



KS170-ADN & KS150-ADN

15" & 17" Industrial Touch Panel PC
User's Manual

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FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

This manual can be retrieved from the website.

The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

Warranty

1. Warranty does not cover damages or failures that arises from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

About this Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 Touch Panel PC
- 1 Quick Installation Guide
- 1 Poron Foam

Note: The items are subject to change in the developing stage.

The product and accessories in the package may not come similar to the information listed above. This may differ in accordance with the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Precautions

- Use the correct DC / AC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging in the power cord.
- There is danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent specifications of batteries recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humid environments.
- Make sure the system is placed or mounted correctly and stably to prevent the chance of dropping or falling may cause damage.
- The openings on the system shall not be blocked and shall be kept in distance from

other objects to make sure of proper air ventilation to protect the system from over-heating.

- Dress the cables, especially the power cord, so they will not be stepped on, in contact with high temperature surfaces, or cause any tripping hazards.
- Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and is compliant with the voltage and current ranges required by the system's electrical specifications.
- If the system is to be unused or stored for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the system.
 - The system has been exposed to moisture.
 - The system is not working properly.
 - The system is physically damaged.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the electricity outlet before cleaning. Use a damp cloth for cleaning the surface. Do not use liquid or spray detergents for cleaning.
- Before connecting, make sure that the power supply voltage is correct. The device is connected to a power outlet which should be grounded connection.



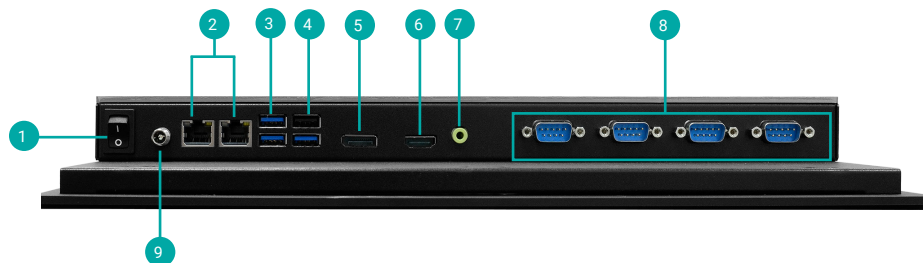
The system may burn fingers while running.

Wait for 30 minutes to handle electronic parts after power off.

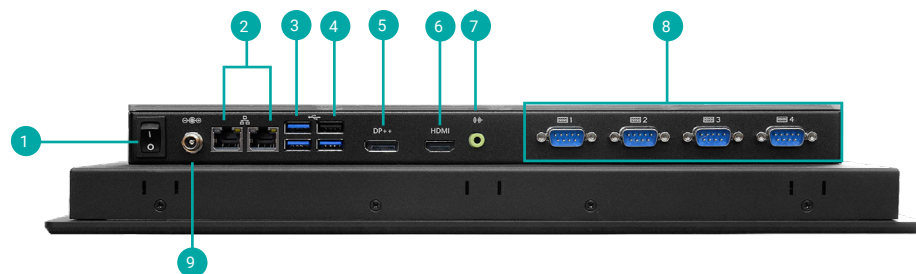
Chapter 1 - Introduction

► I/O Overview

KS150-ADN



KS170-ADN



1 Power Button

2 2.5G LAN

3 USB3.2 Gen2

4 USB2.0

5 DP++

6 HDMI

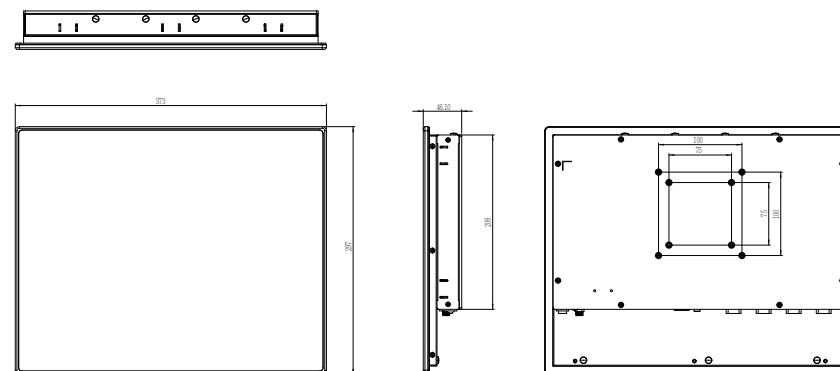
7 Line-Out

8 COM Ports 1~4

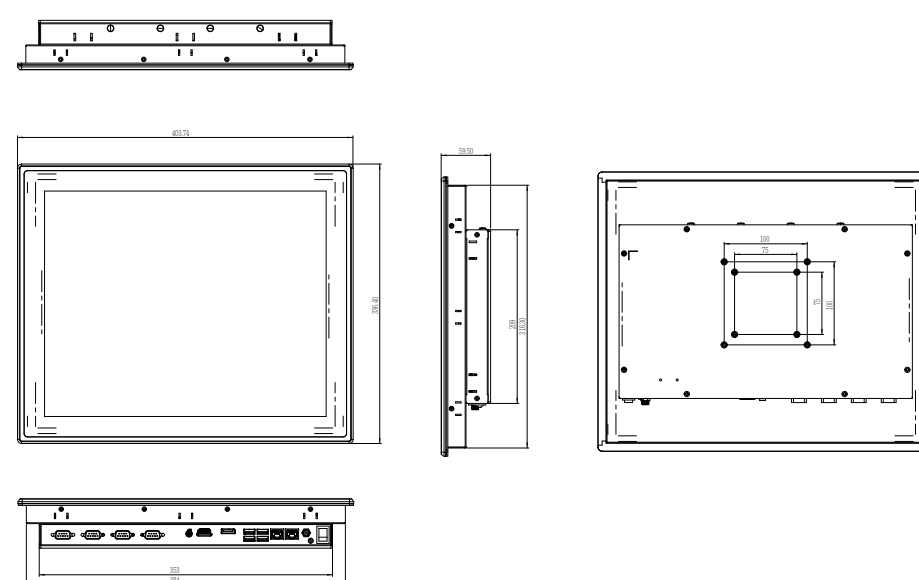
9 DC-In

► Dimensions

KS150-ADN



KS170-ADN



► Key Features

CPU Performance:

Intel® Atom® Alder Lake-N Processors

Touch Type:

Projected Capacitive / 5-Wire Resistive Touch

Dual Display:

HDMI & DP++

Multiple Expansions:

M.2 2242/3042 B Key

M.2 2230 E Key

Wide Voltage:

Support 9 ~ 36V

► Specifications

Model Name		KS150-ADN	KS170-ADN
DISPLAY AND TOUCH SCREEN	Display	15" TFT LCD Panel	17" TFT LCD Panel
	Contrast	4 : 3	5 : 4
	Max. Resolution	1024 x 768	1280 x 1024
	Touch Type	Projected Capacitive / 5-Wire Resistive Touch	Projected Capacitive / 5-Wire Resistive Touch
	Brightness	300 (cd/m2)	350 (cd/m2)
	Backlight Lifetime	50,000 (hours)	50,000 (hours)
SYSTEM	Processor	Intel® Processor N97, 4 cores, 6M Cache, up to 3.60 GHz, 12W	Intel® Processor N97, 4 cores, 6M Cache, up to 3.60 GHz, 12W
	Memory	One 262-pin SODIMM up to 16GB Single Channel DDR5 4800MHz	One 262-pin SODIMM up to 16GB Single Channel DDR5 4800MHz
	BIOS	AMI SPI 256Mbit	AMI SPI 256Mbit
GRAPHICS	Controller	Intel® UHD Graphics	Intel® UHD Graphics
	Feature	OpenGL 4.6, Direct X 12.1, OpenCL 3.0 HW Decode: HEVC, VP9, AV1, AVC HW Encode: HEVC, VP9, AVC	OpenGL 4.6, Direct X 12.1, OpenCL 3.0 HW Decode: HEVC, VP9, AV1, AVC HW Encode: HEVC, VP9, AVC
	Display	1 x DP++ 1 x HDMI 2.0 DP++: resolution up to 3840x2160 @ 60Hz HDMI: resolution up to 3840x2160 @ 24Hz	1 x DP++ 1 x HDMI 2.0 DP++: resolution up to 3840x2160 @ 60Hz HDMI: resolution up to 3840x2160 @ 24Hz
	Dual Displays	DP++ + HDMI	DP++ + HDMI

Model Name		KS150-ADN	KS170-ADN
STORAGE	External	1 x 2.5" SATA 3.0	1 x 2.5" SATA 3.0
	Interface	1 x M.2 2242/3042/3052 B Key (PCIe Gen3x1 or SATA3 and USB 2.0) 1 x M.2 2230 E Key (PCIe Gen3x1 and USB 2.0, support Intel® CNVi) (CNVi only support by selected CPU)	1 x M.2 2242/3042/3052 B Key (PCIe Gen3x1 or SATA3 and USB 2.0) 1 x M.2 2230 E Key (PCIe Gen3x1 and USB 2.0, support Intel® CNVi) (CNVi only support by selected CPU)
I/O	Ethernet	2 x 2.5GbE	2 x 2.5GbE
	Serial	2 x RS-232/422/485 2 x RS-232	2 x RS-232/422/485 2 x RS-232
	USB	3 x USB 3.2 Gen2 1 x USB 2.0	3 x USB 3.2 Gen2 1 x USB 2.0
	Display	1 x DP++ 1 x HDMI	1 x DP++ 1 x HDMI
	Audio	1 x Line-out	1 x Line-out
	Button	1 x Power Button	1 x Power Button
	Type	DC 9-36V	DC 9-36V
POWER	Connector	DC Jack	DC Jack
	Power	9V@3A / 36V@0.9A	9V@4.0A / 36V@1.2A
OS SUPPORT	Microsoft	Windows 11 IoT Enterprise 64bit	Windows 11 IoT Enterprise 64bit
	Linux	Linux	Linux

Model Name		KS150-ADN	KS170-ADN
MECHANISM	Construction	Aluminum Front Bezel + Sheet Metal	Aluminum Front Bezel + Sheet Metal
	Mounting	VESA mount 100 x 100	VESA mount 100 x 100
	IP Rating	IP65 Front Panel Protection	IP65 Front Panel Protection
	Dimensions(W x H x D)	373 x 297 x 46.1 mm	403.8x336.4x59.5mm
	Weight	5KG	6.2KG
ENVIRONMENT	Operating Temperature	0 ~ 50°C with 0.6m/s air flow	0 ~ 50°C with 0.6m/s air flow
	Storage Temperature	-30 ~ 80°C	-30 ~ 80°C
	Relative Humidity	10 to 95% @ 40°C, non-condensing	10 to 95% @ 40°C, non-condensing
STANDARDS AND CERTIFICATION	Shock	OP: Half-sine, 3G @ 11ms Non-OP: Half-sine, 5G @ 11ms MIL-STD-810G Standard	OP: Half-sine, 3G @ 11ms Non-OP: Half-sine, 5G @ 11ms MIL-STD-810G Standard
	Vibration	OP: Random, 1Grms @ 5~500Hz, 30min Non-OP: Sweep sine, 3Grms @ 10~500Hz, 30min MIL-STD-810G Standard	OP: Random, 1Grms @ 5~500Hz, 30min Non-OP: Sweep sine, 3Grms @ 10~500Hz, 30min MIL-STD-810G Standard
	Certifications	CE/FCC Class A	CE, FCC Class A, RoHS, UKCA, KC

Chapter 2 - Hardware Installations

► Removing the Chassis Cover

Please observe the following guidelines and follow the instructions to open the system.

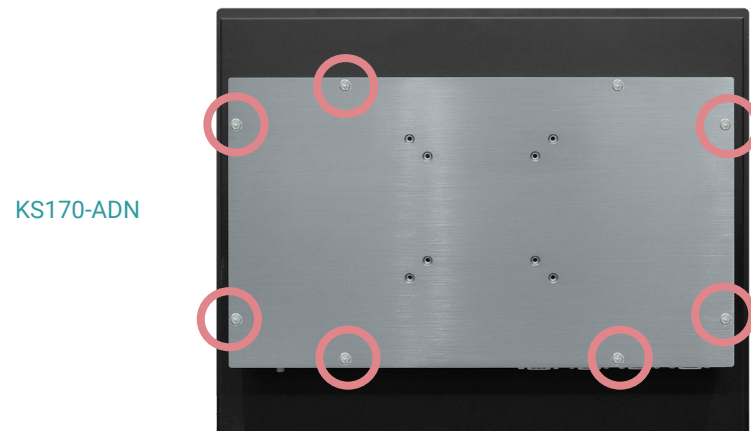
1. Make sure the system and all other peripheral devices connected to it have been powered off.
2. Disconnect all power cords and cables.

Step 1:

The 8 screws of the system are used to secure the cover to the chassis. Remove the screws and put them in a safe place for later use.



KS150-ADN



KS170-ADN

Step 2:

Lift the cover to open the system.

KS150-ADN



KS170-ADN



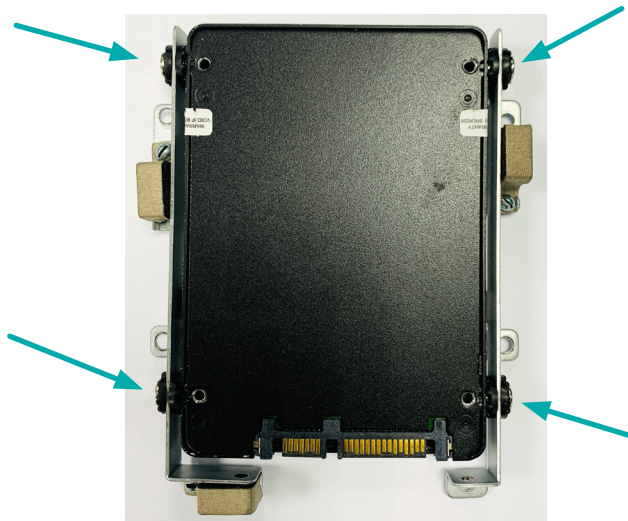
► Installing a SSD Tray

The SSD Tray can be mounted with a 2.5" SATA SSD and secured onto the system board for storage. Please follow the steps below for the assembly.

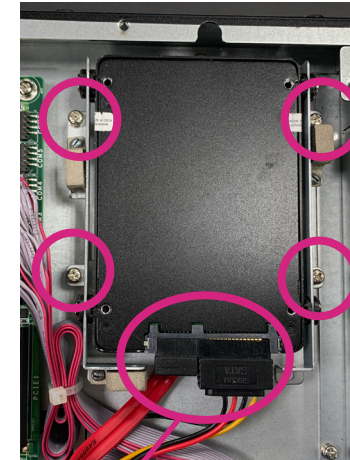
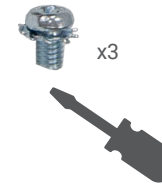
1. Place the SATA SSD in between the SSD brackets while making sure the SATA connector can be access.



2. Screw in the four black screws from each bracket to secure a SSD in place.



3. Screw in the four screws provided in the package to secure the SSD tray in place.

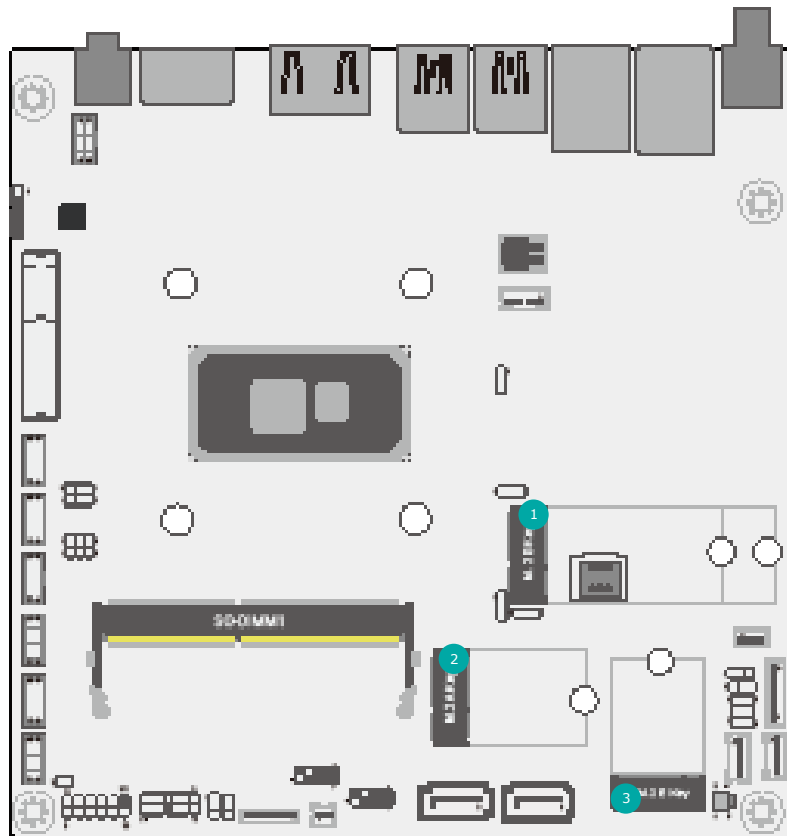


4. Connect the SATA cable and the SATA power cable to SSD and the board connectors.



Note:
After the SATA SSD is correctly mounted, please attach the bottom cover back on as previously instructed

► **Expansion Slots**



1 M.2 B-Key

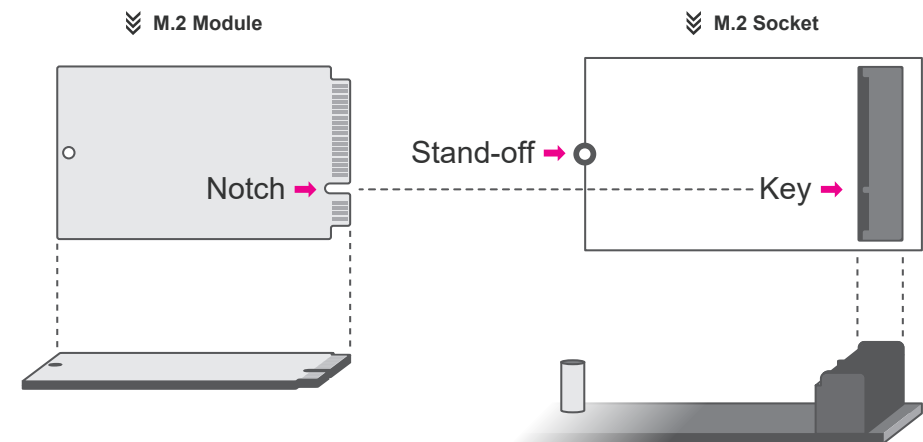
2 M.2 A-Key

3 M.2 E-Key

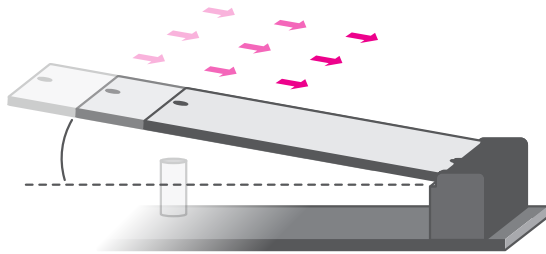
Installing the M.2 Module

Before installing the M.2 module into the M.2 socket, please make sure that the following safety cautions are well-attended.

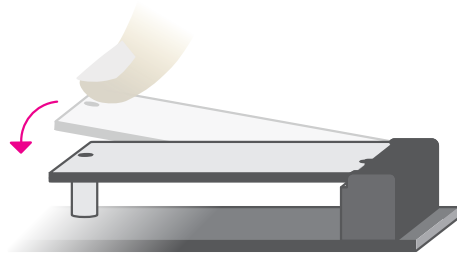
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the M.2 socket on the system board
4. Make sure the notch on card is aligned to the key on the socket.
5. Make sure the standoff screw is removed from the standoff.



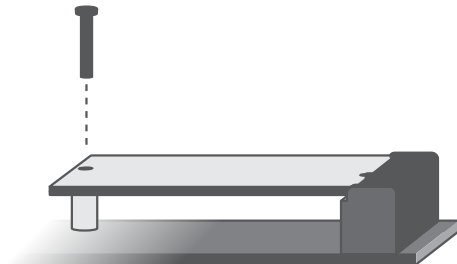
Please follow the steps below to install the card into the socket.



Step 1:
Insert the card into the socket at an angle while making sure the notch and key are perfectly aligned.



Step 2:
Press the end of the card far from the socket down until against the stand-off.



Step 3:
Screw tight the card onto the stand-off with a screw driver and a stand-off screw until the gap between the card and the stand-off closes up. The card should be lying parallel to the board when it's correctly mounted.

► Mounting Options

VESA Mount- KS150-ADN

Step 1:

Select a place on the wall where you will mount the Panel PC.

Step 2:

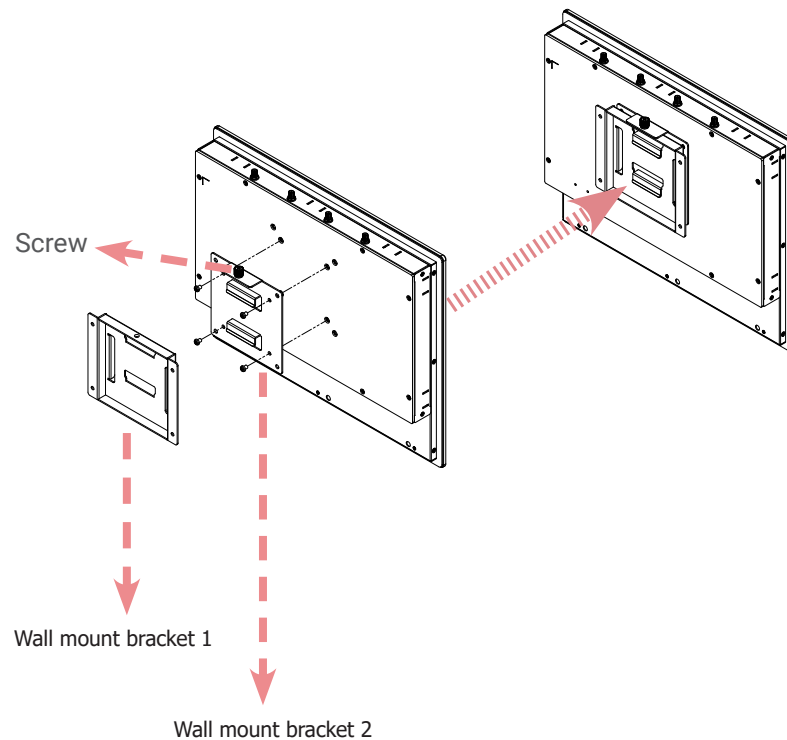
Use the provided mounting screws to attach **wall mount bracket 1** onto the wall.

Step 3:

Attach the other bracket (**wall mount bracket 2**) to the rear of the Panel PC.

Step 4:

Slide the Panel PC to **wall mount bracket 1** and attach the two brackets together with the hooks. Then tighten the screw to secure the assembly in place.



VESA Mount- KS170-ADN

Step 1:

Select a place on the wall where you will mount the Panel PC.

Step 2:

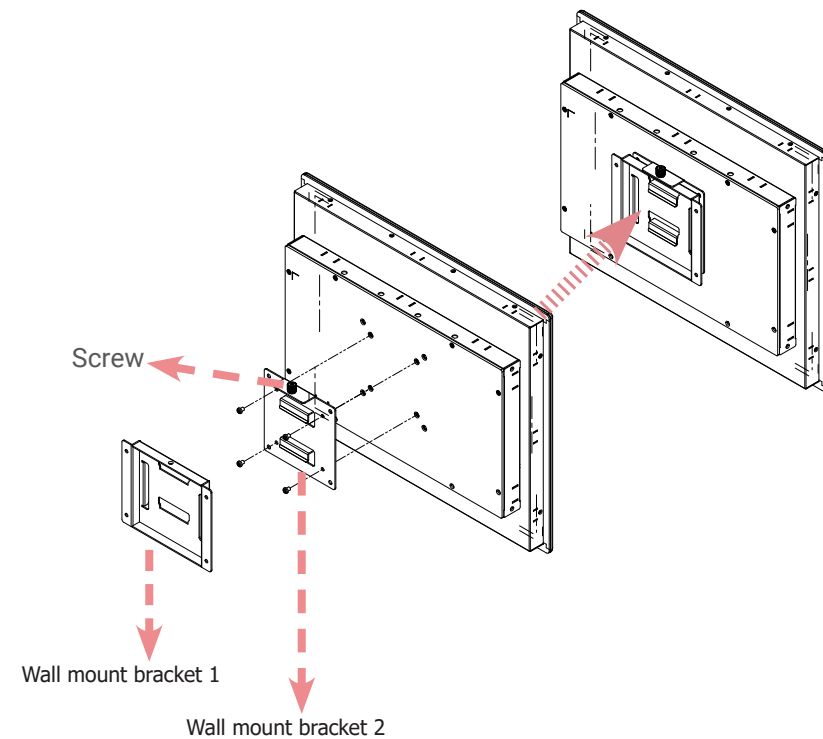
Use the provided mounting screws to attach **wall mount bracket 1** onto the wall.

Step 3:

Attach the other bracket (**wall mount bracket 2**) to the rear of the Panel PC.

Step 4:

Slide the Panel PC to **wall mount bracket 1** and attach the two brackets together with the hooks. Then tighten the screw to secure the assembly in place.



Panel Mount

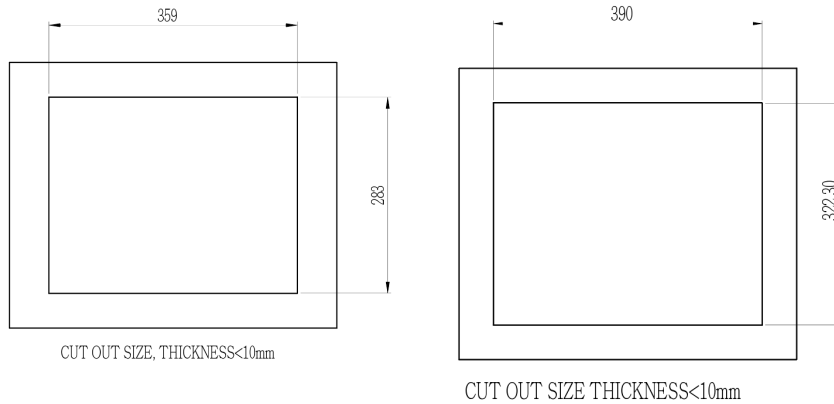
Step 1:

Select a place on the panel (or wall) where you will mount the Panel PC.

Step 2:

Cut out a shape on the panel that corresponds to the Panel PC's rear dimensions: KS150-ADN (359mm x 283mm), KS170-ADN (390mm x 322.30mm) and ensure that the Panel PC can be fitted into the panel properly.

The flat panel thickness is less than 10mm. Be sure to route or trim down the thick wall to 10 mm or slightly less for the clamps to recess and be compatible with your wall or enclosure.



Step 3:

Insert the Panel PC from the outside surface of the panel into the mounting hole until it is properly fitted against the panel.

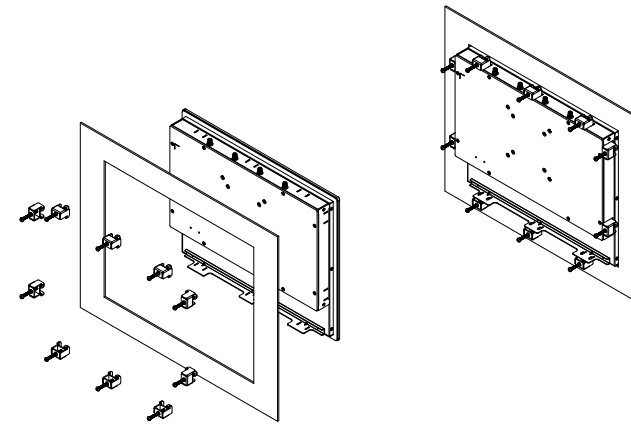
Step 4:

Position the mounting clamps along the rear edges of the Panel PC and insert them into the slits around the Panel PC.

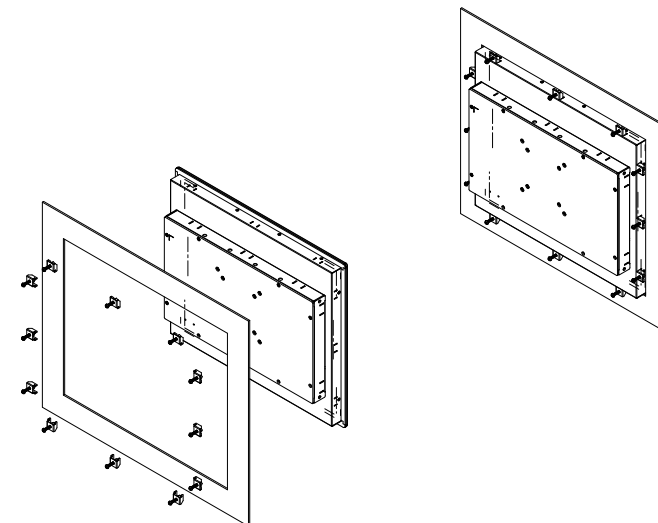
Step 5:

The first and second clamps must be positioned and secured diagonally prior to mounting the rest of the clamps. Tighten the clamp's screw using an electric screwdriver by pressing the white plastic cap onto the back of the panel. The illustration below shows that all clamps are properly mounted.

Panel Mount - KS150-ADN

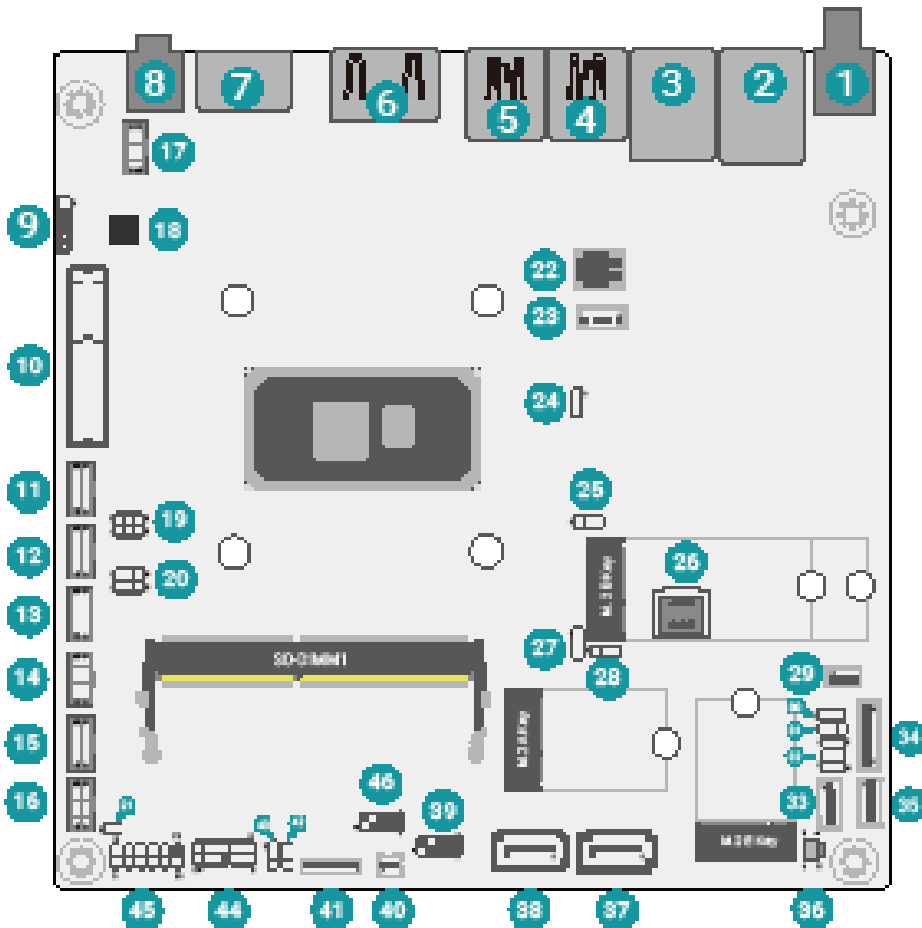


Panel Mount - KS170-ADN



Chapter 3 - System Settings

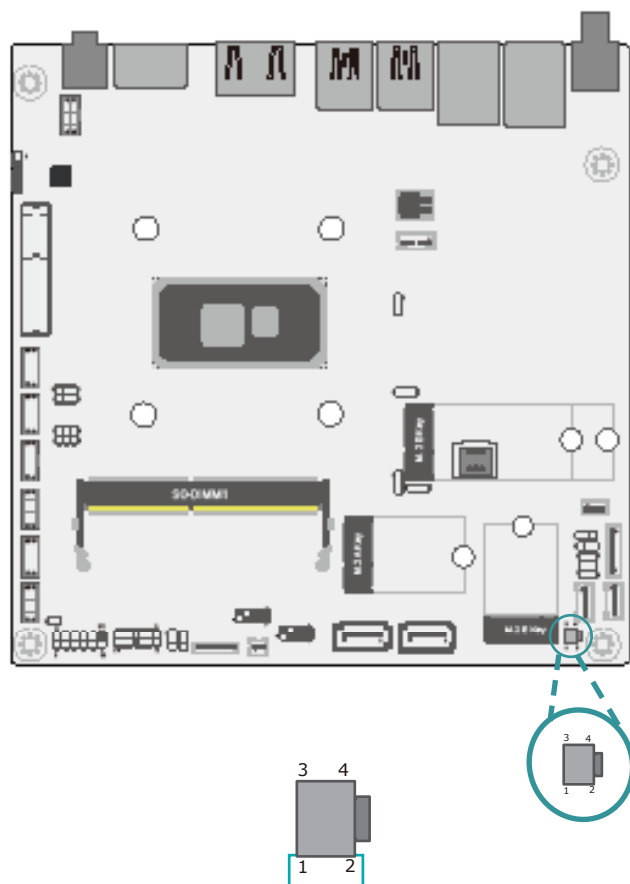
► Board Layout



1 DC-in	21 Case Open	41 DIO
2 2.5G LAN 1	22 SPI	42 DIO_4~7 Power Select
3 2.5G LAN 2	23 System Fan	43 DIO_0~3 Power Select
4 USB3.2 Gen2	24 UART Header (Debug)	44 eSPI Header(Debug)
5 USB3.2 Gen2	25 SATA1 CONN/ M.2 B-KEY	45 Front Panel
6 DP++	26 SIM Card Slot	46 USB2.0 Pin Header
7 HDMI	27 USB3-A/ M.2 B-KEY	
8 Line-out	28 PCIE Slotx2/ M.2 E-KEY	
9 S/PDIF	29 System Fan	
10 PCIE1	30 Panel Backlight ON Level Select	
11 COM1	31 Panel Inverter Power Select	
12 COM2	32 VCC Panel Power Select	
13 COM3	33 SATA Power	
14 COM4	34 Backlight CON	
15 COM5	35 SATA Power	
16 COM6	36 Clear CMOS Data	
17 Front Audio	37 SATA1	
18 Buzzer	38 SATA0	
19 COM1 Power Select	39 USB2.0 Pin Header	
20 COM2 Power Select	40 RTC Battery	

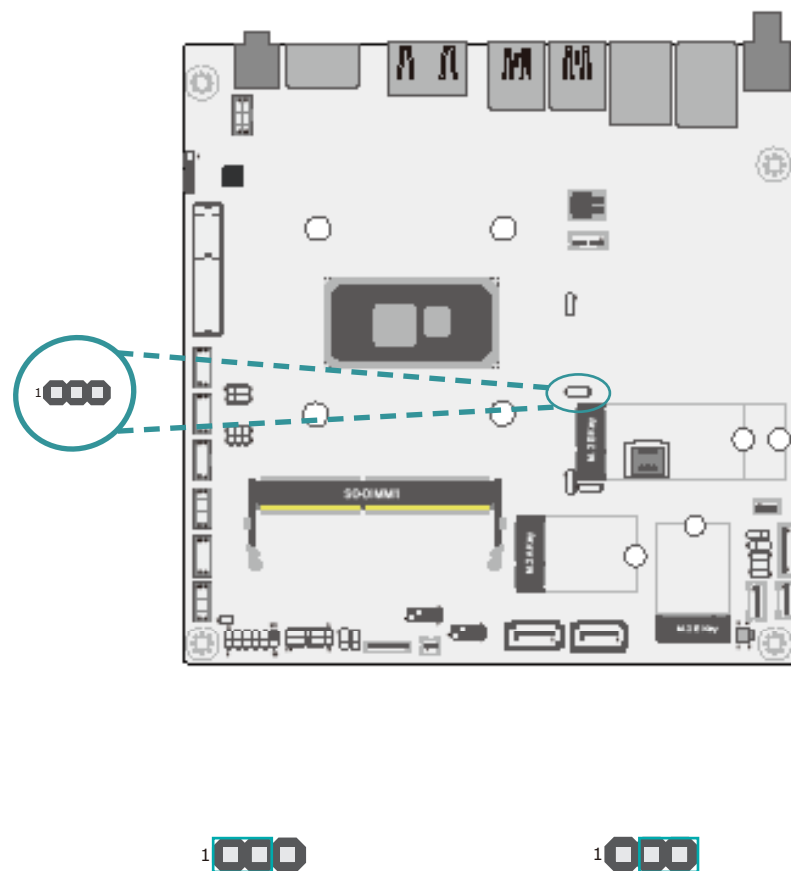
► Jumper Settings

Clear CMOS Data (SW1)



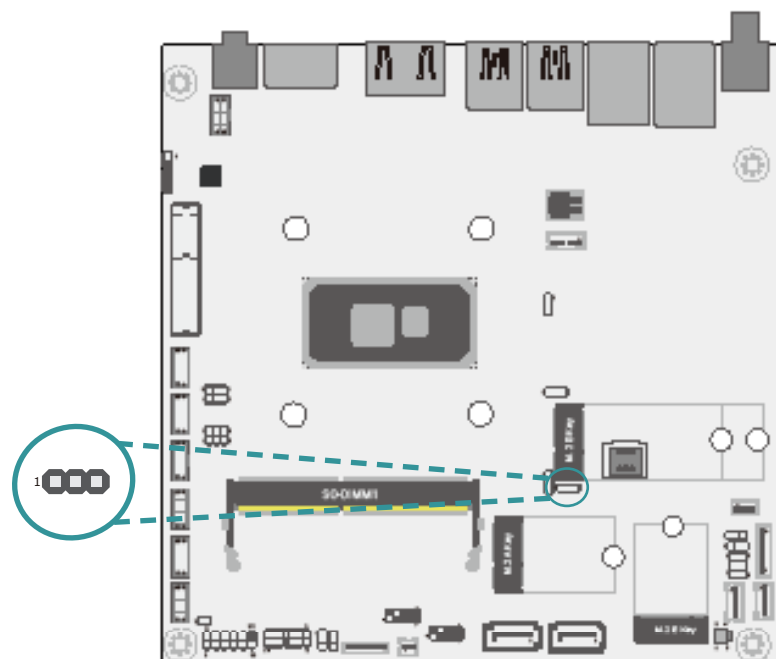
- 1-2 Open: Normal (Default)
- 1-2 Short: Clear CMOS Data

SATA1 CONN/M.2 B-KEY (PBJP1)



- 1-2 Short: M.2 B-KEY, SATA (Default)
- 2-3 Short: SATA1 CONN

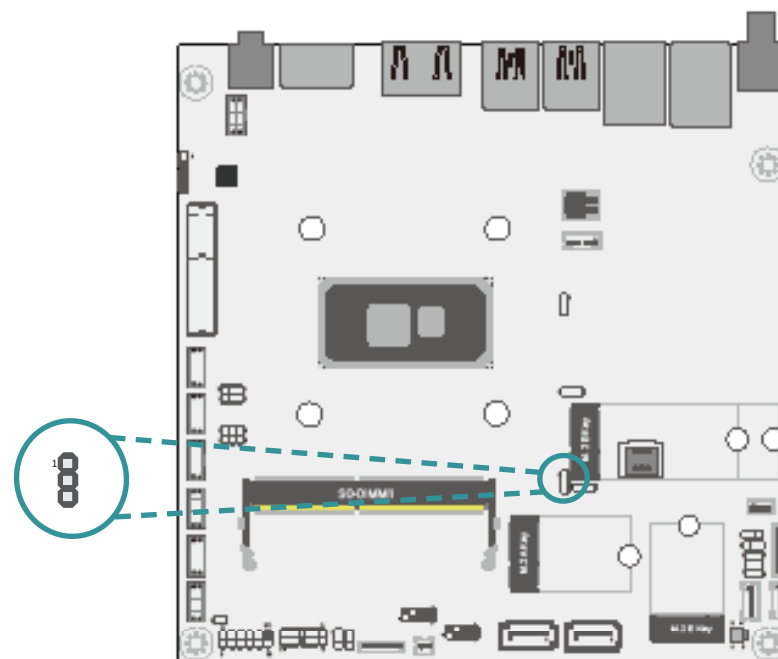
PCIE Slotx2/M.2 E-KEY (PBJP2)



■ 1-2 Short: M.2 E-KEY, PCIe1 (Default)

■ 2-3 Short: PCIe2 Slotx2 (Optional)

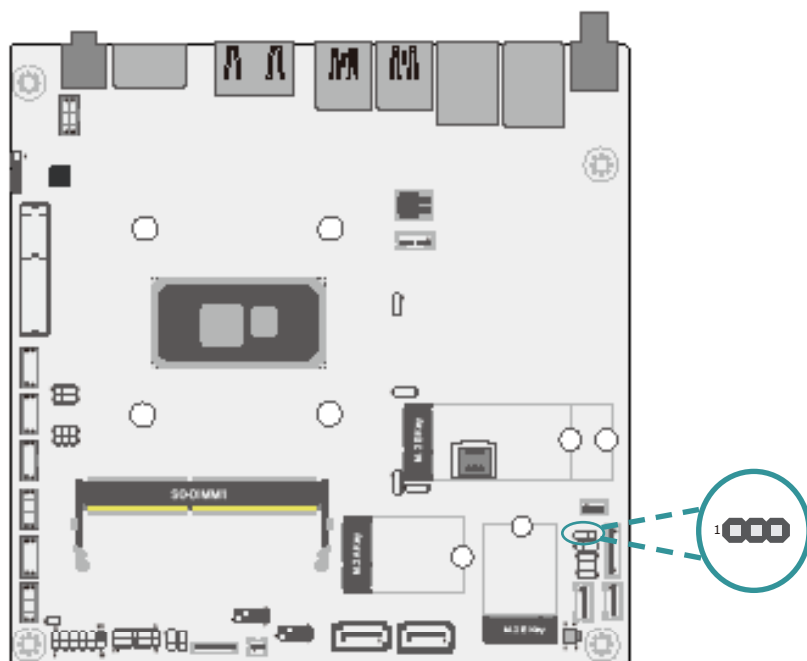
USB3-A/M.2 B-KEY (PBJP3)



■ 1-2 Short: M.2 B-KEY, USB3 (Default)

■ 2-3 Short: USB3-TYPE-A

Panel Backlight ON Level Select (DPJP1)

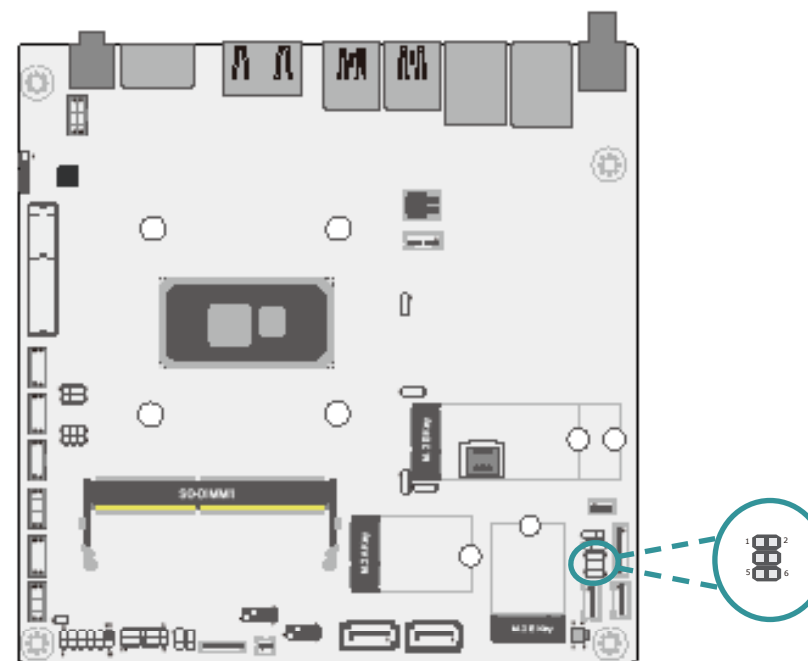


■ 1-2 Short: 3V3 (Default)



■ 2-3 Short: 5V

VCC Panel Power Select (DPJP3)



■ 1-2 Short: 12V

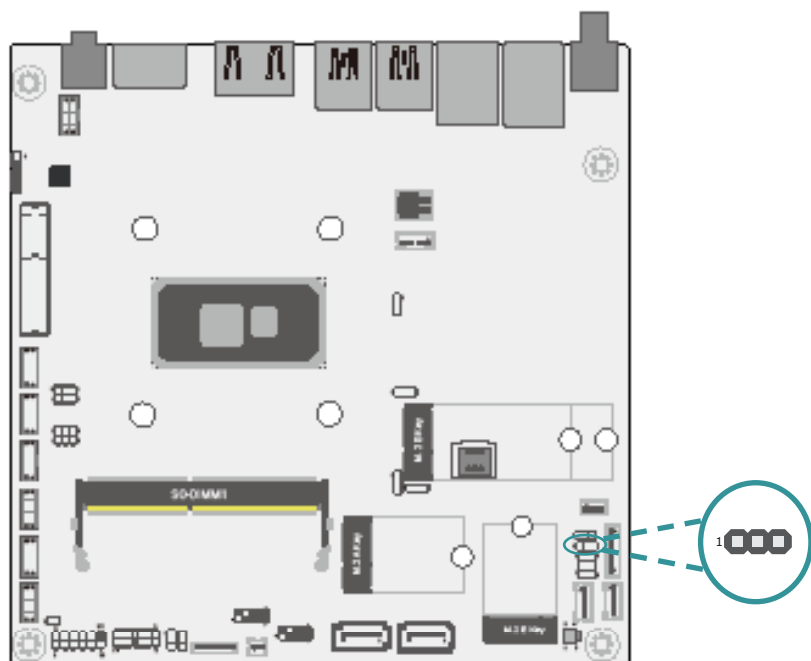


■ 3-4 Short: 5V



■ 5-6 Short: 3V3 (Default)

Inverter Panel Power Select (DPJP4)

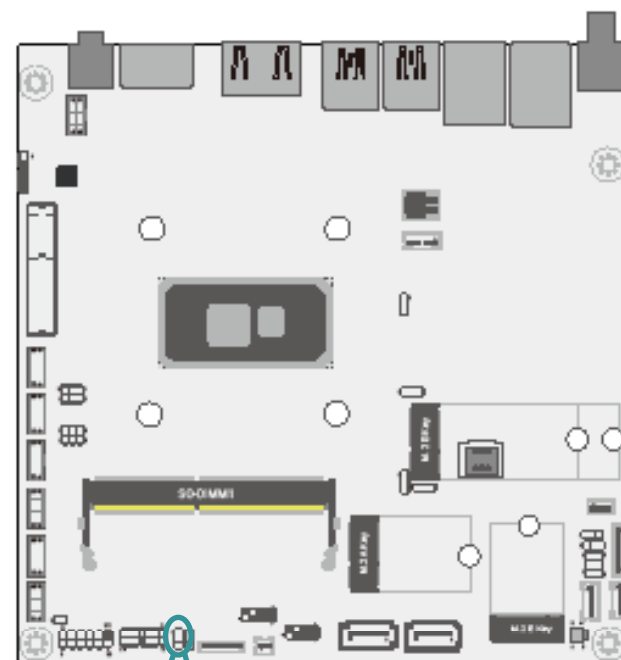


■ 1-2 Short: 12V (Default)



■ 2-3 Short: 5V

DIO_0~3 Power Select (JP2)

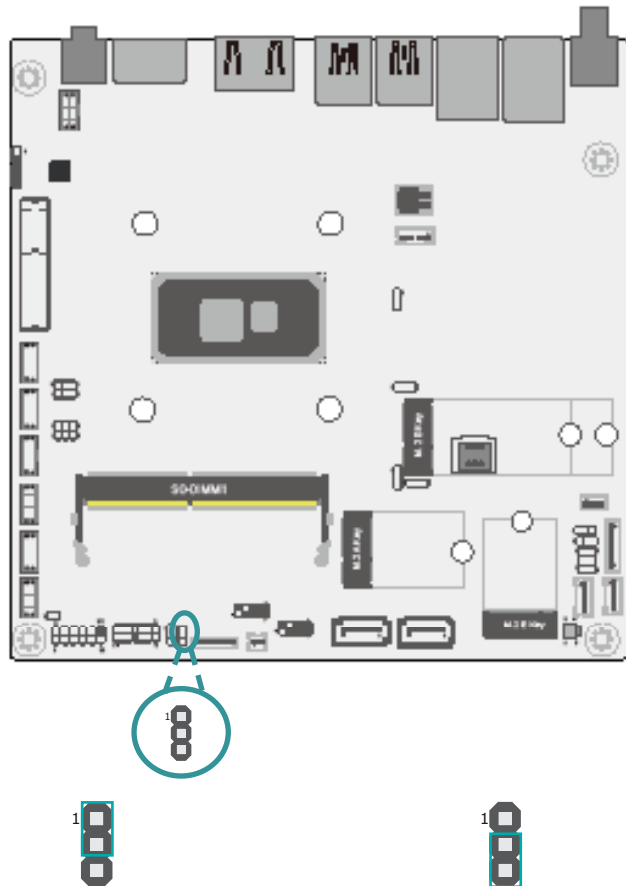


■ 1-2 Short to 5VSB: Normal (Default)



■ 2-3 Short: GND

DIO_4~7 Power Select (JP5)

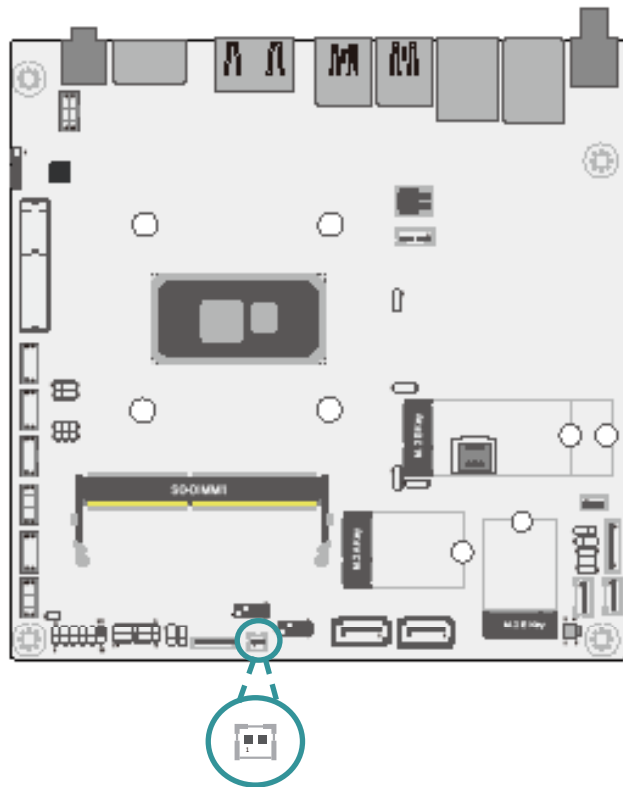


■ 1-2 Short to 5VSB: Normal (Default)

■ 2-3 Short: GND

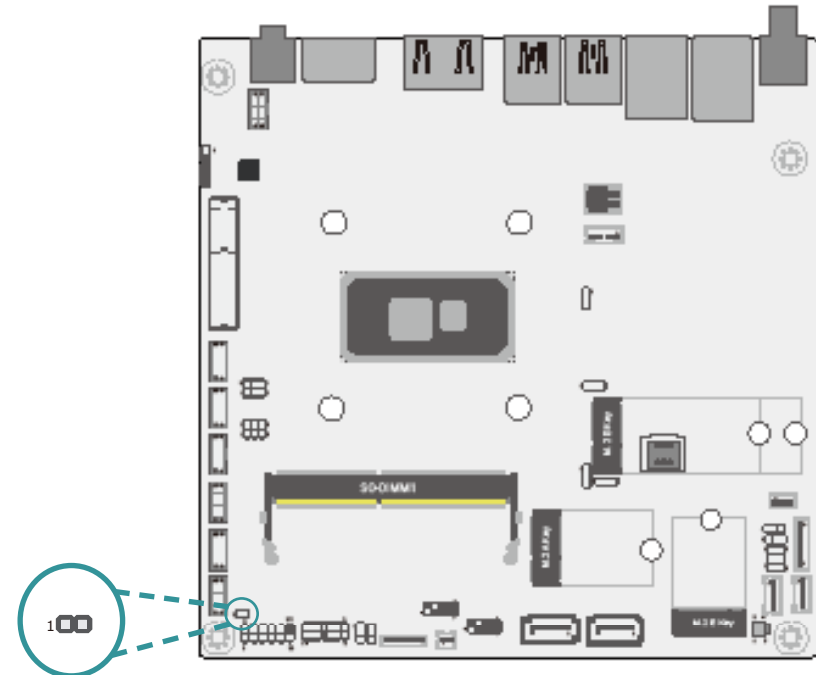
► Pin Assignment

RTC Battery (J19)



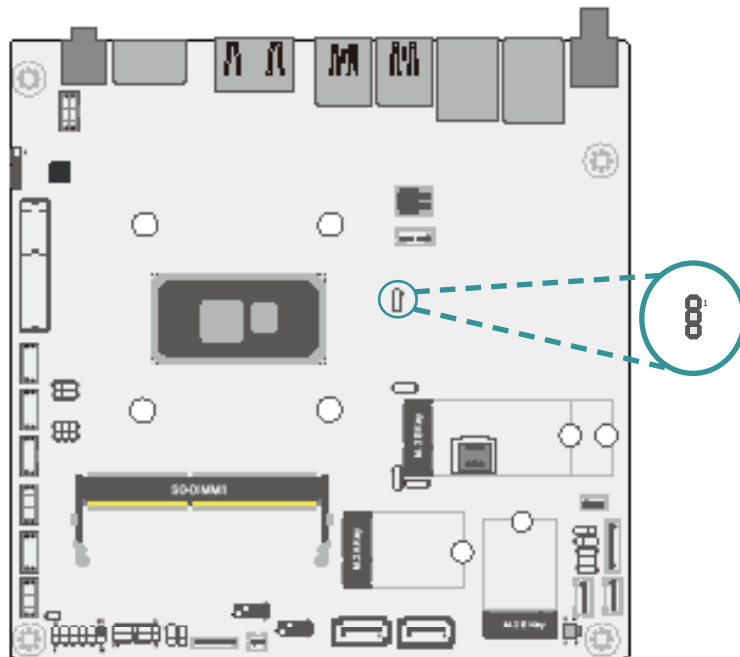
Pin	Assignment
1	V_BAT
2	GND

Case Open (J2)



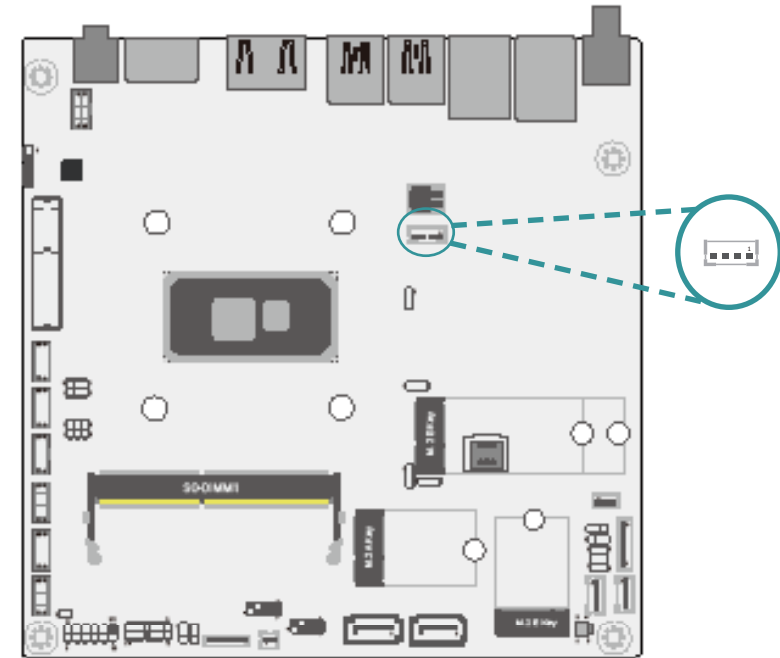
Pin	Assignment
1	Case Open-
2	GND

UART Header (Debug) (JP4)



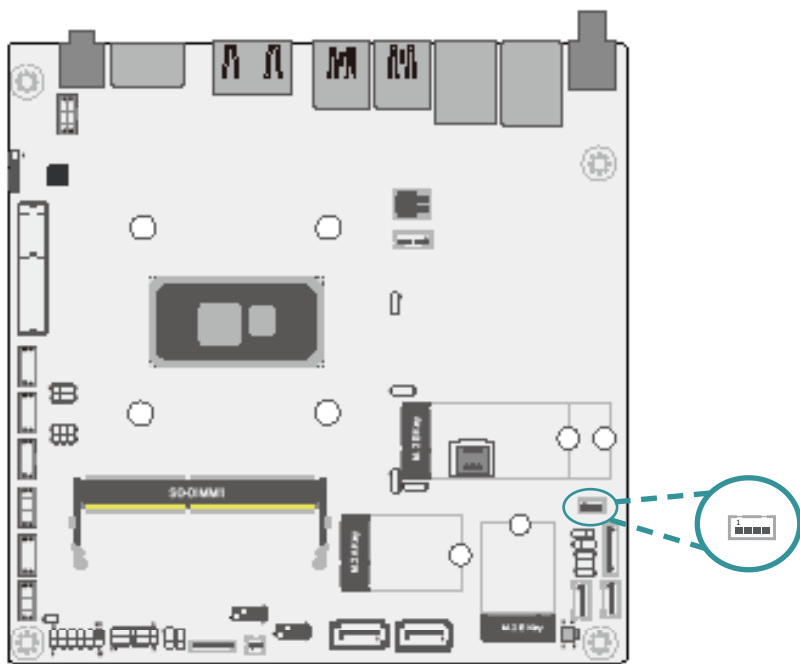
Pin	Assignment
1	DEBUG_UART_TX
2	DEBUG_UART_RX
3	GND

System Fan (J20)



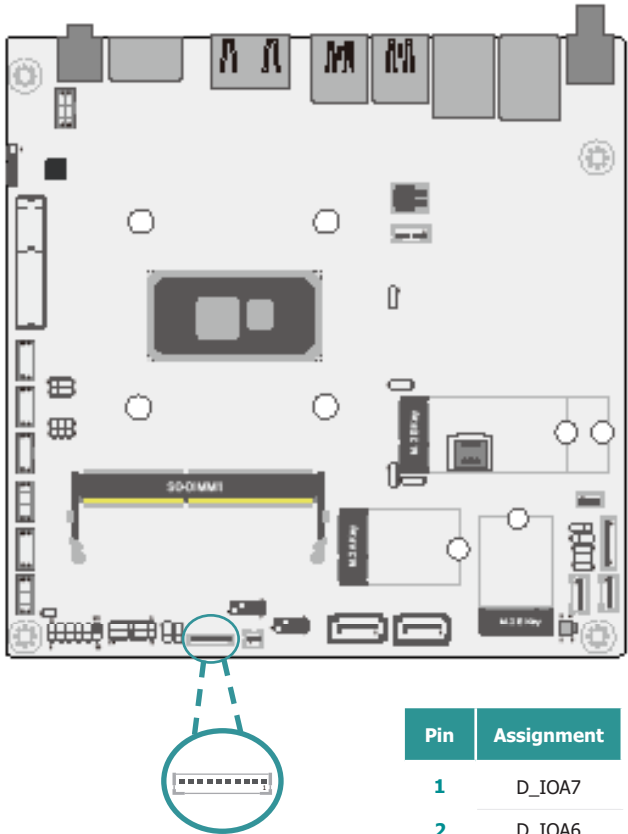
Pin	Assignment
1	GND
2	+12V
3	PWM
4	TACH

System Fan (J10)



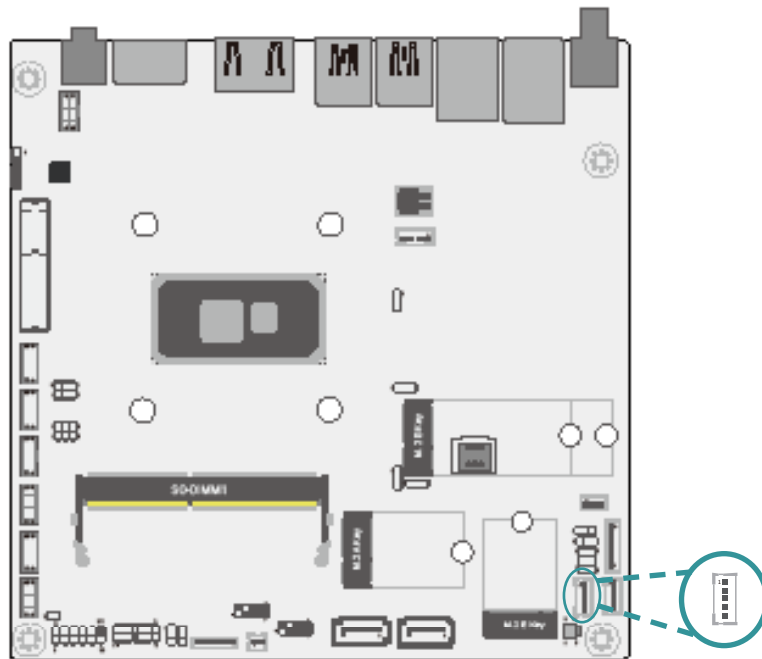
Pin	Assignment
1	GND
2	+12V
3	PWM
4	TACH

DIO (J16)



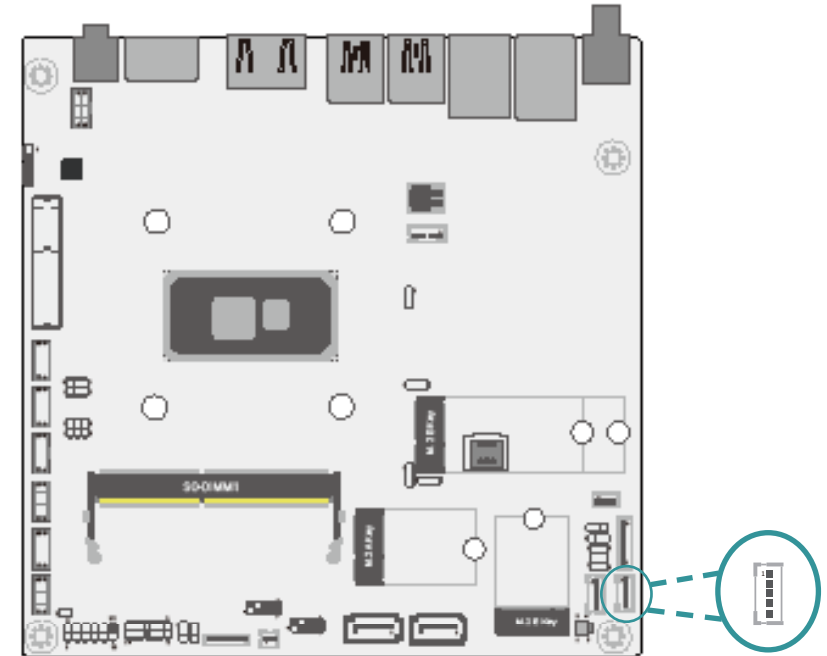
Pin	Assignment
1	D_IOA7
2	D_IOA6
3	D_IOA5
4	D_IOA4
5	D_IOA3
6	D_IOA2
7	D_IOA1
8	D_IOA0
9	5VSB
10	GND

SATA POWER (CN8)



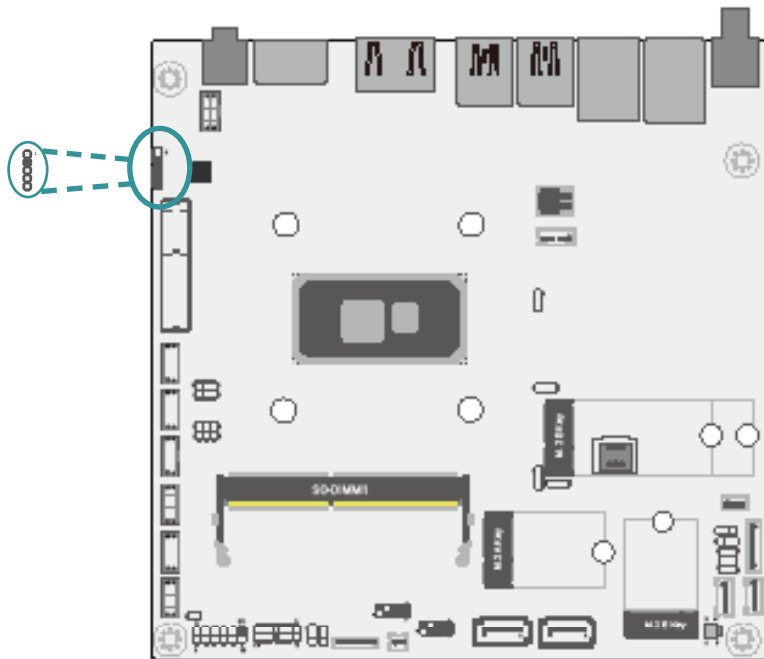
Pin	Assignment
1	5V
2	5V
3	12V
4	GND
5	GND

SATA POWER (CN12)



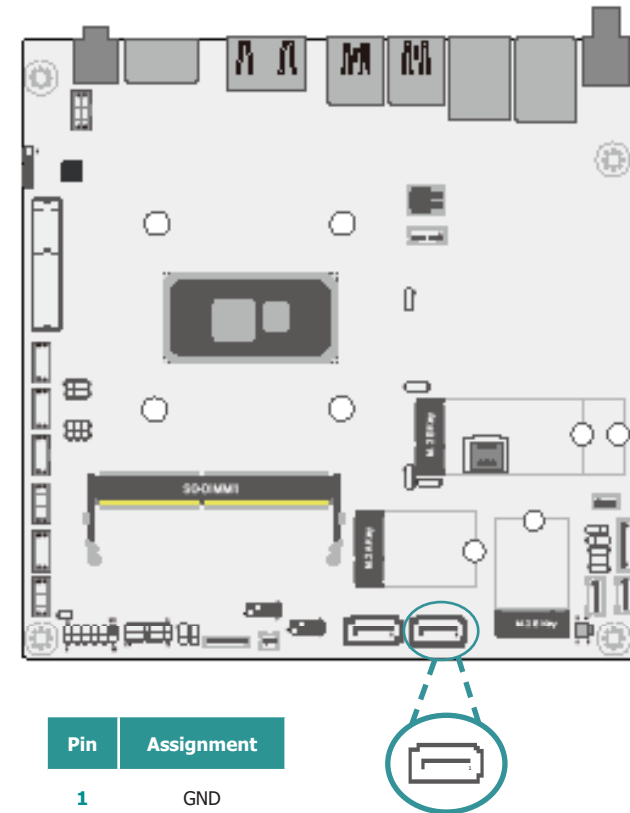
Pin	Assignment
1	5V
2	5V
3	12V
4	GND
5	GND

S/PDIF (AUJ2)



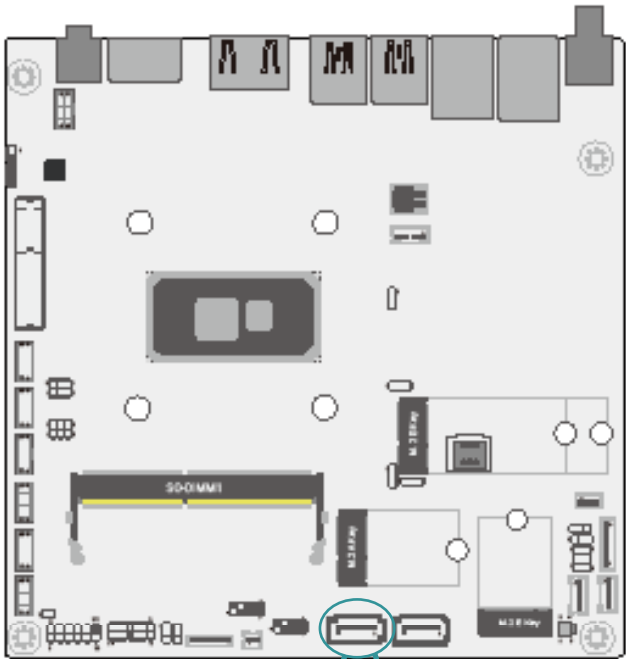
Pin	Assignment
1	5V
2	NC
3	SPDIF OUT
4	GND
5	SPDIF IN

SATA1 (J12)



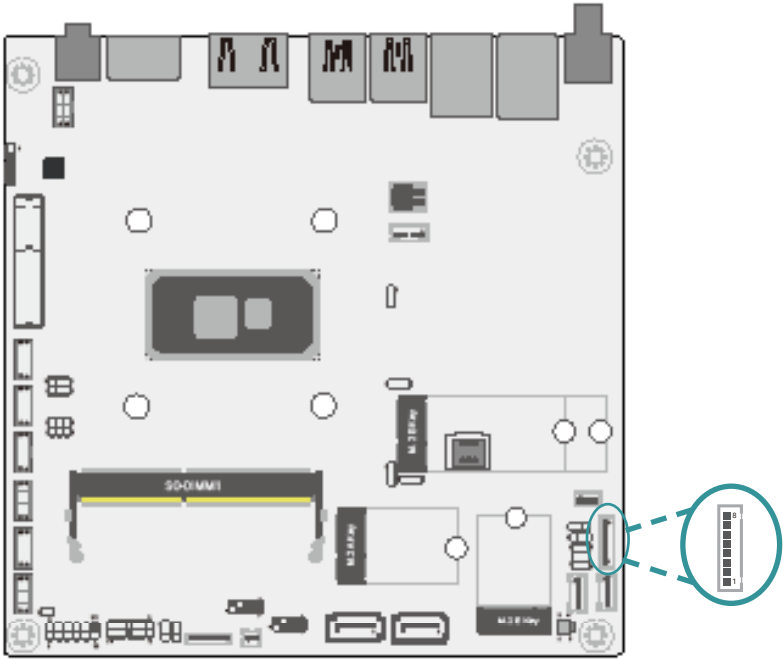
Pin	Assignment
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

SATA0 (J4)



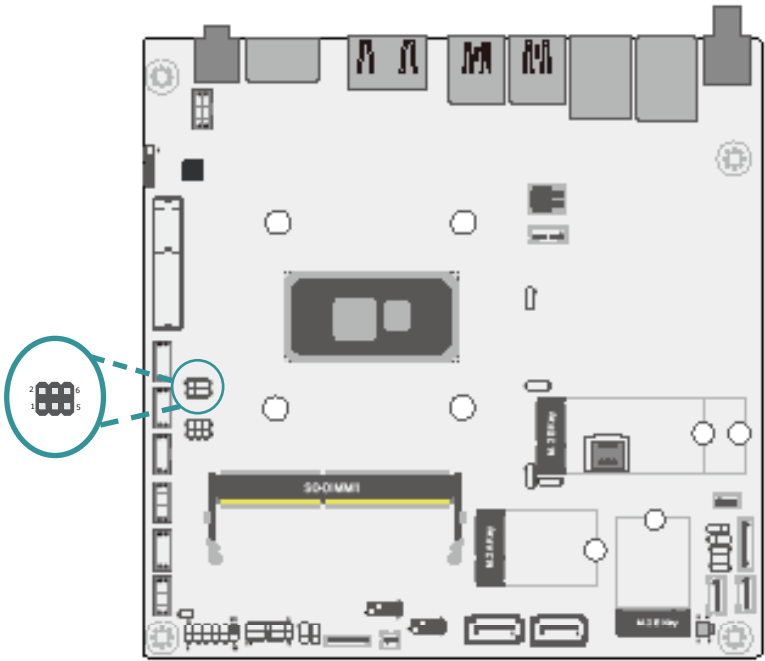
Pin	Assignment
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

Backlight CON (DPJ2)



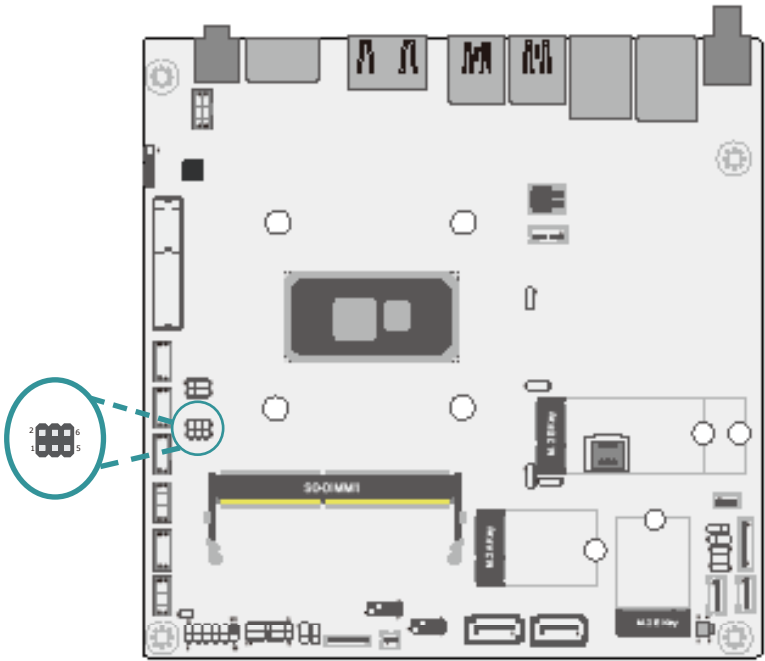
Pin	Assignment
1	GND
2	GND
3	PWM
4	VCC_PANEL_PWR
5	LVDS_3V3
6	BLONOFF
7	INV_PWR
8	INV_PWR

COM1 Power Select (TSJP1)



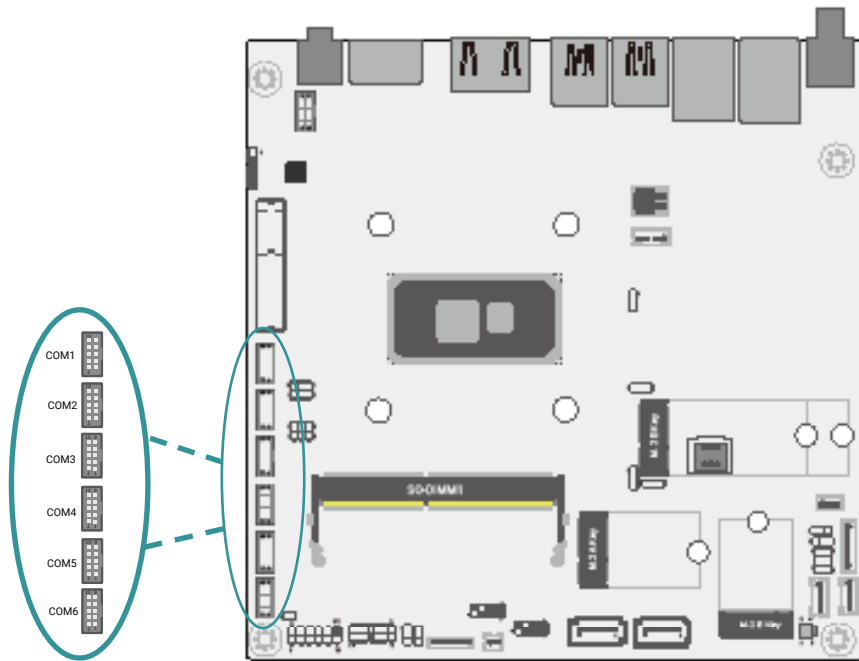
Pin	Assignment	Pin	Assignment
1	MRI-	2	MDCD-
3	X_MRI-	4	X_MDCD-
5	5V	6	12V

COM2 Power Select (TSJP2)



Pin	Assignment	Pin	Assignment
1	MRI-	2	MDCD-
3	X_MRI-	4	X_MDCD-
5	5V	6	12V

COM1 (TSJ1) COM3 (TSJ3) COM5 (TSJ5)
COM2 (TSJ2) COM4 (TSJ4) COM6 (TSJ6)



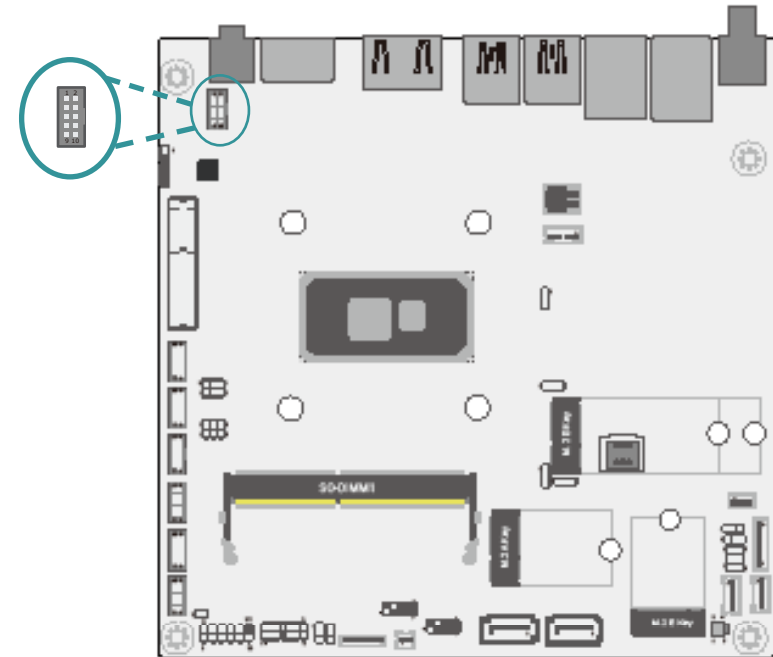
► **COM1 RS232/RS422/RS485 (TSJ1)**

Pin	RS232	RS422 Full Duplex	RS485
1	DCD-	TX-	Data-
2	RD	TX+	Data+
3	TD	RX+	N.C
4	DTR-	RX-	N.C
5	GND	GND	GND
6	DSR-	N.C	N.C
7	RTS-	N.C	N.C
8	CTS-	N.C	N.C
9	RI-	N.C	N.C
10	N.C	N.C	N.C

► **COM2/COM3/COM4/COM5/COM6**

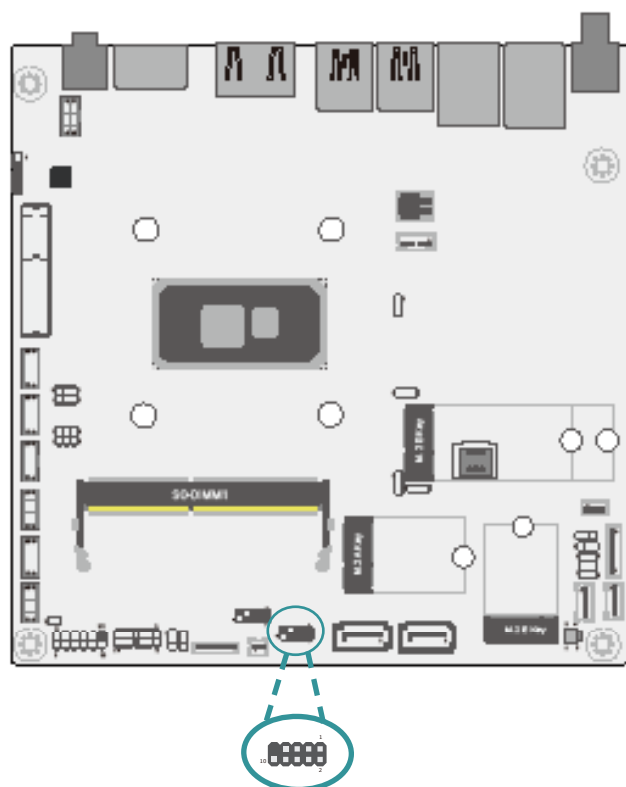
Pin	Assignment	Pin	Assignment
1	MDCD-	2	MSIN-
3	MSO-	4	MDTR-
5	GND	6	MDSR-
7	MRTS-	8	MCTS-
9	MRI-	10	----

Front Audio (AUJ1)



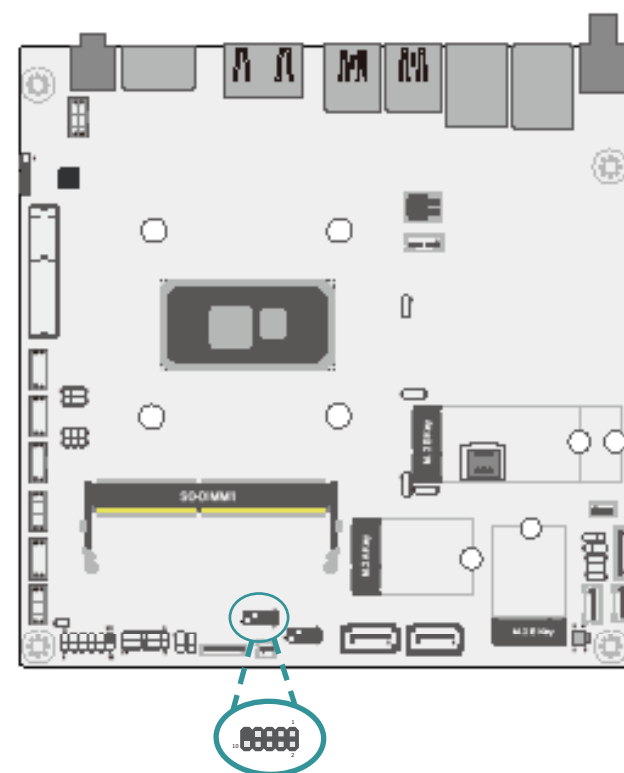
Pin	Assignment	Pin	Assignment
1	MIC2_L	2	GND
3	MIC2_R	4	NC
5	LINE2_R	6	MIC2_JD
7	GND	8	NC
9	LINE2_L	10	LINE2_JD

USB2.0 Pin Header (J3)



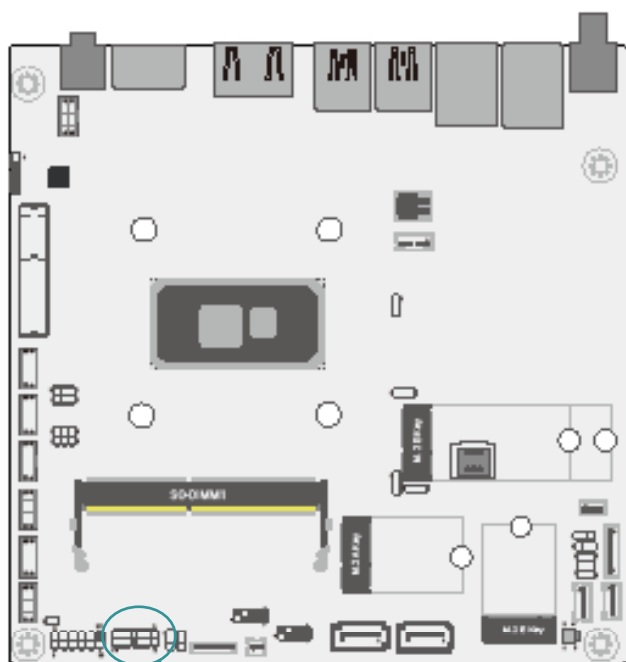
Pin	Assignment	Pin	Assignment
1	5V	2	5V
3	USB2_4_C_N	4	USB2_3_C_N
5	USB2_4_C_P	6	USB2_3_C_P
7	GND	8	GND
9	----	10	NC

USB2.0 Pin Header (J21)



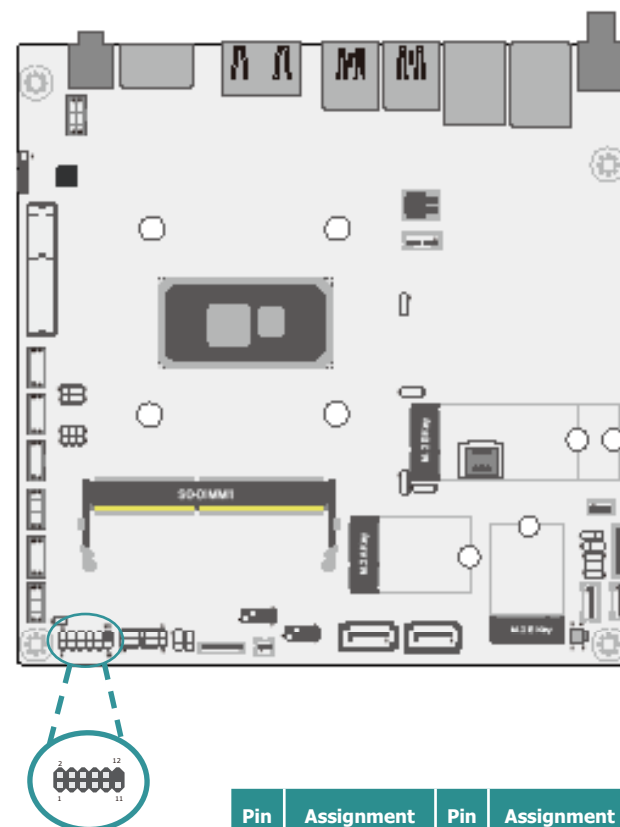
Pin	Assignment	Pin	Assignment
1	5V	2	5V
3	USB2_1_HUB_C_N	4	USB2_2_HUB_C_N
5	USB2_1_HUB_C_P	6	USB2_2_HUB_C_P
7	GND	8	GND
9	----	10	NC

eSPI Header(Debug) (J5)



Pin	Assignment	Pin	Assignment
1	3V3SB	2	ESPI_CLK
3	ESPI_RESET#	4	GND
5	ESPI_ALT#	6	GND
7	ESPI_D0	8	---
9	ESPI_D1	10	ESPI_CS
11	ESPI_D2	12	3V3SB
13	ESPI_D3	14	3V3SB

Front Panel (J17)



Pin	Assignment	Pin	Assignment
1	NC	2	3V3SB
3	3V3	4	3V3SB
5	HD_LED#	6	SUS_LED#
7	GND	8	GND
9	SYS_RST0	10	PWR_BTN0
11	NC	12	---

Chapter 4 - BIOS Settings

► Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board.

The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

**Note:**

The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and keys simultaneously.

Legends

Keys	Function
Right / Left arrow	Move the highlight left or right to select a menu
Up / Down arrow	Move the highlight up or down between submenus or fields
<Enter>	Enter the highlighted submenu
+ (plus key)/F6	Scroll forward through the values or options of the highlighted field
- (minus key)/F5	Scroll backward through the values or options of the highlighted field
<F1>	Display general help
<F2>	Display previous values
<F9>	Optimized defaults
<F10>	Save and Exit
<Esc>	Return to previous menu

Scroll Bar

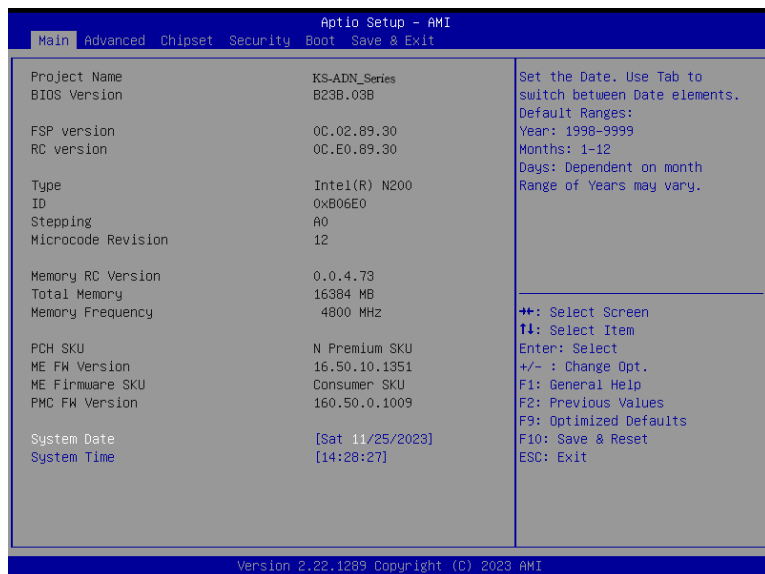
When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

► Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

**System Date**

The date format is <month>, <date>, <year>. Press "Tab" to switch to the next field and press "-" or "+" to modify the value.

System Time

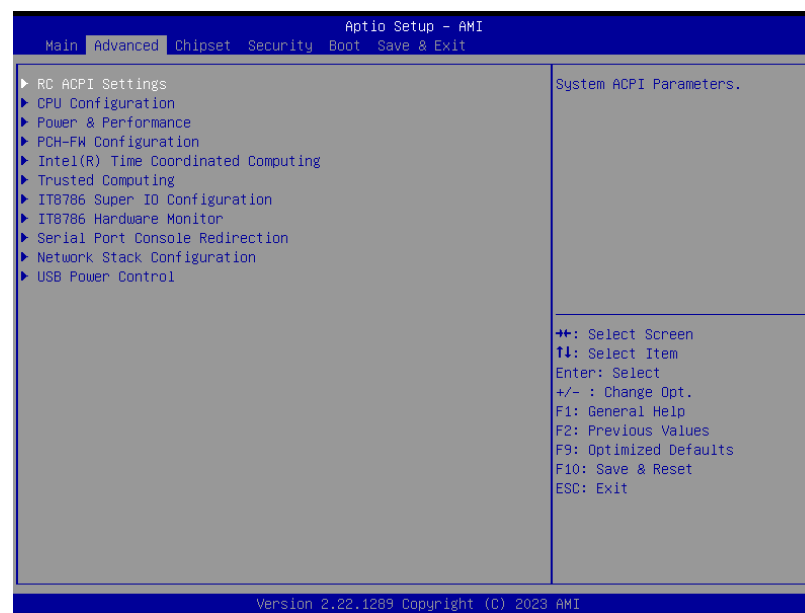
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

► Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

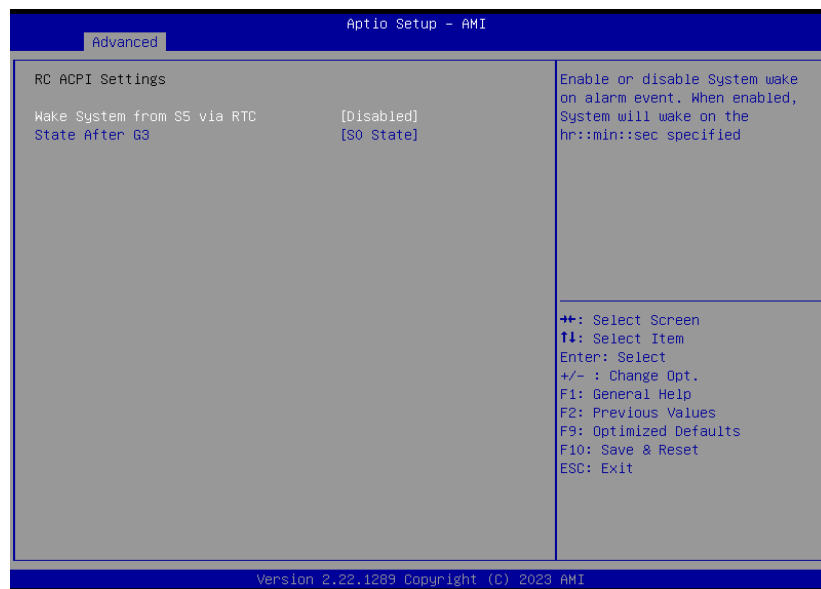
**Important:**

Setting incorrect field values may cause the system to malfunction.



► Advanced

RC ACPI Settings

**Wake system from S5 via RTC**

When Enabled, the system will automatically power up at a designated time every day. Once it's switched to [Enabled], please set up the time of day – hour, minute, and second – for the system to wake up.

State After G3

Select between S0 State, and S5 State. This field is used to specify what state the system is set to return to when power is re-applied after a power failure (G3 state).

- **S0 State** The system automatically powers on after power failure.
- **S5 State** The system enter soft-off state after power failure. Power-on signal input is required to power up the system.

► Advanced

CPU Configuration

**Intel (VMX) Virtualization Technology**

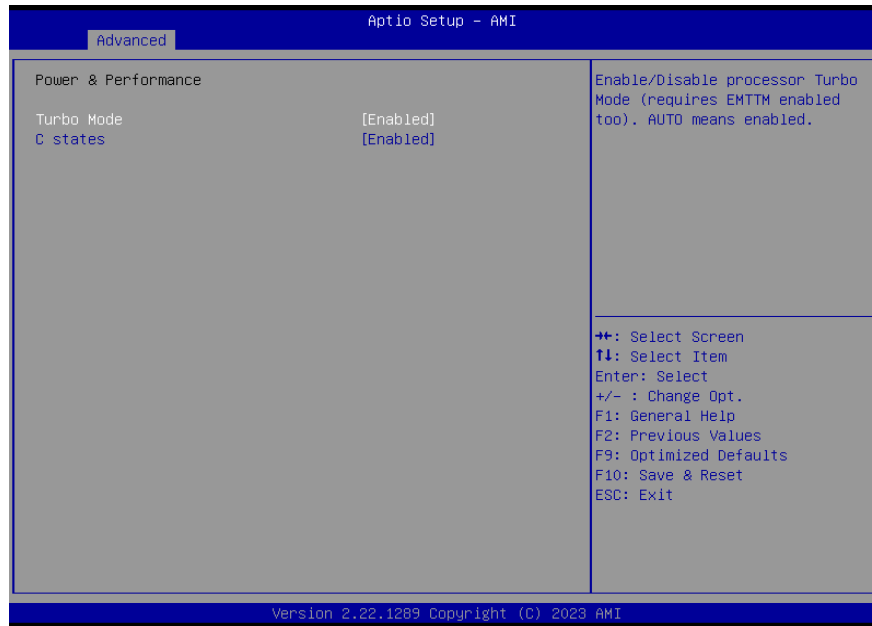
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Processor Cores

Select number of cores to enable in each processor package: all or 1.

► Advanced

Power & Performance



Turbo Mode

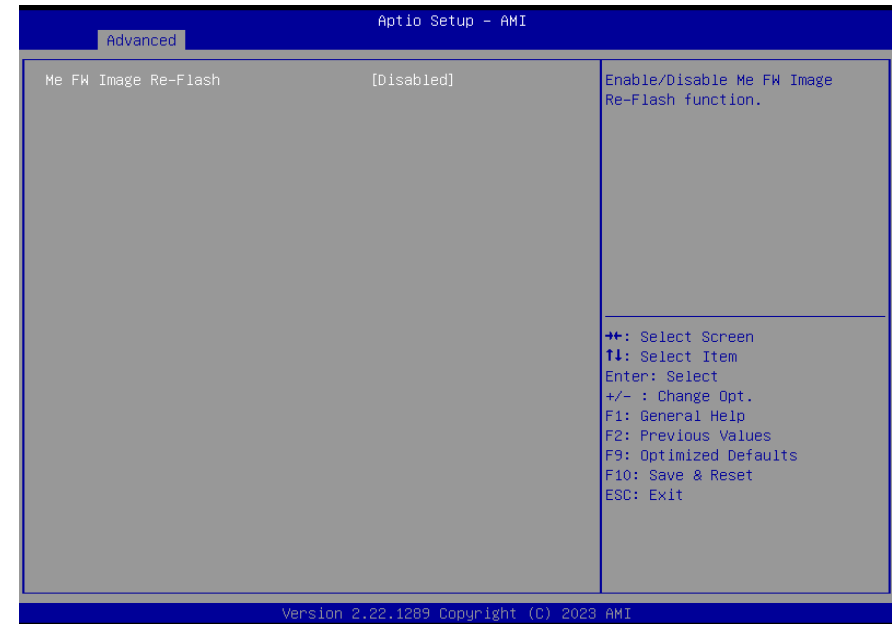
Enable or disable turbo mode of the processor. This field will only be displayed when EIST is enabled.

C states

Enable or disable CPU Power Management. It allows CPU to enter "C states" when it's idle and nothing is executing.

► Advanced

PCH-FW Configuration

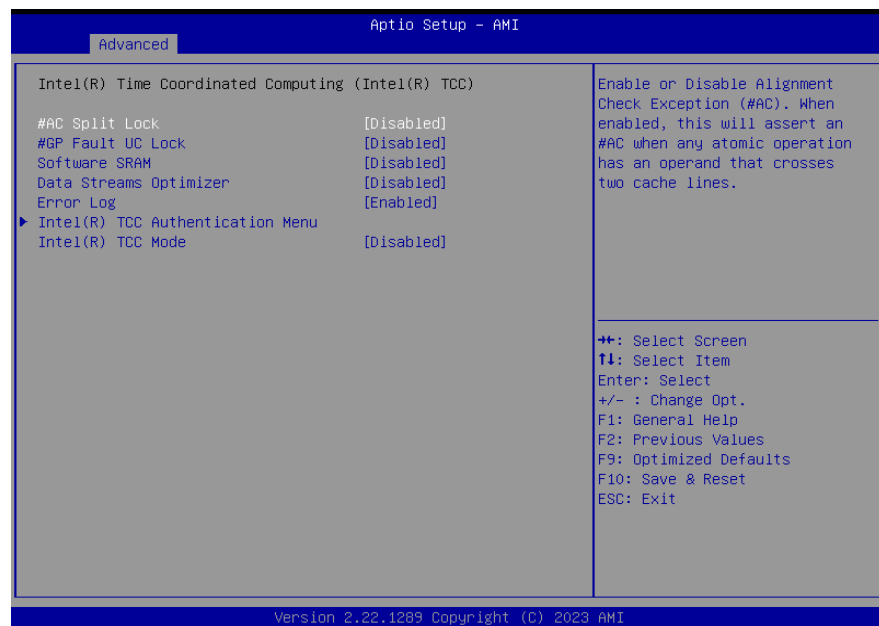


ME State

When this field is set to Disabled, ME will be put into ME Temporarily Disabled Mode.

► Advanced

Intel(R) Time Coordinated Computing

**#AC Split Lock**

Enable or Disable Alignment Check Exception (#AC). When enabled, this will assert an #AC when any atomic operation has an operand that crosses two cache lines.

#GP Fault UC Lock

Enable or Disable GP Fault Exception (GP#). When enabled, this will assert an GP# when encountering a Lock to un-cacheable memory before the bus is locked.

Software SRAM

Enable or Disable Software SRAM. Enable will allocate 1 way of LLC; if Cache Configuration subregion is available, it will allocate based on the subregion.

Data Streams Optimizer

Enable or Disable Data Streams Optimizer (DSO). Enable will utilize DSO Subregion to tune system. DSO settings supercede Intel(R) TCC Mode settings that overlap between the two.

Error Log

Enable or Disable Error Log.
Enable will record errors related to Intel(R) TCC and save them to memory.

Intel(R) TCC Authentication Menu

Intel(R) TCC Authentication
Menu options

Intel(R) TCC Mode

Enable or Disable Intel(R) TCC Mode.

When enabled, this will modify system settings to improve real-time performance. The full list of settings and their current state are displayed below when Intel (R) TCC mode is enabled.

► Advanced

Trusted Computing

**Security Device Support**

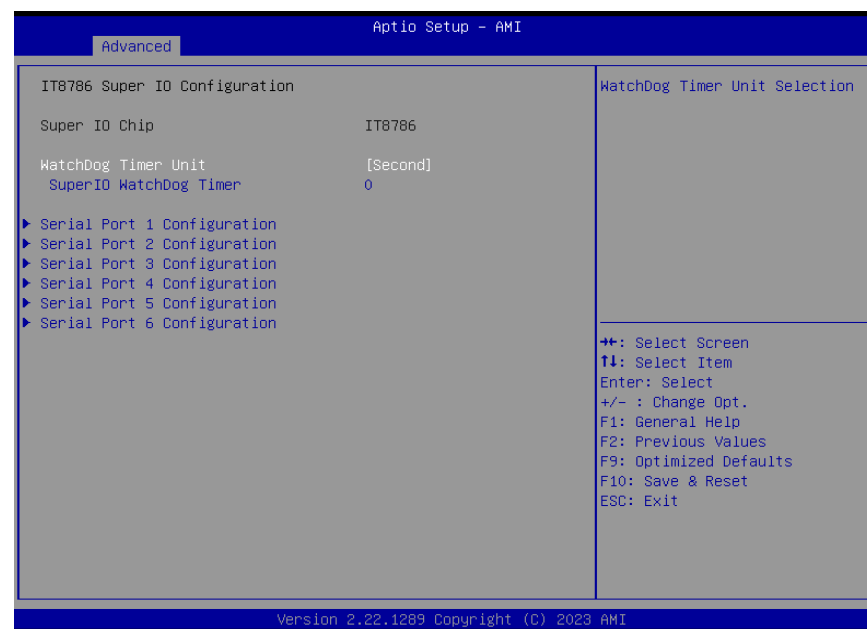
This field is used to enable or disable BIOS support for the security device such as an TPM 2.0 to achieve hardware-level security via cryptographic keys.

Pending operation

To clear the existing TPM encryption, select "TPM Clear" and restart the system. This field is not available when "Security Device Support" is disabled.

► Advanced

IT8786 Super IO Configuration

**WatchDog Timer Unit**

Select WatchDog Timer Unit — Second or Minute.

SuperIO WatchDog Timer

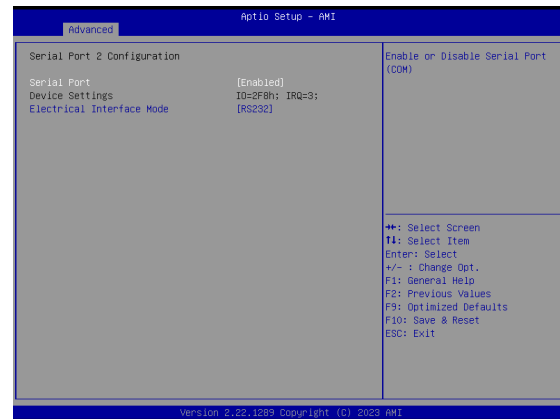
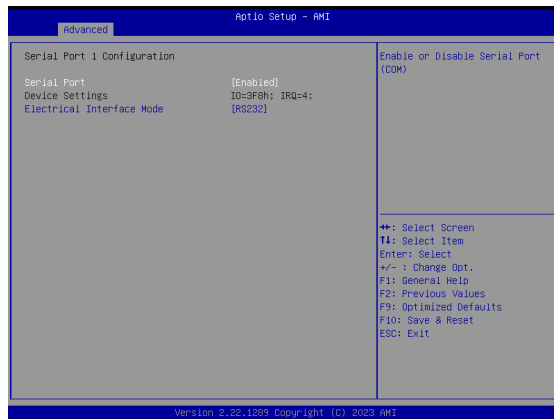
Set SuperIO WatchDog Timer Timeout value. The range is from 0 (disabled) to 255.

**Note:**

The sub-menus are detailed in following sections.

► Advanced

IT8786 Super IO Configuration ► Serial Port 1, 2 Configuration



Serial Port

Enable or disable serial port.

► Advanced

IT8786 Super IO Configuration ► Serial Port 3, 4 Configuration

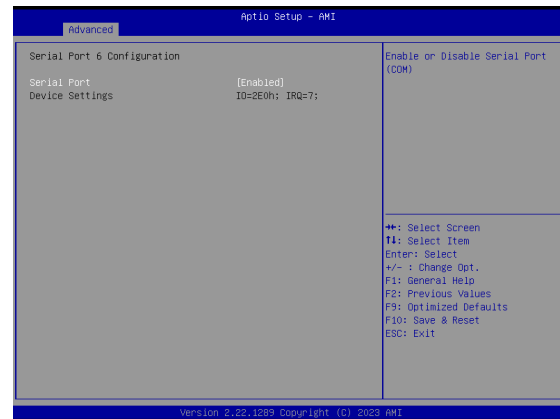
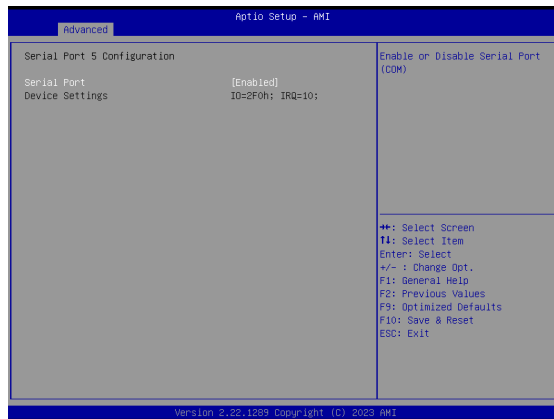


Serial Port

Enable or disable serial port.

► Advanced

IT8786 Super IO Configuration ► Serial Port 5, 6 Configuration

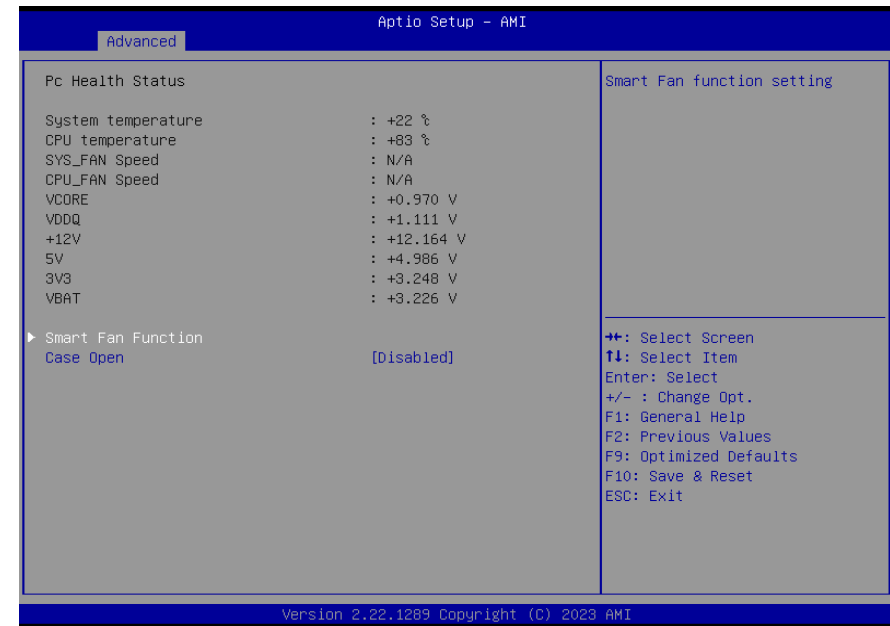


Serial Port

Enable or disable serial port.

► Advanced

IT8786 HW Monitor



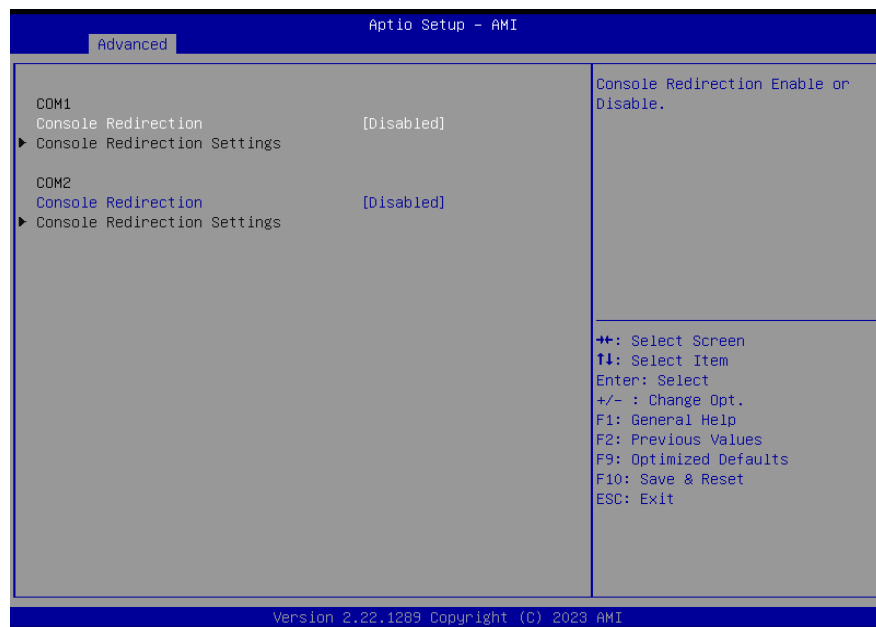
This section displays the system's health information, i.e. voltage readings, CPU and system temperatures, and fan speed readings

Case Open

Enable or disable the case open detection function.

► Advanced

Serial Port Console Redirection

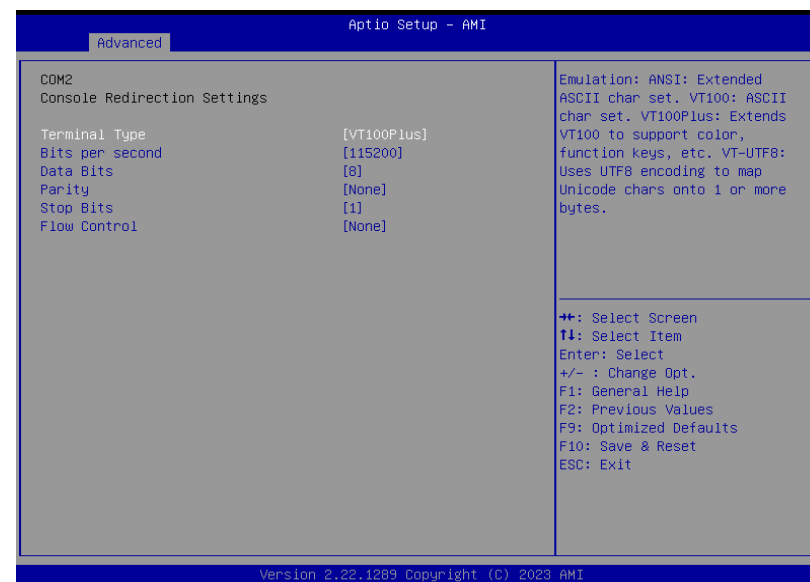
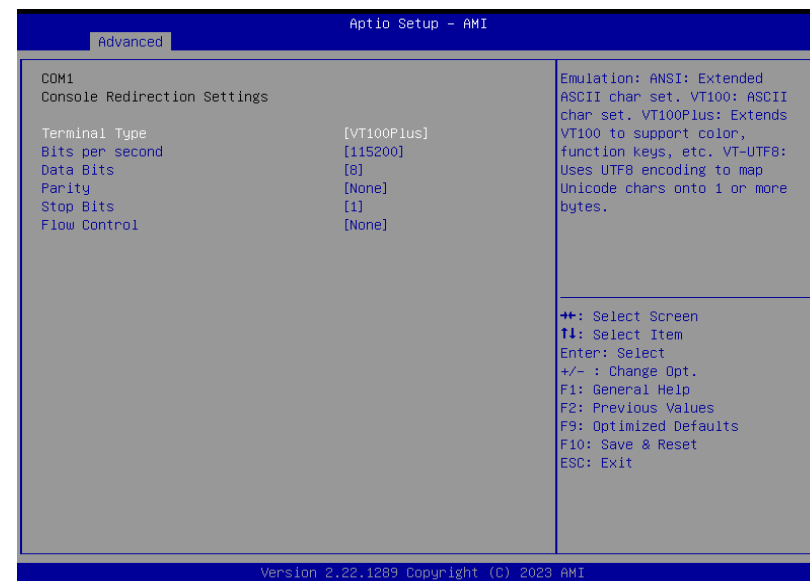


Console Redirection

By enabling Console Redirection of a COM port, the sub-menu of console redirection settings will become available for configuration as detailed in the following.

► Advanced

Serial Port Console Redirection ► Console Redirection Settings



Configure the serial settings of the current COM port.

Terminal Type

Select terminal type: VT100, VT100+, VT-UTF8 or ANSI.

Bits per second

Select serial port transmission speed: 9600, 19200, 38400, 57600 or 115200.

Data Bits

Select data bits: 7 bits or 8 bits.

Parity

Select parity bits: None, Even, Odd, Mark or Space.

Stop Bits

Select stop bits: 1 bit or 2 bits.

Flow Control

Select flow control type: None or Hardware RTS/CTS. Flow Control is for RS485 mode and is only supported by Serial Port 1 (COM1).

► Advanced

Network Stack Configuration



Network Stack

Enable or disable UEFI network stack. The following fields will appear when this field is enabled.

IPv4 PXE Support

Enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPv6 PXE Support

Enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

PXE boot wait time

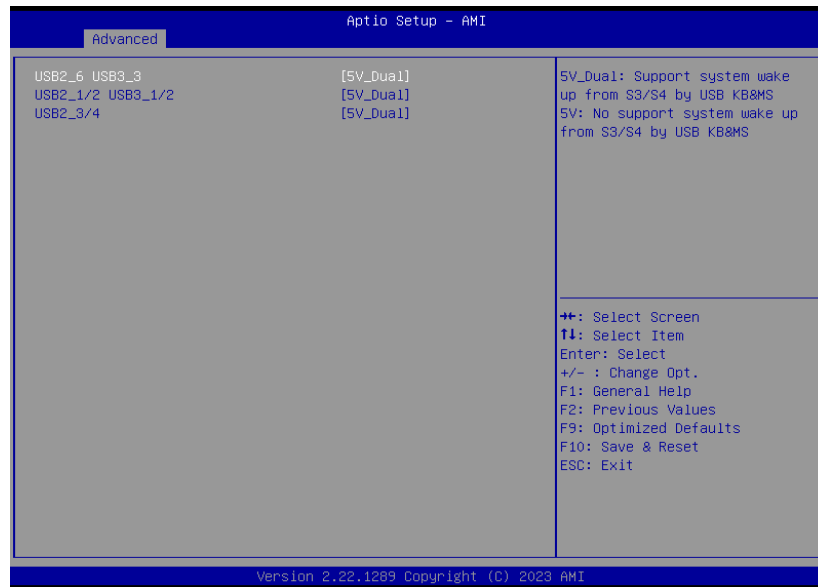
Set the wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Set the number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

► Advanced

USB Power Control



Server CA Configuration

5_Dual: Support system wake up from S3/S4 by USB KB&MS

5V: No support system wake up from S3/S4 by USB KB&MS

► Chipset



Please select a submenu and press Enter. The submenus are detailed in the following pages.

► Chipset

System Agent (SA) Configuration



Memory Configuration

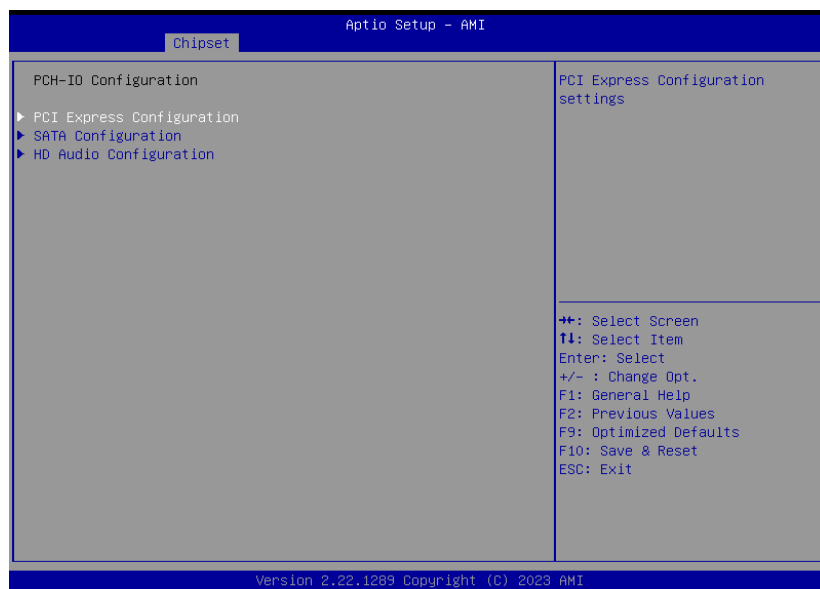
Memory Configuration Parameters

Graphics Configuration

Graphics Configuration

► Chipset

PCH-IO Configuration



PCI Express Configuration

PCI Express Configuration Settings

SATA And RST Configuration

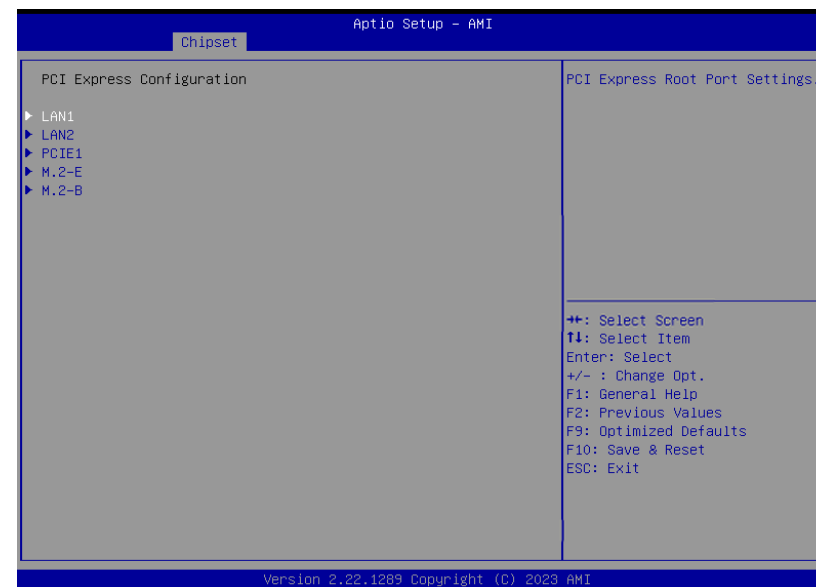
SATA Device Options Settings

HD Audio Configuration

HD Audio Subsystem Configuration Settings

► Chipset

PCH-IO Configuration ► PCI Express Configuration



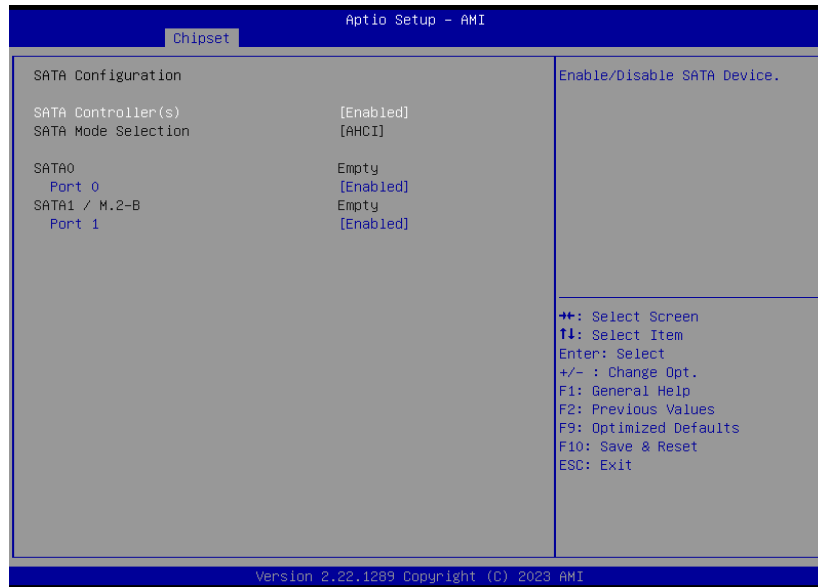
Select one of the PCI Express channels and press enter to configure the following settings.

LAN1, LAN2, PCIE1, M.2-E, M.2-B

Control the PCI Express Root Port.

► Chipset

PCH-IO Configuration ► SATA And RST Configuration



SATA Controller(s)

This field is used to enable or disable the Serial ATA controller.

SATA Mode Selection

The mode selection determines how the SATA controller(s) operates.

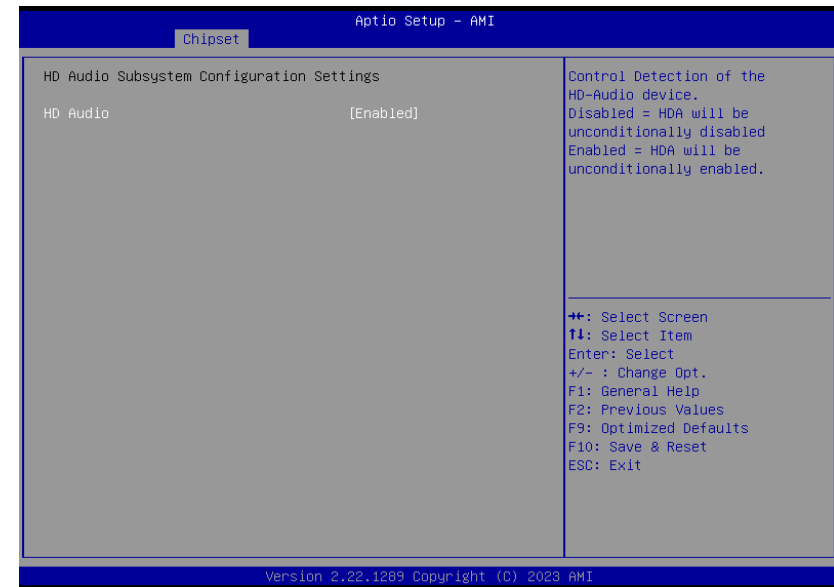
- **AHCI** This option allows the Serial ATA controller(s) to use AHCI (Advanced Host Controller Interface).

Ports

Enable or disable the Serial ATA port.

► Chipset

PCH-IO Configuration ► HD Audio Configuration

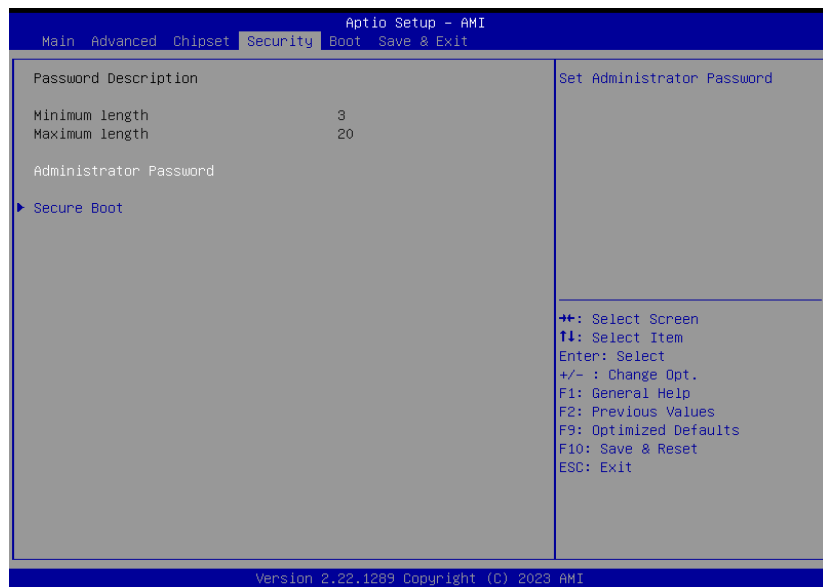


HD Audio

Control the detection of the HD Audio device.

- **Disabled** HDA will be unconditionally disabled.
- **Enabled** HDA will be unconditionally enabled.

► Security

**Administrator Password**

Set the administrator password. To clear the password, input nothing and press enter when a new password is asked. Administrator Password will be required when entering the BIOS.

► Security

Secure Boot

**Secure Boot**

The Secure Boot store a database of certificates in the firmware and only allows the OSeS with authorized signatures to boot on the system. To activate Secure Boot, please make sure that "Secure Boot" is "[Enabled]", Platform Key (PK) is enrolled, "System Mode" is "User", and CSM is disabled. After enabling/disabling Secure Boot, please save the configuration and restart the system. When configured and activated correctly, the Secure Boot status will be "Active".

Secure Boot Mode

Select the secure boot mode — Standard or Custom. When set to Custom, the following fields will be configurable for the user to manually modify the key database.

Restore Factory Keys

Force system to User Mode. Load OEM-defined factory defaults of keys and databases onto the Secure Boot. Press Enter and a prompt will show up for you to confirm.

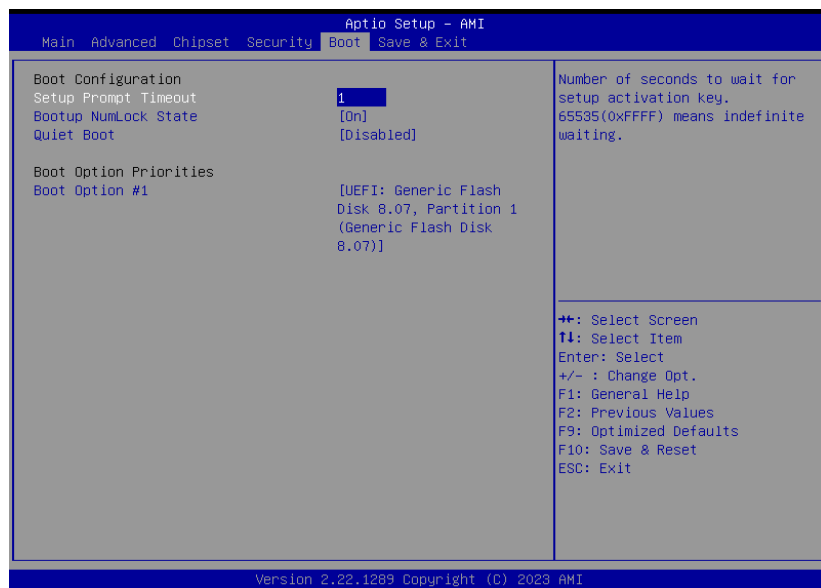
Reset To Setup Mode

Clear the database from the NVRAM, including all the keys and signatures installed in the Key Management menu. Press Enter and a prompt will show up for you to confirm.

Key Management

Enables expert users to modify Secure Boot Policy variables without full authentication.

► Boot

**Setup Prompt Timeout**

Set the number of seconds to wait for the setup activation key. 65535 (0xFFFF) denotes indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state: On or Off.

Quiet Boot

This section is used to enable or disable quiet boot option.

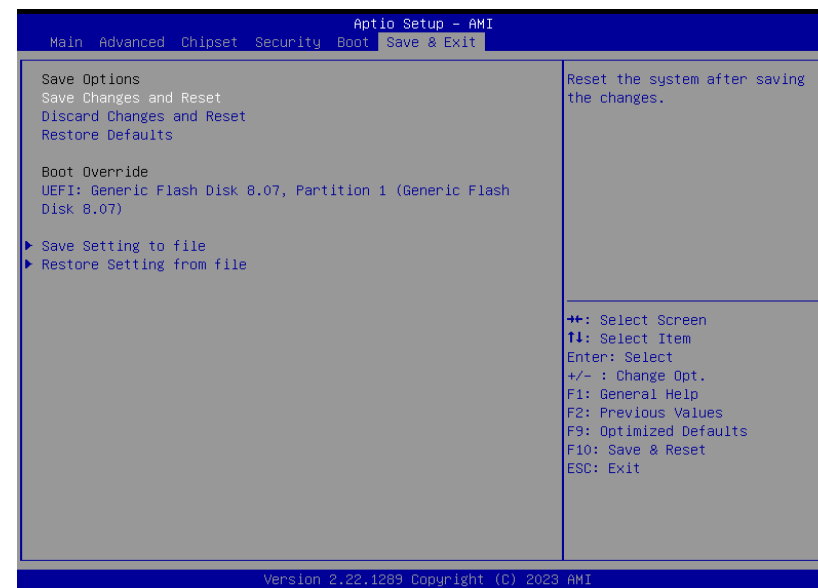
Boot Option Priorities

Rearrange the system boot order of available boot devices.

**Note:**

If “Boot option filter” of “CSM Configuration” is set to “UEFI and Legacy” or “UEFI only”, and “Quiet Boot” is set to enabled, “BGRT Logo” will show up for configuration. Refer to the Advanced > CSM Configuration submenu for more information.

► Save & Exit

**Save Changes and Reset**

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Boot Override

Move the cursor to an available boot device and press Enter, and then the system will immediately boot from the selected boot device. The Boot Override function will only be effective for the current boot. The “Boot Option Priorities” configured in the Boot menu will not be changed.

- **Save Setting to file** Select this option to save BIOS configuration settings to a USB flash device.
- **Restore Setting from file** This field will appear only when a USB flash device is detected. Select this field to restore setting from the USB flash device.

► Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files and specific instructions about how to update BIOS with the flash utility.

► Notice: BIOS SPI ROM

1. The Intel® Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.
2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.
3. If you do not follow the methods above, the Intel® Management Engine will not be updated and will cease to be effective.



Note:

- a. You can take advantage of flash tools to update the default configuration of the BIOS (SPI ROM) to the latest version anytime.
- b. When the BIOS IC needs to be replaced, you have to populate it properly onto the system board after the EEPROM programmer has been burned and follow the technical person's instructions to confirm that the MAC address should be burned or not.