RTSO-6003

Product Manual

Realtimes Beijing Technology Co., LTD.
Fax： +86 010-84284669 / 84280996
Email: info@realtimes.cn
Web Page: https://www.realtimesai.com
Address: 11th Floor, Block B, 20th Heping Xiyuan, Pingxi Street, Chaoyang District, Beijing 100013,P.R.China

Product manual update history

Revision	Date	Reason for change	Applicable hardware version
V1.0	2020-12	Initial release	V1.1
V1.1	2021-8	Add sub-model, add component location map	V1.1
V1.2	2021-11	Added Nano core module support	V1.1

Electronic components and circuits are very sensitive to electrostatic discharge. Although our company designs anti-static protection for the main interfaces on the card when designing circuit board products, it is difficult to achieve anti-static safety protection for all components and circuits. Therefore, it is recommended to observe anti-static safety precautions when handling any circuit board component (including RTS0-6003). Anti-static safety protection measures include, but are not limited to the following:

a) The smart box should be placed in an anti-static bag during transportation and storage, and then the board should not be taken out during installation and deployment.
b) Before touching the smart box, discharge the static electricity stored in the body: wear a discharge grounding wrist strap.
c) Operate the smart box only within the safe area of the electrostatic discharge point.
d) Avoid moving smart boxes in carpeted areas.

Precautions and after-sales maintenance

matters needing attention

Before using the product, please read this manual carefully and keep it for future reference;

- Please pay attention to and follow all warning and guidance information marked on the product;
- Please use matching power adapter to ensure the stability of voltage and current;
- Please use this product in a cool, dry and clean place;
- Do not use this product in cold and hot alternate environment to avoid condensation damage components;
- Do not splash any liquid on the product. Do not use organic solvent or corrosive liquid to clean the product;
- Do not use the product in dusty and messy environment. If it is not used for a long time, please pack the product;
- Do not use in the environment with excessive vibration, any dropping or knocking may damage the circuit and components;
- Do not plug and unplug the core board and peripheral modules when power is on;
- Please do not repair or disassemble the product by yourself. In case of any fault, please contact our company in time for maintenance;

- Do not modify or use unauthorized accessories by yourself, and the damage caused will not be warranted;

After sales maintenance

1) Warranty period

- Base plate, core plate : 3 year (non-human damage)
- Other peripherals sold by the company:1year(non-human damage)

2) Warranty description

- Within 7 days: the product (base plate, core module) is not damaged by human, our company will replace / repair it free of charge, and bear the return freight; (because the core module needs NVIDIA to confirm that it can meet the requirements of repair, it will take a long time, we will coordinate as soon as possible, please forgive for the inconvenience)
- From 7 days to 36 months: the product (base plate, core module) is not damaged by human, our company will repair it free of charge, and bear the return freight; (because the core module needs NVIDIA to confirm that it can meet the requirements of repair, it will take a long time, we will coordinate as soon as possible, please forgive for the inconvenience)
- Artificial damage in more than 3 year or 3 year: the product (carrier plate) shall be tested after it is sent to the customer, and the customer shall be informed of whether it can be repaired and the maintenance cost in detail. After reaching an agreement, the product shall be repaired and returned to the customer, and the company shall bear the return freight;
- The starting time shall be subject to the date of express delivery receipt;

3) Contact information

Official website: www.realtimesai.com

Taobao website: https://shop340963258.taobao.com/

Address: 11, block B, Heping Xiyuan, Heping West Street, Chaoyang District, Beijing

Attention: RMA

Tel: 010-84284669

Mailing notice: contact with the company's sales department in advance, arrange technical support personnel to check and eliminate errors caused by misoperation as soon as possible, fill in the product after-sale return to factory maintenance form after verification, and send it to rma@realtimes.cn Mail box, please attach the list of items to facilitate verification, so as to avoid loss and loss in the process of express delivery. The company does not receive any delivery

Technical support and development customization

1. Scope of technical support

1) The company releases the electrical characteristics and use of industrial carrier boards and modules;

2) Physical dimension of hardware, relevant structure diagram and line sequence definition of specific interface;

3) Burn in verification of all BSP support packages provided by the company;

4) The company released burn environment construction, entry-level use. ;

5) Various peripheral module drivers released by the company;

6) The company's product fault diagnosis and after-sales maintenance services;

2. Scope of technical discussion

Due to the wide range of embedded system knowledge and various types of involvement, we can not

guarantee that all kinds of questions can be answered one by one. The following content is not available for technical support, only suggestions can be provided.

1) Knowledge beyond the course published by our company;

2) Specific software program design;

3) Technical support for industrial carrier not issued by the company;

4) All kinds of driving support for industrial carrier board not issued by the company;

5) Hardware principle and drive design of peripheral module not issued by our company;

3. Technical support mode

1)Official website or email questions (recommended):https://www.realtimesai.com/cn/download.html techsupport@realtimes.cn

2) Official Taobao through Alibaba Wangwang consultation: https://shop340963258.taobao.com/

3) Wechat group consultation (wechat Group No. consults Taobao customer service or sales, and Taobao purchase order No. needs to be provided for verification);

4) Technical support email: techsupport@realtimes.cn

5) Tel: 010-84284669

4. Technical support time

Monday to Friday; 8:30-12:00 am; 1:00-17:30 PM;

The company arranges the rest according to the national legal holidays, during which it may not be able to provide technical support, please send the problem to the technical support email. We will reply to you as soon as possible on weekdays.

5. Complaints and suggestions

If you are not satisfied with us or have suggestions, you can send an email to yu.qin @ realtimes.cn For feedback, please call 010-84284669 for further improvement.

6. Customized development services

The company provides the embedded operating system driver based on NVIDIA Jetson series and the paid customized development service of hardware carrier board to shorten your product development cycle.

Please email the request to info@realtimes.cn

Data acquisition and subsequent update

1. Access to information

Download on our website

The company's website contains supporting information of its products, including product user manual, NVIDIA Jetson series module data manual, BSP driver support package for carrier board, supporting peripheral driver files, interface test verification method, FAQ, system burning guide, etc. get into www.realtimesai.com , select "data download" in the navigation bar, find the data you need, and click download.

2. . Subsequent updates

Updates of subsequent documents, BSP, driver files and other official account will be updated in time. We will pay close attention to our developments in order to ensure that your information is up to date. We will push through WeChat public.

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Catalogue

1 Abstract

NVIDIA Jetson Nano/Xavier NX/TX2 NX are NVIDIA's deep learning processors with powerful computing power and modules the size of a credit card. Mainly aimed at the rapid development of artificial intelligence market in recent years, such as unmanned aerial vehicle, automatic driving system, etc., has a relatively broad application prospect. RTSO-6003 is an industrial-grade load plate for Jetson Nano/Xavier NX/TX2 NX, operating temperature -40~+80℃, low power consumption, high safety level, can meet all kinds of harsh conditions.

1.1 Features

Type distinction:

Difference	6003	6003E	6003L	6003LE
POE power supply	Have	Have	Without	Without
Onboard eMMC	Without	Have	Without	Have

Interface comparison:

Type / Interface	6003	6003E	6003L	6003LE
Adaptation core	Xavier NX/TX2 NX/Nano			
USB	1 x USB3.0 Type-A port, support USB3.0 signal, provide 1A output current, 1 x Micro USB2.0 OTG port, support USB host and USB device mode, provide 1A output current			
HDMI	1x HDMI 2.0 interface， 1x Mini HDMI 2.0 interface			
Network Port	1 x GbE （10/100/1000 BASE-T）， 4x GbE（POE）		1 x GbE （10/100/1000 BASE-T）， 4x GbE	
POE Interface	1 x POE power interface (4 integrated network ports)		Without	
Communication port	1 x Isolated communication port (485, CAN, 4 I/O ports) (with Nano core without CAN function)			
High-speed connector	1 x High-speed connector (can be connected to 6003T1/6003T2 function expansion board)			
M.2 Interface	1x M.2 KEY M 2280 interface， 1x M.2 KEY E 2230 interface			
RTC Interface	1x RTC battery interface			
Multi-function	1 x Multi-function Pin			
SD/EMMC	1 x Micro SD	1 x128G EMMC	1 x Micro SD	1 x 128G EMMC
FAN Interface	1x FAN interface			
Dimensions	150mm*94mm*28mm			
Power	+12V			
Temperature	-40~+80℃			
Weight	About 165g			

1.2 Ordering Information

Model Options	Description
RTSO-6003	Support NANO/Xavier NX/TX2 NX module, 1 x GbE, 4 x GbE (POE 802.3af/at), 4 x GPIO (2 X isolated input, 2 X isolated output), 1 x RS-485 (isolated), 1 x CAN (isolated), 2 x UART (3.3V), 2 x I2C (3.3V), 2 x SPI (3.3V), 1 x USB3.0, 1 x USB OTG, 1 x HDMI, 1 x Mini HDMI, 1 x microSD, 1 x M.2 KEY M, 1 x M.2 KEY E, RoHS Compliant, providing Realtimes Linux4Tegra software support package.
RTSO-6003E	Support NANO/Xavier NX/TX2 NX module, 1 x GbE, 4 x GbE (POE 802.3af/at), 4 x GPIO (2 X isolated input, 2 X isolated output), 1 x RS-485 (isolated), 1 x CAN (isolated), 2 x UART (3.3V), 2 x I2C (3.3V), 2 x SPI (3.3V), 1 x USB3.0, 1 x USB OTG, 1 x HDMI, 1 x Mini HDMI, 128GB eMMC, 1 x M.2 KEY M, 1 x M.2 KEY E, providing Realtimes Linux4Tegra software support package.
RTSO-6003L	Support NANO/Xavier NX/TX2 NX module, 5 x GbE, 4 x GPIO (2 X isolated input, 2 X isolated output), 1 x RS-485 (isolation), 1 x CAN (isolation), 2 x UART (3.3 V), 2 x I2C (3.3V), 2 x SPI (3.3V), 1 x USB3.0, 1 x USB OTG, 1 x HDMI, 1 x Mini HDMI, 1 x microSD, 1 x M.2 KEY M , 1 x M.2 KEY E, provide Realtimes Linux4Tegra software support package.
RTSO-6003LE	Support NANO/Xavier NX/TX2 NX module, 5 x GbE, 4 x GPIO (2 X isolated input, 2 X isolated output), 1 x RS-485 (isolation), 1 x CAN (isolation), 2 x UART (3.3 V), 2 x I2C (3.3V), 2 x SPI (3.3V), 1 x USB3.0, 1 x USB OTG, 1 x HDMI, 1 x Mini HDMI, 128GB eMMC, 1 x M.2 KEY M, 1 x M.2 KEY E, providing Realtimes Linux4Tegra software support package
RTSS-NWL(optional)	M.2 WIFI/Bluetooth module (including antenna)
NVME-SSD-256(optional)	Industrial grade 256GB NVME solid state drive (2280)
RTSV-6902(optional) RTSV-6904(optional) RTSV-6906(optional)	M.2 video capture card, RTSV-6902 (dual channel SDI video input), RTSV-6904 (four channel SDI video input), RTSV-6906 (single channel 4K SDI video input)

Order online

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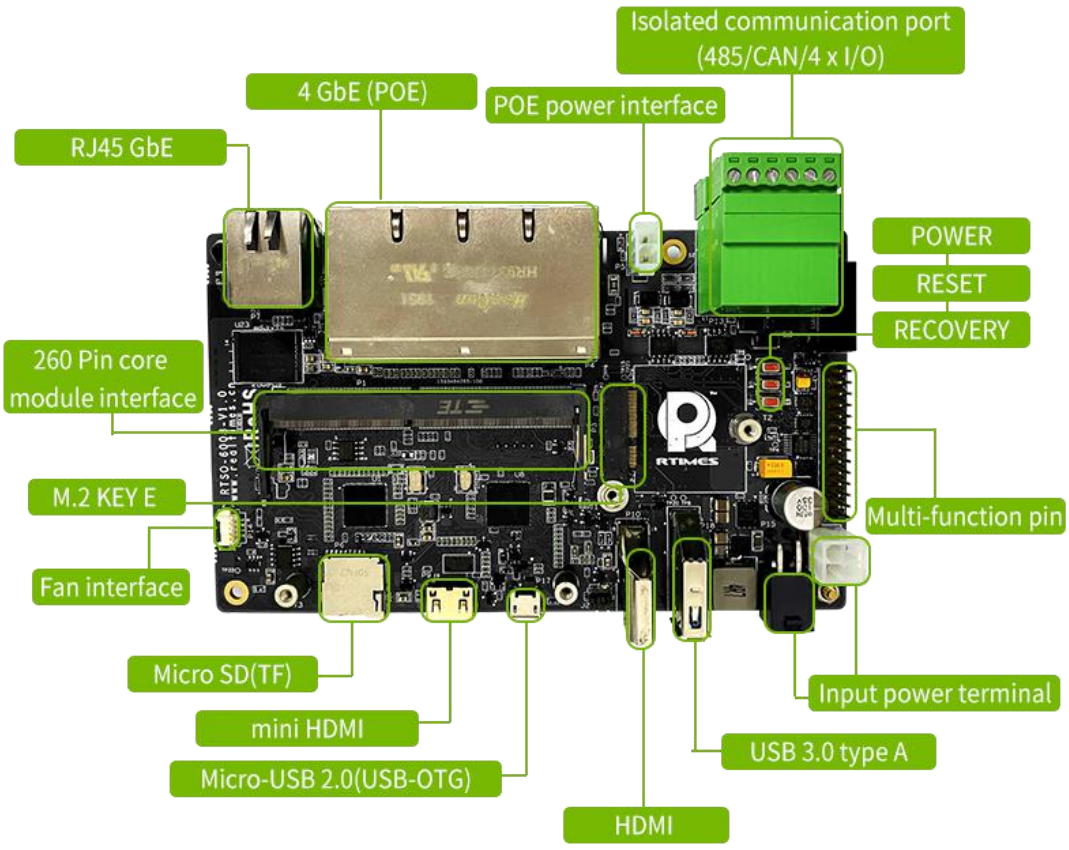
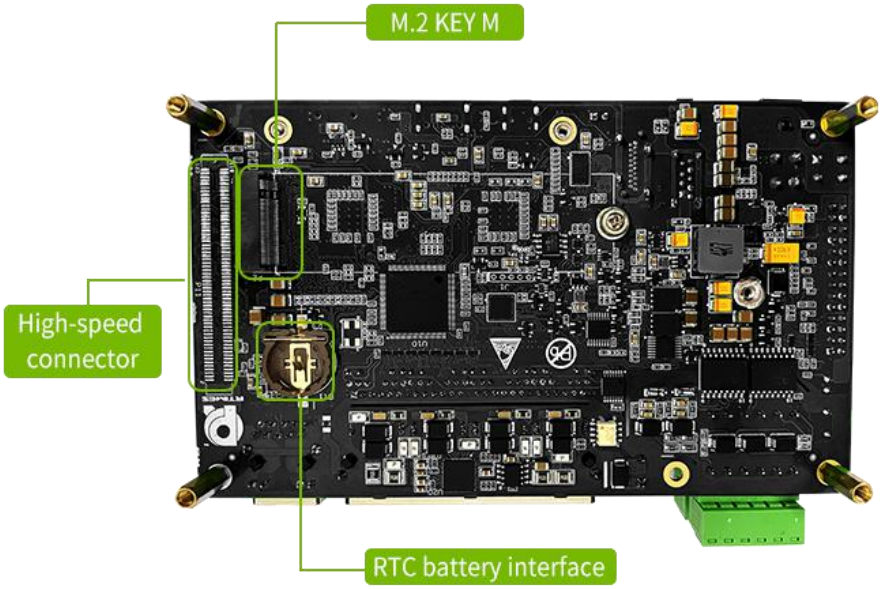
https://mall.jd.com/index-824786.html

2 Connector Locations

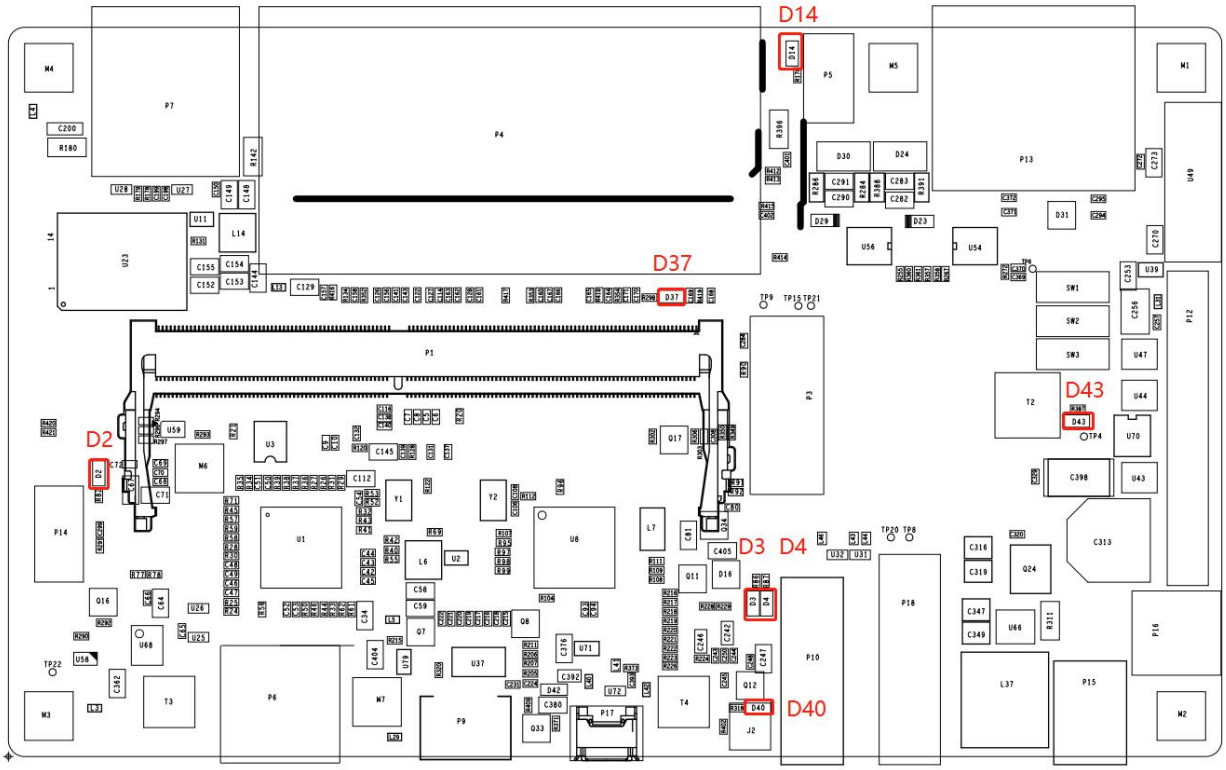


RTSO-6003 Top side

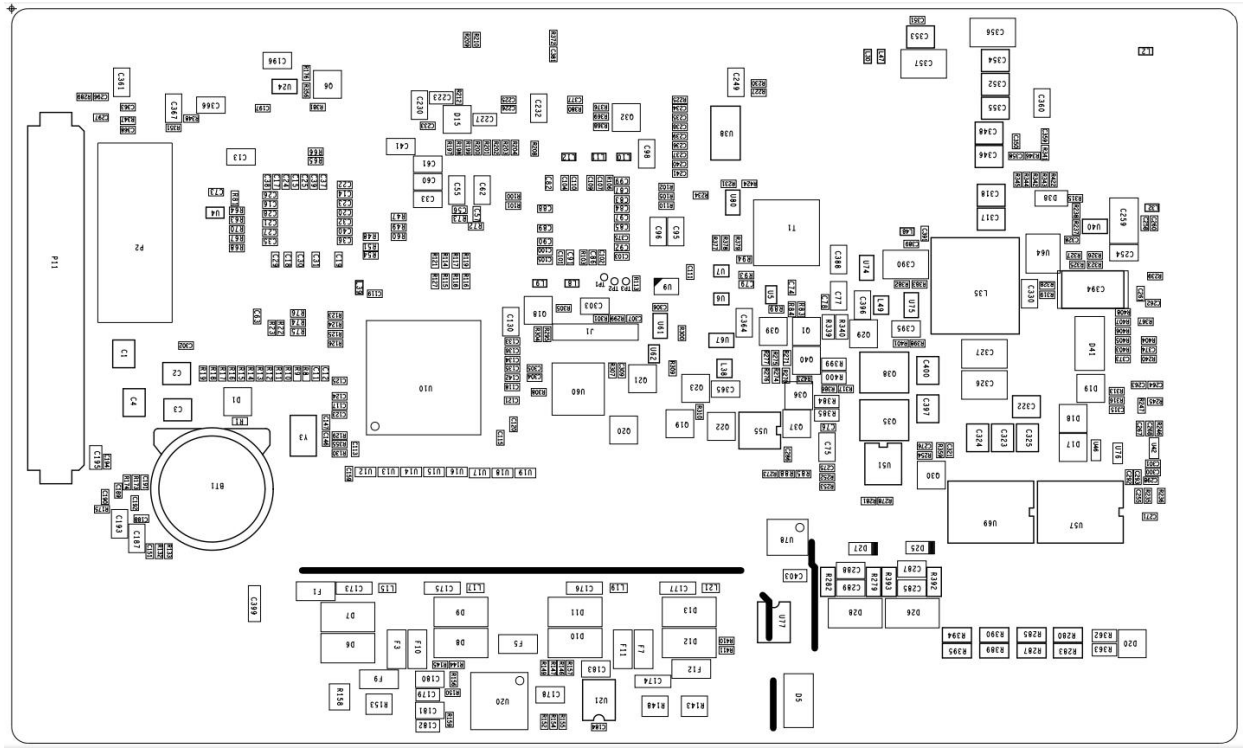


RTSO-6003 bottom side

2.1 Component location diagram



Positioning of front components



Location of components on the back

2.2 Functional connector

Mandatory Sign	Functional Description
P11	High speed connector
P14	FAN interface
P1	260 Pin SO-DIMM，Used to connect to the NVIDIA Jetson Nano/Xavier NX/TX2 NX core module
BT1	RTC battery interface
P6	Micro SD（TF）card slot
P2	M.2 KEY M interface
P3	M.2 KEY E interface
P9	Mini HDMI Display interface
P17	Micro-USB 2.0（USB-OTG）interface
P10	HDMI Display interface
P18	USB3.0 type A interface
P15,P16	Input power terminal
P12	Multi-function needle insertion
P13	Isolated communication port（485，CAN，4x I/O）
P5	POE Power interface(6003L/6003LE does not have this interface)
P4	Four integrated gigabit network port(POE)
P7	RJ45 Gigabit Ethernet

2.3 LED

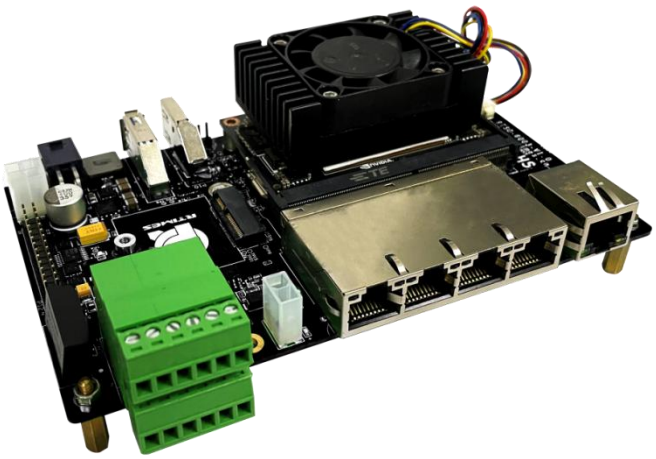
Mandatory Sign	Functional Description	State
D43	12V Power light	Steady bright--normal
D14	POE Power light	Steady bright--normal
D40	3.3V Power light	Steady bright--normal
D2	M.2 KEY M working station indicator	nvme flashes when reading and writing
D37	Indicator light for board running status	Flashing-normal
D3,D4	M.2 KEY E working station indicator	M.2 LED1，M.2 LED2

2.4 Buttons

Mandatory Sign	Functional Description
SW1	The POWER button is used for system shutdown and POWER on after soft shutdown
SW2	The RESET button is used to restart the core module
SW3	The RECOVERY button to enable the core module to enter recovery mode

3 Installation and use

3.1 picture of products



3.2 Drive

The RTSO-6002 carrier board works on a system burned with the official original version of NVIDIA Linux For Tegra (L4T). HDMI, Gigabit Ethernet, USB2.0, serial port, GPIO, SD card, I2C bus can all be supported. But Mini-PCIe, USB3.0, fan interface, etc. cannot work normally.

RTSO-6002 carrier board interface is fully supported, and the supporting driver patch needs to be loaded.

The original NVIDIA LT4 software package (for system programming) can be downloaded from the link below:

https://developer.nvidia.com/embedded/linux-tegra

RTSO-6002 driver patch support package (for system programming) download link:

http:// www.realtimes.cn/download/

System burning method (help document):

https://www.realtimes.cn/cn/help.html

Note: The account password of Ruitai Cloud Space must be obtained by contacting technical support.

3.3 usage

a) Ensure that all external system voltages are switched off
b) Install the Jetson Nano/Xavier NX/TX2 NX core module on the 260 Pin SO-DImm connector. During the installation, please pay attention to the alignment between the connectors, apply force evenly, and install the fixing screws.
c) Install necessary external cables. (e.g., the display cable to the HDMI display, the power input cable to power the system, the USB cable to link the keyboard and mouse...)
d) Connect the power cord to the power supply.
e) RTSO-6003 adopts the automatic/manual power-on design. Power is turned on and the system starts to work.
f) For the system without protective enclosure, please avoid moving the whole system after the system is powered on. It is strictly prohibited to use the body to touch the circuit board and its electronic components.

3.4 Recovery MODE

Jetson Nano/Xavier NX/TX2 NX core module can work in normal mode and Recovery mode, under which file system update, kernel update, Boot Loader update, BCT update and other operations can be carried out.

The steps to enter the Recovery mode are as follows:

a) Turn off the power supply to the system.
b) Use USB cable to connect RTSO-6003's OTG-USB port (P17) with Jetson to develop host USB port.
c) Press and hold the RECOVERY button to supply power to the system. The power supply should be maintained for more than 3 seconds, and then release the RECOVERY button.
d) The system enters the Recovery mode, and subsequent operations can be carried out at this point.

4 Connectors Description

4.1 module interface

Function	Connect to the NVIDIA Jetson Nano/Xavier NX/TX2 NX core module
Marking	P1
Type	260 Pin SO-DIMM
Pin define	For the pin definition of the connector, see the pin definition instructions in the NVIDIA Jetson Nano/Xavier NX/TX2 NX Core Module data Book.

4.2 Fan interface

Function	Connect external cooling fan
Marking	P14
Type	Molex PicoBlade Header
Pin define	

Pin	Signal	Pin	Signal
1	GND	2	VDD5V
3	TACH	4	PWM

Pin-1：the mark in the green box of the picture on the right.

4.3 Micro SD card slot

Function	Micro SD（TF）card slot
Marking	P6
Type	Micro SD（TF）
Pin define	

Pin	Signal	Pin	Signal
1	SD_D2	2	SD_D3/CD
3	SD_CMD	4	SD_VDD
5	SD_CLK	6	GND
7	SD_D0	8	SD_D1
9	CD		

4.4 HDMI2.0 interface

Function	HDMI2.0 interface
Marking	P10
Type	HDMI2.0
Pin define	

Pin	Signal	Pin	Signal
1	TMDS Data2+	2	TMDS Data2 shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 shield
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock shield	12	TMDS Clock-
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC_GND	18	+5V Power
19	Hot Plug Detect		

4.5 Mini HDMI interface

Function	HDMI interface
Marking	P9
Type	Mini HDMI
Pin define	

Pin	Signal	Pin	Signal
1	TMDS Data2 shield	2	TMDS Data2+
3	TMDS Data2-	4	TMDS Data1 shield
5	TMDS Data1+	6	TMDS Data1-
7	TMDS Data0 shield	8	TMDS Data0+
9	TMDS Data0-	10	TMDS Clock shield
11	TMDS Clock+	12	TMDS Clock-
13	DDC/CEC Ground	14	CEC
15	SCL	16	SDA
17	Reserved	18	+5V Power
19	Hot Plug Detect		

4.6 RTC battery interface

Function	RTC battery interface
Marking	BT1
Type	CR1220-S8411-45R
Pin define	

Pin	Signal	Pin	Signal
1	+	2	-

4.7 M.2 KEY E slot

Function	M.2 KEY E interface
Marking	P3
Type	M2 connector 2199230-4

Pin define

Pin	Signal	Pin	Signal
1	GND	2	3.3V
3	USB_DP	4	3.3V
5	USB_DM	6	LED#
7	GND	8	PCM_CLK/12S SCK
9	SDIO CLK	10	PCM_SYNC/12S WS
11	SDIO CMD	12	AP_PCM_IN/12S SD_IN
13	SDIO DATA0	14	AP_PCM_OUT/12S SD_OUT
15	SDIO DATA1	16	LED2#
17	SDIO DATA2	18	GND
19	SDIO DATA3	20	UART_WAKE#
21	SDIO WAKE#	22	AP_UART_RXD
23	SDIO RESET#	32	AP_UART_TXD
33	GND	34	AP_UART_CTS
35	AP_PETP0	36	AP_UART_RTS
37	AP_PETN0	38	VENDOR_DEFINED
39	GND	40	VENDOR_DEFINED
41	AP_PERP0	42	VENDOR_DEFINED
43	AP_PERN0	44	COEX3
45	GND	46	COEX2
47	REFCLKP0	48	COEX1
49	REFCLKN0	50	SUSCLK_32KHZ
51	GND	52	PERST0#
53	CLKREQ0#	54	W_DISABLE2#
55	PEWAKE0#	56	W_DISABLE1#
57	GND	58	I2C_DATA
59	AP_RESERVED/PETP1	60	I2C_CLK
61	AP_RESERVED/PETN1	62	ALERT#
63	GND	64	RESERVED
65	AP_RESERVED/PERP1	66	UIM_SWP/PERST1#
67	AP_RESERVED/PERN1	68	UIM_POWER_SNK/CLKREQ1#
69	GND	70	UIM_POWER_SRC/GPIO1/PEWAKE1#

	71	RESERVED/REFCLKP1	72	3.3V
	73	RESERVED/REFCLKN1	74	3.3V
	75	GND		

4.8 M.2 KEY M slot

Function	M.2 KEY M interface
Marking	P2
Type	M2 connector 1-2199230-4
Pin define	

Pin	Signal	Pin	Signal
1	GND	2	3V3
3	GND	4	3V3
5	PER3_N	6	NC
7	PER3_P	8	NC
9	GND	10	LED
11	PET3_N	12	3V3
13	PET3_P	14	3V3
15	GND	16	3V3
17	PER2_N	18	3V3
19	PER2_P	20	NC
21	GND	22	NC
23	PET2_N	24	NC
25	PET2_P	26	NC
27	GND	28	NC
29	PER1_N	30	NC
31	PER1_P	32	NC
33	GND	34	NC
35	PET1_N	36	NC
37	PET1_P	38	NC
39	GND	40	SMB_CLK
41	PER0_N	42	SMB_DATA
43	PER0_P	44	ALERT*
45	GND	46	NC
47	PET0_N	48	NC
49	PET0_P	50	PERST#
51	GND	52	CLKREQ#
53	REFCLK_N	54	PEWAKE#
55	REFCLK_P	56	NC
57	GND	58	NC

67	NC	68	SUSCLK(32KHZ)	
69	NC	70	3V3	
71	GND	72	3V3	
73	GND	74	3V3	
75	GND			

4.9 Power input interface 1

Function	Power input terminal
Marking	P16
Type	Pin seat connector - through hole -4- position-0.165"（4.20mm） 39281043
Pin define	

Pin	Signal	Pin	Signal
1	POWER_IN	2	POWER_IN
3	GND	4	GND

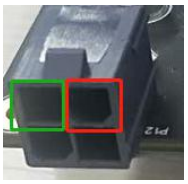
Pin1： Marked in the green box on the right
Pin2： Marked in the red box on the right

4.10 Power input interface 2

Function	**Power input interface 1**
Marking	P15
Type	Pin seat connector - through hole -4- 位置-0.165"（4.20mm） 1724480004
Pin define	

Pin	Signal	Pin	Signal
1	POWER_IN	2	POWER_IN
3	GND	4	GND

Pin1： Marked in the green box on the right
Pin2： Marked in the red box on the right



4.11 Network interface

Function	Gigabit Ethernet connector
Marking	P7
Type	RJ45 packaging
Pin define	

Pin	Signal	Pin	Signal
1	TP0+	2	TP0-
3	TP1+	4	TP2+
5	TP2-	6	TP1-
7	TP3+	8	TP3-

4.12 4 Integrated front-end ports(POE)

Function	Four gigabit Ethernet connectors（POE）
Marking	P4
Type	HR931474CE
Pin define	

Pin	Signal	Pin	Signal
1	TP0+	2	TP0-
3	TP1+	4	TP2+
5	TP2-	6	TP1-
7	TP3+	8	TP3-

Note: 6003L/6003LE has no POE power supply function.

4.13 POE Power connector

Function	POE Power connector
Marking	P5
Type	Vertical joint connector, 4.2MM pitch double row 2PIN
Pin define	

Pin	Signal	Pin	Signal
1	POE_VCC	2	POE_GND

Pin1： Marked in the green box on the right

Note: 6003L/6003LE does not have this interface.

4.14 USB3.0 interface

Function	USB3.0 interface
Marking	P18
Type	USB Type-A interface
Pin define	

Pin	Signal	Pin	Signal
1	VBUS	2	D-
3	D+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+		

4.15 USB2.0 OTG

Function	Micro USB interface
Marking	P17
Type	USB 2.0 MicroType-B
Pin define	

Pin	Signal	Pin	Signal
1	VBUS	2	DN
3	DP	4	ID
5	GND		

4.16 Isolated communication port

Function	Isolated communication port（485，CAN，4 x opto-isolator I/O）
Marking	P13
Type	Double row of bent pins at plate end 3.81mm
Pin define	

Pin	Signal	Pin	Signal
1	RS485_A	2	IN1+
3	RS485_B	4	IN1-
5	CANH	6	IN2+
7	CANL	8	IN2-
9	OUT1+	10	OUT2+
11	OUT1-	12	OUT2-

Pin1： Marked in the blue box on the right.

Pin2： Marked in the red box on the right.

	The RS485 mapping file in the Linux system is ttyTHS1 in the /dev directory. Xavier NX's the mapping files of OUT1, OUT2, IN1, IN2 in Linux system are 264, 266, 267, 422. Nano's the mapping files of OUT1, OUT2, IN1, IN2 in Linux system are 66,63,64,200 Note: There is no CAN interface function when matched with Nano core.	

4.17 Multi-function needle insertion

Function	Multi-function needle insertion	
Marking	P12	
Type	2.54mm pitch 2x14 Pin Dip	
Pin define		

Pin	Signal	Pin	Signal
1	VDD3V3_C	2	VDD5V_C
3	UART2_TXD_3V3	4	UART2_RXD_3V3
5	UART1_TXD1_3V3	6	UART1_RXD1_3V3
7	GND	8	GND
9	I2C0_SCL	10	I2C1_SCL
11	I2C0_SDA	12	I2C1_SDA
13	SPI0_SCK_3V3	14	SPI1_SCK_3V3
15	SPI0_MISO_3V3	16	SPI1_MISO_3V3
17	SPI0_MOSI_3V3	18	SPI1_MOSI_3V3
19	SPI0_CS0_3V3	20	SPI1_CS0_3V3
21	GPIO9_3V3	22	RESET_BTN_IN
23	SPI0_CS1_3V3	24	RECOVERY_BTN_IN
25	SPI1_CS1_3V3	26	POWER_BTN_IN
27	GND	28	GND

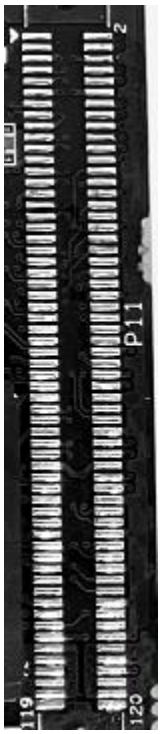
Pin1: Marked in the green box on the right.
Pin2: Marked in the red box on the right.
The two serial ports from UART1 to UART2 are both 3.3V TTL logic level. UART2 is for debugging serial ports. The mapping files for UART1 and UART2 in Linux are ttyTHS0 and ttyTCU0 in the /dev directory.
SPI0 and SPI1 The mapping file in the Linux system is under /dev directory spi0.0 and spi1.0。

4.18 High speed connector

Function	High speed connector
Marking	P11
Type	FX23L_120P_0_5SV12

Pin define

Pin	Signal	Pin	Signal
1	CSI_3_D0_P	2	CSI_3_D0_N
3	GND	4	CSI_3_CLK_P
5	CSI_3_CLK_N	6	GND
7	CSI_3_D1_P	8	CSI_3_D1_N
9	GND	10	CSI_2_D0_P
11	CSI_2_D0_N	12	GND
13	CSI_2_CLK_P	14	CSI_2_CLK_N
15	GND	16	CSI_2_D1_P
17	CSI_2_D1_N	18	GND
19	CSI_4_D0_P	20	CSI_4_D0_N
21	GND	22	CSI_4_CLK_P
23	CSI_4_CLK_N	24	GND
25	CSI_4_D1_P	26	CSI_4_D1_N
27	GND	28	CSI_4_D2_P
29	CSI_4_D2_N	30	GND
31	CSI_4_D3_P	32	CSI_4_D3_N
33	GND	34	CSI_1_D0_P
35	CSI_1_D0_N	36	GND
37	CSI_1_CLK_P	38	CSI_1_CLK_N
39	GND	40	CSI_1_D1_P
41	CSI_1_D1_N	42	GND
43	NC	44	NC
45	GND	46	I2C1_SCL
47	I2C1_SDA	48	GND
49	NC	50	NC
51	GND	52	NC
53	CARRIER_PWR_ON_OUT	54	GND
55	NC	56	NC
57	GND	58	VCC_IN
59	VCC_IN	60	GND
61	USB2_DP	62	USB2_DN
63	GND	64	PCIE1_RX0_P
65	PCIE1_RX0_N	66	GND
67	PCIE1_CLK_P	68	PCIE1_CLK_N



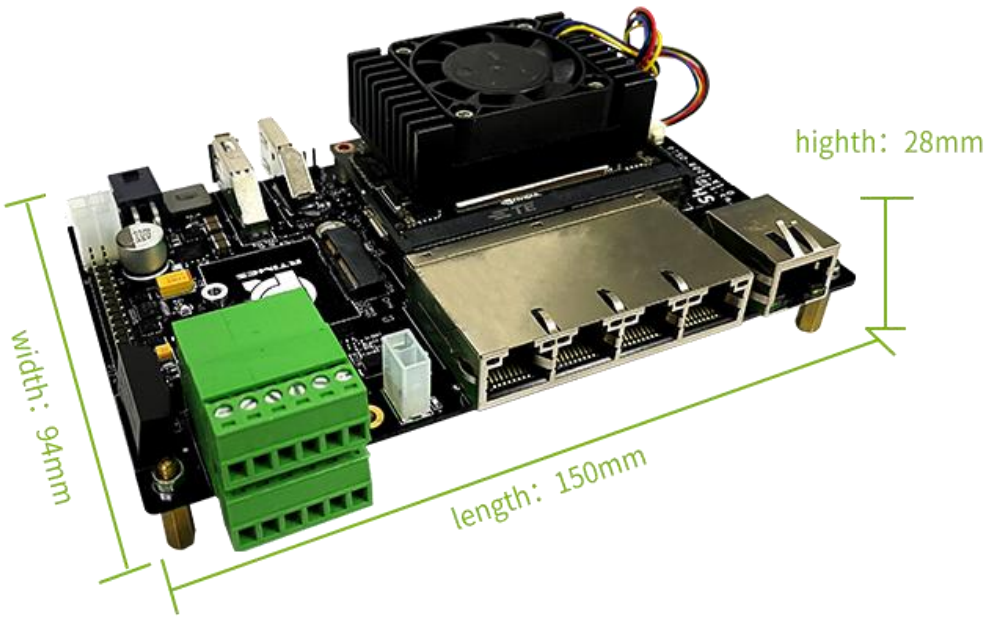
69	GND	70	PCIE1_TX0_P
71	PCIE1_TX0_N	72	GND
73	PCIE0_WAKE	74	PCIE1_RST
75	GND	76	PCIE1_CLK_REQ
77	NC	78	GND
79	CAM0_MCLK	80	CAM0_PWDN
81	GND	82	CAM1_MCLK
83	CAM1_PWDN	84	GND
85	CAM_I2C_SCL	86	CAM_I2C_SDA
87	GND	88	CSI_5_D0_P
89	CSI_5_D0_N	90	GND
91	CSI_5_CLK_P	92	CSI_5_CLK_N
93	GND	94	CSI_5_D1_P
95	CSI_5_D1_N	96	GND
97	CSI_0_D0_P	98	CSI_0_D0_N
99	GND	100	CSI_0_CLK_P
101	CSI_0_CLK_N	102	GND
103	CSI_0_D1_P	104	CSI_0_D1_N
105	GND	106	I2S0_DOUT
107	I2S0_DIN	108	GND
109	I2S0_FS	110	I2S0_SCLK
111	GND	112	NC
113	NC	114	GND
115	NC	116	NC
117	GND	118	VDD5V
119	VDD5V	120	GND
121	VDD3V3	122	VCC_IN
123	GND	124	VDD5V
125	GND	126	GND

5 Hardware update history

RTSO-6003 Board Hardware Update History

Version	Reason for change
V1.0	Initial release
V1.1	Change plate

6 Product size



Terms of Warranty

Important note

Each embedded product provided by Realtimes Technology is free from any defects in material and process,fully in line with the specifications officially issued by the original factory.

Realtimes Technology warranty covers the original products,If the parts configured by the dealer are out of order, please consult with the dealer to solve the problem. All the baseplate and core modules provided by Ruitai New Era (Beijing) Technology Co., Ltd. are guaranteed for 3 years, while the other peripherals are guaranteed for 1 year (life-long maintenance service is provided if the warranty period is beyond the warranty period). The warranty period starts from the date of delivery, for the products repaired within the warranty period, the repair parts shall be extended for 12 months.Unless notified by Realtimes Technology, the date of your original invoice shall be the date of shipment.

How do I get warranty services

If the product does not work properly, Please contact Realtimes Technology or dealer for warranty service, please show invoice when product warranty(this is the proof for you getting warranty service).

Warranty solution

When you ask for warranty service, please follow Realtimes Technology warranty process,You will need to receive your first diagnosis from a technicial engineer by phone or by email,at that time,we need you to cooperate with us to fill in all the questions on the RMA form provided by us. Once we accurately determine the cause of the fault and the location of the damage ,we will provide the charge list for the out of warranty products,which needs your confirmation.Realtimes Technology keep the right to repair or replace the products. If the product is replaced or repaired, the replaced faulty product or the repaired and replaced faulty parts will be returned to Realtimes Technology.

For products under warranty,the customer shall bear the freight when the product is returned to the manufacturer,Realtimes Technology will bear the ship cost of the products after maintenance.

The following conditions are not covered by the warranty terms

a) Improper installation, improper use, misuse and abuse of products(Overloading, for example).
b) Improper maintenance and storage（Such as fire, explosion, etc）or natural disasters（such as lightning stroke,earthquake,typhoon,etc）
c) Personal unauthorized changing the product(such as changing circuit characteristics, mechanical characteristics, software characteristics,Conformal coating).
d) Other failures which are clearly due to misuse(such as overvoltage,polarity reversal, the pin bent or broken,the wrong connection,drop damage,transportation damage,damage due to over operating temperature and so on).
e) The logo and part number on the product have been deleted or removed.
f) The product is out of warranty.

Special concerns

If the same fault multiple occurrence for the products,in order to find out the reason causing the problem,we will request the users to provide the specific documents or information of peripheral equipment,such as monitor,I/O boards,cables,power supply, diagram and structure of the system,etc.If such documents or information are not available,we have the right to refuse to perform the warranty, the repairments will be charged accordingly.

Rev.C 6/2020