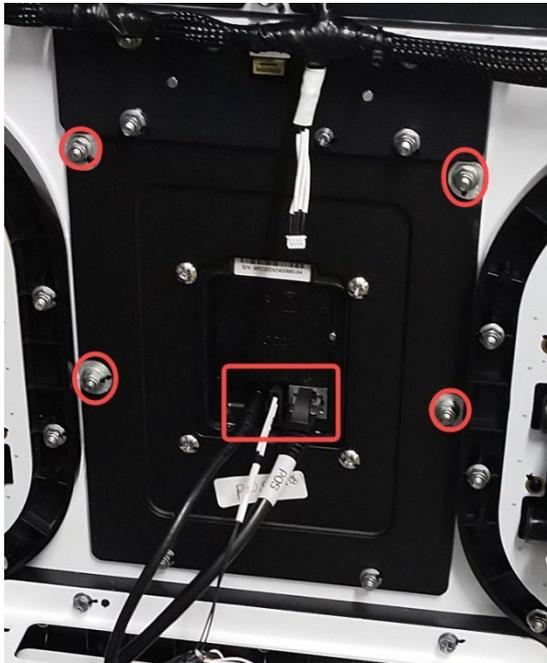
Steps

1. Remove the faulty POS

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Disconnect the terminals on the POS, use the 7mm socket wrench to loosen the four screws, and remove the faulty POS.

2. Install a new POS

a) Install the new POS, use the 7mm socket wrench to tighten the four screws, and connect the terminals.

   Recommended torque: 0.6 Nm

b) 4. Use the 7mm socket wrench to install the protective PC cover.

   Recommended torque: 0.6 Nm

Power module

Introduction

Power module converts incoming electricity to the required voltage for electric vehicle charging. It ensures efficient and stable power delivery, facilitating reliable and optimal charging performance.

Tools

PH1 screwdriver

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 5 min

Steps

1. Use the PH1 screwdriver to loosen the four M4 screws on a power module.

2. Replace the power module and tighten the M4 screws in the diagonal order.

    Recommended torque: 0.6 Nm

Note: UL standard DH480 uses G3 power module, and EU standard DH480 uses G2 power module.

Radar
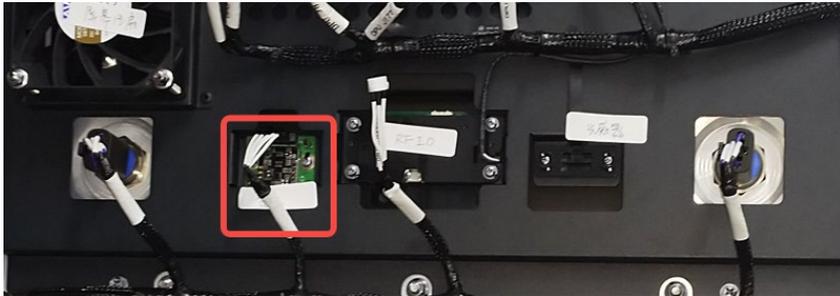
Introduction

Radar is a system that uses radio waves to determine the distance, direction, and radial velocity of objects relative to the site.

Tools

PH1 screwdriver

Cutting plier

Cable tie

7mm socket wrench

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 6 min

Steps

1. **Remove the faulty radar**

a)　Use the 7mm socket wrench to remove the protective PC cover.

b)　Use the PH1 screwdriver to remove the two screws on the radar, unplug the terminal, and remove the radar. Use the cutting plier to cut the cable ties if they interfere with the disassembly.

2. **Install a new radar**

a)　Use the PH1 screwdriver to install the new radar, plug in the terminal, and use cable ties to bind the cables together.

b)　Use the 7mm socket wrench to install the protective PC cover.

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RFID board

Introduction

Radio-frequency identification (RFID) functionality allows access control using RFID cards or tokens. It authorizes users to initiate or stop charging, enhancing security and user management for electric vehicle charging.

Tools

PH1 screwdriver

Cutting plier

Cable tie

7mm socket wrench

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 6 min

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Steps

1. **Remove the faulty RFID board**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Use the PH1 screwdriver to remove the four screws on the RFID board and remove the RFID board. Use the cutting plier to cut the cable ties if they interfere with the disassembly.

2. **Install a new RFID board**

a) Use the PH1 screwdriver to install the new radar, plug in the terminal, and use cable ties to bind the cables together.

b) Use the 7mm socket wrench to install the protective PC cover.

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RBU

Introduction

The routing business unit (RBU) is used for communication control and related communication functions, such as 5G and Wi-Fi.

Tools

8mm open-end wrench

PH1 screwdriver

Estimated disassembly and assembly time: 15 min

Estimated debugging time: 25 min

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Steps

1. **Remove the faulty RBU**

a) Before you replace the RBU component, contact Autel technical support to back up your configuration settings.

b) Use the PH1 screwdriver to loosen the screws on the RBU component.

c) Use the 8 mm open-end wrench to disconnect the antennas from the RBU. You can gently pull out the RBU component a little while you disconnect the antennas so that the handle is not in the way.

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2. Install a new RBU

a) Install a new RBU component, connect the antennas, and tighten the screws.

b) Contact Autel technical support to synchronize your configuration settings to your new RBU component.

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Screen assembly

Introduction

Screen assembly serves to display vital information during the charging process. It shows charging status, power levels, and instructions for users. This user-friendly interface enhances user experience and ensures efficient and informed electric vehicle charging.

Tools

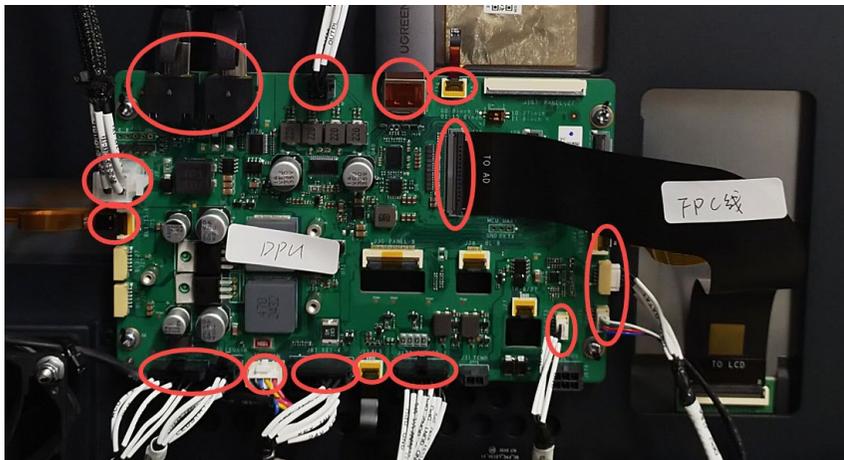7mm, 8mm socket wrench

PH1 screwdriver

Cutting plier

Cable tie

Anti-static wristband

**Estimated disassembly and assembly time:** 40 min

**Estimated debugging time:** 43 min

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Steps

1. **Remove the faulty screen assembly**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Put on the anti-static wristband. Disconnect the cables and terminals on the DPU as shown in the image. Use the PH1 screwdriver to remove the four screws on the DPU and set the DPU aside.
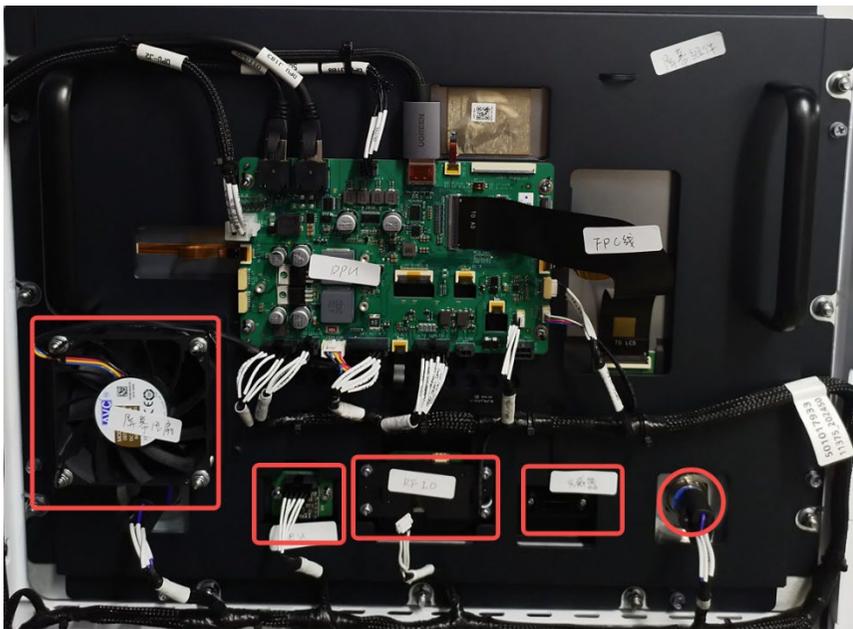
c) Use the 7mm socket wrench to remove the four nuts on the screen fan and set the fan aside. Use the cutting plier to cut the cable ties if they interfere with the disassembly.

d) Use the PH1 screwdriver to remove the two screws on the radar. Unplug the terminal on the radar, and set the radar aside.

e) Use the PH1 screwdriver to remove the four screws on the RFID board and set the RFID board aside.

f) Use the PH1 screwdriver to remove the two screws on the light sensor and set the sensor aside.

g) Unplug the terminals connecting to the screen buttons.

h) Use the 8mm socket wrench to remove the 12 M5 nuts on the screen assembly and take the entire assembly out.

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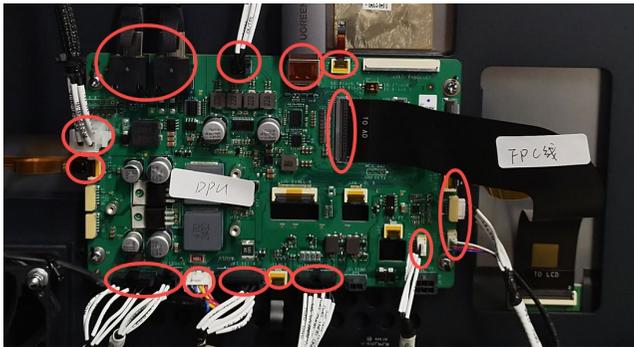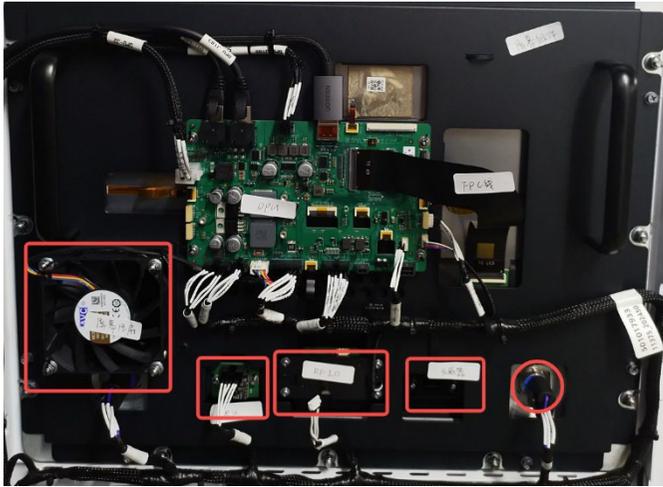
2. Install a new screen assembly

a) Place the new screen assembly on the front door and use the 8mm socket wrench to tighten the 12 M5 screws.
Recommended torque: 1 Nm

b) Use the 7mm socket wrench to install the screen fan.
Recommended torque: 0.6 Nm

c) Use the PH1 screwdriver to install the radar and plug in the terminal.

d) Use the PH1 screwdriver to install the RFID board.

e) Use the PH1 screwdriver to install the light sensor.

f) Install the DPU by connecting the cables and terminals on the DPU as shown in the image.

g) Plug in the terminals connecting to the screen buttons.

h) Use cable ties to bind the loose cables together.

i) Use the 7mm socket wrench to install the protective PC cover.

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Screen fan

Introduction

The screen fan is used to protect the screen from overheating and ensure that the screen works properly.

Tools

7mm socket wrench

Cutting plier

Cable tie

7mm socket wrench

Estimated disassembly and assembly time: 4 min

Estimated debugging time: 7 min

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Steps

1. **Remove the faulty screen fan**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Use the 7mm socket wrench to remove the four screws on the screen fan and remove the faulty fan. Use the cutting plier to cut the cable ties if they interfere with the disassembly.

2. **Install a new screen fan**

a) Use the 7mm socket wrench to install the new screen fan and use cable ties to bind the cables together.

b) Use the 7mm socket wrench to install the protective PC cover.

Sealing strip
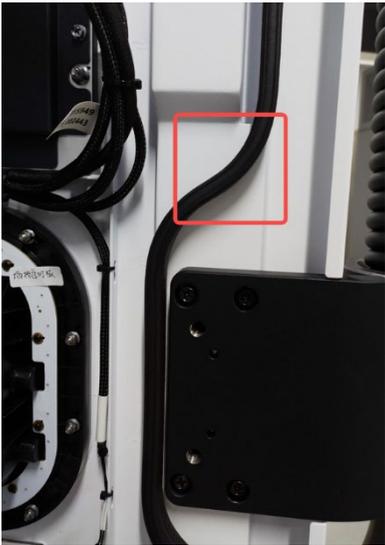
Introduction

Sealing strips are installed both on the cabinet and on the doors. They are used for waterproofing, heat insulation, and dustproof.

Tools

Glue gun

Estimated disassembly and assembly time: 10 min
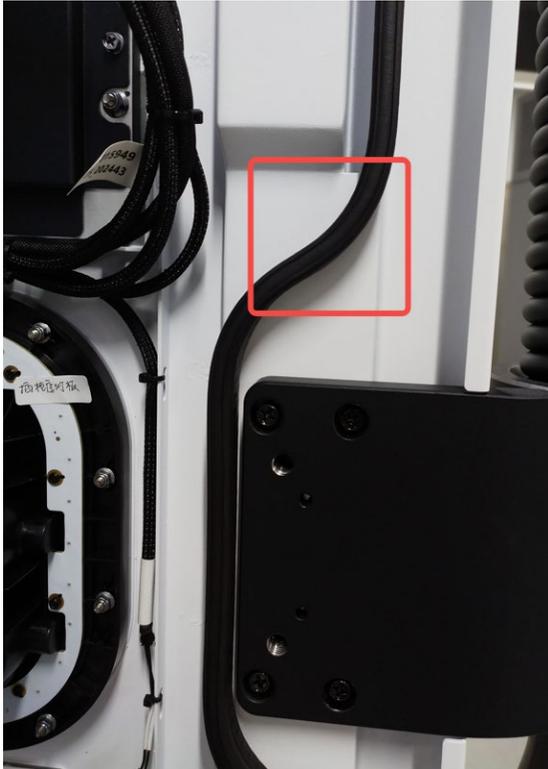
Estimated debugging time: 13 min

Steps

1. Replace the sealing strip on the cabinet

a) Find the joint of the sealing strip ends at the bottom of the door and remove the sealing strip.

b) Secure the new sealing strip from the bottom of the door and make sure the sealing strip is sticked tightly on the edge of the door.

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2. Replace the sealing strip on the door

a) Find the joint of the sealing strip ends at the bottom of the door and remove the sealing strip.

b) Secure the new sealing strip from the bottom of the door and make sure the sealing strip is wrapped tightly on the edge of the door.

c) Use a glue gun to join the ends at the bottom of the door.

Note: You need to replace only the sealing strip that is no longer effective. You do not need to replace the sealing strips on the cabinet and the door together.

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Socket LED board

Introduction

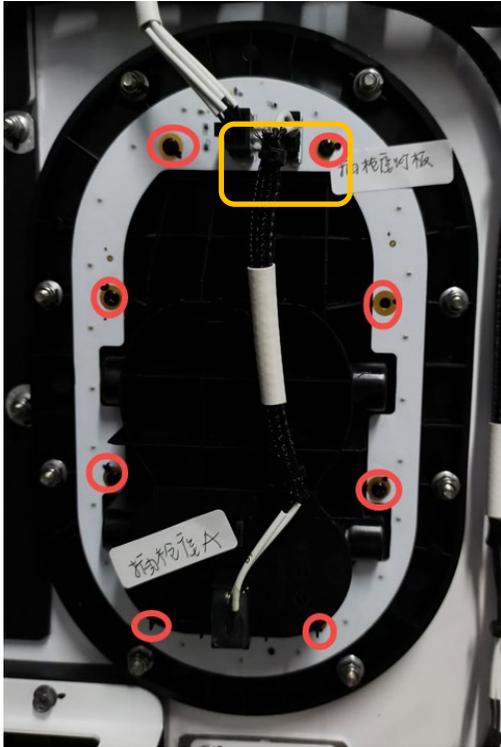Socket LED board is used to display the status of the charging connector.

Tools

PH1 screwdriver

7mm socket wrench

Estimated disassembly and assembly time: 4 min

Estimated debugging time: 7 min

AUTEL®

Steps

1. **Remove the faulty socket LED board**

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Disconnect the terminals on the socket LED board, use the PH1 screwdriver to loosen the eight screws, and remove the faulty LED board.

2. **Install a new socket LED board**

a) Install the new socket LED board, use the PH1 screwdriver to tighten the eight screws *(recommended torque: 0.6 Nm)*, and connect the terminals.

b) Use the 7mm socket wrench to install the protective PC cover.

Recommended torque: 0.6 Nm

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Speaker

Introduction

A speaker converts an electrical audio signal into a corresponding sound.

Tools

7mm socket wrench

Estimated disassembly and assembly time: 3 min

Estimated debugging time: 6 min

AUTEL®

Steps

1. Remove the faulty speaker

a) Use the 7mm socket wrench to remove the protective PC cover.

b) Use the 7mm socket wrench to remove the four screws on the speaker and remove the speaker.
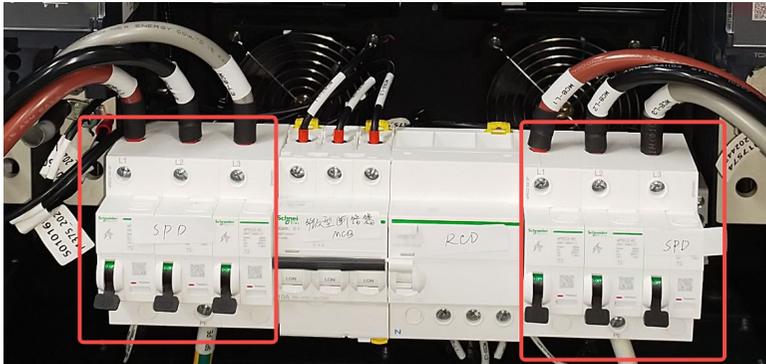
2. Install a new speaker

a) Use the 7mm socket wrench to install the new speaker and tighten the screws.

Recommended torque: 0.6 Nm

b) Use the 7mm socket wrench to install the protective PC cover.

Recommended torque: 0.6 Nm

SPD

Introduction

SPD (surge protection device) protects the charging station from lightning and power surges. It shields the equipment from potential damage, ensures the consistency of electric vehicle charging, and enhances overall system resilience.

Tools

PH1 screwdriver

PH2 screwdriver

Slotted screwdriver

Estimated disassembly and assembly time: 10 min

**Estimated debugging time:** 13 min
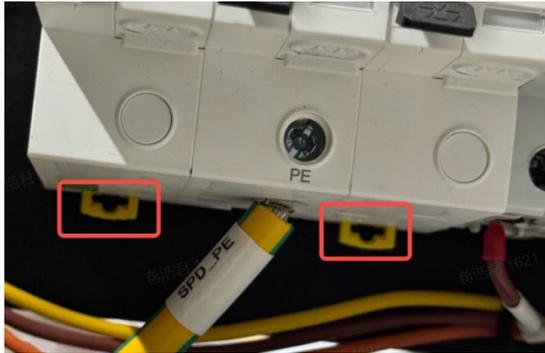
Steps

1. **Remove the faulty SPD**

a) Use the PH2 screwdriver to loosen the four screws on the front cover of AC input module and set the metal cover aside.

b) Use the PH1 screwdriver to loosen the three screws on the SPD.

c) Insert the slotted screwdriver in the buckles on the bottom of the SPD and pry upwards until the buckles are loosened, then take out the SPD.
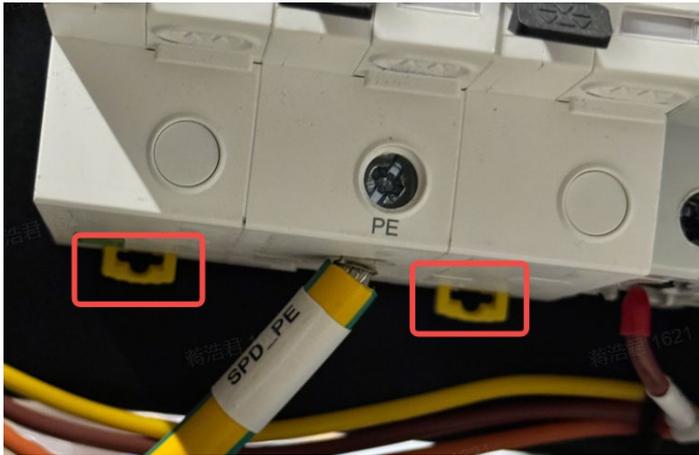
2. **Install a new SPD**

a) Install a new SPD and press on the buckles to secure the SPD on the metal track.

b) Connect the cables according to the labels on the SPD and use the PH1 screwdriver to tighten the three screws.

c) Install the front cover of the AC input module and use the PH2 screwdriver to tighten the four screws.

TCU

Introduction

The telematics control unit (TCU) primarily performs functions related to user interaction, external communication, internal scheduling, and charging settlement. It achieves user interaction through methods such as voice, video, and touch. Wireless communication is facilitated through WIFI, 4G, or Bluetooth, while wired communication is achieved through interfaces like Ethernet, CAN, RS485.

Tools

PH1 screwdriver

Estimated disassembly and assembly time: 5 min

Estimated debugging time: 15 min
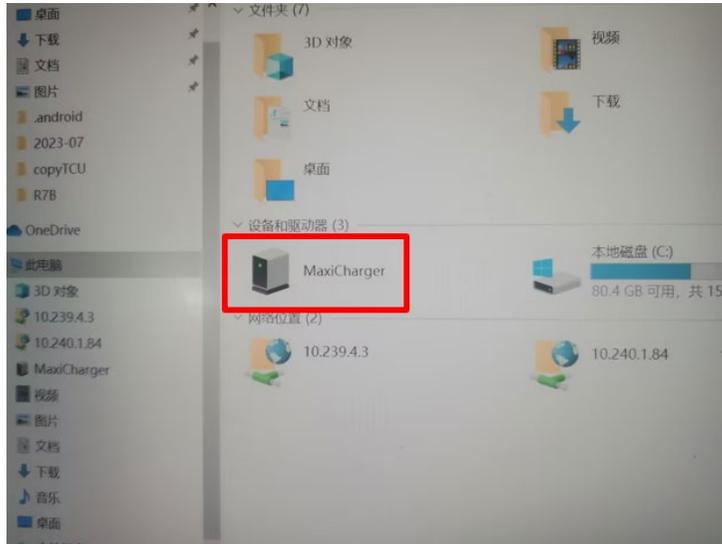
Steps

1. **Remove the faulty TCU**

a) Before you replace the TCU, execute copytcu.exe to save your original TCU data. After the replacement, execute the program again to copy your configurations to the new TCU. You can contact Autel HQ to obtain this program.

b) Use the PH1 screwdriver to loosen the screws on the TCU component.

c) Pull out the TCU component.

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2. Install a new TCU

a) Install a new TCU component and tighten the screws.

b) Contact Autel technical support to synchronize your configuration settings to your new TCU component.

Temperature sensor

Introduction

A temperature sensor is a device that detects and measures hotness and coolness and converts it into an electrical signal.

Tools

Cutting plier

Estimated disassembly and assembly time: 4 min

Estimated debugging time: 7 min

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Steps

1. Remove the faulty temperature sensor

a) Use the cutting piler to cut the cable tie.

b) Unbuckle the temperature sensor.

2. Install a new temperature sensor

a) replace it with a new one, and secure the buckle.

b) Use a cable tie to secure the new temperature sensor to the

air filter.

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3. Post Spare Part Replacement Inspection

Please note that all items described in the following tables must be checked after part replacement.

Installation Test: **Power off the charger** before checking the items below.

Meter	Gently shake on the meter to check whether the meter is securely installed.
RCD	Gently shake on the RCD to check whether the RCD is securely installed.
AC contactor	Shake on the AC contactor to check whether the it is securely installed.
Fuse	Check whether the fuse is securely installed.
Fan	Check whether the fan is securely installed.
Charging cable and connector	• Gently pull on the connector to check whether it is securely fastened. • Check whether the socket is securely installed. • Check whether the connector can plug into the socket smoothly and securely. • Check whether the connection between the socket and the connector is stable and reliable.
Front door	• Check whether the front door is securely installed. • Check for any gaps between the front door and the cabinet. • Check for visible cracks or damages that could compromise the equipment integrity.
Air filter	Check whether the air filters are inserted all the way into the vent and are secured in place.
POS	Gently pull on the POS to check whether it is securely installed.
Cabinet	Check whether the cabinet is intact and free from any damage.
Screen	Check whether the screen is meticulously installed and in good condition.
Sealing strip	• Check whether the sealing strip is intact and free from any visible damage or defects. • Test the elasticity of the sealing strip by applying gentle pressure on it. • Check whether the sealing strip is securely attached to the intended surfaces without any detachment or peeling. • Check the edges and corners of the sealing strip to ensure proper attachment. • Check for signs of aging, such as discoloration, hardening, or degradation of the sealing material.

Function test: **Power on the charger** before checking the items below.

Meter	Check whether the meter screen displays all information accurately and works normally.
RCD	Press the test button on the RCD, check whether the RCD trips. Then, recover the RCD.
Charging cable and connector	Check whether the charging cable and connectors are working normally and you can charge the EV normally.
POS	• Check whether the POS screen can display swipe card reminder normally. • Check for alarms on the POS screen.
Screen	• Check whether the screen can display normally. • Check whether alarms or warning messages are displayed on the charger screen.

4. Glossary of Terms

AC	Alternative current
DPU	Data processing unit
ECU	Electronic control unit
EV	Electric vehicle
FPC	Flexible printed circuit
MCB	Point of sale
NFC	Near field communication
PC	Polycarbonate cover
PCBA	Printed circuit board assembly
RBU	Routing business unit
RCD	Residual-current device
RFID	Radio-frequency identification
SIM	Subscriber identity module
SPD	Surge protection device
TCU	Transmission control unit

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