

# VT-IoT-Dongle User's Manual



## Revision History:

No.	Version	Description	Date
1	V1.0	First release	2018.06.25
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4	V1.3	Fourth release	2018.12.25

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# 1. Foreword

## 1.1 Copyright Notice

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 notice. The latest version of this manual is at [www.vantrontech.com.cn](http://www.vantrontech.com.cn). Please contact Vantron for further information:

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

## 1.2 Notes

Applicable notes are listed in the following table:

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

## 1.3 Statement

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

## 1.4 Disclaimer

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

## **1.5 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 VT-IOT-DONGLE should be installed, debugged and maintained by professional people.

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

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

## **1.6 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.

## **1.7 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.
  - Keep the ventilation slot ventilated for cooling.
  - 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 standard.

## **1.8 Safety Instructions for Power Cables and Accessories**



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 the operation according to the manual.

## 2. Overview



Front Side View



Back Side View



Connector window



Side View

## **2.1 Introduction**

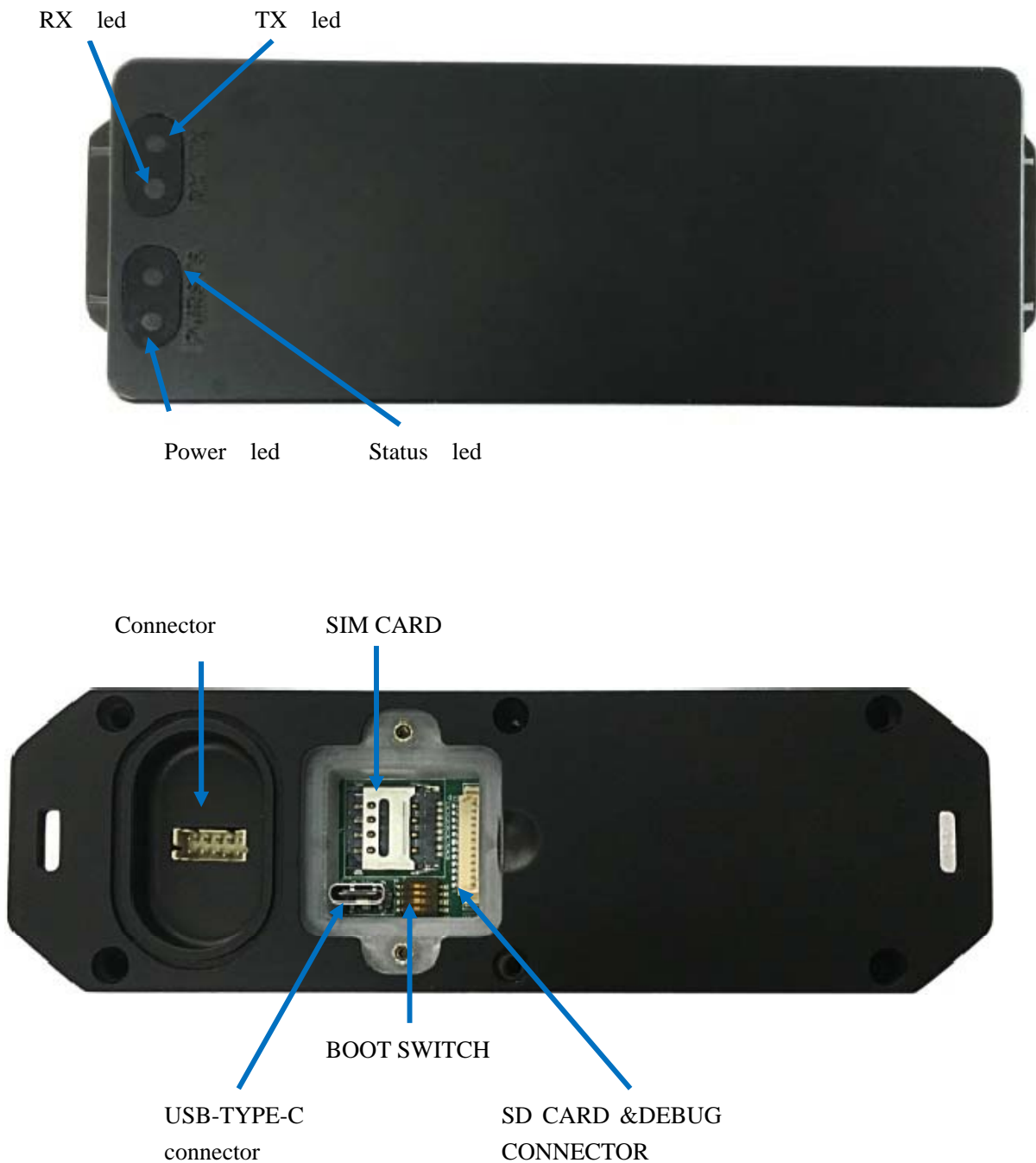
Thank you for choosing Vantron. It is our commitment to provide our valued customers with the embedded devices equipped with the state-of-the-art technology and the best product services.

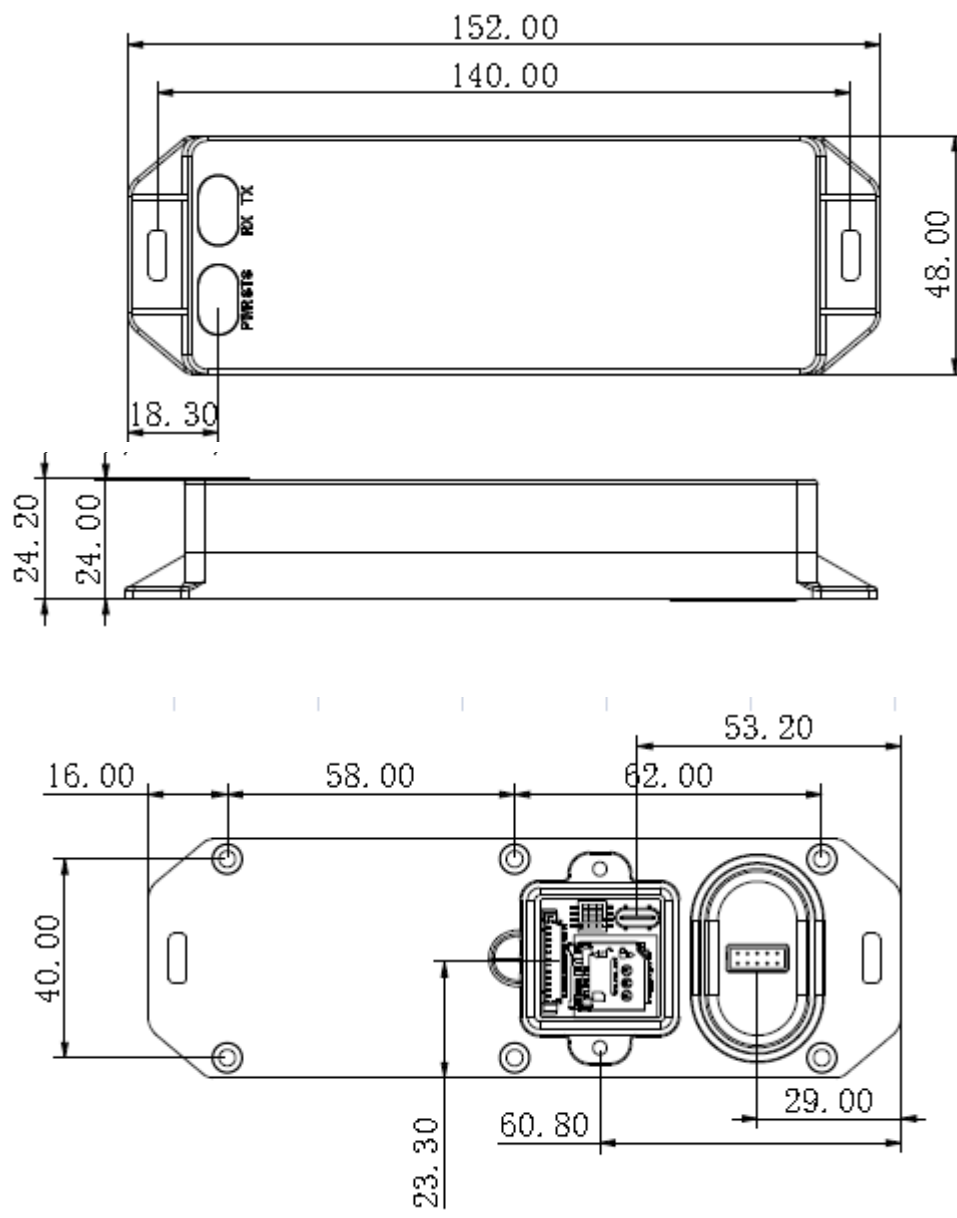
Vantron's VT-IOT-DONGLE products are based on the most advanced ARM and Intel Atom processors and have low-power consumption and high integration. The products are designed for applications of VT-IOT-DONGLE in industrials, medicals, financial, retail, vehicle, and transportations etc.



### 3. VT-IOT-DONGLE Hardware Instructions

#### 3.1 Product Appearance





### 3.2 Specifications

Product	VT-IOT-Dongle
CPU	TI, AM3352, ARM Cortex-A8, 32-Bit, 600MHz Low Power Processor
RAM	DDR3L, 512MB
Storage	16GB on board EMMC Flash
Ethernet	1x100M Ethernet from CPU (Optional SPI)
USB	1xUSB OTG, Type-C Connector
Cellular	Internal mini-PCIE Slot for 4G/LTE Module
	With micro-SIM Slot at Debug Window
WLAN& Bluetooth	On board WIFI 802.11 a/b/g/n/ac and Bluetooth 4.2
COM Port	1x RS232/485 select by GPIO
LED	Power, Status, RX, TX
RTC	Support, with Coin Battery
OS	Linux or XOS, Optional support Python MQTT application
Power Input	DC 5V
Dimension	152mm(L) x 48mm (W) x 24.2mm (H)
Weight	120g
Enclosure	Black Plastic Box
Protection	IP67
Temperature	Operating: -10~+55°C, Storage: -20~+70°C
	ETR: -40~+85°C Optional
Humidity	5~95%RH at 25-35 (Non-Condensation), Operating and Storage

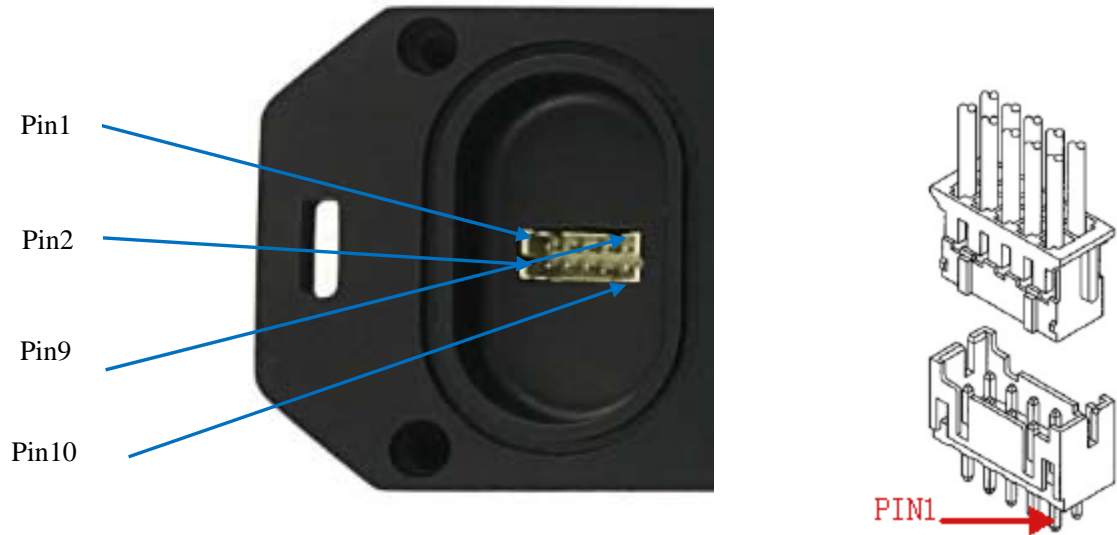
VT-IoT-Dongle contains FCC ID: RI7LE910NAV2

T-IoT-Dongle-CATM contains FCC ID: 2AJYU-SIM7000A

### 3.3 Interface Description

### 3.3.1 CONNECTOR

Connector: 2x5pin,2x2mm



signal connector

1	2	3	4	5	6	7	8	9	10
RX1+	RX1-	TX1+	TX1-	RS32_TX	RS232_RX	GND	GND	VCC_5V	VCC_5V
OR SPI_SCK	OR SPI_D0	OR SPI_D1	OR SPI_CS	OR RS485_B	OR RS485_A				

The mating connector reference NSXD S2008H-2X5P

## S2008H-2

2.00mm pitch Dual Row Housing

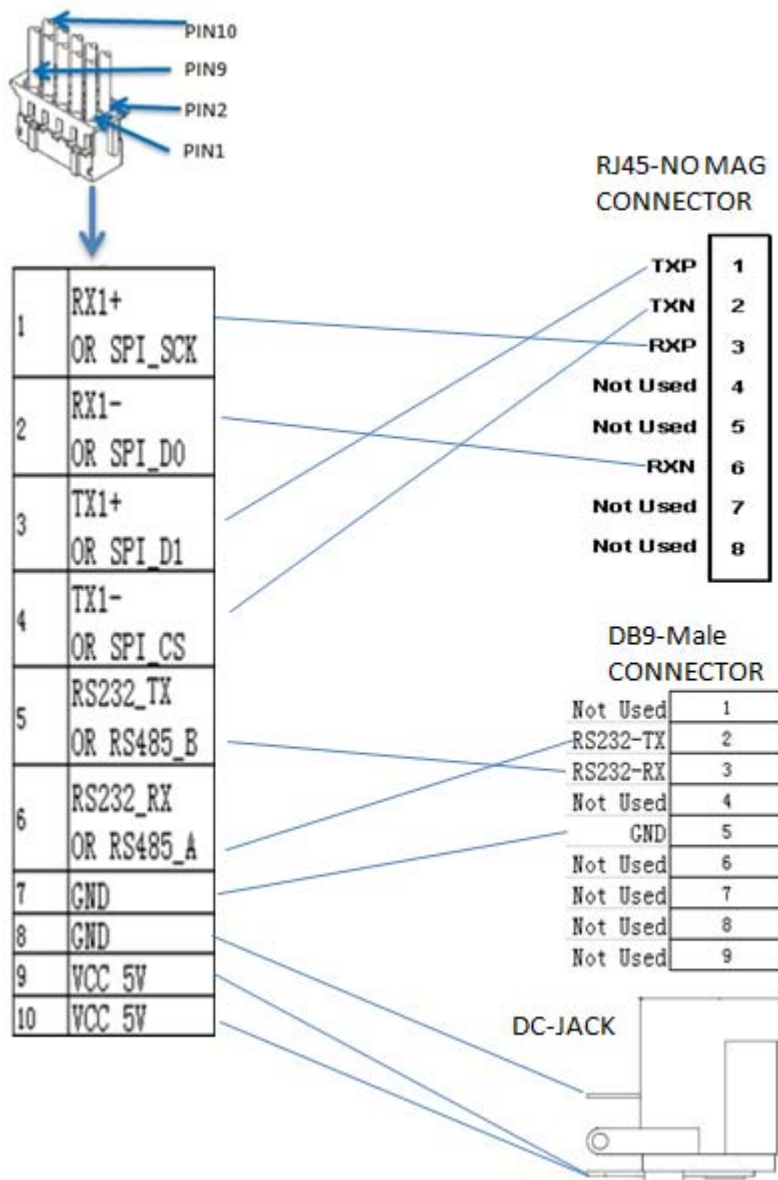
**Reference Informations:**

- \*Material: Nylon 66,UL94V-0
- \*Suitable NSXD S2008 series Terminal
- \*Mates with NSXD S2008 series dual row Wafer

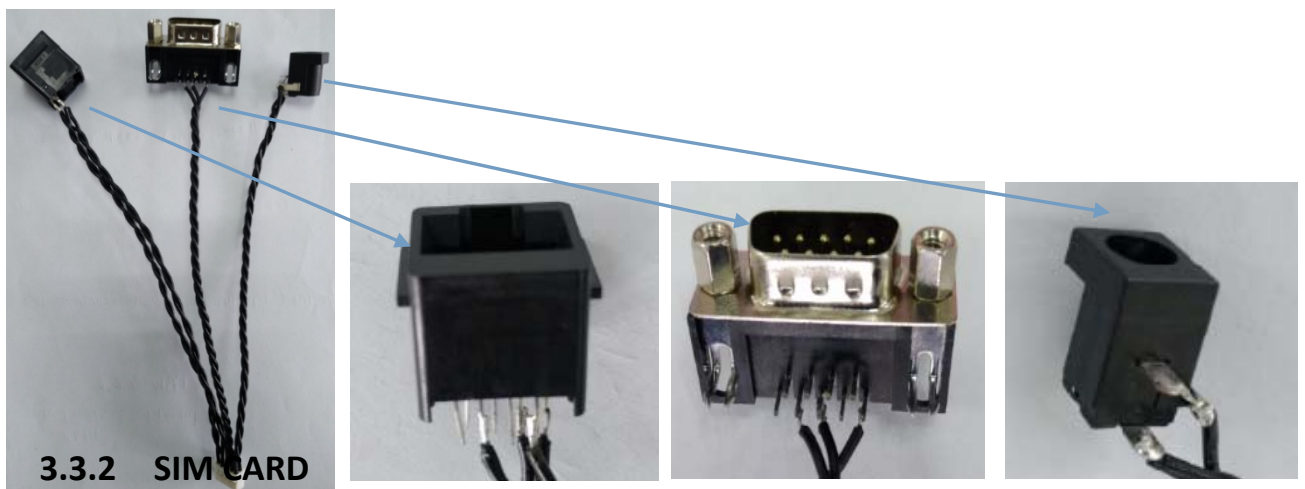
**Ordering Information & Dimensions:**

PART NO.	Dimensions	
	A	B
S2008H-2X2P	2.00	5.90
S2008H-2X3P	4.00	7.90
S2008H-2X4P	6.00	9.90
S2008H-2X5P	8.00	11.90
S2008H-2X6P	10.00	13.90
S2008H-2X7P	12.00	15.90
S2008H-2X8P	14.00	17.90
S2008H-2X9P	16.00	19.90
S2008H-2X10P	18.00	21.90

The connect diagram of the mating connector:

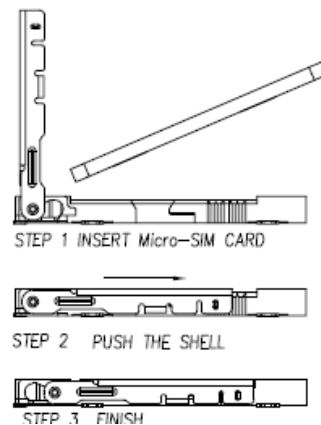


The sample pictures:



**3.3.2 SIM CARD**

MICRO SIM CARD



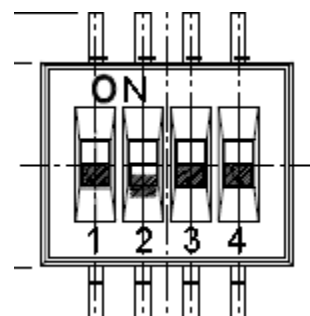
### 3.3.3 USB TYPE-C connector

USB type-c  
connector



### 3.3.4 BOOT SWITCH

Boot switch

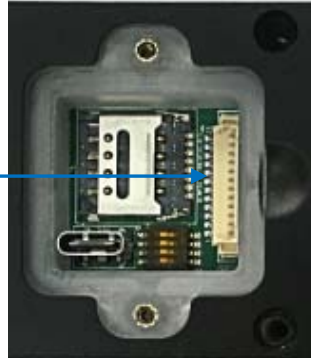


Pin1~3: 110:Boot from EMMC; 001:boot from SD card;

### 3.3.5 SD CARD &DEBUG Connector

Connect to debug SD board, 1.25mmx12pin

SD CARD&DEBUG  
CONNECTOR



1	2	3	4	5	6	7	8	9	10	11	12
DBG UART-TX	DBG UART-RX	SD_CD	DATA3	DATA2	CLK	VCC3V3	DATA0	GND	DATA1	CMD	Default

### 3.3.6 SD CARD &DEBUG board(optional)

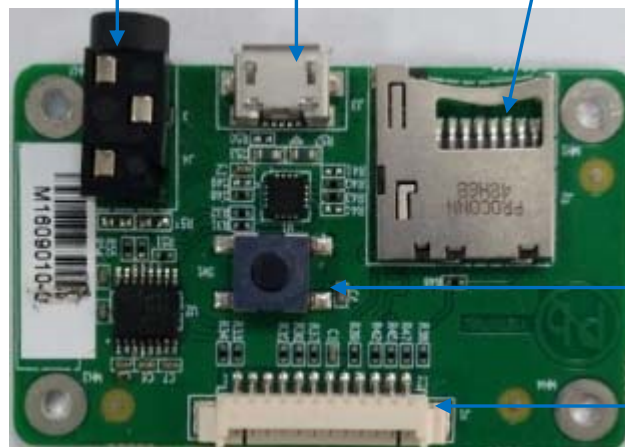
Audio Jack to DB9M  
debug cable



Audio Jack

USB connector  
Not used

SD CARD  
connector



Button  
not used

1x12x1.25mm  
connector



cable  
1x12x1.25mm

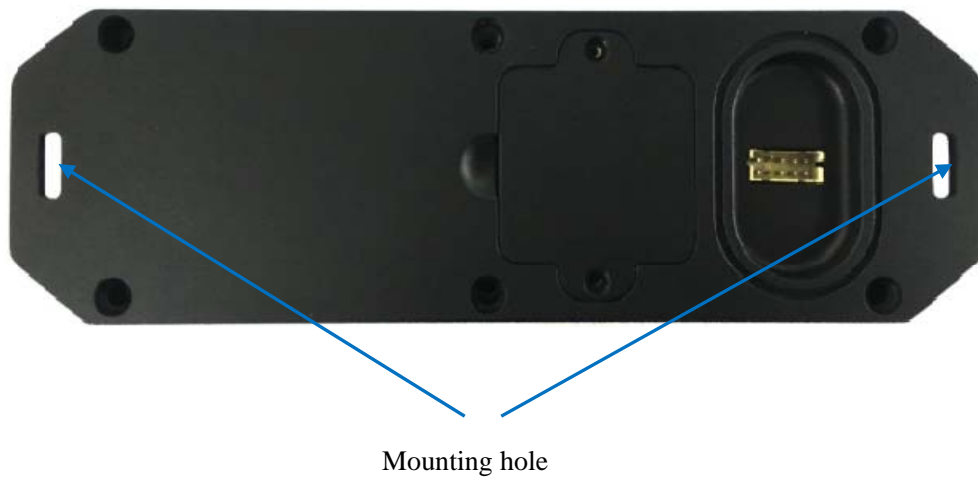
Audio Jack: connect to Audio Jack to DB9M debug cable, use to debug with RS232;

USB connector: not used;

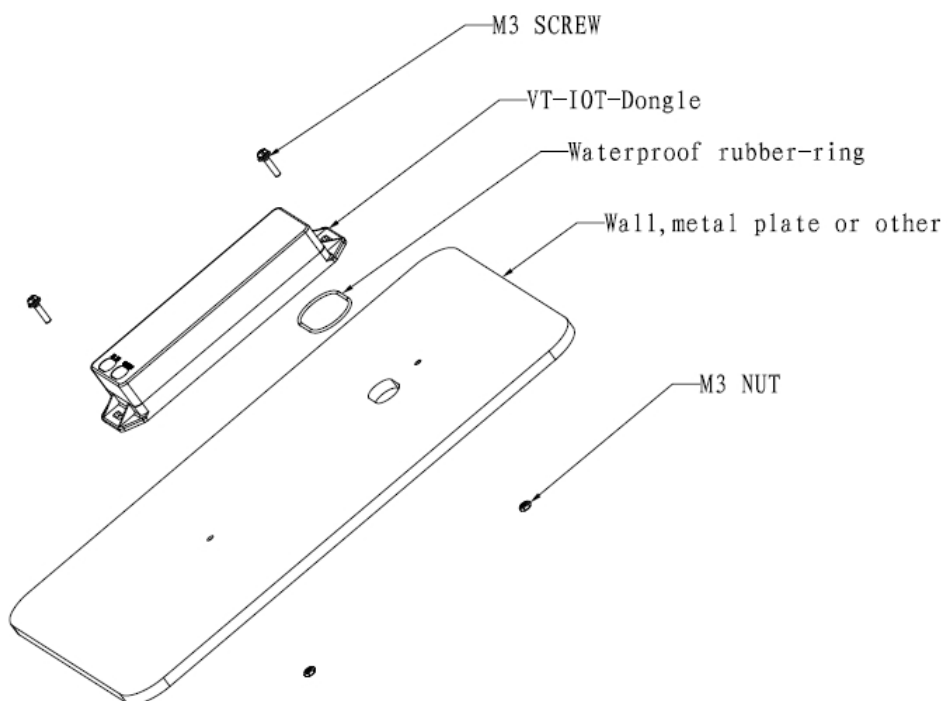
Button: not used;

1x12x1.25mm connector: connect to IOT DOMGLE with cable (1x12x1.25mm);

### 3.3.7 Mounting hole



Installation Diagram:





### 3.3.8 Operating instruction

- Install the device with a SIM Card, insert a network cable into the Ethernet port, insert the dedicate 5V DC into the power jack. The device will be powered up within 20 seconds. The system default mode is AP mode.
- Bluetooth: The default Bluetooth name is VT-IOT-DONGLE-0, it can be searched and match other devices.
- Wi-Fi: The default Wi-Fi name is wifi\_iot-dongle, the password is 12345678.
- Commonly the default IP address is "192.168.0.1", the default login username and password are "admin/admin". The first login requires user to change the default username and password. These modified login settings will affect login via web pages.

**VT-XOS** Control Panel

Firmware: build data 08/29/13  
Time: 15:34:48 up 4:30, 2 users, load average: 0.01, 0.05, 0.15  
WAN IP: 0.0.0.0

Setup Wireless Services NAT Administration Status

**Router Management**

Your Router is currently not protected and uses an unsafe default username and password combination, please change it using the following dialog!

**Router Password**

Router Username:

Router Password:

Re-enter to confirm:

Change Password

**VT-XOS** Control Panel

Firmware: build data 07/21/15  
Time: 11:20:16 up 5:27, load average: 0.34, 0.28, 0.24  
WAN IP: 10.39.35.124

Setup Wireless Services NAT Administration IO Demo Status

Basic Setup DDNS

**WAN Setup**

WAN Connection Type

Connection Type

Disabled  
Static IP  
Automatic Configuration - DHCP  
WLAN/WIFI  
3G/UMTS/4G/LTE

Cellular: Set the APN, input the user name and password of the SIM Card (If the SIM Card does not have user name and password, leave it blank), and click the Save button and then click Apply Settings button. The cellular function setup is finished.

**VT-XOS**  
Control Panel

Login as: admin  
Firmware: build date 04/24/19  
Time: 12:32:30 up 24 min, load average: 0.04, 0.05, 0.04  
WAN IP: 0.0.0.0

**Setup** | Services | Security | Access Restrictions | NAT | Administration | Status

Basic Setup | DDNS

**WAN Setup**

**WAN Connection Type**

Connection Type: 3G/UMTS/4G/LTE

**Basic Settings**

User Name:

Password:  ☐ Unmask

Dial String: \*99#

APN: 3GNET

Modem PDP CID: 1

Modem Broadband Provider: AT&T/TMO/Canada Operators

Note: Before configure in web page, please confirm the SIM card and antenna: plug the SIM card to the slot of the VT-XOS gateway and connect the antenna for cellular module when gateway is powered off.

Steps to confirm your configuration:

**Step 1.** If **username** and **password** are not asked to authenticate the Cellular network, please leave then blank.

**Step 2.** The **Dial String** should always has a value, and \*99# by default.

**Step 3.** The **APN** should always has a value, please confirm the value from your SIM card provider.

**Step 4.** The **Modem PDP CID** is optional for some cellular modem, for example when use the Telit LE910-NA1, set it to 1 when it is for AT&T; 3 when it is for Verizon.

**Step 5.** The **Modem Broadband Provider** is optional for some cellular modem to switch carrier. If this item doesn't show in this web page, means the cellular module that is embedded in this gateway do not support this feature.

**Steps 6.** Save and apply all your changes on webpage.

## 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 for



#### RF exposure warning

This equipment must be installed and operated in accordance with provide instructions and the antenna 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 operation 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.

#### FCC Warning

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. The user manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: 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.

Any modification to the product is not permitted unless authorized by Vantron.

It is not allowed to disassemble the product, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical support department of Vantron or local branches for help.



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