

Installation User Manual

MC401

Introduction.....	3
1.System Overview.....	5
1.1 Product Overview.....	5
1.2 Schematic diagram powered by standard power cable.....	5
2.Installation Preparation.....	6
2.1 Installation Technical Requirements.....	6
2.2 Understanding the Installation Environment.....	6
2.3 Vehicle Condition and Related Electrical Information.....	6
2.4 Vehicle Power Connection.....	6
3.Preparation for Installation Materials and Tools.....	8
3.1 Package Inventory Check.....	8
3.2 Installation Materials and Tools.....	8
3.3 Preparing standard SIM Card and Micro SD Memory Card.....	10
4.Installation.....	11
4.1 Installing standard SIM Card and Memory Card.....	11
4.2 Choice of Installation Area for the Main Unit.....	12
4.3 Installation of the main unit.....	14
4.4 Adjustment and Fixation of the device.....	14
4.5 Power Connection, Signal Cable, and Cable Connection.....	16
5.Device configuration.....	17
6.Acceptance and Cleaning.....	18
6.1 Cleaning.....	18
6.2 Installation Acceptance.....	18

To guide engineers in the correct and efficient installation of MC401 and its accessories, and to improve installation efficiency, this MC401 Solution Installation Guide has been prepared.

This document primarily includes: Preamble, System Overview, Installation Preparation, Installation Introduction, Acceptance, and Cleaning. This document is intended for installation engineers.

We reserve the right to interpret this document and modify the information and descriptions contained herein. In the event of any changes to the content of this manual, no separate notification will be provided.

Important Notice

1. Prior to installation, park the vehicle on level ground and turn off the engine (do not park the vehicle on slopes or inclined roads).
2. Please carefully read the section on packing list and thoroughly inspect upon unpacking.
3. Please carefully read the section on tool list and ensure the availability of installation tools prior to proceed the installation.
4. Prior to installation, observe the vehicle's surroundings and adhere to the following principles:
 - a. The installation position and wiring of the product should not obstruct the driver's visibility or adjustment of the rear-view mirror and sun visor.
 - b. The lens for monitoring the road conditions ahead of the vehicle must be within the working range of the windscreen wipers.
 - c. The installation position of the in-cabin driver monitoring camera should comply with local regulations.
 - d. The installation position should facilitate the replacement and maintenance of the Micro SD card and standard SIM card.

5. Choose a suitable installation position based on the vehicle's environment. This document serves as a reference only.
6. Select the appropriate power connection method based on the vehicle's environmental conditions. Power connection should be performed by professionals, as improper operation of the vehicle's power system by non-professionals may be dangerous. This document serves as a reference only.
7. If any issues arise during the installation of special vehicles, please contact the product supplier promptly for support.
8. During installation, the Mxtool application is required for debugging and configuring the MC401.
9. Scan the QR code below or search for and download the Mxtool application from the application store. Once downloaded, you can connect the application to the MC401 to configure the device's operational parameters.



Android

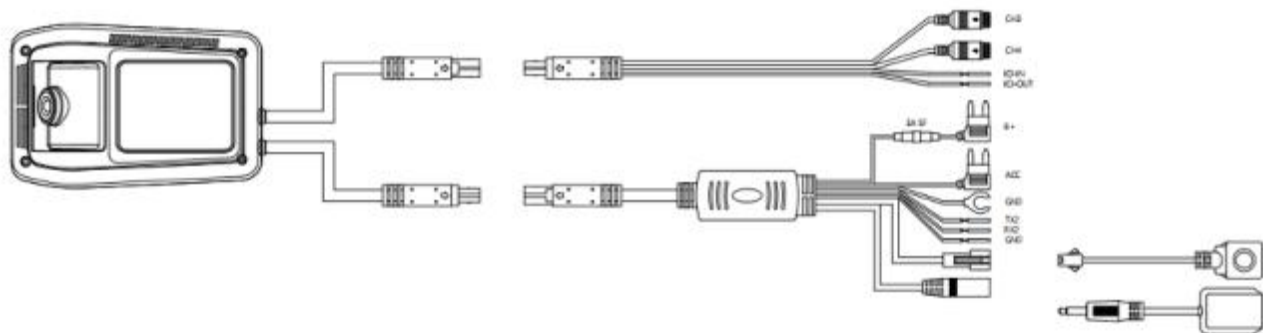
System Overview

1.1 Product Overview

MC401 is an smart dash cam with built-in dual recording cameras. It helps drivers reduce traffic accidents and assists fleet management in improving efficiency. Based on artificial intelligence technology, it can proactively detect dangerous driving events and unsafe driving behaviors. It supports sending local real-time alerts to the driver to avoid risks and uploads the events to the fleet management platform for driver training. It transmits real-time and accurate vehicle location information and operational data to the fleet management platform. It provides high-quality remote intercom and real-time video playback, making fleet management easier and more efficient.

This product is suitable for various weather conditions such as day and night, sunny, and rainy. It can be installed in vehicles such as buses, taxis, passenger cars, trucks, hazardous goods transport vehicles, school buses, dump trucks, and sanitation vehicles.

1.2.Schematic diagram powered by standard power cable:



2.1 Installation Technical Requirements

Relevant personnel should be familiar with the product's features, applications, and overall composition.

Relevant personnel should have knowledge of vehicle circuits, structures, and commonly used installation methods for in-vehicle devices.

2.2 Understanding the Installation Environment

Before equipment installation, relevant personnel should have a clear understanding of the vehicle model, installation position of the device, cable types and lengths required for different vehicle models, and the list of commonly used auxiliary materials. This ensures the smooth completion of equipment installation and debugging.

2.3 Vehicle Condition and Related Electrical Information

Confirmation of vehicle information is the basic prerequisite for successful installation and the assurance of role allocation to avoid vehicle damage. For each component, the next step can only proceed after clear confirmation, with confirmation by the vehicle responsible person and the installation personnel for each operation.

- (1) Check for any damage to the vehicle's exterior and interior components.
- (2) Check if the vehicle can be started normally.
- (3) Check the status of the vehicle's power supply system.

***Note:** Confirming the above information is crucial. Installation can only proceed after confirmation of normal conditions.

2.4 Vehicle Power Connection

It requires the operation of professional installers. The following mainly describes the

method of connecting the vehicle's power supply according to the product's power cable requirements.

(1) Tools required: multi-meter.

(2) Selection of Power Connection Location

When the vehicle is parked and ignition is OFF, use a multi-meter to check if the circuit is powered. If it is positive, it is determined to be a constant power supply, and then measure the voltage.

When the vehicle is parked but the ACC is ON or ignited position, use a multi-meter to check if the circuit is powered. If it is negative when ACC is OFF and positive when ACC is ON, it is determined to be the ACC cable, and then measure the voltage.

(3) Voltage Measurement at Power Connection Point

Constant Power Supply: With the vehicle is parked and ignition is OFF, use a multi-meter to measure the voltage of the constant power supply cable, which is approximately 24 V or 12 V. If multiple cables have voltages within this range, select the cable with higher current as the constant power supply connection cable.

ACC: When the vehicle ACC is in the ON position or ignited state, use a multi-meter to measure if the voltage is 24 V or 12 V. If it is 0 in the OFF state and 24 V or 12 V in the ACC ON position or ignited state, select the cable as the ACC power supply connection cable.

***Note:** When connecting the power supply, measure the positive and negative terminals of the power supply first with a multi-meter to avoid errors.

Preparation for Installation Materials and Tools

3.1 Package Inventory Check

After unpacking the product, please ensure the device is intact and all accessories are included.






3.2 Installation Materials and Tools

Before installation, the following installation accessories and tools shall be made available

Installation Materials and Tools List

#	Image	Name	Usage	Quantity
1		Common Screwdriver Kit	Tighten screws, optional	1pcs
2		Crowbar	Pry up the vehicle panel	1pcs
3		Ties	Bundle cables	As per needs
4		Cleaning Cloth	Clean the dashboard	1pcs
5		Android Phone	Install the MxtoolApp for video preview and parameter configuration	1pcs
6		Measure Tape	Measure the installation height of the ADAS camera and assist the installation in other scenarios	1pcs
7		Mark Pen	Mark lines for installation	1pcs
8		Cutting nippers	Cut and strip wires	1pcs
9		Insulated rubber tape	Wrap wire ends	1pcs

#	Image	Name	Usage	Quantity
10		Scissors	Cut insulated rubber tape or wire clip	1pcs
11		TF Card Reader	For future use	1pcs
12		Multi-meter	Locate vehicle power supply Measure the conduction of harness Measure pulse signal	1pcs
13		3M adhesive tape	Fix DMS Camera	1pcs
14		Three legged ladder	Help to install the BSD camera	1pcs
15		Waterproof sealant	Waterproof backfill after punching	1pcs
16		Waterproof tape	Waterproof protection for outdoor wire connectors	1pcs

3.3 Preparing Micro SIM Card and Micro SD Memory Card

To ensure proper online communication and data storage of the device, please prepare a compatible Micro standard SIM card and a Micro SD memory card that meets the quality requirements before installation.

4.1 Installing standard SIM Card and Memory Card

Installing the standard SIM card and Micro SD card as shown in the following diagram (pay attention to the insertion direction of these cards). During installation, make sure it feels smooth and flexible. When pushing the card, you should hear a clear "click" sound, indicating that the card is correctly inserted. If you feel significant friction or resistance during installation, it means the card is inserted in the wrong direction. In such cases, promptly remove the card to avoid damaging it.

If the Micro SD card and standard SIM card are too small to be inserted into the slot manually, you can place the card into the slot and then use the included pry tool to push it in.

[Diagram: Insertion of standard SIM card and Micro SD card]



*Note:

(1) Due to the operating temperature range of the device from -20°C to $+70^{\circ}\text{C}$, the Micro SD card and standard SIM card should be able to work properly for an extended period in harsh environments. Specifically, the metal contacts on consumer-grade Micro SD cards and standard SIM cards are prone to oxidation under prolonged exposure to heat, humidity, or salt spray conditions. Frequent insertion and removal of cards can lead to contact wear, and the card slot can experience deformation or

bending under constant pressure, resulting in poor contact. Therefore, if you are using a standard SIM card, for industrial equipment, industrial plastic or ceramic M2M cards (MP2/MP3/MS1 grade) with a working temperature range of -40 ° C to 105 ° C is recommended. If using a Micro SD card, an industrial-grade Micro SD card should be used, which offers strong stability and can be used within a wide temperature range (-40° C to 85° C). For safety purposes, when purchasing the device, it is recommended to use Micro SD cards that have been verified by our company. If you choose to purchase unverified Micro SD cards, there may be a risk of damaging the device, thus affecting its lifespan.

(2) Before installing the standard SIM card, please check the metal contact surface of the standard SIM card for any dirt (such as dust, fingerprints, or watermarks). If there is any, use a non-woven cloth or rubber to clean the surface.

(3) When installing the standard SIM card, avoid touching the metal surface of the standard SIM card with your hands to prevent contamination from dust and sweat.

After installing the standard SIM card and Micro SD card, tighten the card slot panel and the screws.

Once the standard SIM card and Micro SD card are installed, remove the lens protective film from the front and rear lenses of the device, as shown in the diagram below.



4.2 Choice of Installation Area for the Main Unit

The installation area requirements for MC401 are as follows:

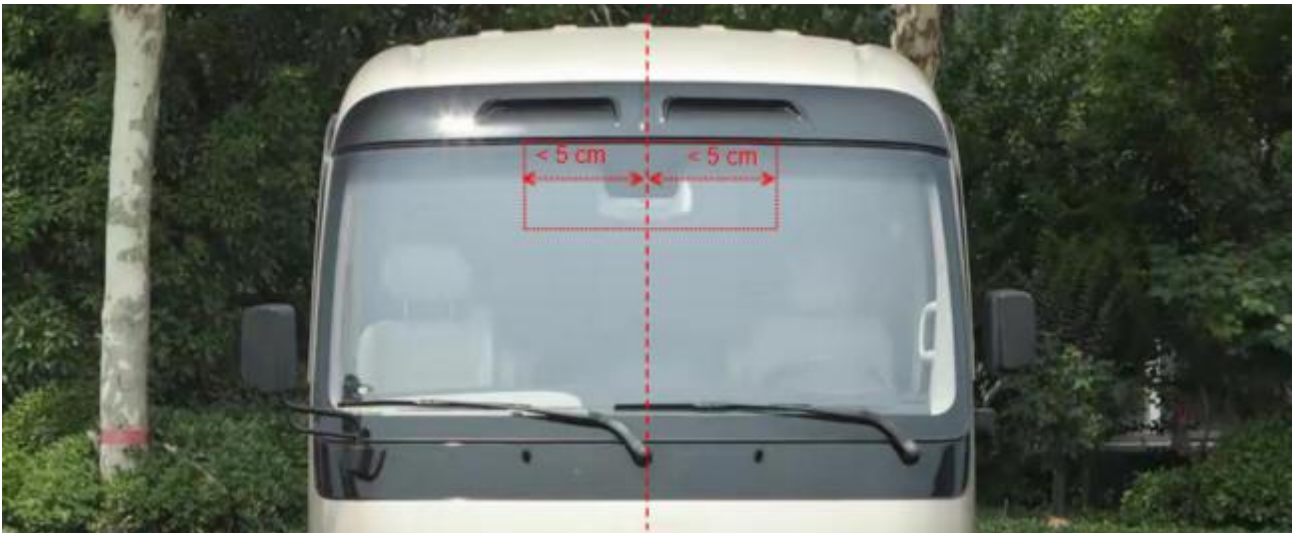
- (1) The device must be installed in the middle of the windshield. Typically, it is installed in the area above the center line of the windshield, in the vicinity of the rear-view mirror. If it is not possible to install the device in the middle as required, a deviation of less than 5 cm to the left or right is allowed (the deviation of the device relative to the center line of the windshield is calculated using the center line of the front lens).
- (2) The lens of the road condition monitoring camera must be within the working range of the left and right windshield wipers (ensuring that the screen of the road condition monitoring lens is clean and free from stains).
- (3) It is recommended to avoid installing other electronic devices, including smart rear-view mirrors, electronic tags, etc., around the device, as it may affect the device's positioning signal.

The installation position should ensure that the main unit does not obstruct the driver's view of the front blind spot reflector, and there are no obstacles (such as the interior rear-view mirror or glass coating) in front of and around the camera lens in the driver's cabin monitoring view.

The general selection of the installation area is shown in the diagram below:

[Diagram: Installation area for the main unit]





4.3 Installation of the main unit.

1. Park the vehicle on a level surface.
2. Clean the inside and outside of the target installation area on the windshield using an alcohol swab. Ensure that there is no dirt or debris on the glass that could obstruct the view of the road condition monitoring lens. Make sure the glass is dry.
3. Remove the protective film from the 3M tape of the mounting base and attach it to the windshield
5. Press device firmly against the windshield for 10 seconds, ensuring that there are no air bubbles between the main unit and the glass.

4.4 Adjustment and Fixation of the device

When fix the camera, ensure that the cabin camera screen meets the following conditions:

- a) The center of the cabin should be positioned in the middle of the screen.
- b) The cabin screen should be horizontal.
- c) The vehicle's steering wheel should be displayed in the lower left/right corner of

the screen.

The properly adjusted cabin monitoring camera rendering is shown below:

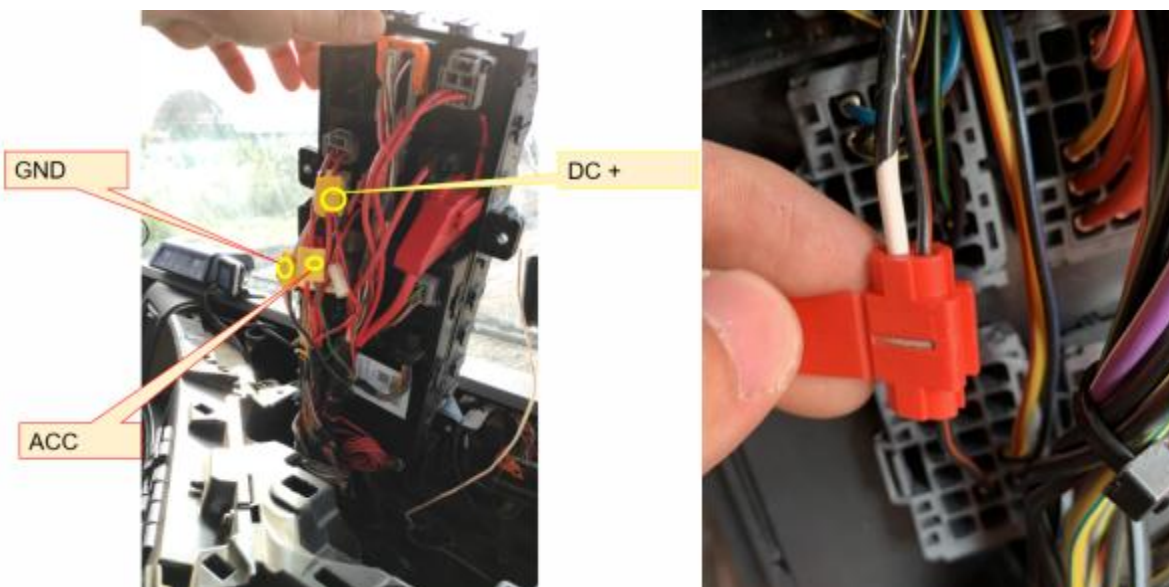
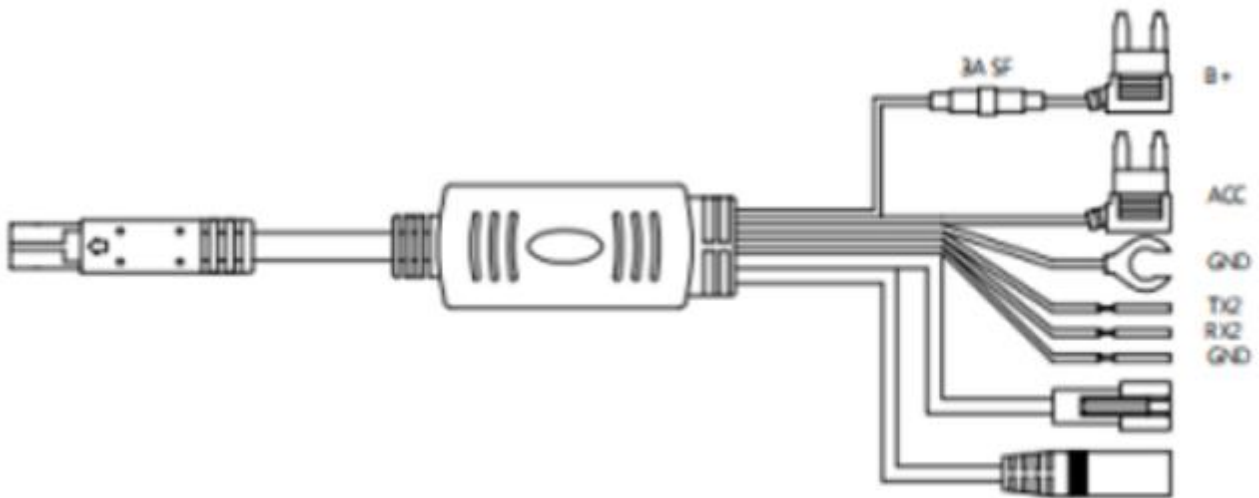


d) MC401 supports two additional external remote cameras, please select the matching camera to install in the appropriate position according to the actual requirements.

***Note:** Only when the device is securely connected to the vehicle, can the device be powered on. If the device is fixed after power connection, it should be powered on again before testing or use.

4.5 Power Connection, Signal Cable, and Cable Connection

Connect the power/ACC/GND to the vehicle's power supply line.



***Note:** The power line should preferably be connected using "dedicated non-stripping connectors" (no need for stripping, to avoid the risk of electric leakage) and wrapped with insulating tape to prevent electric leakage/short circuit. If there are no special non-stripping connectors available, stripping wires can also be used for the connection. In this case, the connection process must comply with standard specifications. After the connection is completed, wrap it with insulating tape to avoid electric leakage/short circuit.

Device configuration

After the device is powered on, adjust it using the mobile app MXtool. Please refer to MXtool user manual for instruction.

4.6 Operating bands(Tx and Rx) and maximum power

Frequency Band(s):	2.4G WIFI: 2412~2462MHz(TX/RX) WCDMA Band II: 1852.40~1907.60MHz(TX),1932.4 ~ 1987.6 MHz(RX) WCDMA Band IV: 1710~1755MHz(TX),2110 ~ 2150 MHz(RX) WCDMA Band V: 826.40~846.60MHz(TX),871.4 ~ 891.6 MHz(RX) LTE Band 2: 1850~1910 MHz(TX), 1930 ~ 1990 MHz(RX) LTE Band 4: 1710~1755 MHz(TX), 2110 ~ 2155 MHz(RX) LTE Band 5: 824 ~849 MHz(TX), 869 ~ 894 MHz(RX) LTE Band 12: 699MHz ~716MHz(TX), 729~ 746 MHz(RX)
Maximum output power:	2.4G WIFI: 0.0475W WCDMA Band II: 0.1791W WCDMA Band IV: 0.1611W WCDMA Band V: 0.1178W LTE Band 2: 0.1774W LTE Band 4: 0.1416W LTE Band 5: 0.1340W LTE Band 12:0.1406W

Acceptance and Cleaning

6.1 Cleaning

Clean up the installation site, collect and remove tools and waste materials. Return any original items to their original positions in the vehicle. The installation work is now complete.

6.2 Installation Acceptance

Conduct acceptance based on the acceptance checklist provided by the customer, focusing on the installation details and parameter settings.

(1) Pay close attention to the parameter settings and take screenshots for documentation.

(2) Verify the video image quality and capture and save sample videos.

After the installation is complete, take photographs of all the devices and the central console.

(1) Capture installation position photos of all components.

(2) Take a rendered photo of the cabin after the installation is complete.

Note1:

This device complies with Part 15 of the FCC Rules . Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation . Changes or modifications not expressly approved by the party responsible for compliance could void the user' s authority to operate the equipment .

Note2:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note3:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

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