



VT-7 Pro

7 Inch Rugged Android Vehicle Display Terminal

User Manual

Version 1.0



Revision History

Version	Release Time	Description
1.0	202006	Initial Release

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About This Manual

This user's manual provides the general information and installation instructions for the product. The manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing 3RTablet products.

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Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

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.

FCC Class B

This device complies with Part 15 of the FCC Rules. Any changes or modifications not expressly approved by the guarantee of this device could void the user's authority to operate the equipment.

RoHS

3RTablet Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

Safety Symbols



This symbol of "CAUTION" indicates that there is a danger of injury to the user or a risk of damage to the product, should warning notices be disregarded.



Battery Recycle



This symbol indicates electrical warning.

Important Safety Instructions

Read these safety instructions carefully:

- ▶ Read all cautions and warnings on the equipment.
- ▶ Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage.
- ▶ Make sure the correct voltage is connected to the equipment.
- ▶ For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
- ▶ Keep this equipment away from humidity.
- ▶ Disconnect this equipment from the A/C outlet before cleaning it. Use a moist cloth. Do not use liquid or sprayed detergent for cleaning.
- ▶ Do not scratch or rub the screen with a hard object.
- ▶ Never use any of the solvents, such as Thinner Spray-type cleaner, Wax, Benzene, Abrasive cleaner, Acid or Alkaline solvent, on the display. Harsh chemicals may cause damage to the cabinet and the touch sensor.
- ▶ Remove the dirt with a lightly moistened cloth and a mild solvent detergent.

- Then wipe the cabinet with a soft dry cloth.
- ▶ If the equipment will not be used for a long time, disconnect it from the power source to avoid damage by transient over voltage.
 - ▶ Never pour any liquid into openings. This may cause fire or electrical shock.
 - ▶ 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 or damaged.
 - f. The equipment has obvious signs of breakage.

Rechargeable Battery Pack Safety

With very little care, you can optimize the battery life and maximize the lifespan of the battery. Most importantly, use only the equipment in its ideal operating temperature (as described in 1.4 Specifications) – do not leave it in a hot trunk during the summer.

- **Using the Equipment for the First Time**
Be sure to fully charge (approx. 4 hours) the equipment when charging the equipment for the first time.
- **Long-Term Storage & Maintenance**
If you are putting away the battery for more than three months, it is recommended that the battery should be stored separately and fully charged, and get recharged every three months. If you store an uncharged battery, it could fall into a deep worn-out state which would render it incapable of holding any charge. Be sure to store the equipment and battery at the proper temperature (as described in 1.5 Specifications).

Additional Information & Technical Support

You can download the related technical documents such as data sheet and user's manual as well as driver on our website.

Please do not hesitate to call or e-mail our customer service when you still cannot get the information you need. www.3Rtablet.com

Warranty

This product is warranted to be in good working order during the warranty period. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it according to 3Rtablet after-sale-service terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

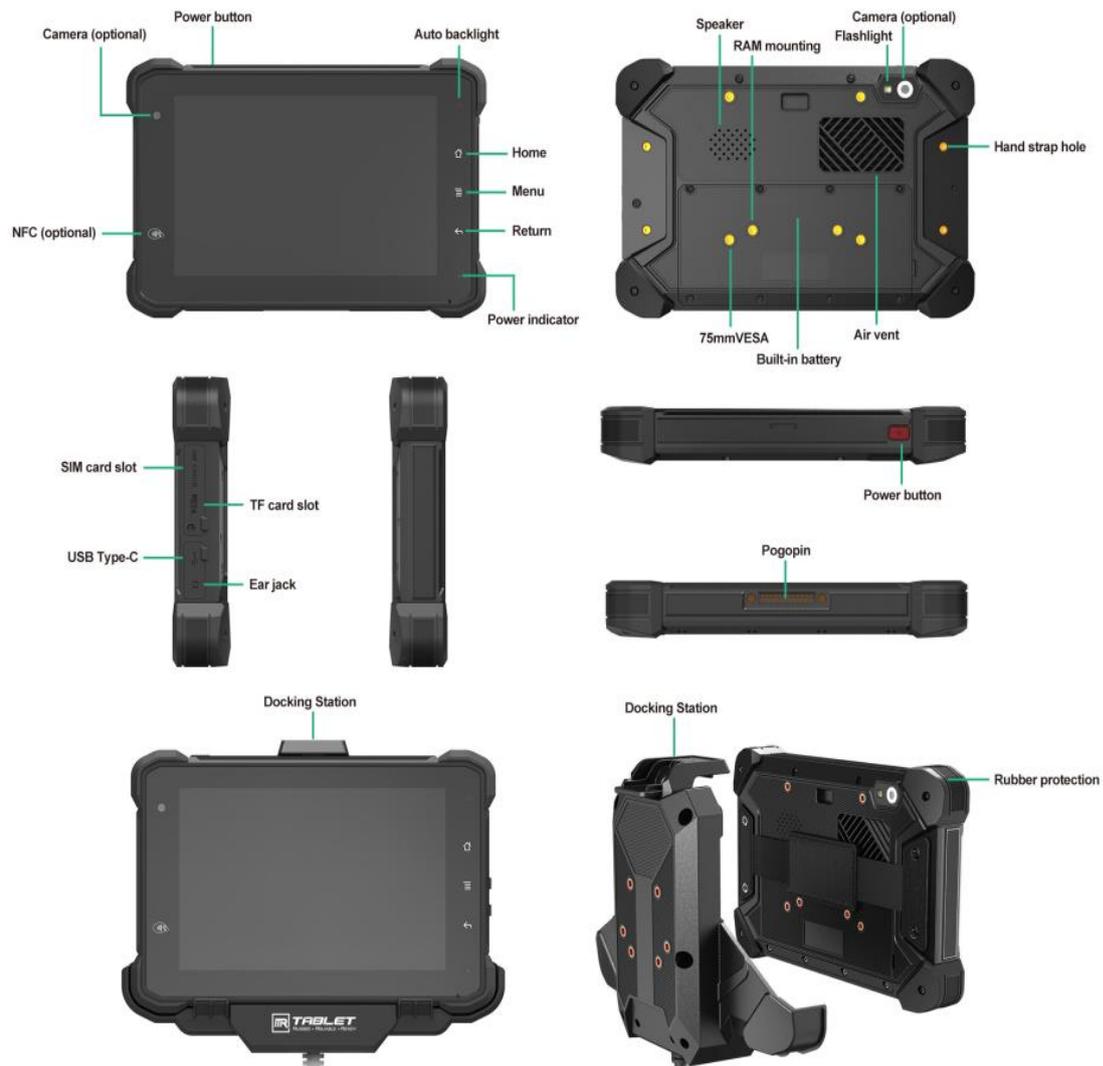
Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or emailing the account representative from vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

Chapter 1: Introduction

1.1 Product Highlights

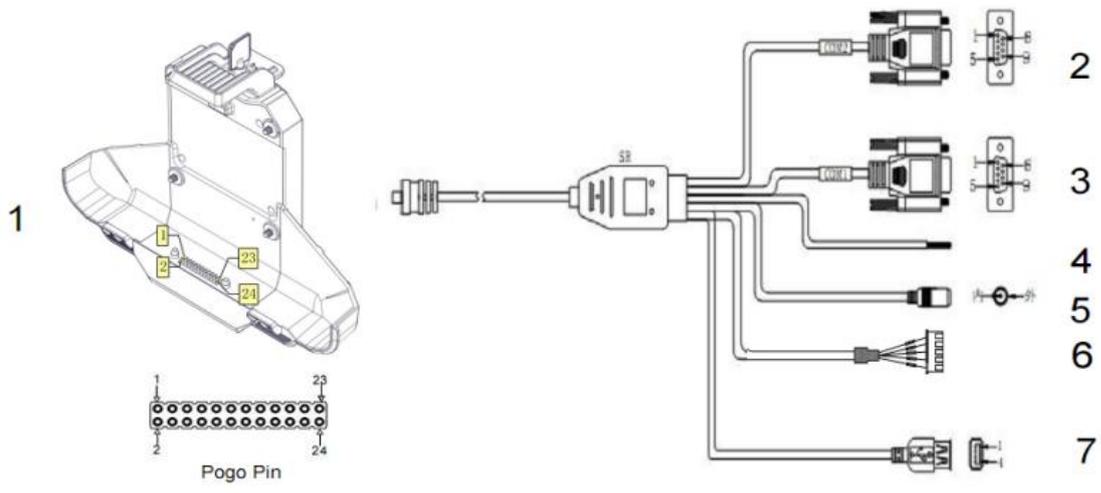
- Qualcomm Cortex-A53 64-bit Octa-core processor 1.8G
- Android 9.0 Operation System
- Comply with IP67 rating
- WIFI, Bluetooth, LTE, GNSS and 5000mAh rechargeable battery supported
- 7 Inch IPS Display, physical 1280x800 resolution, 800cd/m², multi-point capacitive touch
- Portable with Docking Station

1.2 Parts of the Device



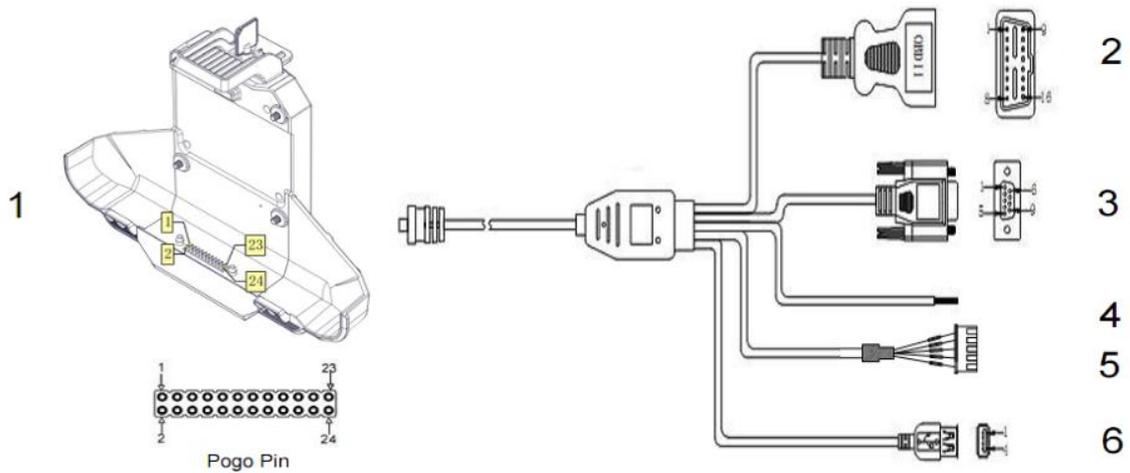
1.3 Extended Cable Definition

1.3.1 Standard Version



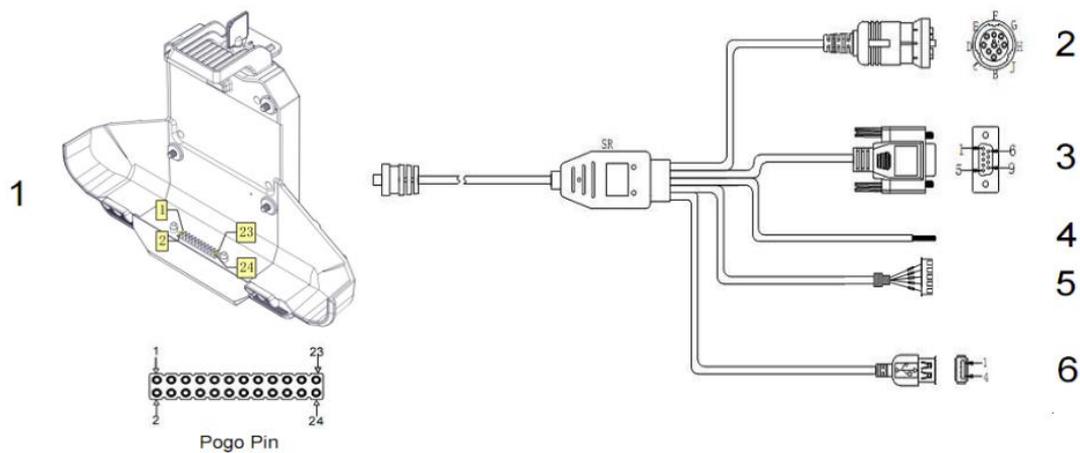
NO.	Item	Definition																																																
1	Pogo Pin	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td> </tr> <tr> <td>GPIO69</td><td>GPIO33</td><td>GPIO66</td><td>GPIO22</td><td>GPIO23</td><td>ACC</td><td>GND</td><td>RXD0</td> </tr> <tr> <td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>TXD0</td><td>RXD1</td><td>TXD1</td><td colspan="3">GND</td><td>ID</td><td>DP</td> </tr> <tr> <td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td> </tr> <tr> <td>DM</td><td colspan="2">VUSB</td><td>EN</td><td colspan="2">DC+</td><td colspan="2">DC-</td> </tr> </table>	1	2	3	4	5	6	7	8	GPIO69	GPIO33	GPIO66	GPIO22	GPIO23	ACC	GND	RXD0	9	10	11	12	13	14	15	16	TXD0	RXD1	TXD1	GND			ID	DP	17	18	19	20	21	22	23	24	DM	VUSB		EN	DC+		DC-	
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5	Power	DC input Voltage:DC8-36V(ISO 7637-2 compliant)																																																
6	GPIO	<table border="1"> <tr> <td>Red</td><td>White</td><td>Green</td><td>Yellow</td><td>Black</td> </tr> <tr> <td>Input 1</td><td>Input 2</td><td>Output 3</td><td>Output 4</td><td>GND</td> </tr> </table>	Red	White	Green	Yellow	Black	Input 1	Input 2	Output 3	Output 4	GND																																						
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Input 1	Input 2	Output 3	Output 4	GND																																														
7	USB	USB Type-A (can't be used simultaneously with USB Type-C on the device)																																																

1.3.2 OBD-II Version



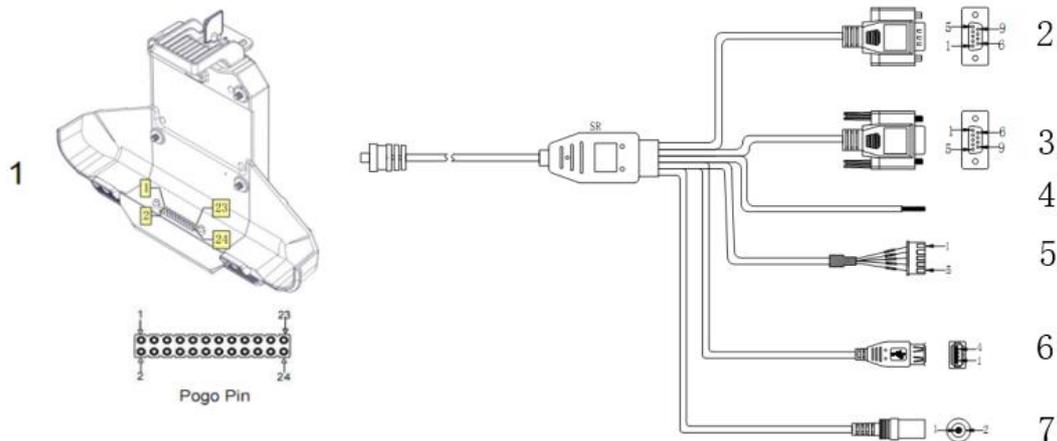
NO.	Item	Definition							
		1	2	3	4	5	6	7	8
1	Pogo Pin	GPIO69	GPIO33	GPIO66	GPIO22	GPIO23	ACC	GND	RXD0
		9	10	11	12	13	14	15	16
		TXD0	RXD1	TXD1	GND			ID	DP
		17	18	19	20	21	22	23	24
		DM	VUSB		EN	DC+		DC-	
2	OBD-II	Reserved	Bus positive line of SAE J1850	Reserved	Chassis ground	Signal ground	CAN_H line of ISO 15765-4	K_line according to ISO 9141-2 and ISO 14230-4	Reserved
		9	10	11	12	13	14	15	16
		Reserved	Bus negative line of SAE J1850	Reserved	Reserved	Reserved	CAN_L line of ISO 15765-4	L_line according to ISO 9141-2 and ISO 14230-4	Permanent positive voltage
3	COM	RS232 /dev/ttyHSL0.							
4	ACC input	Connect with vehicle ACC power. Voltage range: 0-30V. Note: With ACC function, the device is requested to connect the power source via DC adaptor simultaneously to power on after ignition. please refer to 3-2 for the DEMO and source code of ACC.							
5	GPIO	Red	White	Green	Yellow	Black			
		Input 1	Input 2	Output 3	Output 4	GND			
6	USB	USB Type-A(can not be used simultaneously with USB Type-C on the device)							

1.3.3 SAE J1939 Version



NO.	Item	Definition									
1	Pogo Pin	1	2	3	4	5	6	7	8		
		GPIO69	GPIO33	GPIO66	GPIO22	GPIO23	ACC	GND	RXD0		
		9	10	11	12	13	14	15	16		
		TXD0	RXD1	TXD1	GND			ID	DP		
		17	18	19	20	21	22	23	24		
		DM	VUSB		EN	DC+		DC-			
2	J1939	A	B	C	D	E	F	G			
		Battery Minus (Ground)	Battery Plus (+V)	CAN/J1939 High	CAN/J1939 Low	CAN/J1939 shield	Protocol "High"Line,i.e CAN/J1708/J1939 High	Protocol "Low"Line,i.e CAN/J1708/J1939 Low			
3	COM	RS232 /dev/ttyHSL0.									
4	ACC input	Connect with vehicle ACC power. Voltage range: 0-30V. Note: With ACC function, the device is requested to connect the power source via DC adaptor simultaneously to power on after ignition. please refer to 3-2 for the DEMO and source code of ACC.									
5	GPIO output	Red		White		Green		Yellow		Black	
		Input 1		Input 2		Output 3		Output 4		GND	
6	USB	USB Type-A (can't be used simultaneously with USB Type-C on the device)									

1.3.4 CAN Bus Version



NO.	Item	Definition									
		1	2	3	4	5	6	7	8		
1	Pogo Pin	GPIO69	GPIO33	GPIO66	GPIO22	GPIO23	ACC	GND	RXD0		
		9	10	11	12	13	14	15	16		
		TXD0	RXD1	TXD1	GND			ID	DP		
		17	18	19	20	21	22	23	24		
		DM	VUSB		EN	DC+		DC-			
2	CAN Bus		CAN Low			Shielded Line		CAN High			
3	COM	RS232 /dev/ttyHSL0.									
4	ACC input	Connect with vehicle ACC power. Voltage range: 0-30V. Note: With ACC function, the device is requested to connect the power source via DC adaptor simultaneously to power on after ignition. please refer to 3-2 for the DEMO and source code of ACC.									
5	GPIO	Red		White		Green		Yellow		Black	
		Input 1		Input 2		Output 3		Output 4		GND	
6	USB	USB Type-A (can't be used simultaneously with USB Type-C on the device)									
7	Power	DC input Voltage: DC8-36V (ISO 7637-2 compliant)									

1.4 Specifications

Durability Features		
IP67 Rating Certified		
1.5m (5ft.) drop-resistance		
Raised bezel for LCD impact protection		
LCD Display		
Size	7 Inch Digital IPS Panel	
Resolution	1280 x 800	
Brightness	800 cd/m ²	
Touch screen		
Type	Multi-point Capacitive Touch	
System		
CPU	Qualcomm Cortex-A53 64-bit Octa-core processor 1.8G	
OS	Android 9.0	
Memory	LPDDR3 2GB	
Storage	16GB	
GPU	Adreno 506	
Audio	Integrated microphone	
	Integrated speaker 2W	
	1 x 3.5mm stereo headphone jack	
Navigation AGPS & E-com- pass	GPS	1575.42MHz±1.023MHz
	GLONASS	1597.5MHz~1605.8MHz
	BeiDou	1561.098MHz±2.046MHz
WWAN	US Version North America	LTE FDD: B2/B4/B5/B7/B12/B13/B14/B17/B25/ B26/B66/B71 LTE TDD: B41 WCDMA: B2/B4/B5
	EU Version EMEA/Ko- rea/Thailand	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B20/B28 LTE TDD: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B8 GSM: 850/900/1800/1900MHz
Data Transmission	LTE	Cat 6 FDD: Max 300Mbps (DL)/Max 50Mbps (UL) Cat 6 TDD: Max 265Mbps (DL)/Max 35Mbps (UL)
	UMTS	DC-USDPA: Max 42Mbps (DL) DC-HSUPA: Max 11.2Mbps (UL) WCDMA: Max 384Kbps (DL/UL)
WLAN	802.11a/b/g/n/ac	

	2.4GHz&5GHz
	Support Wake-on-WLAN (WoWLAN)
	Support ad hoc mode
	Support WAPI SMS4 hardware encryption
	Support AP mode
	Support Wi-Fi Direct
	Support MCS 0-7 for HT20 and HT40
Bluetooth	2402MHz~2480MHz
	Integrated Bluetooth 4.2 LE + EDR class 2, with HID, A2DP, AVRCP, BIP, BPP, FTP, HFP, HSP, OPP, SPP supported
Sensor	Gyroscope
	Accelerometer (G-sensor)
NFC (optional)	Read/ write Made: ISO/IEC 14443 A&B up to 848kbit/s, FeliCa at 212&424 kbit/s
	MIFARE 1K, 4K, NFC Forum type 1, 2, 3, 4, 5 tags. ISO/IEC 15693 All peer-to-peer modes
	Card Emulation Mode (from host): NFC Forum T4T (ISO/IEC 14443 A&B) at 106 kbit/s
Camera (optional)	Front: 5.0megapixel camera
	Rear: 16.0megapixel camera
Mounting (optional)	
RAM Mount	1.912 Inch RAM mount compatible (AMPS holes)
VESA Bracket	VESA 75mm Folder Bracket
I/O Interface (standard)	
Serial Port	2 x RS232
USB Port	1 x USB Host,1x USB Device, high speed up to 480Mbps
SD Slot	1 x Micro SD card, 1.8v / 2.95v, up to 128G
SIM Socket	1 x Micro SIM Card slot, 1.8v / 2.95v
GPIO	GPIO×2 Input, GPIO×2 Output (See “3. 4Extended Cable Definition” for details.)
	(See “3.3 Extended Cable Definition” for details.)
I/O Interface (CAN Bus version)	
Serial Port	1 x RS232
CAN Bus	1 x CAN Bus
USB Port	1 x USB Host,1x USB Device, High speed up to 480Mbps
SD Slot	1 x Micro SD card, 1.8v / 2.95v, up to 64G
SIM Socket	1 x Micro SIM Card slot, 1.8v / 2.95v

GPIO	GPIO×2 Input, GPIO×2 Output (See “3. 4Extended Cable Definition” for details.)
ACC	(See “3. 3Extended Cable Definition” for details.)
I/O Interface (J1939 /OBD-II/CAN Bus version)	
Serial Port	1 x RS232
J1939/OBD-II/CAN Bus	(See “1.3Extended Cable Definition” for details.)
USB Port	1 x USB Host,1x USB Device, High speed up to 480Mbps
SD Slot	1 x Micro SD card, 1.8v / 2.95v, up to 64G
SIM Socket	1 x Micro SIM Card slot, 1.8v / 2.95v
GPIO	GPIO×2 Input, GPIO×2 Output (See “3. 4Extended Cable Definition” for details.)
ACC	(See “3. 3Extended Cable Definition” for details.)
Power Supply	
Power System	External AC Power Adapter
Battery Type	Lithium-ion rechargeable battery
	Field replaceable (for maintenance)
Battery Capacity	3.7V, 5000mAh battery (Typically around 5hours)
Power Consumption	Normal mode: 5W
	Charging mode: 8W
Adapter Input	AC 100-240C, 50-60Hz
Adapter Output	DC power output 12V/2A
Mechanical & Environmental	
Operating Temp.	-10°C ~ 65°C (14°F ~ 149°F)
Storage Temp.	-20°C ~ 70°C (-4°F ~ 158°F)
Operating Humidity	95% (non-condensing)
Dimensions (W x H x D)	207.4 x 137.4 x 30.1 mm
Weight	Tablet: 815g
	Docking station: 550g

Chapter 2: Getting Started

2.1 Power On/Off and Sleep/Wake

This Chapter is describing how to power on/off the device, put the device into sleep mode (screen saver) and force restart.

Proper operation of power on/off the device will be beneficial to ensure the stability of the system. The device status indicated by the color of the indicator is as described in the following table for the standard VT-7 Pro. We provide customized service if the customer has other requirements regarding the operation of switch.

Table 2.1.1 VT-7 Pro Indicator color and device status table

Indicator color	Device Status	
	Charging and Discharging	Power On/Off
Green light on	Uncharged or Full charged	Power on
Red light on	Charging	Power off or Power on
Red or Green light blinking	The device is abnormal, please cut off the external power supply immediately and return it back to the factory for repair.	

2.1.1 Power on the Device

1. Power on by pressing the button:
Long press the power button for more than 2 seconds until the boot screen displayed. It needs around 40 seconds to start the system. The indicator is on when VT-7 Pro activate normally.
2. Power on by connecting ACC, see the details in Chapter “3.3 Using ACC”.
3. Power consumption during operation: 5w (typical)

2.1.2 Power off the Device

1. Power off by pressing the button: In the status of working on the device desktop, long press the power button for more than 2 seconds until the shutdown prompt pop-up then click the “POWER OFF” option.
2. Power off by ACC, see the details in the Chapter “3.3 Using ACC”.
3. Remark: In order to reduce the standby power consumption, the red light is on in charging status when power on. And the light will go off if full charged.
4. The consumption during power off (with docking station): around 100mW.

2.1.3 Sleep and Wake the Device

- a. Auto sleep, the sleep time can be set up in the settings.
- b. Short press button to sleep.
- c. Sleep by ACC, see the details in Chapter “3.3 Using ACC”

- d. Short press to wake
- e. Wake by ACC, see the details in Chapter “3.3 Using ACC”
- f. The average of power consumption in sleep status: 1W

2.2 Installing Micro SD and SIM Card

To install the micro SD card and/or Micro SIM card: (Note: Must be installed in power off status!)

- a. Find the Micro SIM card slot and the Micro SD card slot. The following graphics illustrates the correct cards orientation, which the card chips is facing into the display orientation:
- b. To install the Micro SIM card(s) or the Micro SD card, orient the card as indicated, and fully insert the card into the slot until it locks into place.
- c. Lock the interface cover with screws.



2.3 Charging the Battery

The battery is partially drained during the transportation. Be sure to charge the battery to full when you are charging it for the first time.

Tips:

Please keep the DC in charging status at work if available. Owe to the unique power supply design (Patent No.: CN201821205954.6), the device using the power supplied by DC input or USB type-C input in priority, rather than the power from the internal battery. It makes the battery to be stored after fully charged. This excellent design is very beneficial for extending the life of the VT-7 Pro battery and ensuring the safety in use.

In order to ensure the life and performance of the battery, if your tablet has been stored in the warehouse for more than three months, it is recommended to charge the battery every three months.

2.3.1 Charging with the Power Adapter

To charge the battery with the provided power adapter:

- a. If the device with an optional docking station, then mount the VT-7 Pro tablet with docking station, connect the power adapter to the DC port of Docking Station.



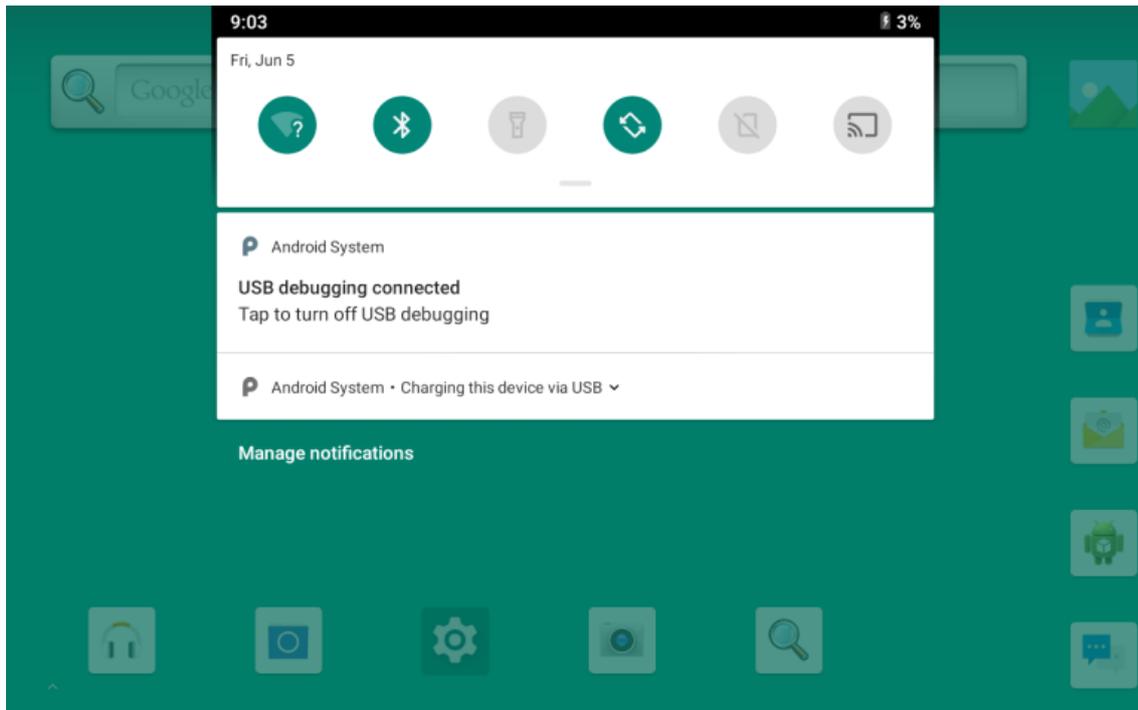
- b. The VT-7 Pro could be charged by a 5V 2A or above by USB type-C cable.

Warning:

Please ensure that the input voltage of the DC interface is within the range of 8V-36V, or use the 12V adapter coming with device. If the input voltage of the DC is outside this range, the VT-7 Pro may be unable to charge or damaged. It may cause the warranty invalid.

2.3.2 Checking the Battery Level

- a. When the charging is in process, a battery indicator will appear in the status bar showing the charging percentage. To view the charge percentage, swipe down the Status Bar and you will see the charging percentage.



b. When the battery is fully charged, you can disconnect the DC input or USB type-c cable. If available, please keep the device in charging by DC power supply. See the details in “2.3 Charging the Battery”.

2.3.3 Installing/Replacing the Battery

In case you need to install or replace the battery, follow the steps below to access the battery chamber and replace the battery.

1. Place the device on a flat surface, with the rear side facing up. Loosen the retaining screws on the back cover by using a Hexagon socket screwdriver with flat head.



2. To install a new battery, orient the new battery so that the contact pins are aligned correctly.

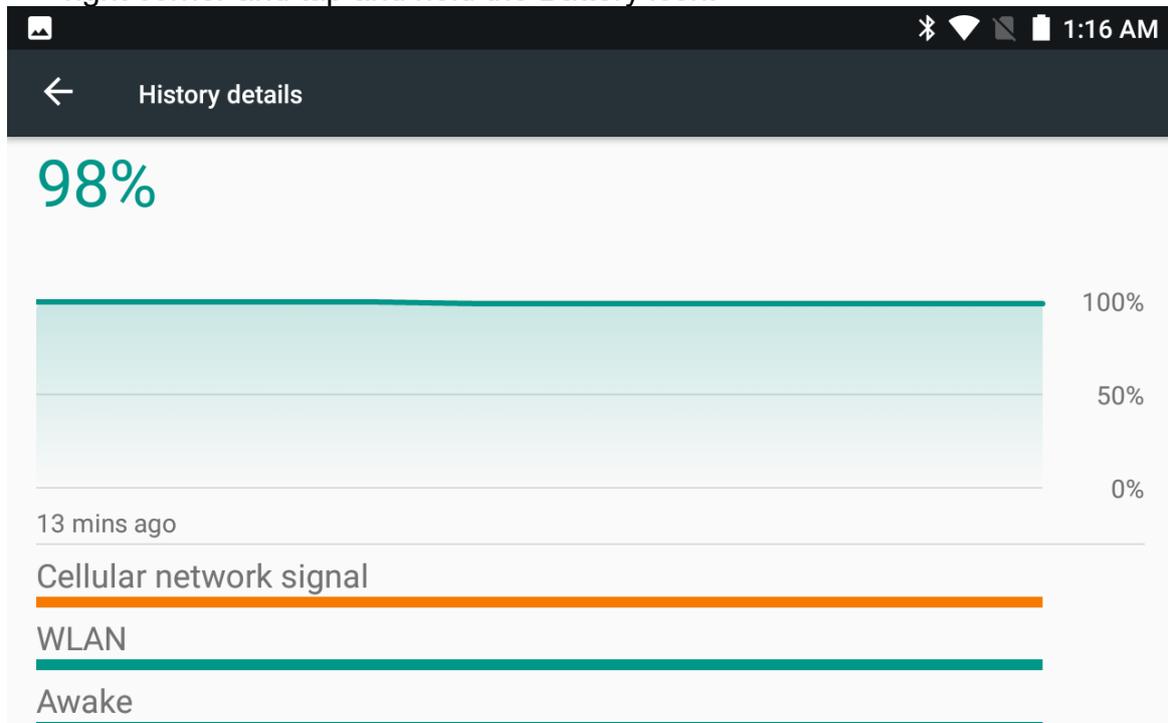


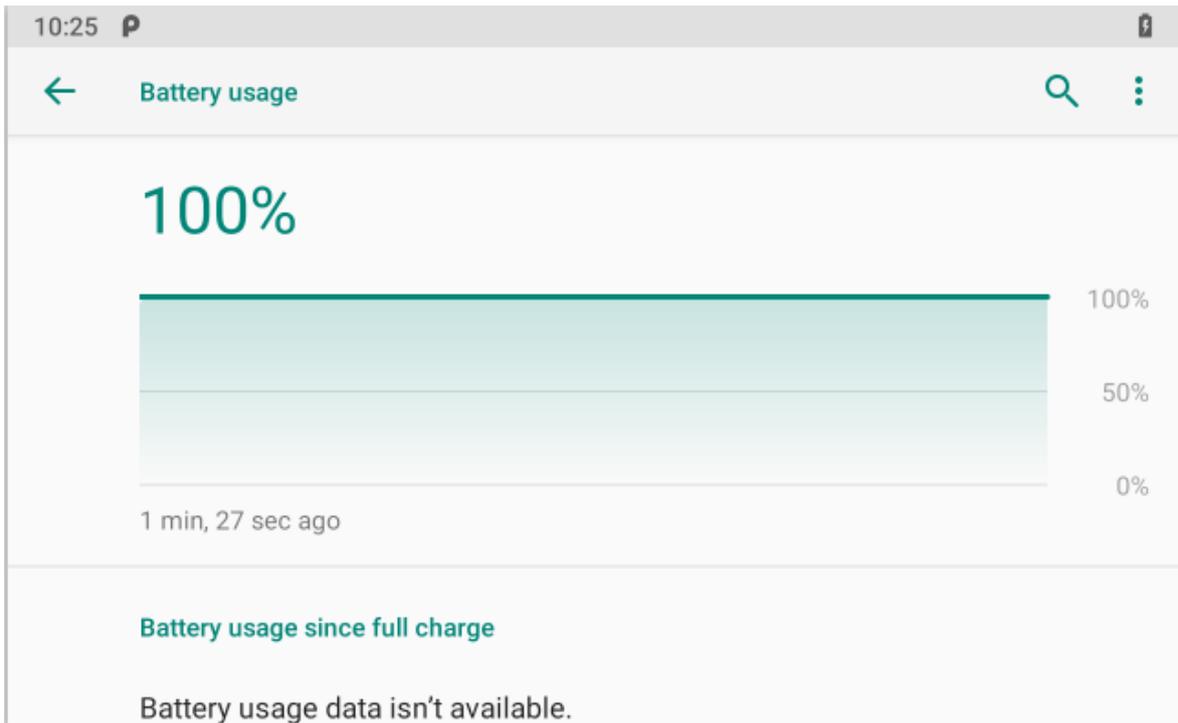
3. Assemble the battery cover and secure the retaining screws by using a Hexagon socket screwdriver with flat head.

2.4 Optimizing Battery Life

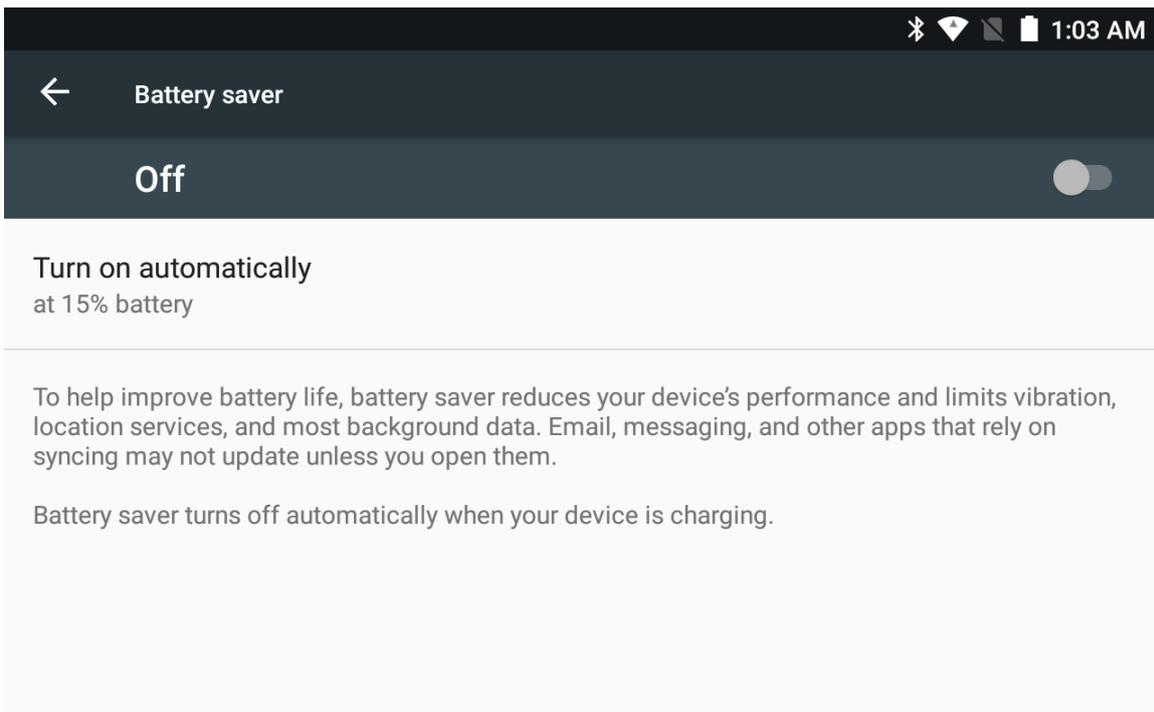
If the VT-7 Pro is unable to keep charging by DC power supply, to optimize the operating time of the battery, it is recommended that you do the following:

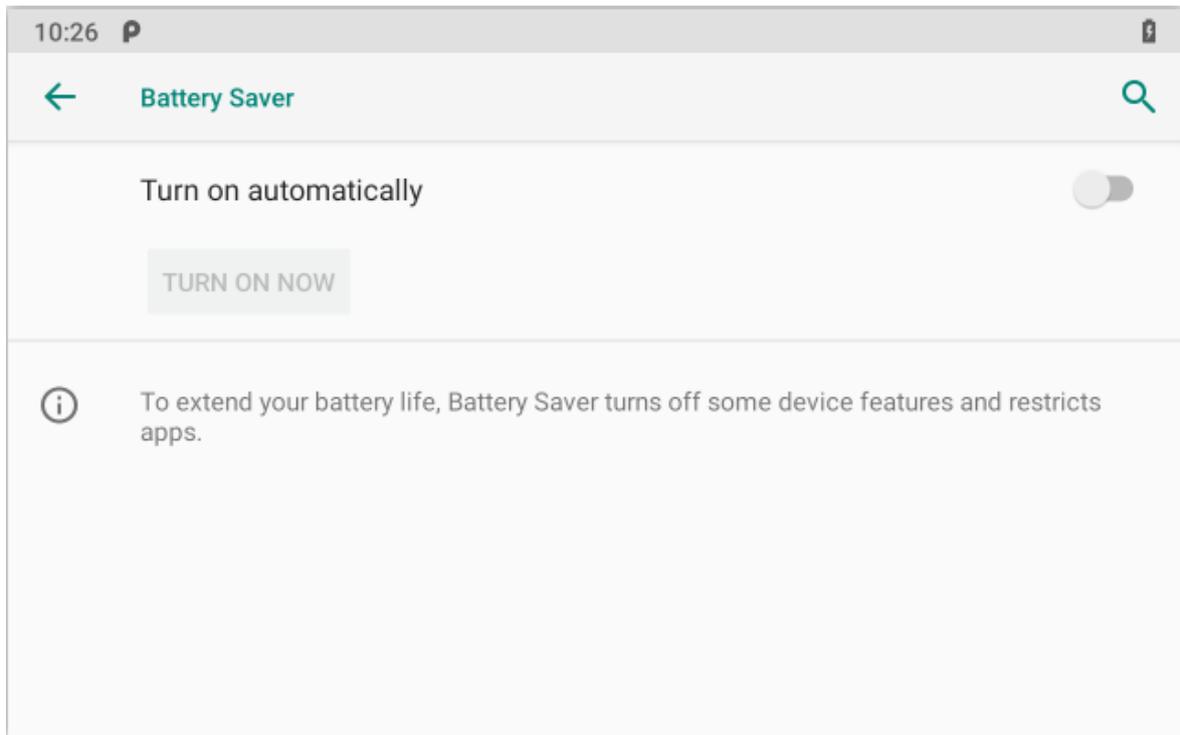
- Decrease the LCD display brightness.
- Set a shorter timeout of inactivity to allow the screen enter sleep mode.
- Turn off the display if you are not using it.
- Turn off Wi-Fi, Bluetooth or GPS function if you are not using it.
- Turn off the App that heavily drains the battery if you are not using it. To view the battery usage by individual App, swipe down the Status Bar in the upper right corner and tap and hold the Battery icon.





- Enable CPU power saving mode on battery settings page to limit the maximum CPU performance to conserve battery life and lower device temperature.
To access the battery settings page, swipe down the Status Bar in the upper right corner and then tap and hold the Battery icon.





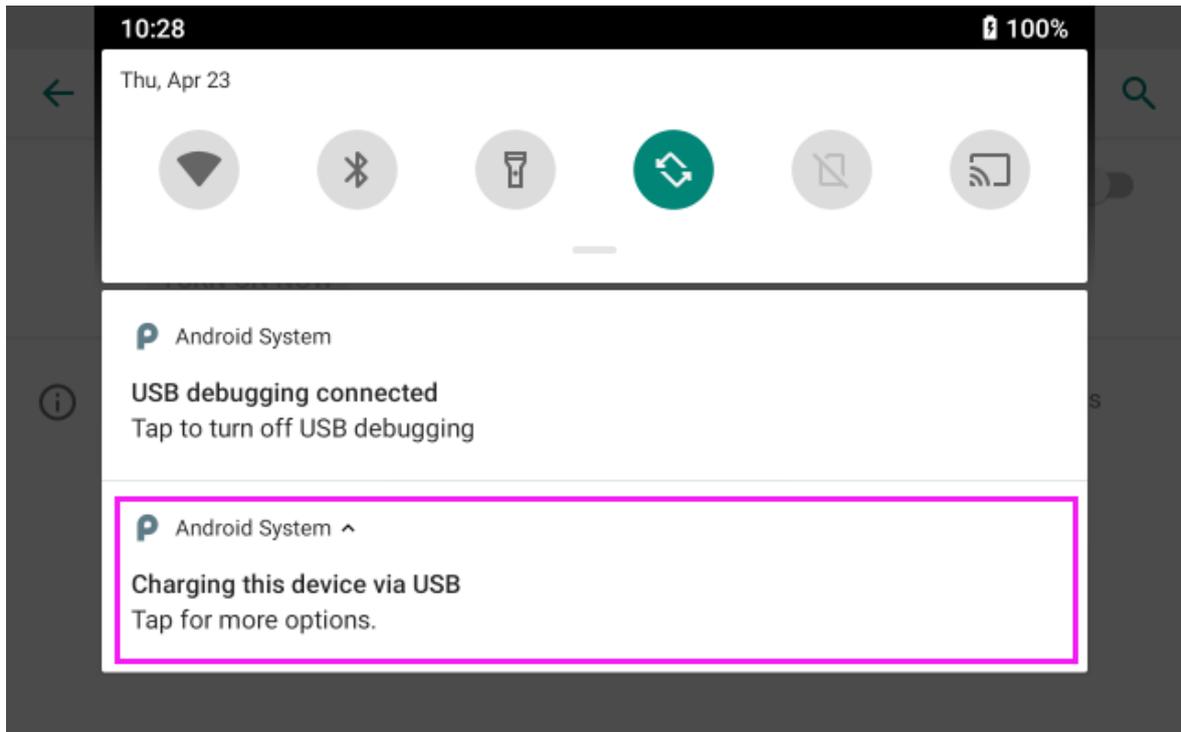
Chapter 3. Using VT-7 Pro Hardware Interface

3.1 Transferring Files between Computer and the Device

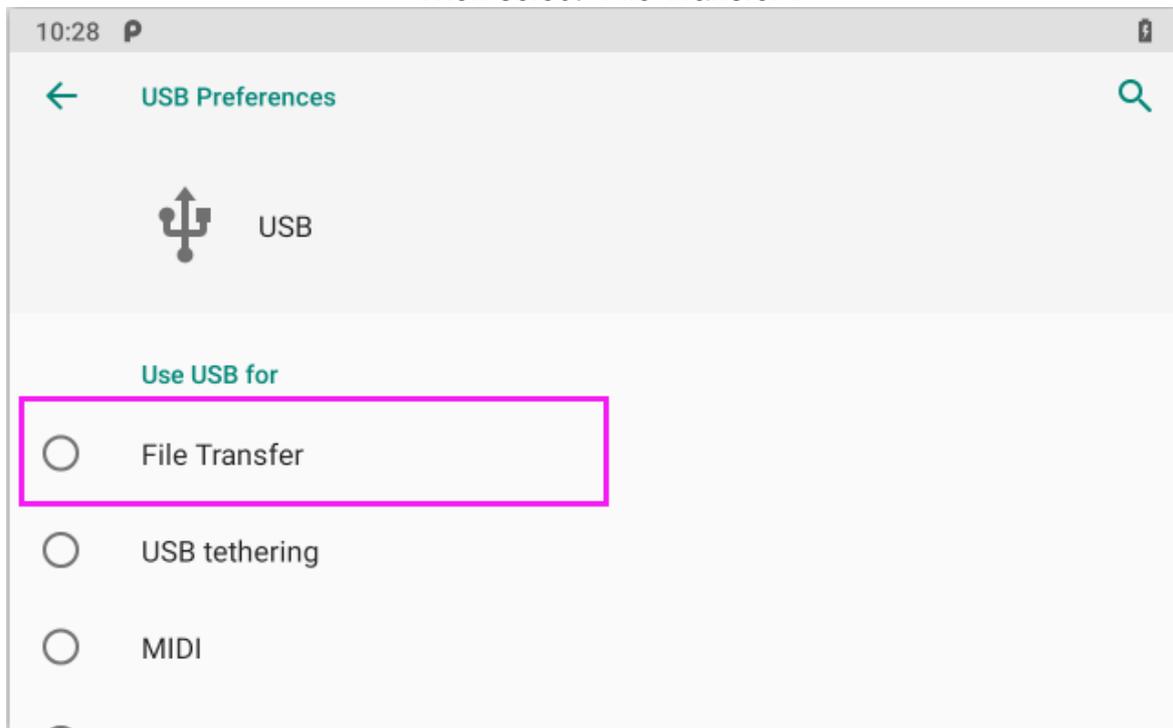
You can transfer files, such as pictures or audio files, between your computer and your device using the provided USB cable.

3.1.1 Connection

Connect the device to the computer by using the USB type-c cable, and open the prompt message of the device. Refer to the following figure, and click “USB charging this device” to charge the battery.



Then select "File Transfer".



Find out the "Device" in "This PC".



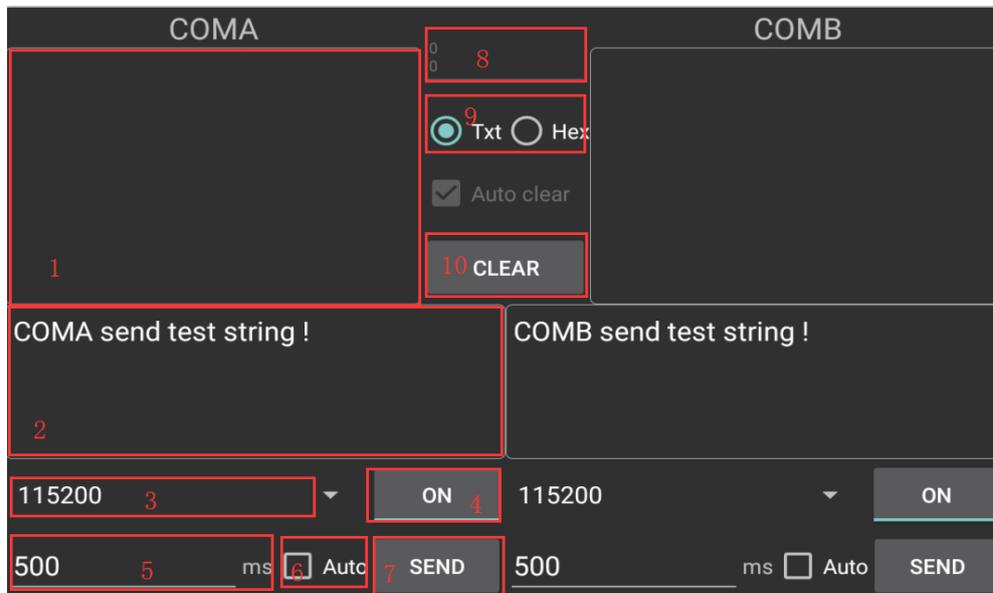
3.2 Using Serial Port Demo App

Serial Port ID: COM1, COM2

Correspondence between RS232 tail line and device node.

COM1=/dev/ttyHSL0.

COM2=/dev/ttyHSL1.



1. The boxes in red means the text box for the COM port information received, to display information received by corresponding COM port.
2. The boxes in red means the text input box for the COM port information sent, to edit information sent by corresponding COM port.
3. The left box in red means Baud rate Drop-down selection box, to select corresponding COM port Baud rate.
4. The right box in red means COM port switch, to switch on/off corresponding COM port.
5. The boxes in red means auto send interval time setting.
6. The boxes in red means auto send mode selection, and COM port info. sending button.
7. COM port info. sending button.
8. The boxes in red means text rows counting in the information receiving text box, the above numbers corresponding to the COM port information receiving box on the left, the following numbers corresponding to the one on the right.
9. The boxes in red means send/receive information codec format option button, select Txt to send info. with String codec, select Hex to send info. with Hexadecimal format codec.
10. The boxes in red means manual clear button, click to clear both info. in the COM port info. receiving boxes.

3.3 Using ACC

Please see “1.3 Extended cable definition” for ACC Interface details.

3.3.1 ACC Connection Instruction

Figure 1-1, connecting the tablet with vehicle power supply through extended cable or docking station, and connecting ACC wire on extended cable of the tablet with ACC of vehicle.

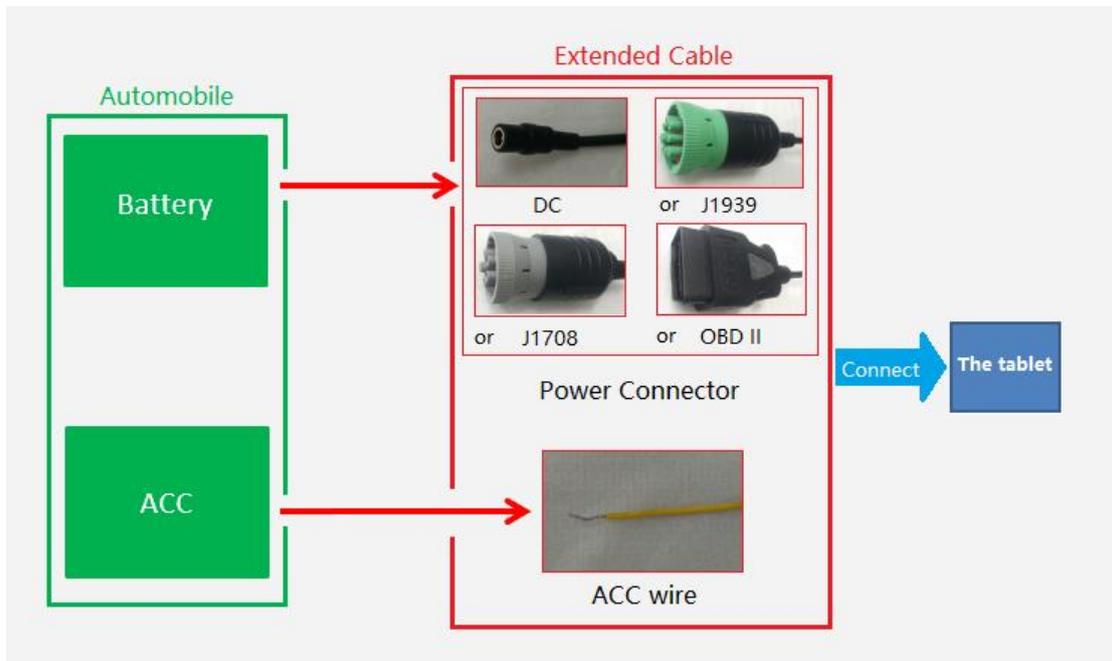


Figure 1-1

3.3.2 ACC Functions

- I. Power on the tablet by ACC.
- II. Light up the screen by ACC.
- III. To turn off the screen by ACC trigger based upon the setting delayed time.
- IV. To shut down the tablet by ACC trigger based upon the setting delayed time.

Note:

- a) The ACC is triggered by the electric level.
- b) Function of “Power on the tablet by ACC” can’t be modified from the system.

3.3.3 ACC Settings Path

Find ACC Settings from Settings as the Figures2-1 shown:

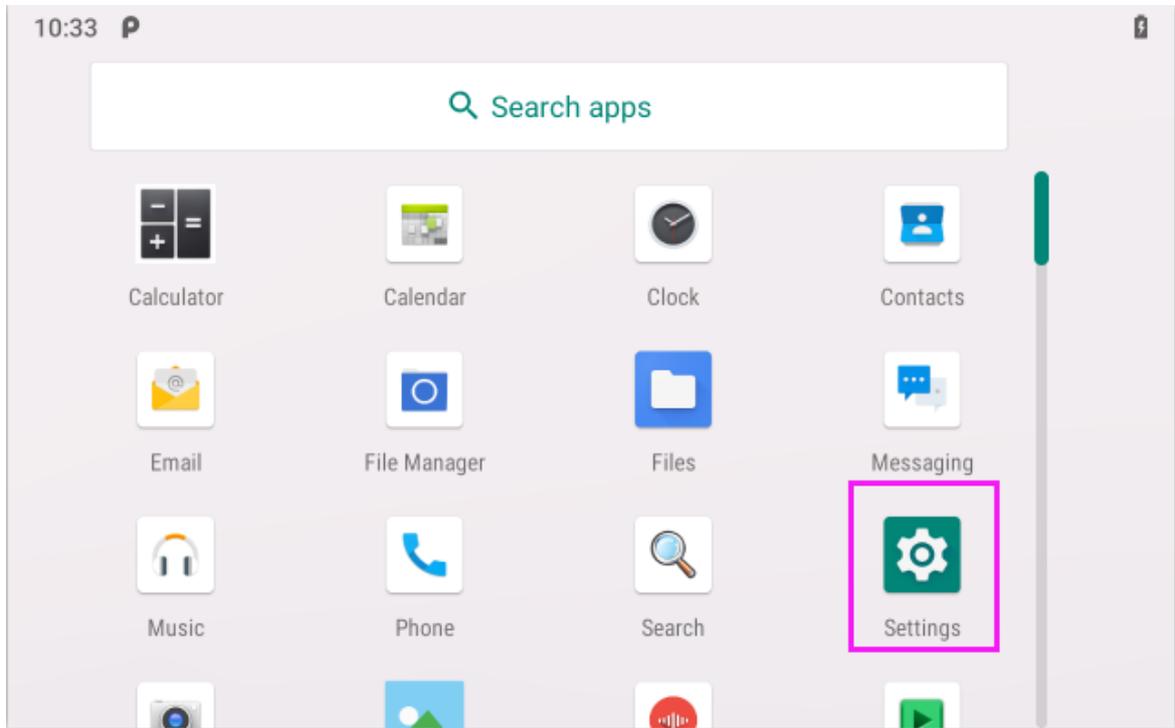


Figure 2-1

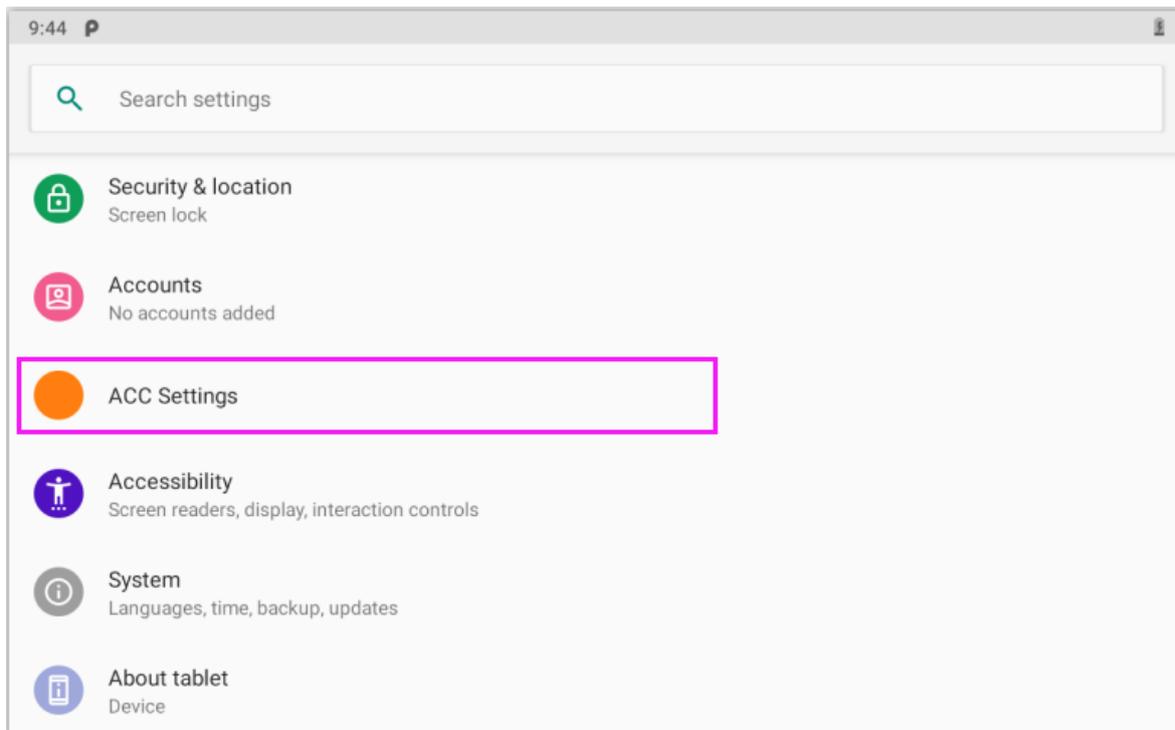


Figure 2-2

3.3.4 ACC Settings

Note: The following text description corresponds to the red number in the figure.

1. ACC controls the switch of the three functions of turning on the screen, turning off the screen and turning off the power;
2. ACC controls switch to turn off the screen function;
3. Click to pop up the dialog box in Figure 2-6 to set the delay time to turn off the screen display after ACC is disconnected;
4. Display current delay time;
5. ACC controls switch to turn off the tablet;
6. After clicking, the dialog box shown in Figure 2-7 to set the delay time for shutdown after ACC is disconnected.
7. Display current delay time;

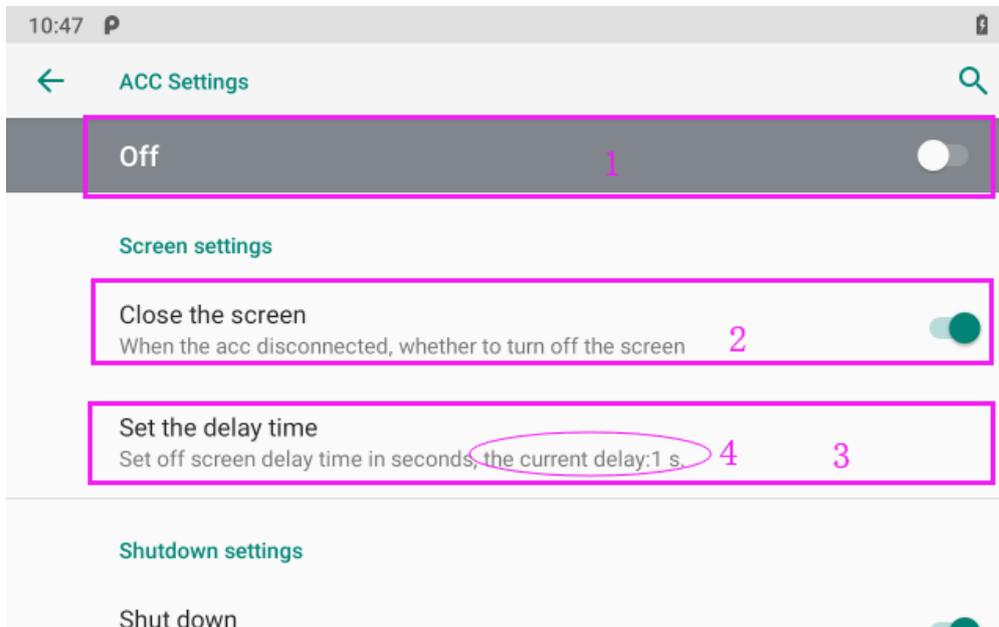


Figure 2-4 ACC Settings interface 1

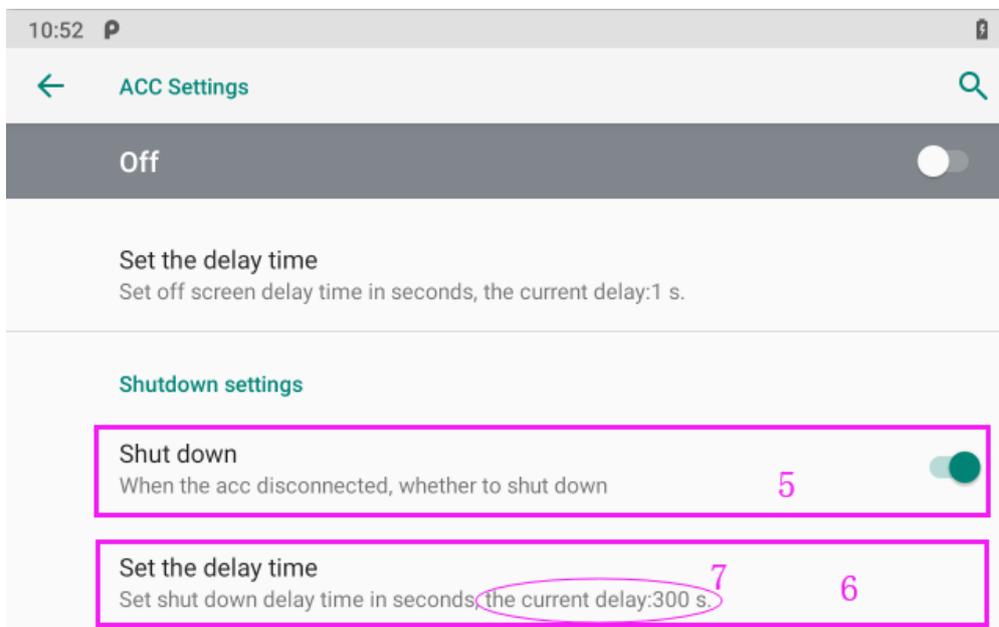


Figure 2-5 ACC Settings interface 2

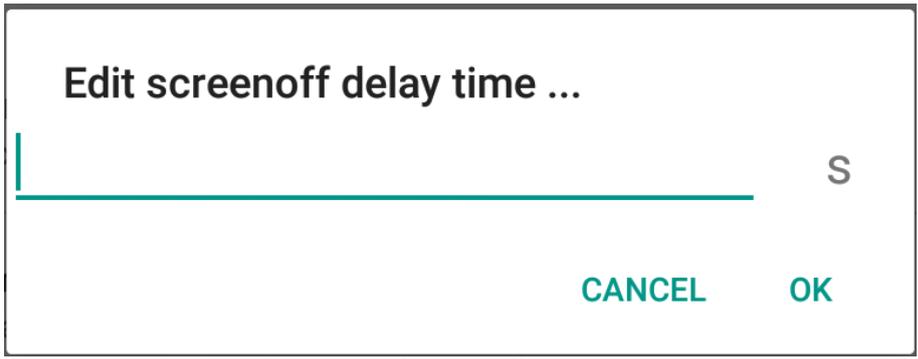


Figure 2-6 Screen off delay time setting dialog box

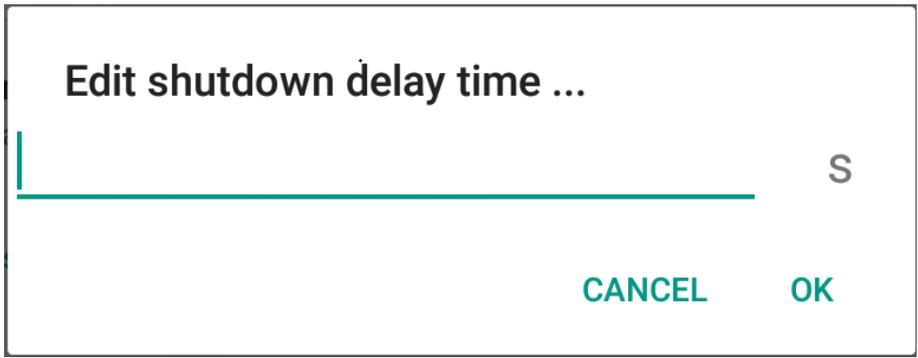


Figure 2-7 Shut down delay time setting dialog box

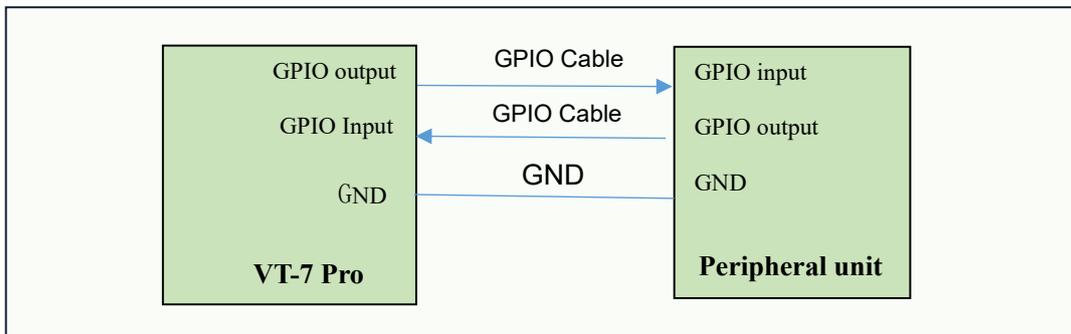
3.4 Using GPIO

3.3.1 GPIO Tail Lines Instruction

Regarding the definition diagram of GPIO interface, please see the details in Chapter “1.5 Cable Definition”.

3.3.2 GPIO Typical Connection

The following figure is a typical connection method of GPIO. In order to ensure communicate normally, please connect the GPIO interface of VT-7 Pro as shown in the following figure.



3.3.3 GPIO Specification

VT-7 Pro GPIO Specification Descriptions								
PINs	Wire Color	Description	Logic Symbol	Min	TYP.	Max	Unit	Note
GPIO1	Red	Digital Input	VIH	3	5	25	V	Positive Trigger input
			VIL	0	0	0.6	V	
GPIO2	White	Digital Input	VIH	3	5	25	V	Positive Trigger input
			VIL	0	0	0.6	V	
GPIO3	Green	Digital Output	VOH	3	-	4	V	Internal weak pull-up
			VOL	0	-	0.1	V	
GPIO4	Yellow	Digital Output	VOH	3	-	4	V	Internal weak pull-up
			VOL	0	-	0.1	V	
GND	Black	Ground						

Note: Black wire (Ground) should be connected to common ground of connecting devices.

3.3.4 GPIO_DEMO Instruction

a) Introduction

This software is only used for developing GPIO functions of device, and it isn't suitable for factory's standard software.

b) GPIO_DEMO Main Interface

Name	Direction	State
GPIO33(REDF)	IN	LOW
GPIO66(WHITE)	IN	LOW
GPIO22(GREEN)	OUT	HIGH
GPIO23(YELLOW)	OUT	HIGH

At the bottom of the interface, there are two buttons: **READ_IN** and **SET_OUT_LOW**.

Figure 2-1

c) Introduction of Main Components

The part marked with a red box in Figure 2-2.

1. Name: means the port names of GPIO.
2. Direction: means the input or output direction of the ports.
3. State: means the current level state of the GPIO ports.

GPIO_DEMO		
Name	Direction	State
GPIO33(REDF)	IN	LOW
GPIO66(WHITE)	IN	LOW
GPIO22(GREEN)	OUT	HIGH
GPIO23(YELLOW)	OUT	HIGH
READ_IN		SET_OUT_LOW

Figure 2-2

The button marked with a red box shown in Figure 2-3. It can read the value at once, when GPIO is set as the input direction.

GPIO_DEMO		
Name	Direction	State
GPIO33(REDF)	IN	LOW
GPIO66(WHITE)	IN	LOW
GPIO22(GREEN)	OUT	HIGH
GPIO23(YELLOW)	OUT	HIGH
READ_IN		SET_OUT_LOW

Figure 2-3

The button marked with a red box shown in Figure 2-4 used to set the high or low of GPIO output at once.

9:57 P GPIO_DEMO

Name	Direction		State
GPIO33(REDF)	IN	▼	LOW
GPIO66(WHITE)	IN	▼	LOW
GPIO22(GREEN)	OUT	▼	HIGH
GPIO23(YELLOW)	OUT	▼	HIGH

READ_IN SET_OUT_LOW

Figure 2-4

3.5 Using NFC Function

3.5.1 NFC Activation Method

Activate the NFC function according to Figure 1 to 4.

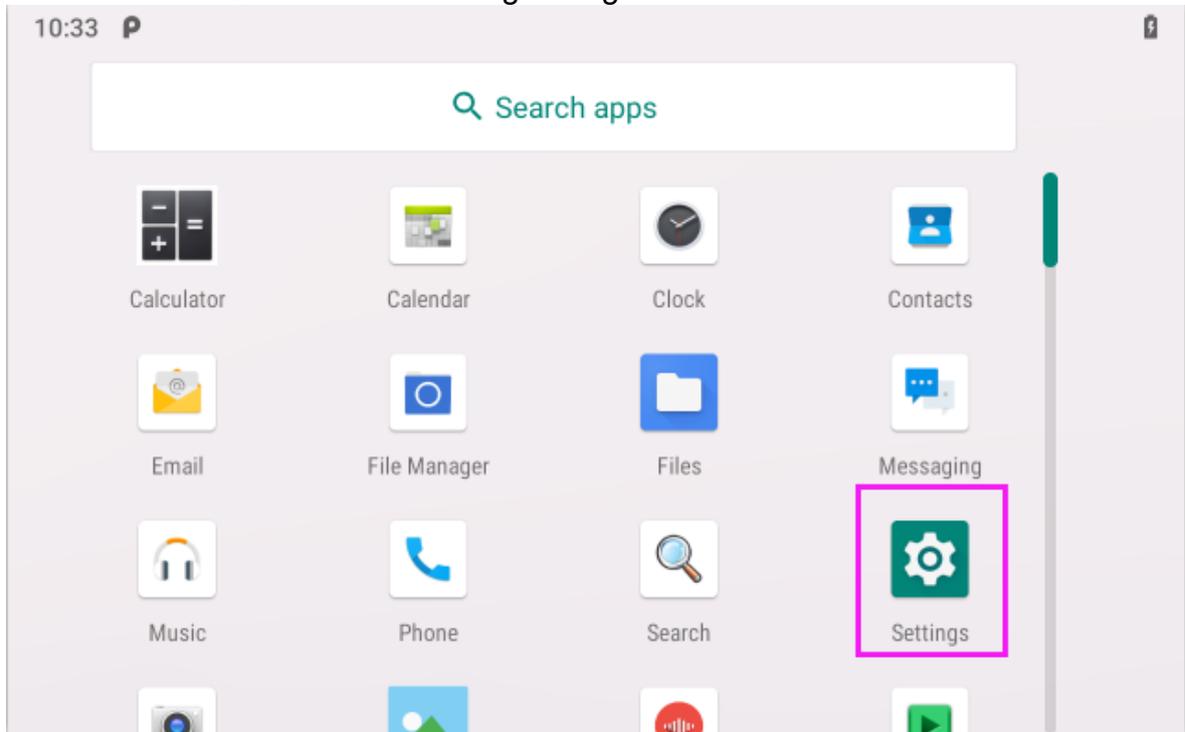


Figure 1

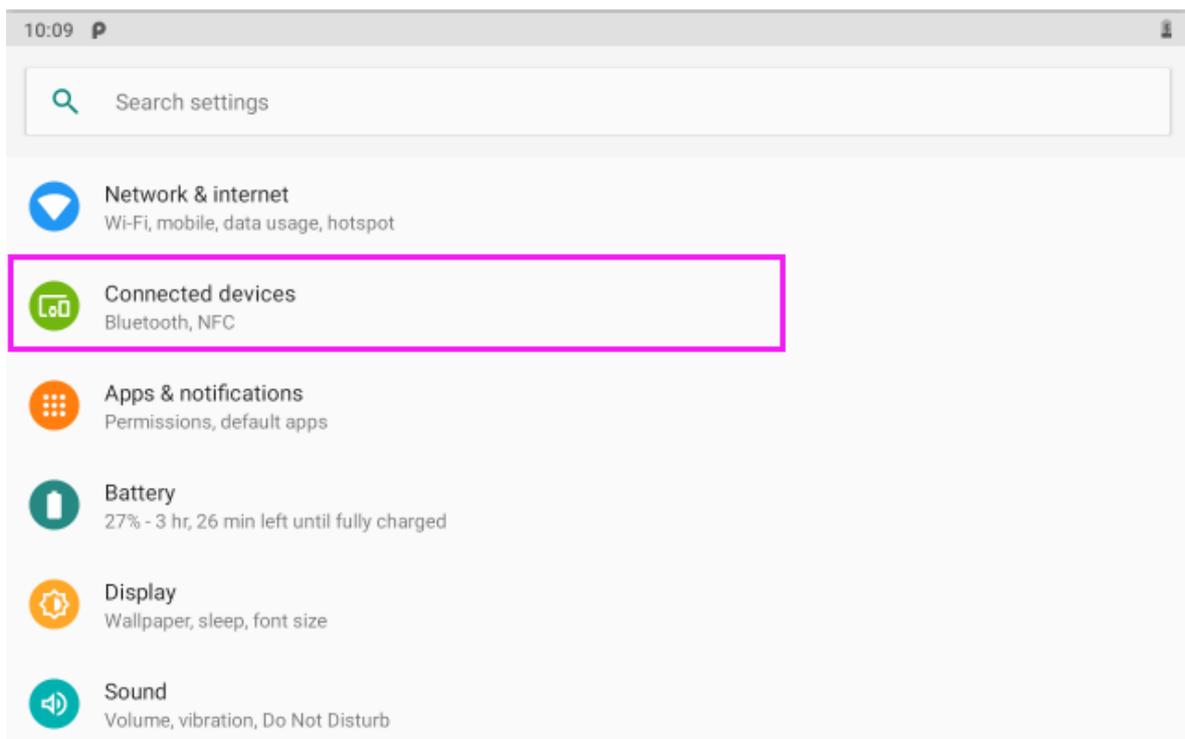


Figure 2

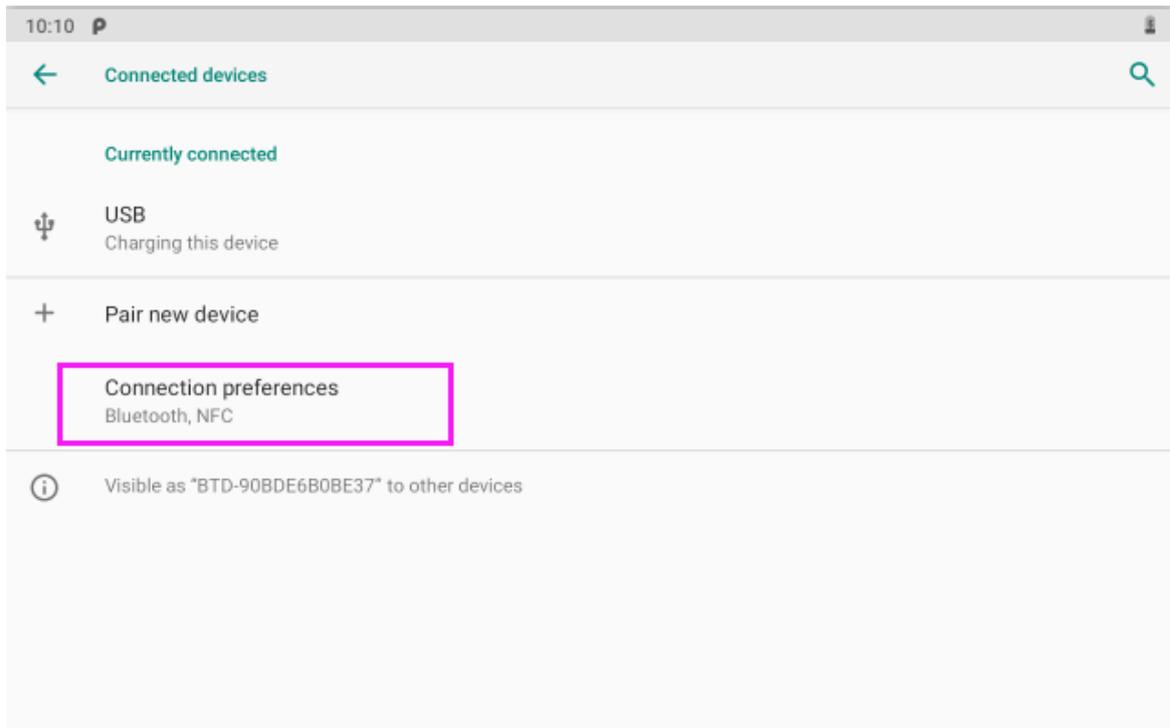


Figure 3

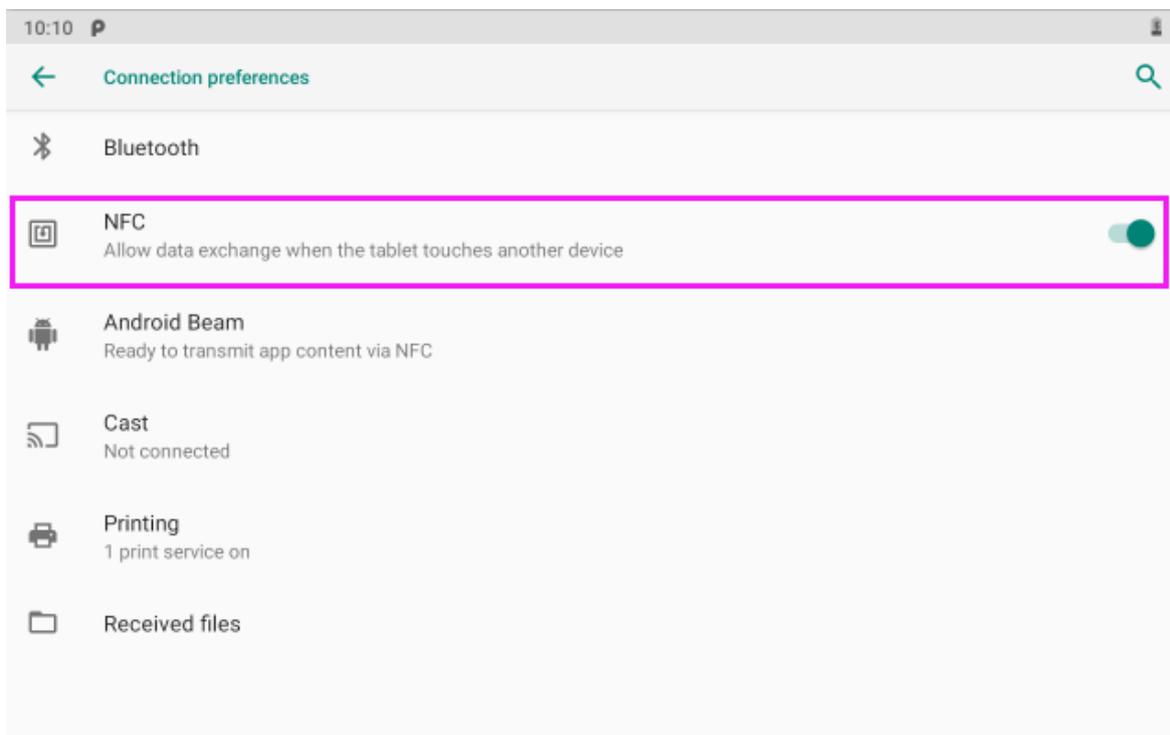


Figure 4

3.5.2 NFC Usage Demo

After activating NFC function, place the NFC card close to the induction area (as Figure 4 shows). A prompt tone would be heard if the card is successfully identified. If the card contains some information (such as manufacturer's information), there will be an interface popped up as shown in Figure 5. (Note: If the card has been identified, it does not always pop up an interface, but there must be a prompt tone.)



Figure 5

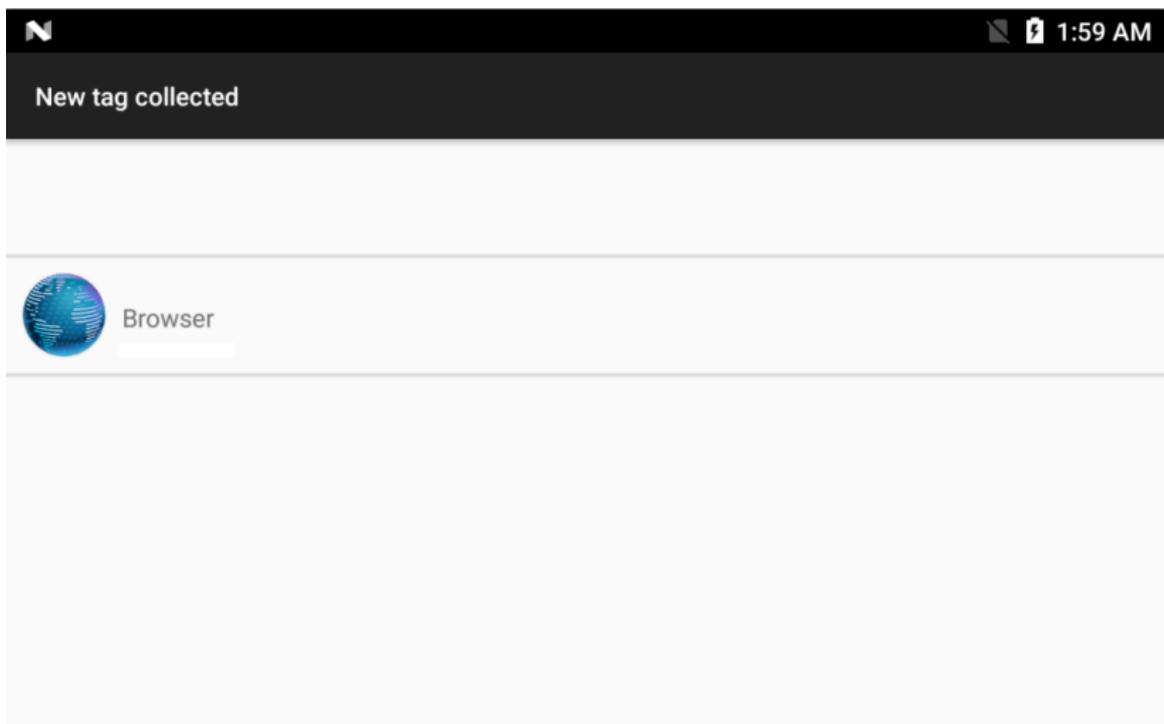
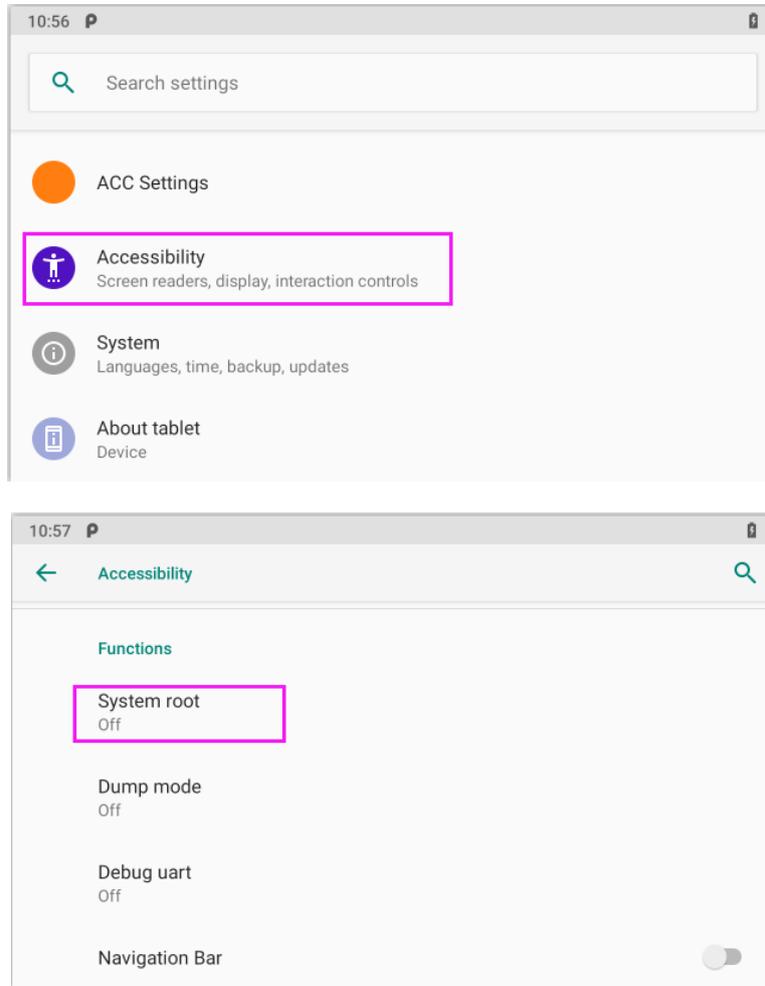


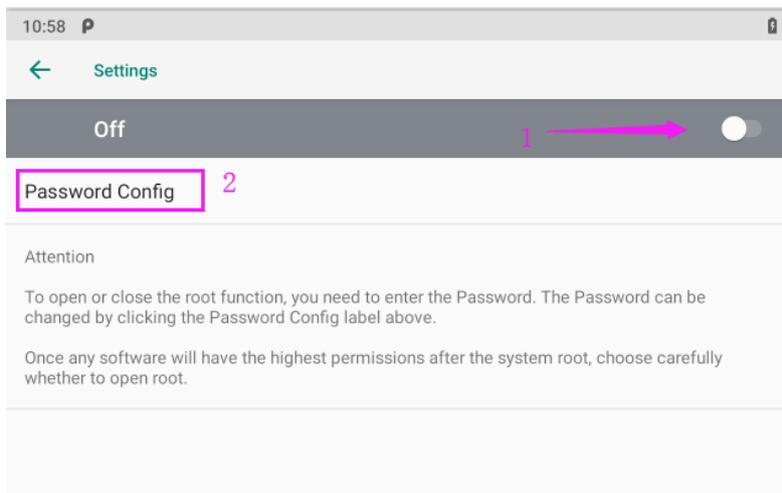
Figure 6

3.6 System Root Switch Usage Guide

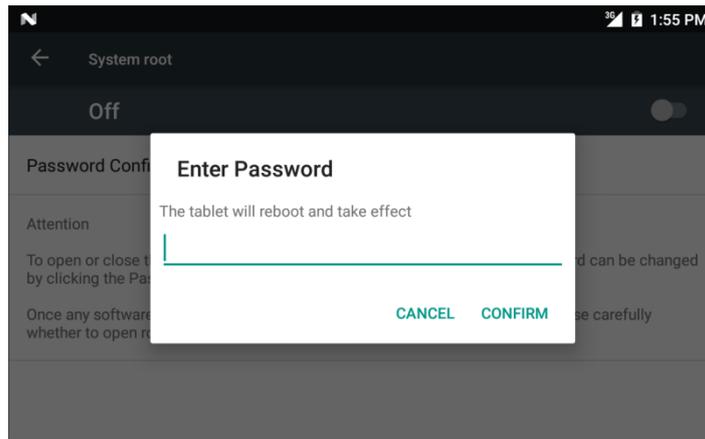
3.6.1 Refer to the following figure to enter the Root privilege (on/off) function setting interface.



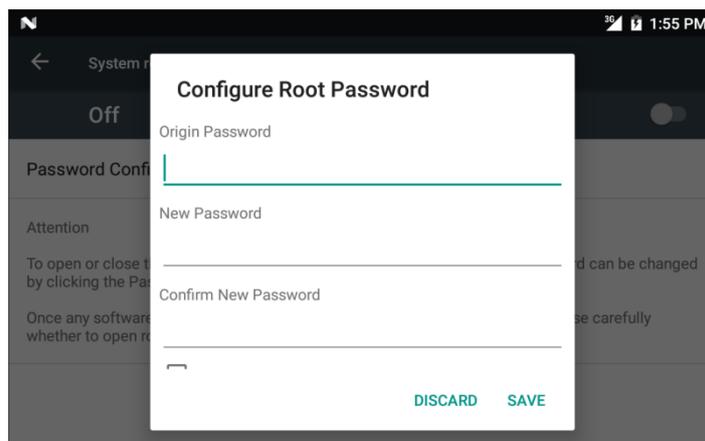
3.6.2 The root switch setting interface is as follows. In the figure, “1” is the Root permission (on/off) switcher. In the figure, “2” to modify the password. Initial password: qwertyuiop



3.6.3 The dialog box to set the Root Permissions (on/off)



3.6.4 Dialog box for modifying the password required for the root permission (on/off) status



Note:

If restore the factory settings, the root switch state will be reset to OFF, and the password is restored to the initial.

3.7 OBD-II Interface (optional)

3.7.1 Overview

The OBD-II interface of VT-7 Pro is recommend for car and commercial vehicle applications. Second Generation (OBD-II) is a set of standards for implementing a computer based system to control emissions from vehicles by Society of Automotive Engineers (SAE) in 1988. It was first introduced in the United States in 1994, and became a requirement on all 1996 and newer US vehicles. Other countries, including Canada, parts of the European Union, Japan, Australia, and Brazil adopted similar legislation. A large portion of the modern vehicle fleet supports OBD-II or one of its regional flavors.

Among other things, OBD-II requires that each compliant vehicle be equipped with a standard diagnostic connector (DLC) and describes a standard way of

communicating with the vehicle's computer, also known as the ECU (Electronic Control Unit). A wealth of information can be obtained by tapping into the OBD bus, including the status of the malfunction indicator light (MIL), diagnostic trouble codes (DTCs), inspection and maintenance (I/M) information, freeze frames, VIN, hundreds of real-time parameters, and more.

3.7.2 Support protocol

- ISO 15765-4 CAN (11 bit ID, 500 kbaud)
- ISO 15765-4 CAN (29 bit ID, 500 kbaud)
- ISO 15765-4 CAN (11 bit ID, 250 kbaud)
- ISO 15765-4 CAN (29 bit ID, 250 kbaud)
- SAE J1850 PWM (41.6 kbaud)
- SAE J1850 VPW (10.4 kbaud)
- ISO 9141-2 (5 baud init)
- ISO 14230-4 KWP (5 baud init)
- ISO 14230-4 KWP (fast init)

3.7.3 Application fields

Academic project

- Vehicle diagnostic scanning tools
- Digital dashboard
- Fleet tracking and management
- OBD data-logging record

3.8 J1939 Interface (optional)

3.8.1 Overview

The J1939 interface of VT-7 Pro is recommend for heavy-duty truck applications. And it supports SAE J1939 and SAE J1708/J1587 protocols.

SAE J1939 (hereinafter referred to as J1939) is the recommendation of Society of Automotive Engineers (SAE), which provides a standard architecture for communications between electronic components on medium-heavy vehicles. It is developed and written by Track & Bus Control and Communications Network Subcommittee, which is the subordinate of Track & Bus Electrical & Electronics Committee.

J1708 is a SAE standard based on the RS-485, which can be used in agricultural vehicles, commercial vehicles and heavy machinery, and is released and maintained by the SAE. Mainly used for serial communication between the heavy vehicle ECU or between the vehicle and the computer. It's associated with the OSI model, J1708 mainly defines the physical layer. The usual high-level protocol to run on J1708 is SAE J1587 (TMC/SAE joint of microcomputer system for electronic data interchange in heavy vehicles) and SAE J1922 (used for electronic control transmission interface of diesel vehicles for medium and heavy roads).

3.8.2 Support protocol

- SAE J1939
- SAE J1708/J1587

3.8.3 Application fields

- Fleet management and tracking devices
- Vehicle diagnostic scanning tools and code reader
- Sensor with J1939 / J1708 and CAN Bus protocol
- Digital dashboard

3.9 CAN Bus Interface (optional)

3.9.1 Overview

CAN Bus is a robust vehicle bus standard designed to allow microcontrollers and devices to communicate with each other's applications without a host computer. It is a message-based protocol, designed originally for multiplex electrical wiring within automobiles to save on copper, but can also be used in many other contexts. For each device the data in a frame is transmitted sequentially but in such a way that if more than one device transmits at the same time the highest priority device is able to continue while the others back off. Frames are received by all devices, including by the transmitting device.

3.9.2 support protocol

- ISO 11898-2
- ISO 11898-3

3.9.3 Application fields

- Passenger vehicles, trucks, buses
- Agricultural equipment
- Electronic equipment for aviation and navigation
- Industrial automation and mechanical control

Chapter 4. Docking Station Using Instruction

4.1 Docking Station Install Steps

4.1.1 Align the VT-7 Pro to the limit slot of docking station as Fig 4.1 shown.



Fig. 4.1

4.1.2 Pull the buckle up as the Fig.4.2 shown.

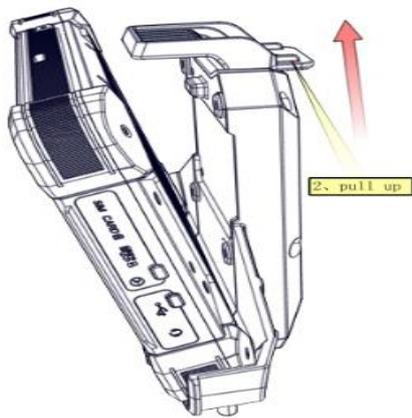


Fig. 4.2

4.1.3. Push VT-7 Pro to make it attached the docking via snap joint, as Fig. 4.3 shown.

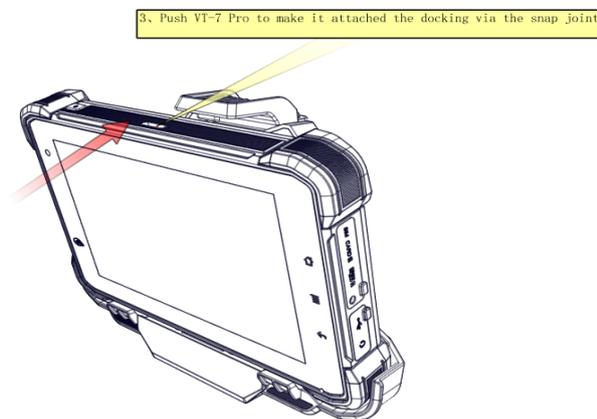


Fig. 4.3

4.1.4 Release and finish the installation as Fig.4.4 shown.

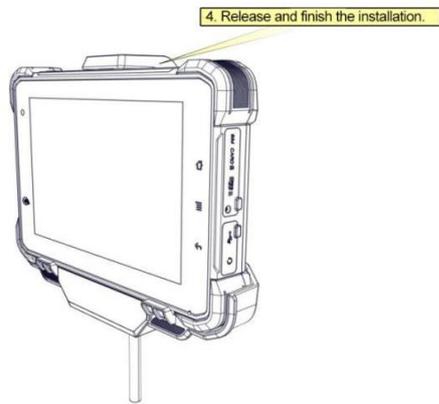


Fig 4.4

4.2 Docking Station Disassemble Steps

4.2.1 Stretch upwards the buckle to release it from the device, as Fig 4.5 shown.

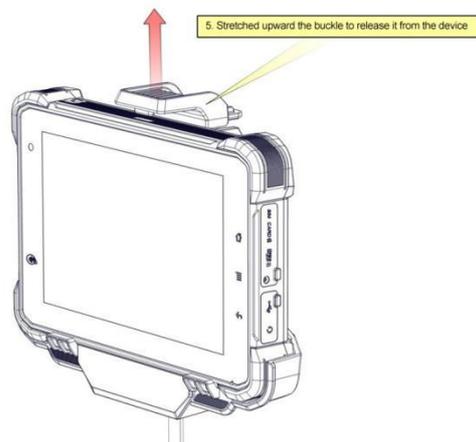


Fig. 4.5

4.2.2. Take out the device as Fig.4.6 shown.

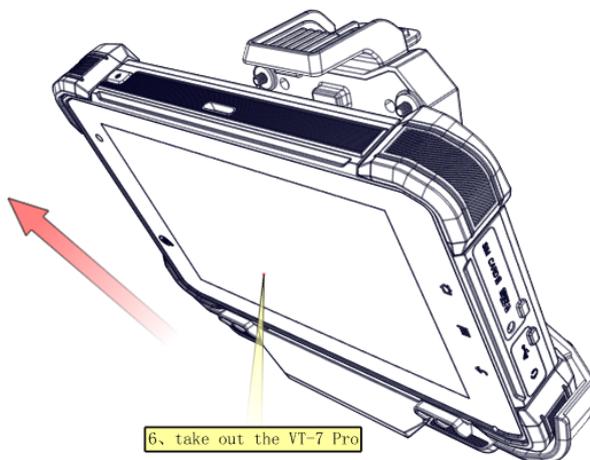


Fig. 4.6

Chapter 5 . Accessories

5.1 Accessories (Choose 1 of 4)



Docking Station	1pc
USB to Type-C cable	1pc
Allen Wrench	1pc
Screws for RAM	4pc
Screws for SIM card	2pc

5.2 Optional accessories



1. Docking Station Lock	1 pc
2. DC (12V)	1 pc
3. J1939 female to open cable	1 pc
4. OBD-II female to open cable	1 pc

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