NewPre3101/3102/3103 Series
AI Edge General-Purpose Controller
Hardware Installation Manual

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KYLAND

AI Edge General-Purpose Controller NewPre3101/3102/3103 Series

Hardware Installation Manual

Notice for Safe Use

This product has good and reliable performance within the designed range of use, but it is necessary to avoid damage or destruction caused by man to the device. Before using the device, read this manual carefully to ensure the safety of the user and the device. Please keep this manual after reading for future reference. Our company does not assume any responsibility for personal injury or device damage caused by violation of safety instructions.

● Do not place or install the device near water sources or in humid places, and keep the relative humidity around the device within the range of 5% to 95% and without condensation.

● Do not place or install the device in a place with high magnetic field, strong earthquake, or high temperature. Keep the device operating and storage temperature within the specified range.

● Keep the device securely placed to prevent falling; Keep the device securely installed to prevent slippage.

● Keep the device and surrounding environment clean. Wipe with soft dry cotton cloth if necessary.

● Please do not place debris on the device or cables, keep the device heat dissipation smooth and the cables smooth and free of knots.

● Wear antistatic gloves or take other safety precautions when operating the device.

● When connecting cables, avoid exposed metal wires to prevent high temperature oxidation or combined electricity of metal wires.

● Install device in accordance with national and local electrical regulations.

● Before powering on the device, check the power specifications supported by the device to prevent the device from being damaged due to overvoltage.

● Keep the power plug and other device connectors securely connected to prevent adverse effects of contact.

● Do not remove or plug the power supply with wet hands. Do not touch the device or its components with wet hands before the power is off.

● Before operating live device, remove jewelry (rings, bracelets, watches, necklaces, etc.) or other metal objects to prevent electric shock or burns.

- Do not operate the device or connect or disconnect cables during lightning weather.

- Please use the connectors and cables approved by our marketing or technical support personnel to prevent the module functions from being affected due to the non-standard connectors and cables.

- Do not disassemble the device by yourself. If the device is faulty or suspected to be faulty, contact our marketing or technical support personnel.

- If the device components are lost, please purchase the replacement parts under the guidance of our marketing staff or technical support staff, it is strictly forbidden to choose the components by yourself.

- The device should be scrapped in accordance with relevant national regulations to reduce the pollution to the environment.

  In the following cases, please disconnect the power supply immediately and contact us.

- The device is flooded.

- The device is broken or the casing is cracked.

- The device works abnormally or its performance changes.

- The device produces odor, smoke or abnormal noise.

Table of Contents

1   Product Overview

AI Edge General-Purpose Controller NewPre3101/3102/3103 Series is AI Edge General-Purpose Controller of Intel Coffee Lake platform developed by our company. Its robust and closed chassis design, fan less but efficient single-ribbed chassis cooling surface, over current and over voltage at the power input and excellent EMC protection, IP30 (3102)/IP40 (3101) protection level make this Series of products used in a variety of harsh environmental sites.

AI Edge General-Purpose Controller NewPre3101/3102/3103 Series supports wall-mounted installation. A maximum of four 10/100/1000Base-T(X) Ethernet interfaces, four RS-232/RS-422/RS-485 serial interfaces, four USB3.0 interfaces, four USB3.1 interfaces, one HDMI interface, one DP display interface, one VGA interface, and one built-in MiniPCIe connection are configured interface (supporting MSATA,4G, and WiFi), two M.2 interfaces (one hard disk supporting M.2, one 5G dedicated interface), and eight DIDO interfaces (optional). The following table shows the specific configuration.

Table 1 Configuration table

Type of product	NewPre3101-P3326-M5-D4
	NewPre3101-P3326-M5-D2
	NewPre3101-P3326-M4-D4
	NewPre3101-P3326-M4-D2
	NewPre3102-P3326-M5-D4
	NewPre3102-P3326-M5-D2
	NewPre3102-P3326-M4-D4
	NewPre3102-P3326-M4-D2
	NewPre3103-P3326-M5-D2
	NewPre3103-P3326-M5-D2
	NewPre3103-P3326-M4-D4
	NewPre3103-P3326-M4-D2
Code definition	Code selection

Electric port	Four 10/100/1000Base-T(X) electric ports, RJ45
Serial Interface	4 x RS232/485/422
	(The mode can be changed through the BIOS)
USB Connector	Four USB3.0, four USB3.1
Video interface	One HDMI, DP, VGA interface (support dual display, support 1080P HD display); The 3102 Series adds an independent graphics card interface
DIDO interface	8-way DIDO interface
Expansion interface	One 5G MiniPCIe interface (built-in), one MINIPCIe MSATA and 4G interface (built-in), one sata expansion slot.
Operating temperature	-40℃～+60℃
PWR1-PWR2: power input	Terminal interfaces: 12V+, 12V- : 12V voltage input

2   Structure and Interface

Note:

In order to maintain the cleanliness of the interface and to protect the operational performance of the device, it is recommended that users order a separate interface dust cover (optional) according to the form of the device interface.

Note:

This device is sold without a power adapter. If you use a power adapter to supply power, you must purchase a power adapter that has obtained the CCC certification and meets the requirements of the standard. The device is powered by a dedicated interface.

2.1   Front panel

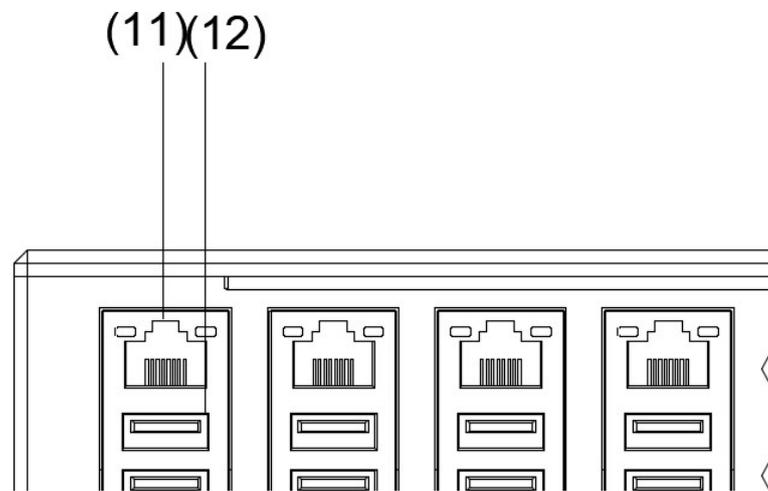● AI Edge General-Purpose Controller NewPre3101 Series

Figure 1 NewPre3101 front panel labeling diagram

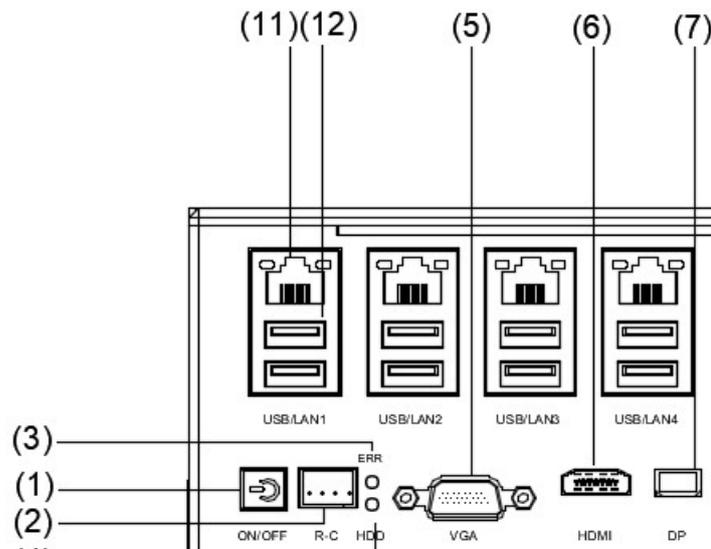● AI Edge General-Purpose Controller NewPre3102 Series

Figure 2 NewPre3102 front panel labeling diagram

Table 2 NewPre3101 and NewPre3102 front panel labeling instructions

No.	Identification	Description
(1)	ON/OFF	Power on and off button
(2)	R-C	R-C interface (pins 1 and 4 are short-connected to start up; pins 2 and 4 are short connected to clear COMS state; pins 3 and 4 are short to restart)
(3)	ERR(LED)	Device failure light
(4)	HDD (LED)	Hard disk state indicator (Read/write, flashing)
(5)	VGA	VGA display interface
(6)	HDMI	HDMI display interface
(7)	DP	MINIDP display interface
(8)	DIDO/CAN	DIDO/CAN interface is an optional interface.
(9)	LOUT	Headphone
(10)	MIC	Microphone
(11)	LAN	Internet interface
(12)	USB	USB Connector
(13)	COM1-4	RS-232/485/422 interface
(14)	--	Ground screw
(15)	--	Power interface 12DV
(16)	--	Discrete graphics card interface

2.2 Side panel

● AI Edge General-Purpose Controller NewPre3101 Series

2.5-inch hard disk port

Figure 3 NewPre3101 side panel labeling diagram

● AI Edge General-Purpose Controller NewPre3102 Series
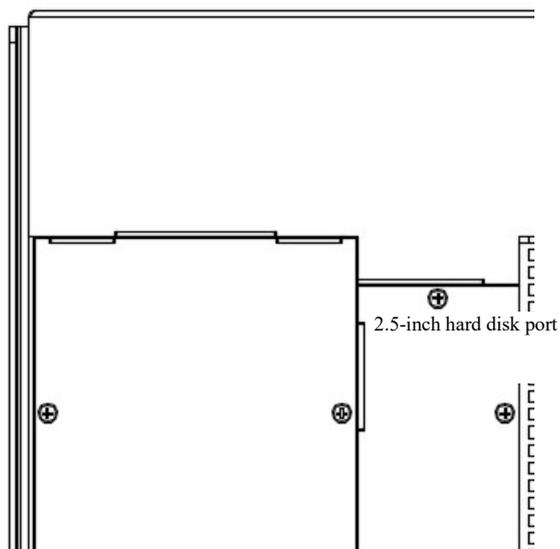

2.5-inch hard disk port

Figure 4 NewPre3102 side plate labeling diagram

3 Installation

3.1 Dimension drawing

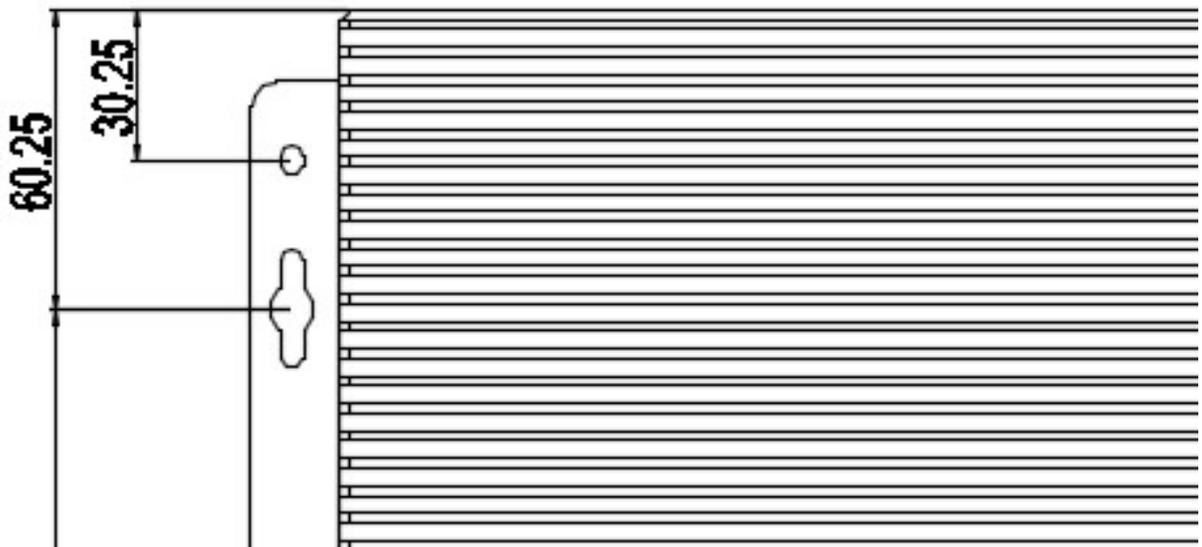● AI Edge General-Purpose Controller NewPre3101 Series

Figure 5 NewPre3101 installation dimension drawing (Unit: mm)

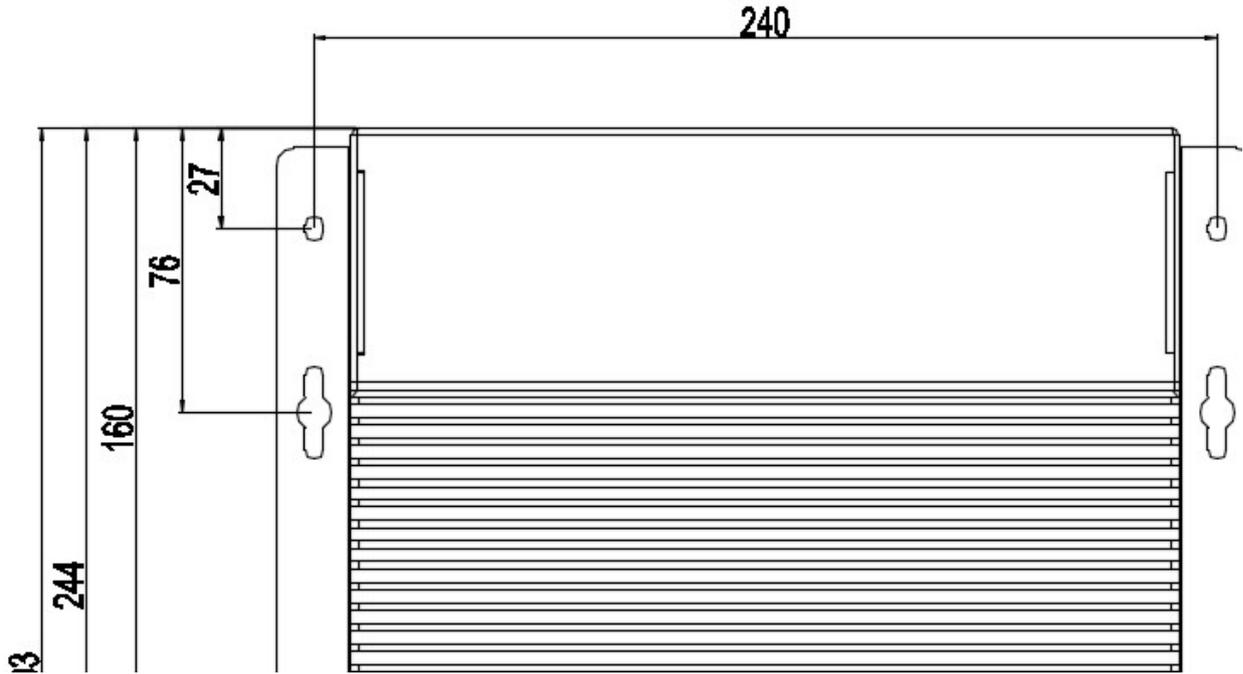● AI Edge General-Purpose Controller NewPre3102 Series

Figure 6 NewPre3102 installation dimension drawing (Unit: mm)

Note:

● The device casing is part of the whole machine cooling system, the casing will be hot during normal operation, please do not cover the casing when the device is working.

● The pictures in this manual are schematic drawings. For details, refer to the actual objects.

3.2   Installation methods and procedures

The device supports wall-mounted installation. Before installing the device, confirm the following installation requirements:

1) Environmental requirements: Operating temperature -40℃ ~ +60℃, relative humidity 90%@40℃ for 24 hours without condensation. 。

2) Power requirements: Confirm that the operating voltage matches the voltage range identified on the device.

3) Ground resistance requirements: <5Ω.

4) Avoid direct sunlight, away from heat sources or areas with strong electromagnetic interference.

5) The installation environment should meet the requirements of the authority. Do not touch the device directly with your hands to avoid personal injury.

6) Only professionals or trained and qualified personnel can install, replace and maintain the device.

Warning:

In a high-temperature environment, the bios enables the high-temperature protection function. The system suspends all processes and enables the protection mechanism. In case of emergency, you can enter the bios function setting menu and turn off the bios high temperature protection option.

3.3 Wall-mounted

● Wall-mounted

Step 1. Secure the wall-mounted plate to the rear panel of the device using screws according to the screw holes on the rear panel of the device.

Step 2. Determine the installation position of the device (for example, a vertical wall or the inner wall of the cabinet) and ensure that the installation space is sufficient and the heat dissipation is smooth.

Step 3. In the selected location in accordance with the wall-mounted installation size chart to punch four holes, using a Phillips screwdriver to install four screws to the selected location of the four holes, the screws do not completely tighten, retaining a distance of about 5 mm.

Step 4. Align the 4 Φ10 parts on the wall-mounted holes of the appliance with and through the 4 screws already in place and move the appliance as shown below with the arrow 1 pointing to the appliance until the screws enter the Φ5.2 parts of the wall-mounted holes. Finally, fasten the four screws to complete the installation.
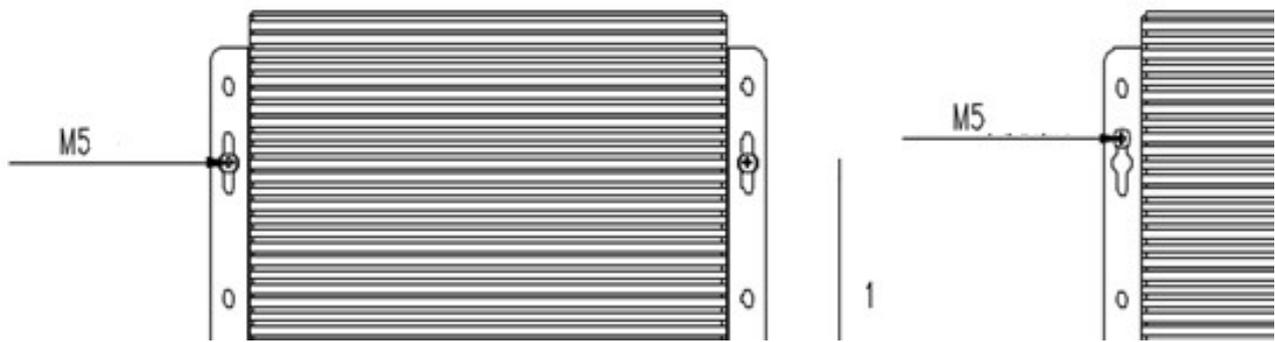
Figure 7 Wall-mounted installation diagram

● Wall-mounted removal

Step 1. According to the following figure arrow 2 pointing to the reverse, using a screwdriver to loosen the four screws fixed, move the device upward until the screws into the Φ10 part of the device wall-mounted hole, and then the wall-mounted hole through the loosened four screws, the device can be detached from the wall or cabinet wall.

Step 2. Remove the screw from the wall or cabinet using a screwdriver, and remove the wall-mounted plate from the rear panel of the device.
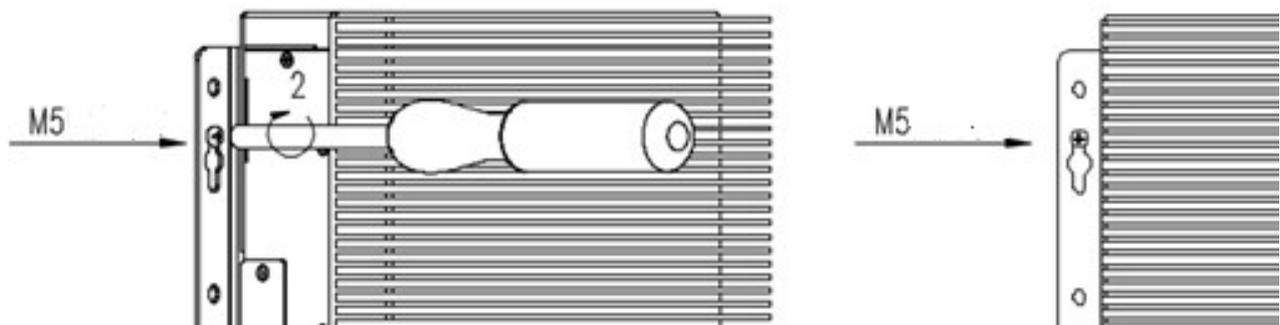

Figure 8 Wall-mounted removal diagram

Note:

Before installing, removing, or moving a device, disconnect the power supply and remove all cables.

3.4 Install and replace hard disk

● Hard disk installation

2.5-inch solid state hard disk installation

Step 1. Remove the screw on the left HDD panel using a screwdriver and remove the HDD

panel.

Step 2. Insert the assembled 2.5-inch solid state hard disk support into the hard disk slot.

Step 3. Install the HDD panel and tighten the screws using a screwdriver.

- Hard disk replacement

    2.5-inch solid-state hard disk replacement

    Step 1. Remove the screw on the left HDD panel using a screwdriver and remove the HDD panel.

    Step 2. Remove the 2.5-inch solid state hard disk support from the disk slot.

    Step 3. Remove the old hard disk from the hard disk support and replace it with a new hard disk.

    Step 4. Insert the newly assembled 2.5-inch solid state hard disk support into the hard disk slot.

    Step 5. Install the HDD panel and tighten the screws using a screwdriver.

Note:

Before installing, removing, or moving a device, disconnect the power supply and remove all cables.

4 Wire

4.1 10/100/1000Base-T(X) Ethernet interface

The 10/100/1000Base-T(X) Ethernet interface adopts standard RJ45 connector with adaptive function, which can be automatically configured to 10M/100M/1000M state and full-duplex/half-duplex operation mode, and supports MDI/MDI-X self-identification function of the cable, i.e. it can be connected with terminal device and network device using either direct network cable or crossover network cable.

● Interface definition

RJ45 interface pin number are shown in the following figure.
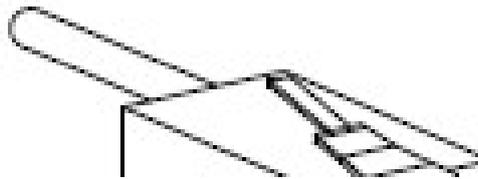
Figure 9 RJ45 interface pin number

Table 3 10/100/1000Base-T(X) RJ45 interface pins definition

Pin	MDI-X	MDI
1	Send/receive data (TRD1+)	Send/receive data (TRD0+)
2	Send/receive data (TRD1-)	Send/receive data (TRD0-)
3	Send/receive data (TRD0+)	Send/receive data (TRD1+)
4	Send/receive data (TRD3+)	Send/receive data (TRD2+)
5	Send/receive data (TRD3-)	Send/receive data (TRD2-)
6	Send/receive data (TRD0-)	Send/receive data (TRD1-)
7	Send/receive data (TRD2+)	Send/receive data (TRD3+)
8	Send/receive data (TRD2-)	Send/receive data (TRD3-)
	Description: "+" "-" indicate the level polarity.	

● Connector line sequence

Direct cable

且连线
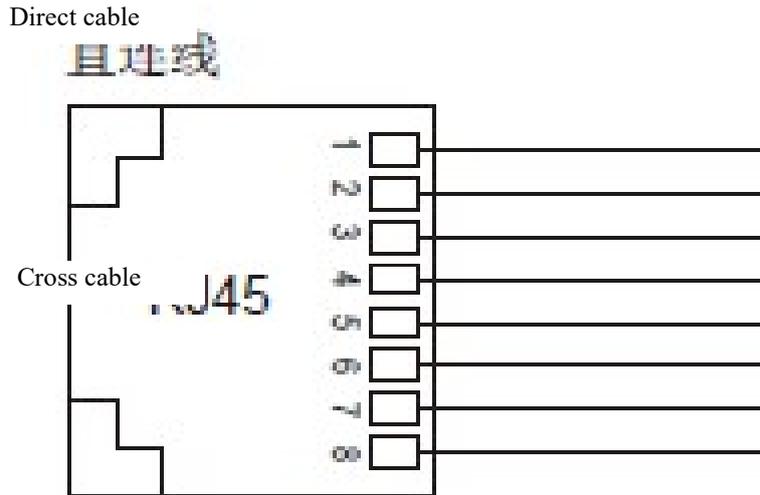
Cross cable

RJ45

Figure 10 10/100/1000Base-T(X) RJ45 connector direct and cross cable interconnection

Description:

RJ45 connectors are wired as standard 568B (1-orange white, 2-orange, 3-green white, 4-blue, 5-blue white,

6-green, 7-brown white, 8-brown).

4.2 RS-232 /RS-485/RS-422 interface

The RS-232, RS-422, and RS-485 interfaces use DB9 wiring terminal interfaces. The pin definition is shown in the following figure.
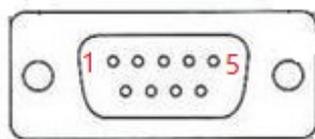
Figure 11 Interface pin definition

Table 4 Serial interface pin definition

Pin	RS-232	RS-485	RS-422
1	NA	NA	422_RXD1-
2	RX	NA	422_RXD1+
3	TX	Data-	422_TXD1-
4	NA	Data+	422_TXD1+
5	GND	GND	GND

4.3 USB interface

The USB interfaces are located on the front panel of the device and contain four USB3.0 interfaces and four USB3.1 interfaces, all of which use standard A female port. USB interface pin definition is shown in the figure below.
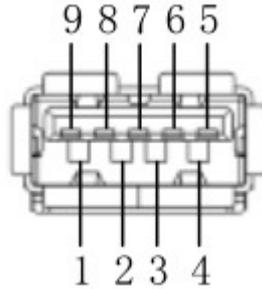
Figure 12 USB3.0/ USB 3.1 interface pin number

Table 5 USB3.0/ USB 3.1 interface pin definition

USB pin	Definition	USB pin	Definition
1	VBUS	2	D-
3	D+	4	GND
5	SSRX-	6	SSRX+
7	GND	8	SSTX-
9	SSTX+	10	Grounding
11	Grounding		

4.3 Video interface

● VGA interface

Pin/name	Definition	Pin/name	Definition
1 / RED	Red component signal	2 / GREEN	Green component signal
3 / BULE	Blue component signal	4 / N/C	Not used.
5 / GND	Grounding screw	6 / GND R	Red component

			grounding screw
7 / GND G	Green component grounding screw	8 / GND B	Blue component grounding screw
9 / +5V	Power supply (not used)	10 / GND	grounding screw
11 / N/C	Not used.	12 / SDA	Serial data signal
13 / H SYNC	Horizontal synchronization (line synchronization)	14 / V SYNC	Vertical synchronization (field synchronization)
15 / SCL	Serial clock signal		

- DP interface
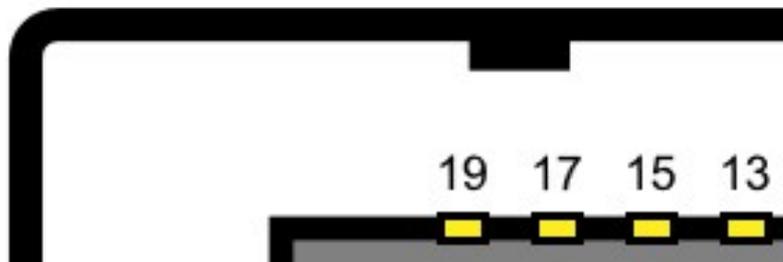
Pin	Signal	Pin	Signal
1	ML_Lane0(p)	11	GND
2	GND	12	ML_Lane3(n)
3	ML_Lane0(n)	13	GND
4	ML_Lane1(p)	14	GND
5	GND	15	AUX CH(p)
6	ML_Lane1(n)	16	GND
7	ML_Lane2(p)	17	AUX CH(n)
8	GND	18	Hot Plug Detect
9	ML_Lane2(n)	19	DP_PWR Return
10	ML_Lane3(p)	20	DP_PWR

- HDMI interface

The HDMI interface uses a standard HDMI connector interface and can support up to 1080P HD display. HDMI interface pins are defined as shown in the following figure.
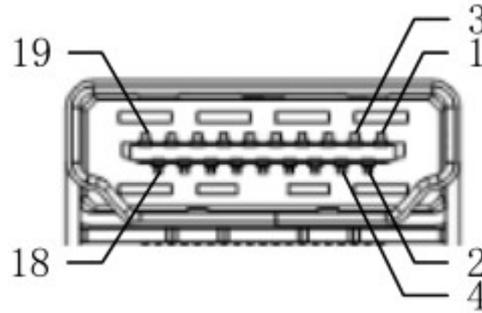
Figure 13 HDMI interface pin number

Table 6 HDMI interface pin definition

HDMI pin	Definition	HDMI pin	Definition
1	TMDS_Data2+	2	GND
3	TMDS_Data2-	4	TMDS_Data1+
5	GND	6	TMDS_Data1-
7	TMDS_Data0+	8	GND
9	TMDS_Data0-	10	TMDS_Clock+
11	GND	12	TMDS_Clock-
13	NC	14	NC
15	SCL	16	SDA
17	GND	18	+5V
19	Hot plug detect		

4.4 DIDO interface

Device pin definition, 8-way DIDO interface.
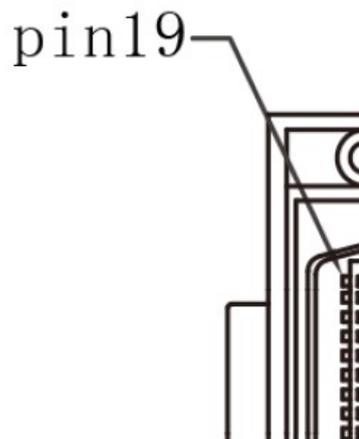
Figure 14 DIDO terminal cable interface diagram

Table 7 DIDO pin definition

DIDO pin	Definition	DIDO pin	Definition
1	24V	2	24V
3	24V_FGND	4	24V_FGND
5	DO3+	6	DO4+
7	DO7+	8	DO8+
9	CH2-	10	CH2+
11	CH4-	12	CH4+
13	CH6-	14	CH6+
15	CH7-	16	CH7+
17	CH8+	18	CH8-
19	24V_FGND	20	24V_FGND
21	CANA_2_H	22	CANA_2_L
23	DO1+	24	DO2+
25	DO5+	26	DO6+
27	CH1+	28	CH1-
29	CH3+	30	CH3-
31	CH5+	32	CH5-
33	CAN_ISO_GND	34	CAN_ISO_GND
35	CANA_1_H	36	CANA_1_L

Table 8 DIDO terminal line definition table

Cable model: Cable -CN36PIN data cable - Male to male screw type customization -KS11636-BK

Terminal block model: Terminal Block-36PIN Solder less CN Slot Type Transfer Board Relay Block-KS12636-BK

4.5 Grounding

The device is properly grounded to protect the device from lightning and interference. Therefore, you must properly connect the grounding screw. Ground the device before powering on, and disconnect the grounding screw after powering off the device.

There is a ground screw on the cover plate of the device, that is, the grounding screw of the

housing, which is called the "casing ground". One end of the grounding screw is crimped to the cold crimp terminal and fixed with grounding screw at the "casing ground", and the other end of the grounding screw is reliably connected to the earth.

Description:

Grounding screw cross-sectional area of 2.5mm^2 or more; grounding resistance requirements: <5.

4.6 Power supply terminal

The power supply terminal is located on the upper cover of the device and connects to the power cable to supply power to the device. This Series of device supports redundant power input, using 4-core 5.08mm spacing plug out wiring terminals, when any of the power supply fails, the device can operate normally without interruption, improving the reliability of network operation.

Description:

Power cord cross-sectional area of 0.75mm^2 or more (wiring maximum cross-sectional area of 2.5mm^2); grounding resistance requirements: <5Ω.

- 4-core 5.08mm spacing plug out wiring terminals
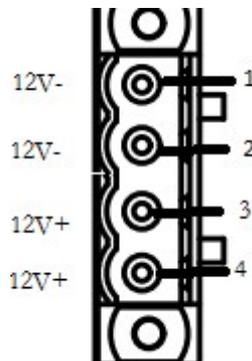
Figure 15 4-core 5.08mm spacing wiring terminals

Table 8 Definition of 4-core 5.08mm spacing terminal

Terminal Number	Dc power supply definition
1	12V-
2	12V-
3	12V+
4	-12V+

- Wire and installation

Step 1. Ground the "casing ground" of the device well.

Step 2. Remove the power supply terminal plug from the device.

Step 3. Insert one end of the power cable and grounding screw into the power supply terminal as required and secure the power cable and grounding screw.

Step 4. Plug the connected power cord back into the corresponding power supply terminal socket of the device.

Step 5. Connect the other end of the power cable to the corresponding external power supply system according to the power supply requirements marked on the device. Check whether the corresponding power indicator of the device is on.

Wire and installation should meet the following specifications.

Table 9 Wire and installation specifications

Classification of terminal	Torque requirements	Wire cross-sectional area (AWG)
Spring type terminal	DEGSON terminal	26-12

Note:

Before connecting to the power supply, please confirm that the power supply matches the power supply requirements marked on the device to avoid damage to the device.

Warning:

● Do not touch any exposed wires, terminals and dangerous voltage marks marked on the product to avoid injury to human body.

● Do not disassemble components or plug and unplug connectors during the powering on process

5 LED Indicator State

Table 10 Description of indicators on the front panel

LED	State	Description
Power indicator (blue)	On	The input power supply is connected and running properly
	Off	The input power supply is disconnected or runs abnormally
Rate/yello Connectic		
Rate indicator of a 10/100/1000Base-T(X) Ethernet interface (yellow)	On	1000M working state (1000Base-TX)
	Off	10/100M working state (10/100Base-T(X)) or no connection
10/100/1000Base-T(X) Ethernet interface connection state indicator (green)	On	The interface has a valid network connection
	Sparkle bright	The interface has network activity
	Off	The interface doesn't have a valid network connection
HDD/SSD (green)	Sparkle bright	The HDD/SSD hard disk is being accessed. Procedure
	Off	The HDD/SSD hard disk cannot be accessed or is not accessed
TX/RX-COM1 (green light)	Sparkle bright	Serial interface COM1 is communicating (receiving or sending data)
	Off	Serial interface COM1 has no communication
TX/RX-COM2 (green)	Sparkle bright	Serial interface COM2 is communicating (receiving or sending data)
	Off	Serial interface COM2 has no communication

6 Basic Performance and Specifications

Power supply		
Power supply identification	Input rated voltage range	Input maximum voltage range
L5	12VDC	12VDC
Access terminal	4 core 5.08mm spacing plug out wiring terminals	
Nominal power		
Nominal power	65W (3101) /350W (3102 nominal power with independent graphics card)	
Mechanical structure		
Casing	All-metal unibody	
Degree of protection	IP30（3102）/IP40（3101）	
Installation method	Wall-mounted	
Dimension (W×H×D)	3101:220mm x 250mm x 80mm (excluding the connector protruding part, wall mounting component dimensions) 3102：220mm × 320mm × 185mm (excluding connector protrusion, wall-mounted component dimensions)	
Weight	3101: 5.6Kg 3102: 9.5Kg	
Environment		
Operating temperature	-40°C～+60°C	
Storage temperature	-40°C～+85°C	
Relative humidity:	5% to 95% no condensation	
Warranty period		
Warranty period	2 years	

KYLAND

Customer service hotline: 010-88796676

Fax: 010-88796678

Website: http://www.kyland.com.cn

Email: services@kyland.com.cn

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