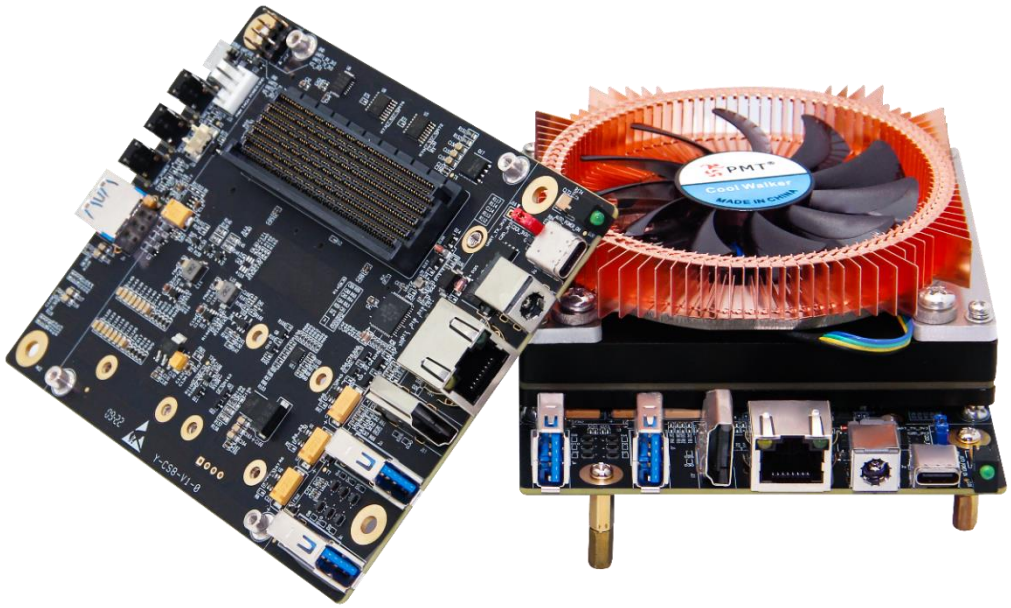
Y-C9
Carrier Board
Datasheet



Document History

Version	Date	Description of Change
V1.0	April 7, 2022	Initial Release
V1.1	October 19, 2022	Modify the Specification to Datasheet Modify footer error message

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

Y-C9 is a small form factor carrier board with NVIDIA® Jetson™ AGX Xavier core module, suitable for compact deployment needs. For industrial deployment applications, the main interface is designed for electrostatic safety protection, and a high-reliability power supply application scheme is adopted. The input power supply has overvoltage and reverse polarity protection functions, and has a wealth of external interfaces. All board devices use wide temperature models.

The Y-C9 carrier board can carry hundreds of functional modules through 2 miniPCIe connectors to further expand the system functions. It can be expanded to 4 Gigabit Ethernet signals, 2 full-speed SATA signals, and can also be equipped with Mini PCIe storage, video capture/output cards of various formats, AD capture cards, multi-serial port cards, sound capture/output cards, multi-function IO card...

1.1 Product Specifications

- Input Power : DC +12V
- Temperature Range : -40°C to 85°C
- Size : 136mm × 100mm ×20mm
- Weight : 112g

1.2 Order Information

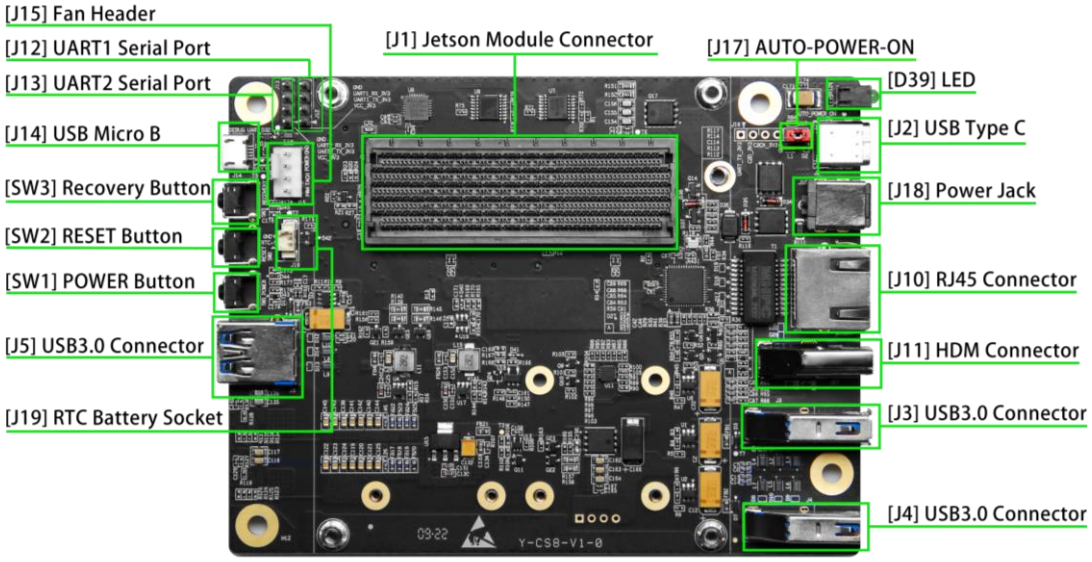
Model	Function
Y-C9	NVIDIA® Jetson™ AGX Xavier series core module interface expansion board.

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

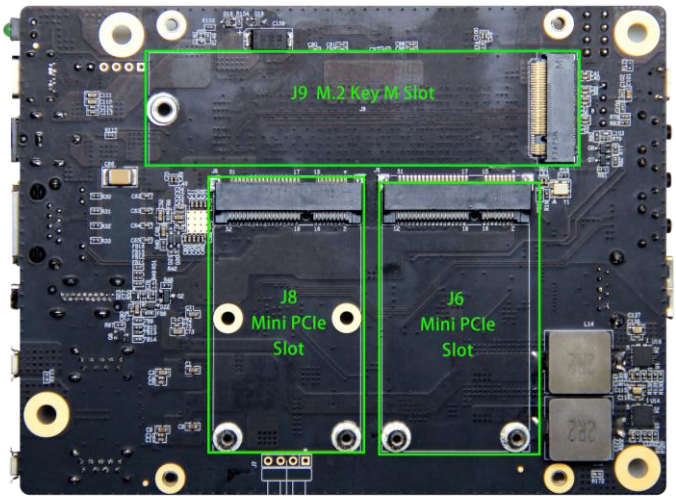
Jingdong Store Address : https://mall.jd.com/index-11467104.html?from=pc

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

Chapter 2. Interface Function Description



Y-C9 Front Interface Description



Y-C9 Reverse Interface Description

2.1 LED Indicators

LED	Description
D39	SOC Regulator Power LED (Green)

2.2 Buttons

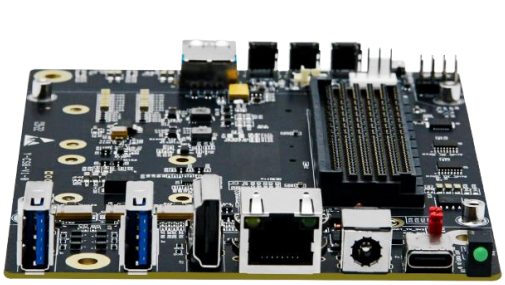
Button	Description	Usage
SW1	Power button	Used to power system up if off, or power down if on. If held for >10 seconds, will shut down the system.
SW2	Reset button	Used to force a full system reset.
SW3	Recovery button	Used to enter Force Recovery Mode. Button is held down while either system is first powered on, or by pressing and releasing reset button while recovery button is pressed.

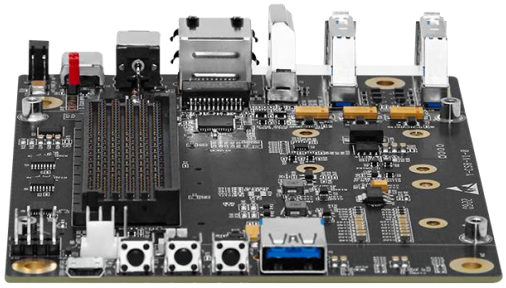
2.3 Functional Connector

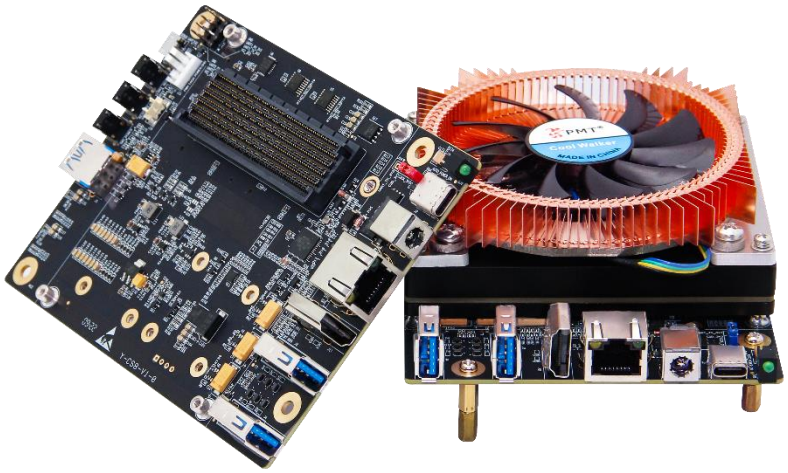
Connetcor	Description
J1	Jetson AGX Xavier Module Connector (65×11)
J2	USB Type C Connector, supporting Device mode only (including USB Recovery)
J3&J4&J5	USB 3.0 Type A Connector
J6&J8	miniPCIe Slot (52-pin)
J9	M.2 Key M Slot (75-pin)
J10	RJ45 Ethernet, RA, Female
J11	HDMI Type A Connector
J12&J13	4-pin Connector (3.3V TTL Serial Port)
J14	Micro USB B Connector (Debug Serial Port)
J15	Fan-Header (4-pin)
J17	AUTO-POWER-ON
J18	12V 10A Power Connector
J19	RTC Battery Socket

Chapter 3. Installation and Use

3.1 Installation effect drawing







3.2 Method of use

(1) Ensure that all external systems are powered off.

(2) Install the Jetson core module onto the J1 high-speed connector, using even force with good alignment between the connectors. Install the core module fixing screws 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) Connect the power cable to the power supply.

(5) Y-C9 You can set this parameter to automatic power-on by default or switch on to enable the system to work.

(6) 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, Boot Loader 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-C9's USB Type C port (J2) with Jetson's development host USB port.

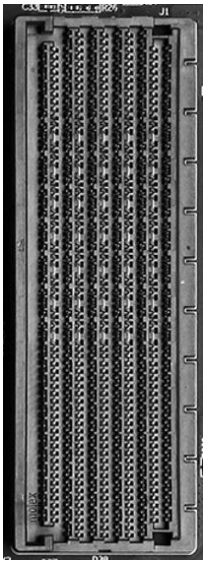
(3) In the automatic power-on mode, press and hold the RECOVERY button (SW3), plug in the system power supply, keep the SW3 button pressed for more than 3 seconds after the power is supplied, and then release the RECOVERY button.In the key start mode, first plug in the system power supply, press and hold the RECOVERY button (SW3), then press and hold the POWER button (SW1), keep pressing the SW3 button for more than 3 seconds, and then release the RECOVERY button.

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

Chapter 4. Interface Definition Description

4.1 Jetson Module Connector [J1]

Function	Connect to the NVIDIA Jetson series AGX Xavier module
Silk-screen	J1
Model	699-pin SO-DIMM
Pin Descriptions	For the pin definition of this connector, see the pin definition instructions in the NVIDIA Jetson Series AGX ORIN/AGX Xavier Core Module Data Book.

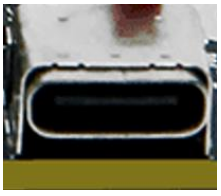


4.2 USB Type C Connector [J2]

Function	Supporting Device mode only (including USB Recovery)
Silk-screen	J2
Model	USB Type C Connector
Pin Descriptions	See table below

Pin	Signal	Pin	Signal
A1	GND_A	B1	GND_B
A2	TX1_P	B2	TX2_P
A3	TX1_N	B3	TX2_N
A4	VBUS_A	B4	VBUS_B
A5	CC1	B5	CC2
A6	D1_P	B6	D2_P
A7	D1_N	B7	D2_N
A8	SBU1	B8	SBU2
A9	VBUS_A	B9	VBUS_B
A10	RX2_N	B10	TX2_N
A11	RX2_P	B11	TX2_P
A12	GND_A	B12	GND_B

This interface is only used for flash system



4.3 USB 3.0 Connector [J3 & J4 & J5]

Function	USB3.0 Connector
Silk-screen	J3 & J4 & J5
Model	USB3.0 Type A Connector

Pin Descriptions

Pin	Signal	Pin	Signal
1	VBUS	2	DN
3	DP	4	GND
5	RX_N	6	RX_P
7	GND	8	TX_N
9	TX_P		

4.4 miniPCIe Connector [J6 & J8]

Function	miniPCIe Connector
Silk-screen	J6 & J8
Model	5.6mm high supports full-length and half-length miniPCIe connectors for expansion cards

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	NC
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	NC
37	GND	38	NC

	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
	J6 only supports full-length expansion cards, J8 supports full-length and half-length expansion cards.			

4.5 M.2 Key M Slot [J9]

Function	M.2 Key M Slot
Silk-screen	J9
Model	M.2 Key M Slot (75-pin)

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		

4.6 RJ45 Ethernet Connector [J10]

Function	RJ45 Ethernet Connector
Silk-screen	J10
Model	RJ45 Ethernet Socket, RA ,Female

Pin Descriptions

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

4.7 HDMI Connector [J11]

Function	HDMI Connector
Silk-screen	J11
Model	HDMI Type A Connector

Pin Descriptions

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		

4.8 UART Serial Port [J12 & J13]

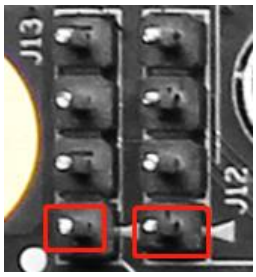
Function	UART Serial Port
Silk-screen	J12 & J13
Model	4pin (2.00mm pitch)
Pin Descriptions	The J12 pin is defined as follows:

Pin	Signal	Pin	Signal
1	3.3V	2	UART1_TX_3V3
3	UART1_RX_3V3	4	GND

The J13 pin is defined as follows:

Pin	Signal	Pin	Signal
1	3.3V	2	UART2_TX_3V3
3	UART2_RX_3V3	4	GND

The corresponding device name of UART1 in the system is /dev/ttyTHS0,
The corresponding device name of UART2 in the system is /dev/ttyTHS1,
Pin 1 position: marked by the red frame in the picture on the right.



4.9 USB Micro B Connector [J14]

Function	USB Micro B Connector
Silk-screen	J14
Model	USB Micro B
Pin Descriptions	

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

This interface is used as a debug serial port, and the corresponding device name in the system is /dev/ttyTHS4. This interface cannot be used for flash system . Pin 1 position: marked by the red frame in the picture on the right.

4.10 Fan-Header [J15]

Function	Fan-Header
Silk-screen	J15

Model	4pin
Pin Descriptions	Position of pin 1: in the red box on the right side of the picture.

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

4.11 AUTO-POWER-ON[J17]

Function	AUTO-POWER-ON
Silk-screen	J17
Model	2pin (2.00mm pitch)
Pin Descriptions	Position of pin 1: in the red box on the right side of the picture.

Pin	Signal	Pin	Signal
1	3.3V	2	ACOK

4.12 Power Jack[J18]

Function	Power Jack
Silk-screen	J18
Model	Inner pin diameter 2.5mm, outer diameter 5.5mm DC connector
Pin Descriptions	Maximum 12V 10A input

4.13 RTC Battery Socket[J19]

Function	RTC Battery Socket
Silk-screen	J19
Model	2pin
Pin Descriptions	Position of pin 1: in the red box on the right side of the picture.

Pin	Signal	Pin	Signal
1	3.3V	2	GND