ISR500

Ruggedized Edge Computer

With MediaTek Genio 700 / MT8390
ARM Cortex-A78 Dual-core + Cortex-A55
Hexa-core Processor

Or

With MediaTek Genio 510 / MT8370
ARM Cortex-A78 Dual-core + Cortex-A55
Quad-core Processor

User Manual

Version 1.0
(January 2026)

iBASE

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Trademarks

All the trademarks, registrations and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

Compliance

CE

The product described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

FC

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

Green IBASE

This product complies with RoHS 2 restrictions, which prohibit the use of certain hazardous substances in electrical and electronic equipment. The following substances must not exceed the specified concentrations:

- Hexavalent chromium: 1,000 ppm
- Polybrominated biphenyls (PBBs): 1,000 ppm
- Polybrominated diphenyl ethers (PBDEs): 1,000 ppm
- Cadmium: 100 ppm
- Mercury: 1,000 ppm
- Lead: 1,000 ppm
- Bis(2-ethylhexyl) phthalate (DEHP): 1,000 ppm
- Butyl benzyl phthalate (BBP): 1,000 ppm
- Dibutyl phthalate (DBP): 1,000 ppm
- Diisobutyl phthalate (DIBP): 1,000 ppm

Important Safety Information

Carefully read the following safety information before using this device.

Setting up your system:

- Put the device horizontally on a stable and solid surface.
- Do not use this product near water.
- Do not use this product near any heat source.
- Leave plenty of space around the device and do not block the ventilation openings. Never drop or insert any objects of any kind into the openings.

Care during use:

- Do not place heavy objects on the top of the device.
- Make sure to connect the correct voltage to the device. Failure to supply the correct voltage could damage the unit.
- Do not place or allow objects to rest on the power cord, and do not walk on it.
- Ensure that the total ampere rating of all devices plugged into the extension cord does not exceed the cord's ampere rating.
- Do not spill water or any other liquids on your device.
- Always unplug the device and use only mild cleaning agents when cleaning.
- Use a computer vacuum cleaner to remove dust and particles from the vents.

Product Disassembly

Do not try to repair, disassemble, or make modifications to the device. Doing so will void the warranty and may result in damage to the product or personal injury.

CAUTION

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries by observing local regulations.

Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adaptor, display panel and touch screen.

* However, products that fail due to misuse, accident, improper installation or unauthorized repair shall be treated as out of warranty and customers shall be billed for repair and shipping charges.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you encounter any technical problems and require assistance from your distributor or sales representative, please prepare and send the following information:

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - Error messages in text or screenshots if any
   - The arrangement of peripherals
   - Software used (such as OS and application software)

If repair service is required, please apply for an RMA number from the IBASE's website or contact your distributor or sales representative for assistance.

Table of Contents

Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Product View
- Dimensions

1.1 Introduction

The ISR500 is an ARM-based rugged, fanless signage and embedded computing system powered by the MediaTek Genio 700 (MT8390) or MediaTek Genio 510 (MT8370) processor, delivering up to 2.2 GHz performance. Designed for reliable industrial and digital signage applications, it supports dual HDMI outputs with one 4K@60Hz and one 4K@30Hz display. The system integrates 4GB to 8GB of LPDDR4 memory running at 4000 MT/s and provides rich embedded I/O including COM, USB, HDMI, and Gigabit Ethernet. Wireless connectivity is enabled through an M.2 E-Key (2230) slot supporting Wi-Fi 6 2T2R and Bluetooth 5.2, while its ruggedized, fanless design ensures stable operation in demanding environments.

1.2 Features

- MediaTek Genio 700 (MT8390) 2.2GHz or MediaTek Genio 510 (MT8370) 2.0GHz processor
- 1x HDMI (4K60) + 1x HDMI (4K30)
- Onboard 4GB~8GB LPDDR4 with 4000MT/s
- Embedded I/O for COM, USB, HDMI, Ethernet
- Supports M.2 E-Key (2230) for WiFi6 2T2R + BT 5.2 connectivity
- Ruggedized and Fanless Design

1.3 Packing List

Your product package should include the items listed below.

- ISR500

Optional parts and accessories include:

- 50W power adaptor 50W (12V @5.0A)
- Wi-Fi / Bluetooth module & antenna kit
- M.2 Wifi/BT module: A024MDWIFI0045000P or A024MDWIFI0046000P

Antenna kit: A055RFAS67H600000P+A055BTC0000010000P

The user manual can be downloaded from the IBASE website.

1.4 Specifications

Product	**ISR500-1** MediaTek Genio 700 / MT8390: 2x A78 2.2GHz L2 256KB, 6x A55 2.0GHz L2 128KB, shared 2MB L3 cache, 8GB LPDDR4, 64~128GB eMMC
	ISR500-1 MediaTek Genio 510 / MT8370: 2x A78 2.2GHz L2 256KB, 4x A55 2.0GHz L2 128KB, shared 2MB L3 cache, 4GB LPDDR4, 64GB eMMC
System Mainboard	IBR500 SBC
Processor	MediaTek Genio 700 (MT8390) : 2x A78 2.2GHz L2 256KB, 6x A55 2.0GHz L2 128KB, shared 2MB L3 cache MediaTek Genio 510 (MT8370) : 2x A78 2.0GHz L2 256KB, 4x A55 2.0GHz L2 128KB, shared 2MB L3 cache
Chipset	Integrated
System Memory	4GB~8GB LPDDR4 on board
Graphics	• ARM Mali-G57 MC3, OpenGL ES 1.1/2.0/3.2, Vulkan 1.0/1.1 • ARM Mali-G57 MC2, Vulkan 1.1, OpenGL ES 3.2, and OpenCLTM 2.2
LAN	1x RJ45 GbE LAN
System Memory	4GB~8GB LPDDR4 on board Graphics ARM Mali-G57 MC3, OpenGL ES 1.1/2.0/3.2, Vulkan 1.0/1.1 ARM Mali-G57 MC2, Vulkan 1.1, OpenGL ES 3.2, and OpenCLTM 2.2 LAN 1x RJ45 GbE LAN
Expansion Slots	1x M.2 E-Key (2230) w/ SDIO, UART (for Wireless)
I/O	**Front I/O:** • 1x RS232 DB9 connector • 1x RJ45 GbE LAN • 1x HDMI (4K60) + 1x HDMI (4K30) • 1x Micro USB2.0 (with OTG support) + 1x USB 3.1 Type-A • 1x DC IN power jack EIAJ with screw lock **Rear I/O:** 2x Antenna holes Side I/O: 1x PWR On/Off button 1x Factory reset button 1x Audio Line-Out

Auto Control and Monitoring	Watchdog Timer: 256 Levels, 0~128 Secs
Power Requirement	12V DC-IN
Memory	SGCC
Weight	0.5 kg (1.1 lbs)
Chassis Color	Black & Silver
Storage	64GB~128GB eMMC 5.1 Flash for O.S. and 8MB SPI NOR Flash for board information
Power Supply	50W
Mounting	Desktop or wall mounting (wall mount kit included)
Dimensions	155mm (W) x 110mm (D) x 35mm (H)
Certification	CE / LVD / FCC Class-B
OS Support	• Linux Yocto 5.15 ready • Android 14 ready • Support for other OS available upon request

Environment	
Operating Temperature	-10°C to 50°C (14°F ~ 122°F)
Storage Temperature	-20°C ~80°C (-4°F ~ 176°F)
Relative Humidity	5~90% @ 45°C, (non-condensing)
Vibration	Non-Operating: 1.0 grms / 5~500Hz / random operation Operating: 0.25 grms / 5~500Hz / random operation

All specifications are subject to change without prior notice.

1.5 Product View

I/O View

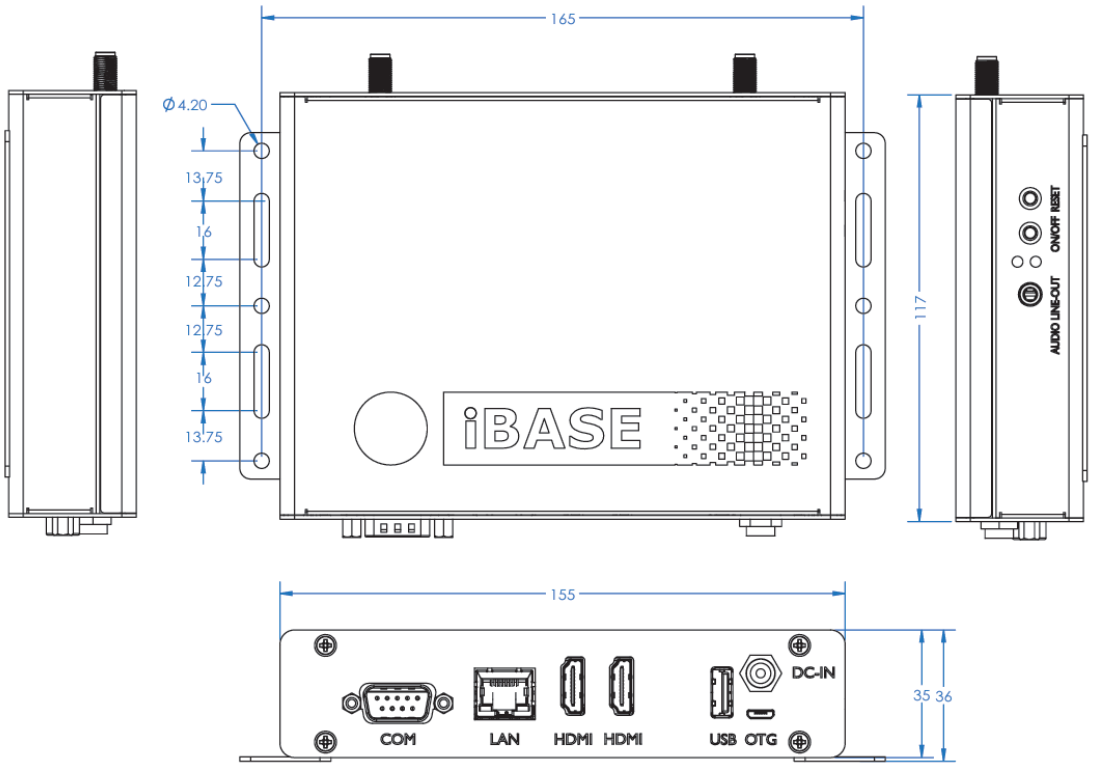
Remarks:
COM, LAN, HDMI1, HDMI2, USB, OTG, DC-IN (left to right)

Remarks:
Right side: PWR On/Off button, Factory Reset button, Audio Line-Out, LED indicators

Antenna View

1.6 Dimensions

Unit: mm



Chapter 2
Hardware Configuration

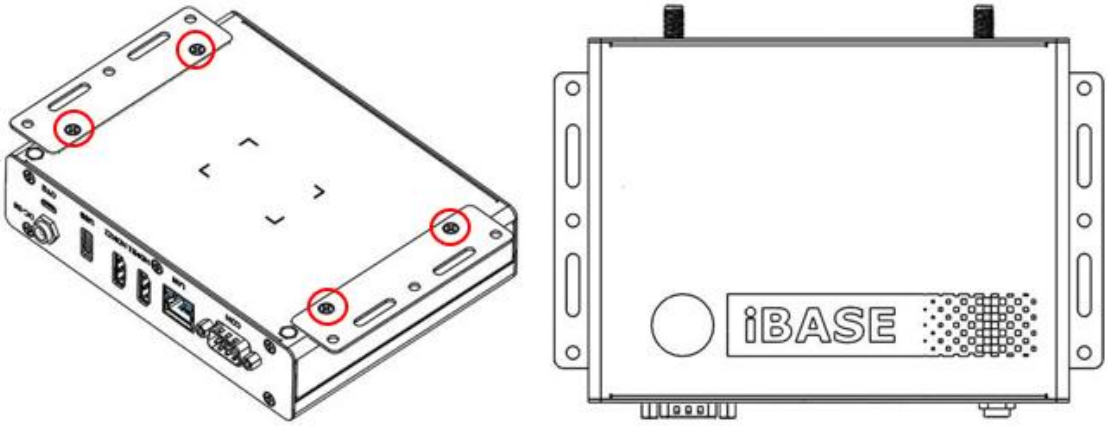
This section contains general information about:

- Installations
- Jumper and connectors

2.1 Installations

2.1.1 Mounting Bracket Installation

1. Place the system on a flat, stable surface with the side panels accessible.
2. Align the mounting brackets with the mounting holes on both sides of the chassis.
3. Secure each mounting bracket to the chassis using the provided screws.
4. Ensure all screws are firmly tightened and the brackets are securely attached.
5. The system is now ready for wall or surface mounting.

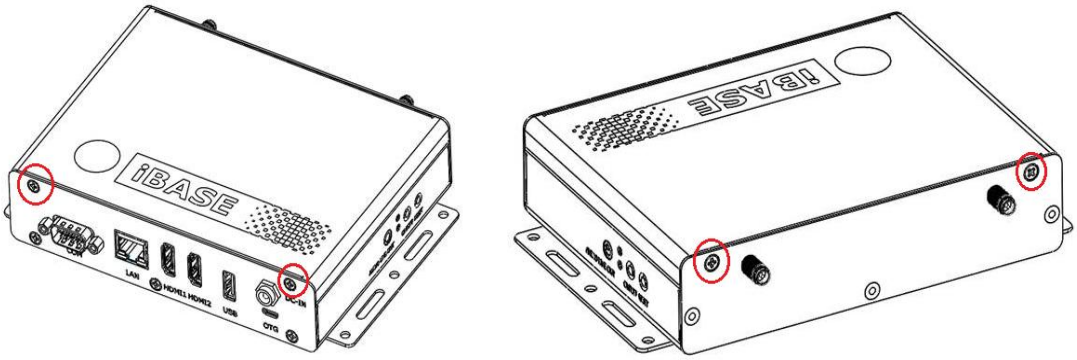


2.1.2 M.2 Card Installation

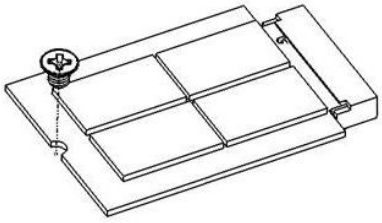
To access the internal M.2 slot, only four screws need to be removed.

Steps

1. Place the system on a flat, stable surface.



2. Remove the four screws securing the top cover, as shown in the figure above.
3. Lift off the top cover to expose the internal board.
4. Locate the M.2 slot, align the key of the M.2 card with the connector, insert the card at an angle, then secure it to the brass standoff with the provided screw.



2.1.3 WiFi / LTE Antenna Installation

Insert the WiFi / 3G / 4G antenna extension cable through the antenna hole of the front I/O cover and fasten the antenna as shown below. Then apply adhesive around the hex nut behind the front I/O cover to prevent the extension cable from falling off, should the cable become loose.

1. Fasten the hex nut and the washer. Then install the antenna.
2. Apply adhesive around here.

Info: The diameter of the nut is around 6.35 mm (0.25”-36UNC).

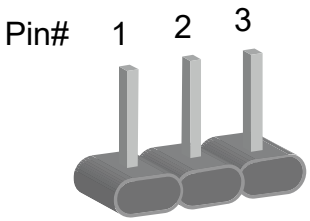
2.1.4 RS-232/422/485 COM Port

Pin	Assignment		
	RS-232	RS-422	RS-485
1	NC	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	NC	RX-	NC
5	Ground	Ground	Ground
6	NC	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	NC	NC	NC

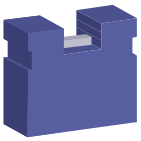
2.2 Setting the Jumpers

Configure your device by using jumpers to enable the features that you need based on your applications. Contact your supplier if you have doubts about the best configuration for your use.

Jumpers are short-length conductors consisting of several metal pins with a base mounted on the circuit board. Jumper caps are placed (or removed) on the pins to enable or disable functions or features. If a jumper has 3 pins, you can connect Pin 1 with Pin 2 or Pin 2 with Pin 3 by shorting the jumper.

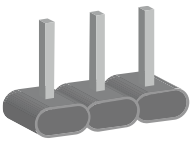
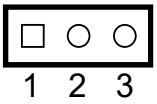
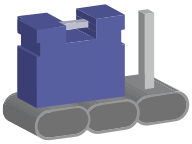
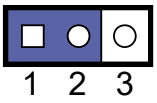
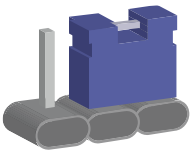
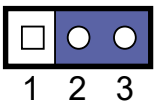


A 3-pin jumper



A jumper cap

Refer to the illustration below to set jumpers.

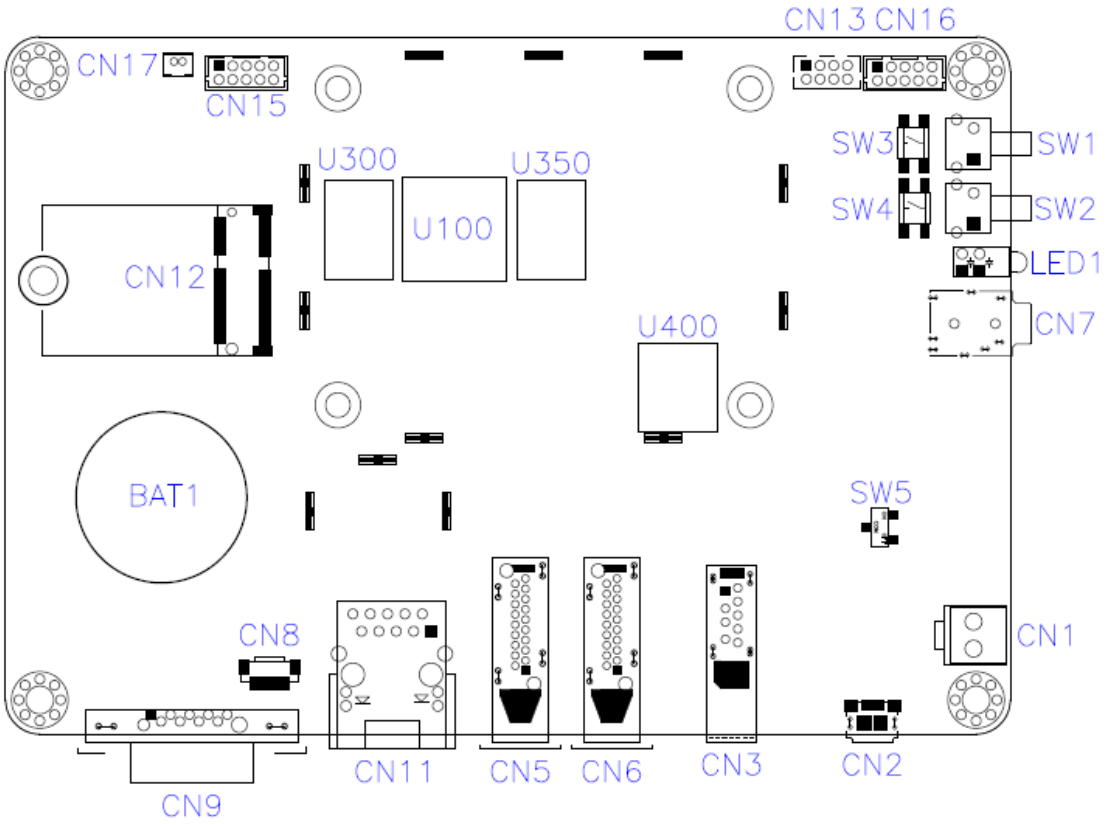
Pin closed	Oblique view	Setting
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3 Jumper & Connector Locations on Motherboard

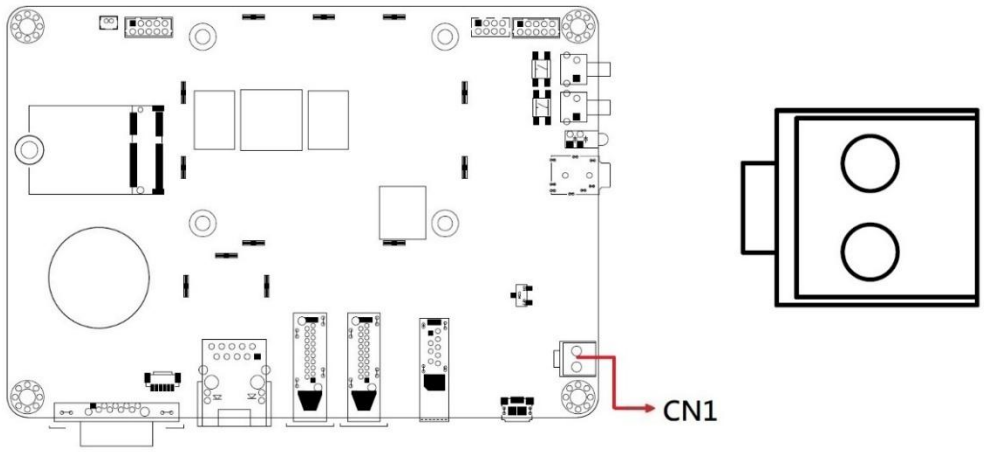
Motherboard: IBR500



2.4 Jumper & Connectors Quick Reference

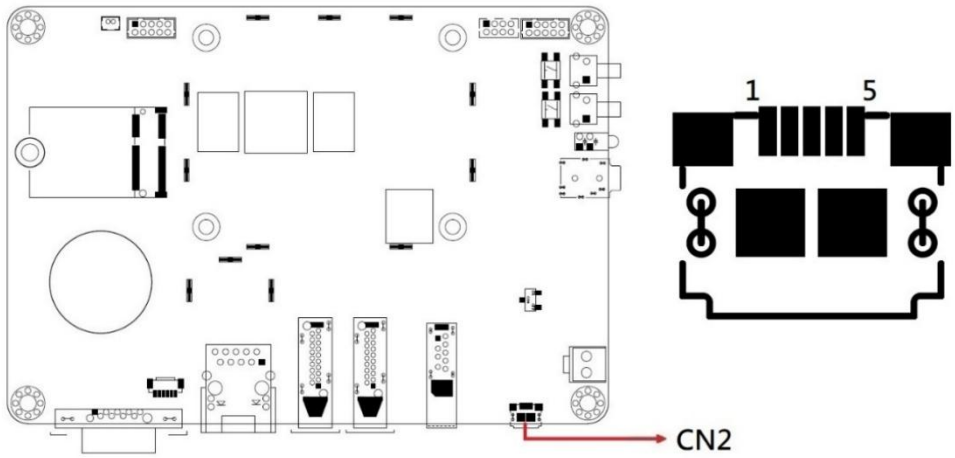
Function	Connector
DC-in Jack	CN1
USB 2.0 Port (Micro-B, OTG)	CN2
USB 3.0 Port	CN3
HDMI1 Port	CN5
HDMI2 Port	CN6
Audio Jack (Headphone-out)	CN7
Debug Connector (RS-232, 2-wire)	CN8
COM Port (RS-232, 2-wire)	CN9
GbE Port (RJ45)	CN11
M.2 (E2230, USB 2.0, PCIe Gen2 x1)	CN12
GPIO Connector (3 In, 3 out, 3.3V @ 1A)	CN13
I²C Connector	CN15
SPI Connector (4-wire)	CN16
RTC Battery Connector	CN17
RTC Battery	BAT1
Power LED	LED1
Reset Button	SW1
Power Button	SW2
DL Button (Down Load)	SW3
Home Button	SW4
Auto-Power On Switch	SW5

2.4.1 DC-in Jack (CN1)



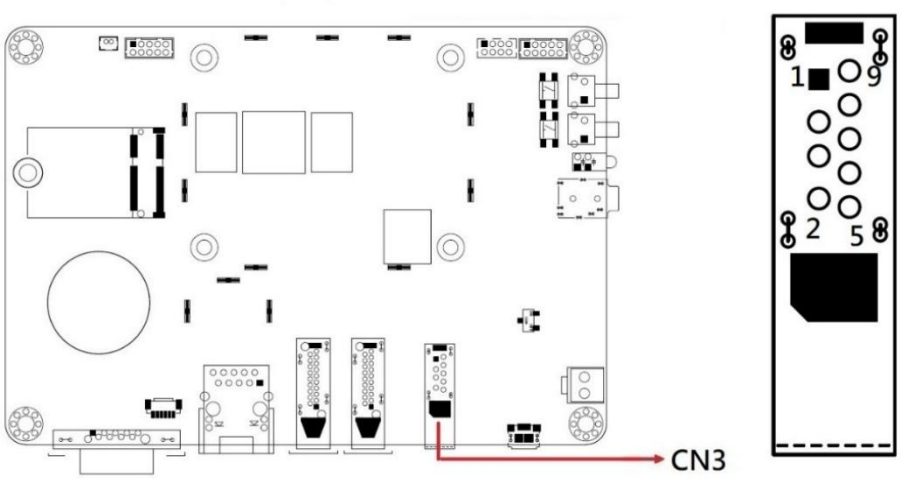
Pin	Signal Name
1	DC_IN
2	DC_IN_GND

2.4.2 USB 2.0 Port (Micro-B, OTG) (CN2)



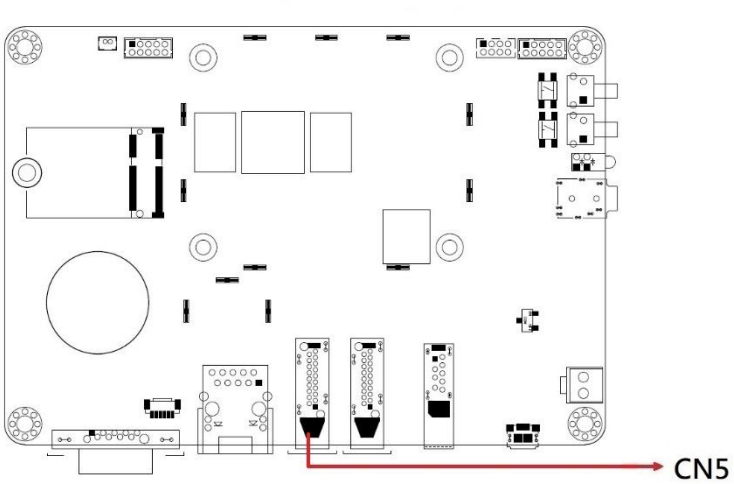
Pin	Signal Name
1	VBUS_P0
2	USB0_D-
3	USB0_D+
4	USB0_ID
5	GND

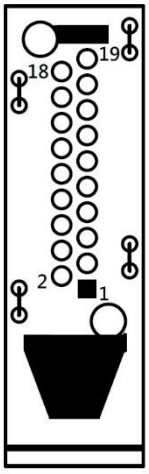
2.4.3 USB 3.0 Port (CN3)



Pin	Signal Name	Pin	Signal Name
1	VBUS_P1	6	USB1_SSRX+
2	USB1_D-	7	GND
3	USB1_D+	8	USB1_SSTX-
4	GND	9	USB1_SSTX+
5	USB1_SSRX-		

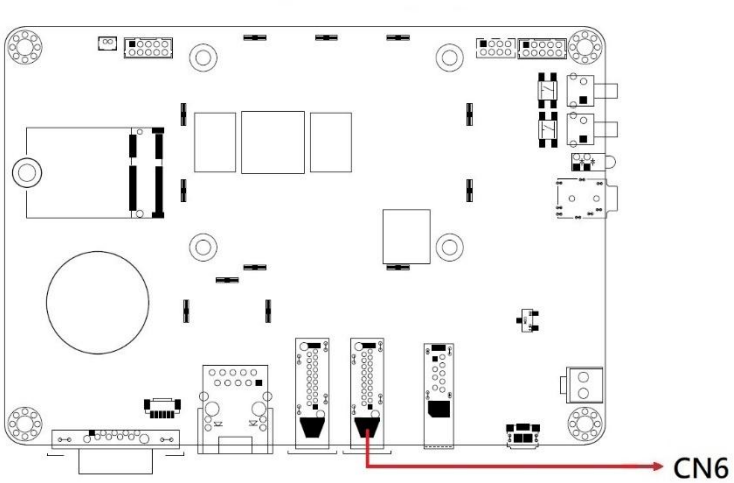
2.4.4 HDMI1 Port (CN5)





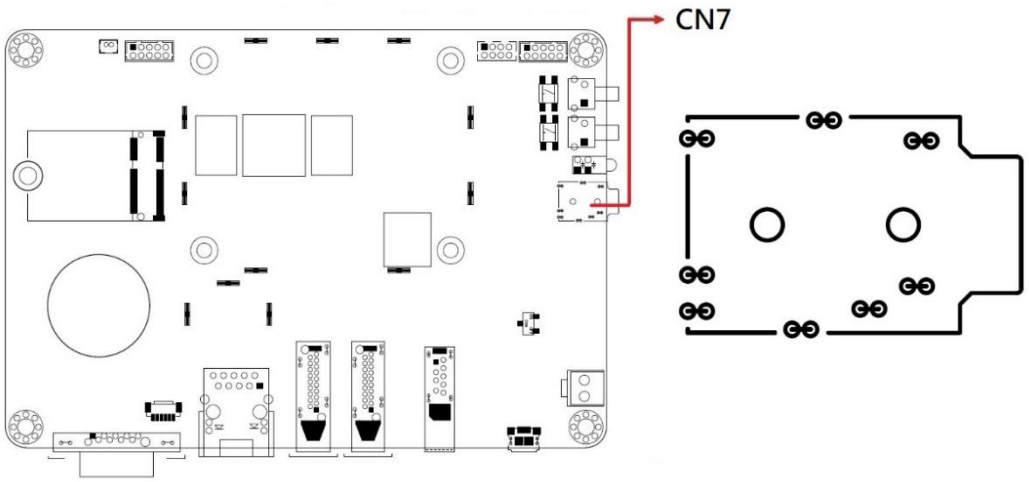
Pin	Signal Name	Pin	Signal Name
1	HDMITX0_CH2_P	11	GND
2	GND	12	HDMITX0_CLK_M
3	HDMITX0_CH2_M	13	HDMITX0_CEC
4	HDMITX0_CH1_P	14	NC
5	GND	15	TX0_DDCSCL
6	HDMITX0_CH1_M	16	TX0_DDCSDA
7	HDMITX0_CH0_P	17	GND
8	GND	18	HDMITX0_5V
9	HDMITX0_CH0_M	19	HDMITX0_HPD
10	HDMITX0_CLK_P		

2.4.5 HDMI2 Port (CN6)



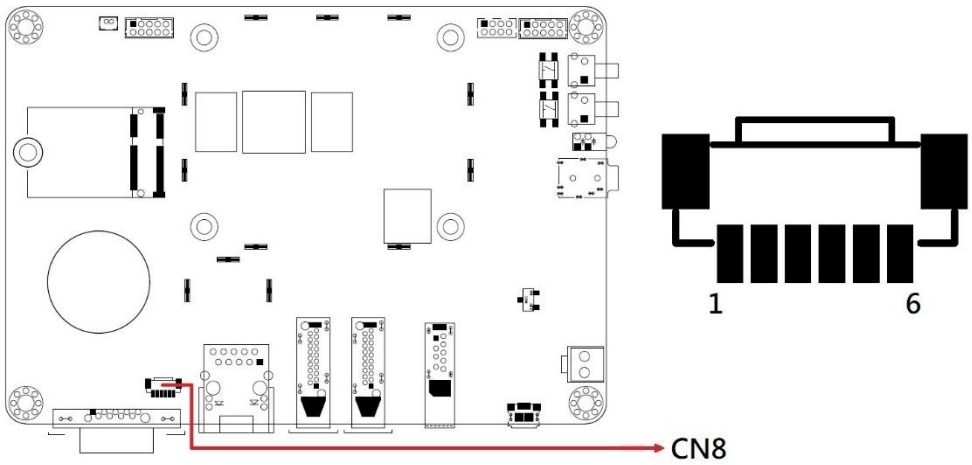
Pin	Signal Name	Pin	Signal Name
1	HDMITX1_CH2_P	11	GND
2	GND	12	HDMITX1_CLK_M
3	HDMITX1_CH2_M	13	HDMITX1_CEC
4	HDMITX1_CH1_P	14	NC
5	GND	15	TX1_DDCSCL
6	HDMITX1_CH1_M	16	TX1_DDCSDA
7	HDMITX1_CH0_P	17	GND
8	GND	18	HDMITX1_5V
9	HDMITX1_CH0_M	19	HDMITX1_HPD
10	HDMITX1_CLK_P		

2.4.6 Audio Jack (Headphone-out) (CN7)



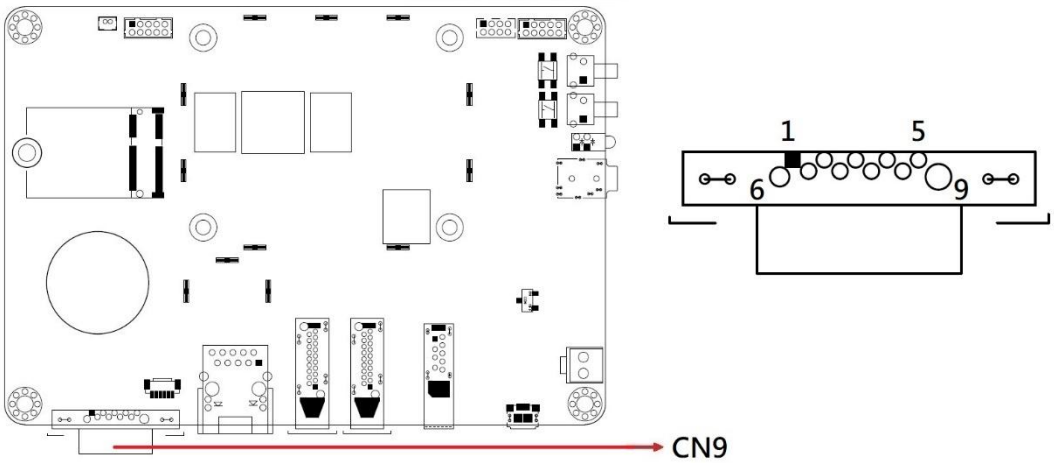
Pin	Signal Name	Pin	Signal Name
1	NC	4	HP_R
2	HP_L	5	HP_EINT_
3	HP_REFN	6	HP_REFN

2.4.7 Debug Connector (RS-232, 2-wire) (CN8)



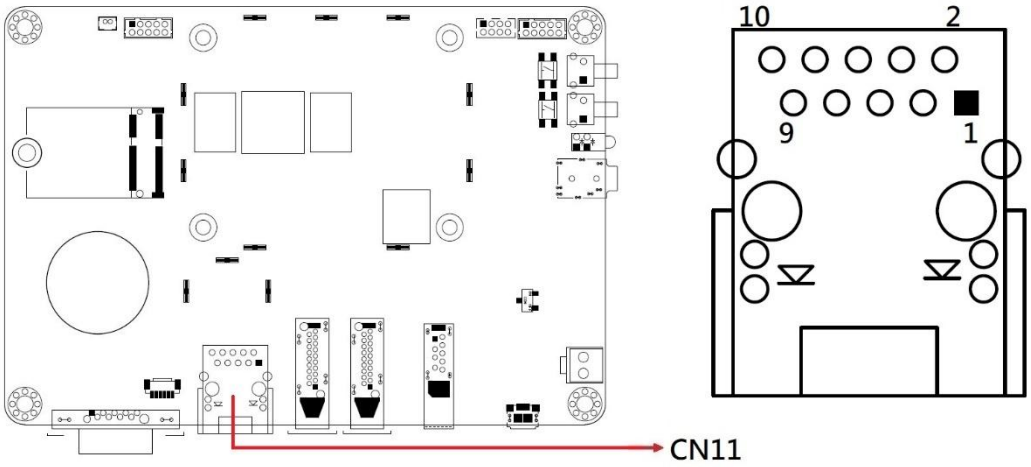
Pin	Signal Name	Pin	Signal Name
1	RS232_0_TXD_DEBUG	4	NC
2	RS232_0_RXD_DEBUG	5	NC
3	GND	6	GND

2.4.8 COM Port (RS-232, 2-wire) (CN9)



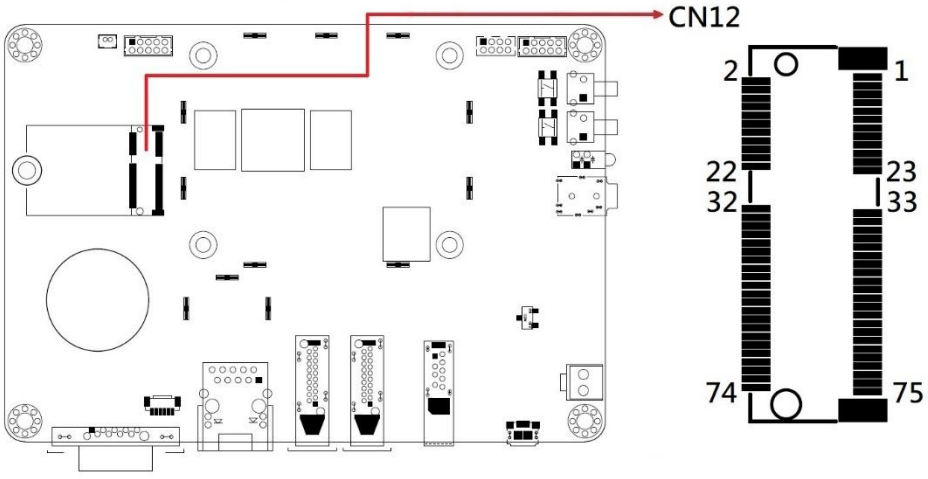
Pin	Signal Name	Pin	Signal Name
1	NC	6	NC
2	RS232_1_RXD	7	NC
3	RS232_1_TXD	8	NC
4	NC	9	NC
5	GND		

2.4.9 GbE Port (RJ45) (CN11)



Pin	Signal Name	Pin	Signal Name
1	GND	2	MDI_3-
3	MDI_3+	4	MDI_1-
5	MDI_2-	6	MDI_2+
7	MDI_1+	8	MDI_0-
9	MDI_0+	10	LAN_CT

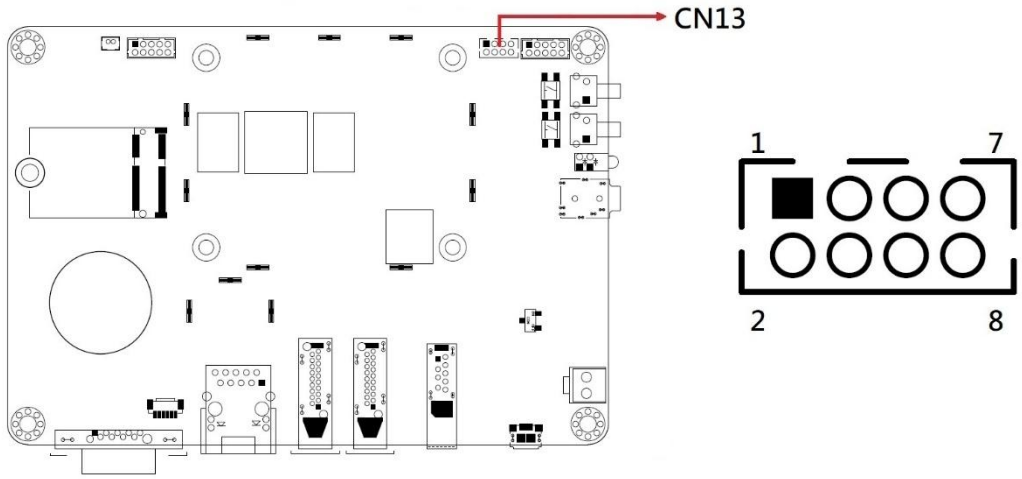
2.4.10 M.2 (E2230, USB 2.0, PCIe Gen2 x1) (CN12)



Pin	Signal Name	Pin	Signal Name
2	WIFI_3.3V	1	GND
4	WIFI_3.3V	3	USB_DP_P2
6	LED_WLAN_L	5	USB_DM_P2

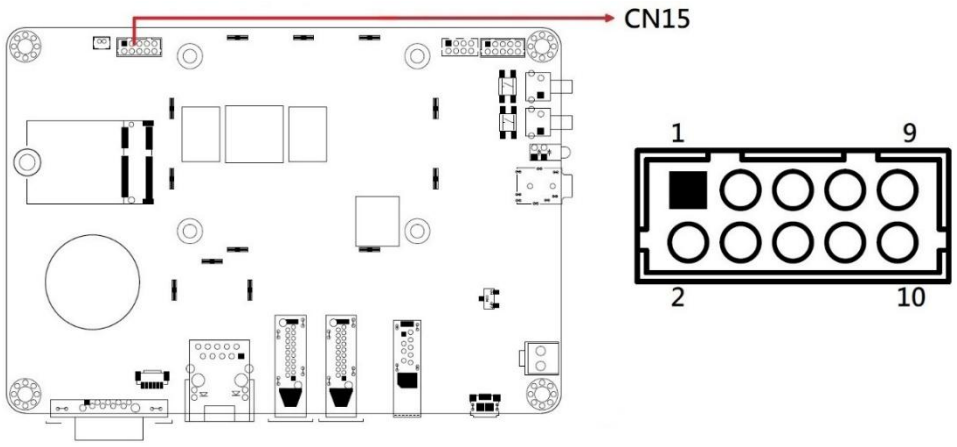
8	NC	7	GND
10	NC	9	NC
12	NC	11	NC
14	NC	13	NC
16	LED_BT_L	15	NC
18	GND	17	NC
20	NC	19	NC
22	NC	21	NC
		23	NC
Pin	**Signal Name**	**Pin**	**Signal Name**
32	NC	33	GND
34	NC	35	PCIEG2_LN0_TXP_
36	NC	37	PCIEG2_LN0_TXN_
38	NC	39	GND
40	NC	41	PCIEG2_LN0_RXP
42	NC	43	PCIEG2_LN0_RXN
44	NC	45	GND
46	NC	47	PCIEG2_CLK_P
48	NC	49	PCIEG2_CLK_N
50	NC	51	GND
52	WIFI1_PERESET_N_3V3	53	WIFI1_CLKREQ0_3V3
54	WIFI1_BT_DISABLE#_3V3	55	WIFI1_PEWAKE#_3V3
56	WIFI1_WF_DISABLE#_3V3	57	GND
58	NC	59	NC
60	NC	61	NC
62	NC	63	GND
64	NC	65	NC
66	NC	67	NC
68	NC	69	GND
70	NC	71	NC
72	WIFI_3.3V	73	NC
74	WIFI_3.3V	75	GND

2.4.11 GPIO Connector (3 In, 3 out, 3.3V @ 1A) (CN13)



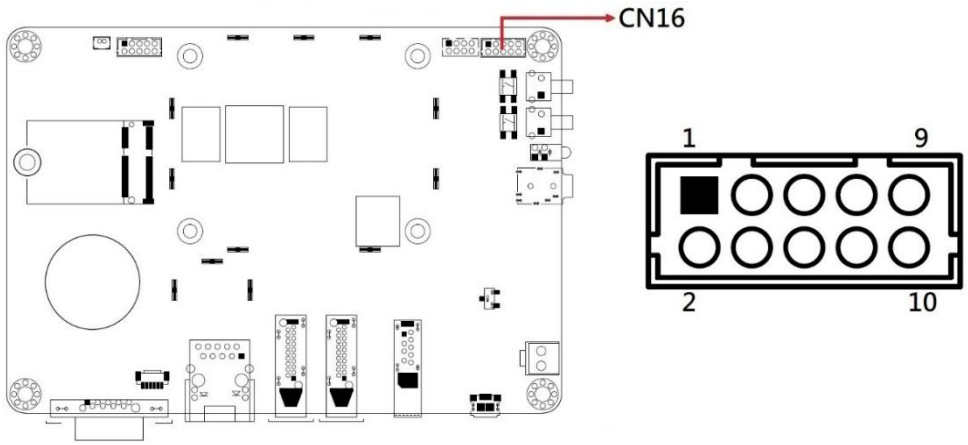
Pin	Signal Name	Pin	Signal Name
1	GND	2	EXT1_3V3
3	GPIO78_3V3	4	GPIO77_3V3
5	GPIO69_3V3	6	GPIO73_3V3
7	GPIO72_3V3	8	GPIO71_3V3

2.4.12 I²C Connector (CN15)



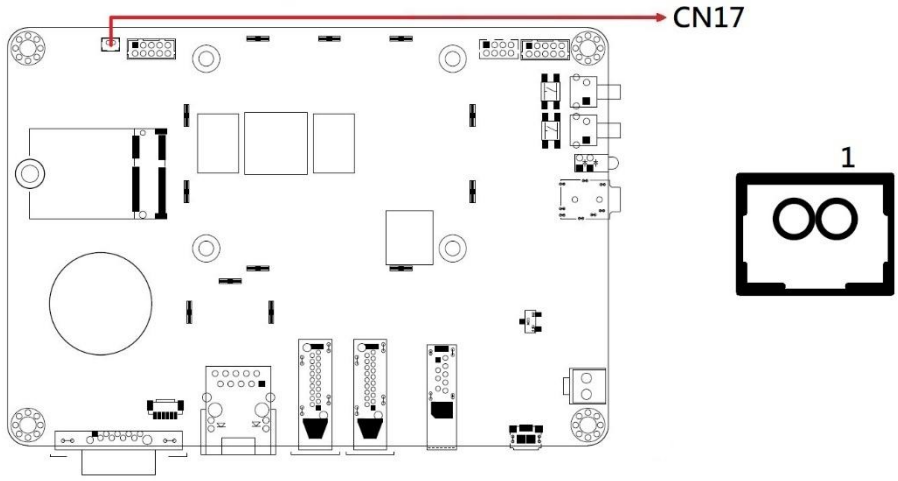
Pin	Signal Name	Pin	Signal Name
1	GND	2	EXT2_3V3
3	GND	4	NC
5	GND	6	NC
7	GND	8	SCL0_3V3
9	GND	10	SDA0_3V3

2.4.13 SPI Connector (4-wire) (CN16)



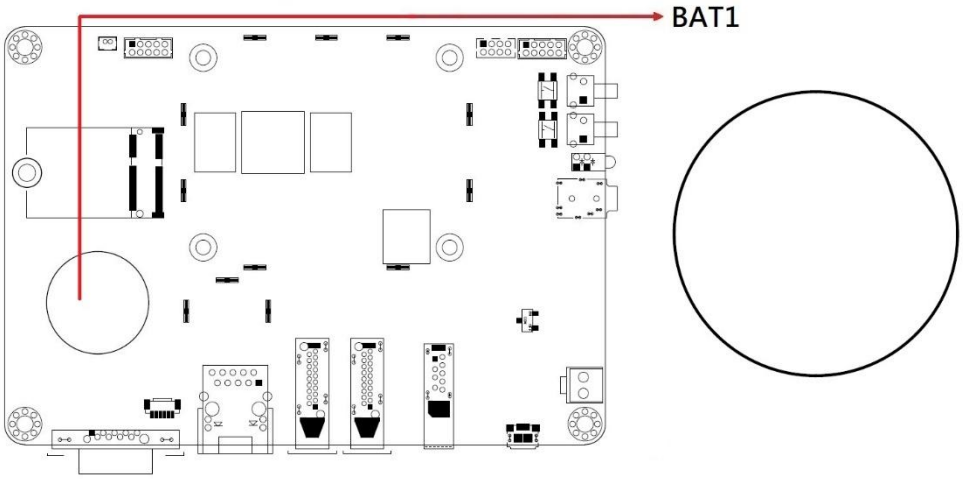
Pin	Signal Name	Pin	Signal Name
1	GND	2	EXT1_3V3
3	GND	4	SPI_CK_3V3
5	GND	6	SPI_CS_3V3
7	GND	8	SPI_MO_3V3
9	GND	10	SPI_MI_3V3

2.4.14 RTC Battery Connector (CN17)



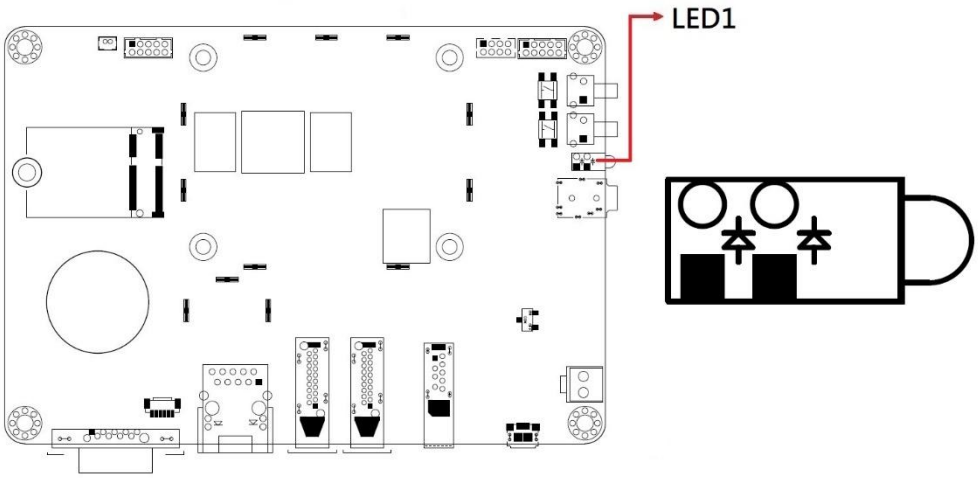
Pin	Signal Name	Pin	Signal Name
1	BAT_3V0	2	GND

2.4.15 RTC Battery (BAT1)



Function	Action
Battery Location	Mount RTC Battery On BAT1

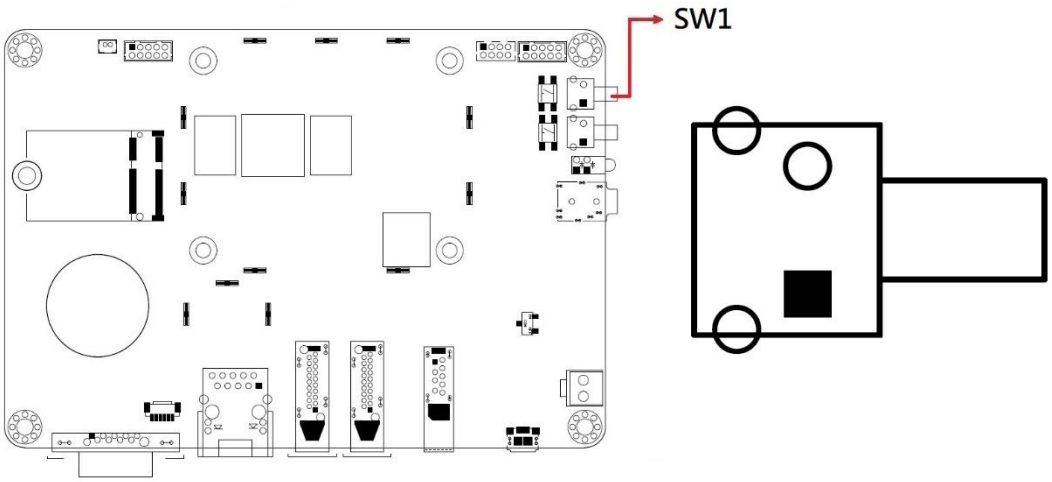
2.4.16 Power LED (LED1)



Pin	Signal Name	Pin	Signal Name
1	VSYS_4V2	2	PWR_LED_Red
3	VSYS_4V2	4	PWR_LED_Green

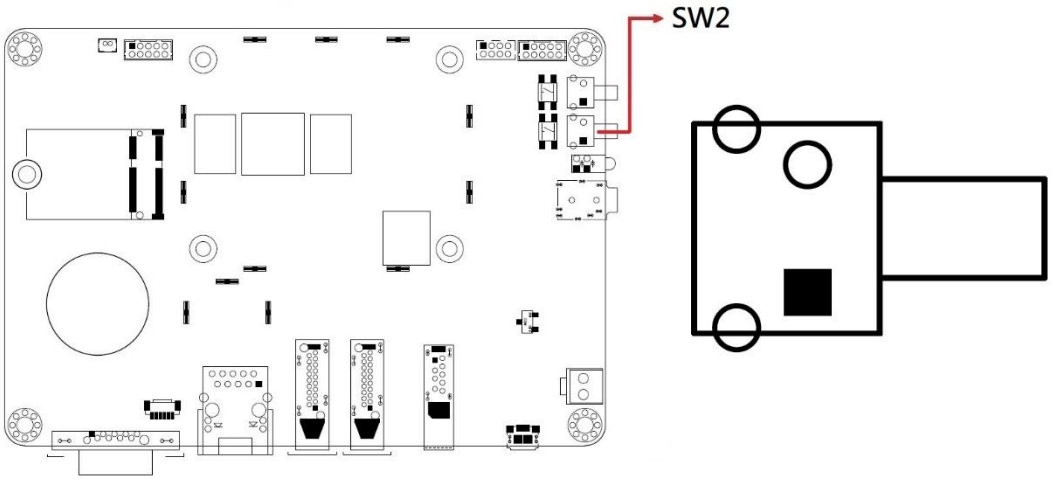
＊When the system power is off, red light will turn on.
＊When the system power is on, green light will turn on.

2.4.17 Reset Button (SW1)



Function	Action
Normal (default)	Release SW1
Reset	Press SW1

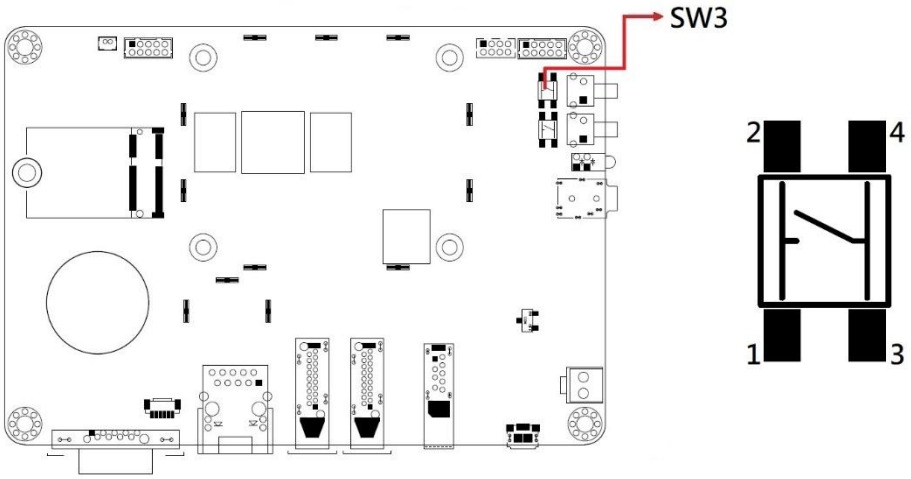
2.4.18 Power Button (SW2)



Function	Action
PWR Off (default)	Release SW2
PWR On	Press and hold SW3 for 4–5 seconds

＊There is no need to press this switch when in automatic power-on mode.

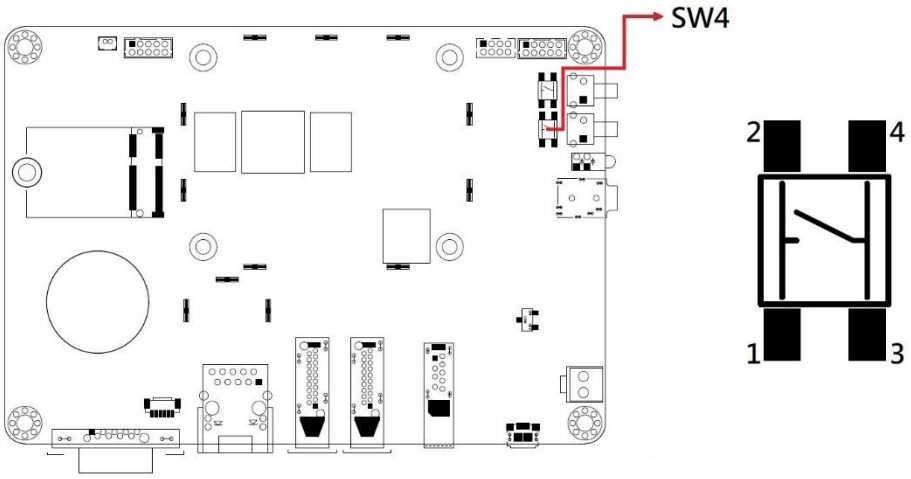
2.4.19 DL Button (Down Load) (SW3)



Function	Action
Normal (default)	Release SW3
Down Load	Press and hold SW3 for 4–5 seconds
VOL +	Press SW3

＊The “VOL +” function applies only to Android OS.

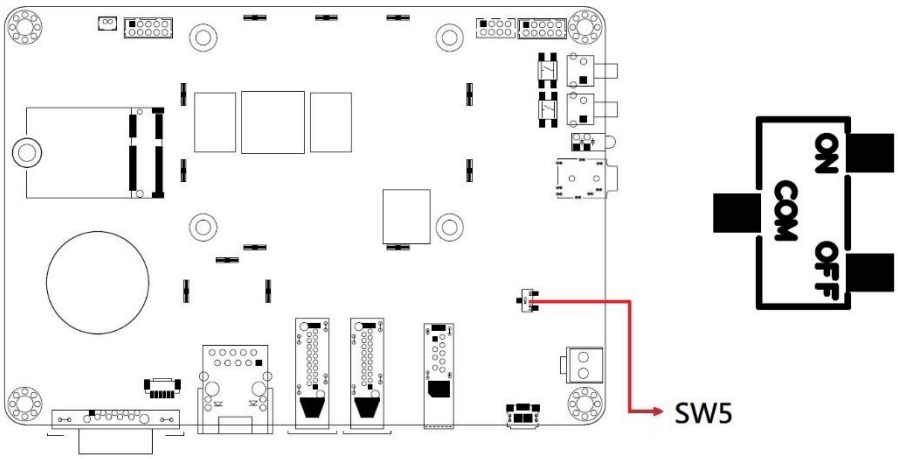
2.4.20 Home Button (SW4)



Function	Action
Normal (default)	Release SW4
VOL -	Press SW4

＊The “VOL -” function is supported only under Android OS.

2.4.21 Auto-Power On Switch (SW5)



Function	Action
Auto PWR Off (default)	Slide SW5 to OFF
Auto PWR On	Slide SW5 to ON

Chapter 3
Software Setup

The system supports both Android and Ubuntu BSP. When placing an order, please inform the responsible sales representative whether you require Android or Ubuntu BSP pre-installed. The BSP provided by IBASE is intended for advanced users to develop their own systems. Any related commercial licenses must be obtained directly by the user from Google and Canonical. IBASE does not provide application development under either operating system.

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Chapter 4
BSP Source Guide

This chapter is dedicated for advanced software engineers only to build BSP source.

4.1 BSP version (Board Support Package)

Note: This is for advanced users who have IBASE standard image file only.

Android version: 14 (U)

Ubuntu version: 22.04.5

Please contact the manufacturer or vendor for the necessary authorization.