

Vantron

VT-M2M-BTA-DE

User's Manual



Vantron Technology
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Part I: Hardware Platform

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.

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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-M2M-BTA 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.

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.
- ✧ 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 61°C.

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.



1.9 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

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.

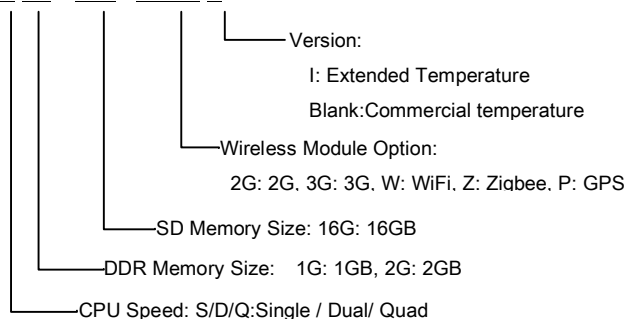
Vantron's M2M products are based on the most advanced ARM and Intel Atom processors and have low-power consumption and high integration. The products are designed for applications of M2M in industrials, medicals, financial, retail, vehicle, and transportations etc.

2.2 Product Series

2.2.1 Product Order Coding Rule

Order Code

VT-M2M-BTA-DE-S-1GM-16GF-GWZP-V



2.2.2 Ordering Information

Order Examples:

VT-M2M-BTA-DE-S-1GM-16GF-G WP-I	ATOM Baytrail single Processor, 1GB DDR3L, 16GB SSD, 3G, WiFi, GPS, extended temperature
VT-M2M-BTA-DE-Q-1GM-16GF-W P	ATOM Baytrail quad Processor, 1GB DDR3L, 16G SSD, WiFi, GPS, commercial temperature

Accessories:

Install Mechanical tools,1pc
Power Adapter with locked connector (Optional),1pc
IO Terminal (12x3.81mm) (Optional),1pc
3G Antenna(Optional),1pc
WiFi Antenna(Optional),1pc
Zigbee Antenna(Optional),1pc
GPS Antenna(Optional),1pc

3 M2M-BTA Hardware Instructions

3.1 Product Appearance



Front Side View



Back Side View



View for all optional embedded modules and antennas



Bottom View for optional embedded modules
(1xHalf PCIe slot under the 1xPCIe slot)



Top View for thermal module

3.2 Specifications

Specifications		
CPU	Processor	Intel® ATOM™, E3827/1.75GHz, E3845/1.91GHz, E3815/1.46GHz
	On Board RAM	On Board DDRIII 1333MT/s(E3845&E3827)/ 1066MT/s (E3815), up to 2GB
Memory	ROM Internal	1.8"SATA SSD Module Internal (16GB, or others) On board SATA2.0 SSD 8GB(OPTIONAL)
	Chipset	Support LVDS/HDMI/VGA, simultaneous/dual view display
Display	Resolution	Up to 1280 x 768 @ 60Hz for LVDS; Up to 1920x1200@60Hz for HDMI Up to 2560x1600@60Hz for VGA
	Interface	1xVGA (DB15) 1xLVDS (Optional Internal)
Wireless Communication	WLAN	Optional 802.11 b/g/n Wireless Module, external antenna , Support 1x Half PCIe Wireless card
	3G Module	Optional1x mini PCIe 3G Broad Band Module with SIM slot
	ZigBee	Optional low power Zigbee Module, external antenna
	GPS	Optional GPS module, external antenna
Peripheral Interfaces	Ethernet	1x10/100/1000-BaseT(RJ45)
	USB	2xUSB2.0 Host (Type A)
	Audio	HD Audio, 1xMIC in 3.5mm, 1xline Out
	COM Port	1xRS232/485/422(DB9 full function), 1xRS232/485(2 wires on Green Terminal)

	Alarm	Buzzer Out
	SD card	1xSD card Slot (Optional)
	RTC	Supported
	Control	Reset Button in the front,Power button in the back
	GPIO	Reserved GPIO (Terminal)
	CAN	1x CAN2.0b
Security	security	On board Registration Serial Number, and SHA-1 Encrypt/Decrypt Chip DS28E01 (Optional) TPM on board
Software	OS	Windows, or Linux
	Applications	SDK Available
Power	Input	DC9-36V(default 12V), Locked Power Jack
	Consumption	6W (Pulse8W), Sleep 2W. (without 3G,GPS,Zigbee,WLAN)
Mechanical	Dimensions	176x101x52mm (Box)
	Install	198x101x52mm
	Weight	0.6Kg (1.2KKg package Kit)
	Enclosure	Aluminum Alloy with Black Color
Environment Condition	Temperature	Operating:-0°C ~ +65°C (ETR:-40°C ~ +65°C Optional)
		Storage: -20°C ~ +70°C, (ETR:-40°C ~ +85°C Optional)
	Humidity	5-95%RH at 25-35 (Non-Condensation)
	Cooling Mode	Fan less, Heat Sink
	Approvals	UL, FCC Class B, and CE

3.3 Interface Instructions

3.3.1 Front View



3G / GPRS Antenna(3G Band) Antenna Gain:1dBi



WLAN / ZigBee Antenna(2.4G Band) Antenna Gain:3.2dBi



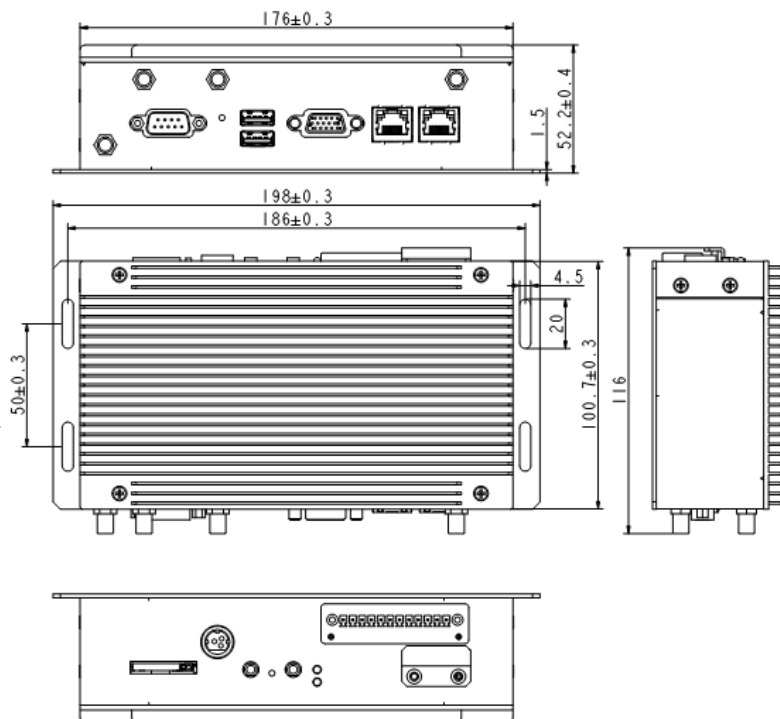
GPS Antenna(1.5G Band)



3.3.2 Back View



3.4 Dimension



3.5 Interface Description

3.5.1 Wide-Range Power Interface

Power JACK with lock



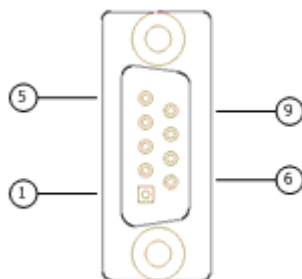
Pin	Description
1,3	DGND (ground pin)
2	Power (+12 DC,UP to 36V)

3.5.2 Ethernet Interface

Standard RJ45 interface, supporting 10M/100M/1000M self-adaptation, this is a standard RJ45 ethernet port

3.5.3 D Sub-9 RS232 Connector

Standard vertical DB-9 male connector



Pin	Description	Remarks
1	DCD1/422TX+/485_A	BIOS set
2	RXD1/422TX-/485_B	BIOS set
3	TXD1/422RX+	BIOS set
4	DTR1/422RX-	BIOS set
5	DGND (ground pin)	
6	DSR1	
7	RTS1	
8	CTS1	
9	RI1	

3.5.4 RS232/485 ,CAN,External IO Connector

12pins 3.81 pitch terminal with screw lock

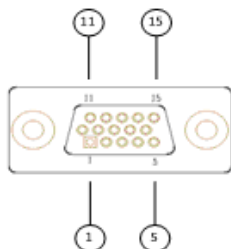
Load capacity: more than 128 nodes/RS485 channel



Pin	Description	Remarks
1	TXD2/485_2_A	BIOS set
2	RXD2/485_2_B	BIOS set
3	DGND	
4	CANH	
5	CANL	
6	DGND	
7	EXTIO0	3.3V Level
8	EXTIO1	3.3V Level
9	EXTIO2	3.3V Level
10	EXTIO3	3.3V Level
11	EXTIO4	3.3V Level
12	EXTIO5	3.3V Level

3.5.5 VGA Interface

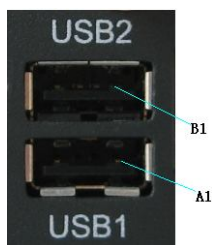
Standard vertical DB-15 Female VGA connector



Pin	Description
1	RED
2	GREEN
3	BLUE
4	N.C.
5	GND
6	GND
7	GND
8	GND
9	+5VDC
10	GND
11	N.C.
12	SD_DDC
13	HSYNC
14	VHYN
15	SC_DDC

3.5.6 USB Host Connector

Dual vertical USB A type interface, USB2.0



Pin	Description
A1	USB1_VCC(+5VDC)
A2	USB1_D-
A3	USB1_D+
A4	USB1_DGND(ground pin)
B1	USB2_VCC(+5VDC)
B2	USB2_D-
B3	USB2_D+
B4	USB2_DGND(ground pin)

3.6 Operation Notice

3.6.1 Change SIM Card

Push the small button on the left of SIM Card Holder, and install the SIM card to the holder. Then push the holder into the Slot.

3.6.2 Power Supply

Please make sure using adapter in the accessory, or the power is not reversed when powered by other adapter.

4 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

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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.

Part II: Software Reference

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 M2M 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 M2M in industrials, medicals, financial, retail, vehicle, and transportations etc.

1.1 About This Manual

This manual is for user how to configure and use devices in Windows system.

1.2 Windows OS Support

The VT-M2M-BTA-DE supports the following Windows operating systems.

- Windows* Embedded Standard 7 64 bit (WES7)
- Windows* 7 32bit / 64bit
- Windows* 8 32bit / 64bit
- Windows* Embedded Standard 8 64 bit (WES8)

1.3 VT-M2M-BTA-DE Features

The below table lists VT-M2M-BTA-DE features.

Device Name	Description
VGA	Maximum resolution up to 2560x1600@60 Hz Driver: CD\\WIN7 Driver\\Graphic\\ Intel_EMGD.WIN7_PC_Version_36_15_0_1073.7z
COM Ports	COM1~5 default RS232 COM1 : DB9, support RS232/RS422/RS485, baud rate up to 115200bps COM2 : Green terminal pin 1 and 2, support RS232/RS485 Baud rate up to 115200bps COM3 : GPS COM4 : ZigBee COM5 : null Configure by BIOS option: Device Management >> SIO SCH3114 Serial Port x Device Management >> SIO FINTEK81801U Serial Port x Test by tool : CD\\SW Guide\\COM Test\\TestCommPC V2.3.3.exe
GPIO	EXTIO 0 ~ 5 Green terminal pin 7 to 12 Configure by BIOS option: Advanced >> Onboard Devices Configuration >> GPIO Configuration Programming Guide: CD\\SW Guide\\GPIO

	Guide\\VT-M2M-BTA GPIO Programming.pdf
CAN	Support CAN V2.0B protocol Green Terminal Pin 4 - CANH Green Terminal Pin 5 - CANL Test by tool: CD\\SW Guide\\CAN Test\\ Test_COM2CAN_Net20_v1.0.zip Test Guide: CD\\SW Guide\\CAN Test\\ Test_COM2CAN_Net20_v1.0.zip
Ethernet	2 x Intel 82574
Audio	Realtek ALC269 Driver: CD\\WIN7 Driver\\Audio \\32bit_Win7_Win8_Win81_R273.exe
USB Port	Support USB 2.0 protocol, 2 x USB2.0 slot USB CAN, 3G and WIFI need USB3.0 driver Driver: CD\\WIN7 Driver\\USB3.0\\SetupUSB3.zip
SD Card	Support SD Card boot and hot plug Driver: CD\\WIN7 Driver\\ USB2Uart XR21V1410\\ XR21x141x-XPVista78-DriversOnly-Vers2.0.0.0.zip
TPM	Support TPM 1.2 User Guide: CD\\SW Guide\\TPM Test\\BayTrail TPM Test guide V1.0.pdf
Accelerometer	Support Accelerometer Module Test by tool: CD\\SW Guide\\Accelerometer test\\Test_ADXL345_BayTrail_Net20_v1.0.zip

	User Guide: CD\\SW Guide\\Accelerometer test\\Test_ADXL345_BayTrail_Net20_v1.0.zip
WIFI	Intel N62205 Driver: CD\\WIN7 Driver\\Intel WIFI 62205ANHWMW\\intel_wireless_14.2.0.10_s64.exe
3G	Telit HE910 User Guide: CD\\WIN7 Driver\\Telit HE910\\HE910 Use guide.pdf Driver: CD\\WIN7 Driver\\Telit HE910\\Telit_xE910_HE863_USB-Driver_Win_desktop_OS_U8.00.04.zip Telit DE910 User Guide: CD\\WIN7 Driver\\Telit DE910\\DE910 Use guide.pdf Driver: CD\\WIN7 Driver\\Telit DE910\\Telit_UC_CC_DE_CE_USB_Driver_WinDesktop_2000_XP_Vista_Seven_U8_00_03.zip
GPS	Support GPS Module Test by tool: CD\\SW Guide\\GPS Test\\RCT-1[1].1.0BETA.exe User Guide: CD\\SW Guide\\GPS Test\\GPS user guide.pdf
ZigBee	Digi ZigBee Test by tool: CD\\SW Guide\\DIGI Zigbee\\40003002_B.exe

	User Guide:CD\\SW Guide\\DIGI Zigbee\\ZigBee ZGB XB24 user guide.pdf
USB HUB	SMSC 4604 Driver: CD\\WES7 Driver\\Smsc USB HUB 4604\\smc_protouch_mpt_4.1.9.0_setup.exe.zip

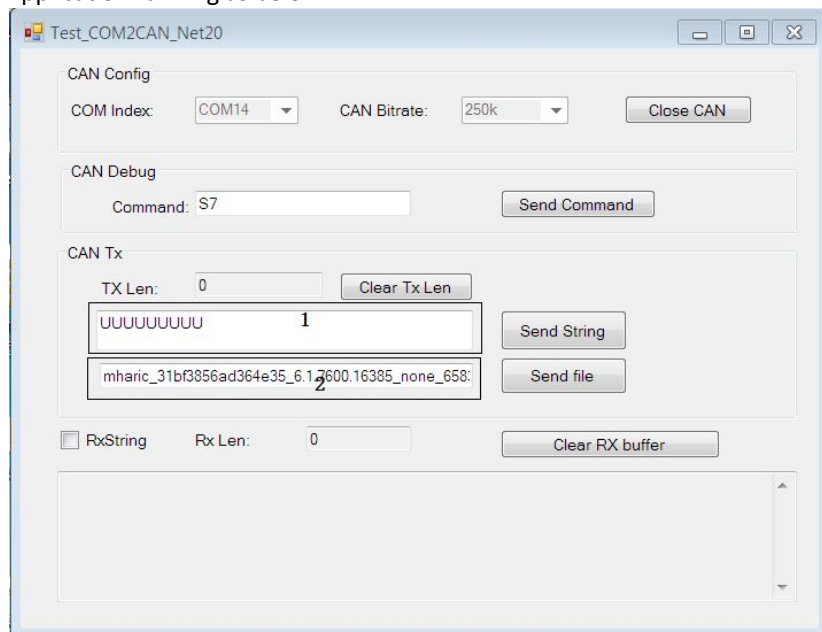
2. Base Control

Turn on the product, boot to Windows.

2.1 CAN Control

This test application use to test COM2CAN communication, it support 32bits system. Please install Microsoft .Net 2.0 or above version and USB2COM Driver in advance before run the application .

Application running as below:



Step Details:

1. Prepare 2 devices, and connect CAN.
2. Enter windows7, look up COM number of USB2COM in device manager.



3. According to the step2, select COM14 and set CAN speed to 500k(support 20k,50k,100k,125k,250k,500k,1M), Open device.
4. Input data in first TextBox in "CAN Tx" GroupBox, Click "Send String" Button on one device, then "Tx Len" will record length of all data sent(Click "Clear TxLen" to set TxLen = 0) .The target device will receive data and show in TextBox in bottom of application now., If we want show string ,Make "RxString" CheckBox checked. "Rx Len" TextBox record length of receive data. Click "Clear Rx Buffer" button will clear all receive data and set RxLen= 0.
5. Click "Send File" button to send file. Then file path will save to The second TextBox in "CAN Tx" GroupBox.
6. We can achieve our all CAN function by "CAN Debug" Groupbox.
 - ◆ Open Channel: Input "O", Click "Commit" button, If success, "0D" returned.
 - ◆ Set CAN Bittate: Input "C", Click "Commit" button. Then input "Sx"(0<=x<=8),Click "Commit" button. If success, "0D" returned.
 - ◆ Send Data: input "t000455555555", If success, "0D" received. The target device receive "uuuu". The meaning of the sample string explained in below:

t	000	4	55555555
Fixed value, present send data	ID, use 3 decimal char	Send data Length	Hexadecimal string, Represent data "uuuu"

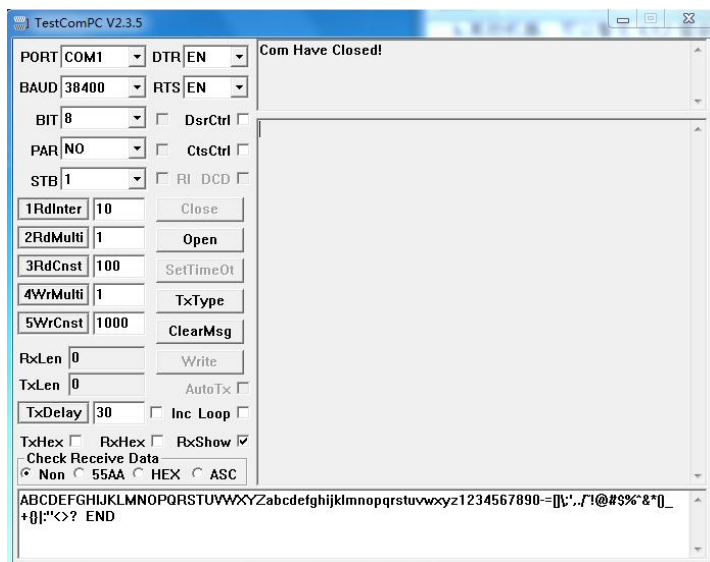
2.2 GPIO Control

Configure by BIOS option:

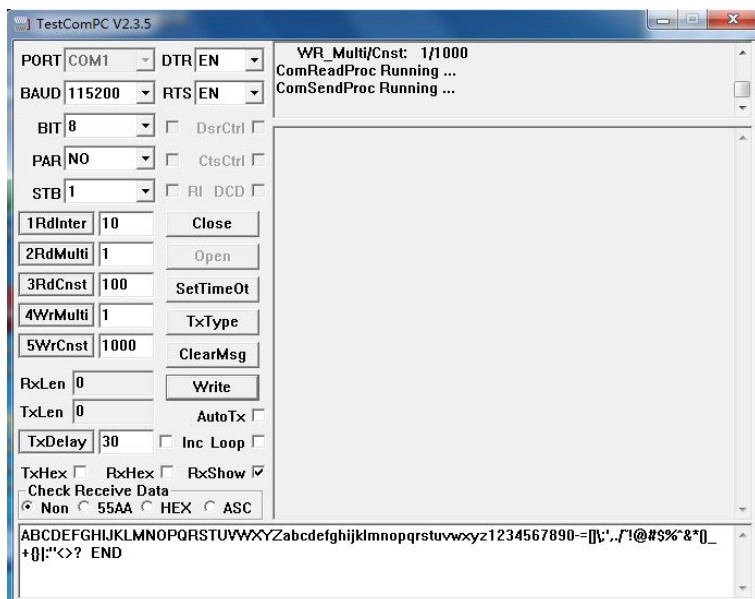
Advanced >> Onboard Devices Configuration >> GPIO Configuration

2.3 Serial COM Control

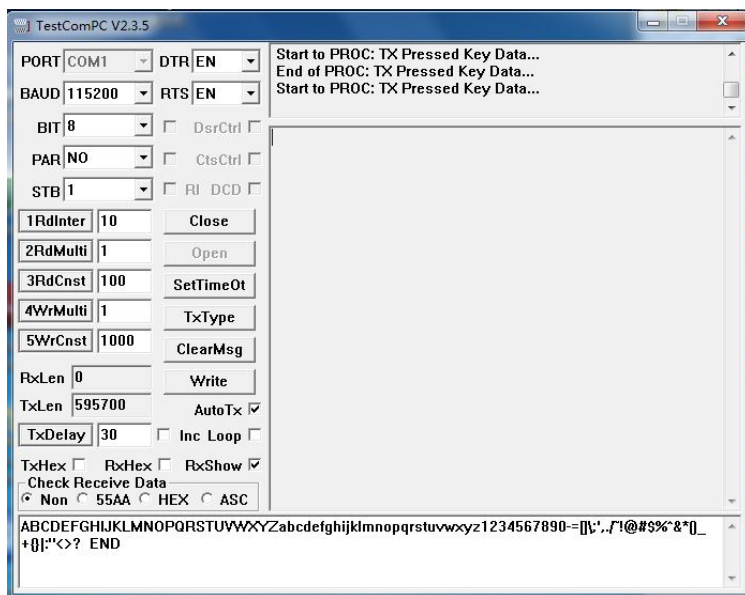
a. Run TestCommPC V2.3.3.exe



b. Select PORT COM1 or COM2, select BAUD 115200, click "Open".

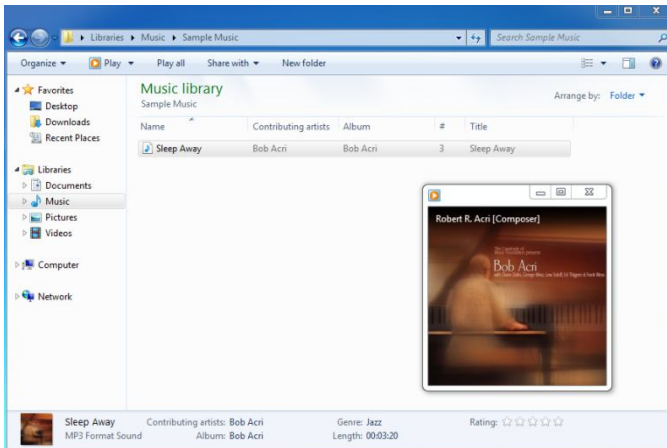


c. Click "AutoTx", COM1 transmit the data below cyclically. If connect the pin2 and pin3 of COM1, it will receive the data, and show on the right.

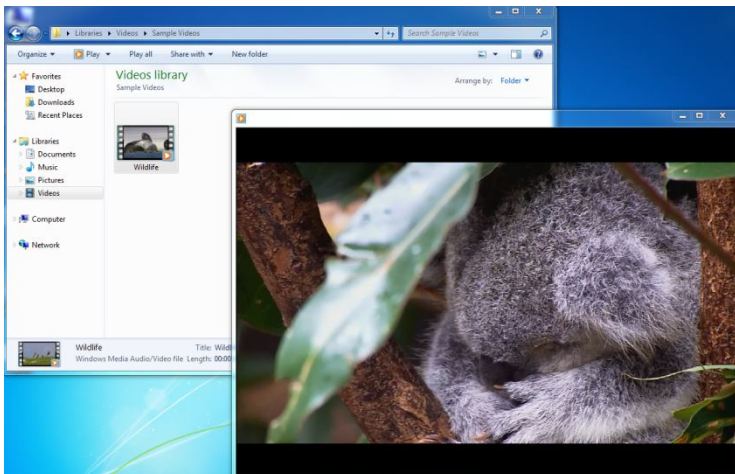


2.4 Audio and Video Control

- It can play sample music.

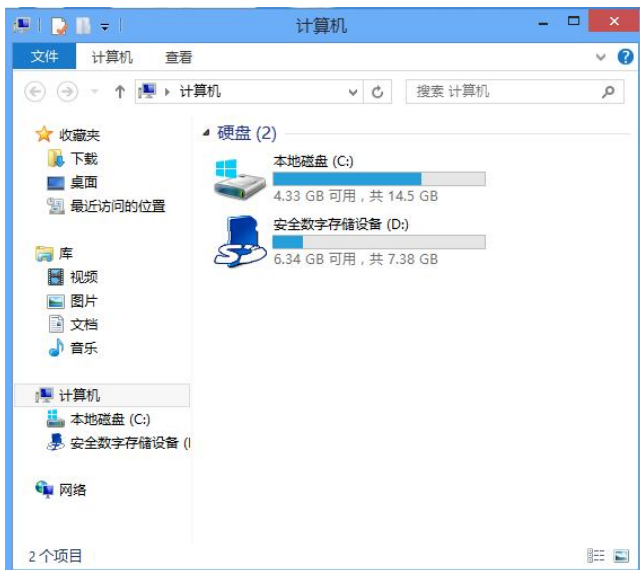


b. It can play sample video.



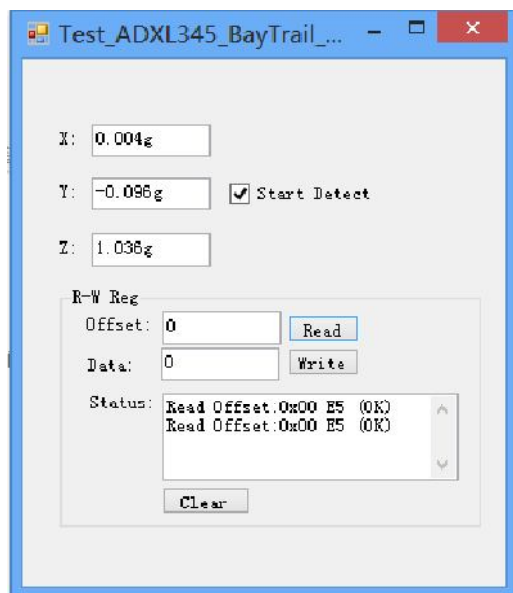
2.5 SD card Control

a. Insert SD card , then look over device:



2.6 ADXL345 Control

a. Run Test_ADXL345_BayTrail_Net20.exe, click “start Detect”.



b. Shake the product, the value of X,Y,Z will change.

3. Network Module

3.1 WIFI Control

a. Click the network icon, choose the WIFI, Enter the password, click the OK icon.



3.2 3G Control

HE910 only support WCDMA.

a. Click the network icon, choose the HE910, click the connect icon.



b. Click dial icon.

Tip: If it fail, try again.

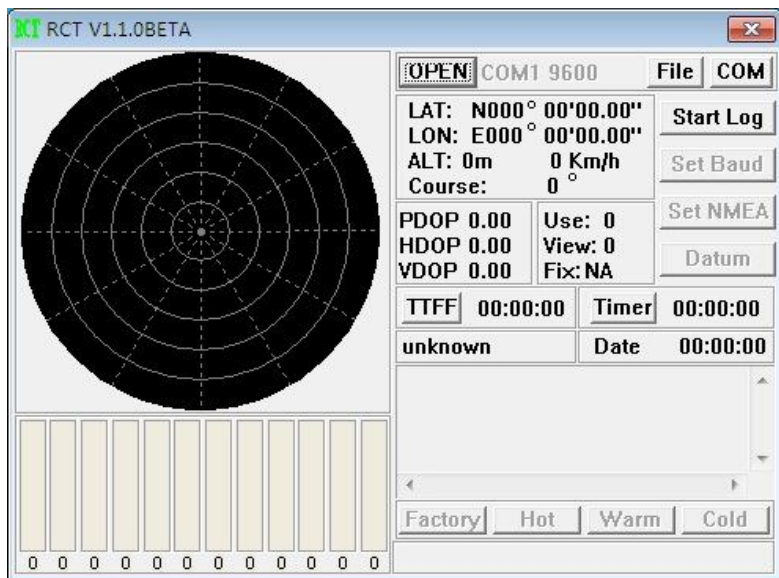


DE910 only support CDMA2000.

a. Fill the Username: "card", Password: "card", Number: "#777".

4. GPS Module

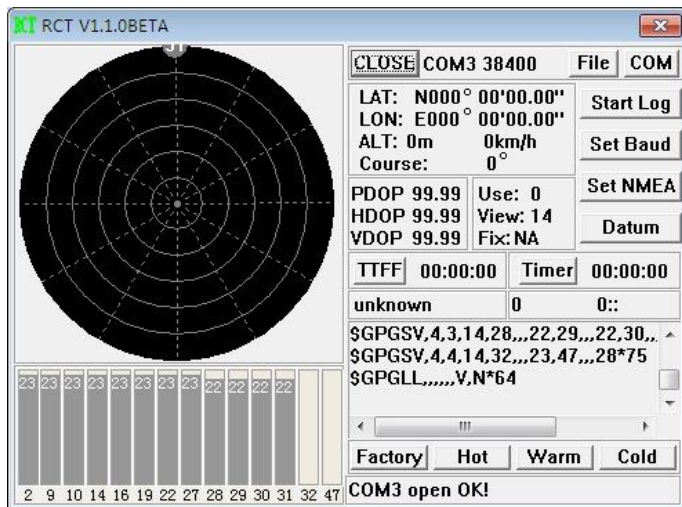
- a. Click RCT-1[1].1.0BETA.exe, use the right key of the mouse, choose Run as administrator.



- b. Click COM icon, choose COM3, 38400.

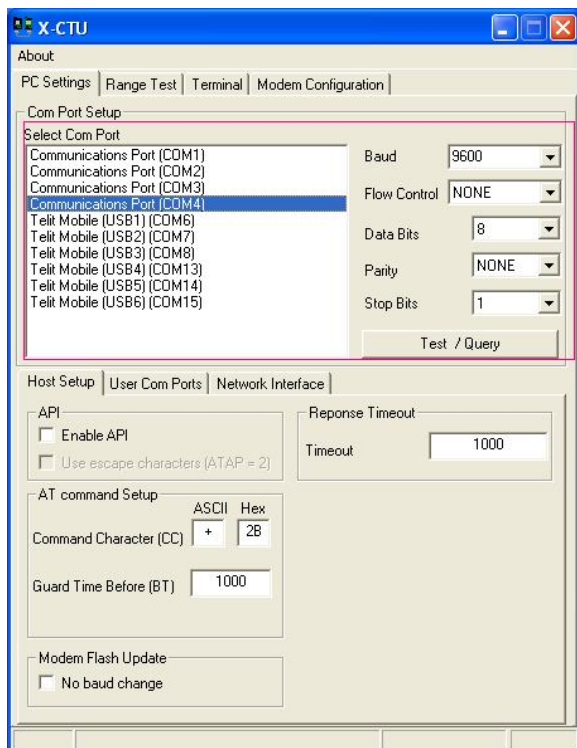


c. Click OPEN icon, starting receive data.

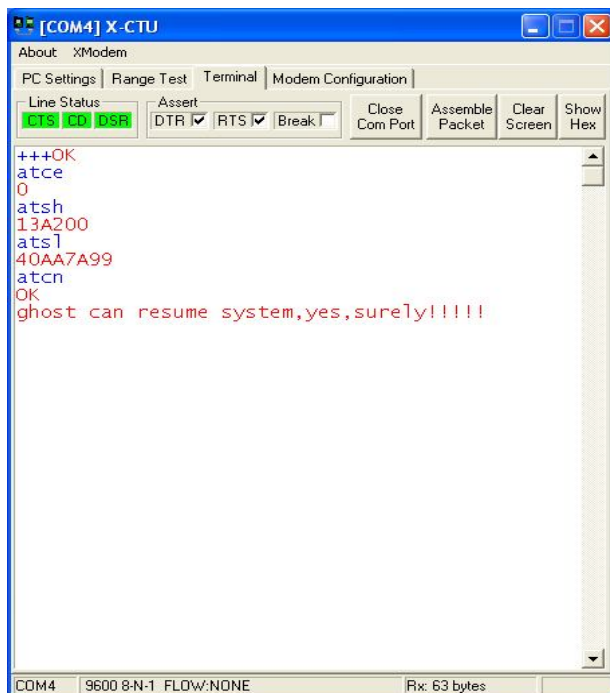


5. ZigBee Control

- a. Install 40003002_B.exe, when it finish, it will generate X-CTU.
- b. Run X-CTU, choose Communication port(COM4).



- c. choose Terminal



1. Input "+++", ZigBee respond "OK".
2. Input "atce 1", ZigBee respond "OK".
3. Input "atcn", Zigbee respond "OK".
4. Wait a few seconds, Zigbee enter since the resumption of spontaneous mode. For an example, input "a", when Zigbee respond "a".



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