MVP-6200 Series

Value Line
12th Gen Intel® Core™ i9/i7/i5/i3
Embedded Fanless Computer

MVP-6220/MVP-6240
User's Manual



Manual Rev.: 1.0

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Part No: 50M-41053-1000

LEADING EDGE COMPUTING

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Revision History

Revision	Release Date	Description of Change(s)
1.0	2023-06-07	Initial release

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Preface

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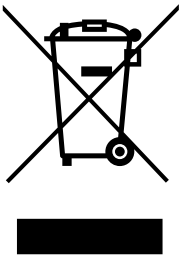
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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.

NOTE: Additional information, aids, and tips that help users perform tasks.

CAUTION: Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.
ATTENTION: Informations destinées à prévenir les blessures corporelles mineures, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche.

WARNING: Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.
AVERTISSEMENT: Informations destinées à prévenir les blessures corporelles graves, les dommages aux composants, la perte de données et/ou la corruption de programme lors de l'exécution d'une tâche spécifique.

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1 Introduction

1.1 Overview

ADLINK's MVP-6200 Series of value line fanless embedded computing platforms, incorporating Intel® Core™ processors, provides one PCIe x16 and one PCI slot for a 2-slot backplane and one PCIe x16, two PCIe x4 and one PCI for a 4-slot backplane and also includes single-side access for I/O ports, optimizing easy maintenance in industrial automation environments. This series retains the robust design of all ADLINK MXC/MXE lines at a new, extremely cost-effective price point. The MVP-6200 series supports DDR5 memory for more powerful computing and the Intel® UHD Graphics 770 speeds graphics performance. Along with a versatile I/O array and flexible expansion capacity, the MVP-6200 Series fully satisfies all the needs of industrial automation (IA) with the performance demanded by vision inspection, motion control, and surveillance applications. Fanless construction not only overcomes contaminant and noise challenges presented by harsh IA environments, the elimination of problematic structural elements that negatively affect MTBF greatly increases lifecycle expectations for the platform.

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1.2 Features

- 12th Generation Intel® Core™ i9/i7/i5/i3 FCLGA1700 processor and R680E chipset
- 4x DDR5 SODIMM socket, supporting up to 128GB DDR5 3600 SODIMM module
- Expansion:
  - MVP-6220 Series: 1x PCIe x16 + 1x PCI
  - MVP-6240 Series: 1x PCIe x16 + 2x PCIe x4 + 1x PCI
  - PCIe x16 supports Gen4 PCIe cards
- 2x DisplayPort, 2x HDMI, supporting 4 independent displays
- 6x External USB ports (4x USB 3.2 Gen 2, 2x USB 3.2 Gen 1)
- 3x Intel 2.5Gbe i225 LAN ports with TSN support
- Built-in 8-ch DI and 8-ch DO, 2 software-programmable RS-232/422/485 + 2 RS-232 ports
- Onboard SATA 6Gb/s port for 2.5” HDD/SSD installation
- Built-in wide-range 9V DC to 32V DC power input

1.3 Packing List

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- MVP-6200 Series Fanless Embedded Computer
- Accessory Box
  - DC power jack
  - Wall-mount brackets
  - Screw pack

1.4 Optional Accessories

- AC/DC Adapter
  - 280W (P/N: 31-62162-1010-A0)

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2 Specifications

2.1 MVP-6249, MVP-6247

	MVP-6249	MVP-6247
System Core		
Processor	Intel® Core™ i9-12900E (16-cores, 65W, up to 5.00 GHz)	Intel® Core™ i7-12700E (12-cores, 65W, up to 4.80 GHz)
Chipset	R680E	
Memory	4x SODIMM DDR5 3600 MHz, up to 128 GB	
I/O Interface		
Display	2x DP++, 2x HDMI (4 independent displays)	
Expansion	PCIe Gen4 x16 + 2 PCIe Gen3 x4 + PCI	
Ethernet	3x 2.5 GbE with TSN supported (i225) 1x vPro supported	
Serial Ports	COM1/2: RS-232/422/485 COM3/4: RS-232 COM5/6: Header, Reserved	
DI/O	8-ch DI and 8-ch DO	
USB	4x USB 3.2 Gen2 + 2x USB 3.2 Gen1	
Audio	Line-out, Mic-in	
M.2	1x M.2 socket 1, Key E, 2230 (PCIe Gen3 x1) 1x M.2 socket 2, Key B, 3052/3042 (PCIe Gen3 x1 / USB3) 1x M.2 socket 3, Key M, NVMe, 2280 (PCIe Gen3 x4)	
Micro SIM	2	
I^2C	2 (3.3V/5V)	
TPM	TPM 2.0	
Storage		
2.5" SATA	2 (3 total w/ optional kit)	
Physical		
Dimensions	210 (W) x 240 (D) x 206 (H) mm (8.27" x 9.45" x 8.11")	
Weight	5.4 kg (11.8 lbs)	
Mounting	Wall mountable	

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	MVP-6249	MVP-6247
Power Supply		
DC Input	9 to 32V	
AC Input	280W AC adapter (P/N: 31-62162-1010-A0)	
Environmental		
Standard Operating Temperature	0°C to 50°C, w/ airflow 0.6 m/s	
Extended Operating Temperature	-20°C to 50°C, w/ airflow 0.6 m/s (w/ industrial storage)	
Storage Temperature	-40°C to 85°C (excluding storage devices)	
Humidity	approx. 95% @ 40°C (non-condensing)	
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes (w/2.5" SSD) Operating: 0.5 Grms, 5-500 Hz, 3 axes (w/ HDD)	
Shock	Operating: 50 Grms, half sine 11ms duration (w/ 2.5" SSD)	
ESD	Contact +/-4kV, Air +/-8kV	
EMC	EN61000-6-4/-2, CE & FCC Class A	
Safety	UL/cUL, CB	

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2.2 MVP-6247T, MVP-6245T

	MVP-6247T	MVP-6245T
System Core		
Processor	Intel® Core™ i7-12700TE (12-cores, 35W, up to 4.60 GHz)	Intel® Core™ i5-12500TE (6-cores, 35W, up to 4.30 GHz)
Chipset	R680E	
Memory	4x SODIMM DDR5 3600 MHz, up to 128 GB	
I/O Interface		
Display	2xDP++, 2xHDMI (4 independent displays)	
Expansion	PCIe Gen4 x16 + 2 PCIe Gen3 x4 + PCI	
Ethernet	3x 2.5 GbE with TSN supported (i225) 1x vPro supported	
Serial Ports	COM1/2: RS-232/422/485 COM3/4: RS-232 COM5/6: Header, Reserved	
DI/O	8-ch DI and 8-ch DO	
USB	4x USB 3.2 Gen2 + 2x USB 3.2 Gen1	
Audio	Line-out, Mic-in	
M.2	1x M.2 socket 1, Key E, 2230 (PCIe Gen3 x1) 1x M.2 socket 2, Key B, 3052/3042 (PCIe Gen3 x1 / USB3) 1x M.2 socket 3, Key M, NVMe, 2280 (PCIe Gen3 x4)	
Micro SIM	2	
I^2C	2 (3.3V/5V)	
TPM	TPM 2.0	
Storage		
2.5" SATA	2 (3 total w/ optional kit)	
Physical		
Dimensions	210 (W) x 240 (D) x 206 (H) mm (8.27" x 9.45" x 8.11")	
Weight	5.4 kg (11.8 lbs)	
Mounting	Wall mountable	

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	MVP-6247T	MVP-6245T
Power Supply		
DC Input	9 to 32V	
AC Input	280W AC adapter (P/N: 31-62162-1010-A0)	
Environmental		
Standard Operating Temperature	0°C to 60°C, w/ airflow 0.6 m/s	
Extended Operating Temperature	-20°C to 60°C, w/ airflow 0.6 m/s (w/ industrial storage)	
Storage Temperature	-40°C to 85°C (excluding storage devices)	
Humidity	approx. 95% @ 40°C (non-condensing)	
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes (w/2.5" SSD) Operating: 0.5 Grms, 5-500 Hz, 3 axes (w/ HDD)	
Shock	Operating: 50 Grms, half sine 11ms duration (w/ 2.5" SSD)	
ESD	Contact +/-4kV, Air +/-8kV	
EMC	EN61000-6-4/-2, CE & FCC Class A	
Safety	UL/cUL, CB, CCC	

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2.3 MVP-6229, MVP-6227

	MVP-6229	MVP-6227
System Core		
Processor	Intel® Core™ i9-12900E (16-cores, 65W, up to 5.00 GHz)	Intel® Core™ i7-12700E (12-cores, 65W, up to 4.80 GHz)
Chipset	R680E	
Memory	4x SODIMM DDR5 3600 MHz, up to 128 GB	
I/O Interface		
Display	2x DP++, 2x HDMI (4 independent displays)	
Expansion	PCIe Gen4 x16 + PCI	
Ethernet	3x 2.5 GbE with TSN supported (i225) 1x vPro supported	
Serial Ports	COM1/2: RS-232/422/485 COM3/4: RS-232 COM5/6: Header, Reserved	
DI/O	8-ch DI and 8-ch DO	
USB	4x USB 3.2 Gen2 + 2x USB 3.2 Gen1	
Audio	Line-out, Mic-in	
M.2	1x M.2 socket 1, Key E, 2230 (PCIe Gen3 x1) 1x M.2 socket 2, Key B, 3052/3042 (PCIe Gen3 x1 / USB3) 1x M.2 socket 3, Key M, NVMe, 2280 (PCIe Gen3 x4)	
Micro SIM	2	
I^2C	2 (3.3V/5V)	
TPM	TPM 2.0	
Storage		
2.5" SATA	2 (3 total w/ optional kit)	
Physical		
Dimensions	210 (W) x 240 (D) x 165 (H) mm (8.27" x 9.45" x 6.5")	
Weight	5.01 kg (11.04 lbs)	
Mounting	Wall mountable	

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	MVP-6229	MVP-6227
Power Supply		
DC Input	9 to 32V	
AC Input	280W AC adapter (P/N: 31-62162-1010-A0)	
Environmental		
Standard Operating Temperature	0°C to 50°C, w/ airflow 0.6 m/s	
Extended Operating Temperature	-20°C to 50°C, w/ airflow 0.6 m/s (w/ industrial storage)	
Storage Temperature	-40°C to 85°C (excluding storage devices)	
Humidity	approx. 95% @ 40°C (non-condensing)	
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes (w/2.5" SSD) Operating: 0.5 Grms, 5-500 Hz, 3 axes (w/ HDD)	
Shock	Operating: 50 Grms, half sine 11ms duration (w/ 2.5" SSD)	
ESD	Contact +/-4kV, Air +/-8kV	
EMC	EN61000-6-4/-2, CE & FCC Class A	
Safety	UL/cUL, CB	

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2.4 MVP-6227T, MVP-6225T

	MVP-6227T	MVP-6225T
System Core		
Processor	Intel® Core™ i7-12700TE (12-cores, 35W, up to 4.60 GHz)	Intel® Core™ i5-12500TE (6-cores, 35W, up to 4.30 GHz)
Chipset	R680E	
Memory	4x SODIMM DDR5 3600 MHz, up to 128 GB	
I/O Interface		
Display	2xDP++, 2xHDMI (4 independent displays)	
Expansion	PCIe Gen4 x16 + PCI	
Ethernet	3x 2.5 GbE with TSN supported (i225) 1x vPro supported	
Serial Ports	COM1/2: RS-232/422/485 COM3/4: RS-232 COM5/6: Header, Reserved	
DI/O	8-ch DI and 8-ch DO	
USB	4x USB 3.2 Gen2 + 2x USB 3.2 Gen1	
Audio	Line-out, Mic-in	
M.2	1x M.2 socket 1, Key E, 2230 (PCIe Gen3 x1) 1x M.2 socket 2, Key B, 3052/3042 (PCIe Gen3 x1 / USB3) 1x M.2 socket 3, Key M, NVMe, 2280 (PCIe Gen3 x4)	
Micro SIM	2	
I^2C	2 (3.3V/5V)	
TPM	TPM 2.0	
Storage		
2.5" SATA	2 (3 total w/ optional kit)	
Physical		
Dimensions	210 (W) x 240 (D) x 165 (H) mm (8.27" x 9.45" x 6.5")	
Weight	5.01 kg (11.04 lbs)	
Mounting	Wall mountable	

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	MVP-6227T	MVP-6225T
Power Supply		
DC Input	9 to 32V	
AC Input	280W AC adapter (P/N: 31-62162-1010-A0)	
Environmental		
Standard Operating Temperature	0°C to 60°C, w/ airflow 0.6 m/s	
Extended Operating Temperature	-20°C to 60°C, w/ airflow 0.6 m/s (w/ industrial storage)	
Storage Temperature	-40°C to 85°C (excluding storage devices)	
Humidity	approx. 95% @ 40°C (non-condensing)	
Vibration	Operating: 5 Grms, 5-500 Hz, 3 axes (w/2.5" SSD) Operating: 0.5 Grms, 5-500 Hz, 3 axes (w/ HDD)	
Shock	Operating: 50 Grms, half sine 11ms duration (w/ 2.5" SSD)	
ESD	Contact +/-4kV, Air +/-8kV	
EMC	EN61000-6-4/-2, CE & FCC Class A	
Safety	UL/cUL, CB, CCC	

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2.5 MVP-6200 Series Functional Block Diagram

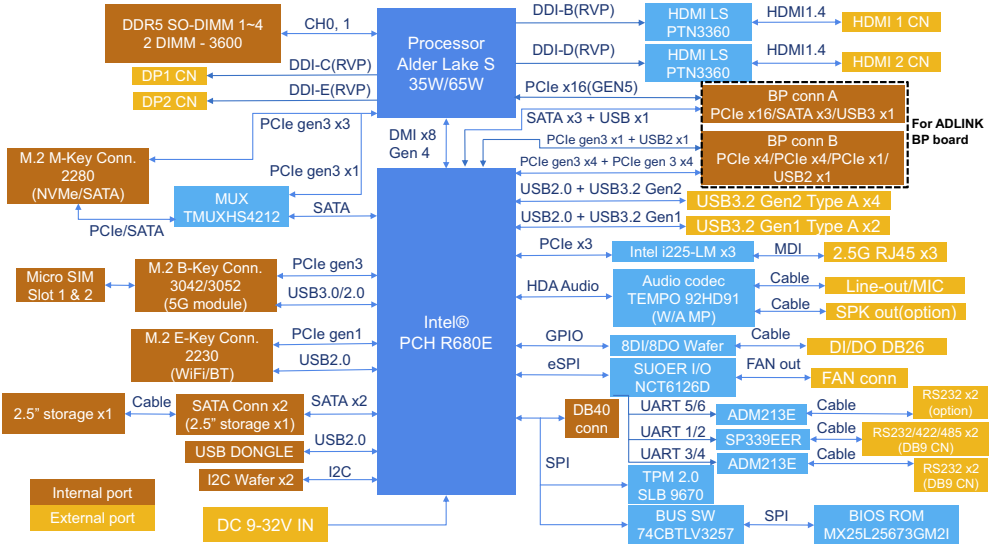


Figure 2-1: MVP-6200 Series Functional Block Diagram

2.6 Display Options

With computing and graphic performance enhancement from its 12th Generation Intel processors, the MVP-6200 Series controller can support four independent displays, with configurations as follows.

	Port	Resolution
Display Option 1	DisplayPort1	4096x2304@60Hz
Display Option 2	DisplayPort2	4096x2304@60Hz
Display Option 3	HDMI1	3840x2160 @ 60Hz
Display Option 4	HDMI2	3840x2160 @ 60Hz

Table 2-1: Maximum Resolution Display Configurations

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2.7 Mechanical

All dimensions in millimeters.

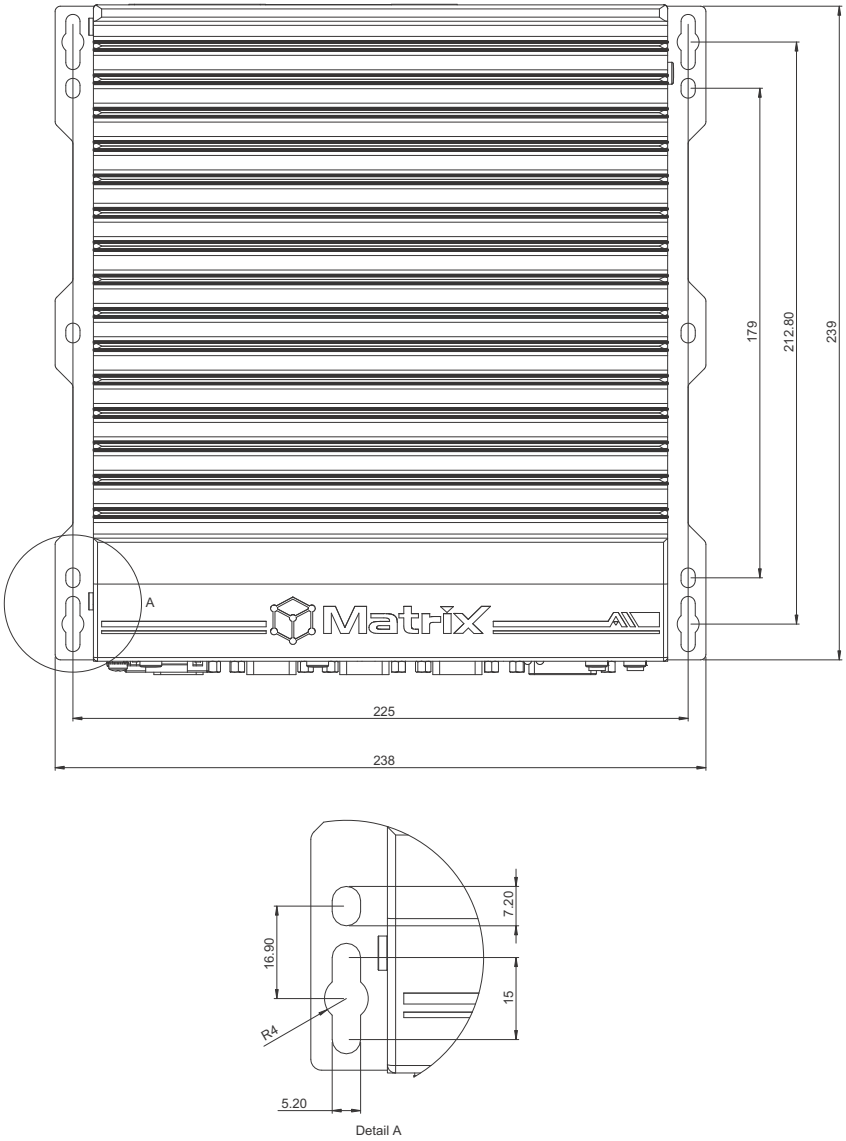


Figure 2-2: MVP-6200 Series Top View

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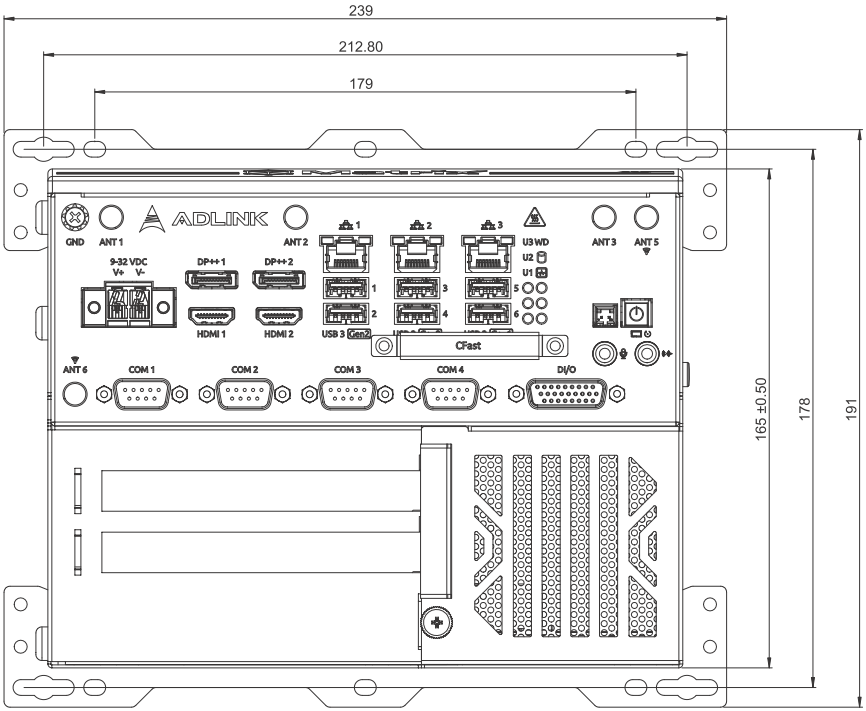
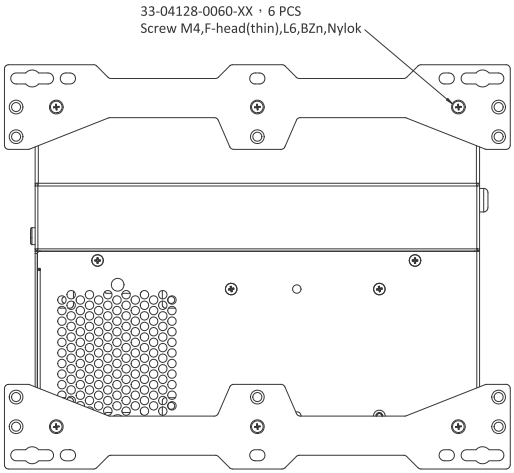
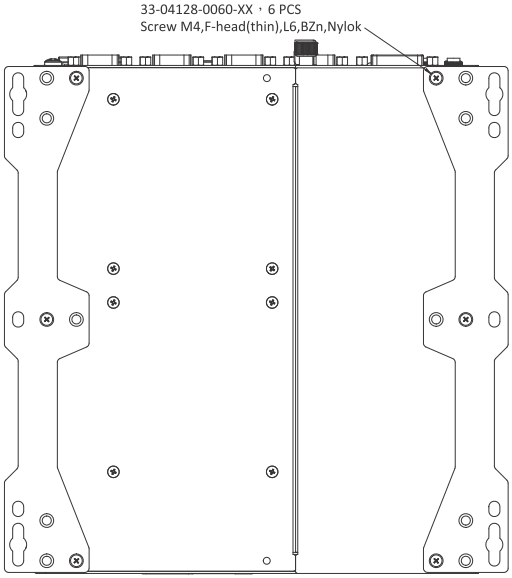


Figure 2-3: MVP-6200 Series 2 Slot Front View

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Rear Panel Mounting Bracket Orientation



Bottom Panel Mounting Bracket Orientation

Figure 2-4: MVP-6200 Series 2 Slot Mounting

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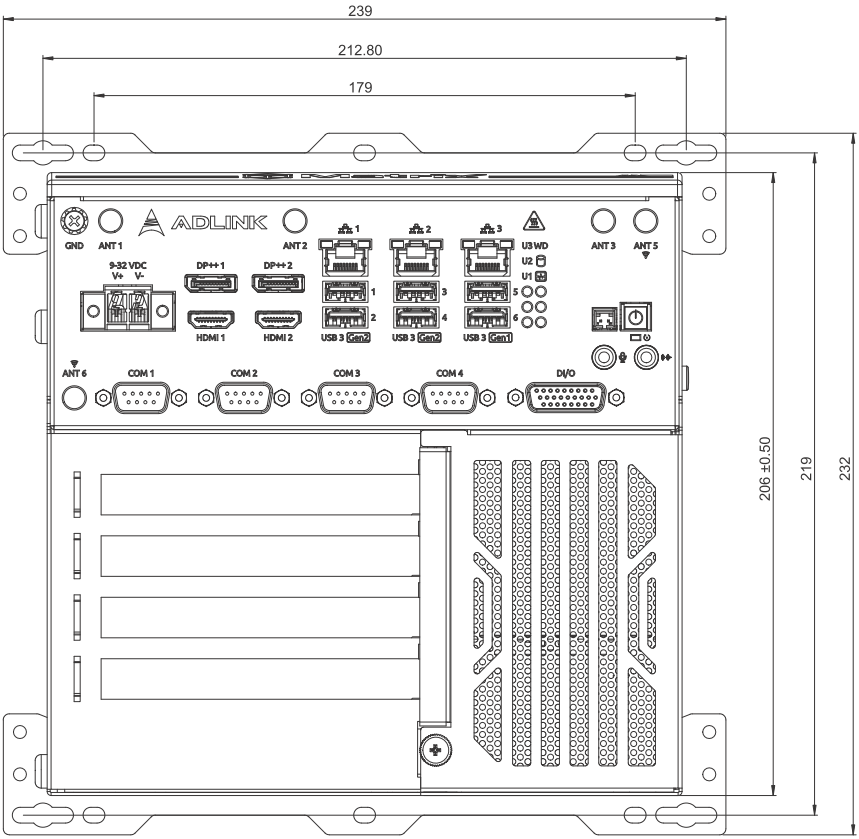
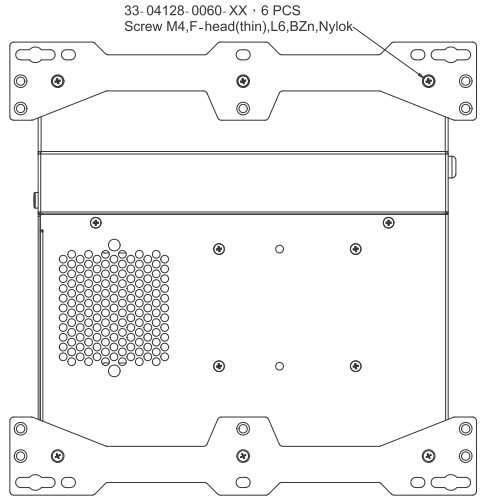
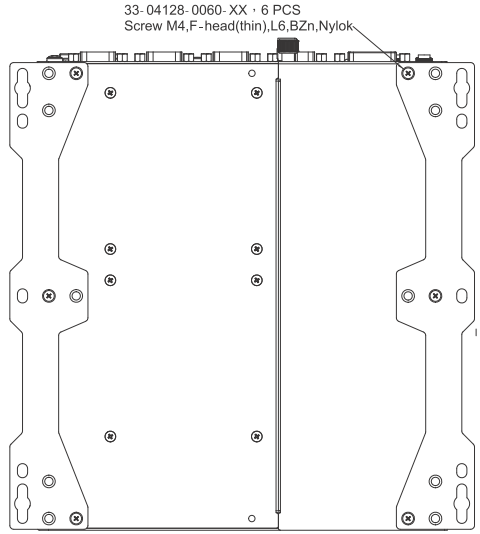


Figure 2-5: MVP-6200 Series 4 Slot Front View

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Rear Panel Mounting Bracket Orientation



Bottom Panel Mounting Bracket Orientation

Figure 2-6: MVP-6200 Series 4 Slot Mounting

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3 System Layout

3.1 Front/Side Panel I/O

The MVP-6200 Series provides the following front and side panel access features.

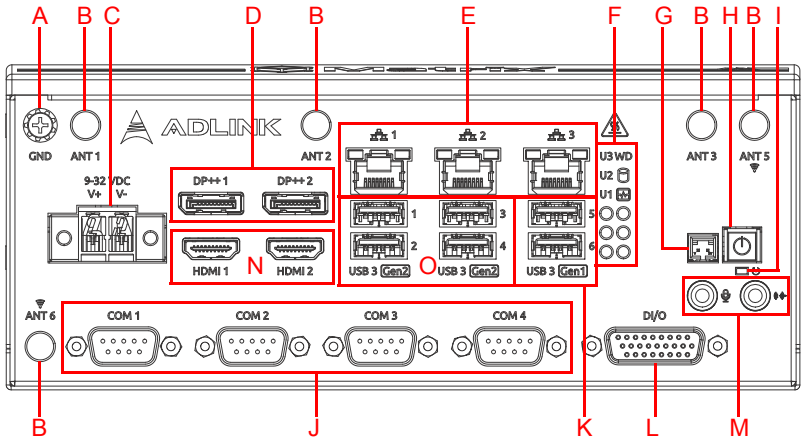


Figure 3-1: Front Panel I/O

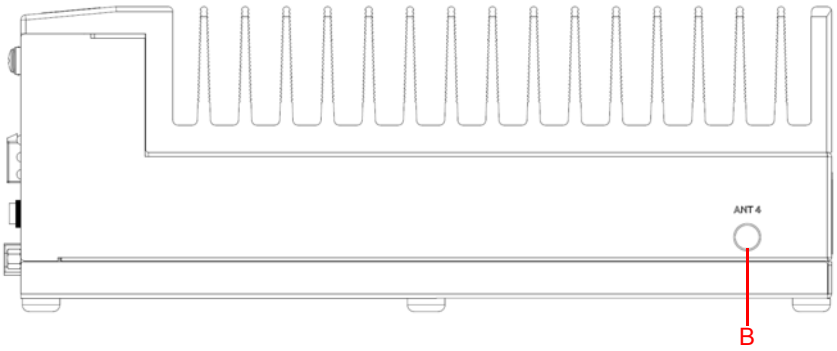


Figure 3-2: Side Panel I/O

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A	Ground	**I**	Reset Button
B	Antenna x6	**J**	COM Port x4
C	DC Power Input	**K**	USB 3.2 Gen 1 Type-A x2
D	DisplayPort++ x2	**L**	Digital Input/Output
E	Gigabit Ethernet x3	**M**	Audio (Line-in, Line-out)
F	LED Indicators	**N**	HDMI x2
G	External Power Button	**O**	USB 3.2 Gen 2 Type-A x4
H	Power Button		

Table 3-1: Front/Side Panel I/O Legend

3.1.1 Antenna Ports

Antenna ports ANT1-4 support 5G (PN: 30-60192-0000-A0), while ports ANT5-6 support WiFi 2.4GHz/5GHz (PN: 30-60125-1000-B0).

3.1.2 Power Button

The power button is a non-latched push button with a blue LED indicator.

System Status	Power LED
System turn on	Light ON
Suspend (S3)	Blinking
Hybernation (S4)	Blinking
Power OFF (S5)	Light OFF

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3.1.3 LED Indicators

In addition to the power button LED, six LEDs on the front panel indicate the following.

LED Indicator	Location	Color	Description
Watchdog (WD)	Top Right	Yellow	Indicates watchdog timer status. When watchdog timer starts, the LED will be on until system boot up success. When system does not boot up and the timer is expired, the system will automatically reboot.
Hard disk drive (HD)	Middle Right	Orange	When blinking, indicates the SATA HDD is active.
Diagnostic(DG)	Bottom Right	Green	If lit continuously, indicates no physical storage is connected. If blinking, indicates no memory is installed on either SO-DIMM socket.
User define (U1)	Top Left	Green	User define LED
User define (U2)	Middle Left	Green	User define LED
User define (U3)	Bottom Left	Green	User define LED

3.1.4 PCI Slot

The MVP-6200 provides one PCI slot for expansion on the backplane board. Based on the ITE IT8892E PCIe to PCI bridge, connection to the host system is achieved through a PCIe x1 Gen3 interface, supporting universal or 5V PCI 32-bit cards operating at 33MHz.

3.1.5 PCI Express x16 Slot

One PCI express x16 slot supports expansion with standard PCIe Gen4 cards and full PCI express x16 signals.

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3.1.6 PCI Express x4 Slot

Two PCI Express x4 slots for the MVP-6240 Series supports expansion with standard PCIe Gen3 cards and full PCI express x4 signals.

3.1.7 Reset Button

The reset button executes a hard reset for the MVP-6200 Series.

3.1.8 External Power Button Connector

The MVP-6200 Series provides an external power button connector to remotely power on/off the platform.

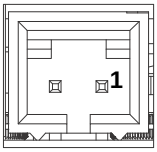


Figure 3-3: External Power Button Connector

Pin	Signal
1	PWR_BTN-L
2	GND

Table 3-2: External Power Button Connector Pin Definition

3.1.9 Audio Jack (Line-in, Line-out)

The MVP-6200 Series provides two stereo audio ports (Line-in, Line-out). Audio is controlled by the TEMPO 92HD91 chip.

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3.1.10 DisplayPort Connectors

Two DisplayPort connectors on the front panel can connect to VGA, DVI, HDMI and DisplayPort monitors via DisplayPort to VGA adapter cable, DisplayPort to DVI adapter cable, or DisplayPort to HDMI adapter cable and DisplayPort cable.

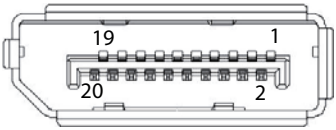


Figure 3-4: DisplayPort Connector Pin Definition

Pin	Signal	Pin	Signal
1	CN_DDPx0+	11	GND
2	GND	12	CN_DDPx3-
3	CN_DDPx0-	13	CN_DDPx_AUX_SEL
4	CN_DDPx1+	14	CN_DDPx_CONFIG2
5	GND	15	CN_DDPx_AUX+
6	CN_DDPx1-	16	GND
7	CN_DDPx2+	17	CN_DDPx_AUX-
8	GND	18	CN_DDPx_HPD
9	CN_DDPx2-	19	GND
10	CN_DDPx3+	20	+V3.3_DDPx_PWR_CN

Table 3-3: DisplayPort Pin Definition

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3.1.11 Digital I/O Connector

The MVP-6200 Series provides 8 channels of non-isolation digital input and 8 channels of non-isolation digital output circuits, with spec and circuits as follows.

8-channel Digital Input

- VIH: 2 to 5.25V
- VIL: 0 to 0.8V

8-channel Digital Output

- Output type: Open drain N-channel
- MOSFET driver with internal pull high of 200Ω resistance.
- Source/Sink current for all channels: 24mA
- VOH: 2.4 to 5V
- VOL: 0 to 0.5V

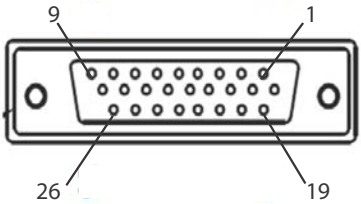


Figure 3-5: Digital I/O Connector Pin Definition

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DI0	8	DI7	15	N/C	22	DO3
2	DI1	9	GND	16	N/C	23	DO4
3	DI2	10	N/C	17	N/C	24	DO5
4	DI3	11	N/C	18	GND	25	DO6
5	DI4	12	N/C	19	DO0	26	DO7
6	DI5	13	N/C	20	DO1		
7	DI6	14	N/C	21	DO2		

Table 3-4: Digital Input/Output Connector Pin Definition

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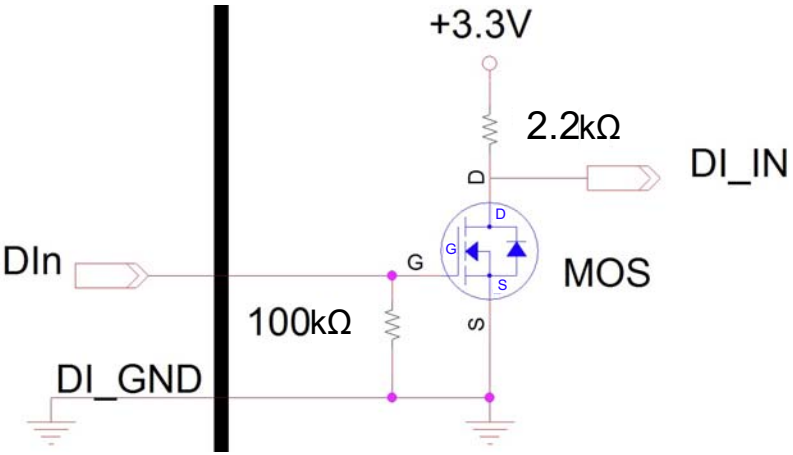


Figure 3-6: Digital Input Circuit

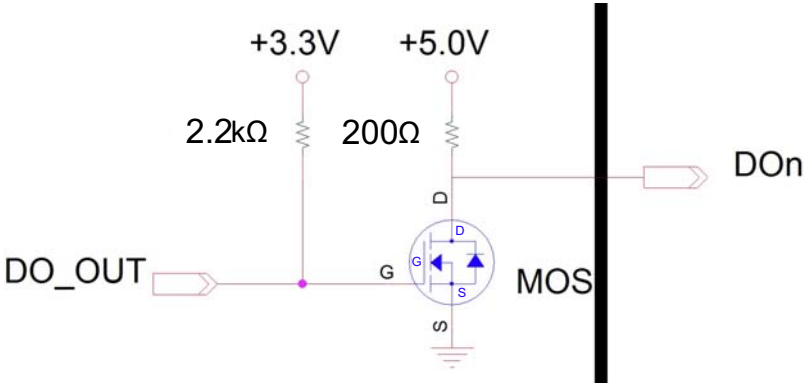
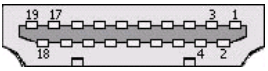


Figure 3-7: Digital Output Circuit

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3.1.12 HDMI Connector

The MVP-6200 Series provides one HDMI connector for connection to an external monitor.



Pin #	Signal	Pin #	Signal
1	CON_HDMI_TX2_P	2	GND
3	CON_HDMI_TX2_N	4	CON_HDMI_TX1_P
5	GND	6	CON_HDMI_TX1_N
7	CON_HDMI_TX0_P	8	GND
9	CON_HDMI_TX0_N	10	CON_HDMI_CLK_P
11	GND	12	CON_HDMI_CLK_N
13	N/C	14	N/C
15	DVI_SCL_SINK	16	DVI_SDA_SINK
17	GND	18	P_+5V0_HDMI_CN
19	CON_HDMI_HPD_5V0		

Table 3-5: HDMI Connector Pin Definition

3.1.13 USB 2.0 Ports

The MVP-6200 Series provides one USB 2.0 Type-A port. All USB ports are compatible with high-speed, full-speed and low-speed USB devices. The MVP-6200 Series supports multiple boot devices, including USB flash drives, USB external hard drives, USB floppy, USB CD-ROM and others. The boot priority and boot device can be configured in the BIOS.

3.1.14 USB 3.2 Ports

The MVP-6200 Series provides four USB 3.2 Gen 2 and two USB 3.2 Gen 1 ports supporting Type-A USB 3.2 connection on the front panel. All USB 3.2 ports are compatible with SuperSpeed Gen2, high-speed, full-speed, and low-speed USB devices. USB1 and USB2 Provide 1.6A current. USB3,4 share 1.6A current, USB5,6 share 1.6A current. The full 1.6A current is available if only one port is used.

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3.1.15 Gigabit Ethernet Ports

Three Gigabit Ethernet ports on the front panel support Intel I225-LM supports 2.5Gps.

Speed LED Green/Orange	Active/Link Yellow

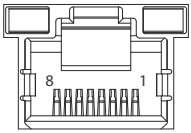


Figure 3-8: Ethernet Port and LEDs

Pin #	10BASE-T/100BASE-TX	1000BASE-T
1	TX+	LAN_TX0+
2	TX-	LAN_TX0-
3	RX+	LAN_TX1+
4	—	LAN_TX2+
5	—	LAN_TX2-
6	RX-	LAN_TX1-
7	—	LAN_TX3+
8	—	LAN_TX3-

Table 3-6: Ethernet Port Pin Definition

LED Color	Status	Description
Yellow	OFF	Ethernet port is disconnected.
	ON	Ethernet port is connected with no activity.
	Flashing	Ethernet port is connected and active.

Table 3-7: Active/Link LED Indicators

LED Color	Status	Description
Green/Orange	OFF	10/100 Mbps
	Green	1000 Mbps
	Orange	2500 Mbps

Table 3-8: Speed LED Indicators

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3.1.16 DC Power Input

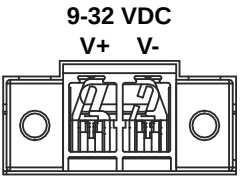


Figure 3-9: DC Power Input

Pin	Signal
1	V+ (DC_IN)
2	V- (DGND)

Table 3-9: DC Power Input Pin Definition

Refer to Section 4.2: Attach DC Power Connector on page 39 to install the DC Power Connector to the DC Power Input.

Use an approved power source as certified by IEC or UL. If you need an adaptor, optional accessories or further assistance, contact ADLINK for further information. The maximum operational altitude is 2000 m with an output that meets LPS and SELV (ES1) circuits.

Power Source Rating

	Voltage	Current
DC Power Source	9 to 32V DC	30A to 8.75A min.
AC-to-DC Adapter	24V DC	11.67A min.

WARNING:

Before providing DC power, ensure the voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can cause system damage.
AVERTISSEMENT: Avant de fournir de l'énergie DC à cet appareil, veuillez vous assurer que la tension et la polarité fournies sont compatibles avec l'entrée DC. Une tension d'entrée et/ou polarité incorrectes peuvent causer des dommages au système.

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3.1.17 COM Port Connectors

The MVP-6200 Series provides four COM ports through D-sub 9-pin connectors. The COM1 & COM2 ports support RS-232/422/485 modes by BIOS setting, while COM3 and COM4 support only RS-232.

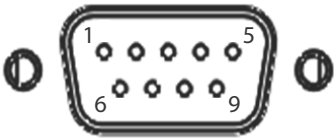


Figure 3-10: COM Port Pin Definition

Pin	Signal Name		
	RS-232	RS-422	RS-485
1	DCD#	TXD422-	485DATA-
2	RXD	TXD422+	485DATA+
3	TXD	RXD422+	N/S
4	DTR#	RXD422-	N/S
5	GND	N/S	N/S
6	DSR#	N/S	N/S
7	RTS#	N/S	N/S
8	CTS#	N/S	N/S
9	RI#	N/S	N/S

Table 3-10: D-Sub 9-pin Signal Function of COM Ports

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3.2 Internal I/O Connectors

3.2.1 Mainboard Top/Bottom Connector Locations

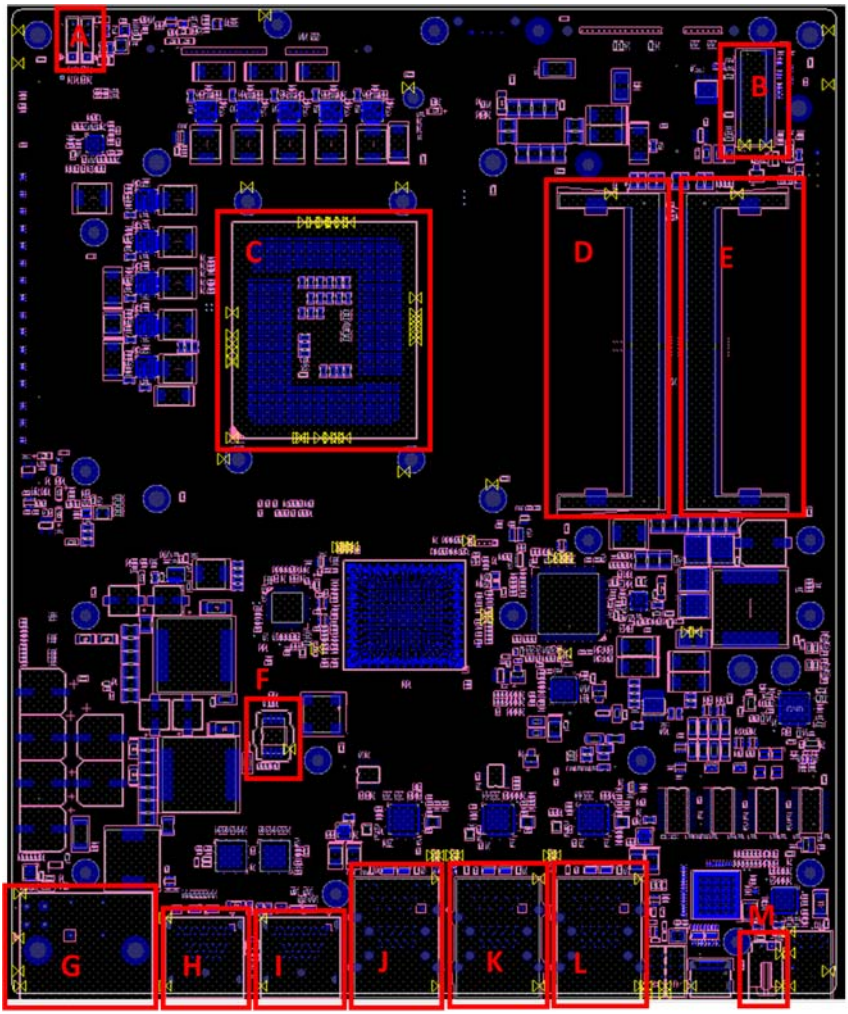


Figure 3-11: Mainboard Top Connectors

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A	Power FW Update Connector (Debug)
B	M.2 M Key
C	CPU Socket
D	DDR5 SO-DIMM1
E	DDR5 SO-DIMM3
F	Flash ROM Socket (Debug)
G	DCIN Connector
H	HDMI + DP
I	HDMI + DP
J	RJ45 + USB 3.0 x2
K	RJ45 + USB 3.0 x2
L	RJ45 + USB 3.0 x2
M	Extenal Power Connector

Table 3-11: Mainboard Top Connector Legend

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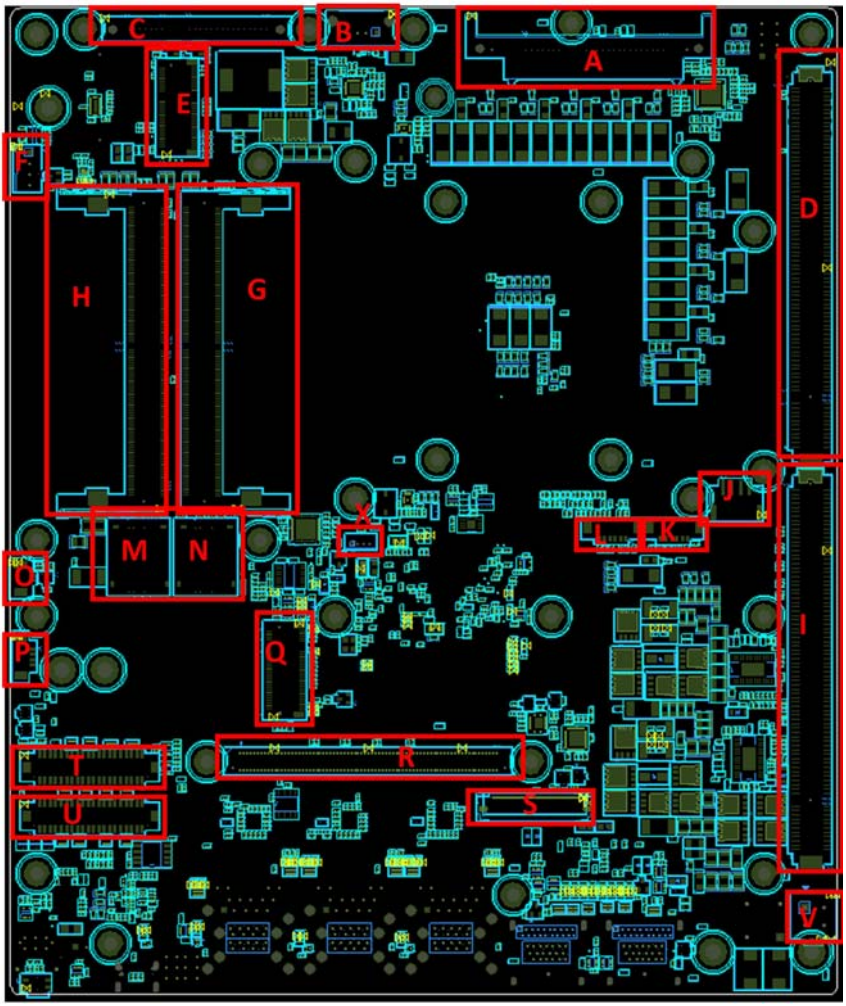


Figure 3-12: Mainboard Bottom Connectors

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A	SATA connector for 2.5” SSD
B	USB 2.0 dongle
C	SATA connector for 2.5” SSD
D	PCIE GEN5 slot for BP Board
E	M.2 E Key
F	System Fan Connector
G	DDR5 SO-DIMM2
H	DDR5 SO-DIMM4
I	PCIE GEN4 + Power slot for BP Board
J	External Power Connector for AFM Board
K	I2C Wafer 2 (I2C1)
L	I2C Wafer 1 (I2C0)
M	SIM connector for M.2
N	SIM connector for M.2
O	RTC Barttery Connector
P	Wafer for Speaker Out
Q	M.2 B Key
R	B2B Connector For AFM Board
S	DB40 Connector (Debug)
T	Wafer for COM5, 6 + DIDO + MIC + HP
U	Wafer for COM1, 2, 3, 4
V	External Power Connector for BP Board
X	External Power/Reset button

Table 3-12: Mainboard Bottom Connector Legend

3.2.2 2-slot/4-slot Backplane Connector

The MVP-6200 Series supports a 2-slot or 4-slot backplane.

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3.2.2.1 2-slot Backplane Card



Figure 3-13: 2-slot Backplane Card

A	USB 2.0 dongle connector
B	SATA power connector
C	SATA signal connector (CN6 no function)
D	PCI slot
E	PCI express x16 slot
F	Additional power for PCIe x 16 slot (12V)
G	Direct SATA connector

Table 3-13: 2-slot Backplane Card Legend

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3.2.2.2 4-slot Backplane Card

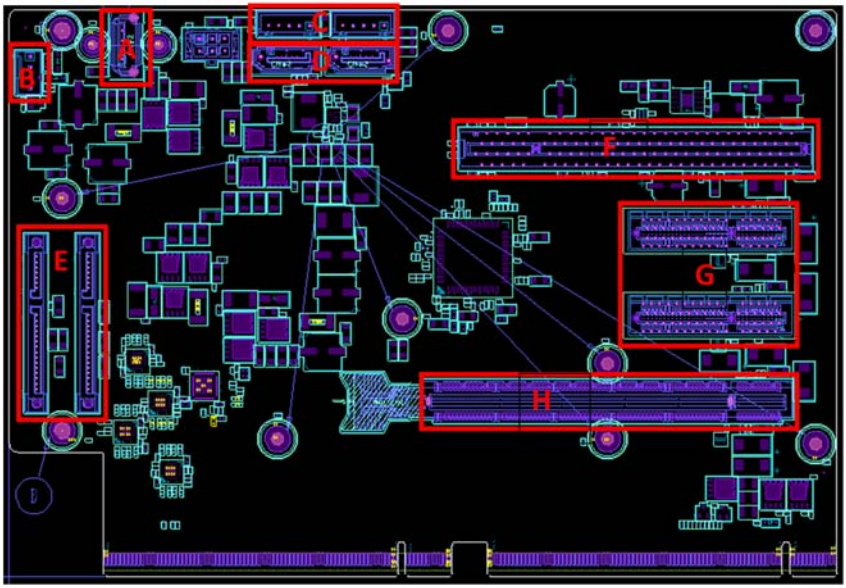


Figure 3-14: 4-slot Backplane Card

A	USB Type-A connector
B	FAN connector
C	SATA power connector
D	SATA data connector (CN1 no function)
E	SATA connector
F	PCI connector
G	PCIE x4 connector
H	PCIE x16 connector

Table 3-14: 4-slot Backplane Card Legend

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3.2.3 SATA Connector

The SATA connector supports transfer up to 6.0Gb/s (600MB/s).

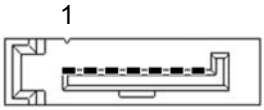


Figure 3-15: SATA Connector

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

Table 3-15: SATA Connector Pin Definition

3.2.4 USB 2.0 Connector

One USB 2.0 Type-A connector is provided on the mainboard for internal USB dongle, with another on the backplane board.

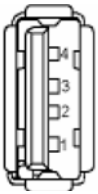


Figure 3-16: USB Port

Pin	Signal
1	Vcc
2	Data-
3	Data+
4	GND

Table 3-16: USB Port Pin Definition

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3.2.5 12V Fan Connector

DC 12V fan module power supply is provided through the connector, to which the optional fan module connects when installed in the chassis.

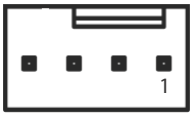


Figure 3-17: 12V Fan Connector Pin Definition

Pin	Signal
1	FAN_GND
2	12V IN PWR
3	FAN TACH
4	FAN PWM

Table 3-17: 12V Fan Connector Pin Definition

3.2.6 External Power/Reset Header

An internal header is provided for the Power and Reset buttons.

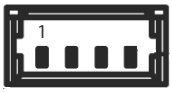


Figure 3-18: External Power/Reset Header Pin Definition

Pin	Signal
1	PWR_BTN-L
2	GND
3	GND
4	RESET_BTN-L

Table 3-18: External Power/Reset Header Pin Definition

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3.2.7 I2C Connector

There are two I2C connectors supporting 3.3v or 5v.

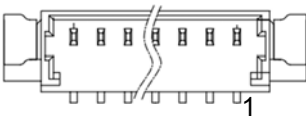


Figure 3-19: I2C Connector Pin Definition

Pin	Signal (I2C0)	Signal (I2C1)
1	P_+5V0_S	P_+5V0_S
2	P_+3V3_S	P_+3V3_S
3	PCH_I2C0_SDA_S	PCH_I2C1_SDA_S
4	PCH_I2C0_SCL_S	PCH_I2C1_SCL_S
5	I2C0_GPIO	I2C1_GPIO
6	GND	GND

Table 3-19: I2C Connector Pin Definition

3.2.8 Micro-SIM Slot

The Micro-SIM slot supports an M.2 B Key.

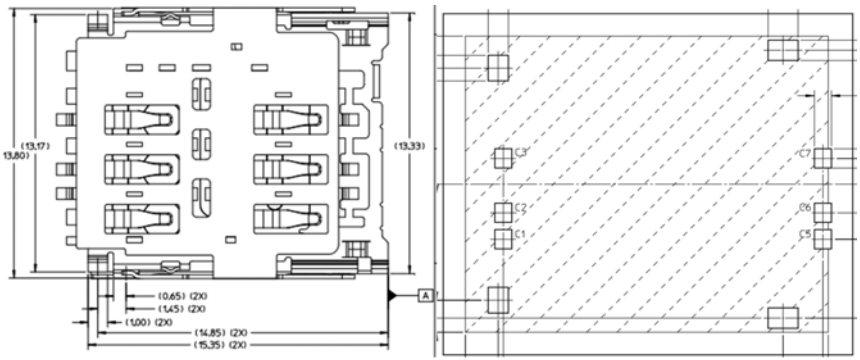


Figure 3-20: Micro-SIM Slot

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Pin	Signal
1	SIM PWR
2	REST#
3	CLK
4	GND
5	VPP
6	DATA

Table 3-20: Micro-SIM Slot Pin Definition

3.2.9 12V Power for Additional AFM MXM Carrier Board

One 12V power pin header provides additional AFM MXM carrier board power for an MXM card, if used.

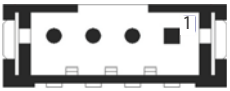


Figure 3-21: 12V Power Pin Definition

Pin	Signal	Pin	Signal
1	P_+12V_B	3	GND
2	P_+12V_B	4	GND

Table 3-21: 12V Power Pin Definition

NOTE:

For additional information regarding the AFM MXM Carrier Board, please contact your ADLINK representative.

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4 Getting Started

4.1 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- MVP-6200 controller
- Accessory pack
- Screw pack for wall-mounting and SSD installation

4.2 Attach DC Power Connector

Locate the DC power connector shown below that is included in the Accessory Box. Insert it into the DC Power Input “A” shown in **Figure 3-2** on page 17 and secure it to the chassis using the captive screws.



Connect a DC power source as described in **Section 3.1.16: DC Power Input on page 26** to the inputs of the DC power connector, making sure to use the correct input voltage andpolarity.

WARNING:

Before providing DC power, ensure the voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can be responsible for system damage.
AVERTISSEMENT: Avant de connecter à une source de courant continu, veuillez vous assurer de la polarité de la tension conformément à l'entrée CC du PC. Une tension et/ou une polarité incorrectes peuvent causer des dommages irréversibles sur le système.

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4.3 Installing Components

4.3.1 Install a Solid-State Drive (SSD) (Option 1)

Follow these steps to install a solid-state drive (SSD).

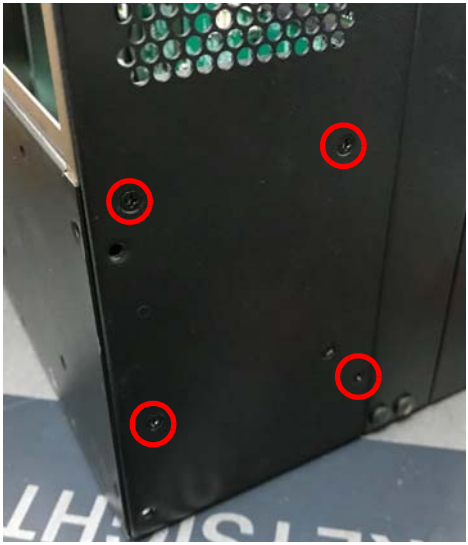
NOTE: This option supports the installation of SSDs with a thickness of 9.5mm only.

1. Remove the top cover after loosening the thumbscrew.

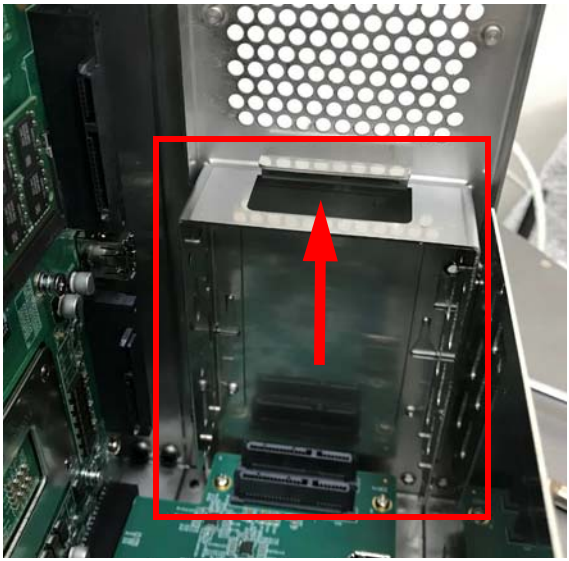


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2. Using a screwdriver, remove the 4 rear panel case screws.



3. Remove the SSD tray.



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4. Use the set of 8 included M3 screws to attach two 2.5" x 9.5mm SSD drives to the tray.





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5. Gently insert the drives into the SATA connectors on the board.



6. Replace the top cover and return the thumbscrew.

4.3.2 Install a Solid-State Drive (SSD) (Option 2)

Follow these steps to install a solid-state drive (SSD).

NOTE: This option supports the installation of SSDs with a thickness up to 15mm.

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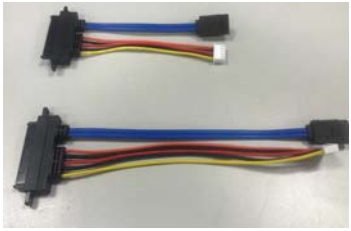
1. Prepare the SSD assembly using the following parts.



1x Bracket



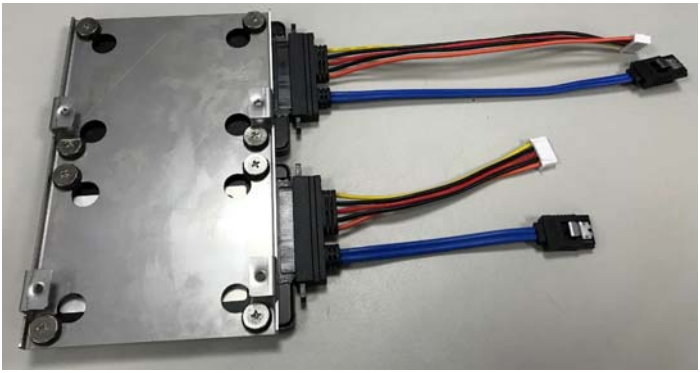
8x Screws



1x Short SATA Data/Power Cable

1x Long SATA Data/Power Cable

Attach up to 2 SSDs to the bracket with the supplied screws, and then attach the short and long SATA data/ power cables.

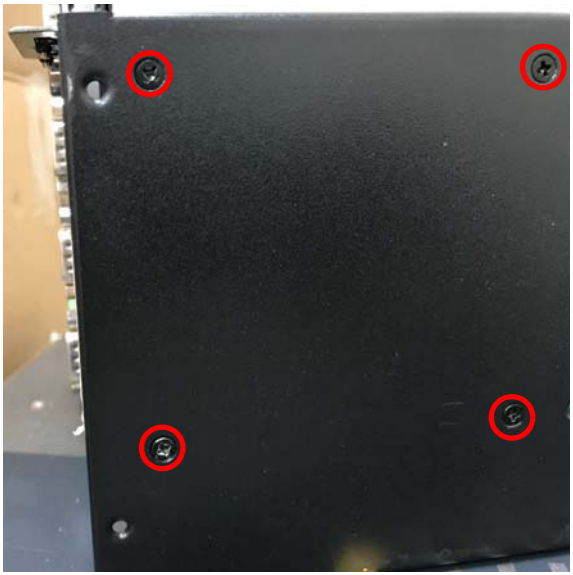


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2. Remove the top cover after loosening the thumbscrew.

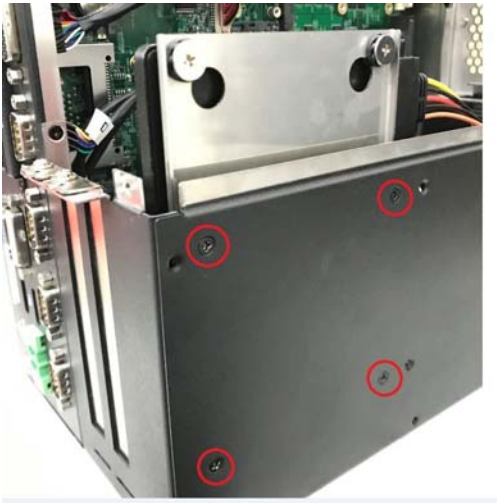


3. Using a screwdriver, remove the 4 side panel case screws.

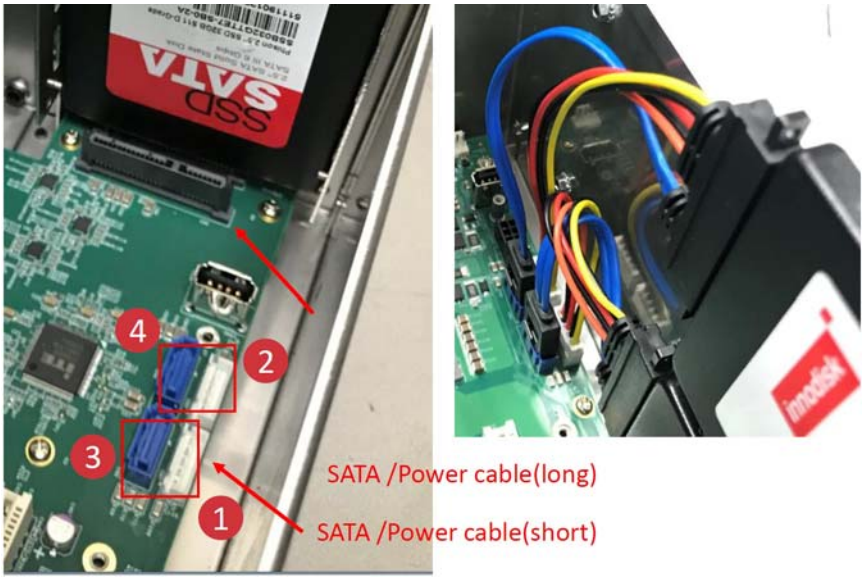


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4. Put the SSD assembly into the system and attach it to the case with the 4 side panel case screws.



5. Connect the SSD data/power cables to the board as shown.



6. Replace the top cover and return the thumbscrew.

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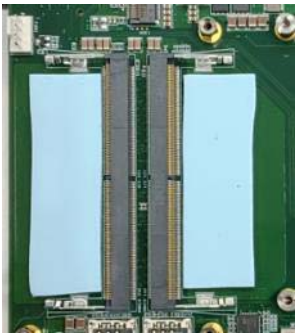
4.3.3 Install SODIMM Memory

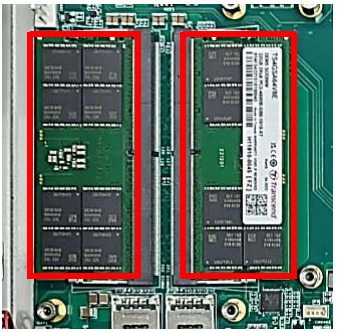
Follow these steps to install SODIMM memory.

1. Remove the top cover after loosening the thumbscrew.



2. Attach the included thermal pads to the main board under the location of the SODIMM modules. Make sure the thermal pads DO NOT contact the connector pins. Install the SODIMM modules.





3. Replace the top cover and return the thumbscrew.

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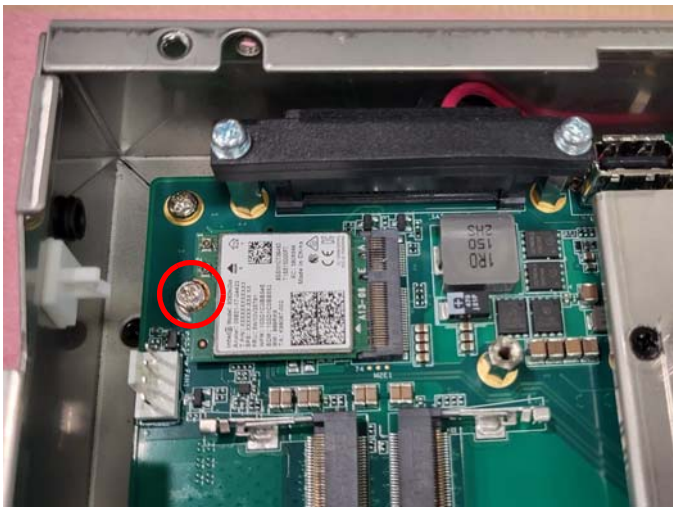
4.3.4 Install Wi-Fi Module

Follow these steps to install a Wi-Fi module.

1. Remove the top cover after loosening the thumbscrew.



2. Install the Wi-Fi module and lock in place with the included M3 screw.



3. Replace the top cover and return the thumbscrew.

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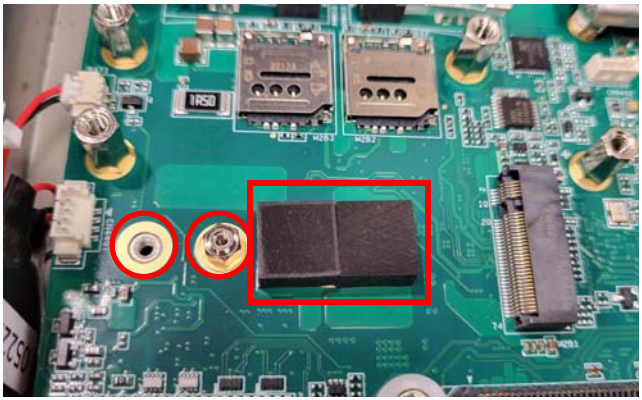
4.3.5 Install 5G Module

Follow these steps to install a 5G module.

1. Remove the top cover after loosening the thumbscrew.



2. Attach the included M2.5 standoff screw to one of two locations on the main board, depending on the size of the module. Attach the thermal pad to the main board as shown.



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3. Install the 5G module and secure it with the included M2 screw.



4. Replace the top cover and return the thumbscrew.

4.3.6 Install Fan Kit

Follow these steps to install a fan kit.

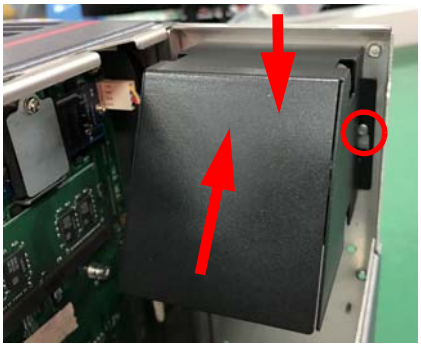
1. Remove the top cover after loosening the thumbscrew.



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2. Connect the fan connector to the board first, and then fasten the fan assembly kit to the chassis.





3. Replace the top cover and return the thumbscrew.

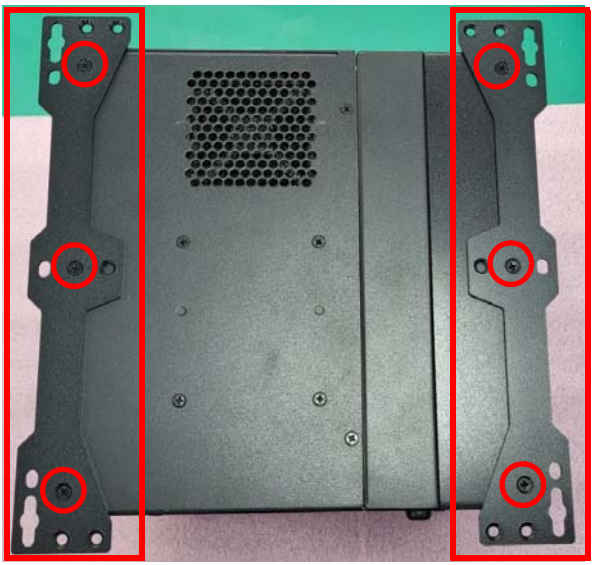
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4.4 Mounting the MVP-6200 Series

4.4.1 Install the Wall-mount Brackets (Rear Panel)

Follow these steps to install the wall-mount brackets on the rear panel.

1. Use the 6 M4 screws shipped with the controller to attach the 2 included wall mount brackets to the chassis as shown.



NOTE:

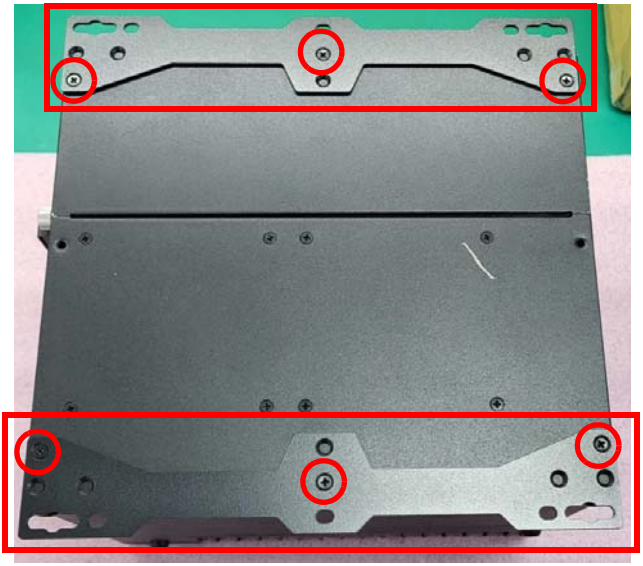
See “Mechanical” on page 12 for dimensions on wall mounting hole placement.

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4.4.2 Install the Wall-mount Brackets (Side Panel)

Follow these steps to install the wall-mount brackets on the side panel.

1. Use the 6 M4 screws shipped with the controller to attach the 2 included wall mount brackets to the chassis as shown.



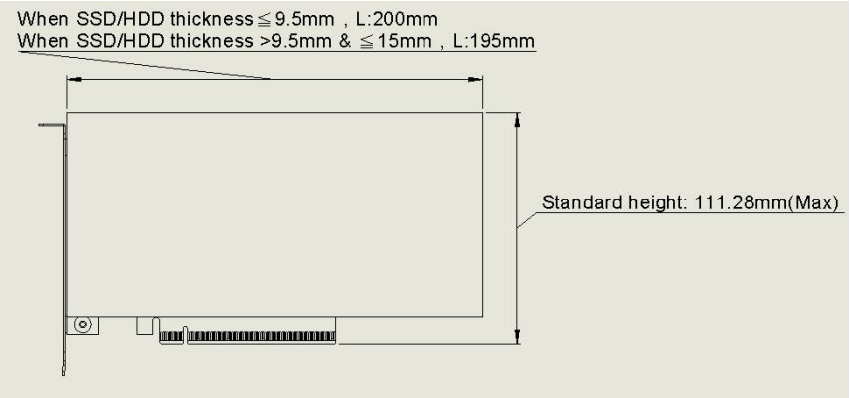
NOTE:

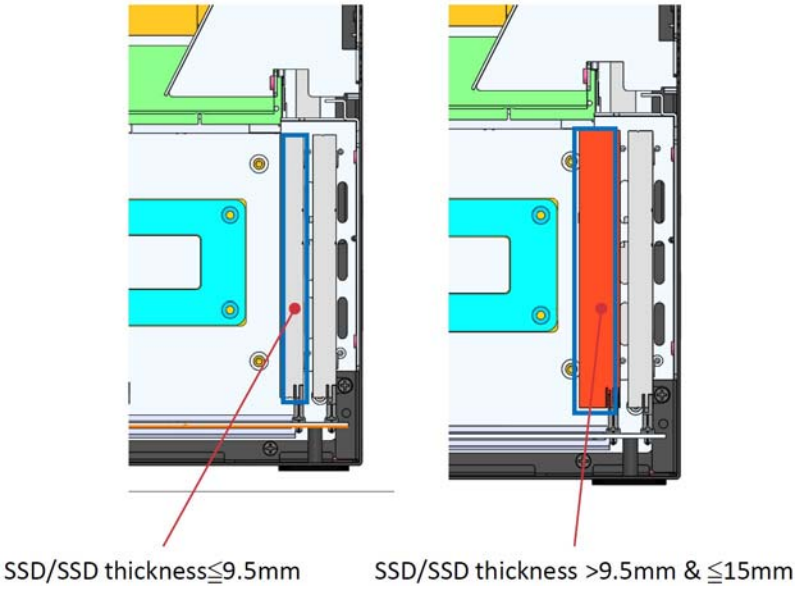
See “Mechanical” on page 12 for dimensions on wall mounting hole placement.

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4.5 PCIe/PCI Board Clearance

The following diagrams show the PCIe/PCI board clearances when using the respective SSD types.





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4.6 Driver Installation

Download the drivers for your system from the product page at https://www.adlinktech.com/Products/Industrial_PCs_Fanless_Embedded_PCs/IntegratedFanlessEmbeddedComputers/MVP-6200 Series_Series.

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Appendix A Power


NOTE:

Information in this Appendix is for power budget planning and design purposes only. Actual power consumption may differ based on final application.

A.1 Power Consumption Reference

Power consumption as follows is based on lab data in which 24V DC is applied and current is measured by the DC power supply. The power consumption (W) is calculated as the product of applied voltage (V) and the current (A).

Platforms tested for this data have available external I/O interfaces and are attached to supported devices such as DP and HDMI monitors, keyboard/mouse, USB dummy load, COM loopback, with an internal hard disk drive installed.

Information is presented for reference only. Actual power consumption will vary with different attached devices and operating system.

System	Power Off	System Idle	Processor Full Load	System Full Load	Recommended Power Supply
MVP-6249 Intel Core i9-12900E	3.7W	59.4W	101W	147W	280W

Table A-1: Power Consumption


NOTE:

- Sufficient power supply for the entire system is required to meet these specifications. At least 100W at 24V input is recommended.
- Heat generated by add-on PCI/PCIe adapters affects thermal stability. Additional heat dissipation is required when the system operates at high temperatures or in harsh environments with add-on adapters.

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Appendix B BIOS Setup

The Basic Input/Output System (BIOS) is a program that provides a basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features applied to the MVP-6200. The BIOS Setup program includes menus for configuring settings and enabling features of the MVP-6200. Most users do not need to use the BIOS Setup program, as the MVP-6200 ships with default settings that work well for most configurations.

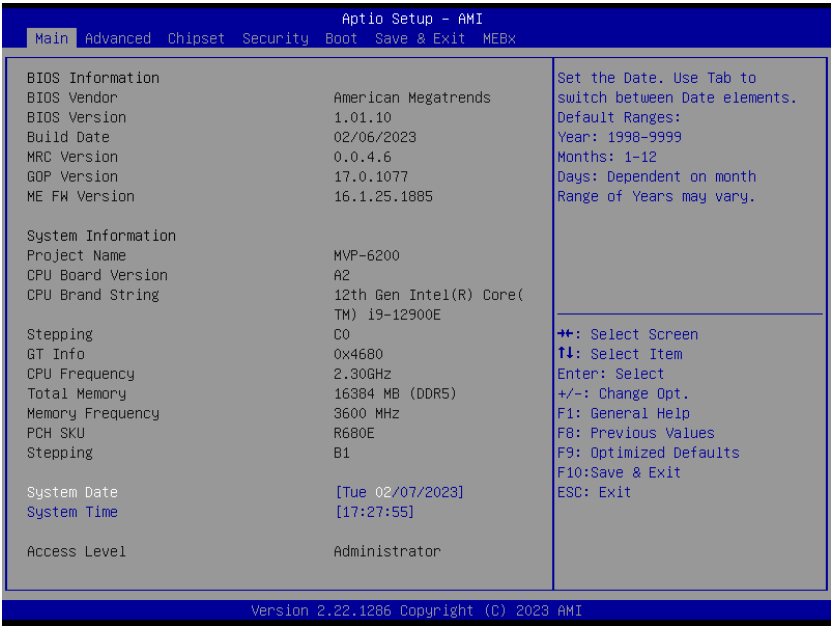
Enter BIOS Setup by selecting DEL when the system is powered on the POST (Power On Self Test) message is displayed.The MVP-6200 controller supports one-time Boot Menu allowing selection of boot device. Enter the Boot Menu by selecting F7 at POST.


NOTE:

- BIOS options listed are for reference only.
- Different configurations can affect BIOS behavior.
- Displayed material may reflect only the BIOS version corresponding to initial release and may differ from that of the purchased motherboard.
- Users are welcome to download the latest BIOS version from our official website.

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B.1 Main



Contains basic system information for the MVP-6200.

WARNING:

Changing BIOS settings may lead to incorrect controller behavior and possible inability to boot.

BIOS Information

Shows current system BIOS Vendor, BIOS Version, Build Date, MRC Version, GOP Version and ME FW Version.

System Information

Shows current system Project Name, CPU Board Version, CPU Branding String, CPU Stepping, GT Info, CPU Frequency, Total Memory, Memory Frequency, PCH SKU and Stepping.

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System Time/System Date

Allows adjustment of system time and date, as follows.

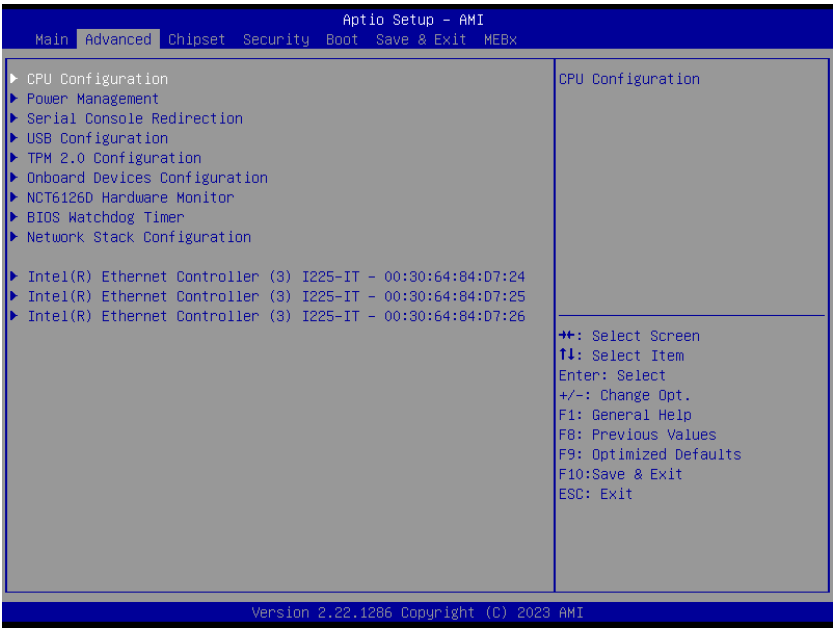
1. Highlight System Time or System Date using the up and down <Arrow> keys.
2. Enter new values using the keyboard and select <Enter>.
3. Select < Tab > to move between fields.



The date must be entered in MM/DD/YY format, and the time in HH:MM:SS. The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

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B.2 Advanced



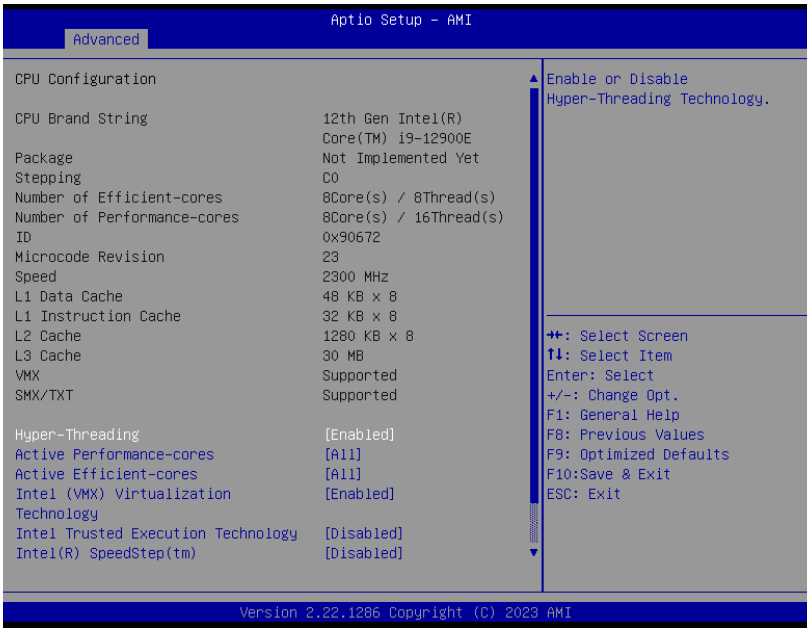
CAUTION:

Setting incorrect or conflicting values in Advanced BIOS Setup may cause system malfunction.

Accesses advanced options of the MVP-6200.

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B.2.1 CPU Configuration



Hyper-Threading

Enabled for Windows and Linux (optimized for Hyper-Threading Technology) and Disabled for other OS (not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.

Active Performance-cores

Number of P-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.

Active Efficient-cores

Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.

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Intel (VMX) Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Intel Trusted Execution Technology

Enables utilization of additional hardware capabilities provided by Intel(R) Trusted Execution Technology. Changes require a full power cycle to take effect.

Intel® SpeedStep™

Allows more than two frequency ranges to be supported.

Intel® Speed Shift Technology

Enables/disables Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow hardware controlled P-states.

C States

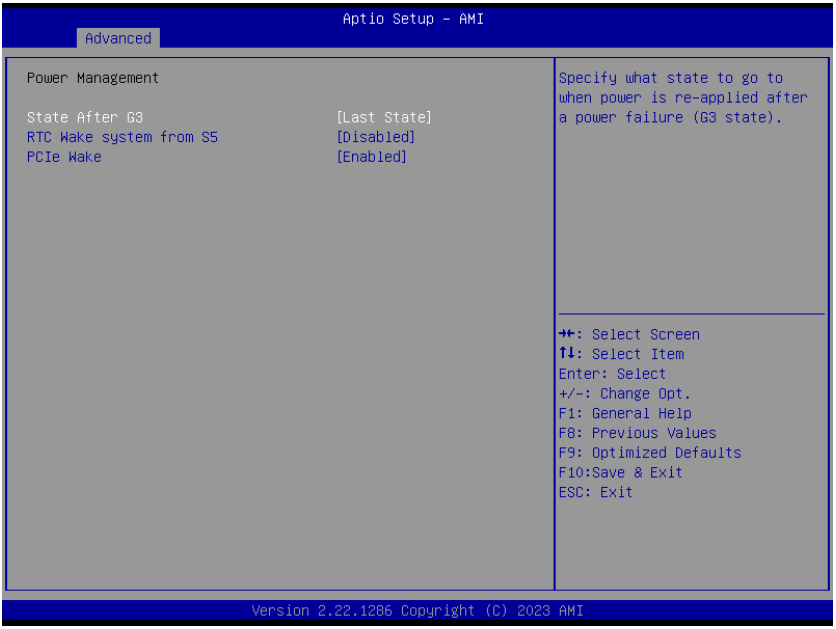
Enable/Disable CPU Power Management. Allows CPU to go to C states when it is not 100% utilized.

TCC Activation Offset

Offset from factory set TCC activation temperature at which the Thermal Control Circuit must be activated. TCC will be activated at: TCC Activation Temp - TCC Activation Offset. TCC Activation Offset range is 0 to 63.

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B.2.2 Power Management



State After G3

Specifies the state to go to when power is re-applied after a power failure (G3 state).

RTC Wake system from S5

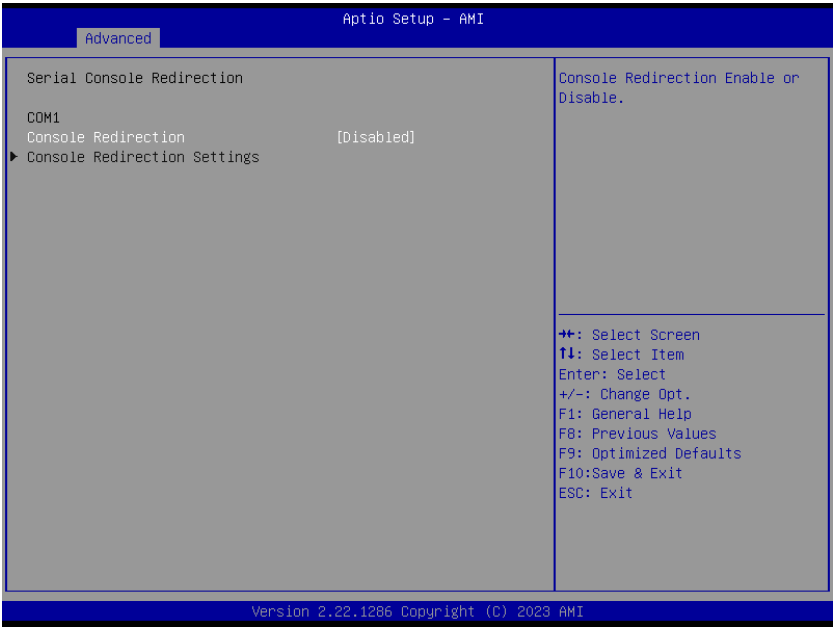
Enable or disable System wake on alarm event. Select FixedTime for the system to wake at the hr::min::sec specified. Select DynamicTime for the system to wake at the current time + Increase minute(s).

PCIe Wake

Enables/disables PCI Express wake capability.

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B.2.3 Serial Console Redirection



COM1

Console Redirection

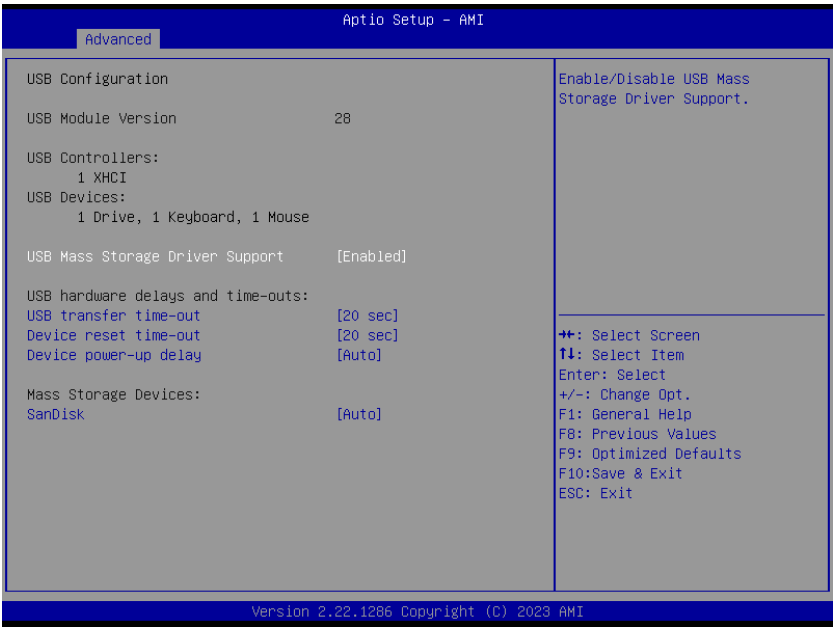
Enables/disables SIO COM1 Console Redirection.

Console Redirection Settings

Specify how the host computer and the remote computer (in use) exchange data. Both computers should have the same or compatible settings.

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B.2.4 USB Configuration



USB Mass Storage Driver Support

Enables/disables USB mass storage driver support.

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

USB mass storage device Start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller, where Auto uses default value for Root port 100ms, and for Hub port the delay is taken from Hub descriptor.

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B.2.5 TPM 2.0 Configuration



Security Device Support

Enables/disables BIOS support for security device. OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

SHA256 PCR Bank

Enables/disables SHA256 PCR Bank.

Pending Operation

Schedules Operation for the Security Device. Computer will reboot during restart in order to change State of Security Device.

Platform Hierarchy

Enables/disables Platform Hierarchy.

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Storage Hierarchy

Enables/disables Storage Hierarchy.

Endorsement Hierarchy

Enables/disables Endorsement Hierarchy.

Physical Presence Spec Version

Directs OS to support PPI Spec Version 1.2 or 1.3. Some HCK tests may not support 1.3.

TPM 2.0 Interface Type

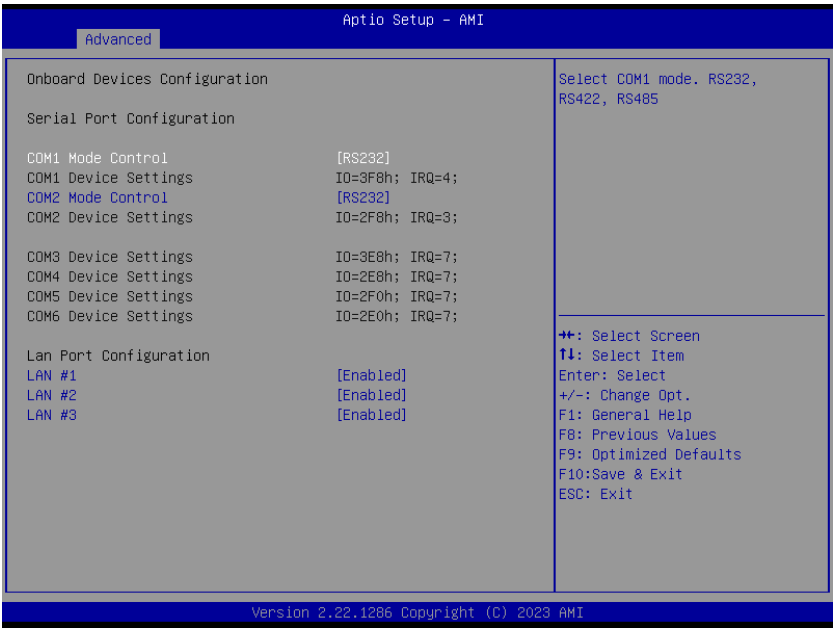
Select the Communication Interface to TPM 20 Device.

PH Randomization

Enables or Disables Platform Hierarchy randomization. **DO NOT ENABLE THIS QUESTION IN PRODUCTION PLATFORMS. THIS IS FOR DEVELOPMENT TESTING.** OVERRIDE Change-PlatformAuth ELINK for production platforms supporting TXT.

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B.2.6 Onboard Devices Configuration



COM1 Mode Control

Selects COM1 mode from RS232, RS422 or RS485.

COM2 Mode Control

Selects COM2 mode from RS232, RS422 or RS485.

LAN #1 (Intel I225)

Enables/disables I225 LAN1.

LAN #2 (Intel I225)

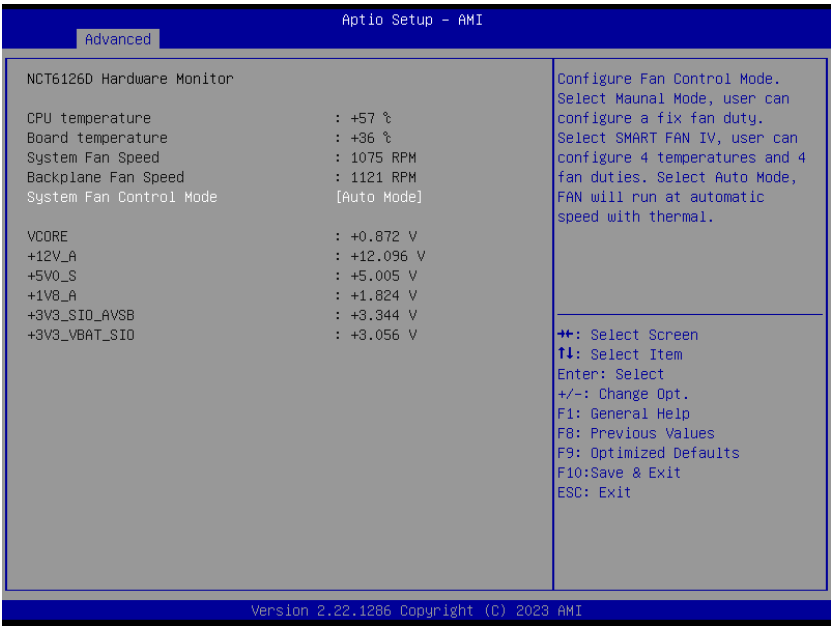
Enables/disables I225 LAN2.

LAN #3 (Intel I225)

Enables/disables I225 LAN3.

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B.2.7 NCT6126D HW Monitor



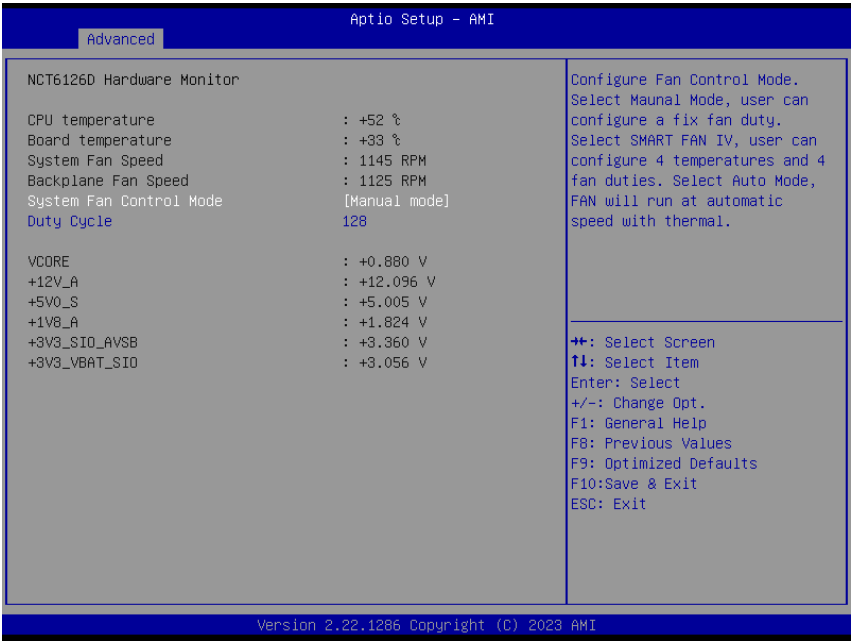
Displays CPU/Board Temperatures, System/Backplane fan speeds, and various Voltages.

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System Fan Control Mode

Configures fan control mode from Manual Mode, Auto Mode, and SMART FAN IV.

Manual Mode

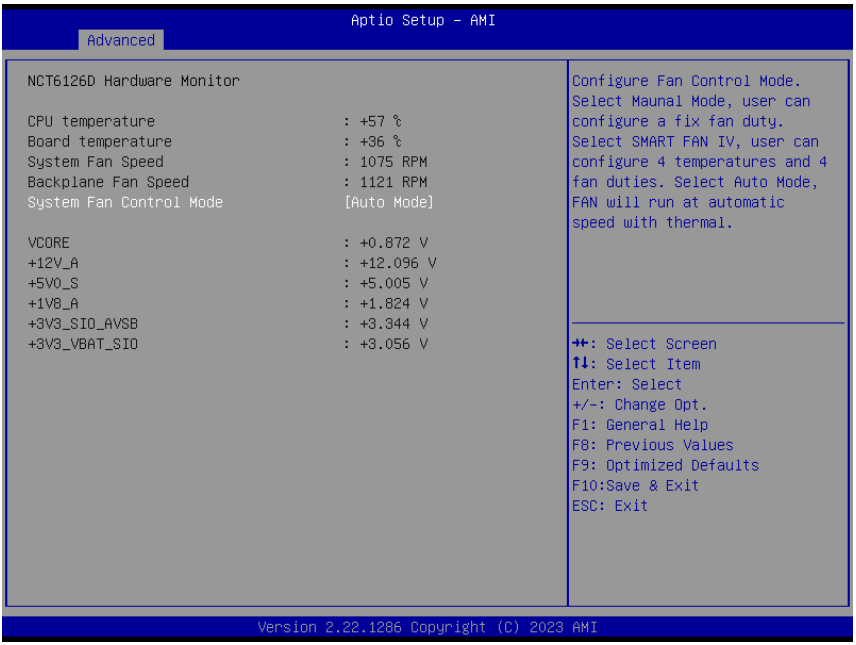


Allows configuration of a set fan duty cycle.

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Auto Mode

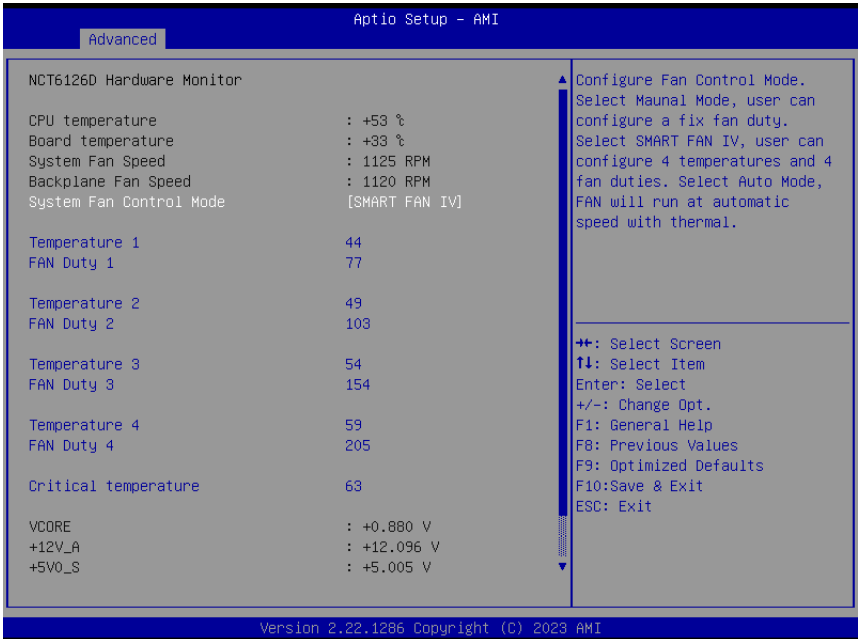
Fan runs at automatic speed for optimal thermal solution.



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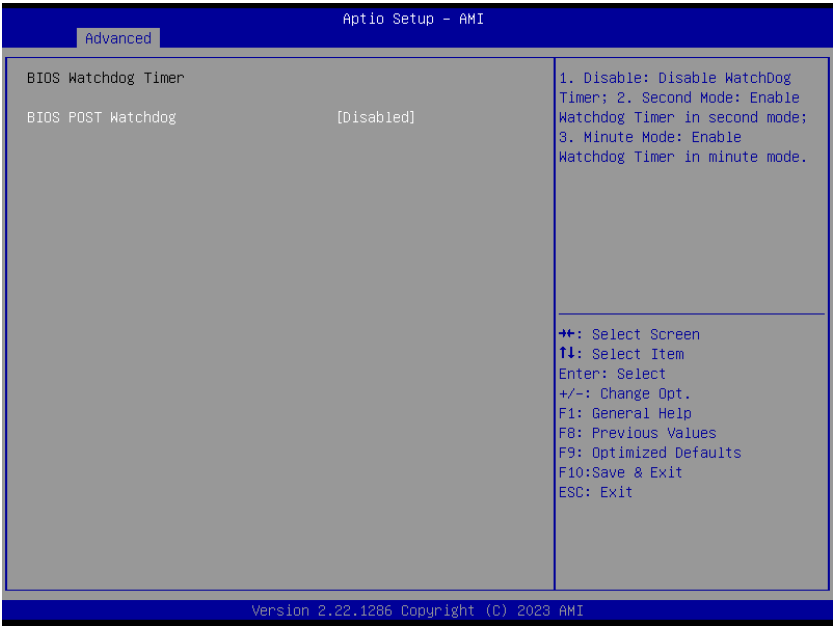
SMART FAN IV

Four temperatures and four fan duties can be user-configured.



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B.2.8 BIOS Watchdog Timer

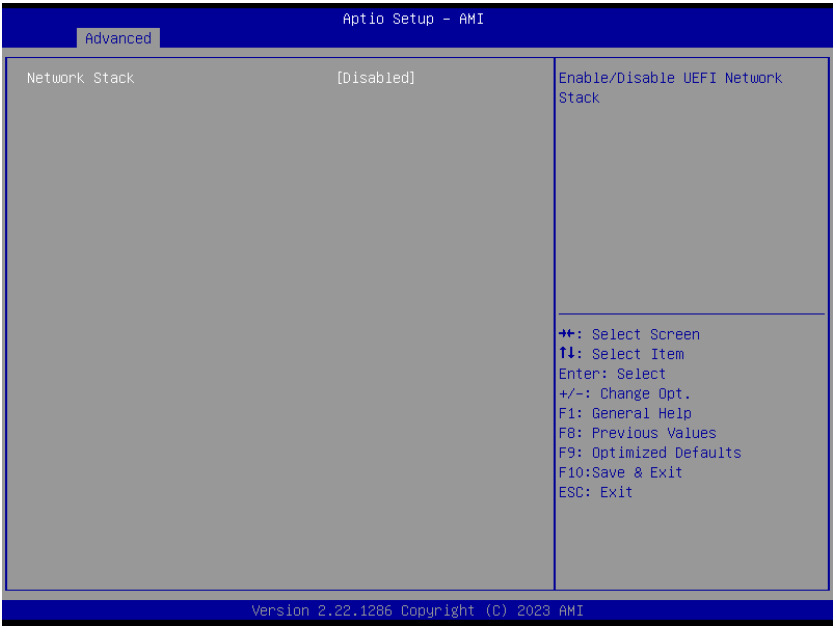


BIOS POST Watchdog

Disable disables WatchDog Timer, Second Mode enables Watchdog Timer in second mode, Minute Mode enables Watchdog Timer in minute mode.

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B.2.9 Network Stack Configuration

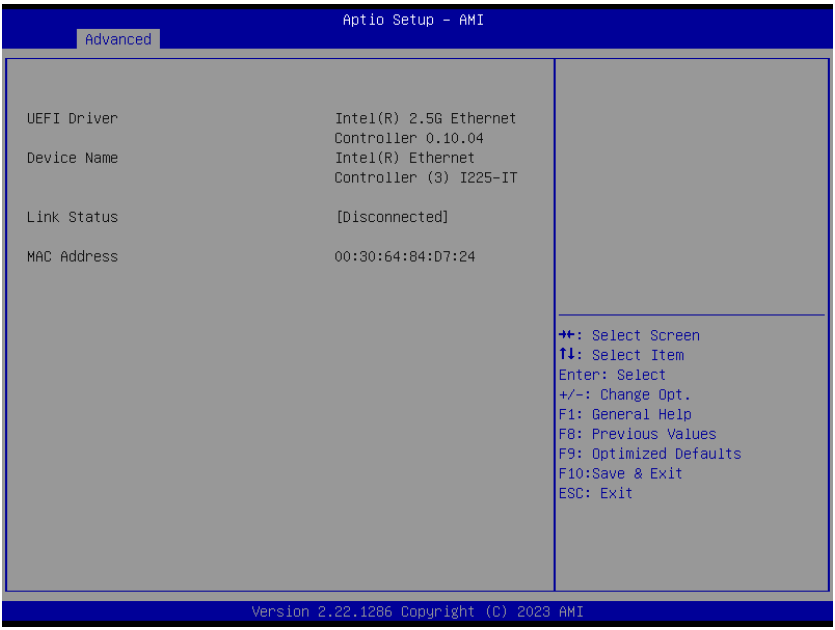


Network Stack

Enables/disables UEFI Network Stack.

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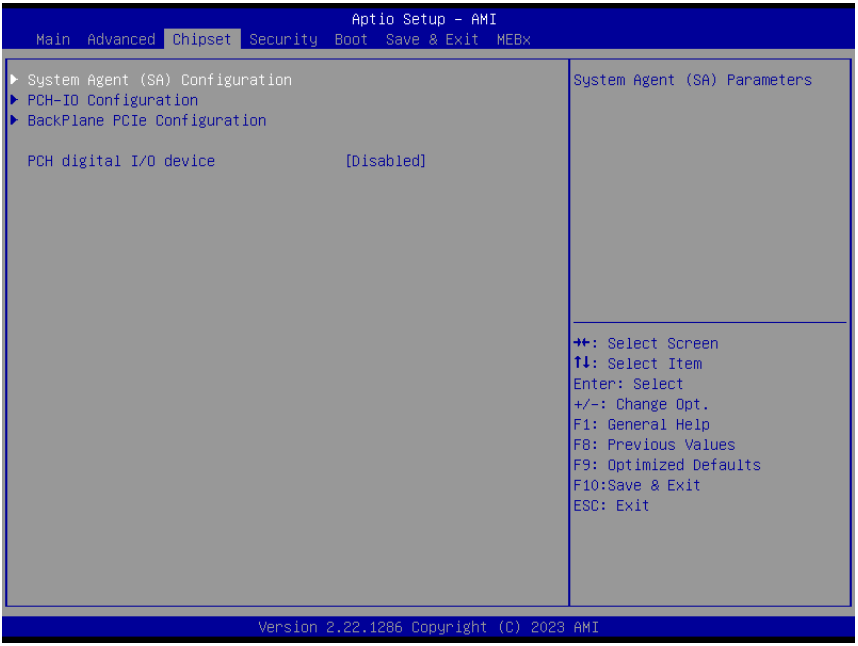
B.2.10 Intel® Ethernet Controller (3) I225-IT



Displays UEFI Driver, Device Name, Link Status and MAC Address.

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B.3 Chipset

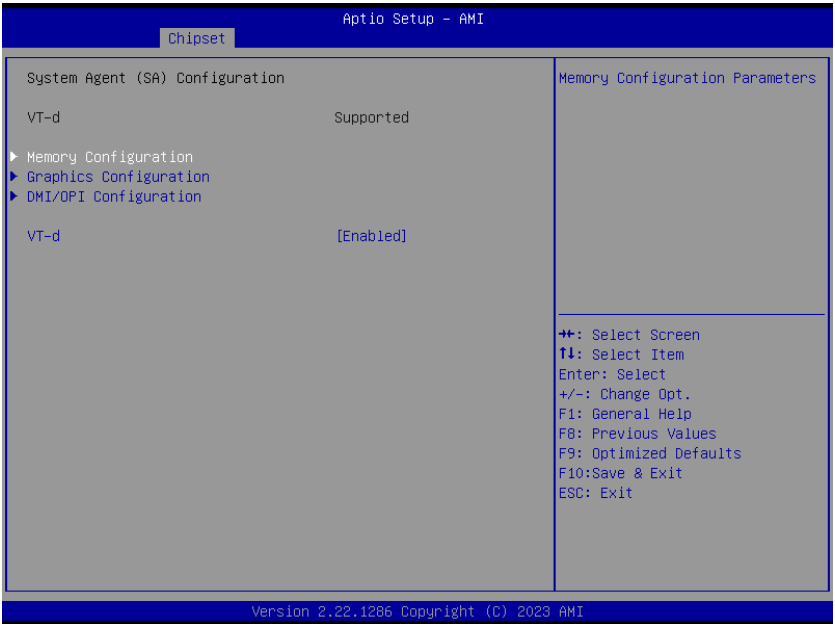


WARNING:

Setting incorrect or conflicting values in Chipset BIOS Setup may cause system malfunction.

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B.3.1 System Agent (SA) Configuration

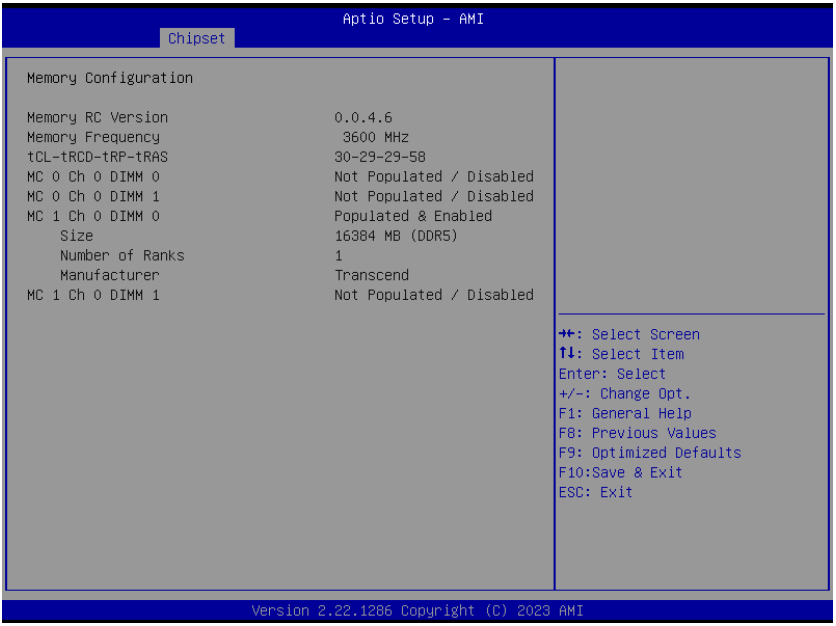


System Agent (SA) Configuration

Displays and configures VT-d capability and provides settings for Memory, Graphics, and DMI/OPI configuration.

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B.3.1.1 Memory Configuration

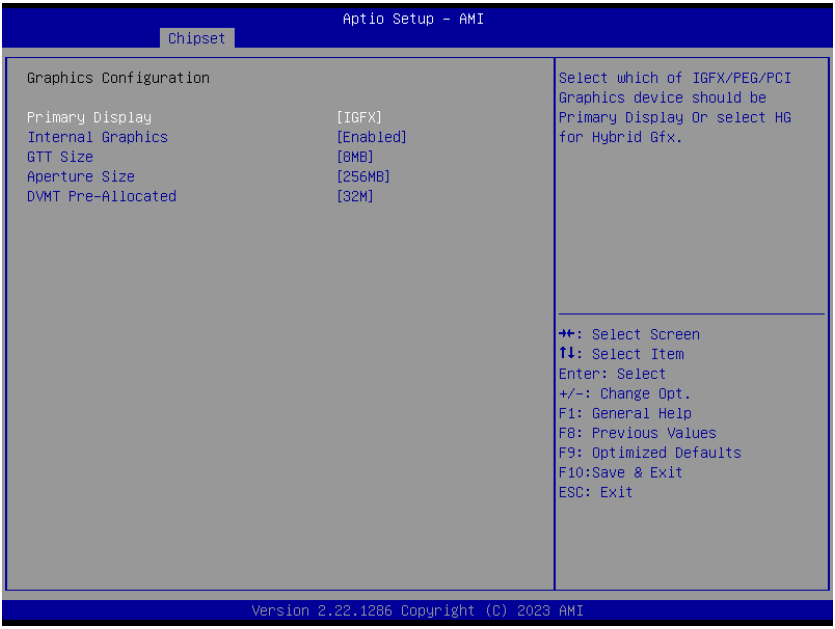


Memory Configuration

Displays memory speed, size, maker, and configuration.

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B.3.1.2 Graphics Configuration



Primary Display

Select which of IGFX/PEG/PCI Graphics device should be the Primary Display.

Internal Graphics

Keeps IGFX enabled based on Setup options.

GTT Size

Selects GTT Size.

Aperture Size

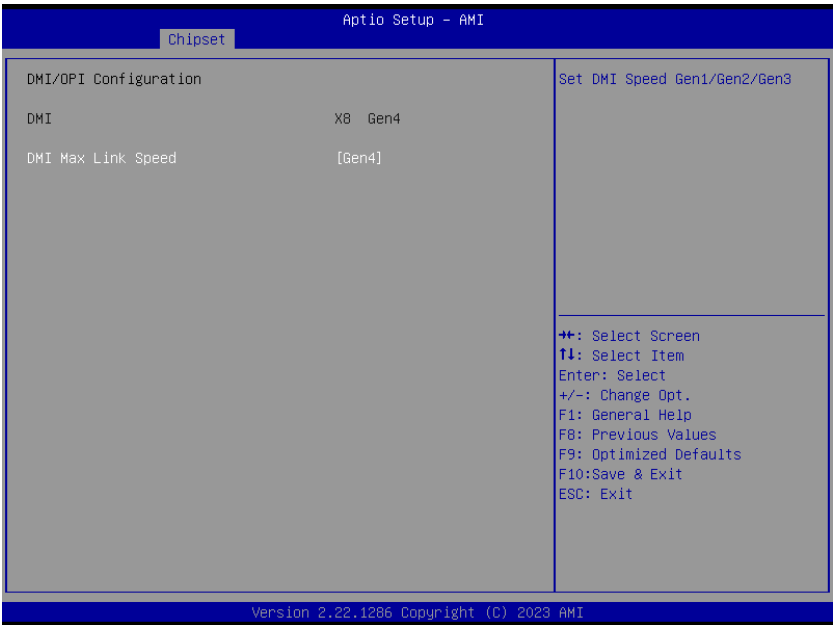
Selects Aperture Size.

DVMT Pre-Allocated

Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

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B.3.1.3 DMI/OPI Configuration



DMI/OPI Configuration

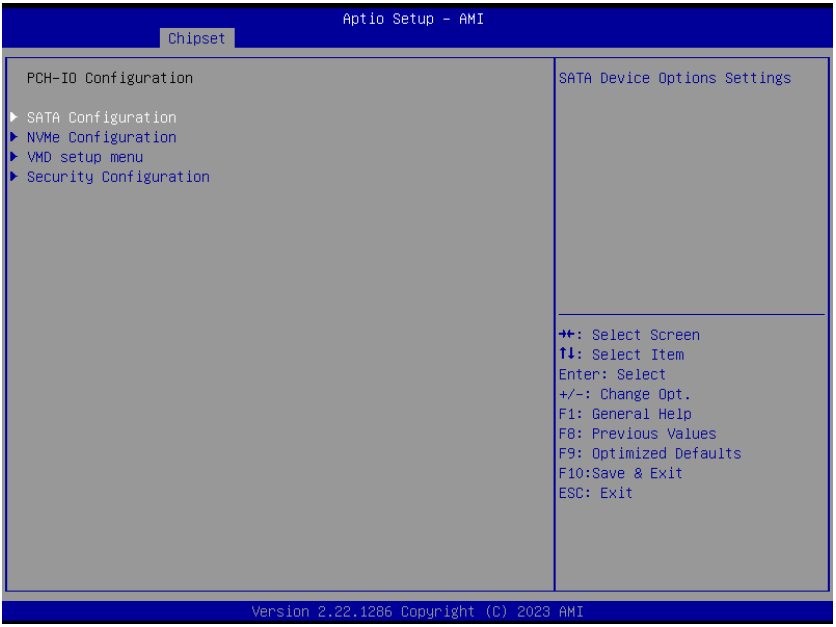
Displays DMI link speed and width.

DMI Max Link Speed

Sets DMI Speed to Gen1/Gen2/Gen3/Gen4.

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B.3.2 PCH-IO Configuration

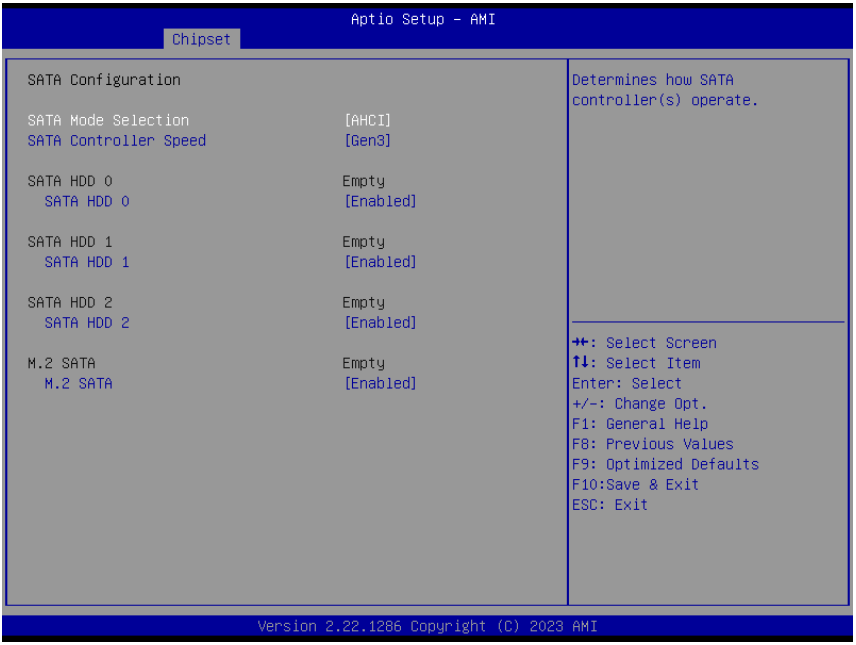


PCH-IO Configuration

Configures SATA, NVMe, VMD, and Secruity.

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B.3.2.1 SATA Configuration



SATA Mode Selection

Determines how SATA controller(s) operate.

SATA Controller Speed

Sets maximum speed the SATA controller can support.

SATA HDD 0

Enables/disables SATA HDD 0.

SATA HDD 1

Enables/disables SATA HDD 1.

SATA HDD 2

Enables/disables SATA HDD 2.

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M.2 SATA

Enables/disables M.2 SATA.

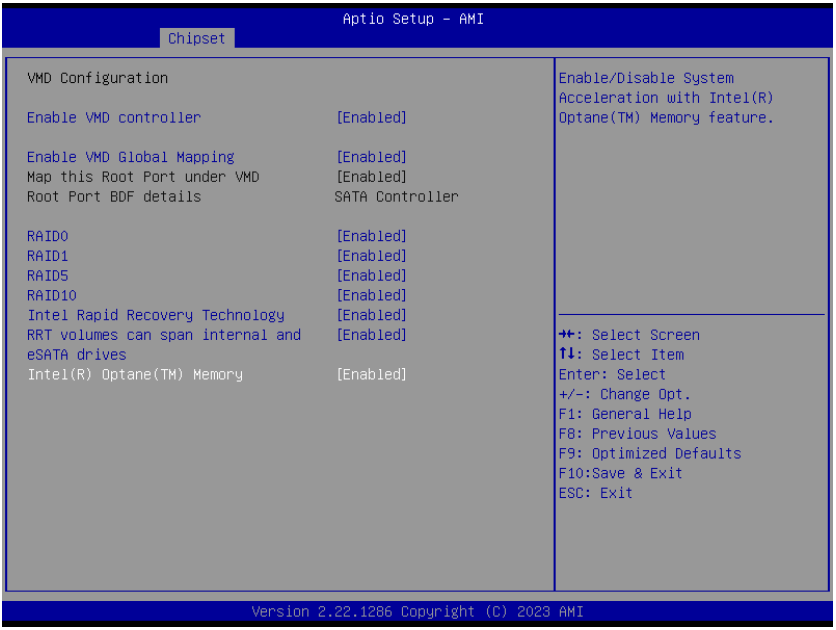
B.3.2.2 NVMe Configuration



Displays NVMe device status.

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B.3.2.3 VMD Setup Menu



Enable VMD controller

Enable/Disable VMD controller.

Enable VMD Global Mapping

Enable/Disable VMD Global Mapping.

RAID0

Enable/Disable RAID0 support.

RAID1

Enable/Disable RAID1 support.

RAID5

Enable/Disable RAID5 support.

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RAID10

Enable/Disable RAID10 support.

Intel Rapid Recovery Technology

Enable/Disable Intel Rapid Recovery Technology.

RRT volumes can span internal and eSATA drives

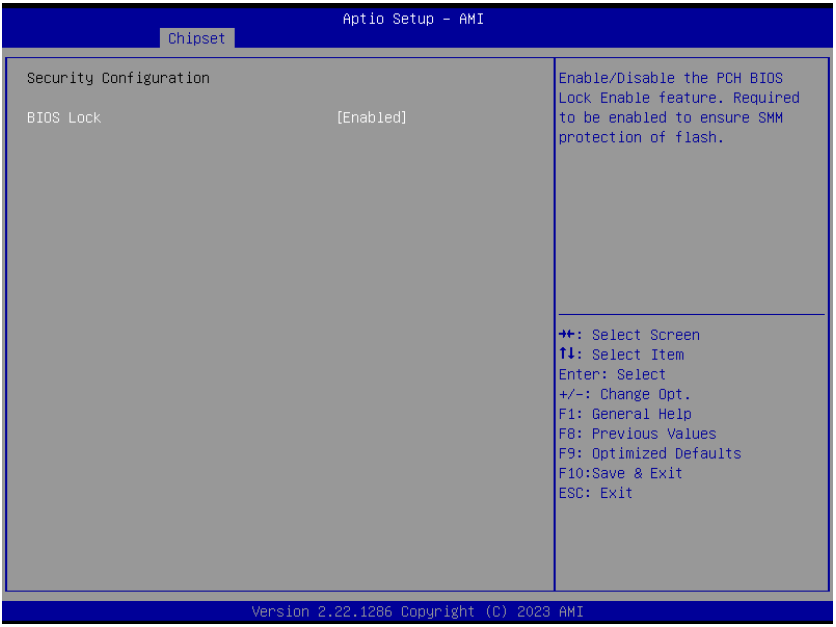
Enable/Disable RRT volumes can span internal and eSATA drives.

Intel® Optane™ Memory

Enable/Disable System Acceleration with Intel® Optane™ Memory feature.

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B.3.2.4 Security Configuration

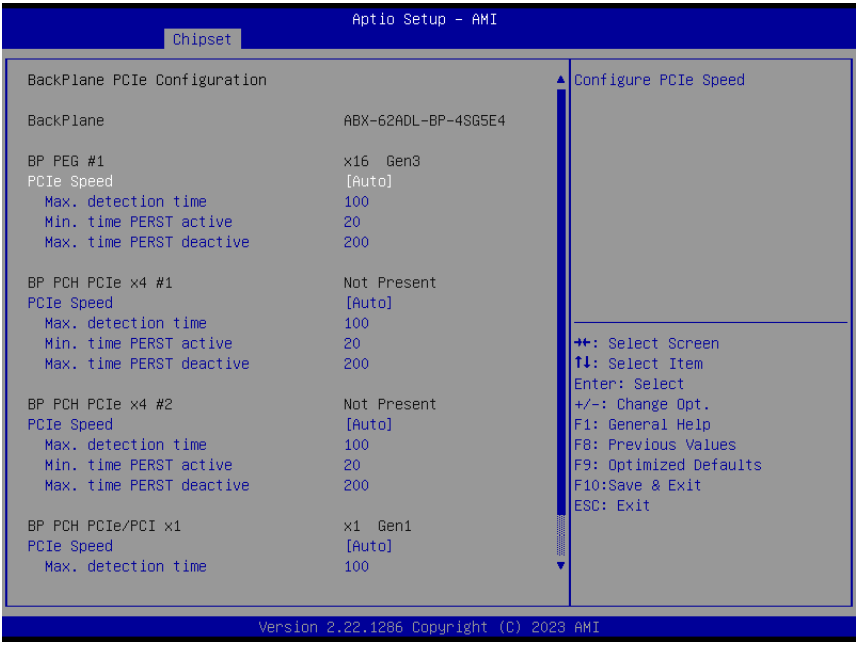


BIOS Lock

Enables/disables PCH BIOS Lock Enable. Required to be enabled to ensure SMM flash protection.

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B.3.3 BackPlane PCIe Configuration



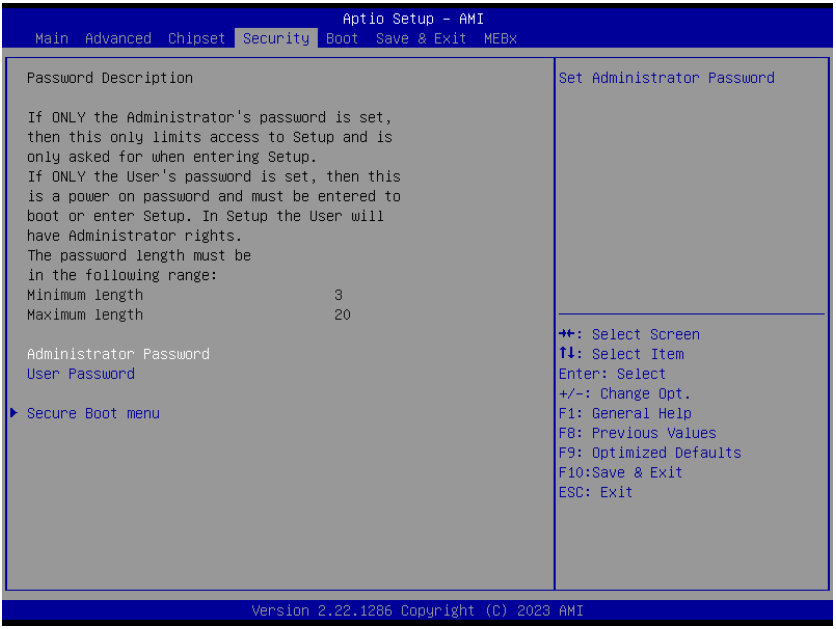
Displays BackPlane model name, slot information, speed control, and time tunings.

B.3.4 PCH digital I/O device

Disable/Enable ACPI GPIO Device support for PCH digital I/O and user LED.

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B.4 Security



If only the Administrator password is set, access is limited and the password requested on Setup. If User password is set, it acts as a power-on password and must be entered to boot or enter setup.

Administrator Password

Sets Administrator Password.

User Password

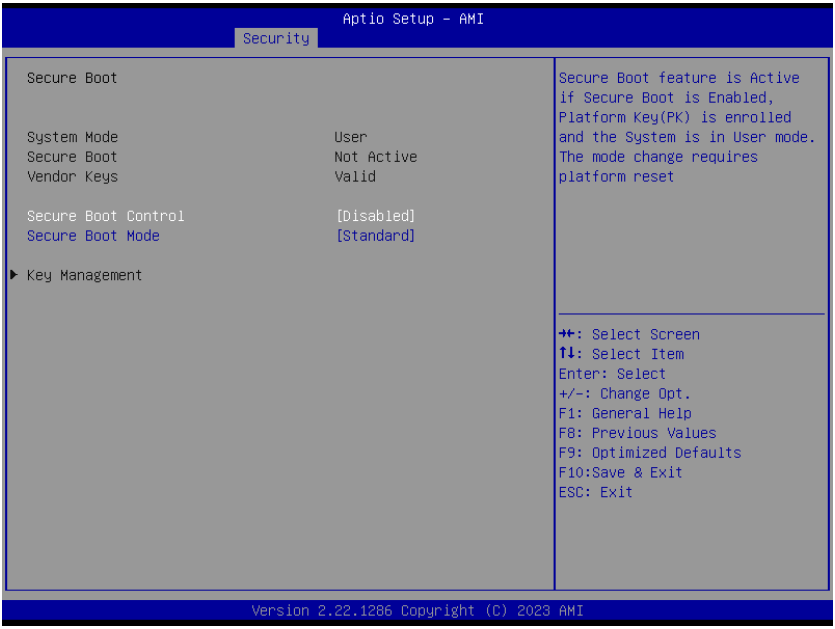
Sets User Password.

Secure Boot Menu

Configures Secure Boot.

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B.4.1 Secure Boot Menu



Secure Boot Control

Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. Mode change requires platform reset.

Secure Boot Mode

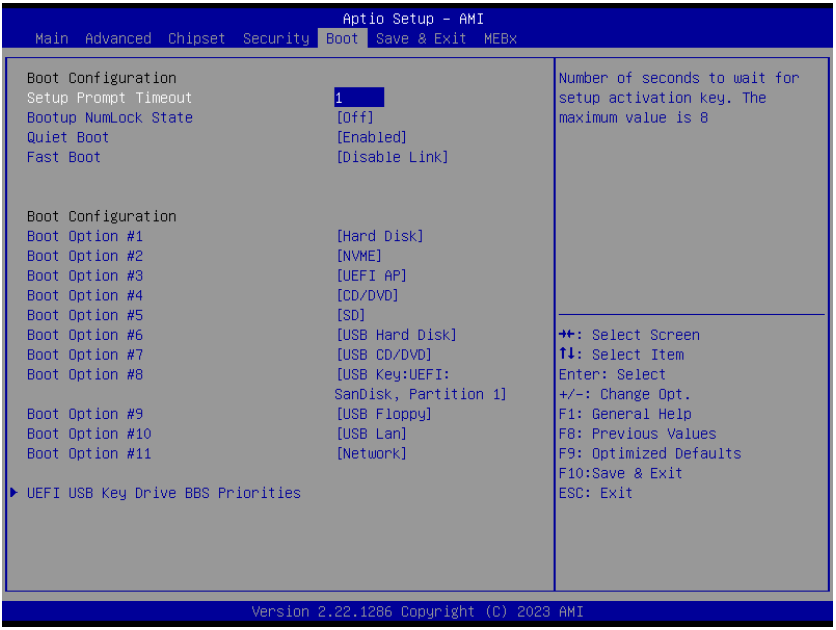
Selects from Standard or Custom. In Custom, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Key Management

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

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B.5 Boot



Setup Prompt Timeout

Number of seconds to wait for setup activation key. The maximum value is 8.

Bootup Num-Lock State

Sets keypad Number Lock status following boot.

Quiet Boot

Option	Description
Disabled	Directs BIOS to display POST messages
Enabled	Directs BIOS to display the OEM logo.

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Fast Boot

Option	Description
Disabled	Directs BIOS to perform all POST tests.
Enabled	Directs BIOS to skip certain POST tests to boot faster.

While enabling Fast Boot can reduce system ready time, some prerequisites can reduce effectiveness.

Boot Configuration

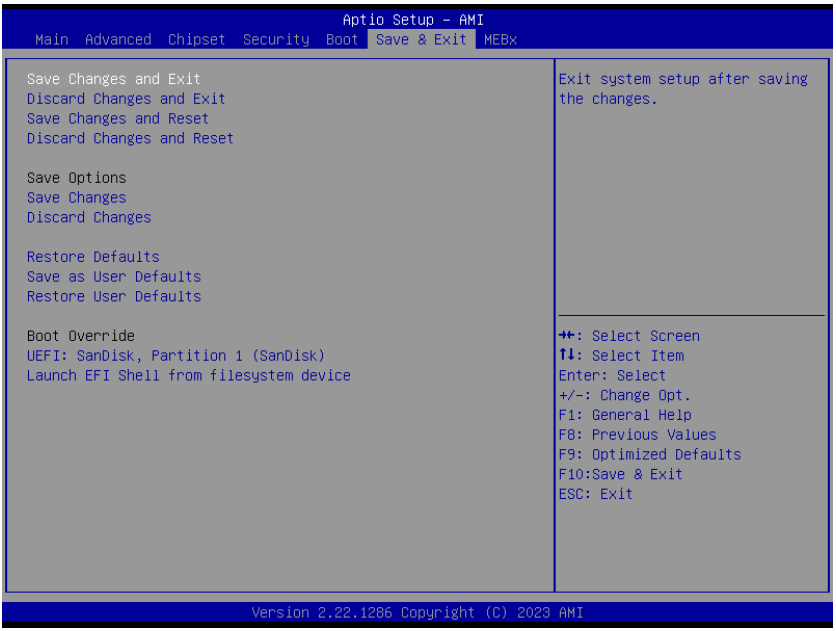
Specifies the priority of boot devices, all of which are detected during POST and displayed. Target Boot Option # and click to select the desired device.

UEFI USB Hard Drive Disk Drives BBS Priorities

Specifies Boot Device Priority sequence from available UEFI USB Drives.

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B.6 Save & Exit



Save Changes and Exit

Exits system setup after saving the changes.

Discard Changes and Exit

Exits system setup without saving any changes.

Save Changes and Reset

Resets the system setup after saving changes.

Discard Changes and Reset

Resets system setup without saving any changes.

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Save Changes

Saves Changes so far to any of the setup options.

Discard Changes

Discards Changes so far to any of the setup options.

Restore Defaults

Sets all BIOS options to default settings, designed for maximum system stability but less than maximum performance. Select Restore Defaults if the computer encounters system configuration problems.

Save as User Defaults

Saves all changes so far as User Defaults.

Restore User Defaults

Restores user defaults to all setup options.

Launch EFI Shell from filesystem device

Attempts to launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

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B.7 MEBx

Intel® AMT

Enable/Disable Intel® AMT support.

Intel® AMT Configuration

Select Intel® AMT configurations in BIOS.

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Appendix C Watchdog Timer (WDT) Function Library

This appendix describes use of the watchdog timer (WDT) function library for the MVP-6200 controller. The watchdog timer is a hardware mechanism provided to reset the system if the operating system or an application stalls. After starting, the watchdog timer in the application must be periodically reset before the timer expires. Once the watchdog timer expires, a hardware-generated signal is sent to reset the system.

C.1 WDT with API/Windows

The WDT API library files and a demo program (incl. source code) can be downloaded from: https://www.adlinktech.com/Products/Industrial_PCs_Fanless_Embedded_PCs/ExpandableFanlessEmbeddedComputers/MVP-6200_Series

To use the WDT function library for the MVP-6200, include the header file WDT.h and linkage library WDT.lib in the C++ project.

InitWDT

Initializes the watchdog timer function. Must be called before the invocation of any other WDT function.

Syntax

C/C++

```
BOOL InitWDT()
```

Parameters

None

Return codes

TRUE if watchdog timer is successfully initialized.

FALSE if watchdog timer fails to initialize.

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SetWDT

Sets the timeout value of the watchdog timer. There are two parameters for this function to indicate the timeout ticks and unit. ResetWDT or StopWDT should be called before the expiration of watchdog timer, or the system will reset.

Syntax

C/C++

```
BOOL SetWDT(BYTE tick, BYTE unit)
```

Parameters

`tick`

Specify the number of ticks for watchdog timer. A valid value is 1 - 60.

`unit`

Specifies the timeout ticks of the watchdog timer.

Value	Description
0	The unit for one tick is 1 second. For example, when one tick is specified as 15 and the unit as 0, the timeout value is 15 seconds.
1	The unit for one tick is one minute. For example, whenone tick is specified as 60 and the unit as 1, the timeout value is 60 minutes.

Return codes

TRUE if timeout value of watchdog timer is successfully set.

FALSE if timeout value of watchdog timer is failed to set.

StartWDT

Start the watchdog timer function. Once the StartWDT is invoked, the watchdog timer starts. ResetWDT or StopWDT should be called before the expiration of watchdog timer, or the system will reset.

Syntax

C/C++

```
BOOL StartWDT()
```


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Parameters

None

Return codes

TRUE if watchdog timer is successfully started.

FALSE if watchdog timer is failed to start.

ResetWDT

Reset the watchdog timer. The invocation of ResetWDT allows restoration of the watchdog timer to the initial timeout value specified in SetWDT function. ResetWDT or StopWDT should be called before the expiration of the watchdog timer, or the system will reset.

Syntax

C/C++

```
BOOL ResetWDT()
```

Parameters

None

Return codes

TRUE if watchdog timer is successfully reset.

FALSE if watchdog timer fails to reset.

StopWDT

Stops the watchdog timer.

Syntax

C/C++

```
BOOL StopWDT()
```

Parameters

None

Return codes

TRUE if watchdog timer is successfully stopped.

FALSE if watchdog timer fails to stop.

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C.2 WDT with DOS/Linux

Under Linux, please program the WDT function using the eSPI IO registers according to the sample program as follows.

```
#include <dos.h>
#include <stddef.h>
#include <stdio.h>
/* Config NCT6126D to enter config mode */
EnterConfig(void)
{
outp(0x4E, 0x87);
outp(0x4E, 0x87);
}
/* Config to exit config mode */
ExitConfig(void)
{ outp(0x4E, 0xAA);
 }
/* Read byte */
unsigned char r_reg(unsigned char regoffset)
{ outp(0x4E, regoffset);
return inp(0x4F); }
/* Write byte */
void w_reg(unsigned char regoffset, unsigned char
data)
{ outp(0x4E, regoffset); outp(0x4F, data);
}
main(void)
{
unsigned int    count;
/* print program title  */
printf("-----------------MVP-6200 WDT Demo-----------
-----\n");
```


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```
printf("Init and config GPIO
ports<<<<<<<<<<<<<<<<<<<<<<<<\n");
printf("-----------------------------------------------
----\n");
EnterConfig();
/* config WDT registers */
w_reg(0x07,0x08);
/* enable keyboard interrupt to reset WDT timeout
value */
w_reg(0xF2,r_reg(0xF2)|0x40);
/* set unit as second */
w_reg(0xF0,r_reg(0xF0)&~0x04);
/* start the Watchdog */
w_reg(0x30,0x01);
/* set timeout value as 30 seconds */
/* WDT start automatically while timeout value is set
*/
w_reg(0xF1,0x1E);


printf("-----------------------------------------------
-----\n");
printf("WDT is set and counting down
now.<<<<<<<<<<<<<<<<<\n");
printf("-----------------------------------------------
-----\n");
for(count=30;count!=0;count--)
{ printf("Countdown %2d :  .\n",count);
/* reset WDT timeout value to 10 seconds */
/* w_reg(0x73,0x0A); */
sleep(1);
}
/* disable WDT */
/* WDT stop while timeout value is set to zero */
w_reg(0x30,0x00);
```


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```
printf("WDT is disable. Program is terminating.");
ExitConfig();
return 0;
}
```


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Appendix D Digital Input/Output Function Library

DI/O provides input/output to support inter-device communications. Simple programming guides allow easy transmission of digital signals between the system and attached peripherals.

DI/O with API/Windows

Matrix DI/O API library files and a demo program (incl. source code) can be downloaded from http://www.adlinktech.com.

To use the DI/O function library for MVP-6200 series, include the header file awl.h and linkage library awl.lib in the C++ project. DI/O functions are as follows.

AwlDioGetValue

Reads the digital logic state of a digital input line.

Syntax

C/C++

```
int __stdcall AwlDioGetValue(int Index)
```

Parameter(s)

Index

Indexes the digital logic state of MVP-6200 digital input channels 1 to 8 (bit 0 to 7)

Return codes

```
0: Operation Success
-1: Operation Failed
```

AwlDioSetValue

Sets the digital logic state of the digital output line.

AwlDioGetValue

Reads the digital logic state of a digital input line.

Syntax

C/C++

```
int __stdcall AwlDioGetValue(int Index , int
     Value)
```


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Parameter(s)

Index

Indexes the digital logic state of MVP-6200 digital input channels 1 to 8 (bit 0 to 7)

Value

Sets the digital logic state of MVP-6200 digital output channels 1 to 8 (bit 0 to 7) to 0 or 1.

Return codes

```
0: Operation Success
-1: Operation Failed
```


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Important Safety Instructions

For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

- Read these safety instructions carefully.
- Keep the User's Manual for future reference.
- Read the Specifications section of this manual for detailed information on the recommended operating environment.
- The device can be operated at an ambient temperature of 50ºC with DC input; 35ºC with adapter input.
- It is recommended that the device be installed in Information Technology Rooms that are in accordance with Article 645 of the National Electrical Code and NFPA 75.
- To avoid electrical shock and/or damage to device:
  - Keep device away from water or liquid sources.
  - Keep device away from high heat or humidity.
  - Keep device properly ventilated (do not block or cover ventilation openings).
  - Always use recommended voltage and power source settings.
  - Always install and operate device near an easily accessible electrical outlet.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate device on stable surfaces and/or recommended mountings.
  - The power must be connected to a ground connection.
- If the device will not be used for long periods of time, turn off and unplug from its power source.
- Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools.

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- A Lithium-type battery may be provided for uninterrupted backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type; please dispose of used batteries appropriately.

- The device must be serviced by authorized technicians when:
  - The power cord or plug is damaged
  - Liquid has entered the device interior
  - The device has been exposed to high humidity and/or moisture
  - The device is not functioning or does not function according to the User's Manual
  - The device has been dropped and/or damaged and/or shows obvious signs of breakage
- Disconnect the power supply cord before loosening the thumbscrews and always fasten the thumbscrews with a screwdriver before starting the system up
- It is recommended that the device be installed only in a server room or computer room where access is:
  - Restricted to qualified service personnel or users familiar with restrictions applied to the location, reasons therefor, and any precautions required
  - Only afforded by the use of a tool or lock and key, or other means of security, and controlled by the authority responsible for the location
- The wire of terminal block should be fixed by an authorized technician with a recommended wire range: 30-10 sol/str, wire type: Cu, torque (Lb IN.): 5.3



BURN HAZARD

Hot surface! Do not touch! Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

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Consignes de Sécurité Importante

S'il vous plaît prêter attention stricte à tous les avertissements et mises en garde figurant sur l'appareil, pour éviter des blessures ou des dommages.

- *Lisez attentivement ces consignes de sécurité.*
- *Conservez le manuel de l'utilisateur pour pouvoir le consulter ultérieurement.*
- *Lisez la section Spécifications de ce manuel pour des informations détaillées sur l'environnement d'exploitation recommandé.*
- *Le dispositif peut être utilisé à une température ambiante de 50ºC avec une entrée DC ; 35ºC avec une entrée d'adaptateur.*
- *Il est recommandé d'installer l'appareil dans des salles de technologie de l'information conformes à l'article 645 du National Electrical Code et à la NFPA 75.*
- *Lorsque l'installation/le montage ou la désinstallation/le retrait du périphérique est necessaire:*
  - *Mettez l'appareil hors tension et débranchez tous les cordons/câbles d'alimentation*
  - *TeRéinstallez tous les couvercles de châssis avant de rétablir l'alimentation*
- *Pour éviter les chocs électriques et/ou d'endommager l'appareil:*
  - *Tenez l'appareil à l'écart de toute source d'eau ou de liquide.*
  - *Tenez l'appareil à l'écart d'une forte chaleur ou d'une humidité élevée.*
  - *Maintenez l'appareil correctement ventilé (n'obstruer ou ne couvrez pas les ouvertures de ventilation).*
  - *Utilisez toujours les réglages de tension et de source d'alimentation recommandés.*
  - *Installez et utilisez toujours l'appareil près d'une prise de courant facilement accessible.*

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- *Fixez le cordon d'alimentation (ne placez aucun objet sur le cordon d'alimentation).*
- *Installez/fixez et utilisez l'appareil uniquement sur des surfaces stables et/ou sur les fixations recommandées.*
- *L'ordinateur Smart Touch est alimenté par un adaptateur ou une source CC. Veuillez vous assurer que l'adaptateur ou la source CC doit conserver la connexion à la terre s'il est doté d'une protection.*

- Si l'appareil ne doit pas être utilisé pendant de longues périodes, éteignez-le et débranchez-le de sa source d'alimentation
- *N'essayez jamais de réparer l'appareil, qui ne doit être réparé que par un personnel technique qualifié à l'aide d'outils appropriés*
- *Une batterie de type Lithium peut être fournie pour une alimentation de secours ininterrompue ou d'urgence.*



ATTENTION: Risque d'explosion si la pile est remplacée par une autre de type incorrect. Veuillez jeter les piles usagées de façon appropriée.

- *L'appareil doit être entretenu par des techniciens agrees lorsque:*
  - Le cordon d'alimentation ou la prise est endommagé(e)
  - Un liquide a pénétré à l'intérieur de l'appareil.
  - L'appareil a été exposé à une forte humidité et/ou de la buée.
  - L'appareil ne fonctionne pas ou ne fonctionne pas selon le manuel de l'utilisateur.
  - L'appareil est tombé et/ou a été endommagé et/ou présente des signes évidents de dommage.
- *Débranchez le cordon d'alimentation avant de desserrer les vis à oreilles et serrez toujours les vis à oreilles avec un tournevis avant de mettre le système en marche.*
- *Il est recommandé d'installer l'appareil uniquement dans une salle de serveurs ou une salle informatique où l'accès est:*

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- ▷ *Réservé au personnel de service qualifié ou aux utilisateurs familiarisés avec les restrictions appliquées à l'emplacement, aux raisons de ces restrictions et toutes les précautions requises*
- ▷ *Uniquement autorisé par l'utilisation d'un outil, d'une serrure et d'une clé, ou d'un autre moyen de sécurité, et contrôlé par l'autorité responsable de l'emplacement.*

▶ *Le fil du bornier doit être fixé par un technicien agréé et recommandation pour la gamme de fils : 30-10 sol/str, type de fil : Cu, couple (Lb IN.) : 5,3*

	***RISQUE DE BRÛLURES*** ***Partie chaude!*** *Ne touchez pas cette surface, cela pourrait entraîner des blessures. Pour éviter tout danger, laissez la surface refroidir avant de la toucher.*

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