

M10 PRO AND M10 LITE

Hardware User Manual

Product Version: 1.0

Date: 2021-1-7

Vantron

For any question, please contact Chengdu Vantron Technology, Ltd.

Copyright © Vantron Technology, Ltd. All rights reserved.

Foreword

Copyright

While all information contained herein have been carefully checked to assure its accuracy in technical details and printing, Vantron assumes no responsibility resulting from any error or features of this manual, or from improper uses of this manual or the software. Please contact our technical department for relevant operation solutions if there is any problem that cannot be solved according to this manual.

Vantron reserves all rights of this manual, including the right to change the content, form, product features, and specifications contained herein at any time without prior written notice.

The trademarks and registered trademarks in this manual are properties of their respective owners. No part of this manual may be copied, reproduced, translated or sold. No changes or other purposes are permitted without the prior written consent of Vantron.

Vantron reserves the right of all publicly-released copies of this manual.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

| Symbol | Type | Description |
|---|---------|--|
|  | Notice | Important information and regulations |
|  | Caution | Caution for latent damage to system or harm to personnel |

Statement & Disclaimer

It is recommended to read and comply with this manual which provides important guidance and helps decreasing the danger of injury, electric shock, fire, or any damage to the device.

Vantron assumes no legal liability of accidents resulting from failure of conforming to the safety instructions.

Limitation of Liability/Non-warranty

For direct or indirect damage to this device or other devices of Vantron caused by failure of conforming to this manual or the safety instructions on device label, Vantron assumes neither warranty nor legal liability even if the device is still under warranty.

The device should be installed, debugged and maintained by professionals.

The outside antennas are not permitted to be installed or to be changed by non-professionals. To run the device normally, only specified antennas are approved to be assembled together by professionals.

Unit shall be used with indoor-use antenna only. No antenna for this unit can be installed outdoor.

Safety Instructions

- ✧ Keep and comply with all operation instructions, warnings, and information.
- ✧ Pay attention to warnings on this device.
- ✧ Read the following precautions so as to decrease the danger of injury, electric shock, fire, or any damage to the device.
- ✧ Operations and service instructions are provided with the equipment.
- ✧ Unit shall be used with indoor-use antenna only. No antenna for this unit can be installed outdoor.
- ✧ The maximum operation temperature is 45°C.

Precautions

- ✧ Pay attention to the product labels/safety instructions printed on silk screens.
 - ✧ Do not try repairing this product unless declared in this manual.
 - ✧ Keep away from heat source, such as heater, heat dissipater, or engine casing.
 - ✧ Do not insert other items into the slot (if any) of this device.
 - ◆ Ensure ventilation of the ventilation slot.
 - ◆ System fault may arise if other items are inserted into this device.
 - ✧ Installation: ensure correct installation according to instructions from the manufacturer with recommended installation tools.
-

-
- ✧ Ensure ventilation and smoothness according to relevant ventilation standards.

Safety Instructions for Power Cables and Accessories

 Use Proper power source only. Start only with power source that satisfies voltage label and the voltage necessary according to this manual. Please contact technical support personnel of Vantron for any uncertainty about the requirements of necessary power source.

 Use tested power source. This product still contains a button lithium battery as a real-time clock after its external power source is removed and therefore should not be short-circuited during transportation or placed under high temperature.

 Place cables properly: Do not place cables at any place with extrusion danger.

Cleaning Instructions

- ✧ Please power off before cleaning the device.
 - ✧ Do not use spray detergent.
 - ✧ Clean with a damp cloth.
 - ✧ Do not try cleaning exposed electronic components unless with a dust collector.
 - ✧ Support for special fault: Power off and contact technical support personnel of Vantron in case of the following faults:
 - The device is damaged.
 - The temperature is excessively high.
 - Fault is still not solved after operations according to the manual.
-

Contents

| | | |
|----------|--|-----------|
| 1 | INTRODUCTION..... | 1 |
| 1.1 | PRODUCT DESCRIPTION..... | 1 |
| 1.2 | CONNECTOR DESCRIPTION | 1 |
| 2 | OVERVIEW..... | 3 |
| 2.1 | INTRODUCTION | 3 |
| 2.2 | FEATURE | 3 |
| 2.3 | ORDER INFORMATION | 4 |
| 3 | HARDWARE INSTRUCTIONS..... | 5 |
| 3.1 | APPEARANCE..... | 5 |
| 3.2 | INTERFACE DESCRIPTION | 5 |
| 3.3 | STRUCTURE..... | 6 |
| 4 | HARDWARE FUNCTION DESCRIPTION | 7 |
| 4.1 | EG95-NAX 4G MODULE | 7 |
| 4.2 | WIFI/BT..... | 7 |
| 4.3 | AUDIO | 8 |
| 4.4 | DISPLAY | 8 |
| 4.5 | CAMERA | 8 |
| 4.6 | BATTERY AND CHARGING | 8 |
| 4.7 | NFC..... | 9 |
| 5 | HARDWARE OPERATION NOTE | 10 |
| 5.1 | POWER PREPARATION | 10 |
| 5.1.1 | Environment..... | 10 |
| 5.1.2 | Type-C Power Input..... | 10 |
| 5.2 | ANTENNA | 10 |
| 6 | PARTS DESCRIPTION..... | 12 |
| 6.1 | USB POWER ADAPTER | 12 |

| | | |
|----------|--|-----------|
| 6.1.1 | Appearance..... | 12 |
| 6.1.2 | Interfaces | 12 |
| 6.1.3 | Structure..... | 12 |
| 6.1.4 | Hardware Instructions..... | 13 |
| 7 | SOFTWARE INSTRUCTIONS..... | 14 |
| 8 | TIPS | 15 |
| | APPENDIX A: HOW TO CONTACT US | 19 |

1 Introduction

1.1 Product Description

Vantron offers both ARM and ATOM based Single Boards Computer (SBC) platforms including Cirrus Logic EP9315, RockChip RK3128, RK3368, RK3288, RK3399, Freescale iMX6, iMX8, TI OMAP35xx CortexA8 series, and Intel Skylake and ApolloLake processor boards. In addition to offering the standard SBCs, we also provide professional customization board design services. Our seamless project management, efficient error-free development process, strong fundamentals in technology, sufficient in human resources, and on-time delivery will guarantee the success in your project development.

Based on idea of “Application Ready” products and services, our embedded computers have embedded basic operation system which includes the drivers of its interfaces. So it is easy to be used by adding your application software only. It can speed Time to Market of your products, and save more cost.

1.2 Connector Description

This table respectively describes the valid signal of connectors on the Vantron board.

| | |
|-----|-------------------------------|
| N/C | Not connect |
| GND | Ground |
| / | Active low signal |
| + | Positive of difference signal |
| - | negative of difference signal |

| | |
|---------|------------------|
| I | Input |
| O | Output |
| I/O | input/output |
| P | Power or ground |
| A | Analog |
| OD | Open drain |
| CMOS | 3.3 V CMOS |
| LVC MOS | Low Voltage CMOS |
| LVTTL | Low Voltage TTL |

| | |
|------|--|
| 3.3V | 3.3 V signal level |
| 5V | 5 V signal level |
| USB | 5 V tolerant signal |
| PCIe | PCI Express signal, not 3.3 V tolerant |
| NC | No Connection |

2 Overview

2.1 Introduction

M10 PRO AND M10 LITE is a tablet computer designed for entertainment application. This product is based on RK3366 which has Quad-cores and one of them is Cortex-A55 with a maximum clock frequency of 1.8GHz, supporting 10.1" LCD and capacity touch screen.

2.2 Feature

| Specification | | |
|----------------------|-------------------|--|
| System | CPU | Rockchip RK3566, Quad core, ARM Cortex-A55, 1.8GHz (Max) |
| | GPU | Mali-G52 |
| | Memory | 4GB |
| | Storage | 32GB 1 x Micro-SD Slot, up to 128GB |
| Communication | Wi-Fi & Bluetooth | Wi-Fi 802.11 ac/a/b/g/n + BT 5.0 |
| | 4G LTE CAT | LTE CAT 4, LTE FDD: B2/ B4/ B5 / B12/ B13/ B25 B26 |
| | NFC | Optional |
| Media | Display | 10.1" IPS TFT LCD Resolution: 1280x800 Brightness: 280cd/m ² |
| | TP | 10-point capacitive touch screen |
| | Camera | Front camera: 5MP, fixed focus Rear camera: 8MP, auto focus |
| | Audio | 1 x 3.5mm combo audio jack 1 x 1W/8Ω Speaker 1 x Mic |
| I/Os | USB | 1 x USB 2.0 Type-A 1 x USB 2.0 Type-C (USB OTG supported) |
| | Button | 1 x Power on/off 1 x Volume -/+ |
| | SIM slot | 1 x Micro-SIM slot |
| Sensor | Light sensor | Optional |
| | Proximity sensor | Optional |
| | G-Sensor | Supported |
| Clock | RTC | Supported |
| Software | OS | Android 11, GMS certified |
| Power | Input | Type-C USB power input, 5V/2A DC (Default) (9V/2A DC fast charge supported) |
| | Battery | Single Li-ion battery: 8000mAh/3.8V |
| | LED | Yellow: Charging Red: Low power Green: Charged |
| Mechanical | Dimensions | 255 x 161.5 x 13.2mm |

| | | |
|------------------------------|---------------|--|
| Environment Condition | Temperature | Operating: 0°C~+45°C Storage: -20°C~+45°C |
| | Humidity | Operating: RH 20%-80% Storage: RH 20%-80% |
| | Certification | FCC (Part 15 Class B) ESD (contact: ±4KV and air: ±8KV) |

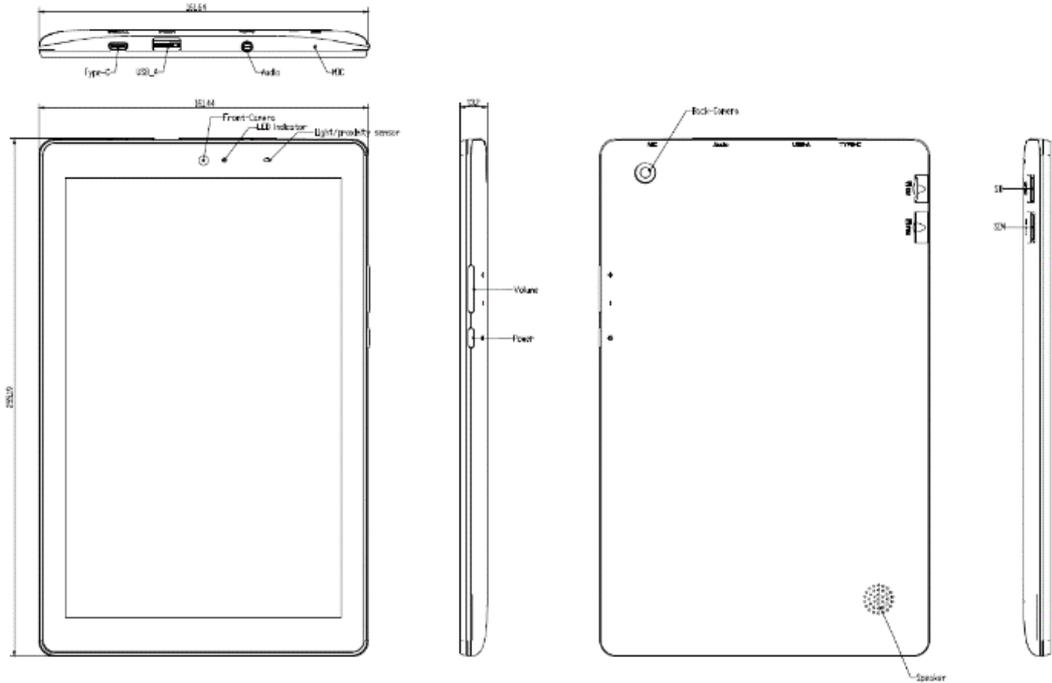
2.3 Order Information

| Order Info | -x | -xx | -xxx |
|------------|---|--|--|
| M10 Pro | -2: NFC supported -1: NFC not supported | -x2: Light/proximity sensor supported -x1: Light/proximity sensor not supported | -xx2: 9V/2A fast charge -xx1: 5V/2A standard charge |
| Example | M10 Lite-221: 2GB DDR and Wi-Fi ac/a/b/g/n & BT5.0, 4000mAH battery M10 Pro -112: No NFC, no light/proximity sensor, but 9V/2A fast change | | |

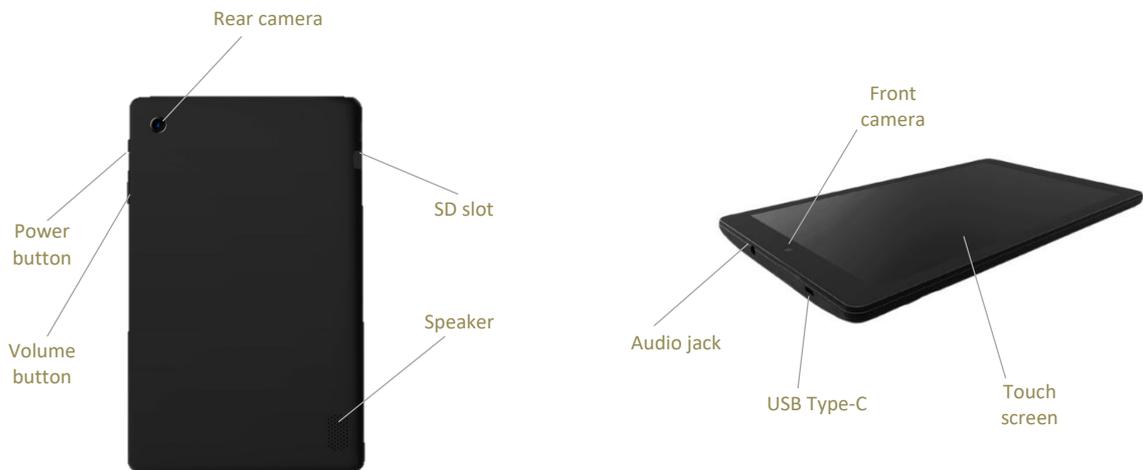
3 Hardware Instructions

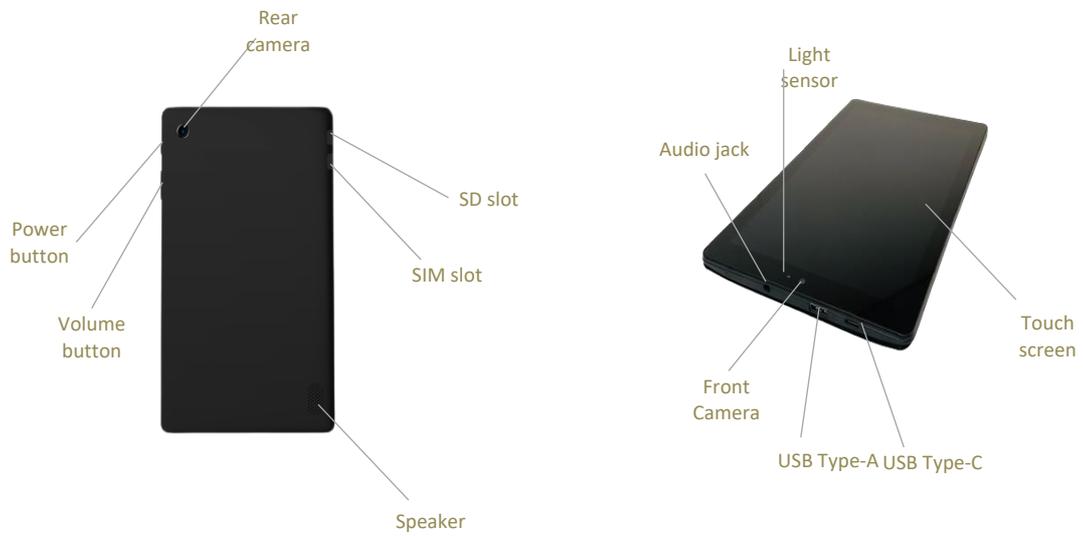
3.1 Appearance

Figure 3-1 Views



3.2 Interface Description



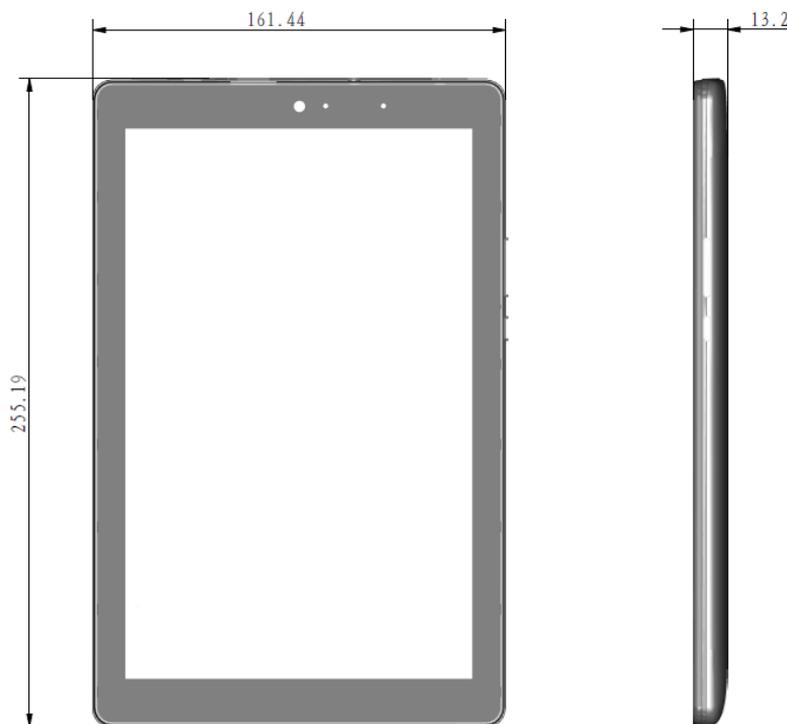


3.3 Structure

Download the board structure document from Vantron technology or Vantron net site: www.vantrontech.com.cn

Figure 3-4 Structure

Unit: mm



4 Hardware Function Description

This chapter mainly describes the main hardware functions of this product, including 4G, WIFI/BT, audio, display, camera, and NFC.

4.1 EG95-NAX 4G Module

EG95-NAX provides data connectivity on LTE-FDD networks. Its frequency bands include LTE-FDD (B2/B4/B5/B12/B13/B25/B26). It has two antennas: main antenna and Rx-diversity antenna.

4.2 WIFI/BT

The wireless module inside the tablet complies with IEEE 802.11 a/b/g/n/ac standard and it can achieve up to a speed of 433.3 Mbps with single stream in 802.11ac connect to the wireless LAN. The integrated module provides SDIO interface for Wi-Fi, and UART interface for Bluetooth.

Features:

- TX and RX low-density parity check (LDPC) support for improved range and power efficiency.
 - Single-stream spatial multiplexing up to 433.3 Mbps data rate.
 - Supports 20, 40, 80 MHz channels with optional SGI (256 QAM modulation).
 - Supports standard SDIO v3.0, compatible with SDIO v2.0 HOST interfaces.
 - BT host digital interface:
 - HCI UART (up to 4 Mbps),
 - PCM for audio data.
 - Simultaneous BT/WLAN receive with single antenna.
 - Complies with Bluetooth Core Specification Version 5.0 with provisions for supporting future specifications. With Bluetooth Class 1 or Class2 transmitter operation.
 - Supports extended synchronous connections (eSCO), for enhanced voice quality by allowing for retransmission of dropped packets.
 - Adaptive frequency hopping (AFH) for reducing radio frequency interference.
- A simplified block diagram of the module is depicted in the figure.

4.3 Audio

M10 PRO AND M10 LITE has a 3.5 mm Headphone jack, a 1.0W Speaker and a MIC. The headphone jack supports drive-by-wire control and mic function. If you want to use both of these features, your headphones must support them, too. Our headphone jack is compatible with three-section headphone and four-section headphone.

4.4 Display

M10 PRO AND M10 LITE has a 10.1" screen. The screen is made up of a display screen and a touch screen, which are fitted together by full-fit technology. More parameters are shown in the table.

| Item | Specifications | Unit |
|-------------------|---------------------|-------|
| Screen Size | 10.1" | Inch |
| Viewing direction | Full View | - |
| Resolution | 800x1280 | - |
| Display Mode | Normally Black | - |
| Number of Colors | 16.7M | - |
| LCM Luminance | 280 (Typ.) | cd/m2 |
| Contrast Ratio | 800:1 | - |
| Interface | MIPI | - |
| Touch Screen | Cap-touch, 10-point | |

4.5 Camera

M10 PRO AND M10 LITE has two camera. Front camera has 5 million pixel with fix focus and 8 bit CIF interface. Rear camera has 8 million pixel with auto focus and 4 line MIPI interface.

4.6 Battery and Charging

M10 PRO AND M10 LITE has a powerful 8000 mAh battery. The time to play the video, listen to the music and standby is not confirmed. It theoretically supports 5V/2A charging and 9V/2A fast charging.

Note: Please use the Vantron-provided charger.

4.7 NFC

M10 PRO AND M10 LITE has a NFC feature, which is an optional feature. If the customer needs it, we can provide it. It Support 40mm away identify for tag1, 42mm for tag 2 and 22mm for tag 4.

5 Hardware Operation Note

This chapter provides a guide to set up and use some of the features of the tablet. For more details, see hardware description.

5.1 Power Preparation

5.1.1 Environment

Before the equipment is powered on, please confirm whether the environmental conditions meet the requirements. Environmental conditions are as follows:

- Operation Temperature: 0°C ~ +45°C
- Operation Humidity: 10-85%RH (Non-Condensation)

5.1.2 Type-C Power Input

Please confirm the power input is 5V, and the reference current is 2A.

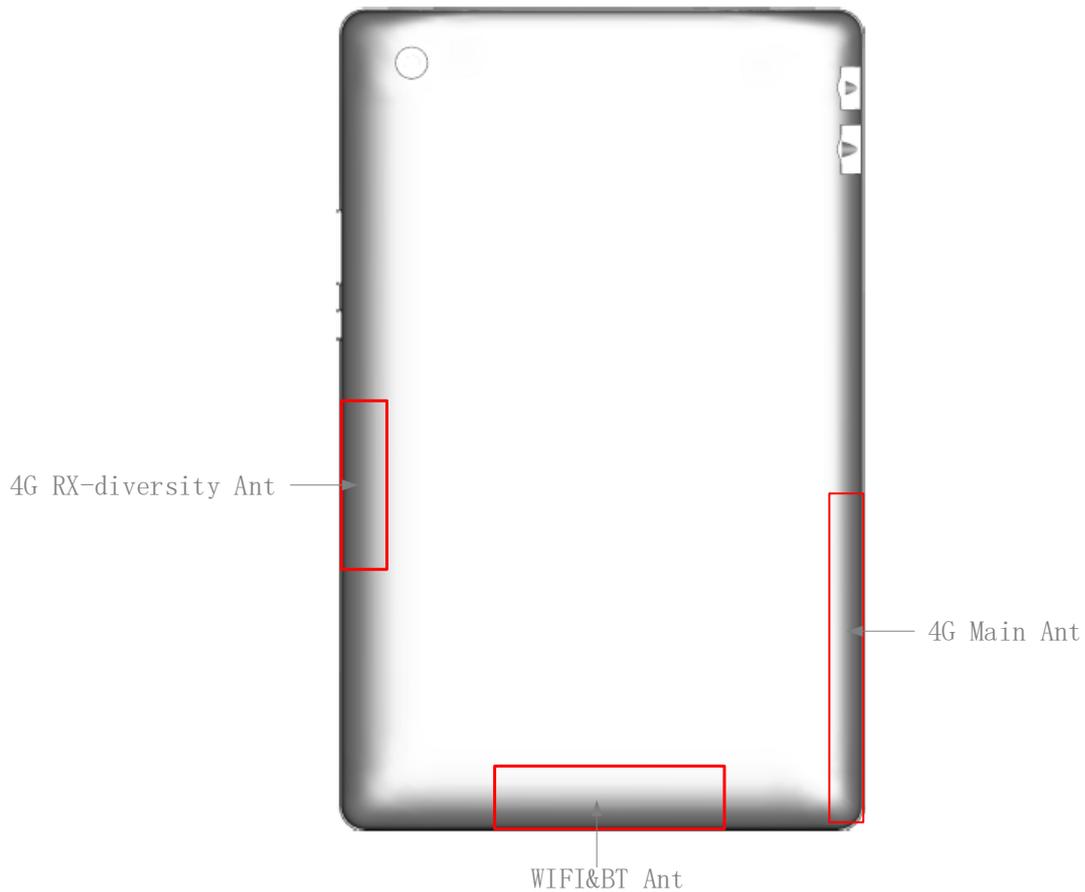


Do not use unauthorized or incompatible power adaptors to charge the device, otherwise fire, explosion or other danger may be caused.

5.2 Antenna

The design of the internal antenna position of M10 PRO AND M10 LITE will be shown as follows:

Figure 5-1 Internal antenna



In order to ensure that the tablet functions can work properly, please do not cover the antenna area with metal shielding devices.

Note: Frequency bands of 4G module include LTE-FDD (B2/B4/B5/B12/B13/B25/B26).

WIFI and BT antenna frequency is 2.4G and 5G respectively.

6 Parts Description

6.1 USB Power Adapter

6.1.1 Appearance

Figure 6-1 View



6.1.2 Interfaces

Figure 6-2 Interfaces



6.1.3 Structure

Figure 6-3 Structure (1)

Unit: mm

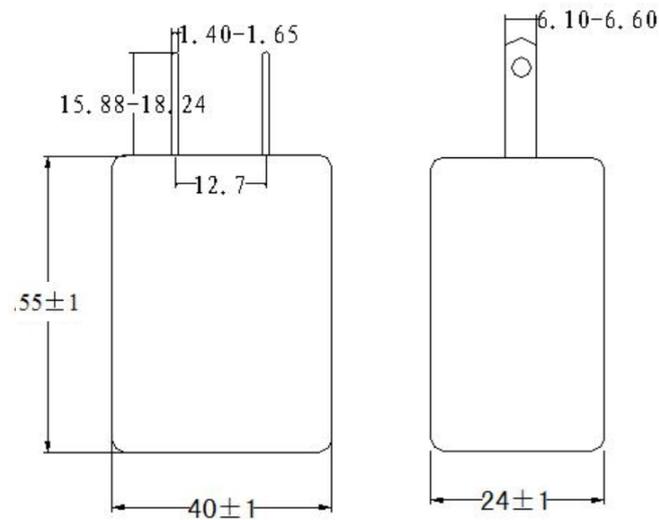
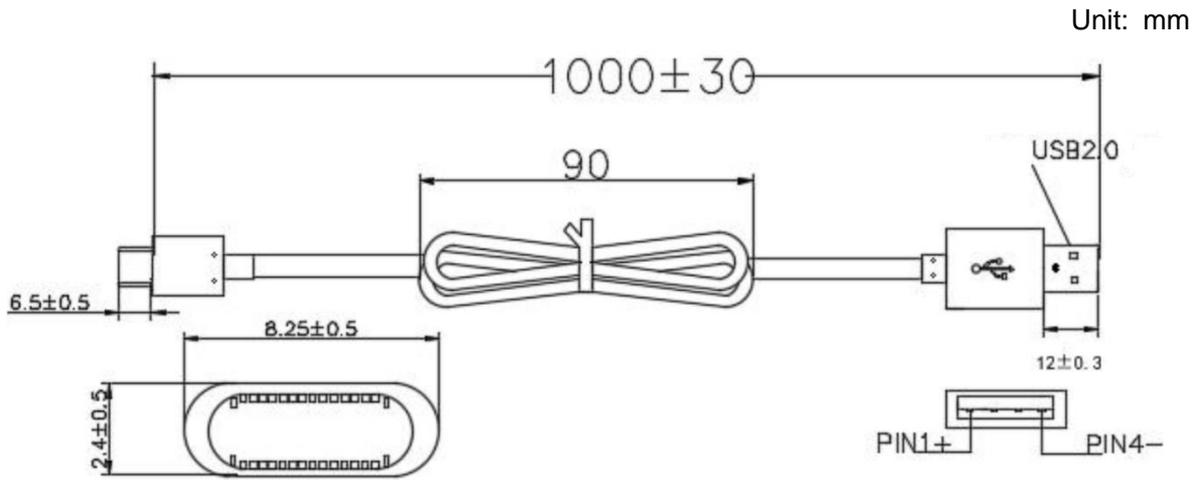


Figure 6-4 Structure (2)



6.1.4 Hardware Instructions

| Specifications | |
|-----------------------|--|
| Product Name | AC/DC ADAPTER |
| MODEL No. | MX15U-0503000UU |
| Interface Type | USB Type-A (Female) |
| Input Parameter | 100-240V ~ 50-60 Hz 0.5A |
| Output Parameter | 5 VDC 3A |
| Product Dimensions | 40 x 24 x 55 mm (Pins are not included) |
| Operating Temperature | 0°C-40°C |

7 Software Instructions

M10 PRO AND M10 LITE has been pre-loaded firmware. For more information, please refer to software user manual for software operation.

8 Tips



Waste Disposal

It is recommended to disassemble the device before abandoning it in conformity with local regulations. Please ensure that the abandoned batteries are disposed according to local regulations on waste disposal. Do not throw batteries into fire (explosive) or put in common waste canister. Products or product packages with the sign of “explosive” should not be disposed like household waste but delivered to specialized electrical & electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:



Do not use in combustible and explosive environment

Keep away from combustible and explosive environment for fear of danger.



Keep away from all energized circuits.

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact so as to avoid injury.



Unauthorized changes to this product or its components are prohibited.

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Vantron or local branches for help.



Pay attention to caution signs.

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.



Notice

Considering that reasonable efforts have been made to assure accuracy of this manual, Vantron assumes no responsibility of possible missing contents and information, errors in contents, citations, examples, and source programs.

Vantron reserves the right to make necessary changes to this manual without prior notice. No part of this manual may be reprinted or publicly released in forms of photocopy, tape, broadcast, e-document, etc.

FCC compliance statement

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.

Note 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE 3: Operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

RF exposure information and statement: this device meets government requirements for exposure to radio waves. The guidelines are based on standards that were developed

by independent scientific organizations through evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. The SAR limit of USA (FCC) is 1.6W/Kg averaged. Has also been tested against this SAR limit. SAR information on this and other pad can be viewed on-line at <http://www.fcc.gov/oet/ea/fccid/>. Please use the device FCC ID number for search. To maintain compliance with FCC RF exposure requirements, the use of belt clips, holsters and similar accessories should not contain metallic components in its assembly, the use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided

ISED Canada compliance statement

this device complies with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

RF exposure information and statement: This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health. The SAR limit of ISED is 1.6W/Kg averaged. Has also been tested against this SAR limit. To maintain compliance with ISED RF exposure requirements, the use of belt clips, holsters and similar accessories should not contain metallic components in its assembly, the use of accessories that do not satisfy these requirements may not comply with ISED RF exposure requirements, and should be avoided.

Le présent appareil est conforme aux CNR d'ISDE Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La bande 5150–5250 MHz est réservée uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

Information et déclaration sur l'exposition aux RF : Cet équipement est conforme aux limites

d'exposition au rayonnement du CNR-102 de l'IC établies pour un environnement non contrôlé. Les lignes directrices sont fondées sur des normes qui ont été élaborées par des organisations scientifiques indépendantes au moyen d'une évaluation périodique et approfondie des études scientifiques. Les normes comprennent une marge de sécurité substantielle conçue pour assurer la sécurité de toutes les personnes, indépendamment de leur âge ou de leur état de santé. La limite SAR d'ISD est de 1.6 W/Kg en moyenne. A également été testé par rapport à cette limite SAR. Pour maintenir la conformité aux exigences d'ISED en matière d'exposition aux RF, l'utilisation de pinces à courroie, d'étuis et d'accessoires similaires ne devrait pas contenir de composants métalliques dans son assemblage, l'utilisation d'accessoires qui ne satisfont pas à ces exigences peut ne pas être conforme aux exigences d'ISED en matière d'exposition aux RF et devrait être évitée.

Appendix A: How to Contact Us

If you have any problem or want to know more about our products, visit www.vanrontech.com or contact us.

US Office: Vantron Technology, Inc.

Address: 440 Boulder Court, Suite 300,

Pleasanton, CA 94566, USA

Tel: 925-621-8758

Email: sales@vanrontech.com

China Office: Chengdu Vantron Technology, Ltd

Address: 6th Floor, 1st Building, No.9, 3rd Wu Ke East Street,

Wu Hou District, Chengdu 610045, China

Tel: 86-28-8512-3930/3931, 8515-7572/6320

Email: sales@vanrontech.com.cn