



MT7010
User's Manual





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Safety Precautions

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. Do not leave this equipment in either an unconditioned environment or in an above 40°C storage temperature as this may damage the equipment.
8. The openings on the enclosure are for air convection to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
10. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
13. Never pour any liquid into an opening. This may cause fire or electrical shock.
14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
15. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.



- d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
16. Do not place heavy objects on the equipment.
17. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
18. **CAUTION:** DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY RE- PLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE REC- OMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.



Regulatory and Certification

FCC

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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 the 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.

Shielded interconnect cables and shielded AC power cable must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.



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

This device is operation in 5.15 – 5.25GHz frequency range, then restricted in indoor use only, Outdoor operations in the 5.15 – 5.25GHz is prohibit.



RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

CE Marking

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. Please contact your local representative for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

RED

This device complies with the essential requirements of the Radio Equipment Directive (2014/53/EU).



Lithium Battery Safety Statement

Lithium battery inside. Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by battery manufacturer.

THIS PRODUCT CONTAINS LITHIUM-ION BATTERY PACKS. IT MUST BE DISPOSED OF PROPERLY. CONTACT LOCAL ENVIRONMENTAL AGENCIES FOR INFORMATION ON RECYCLING AND DISPOSAL PLANS IN YOUR AREA.



Chapter 1. Product Introduction

MT7010 is the in-vehicle terminal with 7” high resolution display with 500nits brightness and flexible to expand varied wireless connection capability designed, it’s for the fleet management, asset management, EOBR and ELDs application.

This includes ISO 7637-2, SAE J1455 and SAE J1113 compliance and optimized power system design for cold cranking, load dump, transient voltage and ESD.

With IP65 protection rating, wide temperature design, wide power range input, and rich expanding interfaces supporting in-vehicle connectivity.

Hardware Specifications

Item	Description
Processor	Qualcomm MSM8909 (Quad-Core Cortex-A7 1.3 GHz)
Memory	LPDDR2 RAM 2GB (Europe, North America version) LPDDR2 RAM 1GB (China version)
Storage	eMMC 16GB (Europe, North America version) eMMC 8GB (China version)
Display	<ul style="list-style-type: none"> ● 7 inch TFT LCD ● 500 nits ● Viewing angel: 145(H)/ 160(V) (CR>10)
Touch Panel	<ul style="list-style-type: none"> ● Projected Capacitive Touch Screen
Wireless Connectivity	<ul style="list-style-type: none"> ● 802.11 a/b/g/n ● Bluetooth 4.1 ● GPS / GLONASS / BEIDOU (TBD)
Item	Description
Power Input	9-36VDC,3.5A
Battery	1950mAh, 3.6V
Housing (Mechanical)	PC+ABS, fanless design
Certification	CE, FCC, CB



Operating System Support

- Android 5.1

Environment

- Operating temperature:
 - -20°C (-4°F) to 60°C (140°F)
 - In accordance with MIL-STD-810G CHANGE1 Method 501.6 High Temperature Procedure II - Operation
 - In accordance with MIL-STD-810G CHANGE1 Method 502.6 Low Temperature Procedure II – Operation
- Storage temperature:
 - -30°C (-22°F) to 70 °C (158°F)
 - In accordance with MIL-STD-810G CHANGE1 Method 501.6 High Temperature Procedure I – Storage
 - In accordance with MIL-STD-810G CHANGE1 Method 502.6 Low Temperature Procedure I - Storage
- Relative humidity: 5% to 95% @ 30°C (86°F) to 60°C (140°F) non-condensating in accordance with MIL-STD-810G CHANGE1 Method 507.6 Humidity Procedure II Aggravated Cycles (Fig 507.6-7)
- Vibration Test:
 - Operating: MIL-STD-810G CHANGE1 Method 514.7 Category 4, Fig 514.7C-2 Common carrier (US highway truck vibration exposure); Fig 514.7C-3 Composite two-wheeled trailer; Fig 514.7C-4 Composite wheeled vehicle
 - Non-Operating: MIL-STD-810G CHANGE1 Method 514.7 Category 24, Fig 514.7E-1 (General minimum integrity exposure)
- Shock Test:
 - Operation: MIL-STD-810G CHANGE1 Method 516.7 Procedure 1 Functional Shock
 - Non-Operation: MIL-STD-810G CHANGE1 Method 516.7 Procedure V Crash Hazard Shock



I/O Ports

Item	Description
Serial	1 x RS-232 (RX, TX)/422/485, non isolation (COM1) RS-232, with 5V/600mA & 12V/300mA x 1 (COM2)
USB	USB 2.0 for host A-type connector (500mA) x 1
Ethernet	Gigabit RJ45 x 1
GPIO	DI/ DO x 2 Input: GPI 0~30V Output: (1) circuit design reserved for 2 x GPO 5V (2) default setting 2 x GPO: OC output, High level depends on external pull up resistor, Up to 30 VDC maximum sink 50 mA per channel
CAN	CANbus and SAE J1939
Audio	Headset for Mic-in/ Audio out x 1 Internal Mic-in x 2
Speaker	Built-in dual 2W speaker



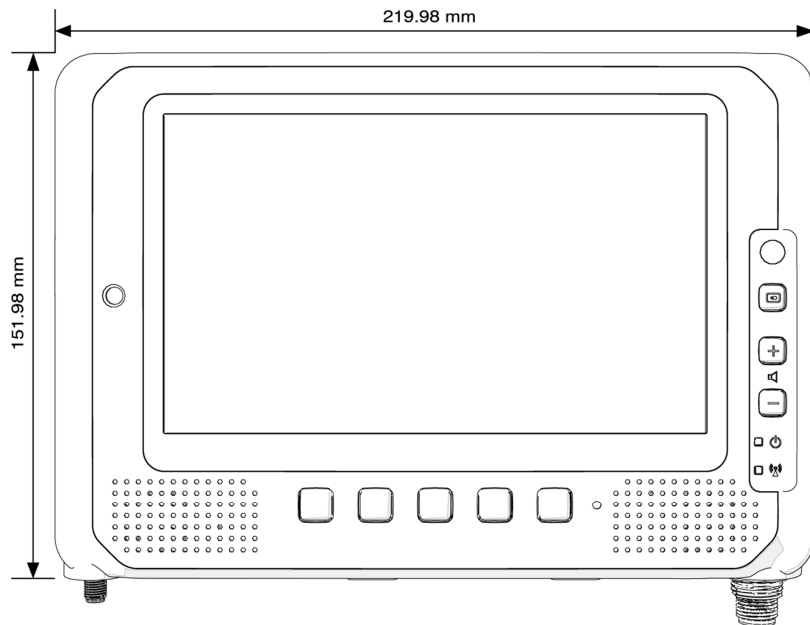
Dimension and Weight

MT7010 Standard

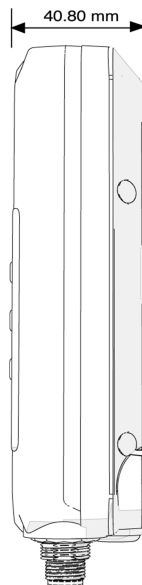
Dimension: 219.98 x 151.98 x 40.8mm / 8.66 x 5.98 x 1.60in. (W x H x D)

Weight: 1.25 kg/ 2.76 lbs.

Front View Dimension



Side View Dimension





Package List

Before you begin the installation or configuration process make sure to inspect all components and accessories. Contact your representative if there are any missing or damaged items.

Please verify the delivery of the contents upon receipt

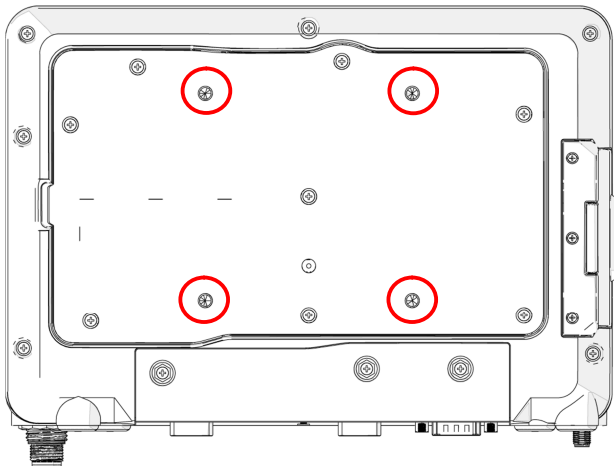
- MT7010 in-vehicle terminal
- Bare wire power cable with circular power code

NOTE: The packaging material has been selected to optimally protect your device. After unpacking, store the original packaging material in the event that you need to return shipment.



Chapter 2. Hardware Mounting

The MT7010 supports a standard VESA version MIS-D, 75, C (75mm distance quadrate order, M5 thread, deepness 6mm) through the four drill holes on the back side of the device.



Notes: To prevent any damage or injury, make sure the mounting bracket is securely attached.



Chapter 3. Start up

Powering the System

Connector Power

MT7010 allows a wide range of DC power input from 9~36V via a 5-pin M12 A-code power cord. There are two options to start up the MT7010 via car power cable or external power adapter.



The wire definition.

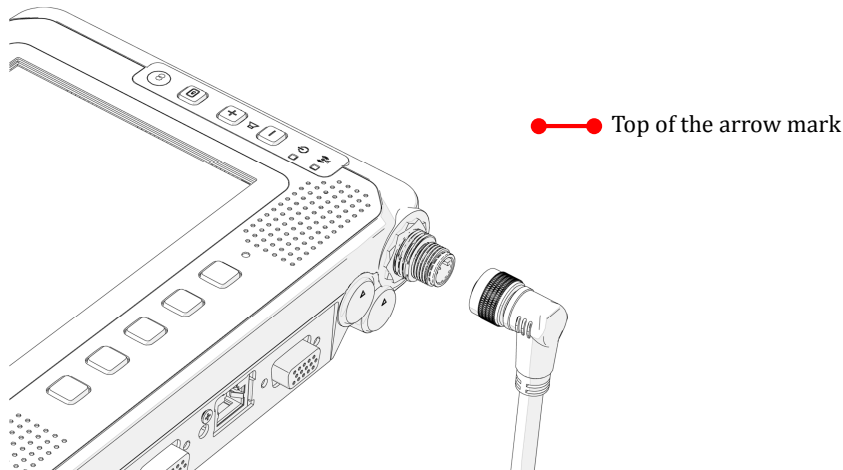
Wire Color	Description
RED	V+
BLACK	V-
GREEN	Chassis Ground
WHITE	ACC/ Ignition

Power source from car power cable

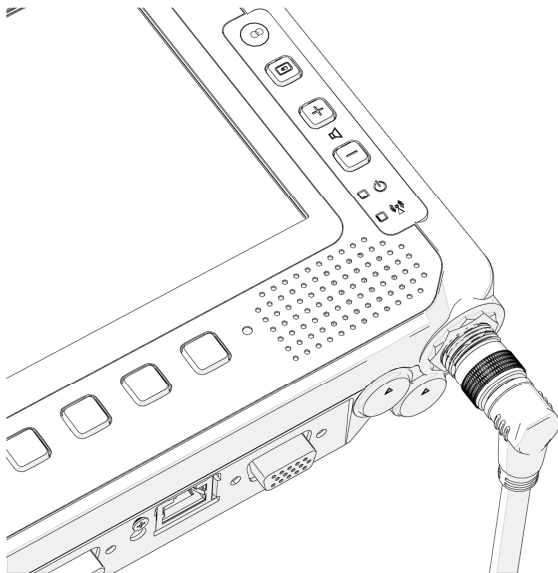
1. The bare wire lead cable allows you to directly wire 12 V or 24 V car power supply. Please follow the wire definition to connect to your power source.



2. Plug the power code into the power connector on the top of the arrow mark.



3. Twist the nut to lock the power connector to the device.



4. MT7010 will turn on automatically when the power supply is connected to the device.

Power source from external power adapter

If your power source is from external power adapter, the mean the power source doesn't control by AAC/ Ignition signal. Please short red (V+) and white (ACC/ Ignition) wires.



Ensure that the power supplies are disconnected when the power cord plug into the power connector.



Powering Down the System

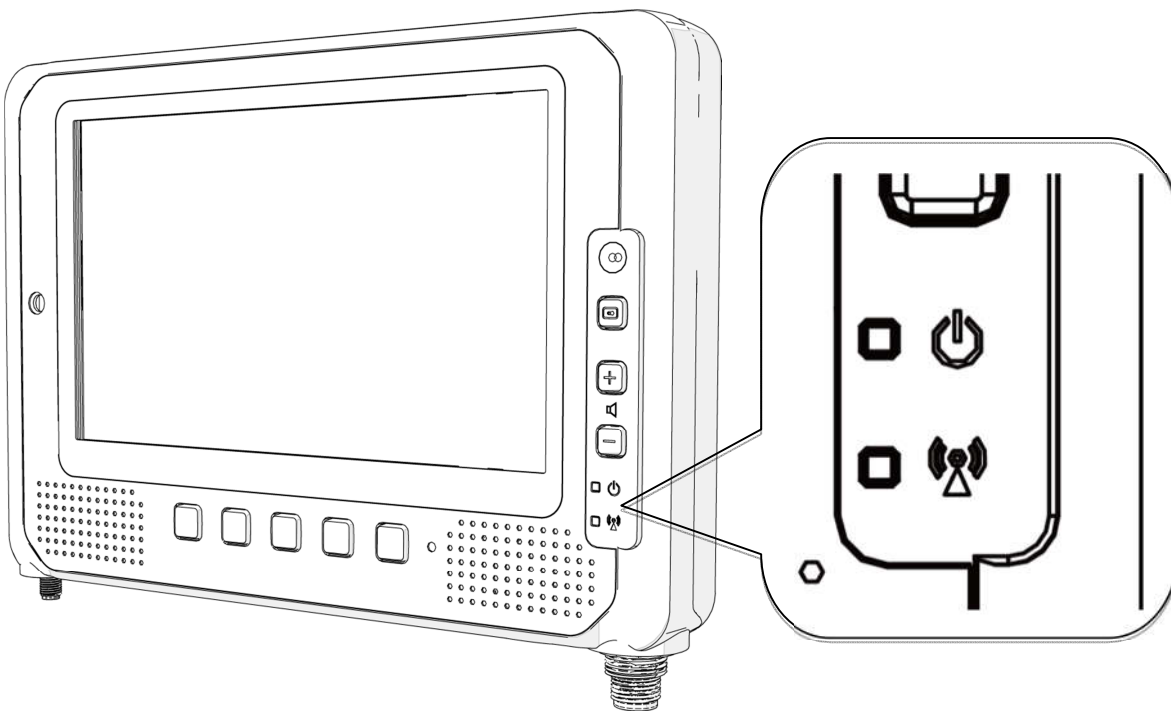
MT7010 will be auto power off after one minute when the power supply is removed. If you use software to power off the system, please remember to remove the power supply too; otherwise, the device will auto reboot again.



LED Status

The LEDs on MT7010 are status indicators that show the operating status of your system. The status indicators can help pinpoint possible failed hardware components causing specific symptoms. There are two status indicators in the front panel. Refer to the description below.



LED	Status	Description
PWR	Blink Green	Power up
PWR.	Blink Yellow	Load BIOS/ boot loader
PWR	Solid Green	System ready to use
PWR	Blink Red	Vehicle battery abnormal

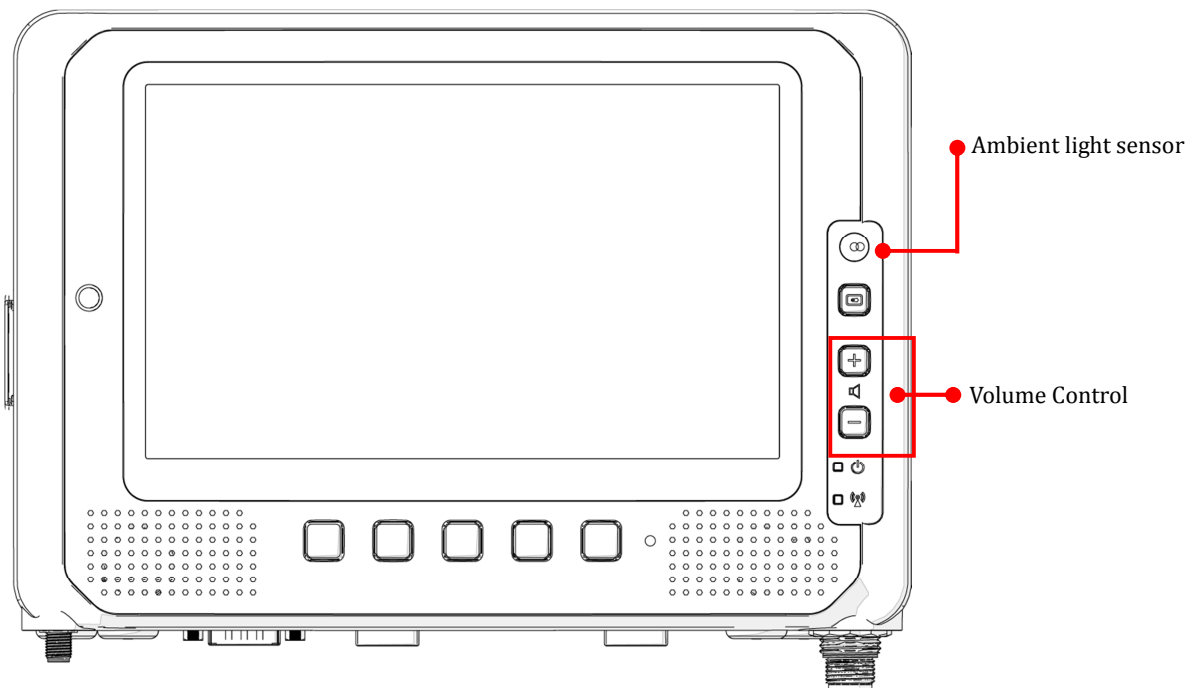




Adjust the Speaker Volume

MT7010 has the volume control buttons to adjust the speakers' volume; you also can control the overall level of sound using Windows. When you press the top part of the volume button, it makes the volume louder; pressing the bottom part makes the volume softer

- Press the  button to decrease the volume louder.
- Press the  button to increase the volume softer.



Auto-Brightness Adjustment

When you are using MT7010, you may well encounter different lighting conditions that make it difficult to see the information on screen. MT7010 is built-in the ambient light sensor on the front panel to supports auto-dimming, you also can disable this function and manually adjust the brightness, the setting can be done via DashON.

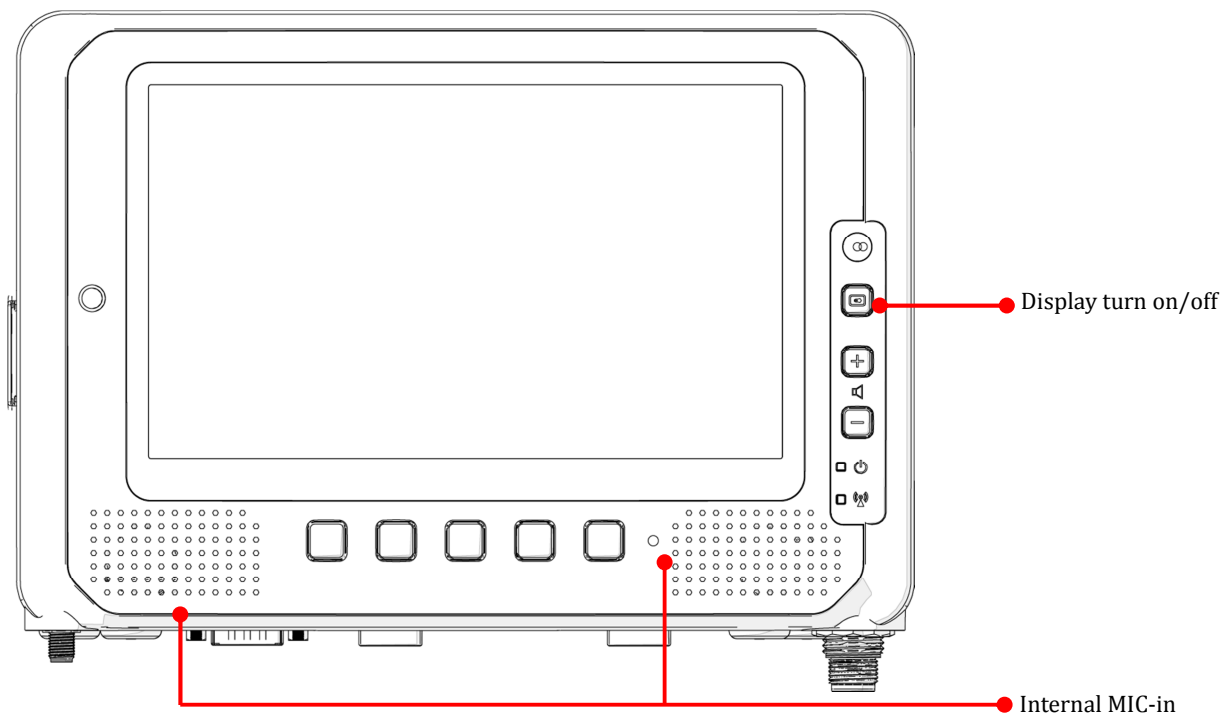


Internal Microphone

MT7010 equips two internal microphone without the need for an external microphone. In addition to the built-in speaker and microphones, you can plug external headsets in the audio jack.

Programmable Buttons

MT7010 provides default commands for five programmable buttons. You can configure the programmable buttons via DashON to different commands or keyboard shortcuts to better fit your work style.



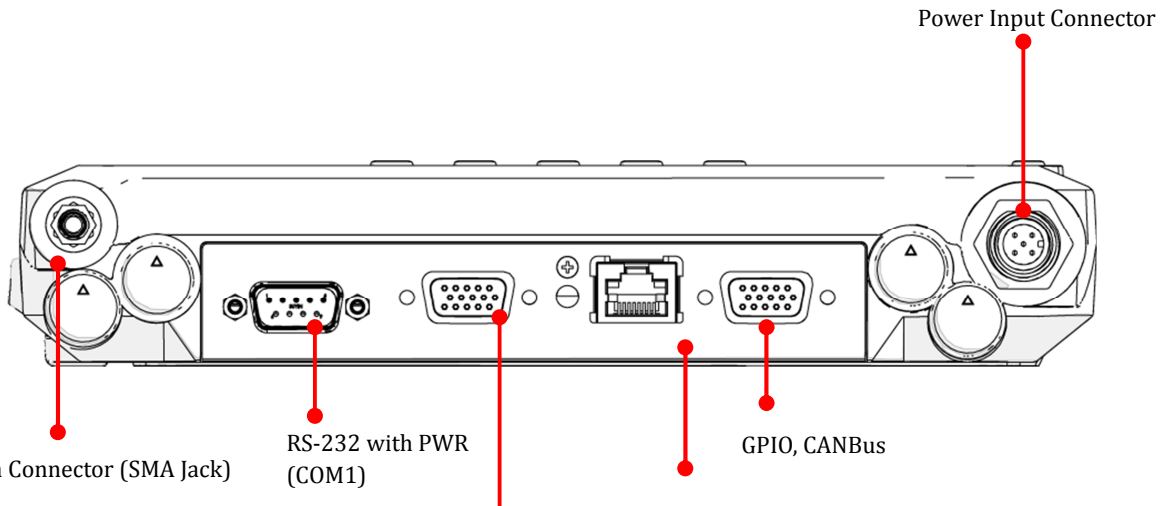
Power Management

In addition to setting in Windows Control Panel, MT7010 also provide the utility, DashON, to set the configuration including power management and system setup. Please refer the Chapter 6 for configuration setting in DashON.



Chapter 4. Jumpers and Connectors

Bottom View



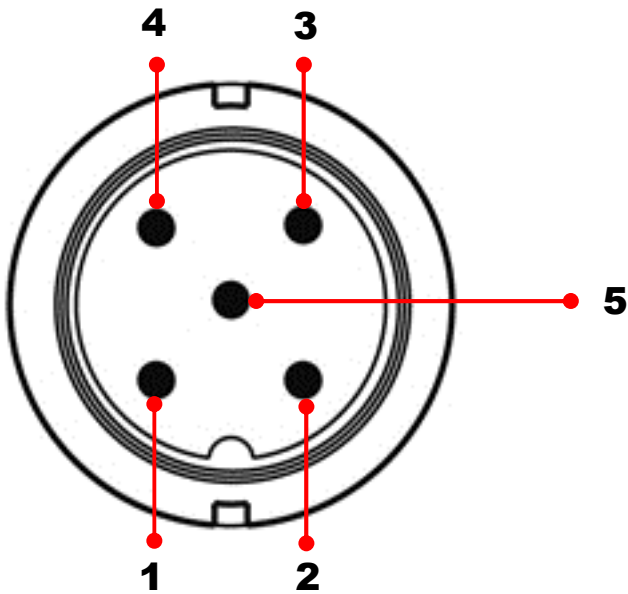
- USB, RS-232/422/485 (COM2) LAN
- USB 2.0



External Connectors Pin Assignments

Use this section as a reference for the pin assignments of the various ports available on the MT7010.

Power Connector

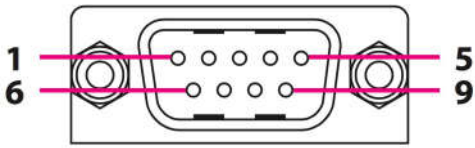


Pin	Signal
1	DC+
2	
3	GND
4	
5	ACC/ Ignition

Note: Please refer the Chapter 4 section 1 for the external power cable to connect to power source.

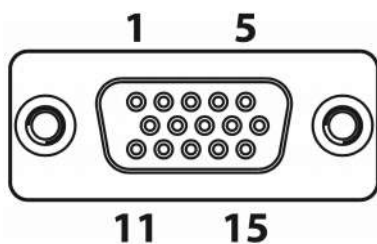


RS-232 Port



Pin	Signal	Description
1	DCD	Data carrier detect (input)
2	RXD	Receive data (input)
3	TXD	Transmit data (output)
4	DTR	Data terminal ready (output)
5	GND	Signal/power ground
6	DSR	Data set ready (input)
7	RTS	Request to send (output)
8	CTS	Clear to send (input)
9	RI / PWR	Bar code scanner power (1 A max) or Ring indicator (input)

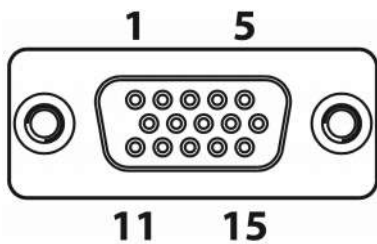
USB and RS-232/422/485 Port



Pin	Signal
1	RS-422 TX+
2	RS-422 RX+
3	RS-485 TX+
4	RS-232 TX
5	GND
6	RS-422 TX-
7	RS-422 RX-
8	RS-485 TX-
9	USB 5V
10	RS-232 RX
11	GND
12	USB DP
13	USB DM
14	USB 5V
15	NC

We provide Y-cable with DB15 male connector is the RS232/422/485 and USB converter.
Please contact your local representative for ordering information

GPIO and CANbus Port



Pin	Signal
1	CAN_H
2	N/A
3	N/A
4	FWD
5	WHEELTICK
6	CAN_L
7	N/A
8	N/A
9	CARD POWER
10	GND
11	SOS
12	DIO_OUT1 (5V 10mA)
13	DIO_IN1 (5V 100mA)
14	DIO_IN2 (5V 100mA)
15	DIO_OUT2 (5V 10mA)

We provide the DB15 male connector to multiple pins without termination cable. Please contact your local representative for ordering information