VT-SBC-RK3566-NT Single Board Computer



User Manual

Version: 1.4

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VT-SBC-RK3566-NT | User Manual

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Revision History

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Foreword

Thank you for purchasing VT-SBC-RK3566-NT single board computer ("the Board" or "the Product"). This manual intends to provide guidance and assistance necessary on setting up, operating or maintaining the Product. Please read this manual and make sure you understand the functionality of the Product before putting it into use.

Intended Users

This manual is intended for:

- Embedded software developer
- Custom development software engineer
- Other technically qualified personnel

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Technical Support and Assistance

Should you have any question about the Product that is not covered in this manual, contact your sales representative for solution. Please include the following information in your question:

- Product name and PO number;
- Complete description of the problem;
- Error message you received, if any.

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Symbology

This manual uses the following signs to prompt users to pay special attention to relevant information.

\triangle	Caution for latent damage to system or harm to personnel
ì	Attention to important information or regulations

General Safety Instructions

The Product is supposed be installed by knowledgeable, skilled persons familiar with local and/or international electrical codes and regulations. For your safety and prevention of damage to the Product, please read and observe carefully the following safety instructions prior to installation and operation. Keep this manual well for future reference.

- Do not disassemble or otherwise modify the Product. Such action may cause heat generation, ignition, electronic shock, or other damages including human injury, and may void your warranty.
- Keep the Product away from heat source, such as heater, heat dissipater, or engine casing.
- Do not insert foreign materials into any opening of the Product as it may cause the Product to malfunction or burn out.
- To ensure proper functioning and prevent overheating of the Product, do not cover or block the ventilation holes of the Product.
- Follow the installation instructions with the installation tools provided or recommended.
- The use or placement of the operation tools shall comply with the code of practice of such tools to avoid short circuit of the Product.
- Cut off the power before inspection of the Product to avoid human injury or product damage.

Precautions for Power Cables and Accessories

- Use proper power source only. Make sure the supply voltage falls within the specified range.
- Place the cables properly at places without extrusion hazards.
- Please avoid short circuit of the battery during transportation or operation at high temperatures.
- Cleaning instructions:
 - Power off before cleaning the Product
 - Do not use spray detergent
 - Clean with a damp cloth
 - Do not try to clean exposed electronic components unless with a dust collector

Power off and contact Vantron technical support engineer in case of the following faults:

- The Product is damaged
- The temperature is excessively high
- Fault is still not solved after troubleshooting according to this manual

Do not use in combustible and explosive environment:

- Keep away from combustible and explosive environment
- Keep away from all energized circuits
- Unauthorized removal of the enclosure from the device is not allowed
- Do not change components unless the power cable is unplugged
- In some cases, the device may still have residual voltage even if the power cable is unplugged. Therefore, it is a must to remove and fully discharge the device before replacement of the components.

CHAPTER 1 INTRODUCTION

1.1 Product Overview

Vantron Technology recently unveiled NiceLit series to its embedded board family that features an efficient AI processing unit to provide quality computing power for lightweight AIoT applications.

NiceLit series is powered by Rockchip RK3566/RK3566 processor that integrates quad-core ARM Cortex-A55 CPU and Mali G52 GPU to provide optimized performance at lower power consumption. Compact as it is, yet this series provide a range of customer expansion options and supports multiple operating systems to meet the requirements of different application purposes.

VT-SBC-RK3566-NT offers two HDMI ports that support duplicate mode with resolution up to 4K + 1080P to offer optimized display performance.

NiceLit series targets at industrial customization markets of IoT endpoints and software platforms such as industrial panel PC, trail transit, banking, automotive control center, etc.

Terminology	Description	
NC	No connection	
VCC	Voltage common collector	
GND	Ground	
/	Active low signal	
+	Positive of difference signal	
-	Negative of difference signal	
1	Input	
O Output		
I/O	Input/output	
Р	Power or ground	
A	Analog	
OD	Open drain	
CMOS	3.3 V CMOS	
LVCMOS	Low Voltage CMOS	
LVTTL	Low Voltage TTL	
CK/CLK	Clock	
PWM	Pulse-width modulation	
MISO	Master in slave out	
MOSI	Master out slave in	
WP	Write protection	

1.2 Terminology

1.3 Block Diagram



1.4 Specifications

VT-SBC-RK3566-NT				
	CPU	RK3566, Quad-core Cortex-A55, 1.8GHz (Max.)		
	GPU	Mali-G52		
System	Memory	4GB LPDDR4 (Optional: 8GB)		
	Storago	64GB eMMC		
	Storage	1 x Micro SD slot		
Communication	Ethernet	1 x RJ45, 10/100/1000Mbps (PoE supported)		
connuncation	Wi-Fi & BT	Wi-Fi 2.4GHz/5GHz & BT 5.0		
		1 x Dual-lane MIPI DSI		
Media	Display	2 x Micro HDMI, supporting 4K + 1080P		
		(Duplicate mode supported)		
	Camera	1 x MIPI CSI		
	Audio	1 x 3.5mm Combo audio jack		
		2 x USB 2.0 Host, Type A		
	USB	2 x USB 3.0 Host, Type A		
		1 x USB 2.0, Type-C (power in/data transfer/OTG)		
_	GPIO	3 x GPIO		
I/Os	12C	3 x I ² C		
	SPI	2 x SPI		
	UART	4 x UART (including one for debugging)		
	PWM	2 x PWM		
	POWER_ON	1 x POWER_ON		
_	Antenna	1 x Wi-Fi & BT antenna		
Power	Input	5V/3A DC, USB Type-C		
	Operating system	Android 11, Debian 11		
Software	Device management	BlueSphere MDM (Android devices only)		
		BlueSphere OTA		
	Dimensions	85mm x 56mm		
Mechanical	Weight	55g (+5g)		
		Operating: -20°C~+70°C		
Environment	Temperature	Storage: -40°C~+85°C		
Condition	Humidity	RH 5%-95% (Non-condensing)		

1.5 Operating system

VT-SBC-RK3566-NT supports Debian 11 and Android 11 operating systems.

1.6 Mechanical Dimensions

• 85mm x 56mm



1.7 Power Supply and Consumption

VT-SBC-RK3566-NT works with 5V/3A DC power input supplied via the USB Type-C interface.

The power consumption of the Board is about 5W at working mode. It should be pointed out that power consumption is largely determined by the RAM, storage capacity, and other configurations of the board.

1.8 Environmental Specifications

VT-SBC-RK3566-NT works at a temperature ranging from -20°C to +70°C and is designed to be stored at a temperature ranging from -40°C to +85°C and at relative humidity between 5%-95% for non-condensing purpose.

CHAPTER 2 CONNECTOR DESCRIPTION

2.1 Product Layout



The board I/Os will be described in detail in 2.4 Connectors and Jumpers following the sequencing numbers provided here.

2.2 Memory and Storage

2.2.1 LPDDR4 RAM

VT-SBC-RK3566-NT is equipped with a 4GB LPDDR4 RAM by default, and users also have the option of 8GB RAM.

2.2.2 eMMC Flash

VT-SBC-RK3566-NT offers an eMMC 5.1 flash of 64GB. It is used as the default boot and storage device.

2.2.3 Micro SD Slot

VT-SBC-RK3566-NT implements a Micro SD slot for expansion of RAM/storage capacity. It supports hot plug of the Micro SD card.

2.2.4 EEPROM

VT-SBC-RK3566-NT provides a 2Kb EEPROM to store hardware configuration information.

2.3 Identification of Pin 1

Unless otherwise stated, pin 1 of a connector is seated on a square pad that is different from the round pads used for other pins. Sometimes, pin 1 is next to a trigonal mark on the board. When there are two rows of pins on a connector, the row with pin 1 is composed of odd numbers and the other is composed of even numbers.





Usually, there will be numbers or marks next to the pins of a connector on the board to indicate the pinouts.



2.4 Connectors and Jumpers

This section is going to brief the connectors/jumpers on the Board with corresponsive pinout description.

2.4.1 J8 USB 2.0 Type-C (1)

VT-SBC-RK3566-NT is powered up by an external power source via the USB 2.0 Type-C, which supports USB OTG and data transmission as well.

2.4.2 U5 USB 2.0 Type-A (2)

VT-SBC-RK3566-NT implements two USB 2.0 Type-A ports that are stacked in layers for connecting the peripherals.

2.4.3 U8 USB 3.0 Type-A (3)

VT-SBC-RK3566-NT implements two stacked USB 3.0 Type-A ports for connecting the peripherals.

2.4.4 J6 Ethernet Jack (4)

VT-SBC-RK3566-NT has one RJ45 Ethernet jack which conforms to IEEE 802.3u/ab, supporting 3.3V/2.5V/1.8V RGMII with transmission rate up to 1000Mbps.

The RJ45 Ethernet jack is also IEEE 802.3af (PoE) compliant to work as a power sourcing equipment that supplies power to a client device after connecting a PSE module.

There are two signal indicators on the Ethernet jack. The solid green indicator means it supports 1000Mbps transmission rate and the blinking amber indicator means the network is functioning properly and the transmission rate is 10/100Mbps.

2.4.5 J4 MIPI DSI (5)

VT-SBC-RK3566-NT offers a dual-lane MIPI DSI connector for connecting displays.

Specifications: 1 x 30, 0.5mm, 0.5A (Max.), SMT, Vert., RoHS



Pinout description:

Pin	Name	Туре	Description
1	MIPI_DSI_GPIO	0	LCD control output, active high (3.3V level)
2	VCC3V3	Р	Power supply 3.3V
3	MIPI_DSI_PWM	0	LCD backlight PWM control output (3.3V level)
4	VCC3V3	Ρ	Power supply 3.3V(controllable 错误!未 定义书签。)
5	MIPI_TX_D3P	0	MIPI_DSI differential lane 3 + (3.3V level)

6	GND	Р	Ground
7	MIPI_TX_D3N	0	MIPI_DSI differential lane 3 - (3.3V level)
8	MIPI_DSI_SDA	I/O	MIPI_DSI I2C data
9	MIPI_TX_D2P	0	MIPI_DSI differential lane 2 + (3.3V level)
10	MIPI_DSI_SCL	0	MIPI_DSI I2C clock
11	MIPI_TX_D2N	0	MIPI_DSI differential lane 2 - (3.3V level)
12	GND	Р	Ground
13	NC		
14	MIPI_TX_D0P	0	MIPI_DSI differential lane 0 + (3.3V level)
15	NC		
16	MIPI_TX_DON	0	MIPI_DSI differential lane 0 - (3.3V level)
17	NC		
18	GND	Р	Ground
19	NC		
20	MIPI_TX_CLKP	I	MIPI_DSI differential clock lane + (3.3V level)
21	NC		
22	MIPI_TX_CLKN	I	MIPI_DSI differential clock lane - (3.3V level)
23	NC		
24	GND	Р	Ground
25	NC		
26	MIPI_TX_D1P	0	MIPI_DSI differential lane 1 + (3.3V level)
27	NC		
28	MIPI_TX_D1N	0	MIPI_DSI differential lane 1 - (3.3V level)
29	NC		
30	GND	Р	Ground

2.4.6 U14/U15 Micro HDMI (6)

VT-SBC-RK3566-NT implements two Micro HDMI ports supporting duplicate mode.





Both ports support hot plug, allowing for convenient and seamless connection of display devices. Micro HDMI 2 is the primary display port and must be connected to enable display output from Micro HDMI 1. It is important to note that connecting only Micro HDMI 1 without Micro HDMI 2 will result in an invalid connection and no display output.

2.4.7 J5 MIPI CSI (7)

VT-SBC-RK3566-NT implements a MIPI DSI interface for connecting a camera.

Specifications: 1 x 30, 0.5mm, 0.5A (Max.), SMT, Vert., RoHS



Pinout description:

Pin	Name	Туре	Description
1	NC		
2	VCC3V3	Р	Power supply 3.3V
3	NC		
4	I2C3_SDA_M0	I/O	I2C3 data/address (1.8V level)
5	MPI_CSI_DP3	I	MIP_CSI differential lane 3 + (1.8V level)
6	12C3_SCL_M0	0	I2C3 clock (1.8V level)
7	MIPI_CSI_DN3	I	MIP_CSI differential lane 3 - (1.8V level)
8	GND	Р	Ground

9	MIPI_CSI_DP2	I	MIP_CSI differential lane 2 + (1.8V level)
10	MIPI_CSI_GPIO	0	GPIO output (3.3V level)
11	MIPI_CSI_DN2	I	MIP CSI differential lane 2 - (1.8V level)
12	GND	Р	Ground
13	NC		
14	MIPI_CSI_CLKP	0	MIP_CSI differential clock + (1.8V level)
15	NC		
16	MIPI_CSI_CLKN	0	MIP_CSI differential clock - (1.8V level)
17	NC		
18	GND	Р	Ground
19	NC		
20	MIPI_CSI_DP1	I	MIP CSI differential lane 1 + (1.8V level)
21	NC		
22	MIPI_CSI_DN1	I	MIP CSI differential lane 1 - (1.8V level)
23	NC		
24	GND	Р	Ground
25	NC		
26	MIPI_CSI_DP0	I.	MIP_CSI differential lane 0 + (1.8V level)
27	NC		
28	MIPI_CSI_DN0	I	MIP_CSI differential lane 0 - (1.8V level)
29	NC		
30	GND	Р	Ground

2.4.8 J7 Audio jack (8)

VT-SBC-RK3566-NT implements a 3.5mm audio jack, supporting left/right stereo sound and microphone functions. It also supports hook identification. The audio jack uses I²S signal for communication.

2.4.9 J1 GPIO (9)

VT-SBC-RK3566-NT offer a GPIO header for user development, including 2 x SPI, 3 x $I^{2}C$, 2 x PWM, 4 x UART (including one debug UART), 3 x GPIO, and 1 x Power_ON. All pins other than the power pins could be used as GPIO pins. The Power_ON and debug UART pins shall be connected for debugging the Board.

Specifications: 2 x 20, 2.54mm, 3A, Vert, RoHS



Pin	Name	Туре	Description
1	EXT_3V3	Р	Power supply 3.3V (controllable ¹)
2	VBUS	Р	5V input/output (uncontrollable)
3	I2C1_SDA	I/O	I2C1 data (3.3V level)
4	VBUS	Р	5V input/output (uncontrollable)
5	I2C1_SCL	I/O	I2C1 clock (3.3V level)
6	GND	Р	Ground
7	SPI3_CS0_M1	I/O	SPI3 CS signal (3.3V level)
8	UART7_TX_M1	0	UART7 serial data output (3.3V level)
9	GND	Р	Ground
10	UART7_RX_M1	I	UART7 serial data input (3.3V level)
11	PWM5	0	PWM5 output (3.3V level)
12	PWM11_M0	I	PWM11 output (3.3V level)
13	I2C2_SDA_M0	I/O	I2C2 data (3.3V level)
14	GND	Р	Ground
15	I2C5_SDA_M0	I/O	I2C5 data (3.3V level)
16	I2C2_SCL_M0	0	I2C2 clock (3.3V level)
17	EXT_3V3	Р	Power supply 3.3V (controllable ¹)
18	12C5_SCL_M0	0	I2C5 clock (3.3V level)
19	SPI3_MOSI_M1	I/O	SPI3 MOSI (3.3V level)
20	GND	Р	Ground

¹ Pulled down (no output) by default, controllable in the software system via GPIO3_ B0 to pull up for 3.3V output. Pull-up command: # gpioset gpiochip3 8=1.

21	SPI3_MISO_M1	I/O	SPI3 MISO (3.3V level)
22	UARTO_TX	I/O	UARTO serial data output (3.3V level)
23	SPI3_CLK_M1	0	SPI3 clock (3.3V level)
24	SPI1_CS0_M1	I/O	SPI1 CS signal (3.3V level)
25	GND	Р	Ground
26	SPI1_CLK_M1	0	SPI1 clock (3.3V level)
27	GPIO1_A4_d	I	General purpose input and output (3.3V level)
28	GPIO1_B0_d	0	General purpose input and output (3.3V level)
29	SPI1_MISO_M1	I/O	SPI1 MISO (3.3V level)
30	GND	Р	Ground
31	SPI1_MOSI_M1	I/O	SPI1 MOSI (3.3V level)
32	RK809_PWRON	Р	RK809 power_on (3.3V level) ²
33	UART2_RX_M0_DEBUG	L	UART2 data input for AP debug (3.3V level)
34	GND	Р	Ground
35	UART2_TX_M0_DEBUG	0	UART2 data output for AP debug (3.3V level)
36	UART4_TX_M1	0	UART4 data output (3.3V level)
37	GPIO1_B1_d	0	General purpose input and output (3.3V level)
38	UART4_RX_M1	I.	UART4 data input (3.3V level)
39	GND	Р	Ground
40	UARTO_RX	I	UARTO data input (3.3V level)

² Open drain input, may connect a power key (applicable only to Android system): long press for turning on/off the device, short press for device sleep/wake-up.

2.4.10 U3 Wi-Fi and Bluetooth (10)

VT-SBC-RK3566-NT offers a combo SiP module, combining Wi-Fi 802.11 a/b/g/n/ac and Bluetooth 5.0. The Wi-Fi interface employs SDIO2.0/SDIO 3.0, and the Bluetooth uses UART for communication. There is an antenna interface next to the module for connecting the Wi-Fi & Bluetooth antenna.

VT-SBC-RK3566-NT supports wake up from the sleep mode via the Wi-Fi & Bluetooth functions. To ensure successful wakeup of the Board, the Wi-Fi & Bluetooth module shall keep working under the sleep mode, with the VCC_3V3 and VCC_1V8 power supplies on.

2.4.11 J9 Micro SD slot (11)

VT-SBC-RK3566-NT offers a Micro SD card slot at its back, supporting SD3.0 and MMC 4.51 interfaces. The Micro SD card can be used for RAM expansion or used as mobile storage. Micro SD card hot plug is supported.

CHAPTER 3 FIRST-USE DEBUGGING

This chapter is mainly about the first-use debugging of interfaces or software applications. You can connect a keyboard, a mouse and a display to VT-SBC-RK3566-NT and debug the Board directly in the console if it runs on a Linux distribution. On the other hand, you can also use a USB to TTL (3.3V) adapter to connect UART2 serial port (baud rate to 150000bps) of the Board to a Linux host for remote debugging.

Please execute all commands with the root privilege (no password).

3.1 Interface Definition

3.1.1 UART

VT-SBC-RK3566-NT offers 4 UART ports on the GPIO header. UARTO, UART4, and UART7 are used for serial communication, mapped as /dev/ttyS0, /dev/ ttyS4, and /dev/ttyS7, respectively. UART2 is used for serial debugging.



Please use a USB to TTL (3.3V) adapter to connect the Board and the host computer when using UART2 for device debugging. You are recommended to set the baud rate to 1500000bps.

When using the UART ports for serial communication, please connect the pins following the pinout description in 2.4.9 (TX-RX, RX-TX).

You can execute the following commands to test the port (UART4 for instance) status.

\$ adb shell //open the shel	I (not necessary if you use the console)
# su //enable the root	privilege (replace with "sudo su" if you use the console)
# cat /dev/ttyS4 &	//receive data
# echo TEST > /dev/ttyS4	//send data

Cone single port cannot receive and transmit data at the same time. The commands for both Android and Linux systems are the same.

3.1.2 GPIO

1. Check the status of GPIO1:

~# gpioinfo gpiochip1

2. Output control over a GPIO pin (e.g., GPIO1_A4);

~# gpioset gpiochip1 4=1 // high level

~# gpioset gpiochip1 4=0 //low level

3.2 Ethernet

Check the IP address:

ifconfig

Set up and verify the IP address of the ethernet port:

ifconfig eth0 192.168.9.10
ping 192.168.9.10
PING 192.168.9.10 (192.168.9.10): 56 data bytes
64 bytes from 192.168.9.10: seq=0 ttl=64 time=1.296 ms
64 bytes from 192.168.9.10: seq=1 ttl=64 time=1.358 ms

3.3 Wi-Fi

VT-SBC-RK3566-NT supports Wi-Fi and Bluetooth functions. You are recommended to use nmtui to set up the Wi-Fi network.

1. Open a terminal in the Ubuntu system, and input the following command to set up the network;

\$ nmtui

2. Use the arrows on the keyboard to navigate to **Activate a connection** and press **Enter** to confirm;



3. Select a Wi-Fi network from the list;



4. Input the password of the access point and verify;



5. You will connect to the access point after successful verification.

3.4 USB

When any of the USB interfaces connects to a storage device, input the following commands to check/configure the USB interface.

1. Check the information of all USB devices:

\$ Isusb

2. Display details of all storage devices and their partitions:

\$ fdisk -l

3. Mount a USB drive to a specified directory (e.g., /mnt):

\$ mount /dev/xxx /mnt

4. Check the mounted content in /mnt:

\$ ls /mnt

5. Unmount the USB drive:

\$ umount /dev/xxx

CHAPTER 4 ANDROID SYSTEM MANUAL

Prerequisites:

- VT-SBC-RK3566-NT
- A Windows host computer
- Software release package of VT-SBC-RK3566-NT
- A USB mouse, keyboard, and monitor for connecting the Board for easier operation
- A 5V USB Type-C charger for booting the Board
- A Micro HDMI to HDMI Type-A cable for connecting the Board and a monitor
- A USB Type-A to Type-C cable for connecting the Board and the host computer

4.1 Enable Developer Options

To enable Developer Options of VT-SBC-RK3566-NT, follow the steps below:

- 1. Connect the Board to a mouse, a keyboard, and a display for easier operations;
- 2. After the system has booted, swipe up to access the application drawer;
- 3. Click Settings > About tablet in sequence;
- Scroll down to Build number, and click it consecutively for at least 7 times to enable Developer options;
- 5. Go back to Settings > System > Advanced > Developer options and toggle on USB debugging, then you can customize the Board settings.
- Depending on the Android version, the entry might vary slightly.

4.2 ADB Setup on the Windows Host

Android Debug Bridge (ADB) is a tool that is designed to connect your development workstation directly to your Android device for debugging, device upgrading, app installation, etc.

Adding the ADB executable file to the system's environment variable allows you to run the ADB tool regardless of your current working directory.

Follow the steps below to set up the ADB on the Windows host.

- 1. Unzip the software release package and navigate to the following directory: \SW\ tools;
- 2. Extract the adb_fastboot_and_other_tools_for_windows zip file;
- 3. Navigate to the Android folder that contains the ADB tool kit, and copy the folder path;

W → tools	→ adb_fastboot_and_other_tools → Ar	ndroid >		✓ Č Sear
	Name	Date modified	Туре	Size
	📙 api	11/17/2012 11:37	File folder	
Ħ	lib	11/17/2012 11:37	File folder	
A	renderscript	11/17/2012 11:37	File folder	
А.	📧 aapt.exe	11/17/2012 11:37	Application	832 KB
*	📧 adb.exe	11/17/2012 11:37	Application	796 KB
*	🚳 AdbWinApi.dll	11/17/2012 11:37	Application extens	94 KB
	AdbWinUsbApi.dll	11/17/2012 11:37	Application extens	60 KB
	📧 aidl.exe	11/17/2012 11:37	Application	270 KB
	📧 dexdump.exe	11/17/2012 11:37	Application	125 KB
	💿 dx.bat	11/17/2012 11:37	Windows Batch File	3 KB
	📧 fastboot.exe	11/17/2012 11:37	Application	154 KB
	📧 llvm-rs-cc.exe	11/17/2012 11:37	Application	23,289 KB
	NOTICE.txt	11/17/2012 11:37	Text Document	457 KB
	source.properties	11/17/2012 11:37	PROPERTIES File	1 KB

4. Press "Win + R" and input sysdm.cpl in the dialogue box to open the settings interface;

💷 Run	×
	Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
<u>O</u> pen:	sysdm.cpl 🗸
	OK Cancel Browse

 Click in sequence Advanced > Environment Variables > System Variables > Path > Edit, and click New in the pop-up;

	nvironment Variables X	
	User variables for Administrator Edit environment variable)
otem Properties Computer Name Hardware Advanced System Protection Pernote You wut be logged on as an Administrator to make most of these change Performance Valuel effects, processor scheduling, memory usage, and visual memory Settmos.	Variable Value M0Z_ZUGIR_PATH CUProgram Files (dBI)/Food Software/Food Reader/Food PDF Reader. %SystemBoot% Upstem022 OurOfive CUUPers/Administrate/AppDratil.co.dl/Microsoft/WindowsAppr; %SystemBoot% System32.Wbern TDMP C/UUers/Administrate/AppDratil.co.dl/Microsoft/WindowsAppr; %SystemBoot% System32.Wbern TMP C/UUers/Administrate/AppDratil.co.dl/Temp	RJA Browse Delete
User Profiles Devices settings related to your signin	New	Move Up
Setings Statup and Recovery System statup, system failure, and debugging information Settings Environment Valable	Variable Value Configer Cl/Windows/system32:0md.exe DriveData Cl/Windows/System32:Drivers/Driver/Data NUMBER_OF_PROCESSORS 6 OS Windows/System32:Drivers/Driver/Data VM Windows/System32:Drivers/Drivers/Driver/Data OS Windows/System32:Drivers/Drivers	Edit text
OK Cancel Ap	New Delete	K Cancel

6. Paste the path of the Android folder, and click OK one by one to confirm and exit;

Edit environment variable	×
%SystemRoot%\system32	New
%SystemRoot%	
%SystemRoot%\System32\Wbem	Edit
rev1.8, image, 20230517\SW\tools\adb_fastboot_and_other_tools\Android	
	Browse
	Delete
	Move Up
	Move Down
	Edit text
ОК	Cancel

- 7. Press "Win + R" and input cmd in the dialogue box;
- 8. Input adb version in the command prompt to check if the ADB tool is installed.

Administrator: C:\Windows\system32\cmd.exe	
Microsoft Windows [Version 10.0.17763 (c) 2018 Microsoft Corporation. All r	3.1577] rights reserved.
C:\Users\Administrator≻adb version Android Debug Bridge version 1.0.31	
C:\Users\Administrator> _	

4.3 App Installation via ADB Commands

In addition to the standard pre-installed Android applications, users can install their own applications on the Board provided that it runs Android system and the ADB tool kit is installed and accessible on the Windows host computer.

- 1. Connect VT-SBC-RK3566-NT and the host computer via the USB Type-A to Type-C cable;
- 2. Press "Win + R" and input cmd in the dialogue box;
- 3. Input adb devices -I in the command prompt to check if the Board is connected to the host computer;

- 4. When the device information is displayed under the command, you can copy the serial number (squared as shown above) for the next-step use;
- 5. Input the following command line to install the app;

adb -s <serial number> install <APP path>

 The installation will be executed after the command line is input and the result of installation will be displayed below;

```
C:\Users\Administrator>adb -s 9fcafbd4d37a6b4e install G:\tools\APKs\AnTuTuBenchmark_3400.apk
Performing Streamed Install
Success
```

- 7. The newly installed app will be displayed on the App drawer in the Alphabetic order.
- The screenshot is for illustration only and is not intended to represent the actual device number and other information of the device currently in your possession.
- In step 5 shown above, you can drag the .apk file from the local directory to the command line to replace the <App path> you typed in manually.
- If you failed to install the apk, try using the absolute path of the .apk file enclosed in double quotation marks.

4.4 Firmware Upgrade in Windows Environment

- Unzip the release package and open the directory of the upgrade driver (\SW\ DriverAssitant_vxxx.zip);
- 2. Unzip the driver folder;
- 3. Right click the mouse and run the driver program **DriverInstall.exe** as administrator;
- 4. Click Install Driver and wait for the installation to complete;

RK Driver Assitant v5.1.1	×
Install Driver	Uninstall Driver

- Open the directory of the upgrade tool and unzip the folder (\SW\AndroidTool\RKDevTool_Release_vxxx);
- 6. Double click the driver for the upgrade tool **RKDevTool.exe**;

> RKDevTool > RKDevTool_Release			ٽ ~
名称 ^	修改日期	类型	大小
rk3036-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3128-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3128h-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3229-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3288-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3308-config.cfg	2021/12/7 9:19	CFG 文件	6 KB
rk3326-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3328-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
rk3399-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
KKDevTool.exe	2021/12/7 9:19	应用程序	1,170 KB
RKDevTool_manual_v1.2_cn.pdf	2021/12/7 9:19	PDF 文件	530 KB
RKDevTool_manual_v1.2_en.pdf	2021/12/7 9:19	PDF 文件	448 KB
rv1126_rv1109_tb-config.cfg	2021/12/7 9:19	CFG 文件	3 KB
rv1126_rv1109-config.cfg	2021/12/7 9:19	CFG 文件	6 KB
rv1126_rv1109-config-ab.cfg	2021/12/7 9:19	CFG 文件	7 KB

7. Open the upgrade window;

Dev	/Tool	v2.84						-	
wnlo	ad Ir	nage Upgrade	Firmware Adv	anced Function			 		
#		Address	Name	Path					
1		0x0000000	Loader						
2		0x00000000	Parameter						
3		0x00000000	Uboot						
4		0x0000000	trust						
5		0x0000000	Misc						
6	<u> </u>	0x00000000	Resource						
<u>(</u>	늗	0x0000000	Kernel						
8	늗	0x0000000	Boot						
9	-	0x0000000	Kecovery						
10	-	0x0000000	D J						
				·					
<					>				
Load	ler:		Run	Switch Dev Partition	Clear				
			No De	vices Found					

- 8. Connect VT-SBC-RK3566-NT to the Windows host using the USB Type-A to Type-C cable;
- 9. Press "Win + R" and input cmd in the dialog box to open the command prompt;
- 10. Input adb devices in the command prompt to check if the Board is connected to the Windows host;
- 11. Once the Board is identified by the Windows host, input adb reboot loader to reboot the Board into the bootloader mode;
- 12. Then the upgrade window will prompt for the existence of a Loader device, indicating that the upgrade process is ready;

Image: Constraint of the second constraint of th
2 0x00000000 Parameter 3 0x00000000 Vboot 4 0x000000000 trust 5 0x00000000 Miso 6 0x00000000 Resource
3 0x00000000 Vboot 4 0x00000000 trust 5 0x00000000 Misco 5 0x00000000 Resource
4 0x00000000 trust 5 0x00000000 Misc 6 0x00000000 Resource
5 0x0000000 Misc 6 0x0000000 Resource
6 0x00000000 Resource
7 0x0000000 Kernel
3 0x0000000 Boot
Ox00000000 Recovery
10 0x00000000 System
11 0x00000000 Backup
x >

- 13. Click **Upgrade Firmware > Firmware** in the upgrade window;
- 14. Select the upgrade file (**update.img**) from the directory (\SW\Image) and click **Open**, and the firmware details will be automatically populated in the boxes;

KDevTool v2.84	-	×
Download Image Upgrade Firmware Advanced Function		
Firmware Upgrade Switch EraseFlash		
Fw Ver: 11.0.00 Loader Ver: 1.01 Chip Info: EX3568		
Firmware: RPAGA00071_VT-SBC-3566-NT-Android-R, rev0. 6, Image, 20230222\SW\:		
Found One LOADER Device		

- 15. Click the **Upgrade** button and the Board will start to download the image and upgrade the firmware automatically;
- 16. When the upgrade finishes, the Board will reboot automatically.

CHAPTER 5 DEBIAN SYSTEM MANUAL

Prerequisites:

- VT-SBC-RK3566-NT
- A host computer running Windows or Ubuntu system
- Software release package of VT-SBC-RK3566-NT
- A USB mouse, keyboard, and monitor for connecting the Board for easier operation
- A 5V USB Type-C charger for booting the Board
- A Micro HDMI to HDMI Type-A cable for connecting the Board and a monitor
- A USB Type-A to Type-C cable for connecting the Board and the host computer

5.1 About the System

Debian is a Linux distribution and the Board was built on Debian GNU/Linux 11 operating system.

5.1.1 User and password

The system will automatically log in to **linaro** as the default user after bootup.

° User: linaro / Password: linaro

You can use the sudo su command to switch to the root user (no password).

5.1.2 System information

- 1. Power on the Board and the system will log in to linaro as the default user;
- 2. Right click the mouse in an empty area to open the property dialogue of the system;
- Click Applications > About Xface to access the desktop environment where you can check the system information like the device name, operating system, copyright statement, etc.



5.2 System Settings

By clicking on **linaro** on the top right corner of the screen, you can

- ° Lock the screen;
- ° Switch the user;
- ° Shut down/suspend the Device;
- Output of the "Log out" option) Log out/restart/shut down/suspend the Device or switch the user while saving the session for future logins.

The menu bar on the top of the screen allows the user to:

- ° Change the brightness and power settings of the Device;
- ° Adjust the system volume and sound settings;
- ° Add the Device to a Wi-Fi network and pair it with a Bluetooth device;
- ° Switch between different workspaces.

Other system settings are accessible from **Applications** on the top left corner of the screen or upon a right click of the mouse in an empty area of the screen.

5.3 Firmware Upgrade in Windows Environment

- 1. Follow the instructions in 4.2 to finish ADB setup on the windows host computer;
- Unzip the release package, and open the directory of the upgrade driver (\SW\upgrade_tools\windows\ DriverAssitant_vxxx);
- 3. Unzip the driver folder;
- 4. Right click the mouse and run the driver program **DriverInstall.exe** as administrator;
- 5. Click Install Driver and wait for the installation to proceed;

RK Driver Assitant v5.1.1	>
Install Driver	Uninstall Driver

- Open the directory of the upgrade tool and unzip the folder (\SW\upgrade_tools\windows\ RKDevTool_Release_vxxx);
- 7. Double click the driver for the upgrade tool **RKDevTool.exe**;

→ R	KDevTool → RKDevTool Release			ٽ د
-				
	名称	修改日期	类型	大小
	rk3036-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
<i>A</i>	rk3128-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
1	rk3128h-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
*	rk3229-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
*	rk3288-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
	rk3308-config.cfg	2021/12/7 9:19	CFG 文件	6 KB
	rk3326-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
	rk3328-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
	rk3399-config.cfg	2021/12/7 9:19	CFG 文件	7 KB
	KDevTool.exe	2021/12/7 9:19	应用程序	1,170 KB
	RKDeviool_manual_v1.2_cn.pdf	2021/12/7 9:19	PDF 文件	530 KB
	RKDevTool_manual_v1.2_en.pdf	2021/12/7 9:19	PDF 文件	448 KB
	rv1126_rv1109_tb-config.cfg	2021/12/7 9:19	CFG 文件	3 KB
	rv1126_rv1109-config.cfg	2021/12/7 9:19	CFG 文件	6 KB
	rv1126_rv1109-config-ab.cfg	2021/12/7 9:19	CFG 文件	7 KB

8. Open the upgrade window;

wnlo	ad Ir	nage Upgrade	Firmware Adv	vanced Function	
ŧ		Address	Name	Path	
		0x0000000	Loader		
2		0x00000000	Parameter		
3		0x00000000	Uboot		
4	느	0x0000000	trust		
5	느	0x0000000	Misc		
6 -	닏	0x00000000	Resource		
(닏	Ux0000000	Kernel		
3	닏	0x00000000	Boot		
9	닏	0x00000000	Recovery		
10	닏	0x00000000	System		
11		Ux00000000	Backup		
<					
.oad	ler:		Run	Switch Dev Partition	Clear
			No. Do	vices Found	

- 9. Connect VT-SBC-RK3566-NT to the Windows host using the USB Type-A to Type-C cable;
- 10. Press "Win + R" and input cmd in the dialog box to open the command prompt;
- 11. Input adb devices in the command prompt to check if the Board is connected to the Windows host;
- 12. Once the Board is identified by the Windows host, input adb reboot loader to reboot the Board into the bootloader mode;
- 13. Then the upgrade window will prompt for the existence of a Loader device, indicating that the upgrade process is ready;

1 0x0000000 Loader 2 0x0000000 Parameter 3 0x0000000 Wboot 4 0x0000000 trust 5 0x0000000 Misc 6 0x0000000 Kesurce 7 0x0000000 Kernel 8 0x0000000 Boot 9 0x0000000 Recovery	2					
2 0x00000000 Parameter 3 0x00000000 Uboot 0x00000000 4 0x00000000 Hiso 0x00000000 5 0x00000000 Miso 0x00000000 6 0x00000000 Resource 0x00000000 7 0x00000000 Boot 0x0000000 8 0x00000000 Boot 0x0000000 9 0x00000000 Reovery 0x0000000	2		0x00000000	Loader		
3 0x00000000 Vbot 4 0x00000000 trust 5 0x00000000 Misco 6 0x00000000 Resource 7 0x00000000 Kernel 8 0x00000000 Recovery 9 0x00000000 Recovery	-		0x00000000	Parameter		
4 0x00000000 trust 5 0x00000000 Misc 6 0x00000000 Resource 7 0x00000000 Kernel 8 0x00000000 Boot 9 0x00000000 Recourse	3	<u> </u>	0x00000000	Uboot		
5 0x00000000 Misc 6 0x00000000 Resource 7 0x00000000 Kernel 8 0x00000000 Boot 9 0x00000000 Recovery	ł	<u> </u>	0x00000000	trust		
6 0x00000000 Resource 7 0x00000000 Kernel 8 0x00000000 Boot 9 0x00000000 Recovery 0x00000000 Recovery	5	<u> </u>	0x00000000	Misc		
7 0x00000000 Kernel 8 0x00000000 Boot 9 0x00000000 Recovery	3		0x00000000	Resource		
8 0x00000000 Boot 9 0x00000000 Recovery	'	<u> </u>	0x00000000	Kernel		
9 0x0000000 Recovery	3		0x00000000	Boot		
	•	<u> </u>	0x00000000	Recovery		
10 U UxUUUUUU System	.0	느	0x00000000	System		
11 J 0x00000000 Backup	1		0x00000000	Backup		
					>	
				Dun	Switch Dov Partition Close	

- 14. Click Upgrade Firmware > Firmware in the upgrade window;
- 15. Select the upgrade file (**update.img**) from the directory (\SW\release) and click **Open**, and the firmware details will be automatically populated in the boxes;

🔀 RKDevTool v2.8	4	- C	×
Download Image	Upgrade Firmware Advanced Function		
Firmware	Upgrade Switch EraseFlash		
Fw Ver:	1.0.00 Loader Ver. 1.01 Chip Info: EK3568		
Firmware:	IT, V1, Debiani1, rev1.0.3, Image_M, 20230203\SW\release\update.img		
	Found One LOADER Device		

- 16. Click the **Upgrade** button and the Board will start to download the image and upgrade the firmware automatically;
- 17. When the upgrade finishes, the Board will reboot automatically.

5.4 Firmware Upgrade in Ubuntu Environment

- 1. Connect VT-SBC-RK3566-NT to the host computer using the USB Type-A to Type-C cable;
- 2. Open a terminal and input adb shell to pen the shell;
- 3. Input reboot loader to reboot the Board to the bootloader mode;

root@linaro-alip:~# root@linaro-alip:~# reboot loader CTRL-A Z for help | 1500000 8N1 | NOR | Minicom 2.7.1 | VT102 | Offline | ttyUSB0

- 4. Copy the release package to the Ubuntu system or save the release package to a USB drive and mount the USB drive to the Ubuntu system;
- Open the directory of the upgrade tool (upgrade_tool) in the Ubuntu system (\ SW\upgrade_tools\linux\ Linux_Upgrade_Tool_vxxx);
- 6. Right click the mouse in an empty space of the folder to open a terminal with the following command;

\$ sudo ./upgrade_tool uf xxx/update.img

- *"xxx" is the path of the image file (update.img).*
- 7. The system will start upgrading after the download finishes, and it will reboot automatically when the upgrade finishes.

CHAPTER 6 DISPOSAL AND PRODUCT WARRANTY

6.1 Disposal

When the device comes to end of life, you are suggested to properly dispose of the device for the sake of the environment and safety.

Before you dispose of the device, please back up your data and erase it from the device.

It is recommended that the device is disassembled prior to disposal in conformity with local regulations. Please ensure that the abandoned batteries are disposed of according to local regulations on waste disposal. Do not throw batteries into fire or put in common waste canister as they are explosive. Products or product packages labeled with the sign of "explosive" should not be disposed of like household waste but delivered to specialized electrical & electronic waste recycling/disposal center.

Proper disposal of this sort of waste helps avoid 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.

6.2 Warranty

Product warranty

VANTRON warrants to its CUSTOMER that the Product manufactured by VANTRON, or its subcontractors will conform strictly to the mutually agreed specifications and be free from defects in workmanship and materials (except that which is furnished by the CUSTOMER) upon shipment from VANTRON. VANTRON's obligation under this warranty is limited to replacing or repairing at its option of the Product which shall, within <u>24 months</u> after shipment, effective from invoice date, be returned to VANTRON's factory with transportation fee paid by the CUSTOMER and which shall, after examination, be disclosed to VANTRON's reasonable satisfaction to be thus defective. VANTRON shall bear the transportation fee for the shipment of the Product to the CUSTOMER.

Out-of-Warranty Repair

VANTRON will furnish the repair services for the Product which are out-of-warranty at VANTRON's then-prevailing rates for such services. At customer's request, VANTRON will provide components to the CUSTOMER for non-warranty repair. VANTRON will provide this service as long as the components are available in the market; and the CUSTOMER is requested to place a purchase order up front. Parts repaired will have an extended warranty of 3 months.

Returned Products

Any Product found to be defective and covered under warranty pursuant to Clause above, shall be returned to VANTRON only upon the CUSTOMER's receipt of and with reference to a VANTRON supplied Returned Materials Authorization (RMA) number. VANTRON shall supply a RMA, when required within three (3) working days of request by the CUSTOMER. VANTRON shall submit a new invoice to the CUSTOMER upon shipping of the returned products to the CUSTOMER. Prior to the return of any products by the CUSTOMER due to rejection or warranty defect, the CUSTOMER shall afford VANTRON the opportunity to inspect such products at the CUSTOMER's location and no Product so inspected shall be returned to VANTRON unless the cause for the rejection or defect is determined to be the responsibility of VANTRON. VANTRON shall in turn provide the CUSTOMER turnaround shipment on defective Product within **fourteen (14) working days** upon its receipt at VANTRON. If such turnaround cannot be provided by VANTRON due to causes beyond the control of VANTRON, VANTRON shall document such instances and notify the CUSTOMER immediately.