Y-C11
Carrier Board
Datasheet

Datasheet Updated History

Version	Date	Description of Change	Hardware Version
V1.0	Mar 30,2023	Create a document	V1.0

Product Hardware Updated History

Version	Date	Description of Change
V1.0	Mar 28, 2023	Initial version

Electronic components and circuits are very sensitive to electrostatic discharge, although the company will do anti-static protection design on the main interface of the board when designing circuit board products, but it is difficult to do anti-static safety protection for all components and circuits. Therefore, it is recommended to follow esd safety precautions when handling any circuit board component. Esd protection measures include but are not limited to the following:

- During transportation or storage, place the card in an ESD bag and do not take it out until installation.
- Release the static electricity before touching the board. Wear a discharge grounding wrist strap.
- Operate the circuit board only in electrostatic discharge safety area.
- Avoid moving circuit boards in carpeted areas.
- Avoid direct contact with electronic components on the board by edge contact.

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Chapter 1. Introduction

The Y-C11 is a carrier board with NVIDIA® Jetson Orin NX/Orin Nano core modules. The whole board adopts wide temperature industrial models, the main interface is designed for electrostatic safety protection, and the power supply application scheme of high reliability is adopted. The input power supply has the function of overvoltage and reverse polarity protection, and has a rich external interface.It can carry hundreds of functional modules through MiniPCIe connector (including USB2.0 and PCIe X1 signals) to achieve further expansion of system functions. The M.2 B key slot of the Y-C11 carrier board can directly carry 4G/5G communication modules, and the carrier board has a Nano SIM card slot. Both independent and dual gigabit network ports support expanded POE power supply.

1.1 Product Specifications

- 4 x USB3.0 TypeA connector
- 1 x Micro USB connector
- 2 x Gigabit Ethernet (10/100/1000 base-t) RJ45 connector (extensible support POE power supply)
- 1 x HDMI TypeA connector
- 1 x Nano type SIM card connector
- 1 x full length MiniPCIe connector
- 2 x M.2 2242 M key slot
- 1 x M.2 3050 B key slot (Extendable 4G/5G communication module)
- 2 x 4 Lane MIPI camera interface FPC connector
- 1 x 3.3 V RTC power supply interface
- 1 x fan control interface (12 v)
- 1 x transceiver of CAN bus interface
- 40 pin (2 x20) 2.0 mm spacing multi-function extension pin connector(including 4xGPIO, 2xI2C, 2xSPI, 1xI2S, 1xUSB2.0, 2xUART)
- Automatic startup on electricity
- Anti-shedding power supply terminals
- Board size: 120mm*102mm*23mm
- Power input: DC +12V ~ +24V
- Working temperature: - 40 ~ + 85 ℃
- Weight: 112 g

1.2 Order Information

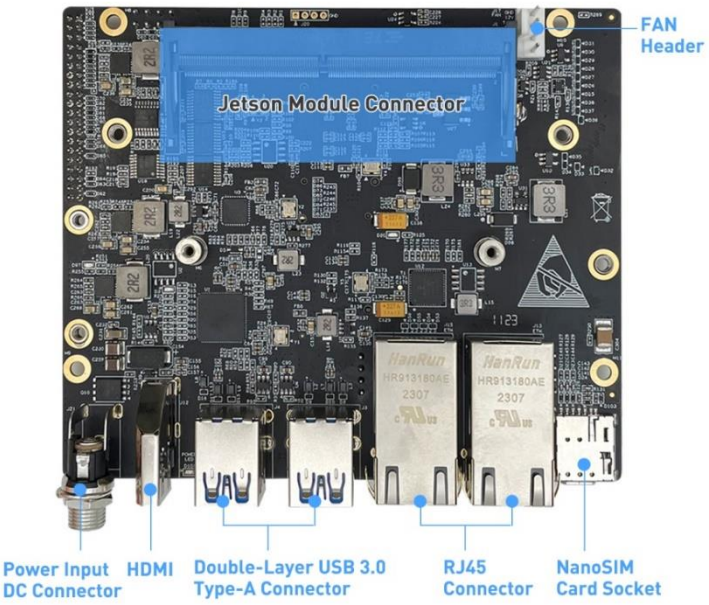
Model	Function
Y-C11	Equipped with NVIDIA® Jetson™ ORIN NX、ORIN Nano series core module’s interface expansion board.

Taobao Store Address : https://shop333807435.taobao.com/

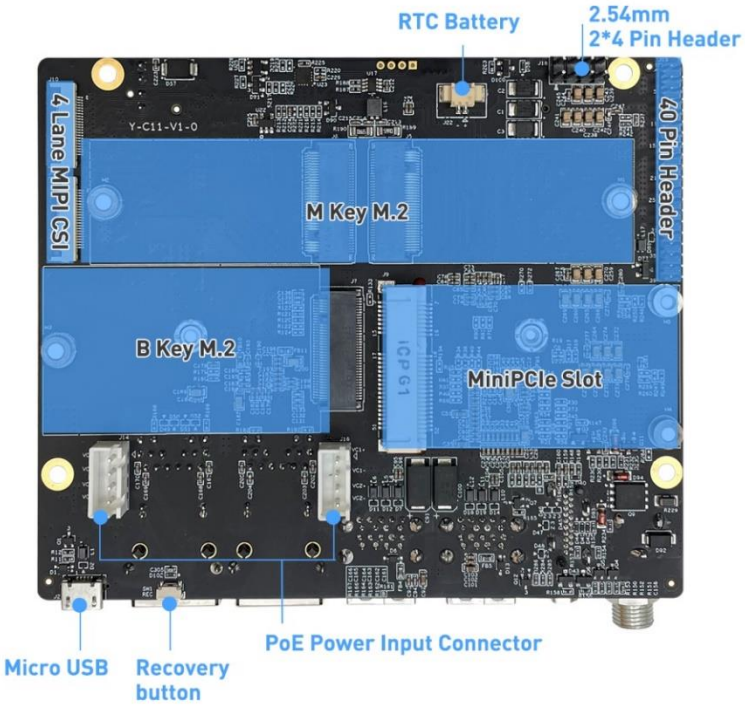
Jingdong Store Address : https://mall.jd.com/index-11467104.html?from=pc

Ali International Station address : https://plink-ai.en.alibaba.com/

Chapter2. Port function and location



Front



Back

2.1 Functional Connector

Connector	Description
J1	High-speed connector for connecting Jetson series core modules
J2	Type-B Micro-USB interface for system burning and OTG function output
J3/J4	Double-layer Type A USB3.0 Connector
J5	2242 Size M key M.2 Connector (PCIe x4)
J6	2242 Size M key M.2 Connector (PCIe x2)
J7	3050 Size B key M.2 Connector (USB3.0+USB2.0)
J8	Nano SIM socket
J9	MiniPCIe slot (PCIe x1 + USB2.0)
J10、J11	4 lane MIPI CSI Connector
J12	Type-A HDMI connector
J13、J15	Gigabit network port RJ45 connector
J14	J13 POE power supply port
J16	J15 POE power supply port
J17	12V fan connector
J18	2.54mm Pitch 2 x 4pin Pin connector (see interface definition description for details)
J19	2.0mm Pitch 2 x 20pin Pin connectors (see interface definition description for details)
J21	Power supply DC connector with locking thread
J22	RTC power connector

2.2 LED indicator light

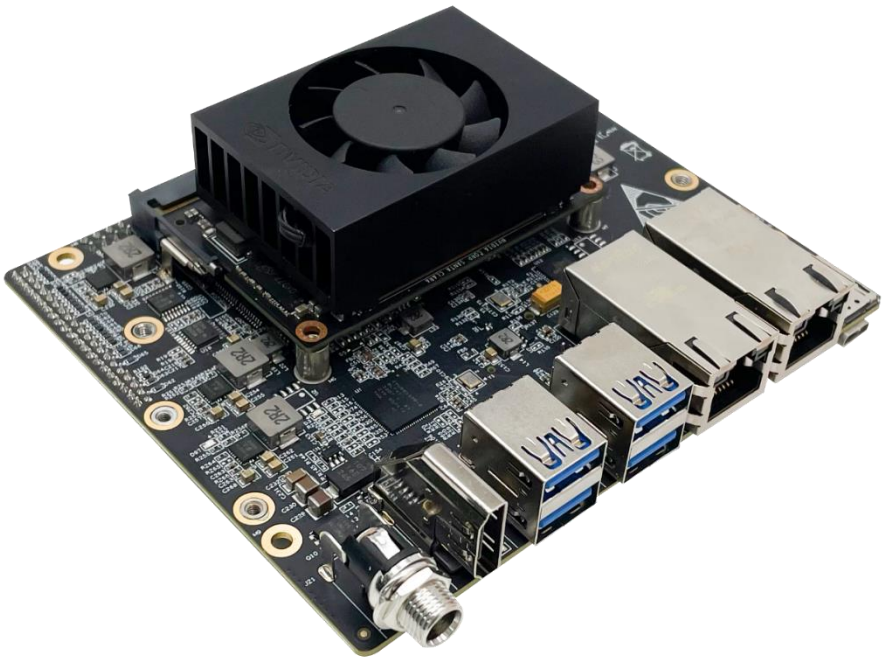
LED	Description
D101	Core module working status indicator light
D97	Carrier board power supply status indicator light

2.3 Buttons

Button	Description
SW1	Recovery button is used to put the core module into recovery mode

Chapter 3. Installation and Use

3.1 Installation effect drawing



3.2 Method of use

(1) Ensure that all external system voltages are turned off

(2) Install the Jetson core module to the J1 high speed connector. Please pay attention to the alignment between the connectors and apply even force during the installation. Install the core module fixing screw after the module is installed in place.

(3) Install necessary external cables. (For example: display cable connected to HDMI display, power input cable for system power, USB cable connecting keyboard and mouse, camera, MiniPCIe function expansion module...)

(4) Power on the DC12-24V power supply (Ensure that the heat dissipation device on the core module is installed before power-on).

(5) For the system without a protective cover, do not move the hardware system after the system is powered on. Do not touch the circuit board or any electronic components directly with your body.

3.3 Recovery mode

Jetson core module can work in normal mode and Recovery mode, in which file system update, kernel update, Bootloader/UEFI update, BCT update and other operations can be performed.

To enter the Recovery mode, perform the following steps:

(1) Turn off the system power supply.

(2) Use a micro-USB cable to connect Y-C11's Micro-USB port (J2) with Jetson's development host USB port.

(3) Hold down the RECOVERY button (SW1) and power the system. Hold down the SW1 button for more than 3 seconds and release the RECOVERY button.

(4) The system enters Recovery mode, and you can perform subsequent operations.

Chapter 4. Interface Definition Description

4.1 Core Module Connector [J1]

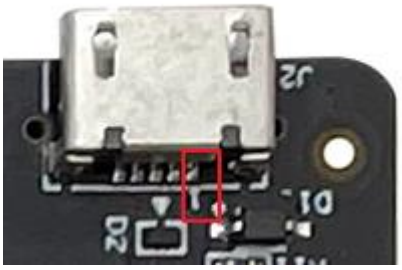
Function	Connect to the NVIDIA Jetson series Orin NX / Orin Nano module
Location	J1
Model	2309413-1
Pin Descriptions	For the pin definition of this connector, see the pin definition instructions in the NVIDIA Jetson Series Orin NX Core Module Data Book.

4.2 Micro USB2.0 [J2]

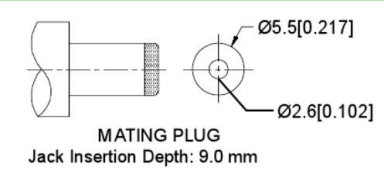
Function	USB2.0 OTG Functional Connector
Location	J2
Model	Type-B standard Micro USB 2.0 port(For burning operating system)
Pin Descriptions	See table below

Pin	Signal	Pin	Signal
1	VBUS	2	USB 2.0 D-
3	USB 2.0 D+	4	NC
5	GND		

Position of pin 1: in the red box on the right side of the picture.



4.3 DC power connector [J21]

Function	Carrier board power supply connector
Location	J21
Model	DC-026LBM-5A-2.5
Pin Descriptions	The supported input voltage ranges from 12V to 24V Inner diameter of contact: 2.5mm, outer diameter of contact: 5.6mm 

4.4 HDMI Connector[J12]

Function	Type A HDMI Connector
Location	J12
Model	Type-A standard USB3.0 port，Type A standard HDMI connector
Pin Descriptions	HDMI pin definition:

Pin	Signal	Pin	Signal
1	D2+	2	D2_SHIELD
3	D2-	4	D1+
5	D1_SHIELD	6	D1-
7	D0+	8	D0_SHIELD
9	D0-	10	CK+
11	CK_SHIELD	12	CK-
13	CEC	14	RESERVED
15	SCL	16	SDA
17	DDC/CEC_GND	18	+5V
19	HP_DETS		

4.5 Dual Layer USB3.0 Connector (J3&J4)

Function	Dual Layer USB3.0 Type A Connector
Location	J3&J4
Model	Type A Standard USB3.0 Interface

Pin Descriptions

Pin	Signal	Pin	Signal
1	VBUS	2	USB 2.0 D -
3	USB 2.0 D +	4	GND
5	SSRX -	6	SSRX +
7	GND	8	SSTX -
9	SSTX +		

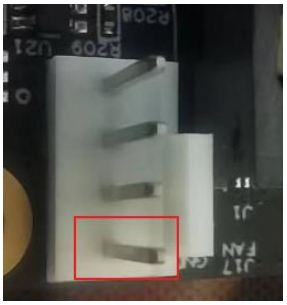
4.6 Fan Port [J17]

Function	Connecting external heat dissipation
Location	J17
Model	47053-1000

Pin Descriptions

Pin	Signal	Pin	Signal
1	GND	2	POWER (12V)
3	TACH	4	PWM

Position of pin 1: in the red box on the right side of the picture.



4.7 SIM Card Connector [J6]

Function	Nano type SIM card slot
Location	J6
Model	Self-ejecting Nano SIM card slot
Pin Descriptions	

4.8 RJ45 Connector [J13&J15]

Function	RJ45 Connector
Location	J13&J15
Model	Extensible RJ45 cable connector with support for POE++ specification
Pin Descriptions	

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

J13 and J15 connectors can be supplied with standard/non-standard PoE power through J14 and J16 connectors. For details, please consult our technical staff.

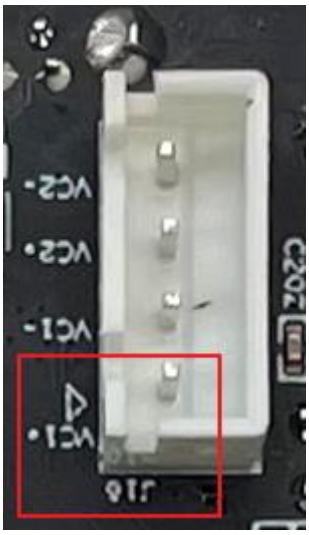
4.9 PoE Power Supply Expansion Connector [J14&J16]

Function	PoE Power Supply Expansion Connector
Location	J14&J16
Model	XH-4PA
Pin Descriptions	

Pi	Signal	Pin	Signal
1	VC1+	2	VC1-
3	VC2+	4	VC2-

J13 and J15 connectors can be supplied with standard/non-standard PoE power through J14 and J16 connectors. For details, please consult our technical staff.

Position of pin 1: in the red box on the right side of the picture.



4.10 M.2 B key Extension interface[J7]

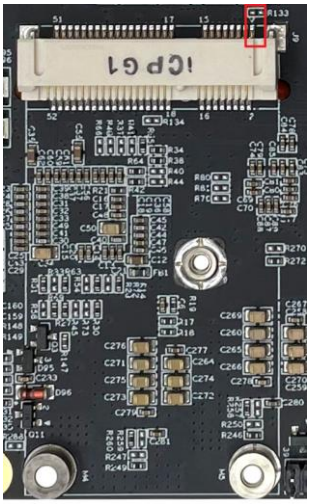
Function	B Key M.2 Slot
Location	J7
Model	B Key， 3050 size The standard M.2 Key B port is used to connect 4G/5G communication modules The J5 connector uses USB3.0+USB2.0 signals without PCIe signals. Please contact us for detailed signal definition.

4.11 miniPCIe Extension interface [J9]

Function	miniPCI slot
Location	J9
Model	5.6mm full length miniPCIe connector

Pin Descriptions

Pin	Signal	Pin	Signal
1	WAKE	2	3.3V
3	NC	4	GND
5	NC	6	1.5V
7	PEIC1_CLKREQ	8	NC
9	GND	10	NC
11	PEIC1_REFCLK_N	12	NC
13	PEIC1_REFCLK_P	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	WI_DISABLE
21	PEIC_CARD_SEL	22	PEIC1_REST
23	PERN	24	3.3V
25	PERP	26	GND
27	GND	28	1.5V
29	GND	30	NC
31	PETN	32	NC
33	PETP	34	GND
35	GND	36	USB2_D_N
37	GND	38	USB2_D_P
39	VCC_3V3_PCIE	40	GND
41	VCC_3V3_PCIE	42	NC
43	PEIC_SEL	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3V



Position of pin 1: in the red box on the right side of the picture.

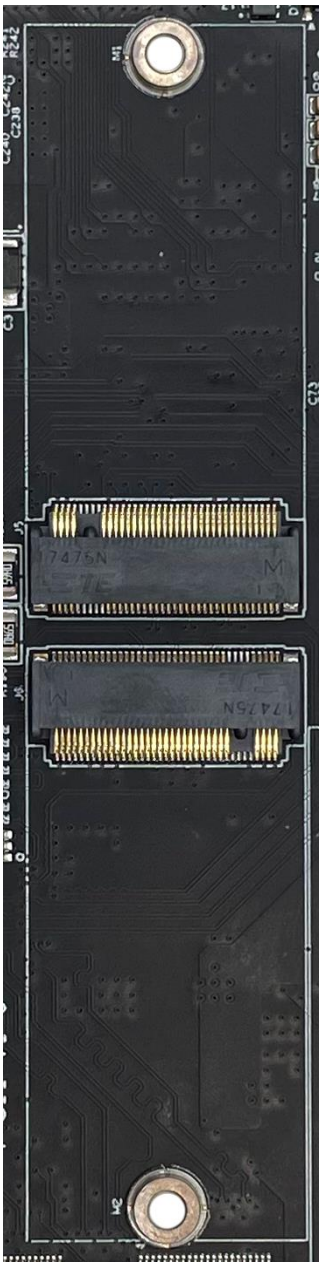
J9 Connectors contain USB2.0 and PCIe x1 signals

4.12 M.2 M key Extension interface[J5/J6]

Function	M Key M.2 Slot
Location	J5/J6
Model	M Key ,2242 Size

Pin Descriptions

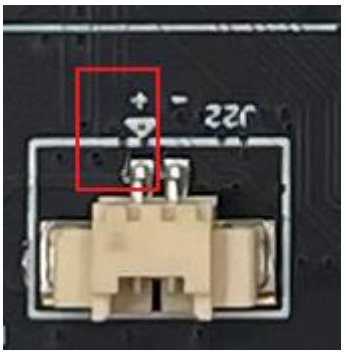
Pin	Signal	Pin	Signal
1	GND	2	3.3V
3	GND	4	3.3V
5	UPHY_RX5_N	6	NC
7	UPHY_RX5_P	8	NC
9	GND	10	LED
11	UPHY_RX5_N	12	3.3V
13	UPHY_RX5_P	14	3.3V
15	GND	16	3.3V
17	UPHY_RX4_N	18	3.3V
19	UPHY_RX4_P	20	NC
21	GND	22	NC
23	UPHY_RX4_N	24	NC
25	UPHY_RX4_P	26	NC
27	GND	28	NC
29	UPHY_RX3_N	30	NC
31	UPHY_RX3_P	32	NC
33	GND	34	NC
35	UPHY_RX3_N	36	NC
37	UPHY_RX3_P	38	NC
39	GND	40	SMB_CLK
41	UPHY_RX2_N	42	SMB_DATA
43	UPHY_RX2_P	44	ALERT
45	GND	46	NC
47	UPHY_RX2_N	48	NC
49	UPHY_RX2_P	50	PERST#
51	GND	52	CLKREQ#
53	UPHY_REFCLK0_N	54	PEWAKE#
55	UPHY_REFCLK0_P	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	SUSCLK(32KHz)
69	NC	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		



4.13 RTC Power Supply Connector [J22]

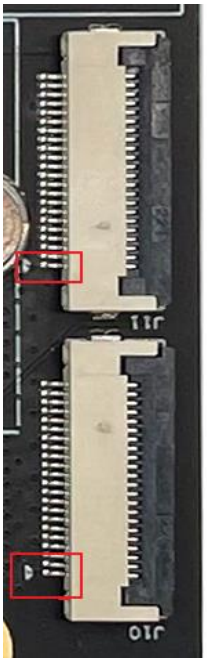
Function	Provide power support for the core board clock circuit
Location	J22
Model	53261-0271
Pin Descriptions	Position of pin 1: in the red box on the right side of the picture.

Pin	Signal	Pin	Signal
1	VCC（3.3V）	2	GND



4.14 MIPI CSI connector[J10&J11]

Function	4 Lane MIPI CSI Camera Connector
Location	J10&J11
Model	FG0.5-H2.0-22PIN
Pin Descriptions	Please contact us for detailed signal definition.



4.15 Expand the pin connector[J18]

Model	unction extension
	18
	254mm spacing 2*4pin double row of in-line pins

Pin Descriptions

Pin	Signal	Pin	Signal
1	3.3V	2	Power Button
3	UART2_TX_3V3	4	GND
5	UART2_RX_3V3	6	Reset Button
7	GND	8	GND

Position of pin 1: in the red box on the right side of the picture.

4.16 Multifunctional expansion connector [J19]

Function	Multifunctional expansion connector
Location	J19
Model	2.0mm spacing 2*20pin double row straight

Pin Descriptions

Pin	Signal	Pin	Signal
1	3.3V	2	5V
3	I2C1_SCL_3V3	4	I2C0_SCL_3V3
5	I2C1_SDA_3V3	6	I2C0_SDA_3V3
7	GND	8	GND
9	GPIO02_3V3	10	I2S0_DOUT_3V3
11	GPIO03_3V3	12	I2S0_DIN_3V3
13	GPIO07_PWM_3V3	14	I2S0_LRCK_3V3
15	GPIO13_PWM_3V3	16	I2S0_SCLK_3V3
17	GND	18	GND
19	SPI1_CS0_3V3	20	SPI0_CS0_3V3
21	SPI1_CS1_3V3	22	SPI0_CS1_3V3
23	SPI1_MISO_3V3	24	SPI0_MISO_3V3
25	SPI1_MOSI_3V3	26	SPI0_MOSI_3V3
27	SPI1_SCK_3V3	28	SPI0_SCK_3V3
29	GND	30	GND
31	USB_D2_N	32	UART0_TX_3V3
33	USB_D2_P	34	UART0_RX_3V3
35	GND	36	GND
37	CAN_H	38	UART1_TX_3V3
39	CAN_L	40	UART1_RX_3V3

Position of pin 1: in the red box on the right side of the picture.

Mapping numbers of GPIO02, GPIO03, GPIO07, and GPIO13 in the system are as follows:

446(PP.06), 328(PCC.00), 389(PG.06), 391 (PH.00)

The mapping files of UART0 and UART1 in the system are ttyTHS1 and ttyTHS0 in the /dev directory respectively.