User Manual

MERA-2000 Series

Modular Embedded Computers
with Intel® Celeron® J1900 Processor

Arestech
Embedded & Automation Solutions

Record of Revisions

Version	Issue Date	Descriptions	Made By
1.0	2021/09/27	First Release	Jerry

Arestech
Embedded & Automation Solutions

Copyright

The documentation and the software included with this product are copyrighted by Arestech Cooperation Co., Ltd. All rights are reserved. No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of Arestech Cooperation Co., Ltd. Information provided in this manual is intended to be accurate and reliable.

Trademark Acknowledgement

Brand and product names are registered trademarks of their respective owners.

Disclaimer

Arestech reserves the right to make changes, without notice, to any product described or contained in this manual to improve design and/or performance. Applications that are described in this manual are for illustration purposes only. Arestech makes no representation or guarantee that such application will be suitable for the specified use without further testing or modification. This manual might include unintentional typographical or technical errors. Arestech will periodically correct such erroneous files and incorporate these corrections into the new version of the manual.

Technical Support and Assistance

If there is a problem with your product and you are unable to get a solution from the user's manual, please contact the local distributor.

Product Warranty (2 Years)

Arestech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the invoice date. This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Arestech, or which have been subject to misuse, abuse, accident, or improper installation. Arestech assumes no liability under the terms of this warranty as a consequence of such events. When a defect is discovered, please obtain an RMA (return merchandize authorization) from our website, which allows us to process your return more quickly. The returned product must be properly packaged in its original packaging to obtain warranty service.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. For safety reasons, the equipment should be opened only by qualified service personnel. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
14. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 55° C (131° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
15. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage:

1. To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Contents

Chapter 1. Product Introductions 8
1.1 Overview 8
1.2 Hardware Specifications 9
1.2.1 MERA-2000-2L Specification 9
1.2.2 MERA-2001(S)-2L Series Specification 10
1.3 Panel I/O 11
1.3.1 Front Panel 11
1.3.2 Rear Panel 13
1.3.3 Right Panel 15
1.4 Mechanical Dimensions 16
1.4.1 MERA-2000-2L 16
1.4.1 MERA-2001(S)-2L 17
Chapter 2. Switches and Connectors 18
2.1 Switches and Connectors 18
2.1.1 Front View 18
2.1.2 Rear View 18
2.1.3 Right View 19
2.2 Switches, LEDs and Connectors Definitions 20
2.3 Switch Definitions 22
2.4 Connector Definitions 25
Chapter 3. System Setup 29
3.1 Installing A SODIMM 29
3.2 Replacing A CMOS Battery 33
3.3 Installing A mini-PCIe / mSATA Module 37
3.4 Installing An Antenna 40
3.5 Installing A SIM Card or CFast Card 42
3.6 Installing The Front Removable SATA HDD Bay 43
3.7 Installing The Right Removable SATA HDD Bay (MERA-2001(S)-2L Only) 44
3.8 Installing The Wall Mount Brackets 45

3.9 Installing The DIN-Rail Holder.....46
Chapter 4. BIOS Setup.....47
4.1 BIOS Introduction.....47
4.2 Main Setup.....48
4.3 Advanced Setup.....49
4.3.1 Trusted Computing (Optional).....49
4.3.2 ACPI Settings.....50
4.3.3 Super IO Configuration.....51
4.3.4 Hardware Monitor.....55
4.3.5 Serial Port Console Redirection.....56
4.3.6 CPU Configuration.....57
4.3.7 PPM Configuration.....58
4.3.8 SATA Configuration.....59
4.3.9 OS Selection.....60
4.3.10 Network Stack Configuration.....61
4.3.11 CSM Configuration.....62
4.3.12 USB Configuration.....64
4.4 Chipset.....65
4.4.1 North Bridge.....66
4.4.2 South Bridge.....68
4.5 Security.....70
4.6 Boot 71
4.7 Save & Exit.....72

Chapter 1. Product Introductions

1.1 Overview

MERA-2000 series is a compact fanless system with Intel® Celeron® J1900 quad-core processor. The system integrates rich I/O and supports vehicle power ignition function. It has a wide-range DC power input from 9V to 48V, wide operating temperature range of -40°C to +70°C, and an industrial-grade protection (RVP, OVP, OCP, ESD, surge, etc.). This design standard ensures that MERA-2000 series system can operate in harsh and demanding environments.

1.2 Hardware Specifications

1.2.1 MERA-2000-2L Specification

Processor
- Onboard Intel® Celeron® J1900 Quad Core Processor, up to 2.42 GHz

BIOS
- AMI BIOS, 64Mbit SPI Flash ROM built on board.

Memory
- 1x DDR3L-1066/ 1333MHz 204-Pin SO-DIMM Socket
- Support up to 8GB (un-buffered and non-ECC)

Graphics
- Integrated Intel® HD Graphics
- Supports Dual Independent Display
- 1x DVI-I (DVI-D+VGA)
- 1x DisplayPort

Audio
- Realtek ALC888S
- High Definition Audio

Ethernet
- 2x Intel® i210-AT GbE LAN Port, Support Wake-on-LAN and PXE

Watchdog Timer
- Software Programmable Supports 1~255 sec. System Reset

I/O Ports
- 1x DVI-I
- 1x DisplayPort
- 2x GbE RJ45
- 1x USB 3.0 Port and 4x USB 2.0 Port
- 2x RS232/422/485 with Auto Flow Control, DB9
- 1x Line-out and 1x Mic-in, Phone Jack 3.5mm
- 4x Isolated DI and 4x Isolated DO Port, 10-Pin Terminal Block
- 1x Power On/Off Button
- 1x AT/ATX Mode Switch
- 1x PC/Car Mode Switch
- 1x External Clear CMOS Switch
- 1x Remote Power on/off Connector, 2-Pin Terminal Block

Expansion
- 1x Full-size Mini-PCIe Socket (mux with mSATA)
- 1x Full-size Mini-PCIe Socket
- 2x SIM Socket
- 4x Antenna Hole

Storage
- 1x Removable 2.5" SATA HDD Bay
- 1x CFast Socket (Shared by mSATA)
- 1x mSATA Socket (Shared by CFast)

Power Requiement
- Support Hardware AT, ATX Power Mode
- 1x 3-pin Terminal Block Connector with Power Input 9~48VDC
- Power Ignition Sensing
- 1x Optional AC/DC 12V/5A, 60W Power Adapter

Protection
- Over Voltage Protection (OVP) Up to 52V
- Reverse Voltage Protection (RVP) up to -48V
- Over Current Protection (OCP) 20A

Environment
- Operating Temperature: Ambient with Air Flow: -40°C to 70°C (with Industrial Grade Peripherals)
- Storage Temperature: -40°C to 80°C
- Relative humidity: 10%~95% (non-condensing)
- Shock: 50 Grms, Half-sine 11 ms
- Vibration: 5 Grms, 5-500 Hz, 3 Axis

Physical
- Dimension (WxDxH): 168 x 135 x 47 mm
- Extruded Aluminum with Heavy Duty Metal
- Wall mounting
- DIN-Rail mounting (Optional)

1.2.2 MERA-2001(S)-2L Series Specification

Processor
- Onboard Intel® Celeron® J1900 Quad Core Processor, up to 2.42 GHz

BIOS
- AMI BIOS, 64Mbit SPI Flash ROM built on board.

Memory
- 1x DDR3L-1066/1333MHz 204-Pin SO-DIMM Socket
- Support up to 8GB (un-buffered and non-ECC)

Graphics
- Integrated Intel® HD Graphics
- Supports Dual Independent Display
- 1x DVI-I (DVI-D+VGA)
- 1x DisplayPort

Audio
- Realtek ALC888S
- High Definition Audio

Ethernet
- 2x Intel® i210-AT GbE LAN Port, Support Wake-on-LAN and PXE

Watchdog Timer
- Software Programmable Supports 1~255 sec. System Reset

I/O Ports
- 1x DVI-I
- 1x Display Port
- 2x GbE RJ45
- 1x USB 3.0 Port and 4x USB 2.0 Port
- 2x RS232/422/485 with Auto Flow Control, DB9 (MERA-2001-2L only)
- 6x RS232/422/485 with Auto Flow Control, DB9 (MERA-2001S-2L only)
- 1x Line-out and 1x Mic-in, Phone Jack 3.5mm
- 4x Isolated DI and 4x Isolated DO Port, 10-Pin Terminal Block
- 1x Power On/Off Button
- 1x AT/ATX Mode Switch
- 1x PC/Car Mode Switch
- 1x External Clear CMOS Switch
- 1x Remote Power on/off Connector, 2-Pin Terminal Block

Expansion
- 1x Full-size Mini PCIe Socket (mux with mSATA)
- 1x Full-size Mini PCIe Socket
- 2x SIM Socket
- 4x Antenna Hole

Storage
- 2x Removable 2.5" SATA HDD Bay
- 1x CFast Socket (Shared by 1x SATA and mSATA)
- 1x mSATA Socket (Shared by 1x SATA and CFast)

Power Requiement
- Support Hardware AT, ATX Power Mode
- 1x 3-pin Terminal Block Connector with Power Input 9~48VDC
- Power Ignition Sensing
- 1x Optional AC/DC 12V/5A, 60W Power Adapter

Protection
- Over Voltage Protection (OVP) Up to 52V
- Reverse Voltage Protection (RVP) up to -48V
- Over Current Protection (OCP) 20A

Environment
- Operating Temperature: Ambient with Air Flow: -40°C to 70°C (with Industrial Grade Peripherals)
- Storage Temperature: -40°C to 80°C
- Relative humidity: 10%~95% (non-condensing)
- Shock: 50 Grms, Half-sine 11 ms
- Vibration: 5 Grms, 5-500 Hz, 3 Axis

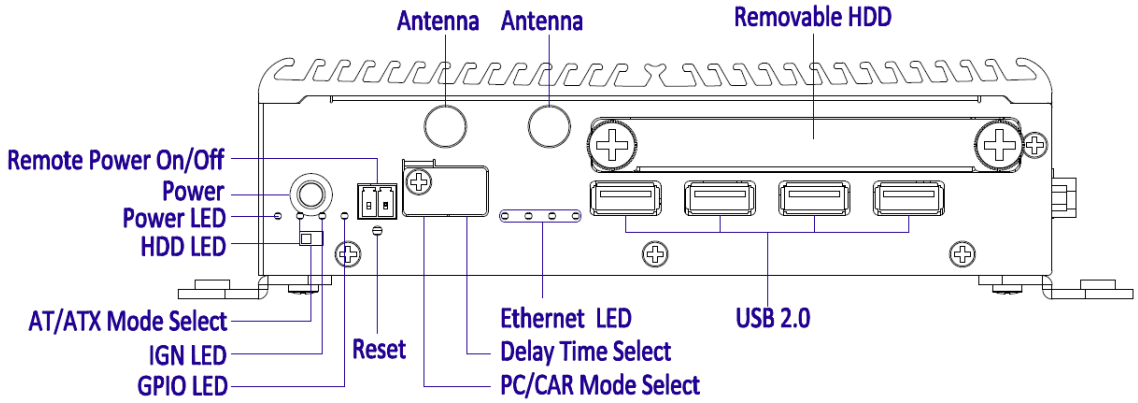
Physical
- Dimension (WxDxH): 168 x 135 x 62 mm
- Extruded Aluminum with Heavy Duty Metal
- Wall mounting
- DIN-Rail mounting (Optional)

1.3 Panel I/O

1.3.1 Front Panel

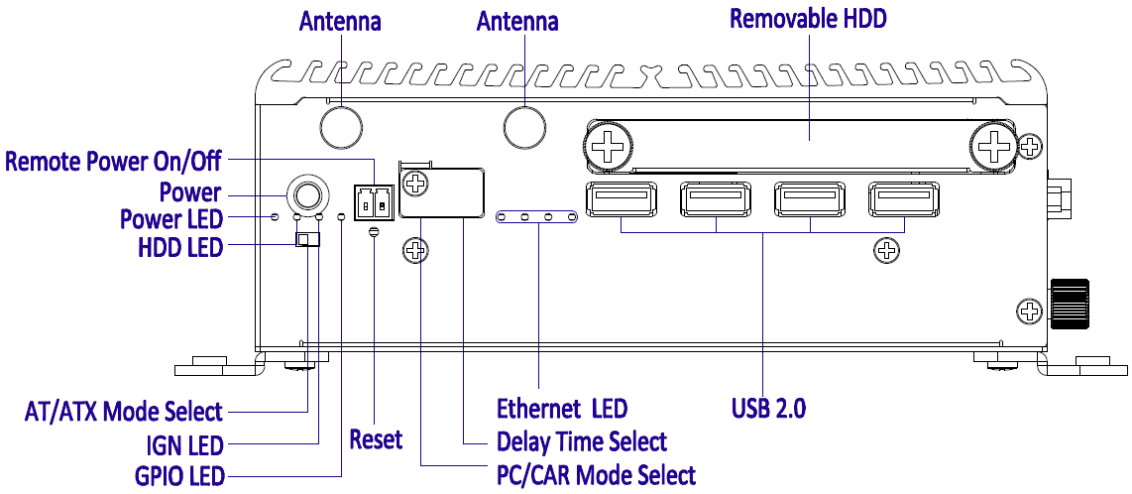
- **Power On/Off Button**
  Press to turn on or off the system
- **AT/ATX Mode Select Switch**
  Used to select AT or ATX power mode
- **Reset Button**
  Used to reset the system
- **Remote Power On/Off Terminal Block**
  Used to plug in a remote power on/off terminal block
- **PC/Car Mode Select Switch**
  Used to select PC or Car mode
- **Delay Time Select Switch**
  Used to select car mode system to turn off delay time
- **USB 2.0 Port**
  Used to connect a USB 2.0/1.1 device
- **Removable HDD Port**
  Removable 2.5" SATA HDD area
- **Power LED**
  Indicates the power status of the system
- **HDD LED**
  Indicates the status of the hard drive
- **IGN LED**
  Indicates the status of the active ignition
- **GPIO LED**
  Indicates the status of the GPIO defined by customer
- **Ethernet LEDs**
  Indicates the status of the active LAN
- **Antenna Hole**
  Used to connect an antenna for optional mini-PCIe Wi-Fi module

MERA-2000-2L



Arestech
Embedded & Automation Solutions

MERA-2001(S)-2L

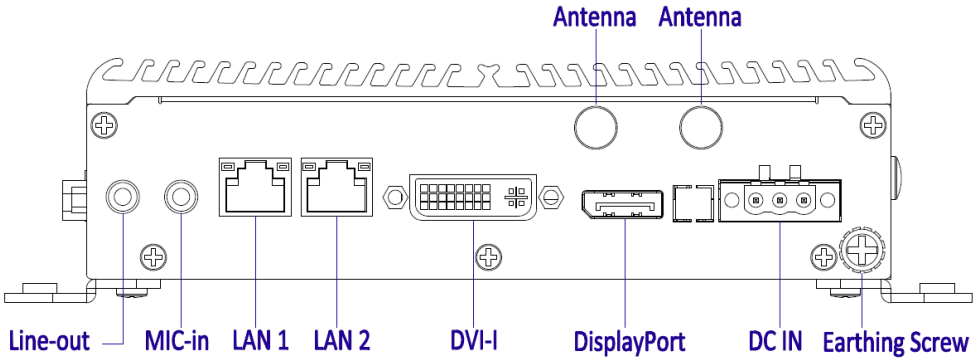


Arestech
Embedded & Automation Solutions

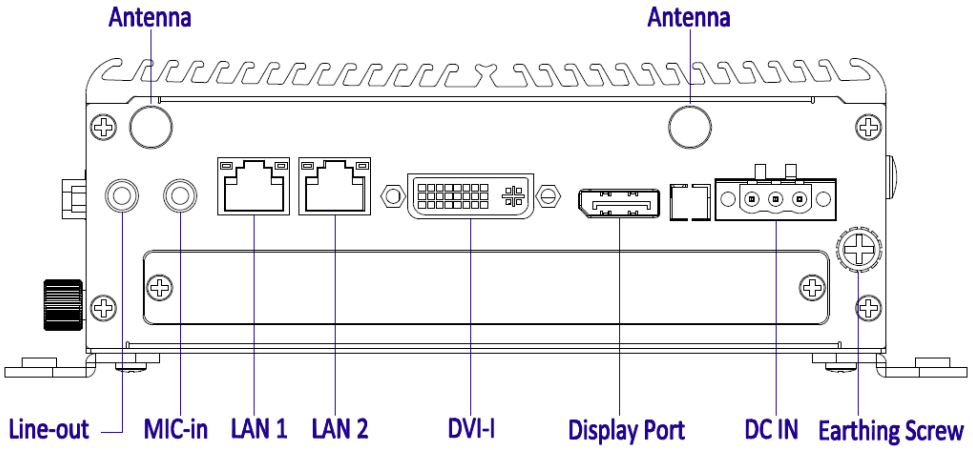
1.3.2 Rear Panel

- **Line Out**
  Used to connect a speaker
- **Mic In**
  Used to connect a microphone
- **LAN Port**
  Used to connect the system to a local area network
- **DVI-I Port**
  Used to connect a DVI monitor or an optional split cable for dual-display mode
- **Display Port**
  Used to connect a DisplayPort monitor
- **DC In**
  Used to plug in a DC power input with terminal block
- **Earthing Screw Hole**
  Used to connect the ground wire
- **Antenna Hole**
  Used to connect an antenna for optional mini-PCIe Wi-Fi module
- **COM Port**
  COM3 ~ COM6 support RS232/422/485 serial device (MERA-2001(S)-2L only)
- **USB 2.0 Port**
  Used to connect a USB 2.0/1.1 device

MERA-2000-2L

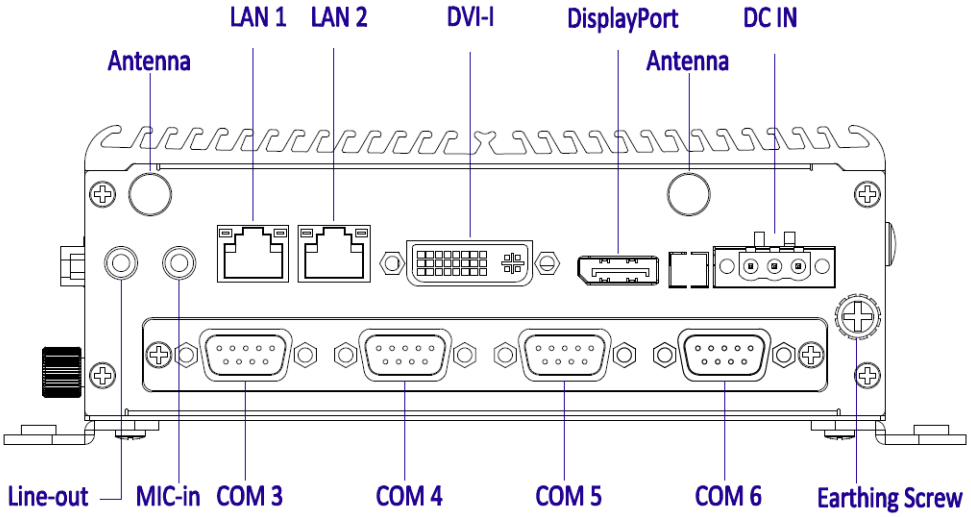


MERA-2001-2L



Arestech
Embedded & Automation Solutions

MERA-2001S-2L

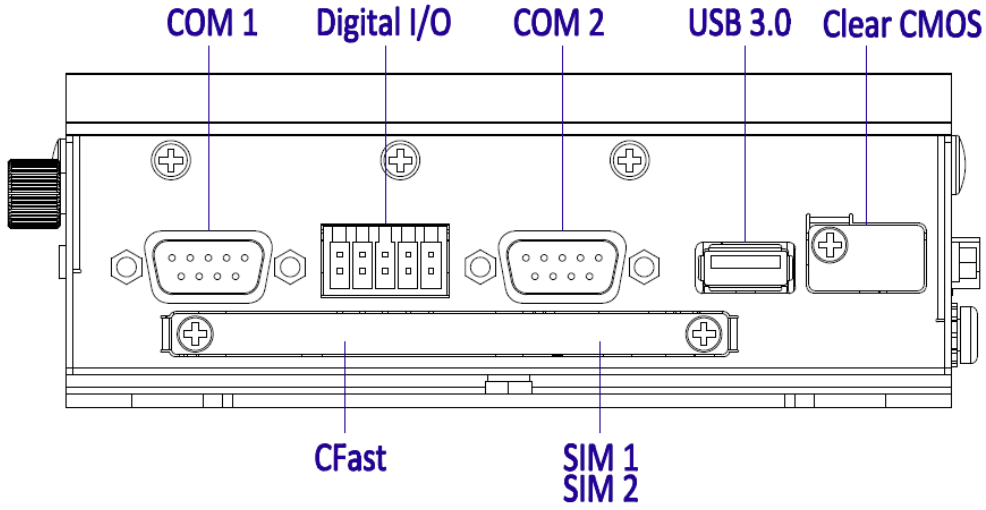


Arestech
Embedded & Automation Solutions

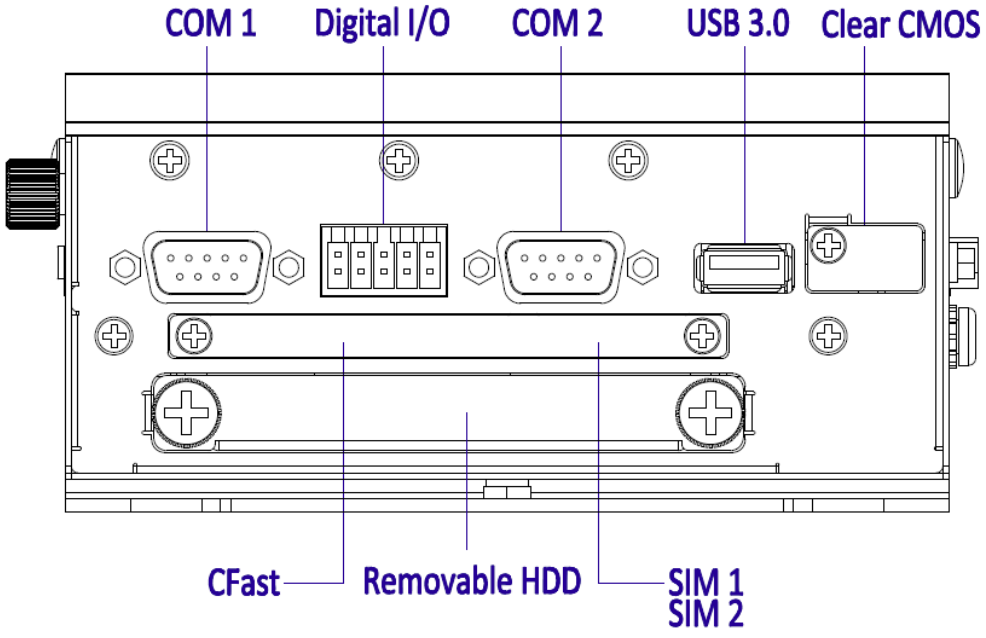
1.3.3 Right Panel

- **COM Port**
  COM1 ~ COM2 support RS232/422/485 serial device
- **Digital I/O Terminal Block**
  Supports 4 digital inputs and 4 digital outputs
- **USB 3.0 Port**
  Used to connect a USB 3.0 device
- **Clear CMOS**
  Used to clear CMOS
- **CFast Socket**
  Used to insert a CFast card
- **SIM Holder**
  Used to insert a SIM card

MERA-2000-2L



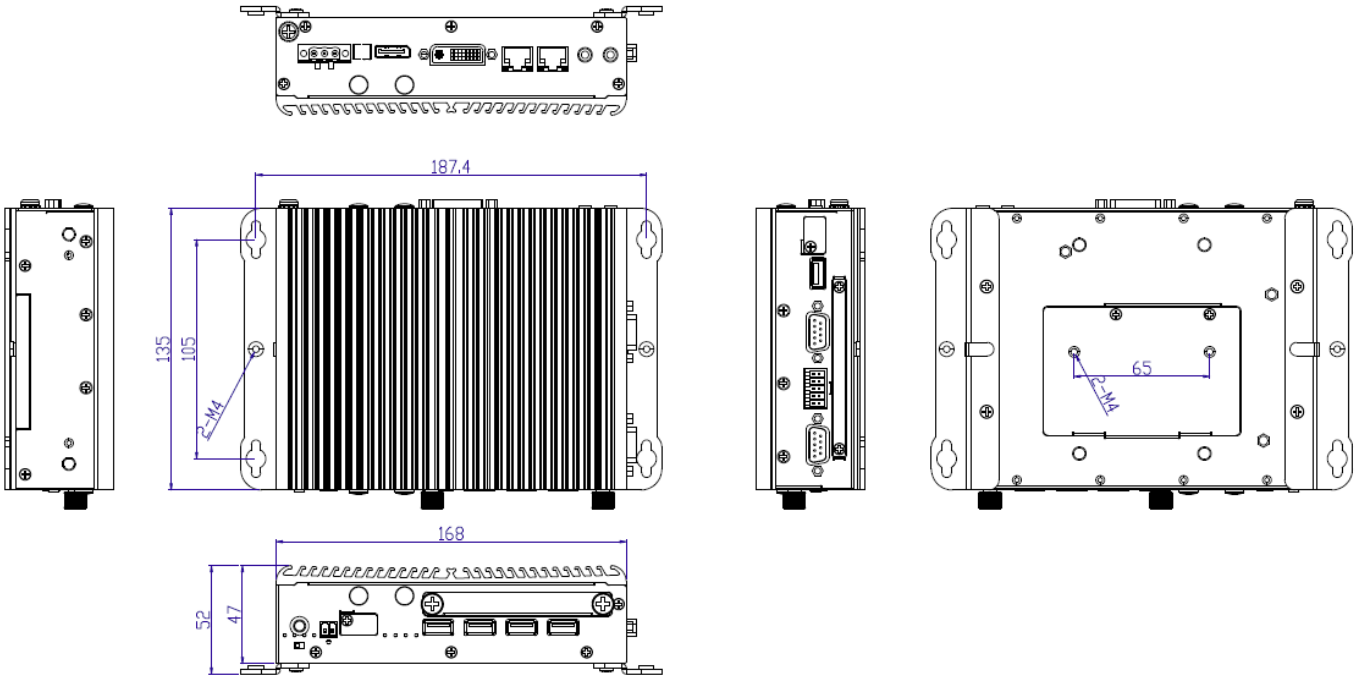
MERA-2001(S)-2L



Arestech
Embedded & Automation Solutions

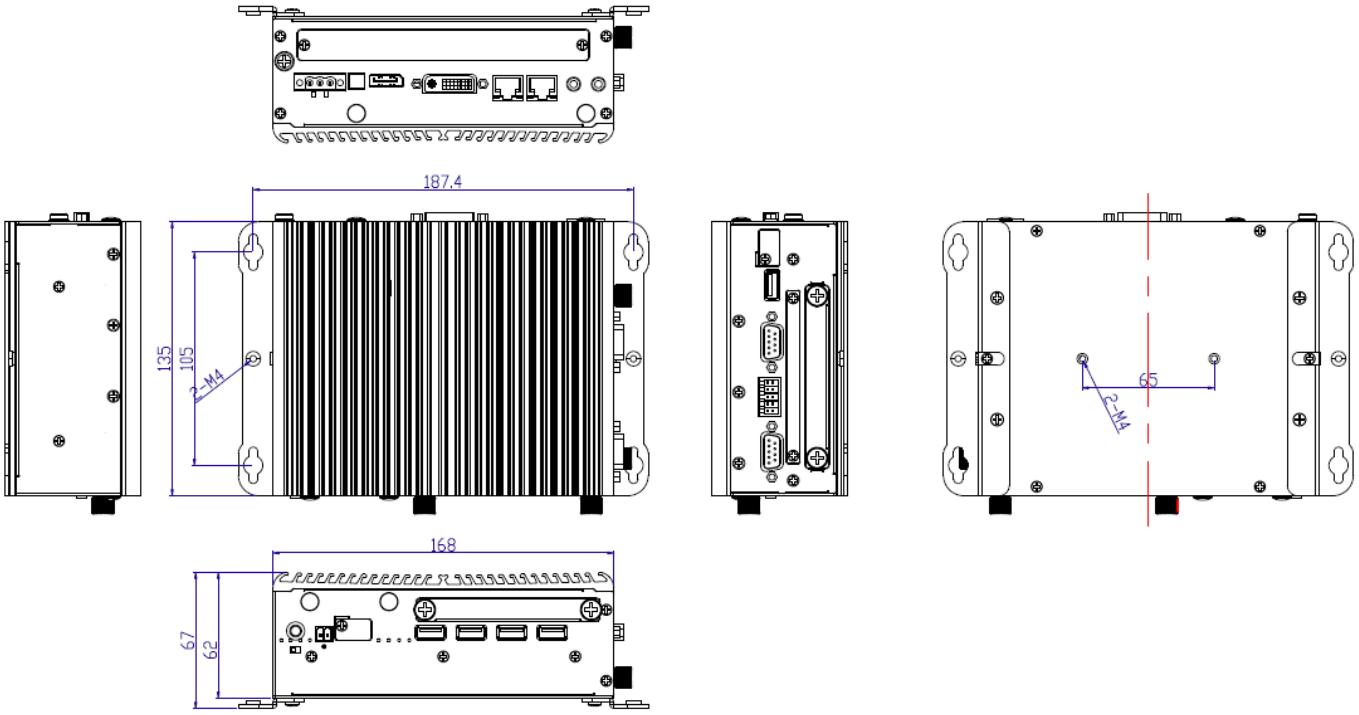
1.4 Mechanical Dimensions

1.4.1 MERA-2000-2L



Arestech
Embedded & Automation Solutions

1.4.1 MERA-2001(S)-2L

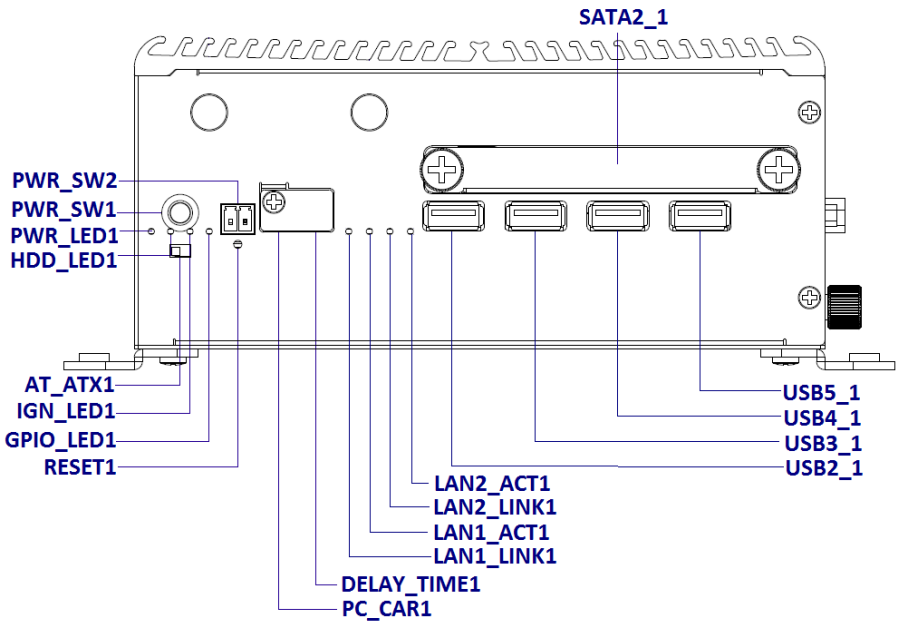


Arestech
Embedded & Automation Solutions

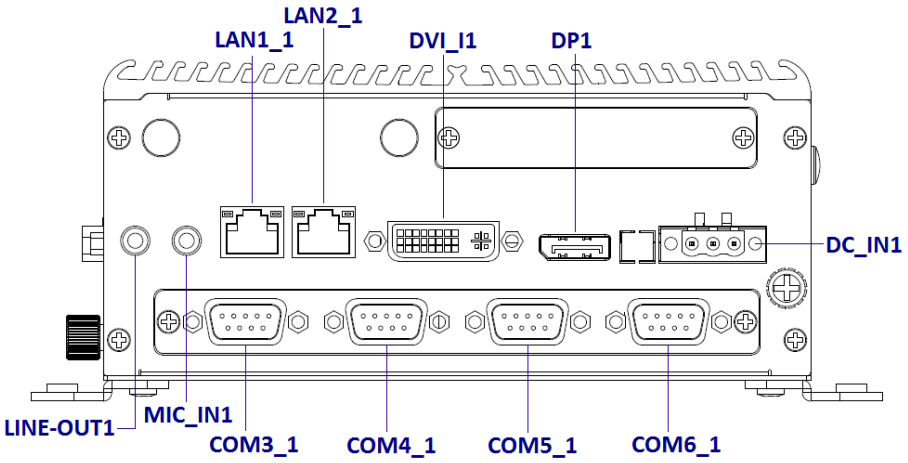
Chapter 2. Switches and Connectors

2.1 Switches and Connectors

2.1.1 Front View

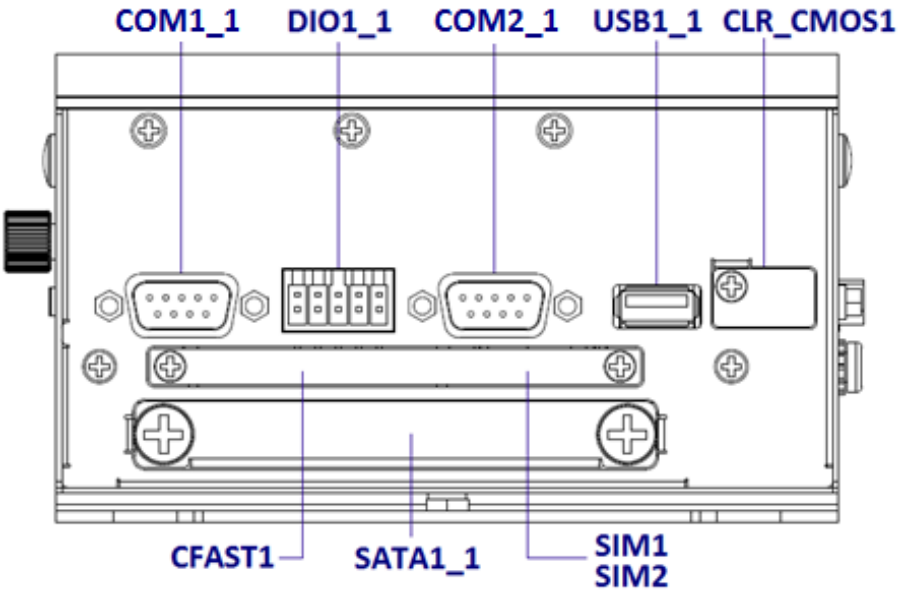


2.1.2 Rear View



Arestech
Embedded & Automation Solutions

2.1.3 Right View



Arestech
Embedded & Automation Solutions

2.2 Switches, LEDs and Connectors Definitions

■ **List of Switches and LEDs**

Location	Definition
PWR_SW1	Power Button
AT_ATX1	AT / ATX Power Mode Switch
RESET1	Reset Button
CLR_CMOS1	Clear BIOS Switch
PC_CAR1	PC / Car Mode Switch
DELAY_TIME1	Car mode system turn off delay time
PWR_LED1	Power LED Status
HDD_LED1	HDD Access LED Status
IGN_LED1	Power Ignition LED Status
GPIO_LED1	GPIO LED Status
LAN1_LINK1, LAN2_LINK1	LAN Link LED
LAN1_ACT1, LAN2_ACT1	LAN Active LED

List of Connectors

Location	Definition
PWR_SW2	Remote Power On/Off Connector
USB1_1	USB 3.0 Port
USB2_1, USB3_1, USB4_1,USB5_1	USB 2.0 Port
COM1_1, COM2_1, COM3_1, COM4_1, COM5_1, COM6_1	RS232 / RS422 / RS485 Connector
CFAST1	CFast Socket
DC_IN1	3-pin DC 9~48V Power Input with Power Ignition Connector
SIM1, SIM2	SIM Card Socket
LINE_OUT1	Line-out Jack
MIC_IN1	Mic-in Jack
LAN1_1, LAN2_1	LAN Port
DIO1_1	4DI / 4DO Connector
DVI_I1	DVI-I Connector
DP1	DisplayPort Connector
POWER1	Power Connector
SODIMM1	DDR3L SODIMM Socket
MINIPCIE1	Mini PCI-Express Socket
CN1	Dual Mode Mini PCI-Express / mSATA Socket
SATA1_1, SATA2_1	22-pin SATA with Power Connector
TPM_S1	TPM 2.0 Module Connector
FAN1	Internal PWM FAN Connector

2.3 Switch Definitions

- **PWR_SW1: Power Button**

Switch	Definition
Push	Power On/Off System

- **AT_ATX1: AT / ATX Power Mode Switch**

Pin	Definition
1-2 (Right)	ATX Power Mode (Default)
2-3 (Left)	AT Power Mode

- **RESET1: Reset Button**

Switch	Definition
Push	Reset System

- **CLR_CMOS1: CMOS Clear Switch**

Pin	Definition
1-2 (Left)	Normal (Default)
2-3 (Right)	Clear CMOS

- **CAR_PWR1: PC / Car Mode Switch**

Pin	Definition
1-2 (Left)	PC Power Mode (Default)
2-3 (Right)	Vehicle Power Ignition Mode

■ **DELAY_TIME1: Switch to Car Mode to Turn off Delay Time**

Switch 1 / 2 / 3	Definition
ON / ON / ON	Shutdown Timer by O.S (Default)
ON / ON / OFF	1 min.
ON / OFF / ON	5 mins.
ON / OFF / OFF	10 mins.
OFF / ON / ON	30 mins.
OFF / ON / OFF	1 hour
OFF / OFF / ON	2 hours
OFF / OFF / OFF	Reserved

■ **Steps to Set the Power Ignition**

Step 1: Select the power ignition by PC/CAR switch.

Step 1
Pin 1-2 (Left)：PC Power Mode
Pin 2-3 (Right)：Vehicle Power Ignition Mode

Step 2: To configure the power off delay time, please check the delay time setting options in advance.

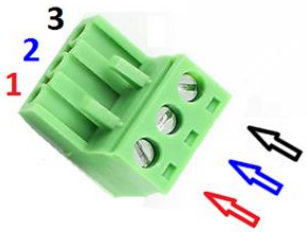
Switch 1 / 2 / 3	Definition
ON / ON / ON	Shutdown Timer by O.S (Default)
ON / ON / OFF	1 min.
ON / OFF / ON	5 mins.
ON / OFF / OFF	10 mins.
OFF / ON / ON	30 mins.
OFF / ON / OFF	1 hour
OFF / OFF / ON	2 hours

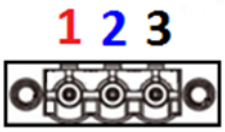
Example: Set the delay time as 1 minute

When the delay time is set as “1 minute”, the system will shut down 1 minute after you turn off the vehicle engine.

Arestech
Embedded & Automation Solutions

Step 3: Connect the vehicle battery and ignition signal





Pin	Definition
1	+9~48VIN
2	Power Ignition
3	GND

■ **PWR_LED1: Power Status LED**

Power Status	LED Color
Power ON	Blue

■ **HDD_LED1：HDD Status LED**

HDD Status	LED Color
HDD Read/Write	Yellow

■ **IGN_LED1：Ignition Status LED**

IGN Status	LED Color
IGN ON	Green

■ **GPIO_LED1：GPIO Status LED**

GPIO Status	LED Color
GPIO ON	Red

■ **LAN1_LINK1, LAN2_LINK1：LAN Link Status LED**

LAN Link Status	LED Status Color
1Gbps Network Link	Steady Green
100Mbps Network Link	Steady Orange
10Mbps Network Link	Off

■ **LAN1_ACT1, LAN2_ACT1：LAN Active Status LED**

LAN Active Status	LED Status Color
LAN Active	Yellow Blinking

Arestech
Embedded & Automation Solutions

2.4 Connector Definitions

■ **PWR_SW2：Remote Power Switch**

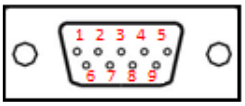
Connector Type：Terminal Block 1X2 2-pin, 3.5mm pitch

Pin	Definition
1	Power Button
2	GND

■ **COM1_1, COM2_1, COM3_1, COM4_1, COM5_1, COM6_1：RS232 / RS422 / RS485 Connector**

Connector Type：9-pin D-Sub

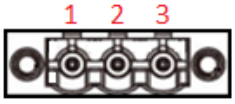
Pin	RS232 Definition	RS422 / 485 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA-
2	RxD	TX+	DATA+
3	TxD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		



■ **DC_IN1：DC Power Input Connector (+9~48V)**

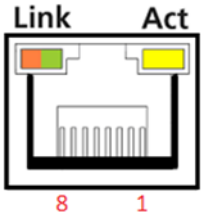
Connector Type: Terminal Block 1X3 3-pin, 5.0mm pitch

Pin	Definition
1	+9~48VIN
2	Power Ignition
3	GND



■ **LAN1_1, LAN2_1：LAN LED Status Definition**

Link LED Staus	Definition
Steady Green	1Gbps Network Link
Steady Orange	100Mbps Network Link
Off	10Mbps Network Link



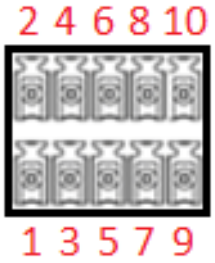
Arestech
Embedded & Automation Solutions

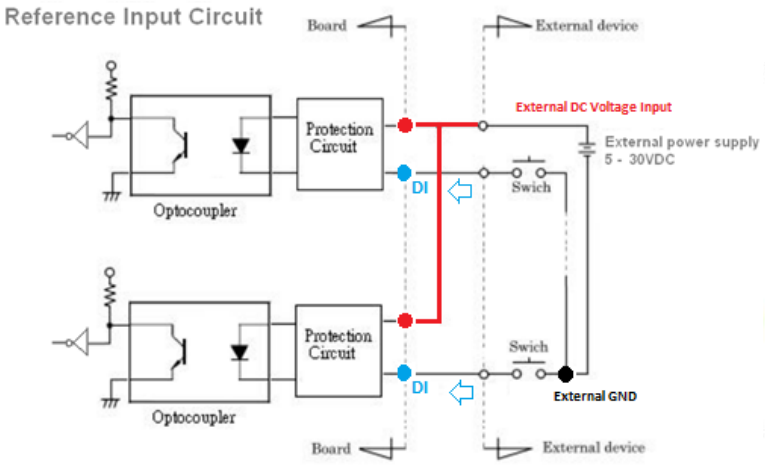
Active LED Staus	Definition
Blinking Yellow	Data Activity
Off	No Activity

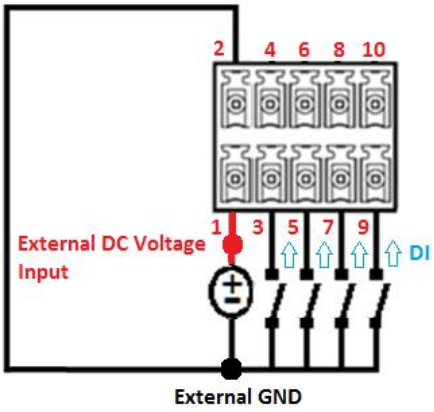
■ **DIO1_1：Digital Input / Output Connector**

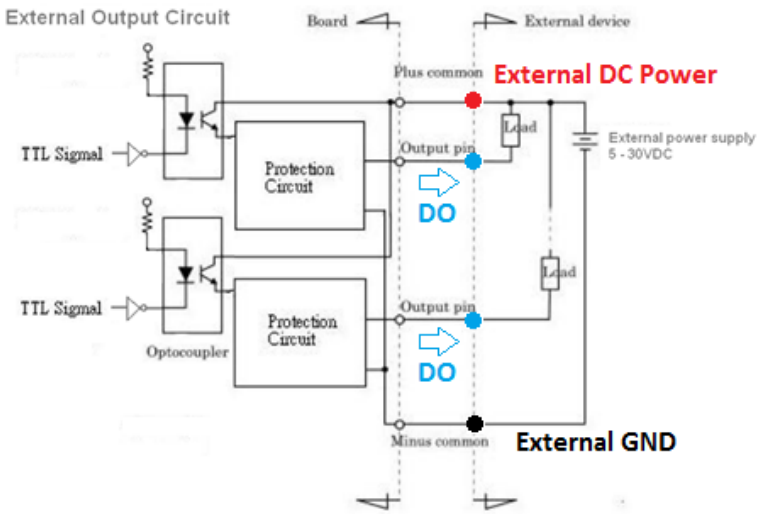
Connector Type：Terminal Block 2X5 18-pin, 3.5mm pitch

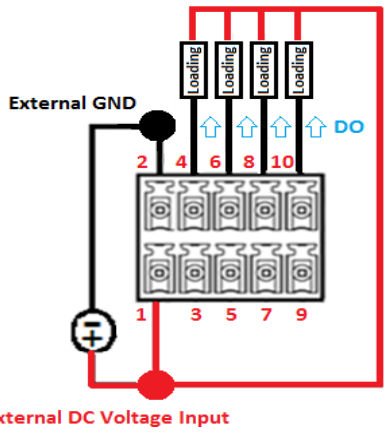
Pin	Definition	Pin	Definition
1	External DC Voltage Input	2	External GND
3	DI1	4	DO1
5	DI2	6	DO2
7	DI3	8	DO3
9	DI4	10	DO4











Arestech
Embedded & Automation Solutions

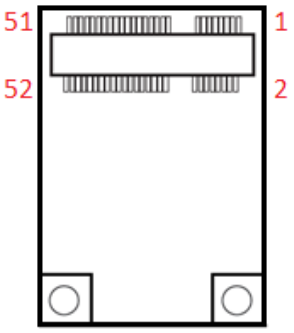
■ **POWER1：Power Connector**

Connector Type：1X4-pin Wafer, 2.0mm pitch

Pin	Definition
1	+5V
2	GND
3	GND
4	+12V

■ **MINIPCIE1：Mini PCI-Express Socket (Support SIM Card to Link feature)**

Pin	Definition	Pin	Definition
1	WAKE#	2	+3.3Vaux
3	NA	4	GND
5	NA	6	+1.5V
7	CLKREQ2#	8	UIM1_PWR
9	GND	10	USIM1_DATA
11	PCIE_CLK-	12	USIM1_CLK
13	PCIE_CLK+	14	USIM1_RST
15	GND	16	USIM1_VPP
17	RESERVED	18	GND
19	RESERVED	20	W_DISABLE#
21	GND	22	RESET#
23	PCIE_RXN2	24	+3.3Vaux
25	PCIE_RXP2	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXN2	32	SMB_DATA
33	PCIE_TXP2	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3Vaux	40	GND
41	+3.3Vaux	42	NA
43	GND	44	NA
45	NA	46	NA
47	NA	48	+1.5V
49	NA	50	GND
51	NA	52	+3.3Vaux



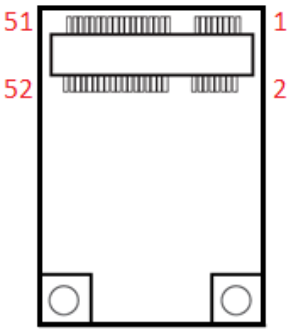
Arestech
Embedded & Automation Solutions

WARNING:

SOME OFF-THE-SHELF MINI-PCIE MODULES ARE NOT COMPATIBLE WITH THE +3.3VAUX POWER AND ARE ONLY COMPATIBLE WITH THE +3.3V POWER DESIGN. IF ANY SIMILAR SITUATION ARISES, PLEASE CONTACT ARESTECH FOR SOLUTIONS.

■ **CN1：Dual Mode Mini PCI-Express (Support mSATA and SIM Card to Link feature)**

Pin	Definition	Pin	Definition
1	WAKE#	2	+3.3Vaux
3	NA	4	GND
5	NA	6	+1.5V
7	CLKREQ3#	8	UIM2_PWR
9	GND	10	USIM2_DATA
11	PCIE_CLK-	12	USIM2_CLK
13	PCIE_CLK+	14	USIM2_RST
15	GND	16	USIM2_VPP
17	RESERVED	18	GND
19	RESERVED	20	W_DISABLE#
21	GND	22	RESET#
23	PCIE_RXN3 (SATA_RXP1)	24	+3.3Vaux
25	PCIE_RXP3 (SATA_RXN1)	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXN3 (SATA_TXN1)	32	SMB_DATA
33	PCIE_TXP3 (SATA_TXP1)	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3Vaux	40	GND
41	+3.3Vaux	42	NA
43	GND	44	NA
45	NA	46	NA
47	NA	48	+1.5V
49	NA	50	GND
51	NA	52	+3.3Vaux



WARNING:

SOME OFF-THE-SHELF MINI-PCIE MODULES ARE NOT COMPATIBLE WITH THE +3.3VAUX POWER AND ARE ONLY COMPATIBLE WITH THE +3.3V POWER DESIGN. IF ANY SIMILAR SITUATION ARISES, PLEASE CONTACT ARESTECH FOR SOLUTIONS.

Arestech
Embedded & Automation Solutions

Chapter 3. System Setup

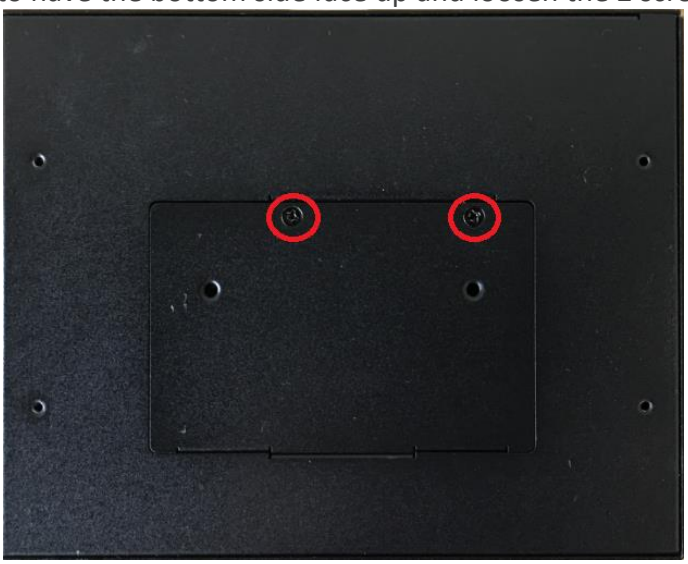
WARNING:

TO PREVENT ELECTRIC SHOCK OR SYSTEM DAMAGE, PLEASE MUST TURN OFF THE POWER AND DISCONNECT THE DEVICE FROM THE POWER SOURCE BEFORE REMOVING THE TOP OR BOTTOM CHASSIS COVER.

3.1 Installing A SODIMM

- MERA-2000-2L

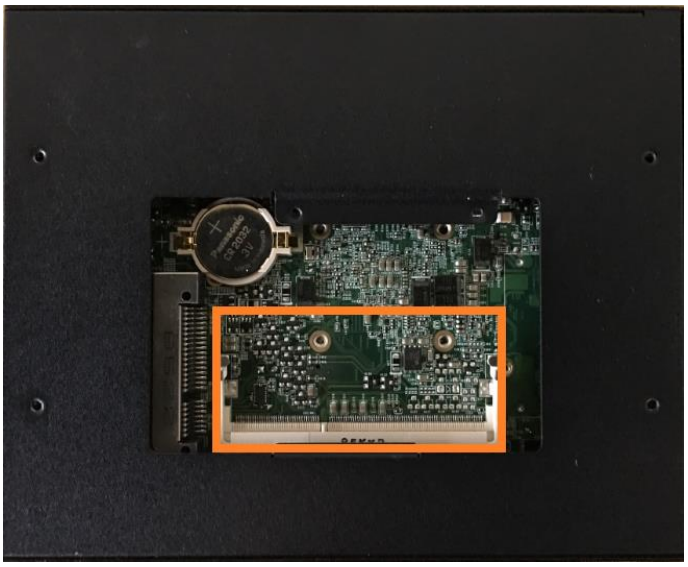
1. Turn over the system to have the bottom side face up and loosen the 2 screws at the bottom.



2. Remove the bottom cover.

Arestech
Embedded & Automation Solutions

3. Locate the SODIMM socket.



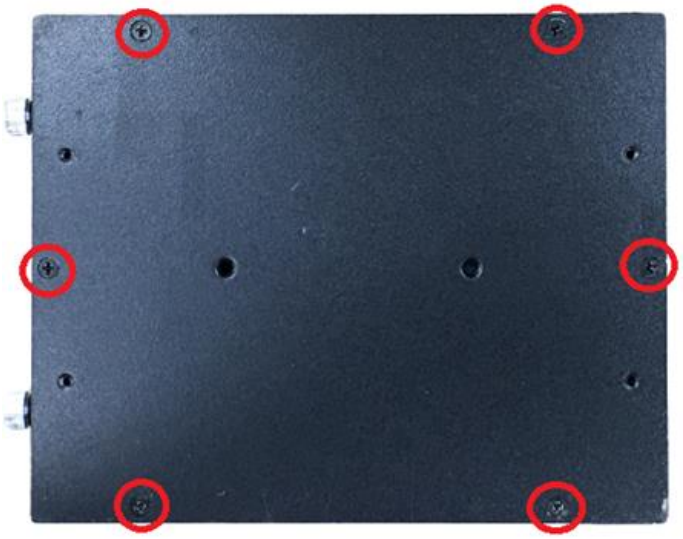
4. Insert the SODIMM module at 45-degree angle

5. Press the module down until it's fixed firmly by the two locking latches.

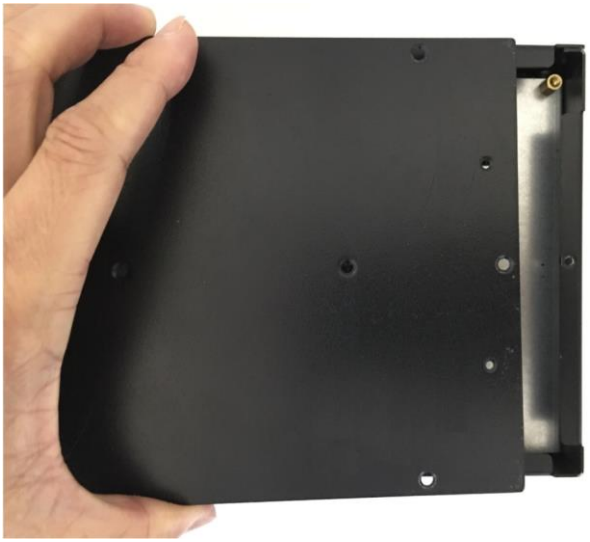
Arestech
Embedded & Automation Solutions

■ MERA-2001(S)-2L

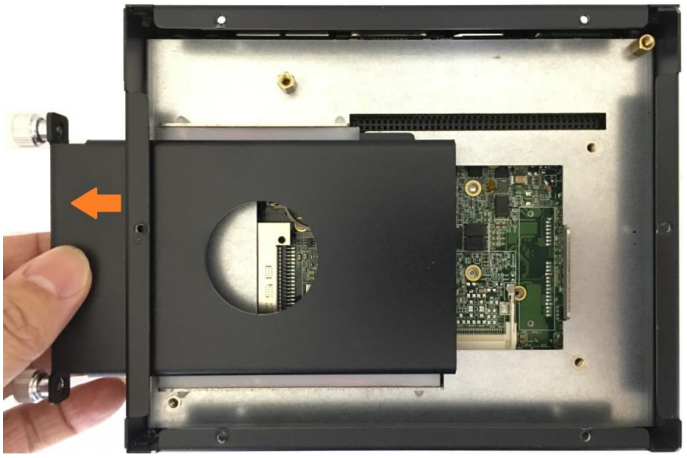
1. Turn over the system to have the bottom side face up and loosen the 6 screws at the bottom.



2. Remove the bottom cover.

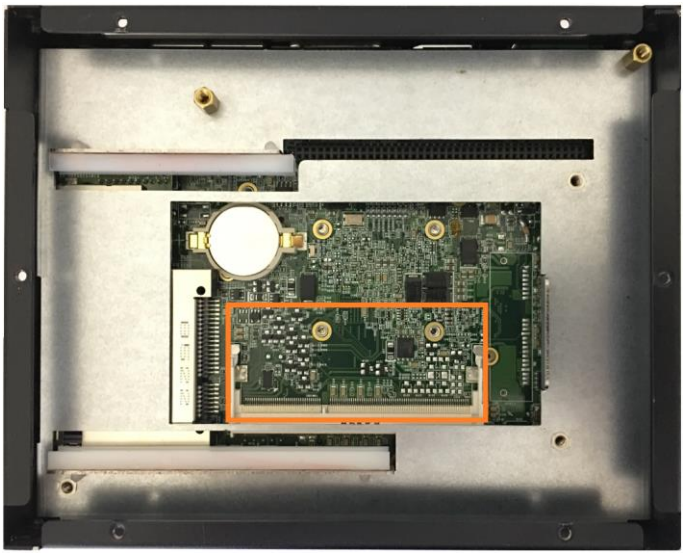


3. Remove the hard drive bay on the side.



Arestech
Embedded & Automation Solutions

4. Locate the SODIMM socket.



5. Insert the SODIMM module at 45-degree angle.

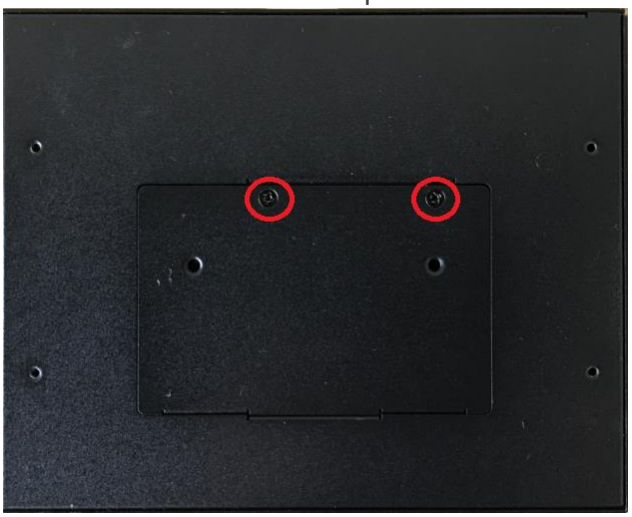
6. Press the module down until it’s fixed firmly by the two locking latches.

Arestech
Embedded & Automation Solutions

3.2 Replacing A CMOS Battery

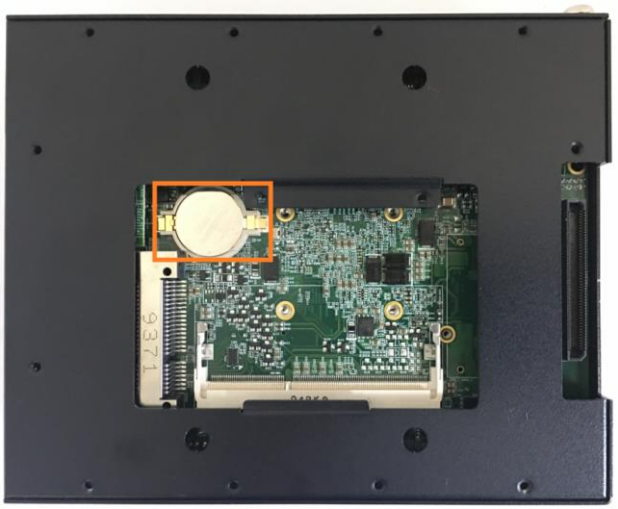
- MERA-2000-2L

1. Turn over the system to have the bottom side face up and loosen the 2 screws at the bottom.



2. Remove the bottom cover.

3. Locate the CMOS Battery.



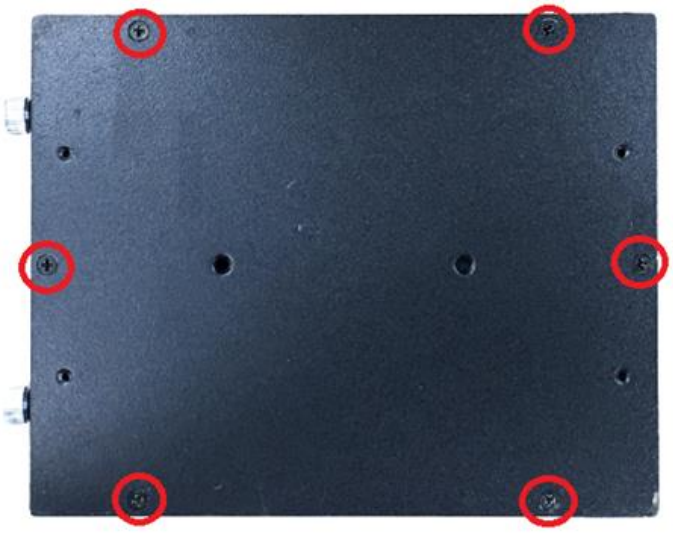
Arestech
Embedded & Automation Solutions

4. Remove the old CMOS battery.

5. Install a new CMOS battery in the battery holder.

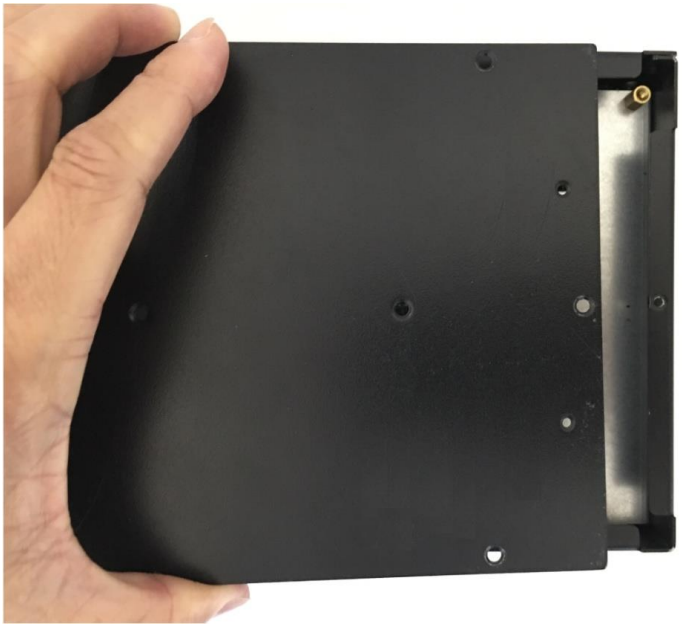
■ MERA-2001(S)-2L

1. Turn over the system to have the bottom side face up and loosen the 6 screws at the bottom.

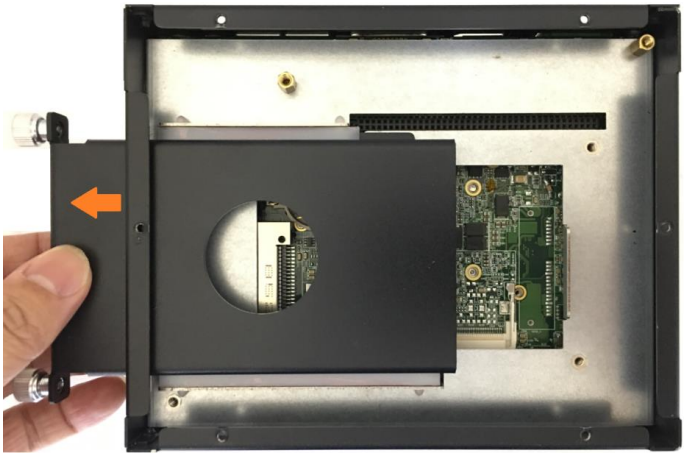


Arestech
Embedded & Automation Solutions

2. Remove the bottom cover.



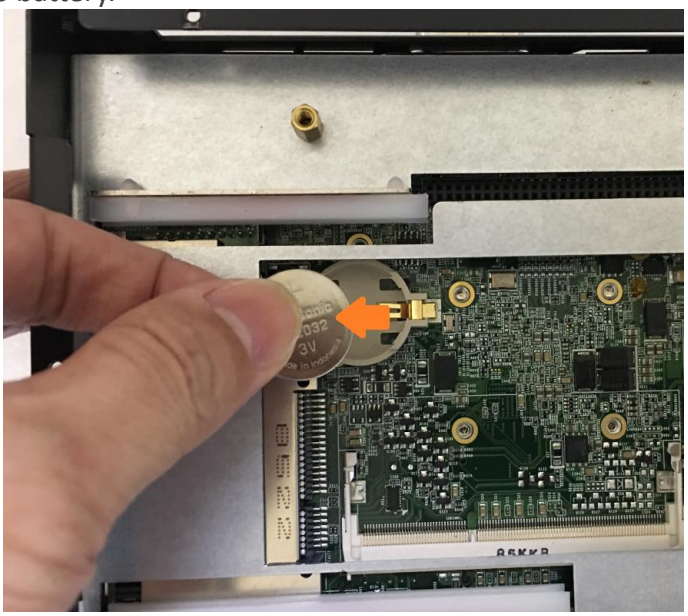
3. Remove the hard drive bay on the side.



4. Locate the CMOS Battery.

Arestech
Embedded & Automation Solutions

5. Remove the old CMOS battery.



6. Install a new CMOS battery in the battery holder.

3.3 Installing A mini-PCIe / mSATA Module

1. Turn the SATA HDD thumb screw on the front panel and remove the SATA HDD bay.

2. Turn over the system to have the top side face up and loosen the six screws on the left and right sides.

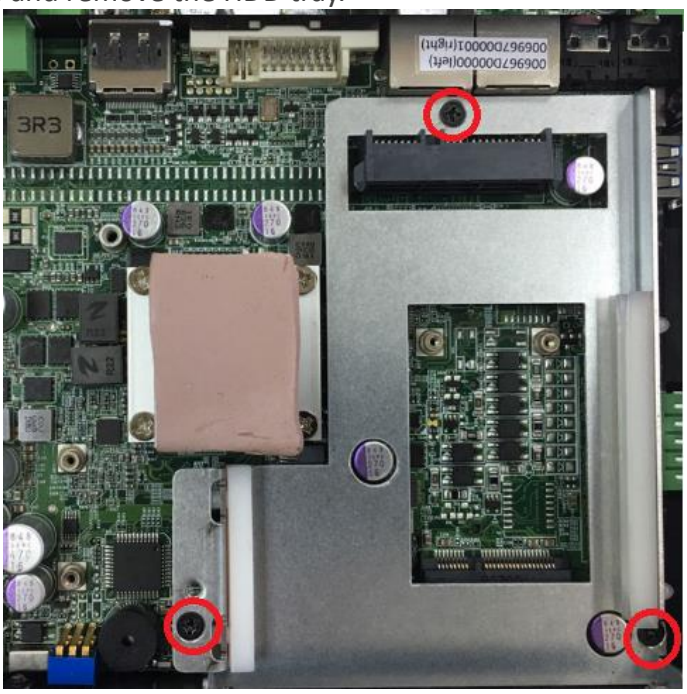
Left Side

Right Side

3. Remove the top cover.

Arestech
Embedded & Automation Solutions

4. Loosen the 3 screws and remove the HDD tray.

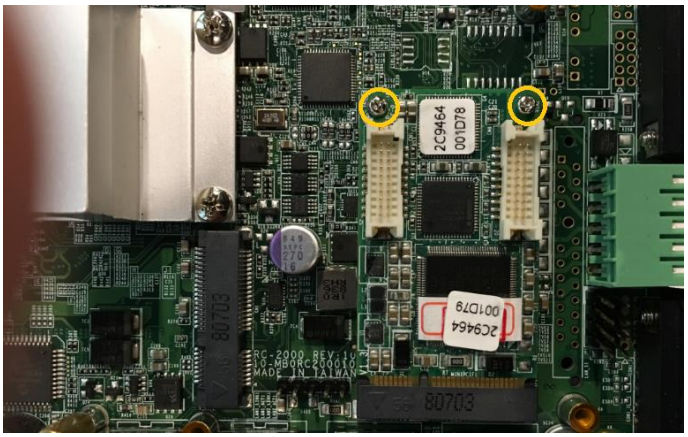


5. Locate the mini-PCIe sockets. Please note that the left connector (CN1) is shared by mini-PCIe/mSATA interface, and right connector (MINIPCIE1) is mini-PCIe interface. Both support SIM card to Link feature.

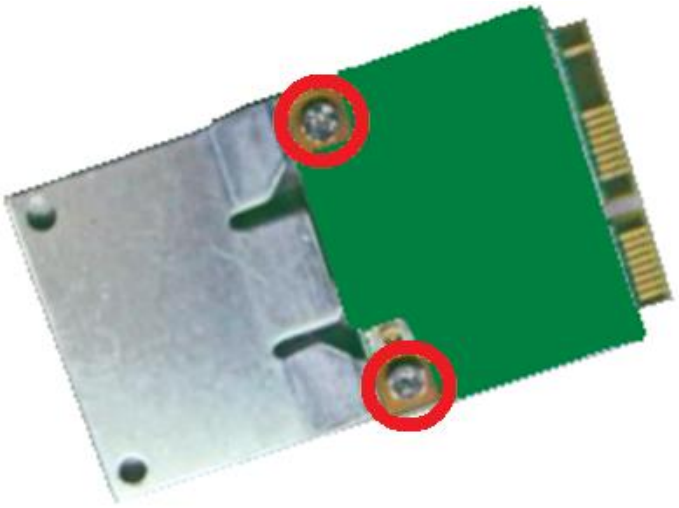
6. Insert the mini-PCIe card or mSATA device at 45-degree angle.

Arestech
Embedded & Automation Solutions

7. Press the mini-PCIe/mSATA module down and lock it with two screws.



8. If you have a half-size mini-PCIe card, make sure use extender to make it full-size as shown below.



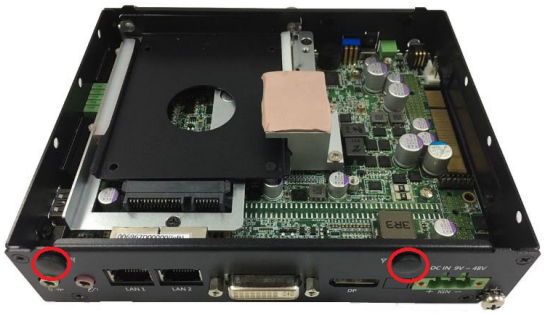
Arestech
Embedded & Automation Solutions

3.4 Installing An Antenna

1. Remove the antenna hole covers at front or rear panel.

Front

Rear



2. Have the antenna jack penetrate through the hole.

3. Put on the washer and fasten the nut with the antenna jack.

4. Assemble the antenna and antenna jack together.

Arestech
Embedded & Automation Solutions

5. Attach the RF connector at the cable-end onto the mini-PCIe Wi-Fi module.

3.5 Installing A SIM Card or CFast Card

1. Loosen the 2 screws on the right panel to remove the CFast / SIM cover plate.

2. Insert the CFast / SIM card into the socket.

◎ NOTE:

1. PLEASE NOTE THAT THE INSTALLATION OF SIM1_1 and SIM2_1 HAS TO MATCH THE INSTALLATION OF MINI-PCIE SOCKET.

SIM Card Socket Number	Matching Mini-PCIe Socket
SIM1	MINIPCIE1
SIM2	CN1

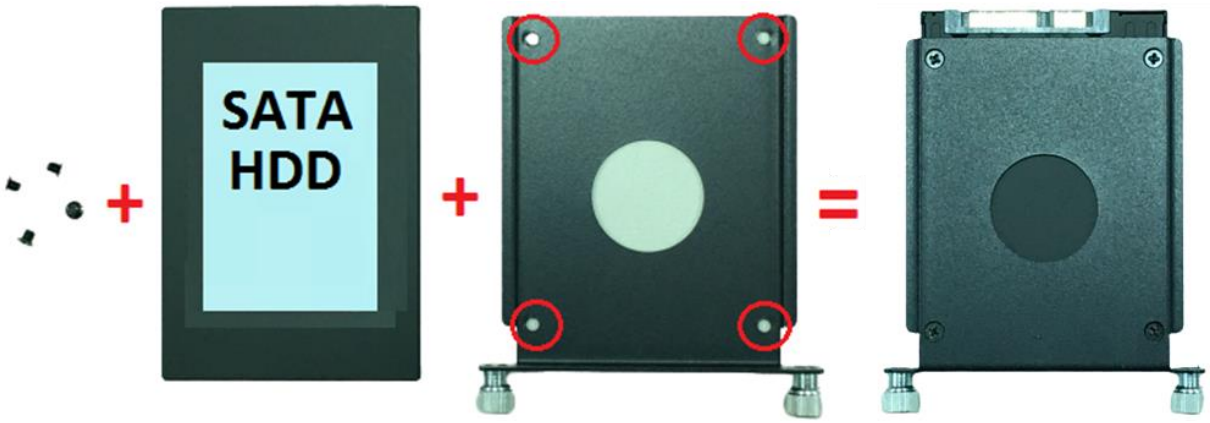
2. WHEN YOU WANT TO UNINSTALL THE SIM CARD OR CFAST CARD, PLEASE SIMPLY PRESS THE INSTALLED SIM CARD OR CFAST CARD TO EJECT THE CARD OUT.

Arestech
Embedded & Automation Solutions

3.6 Installing The Front Removable SATA HDD Bay

1. Unscrew the two thumb screws circled below to take out the removable 2.5” SATA HDD bay.

2. Lock the 2.5” SATA HDD with HDD bracket using four screws.



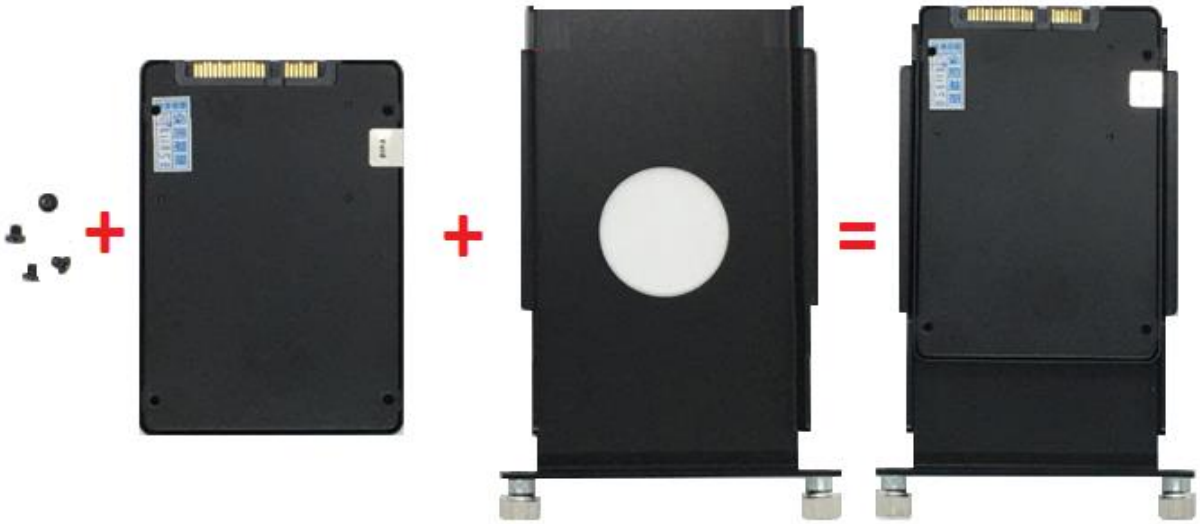
3. Slide the HDD bracket back and then fasten the thumb screws.

Arestech
Embedded & Automation Solutions

3.7 Installing The Right Removable SATA HDD Bay (MERA-2001(S)-2L Only)

1. Unscrew the two thumb screws circled below to take out the removable 2.5” SATA HDD bay.

2. Lock the 2.5” SATA HDD with HDD bracket using four screws.

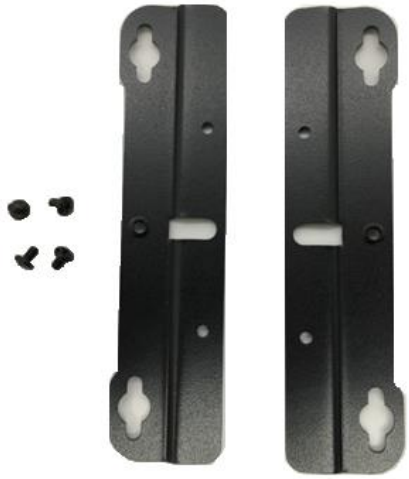


3. Slide the HDD bracket back and then fasten the thumb screws.

Arestech
Embedded & Automation Solutions

3.8 Installing The Wall Mount Brackets

1. Wall mount kit is included in the standard package.



2. The mounting holes are at the bottom of system.

3. Use the provided 4 screws to fasten the bracket with each side of system.

Arestech
Embedded & Automation Solutions

3.9 Installing The DIN-Rail Holder

1. The DIN-Rail bracket is an optional accessory.

2. Place the system upside down so you can see the bottom cover with two screw holes for the DIN-Rail holder.

3. Place the DIN-Rail holder on the top of the bottom cover and lock it with two screws.

Arestech
Embedded & Automation Solutions

Chapter 4. BIOS Setup

4.1 BIOS Introduction

The system BIOS software is stored on EEPROM. The BIOS provides an interface to modify the configuration. When the battery is removed, all the parameters will be reset.

■ **BIOS Setup**

Power on the embedded system and by pressing <Del> or <F2> immediately allows you to enter the setup screens. If the message disappears before you respond, and you still wish to enter the Setup, please restart the system by turning it OFF and ON or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys	
<←> <→>	Select Screen
<↑> <↓>	Select Item
<Enter>	Select
<Page Up/+>	Increases the numeric value or makes changes
<Page Down/->	Decreases the numeric value or makes changes
<F1>	General Help
<F2>	Previous Value
<F3>	Load Optimized Defaults
<F10>	Save Configuration and Exit
<Tab>	Select Setup Fields
<Esc>	Exit BIOS Setup

■ **Main Setup**

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑ ↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

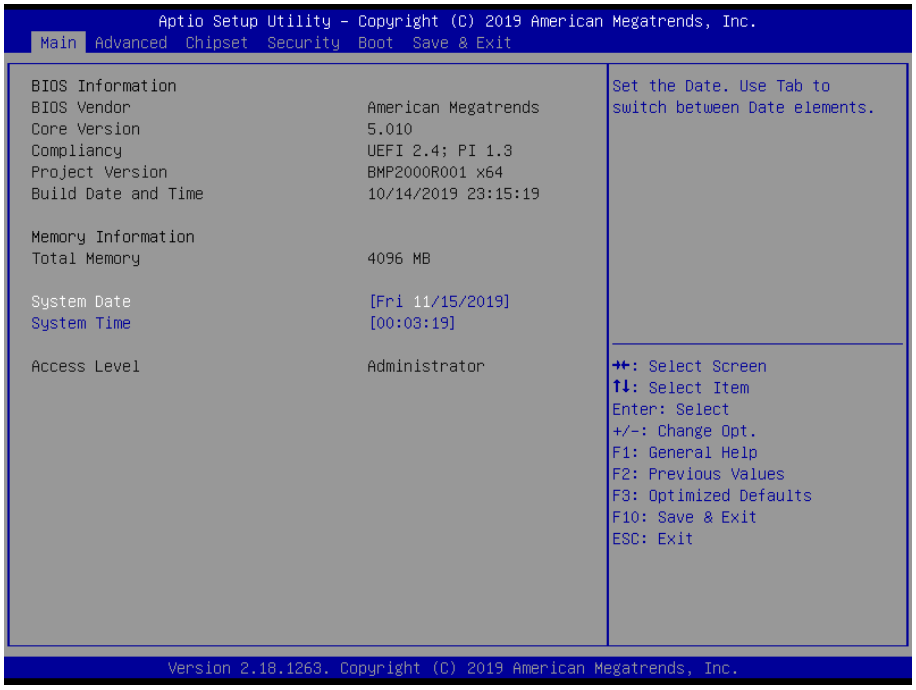
■ **General Help <F1>**

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

Arestech
Embedded & Automation Solutions

4.2 Main Setup

Press <Del> to enter BIOS CMOS Setup Utility. The Main setup screen is showed as follows when the setup utility is entered. System Date/Time is set up in the Main Menu.

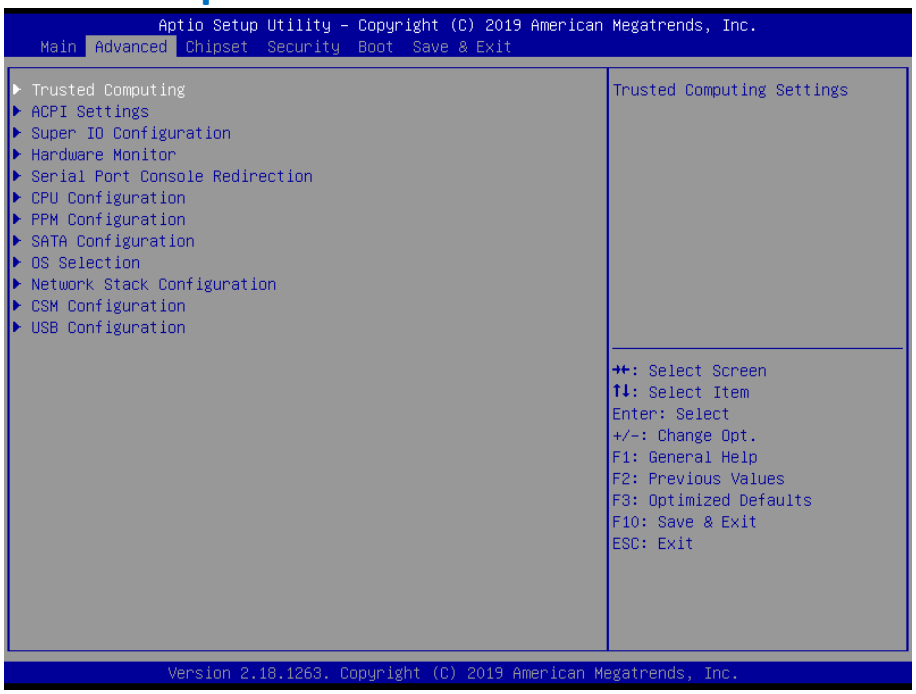


- **System Date**
  To set the system date, please use <Tab> to switch between data elements.

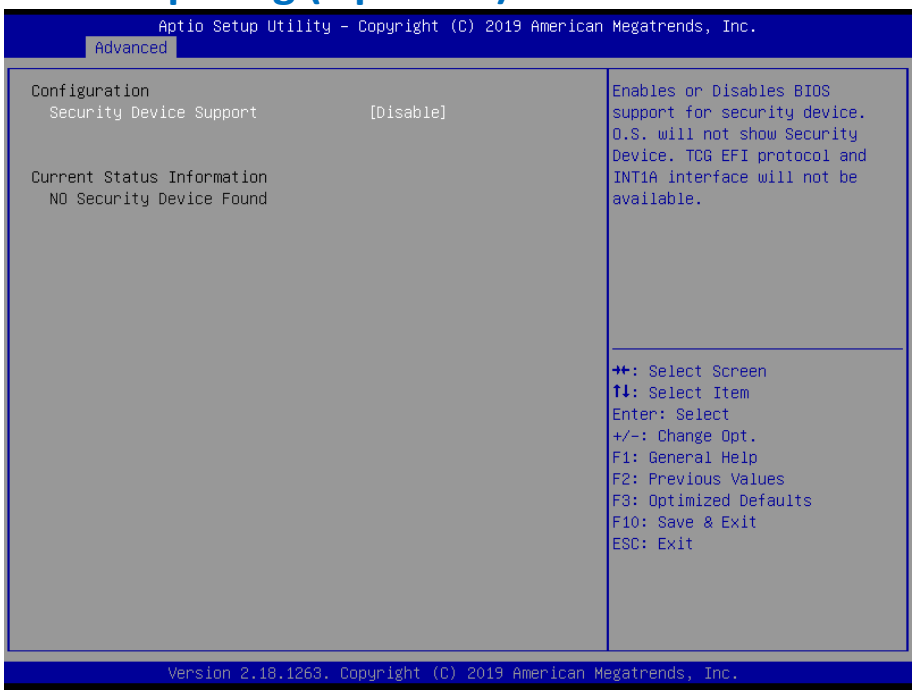
- **System Time**
  To set the system time, please use <Tab> to switch between time elements.

Arestech
Embedded & Automation Solutions

4.3 Advanced Setup



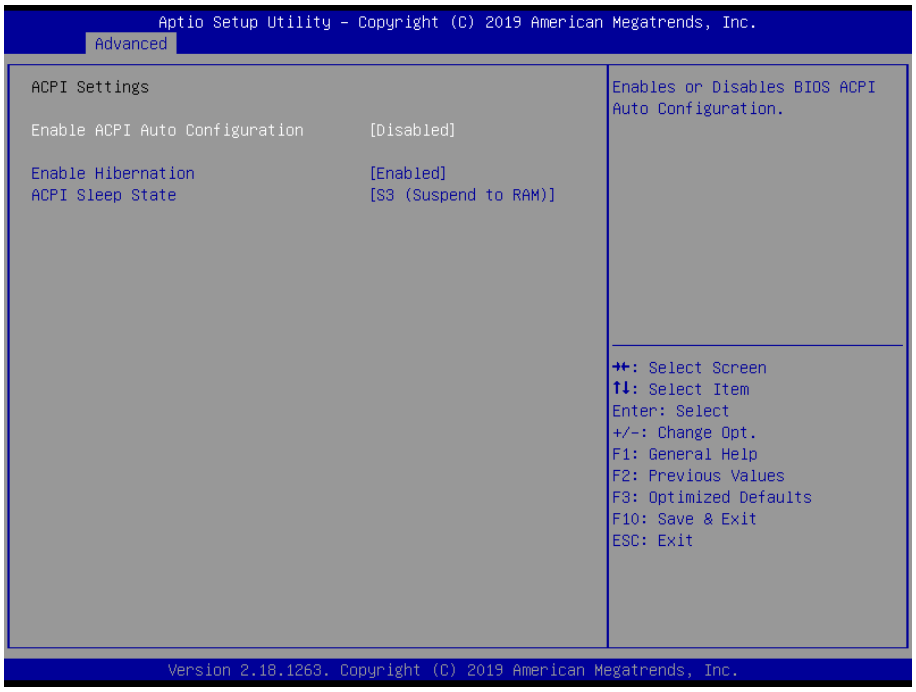
4.3.1 Trusted Computing (Optional)



- **Security Device Support**
  Enable or disable TPM function

Arestech
Embedded & Automation Solutions

4.3.2 ACPI Settings



- **Enable ACPI Auto Configuration**
  This item allows you to enable or disable BIOS ACPI Auto Configuration.

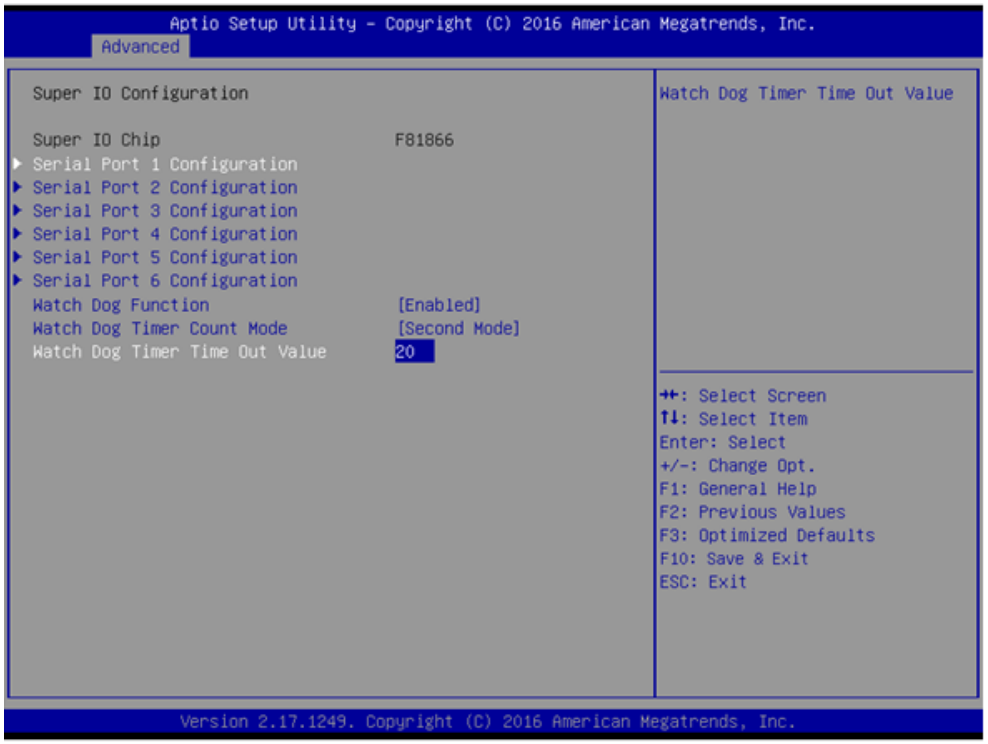
- **Enable Hibernation**
  This item allows you to enable or disable system ability to hibernate.

- **ACPI Sleep State**
  This item selects the highest ACPI sleep state the system will enter when the suspend button is pressed. Select <Suspend Disabled> or <S3 (Suspend to RAM)>.

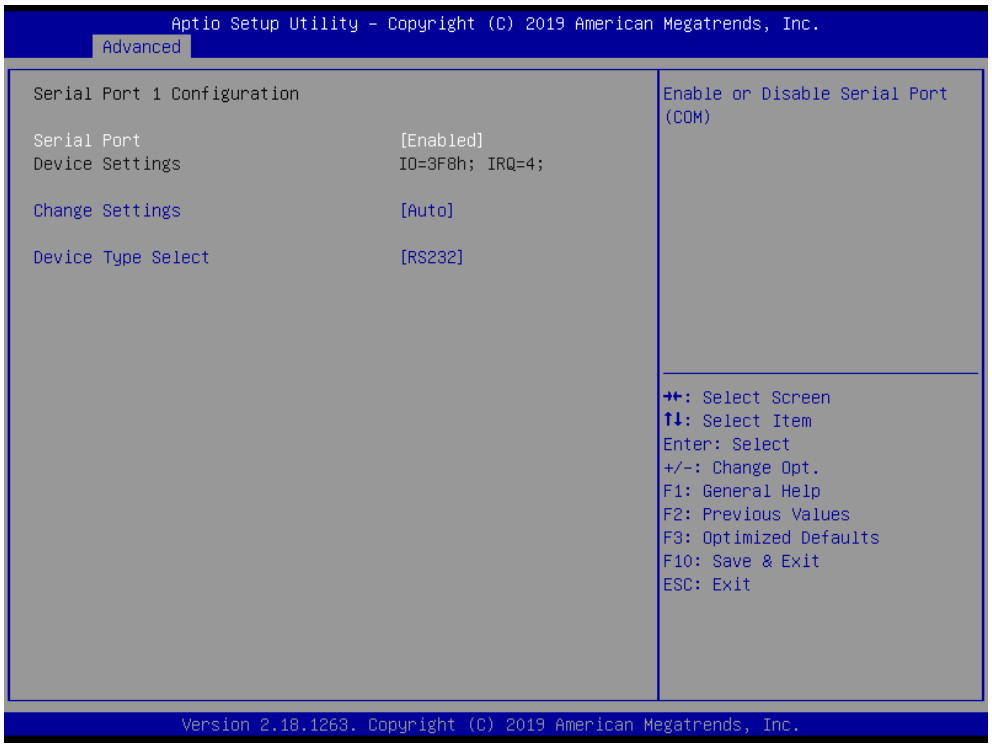
Arestech
Embedded & Automation Solutions

4.3.3 Super IO Configuration

This setting allows you to select options for the Super IO Configuration and change the value of the selected option.

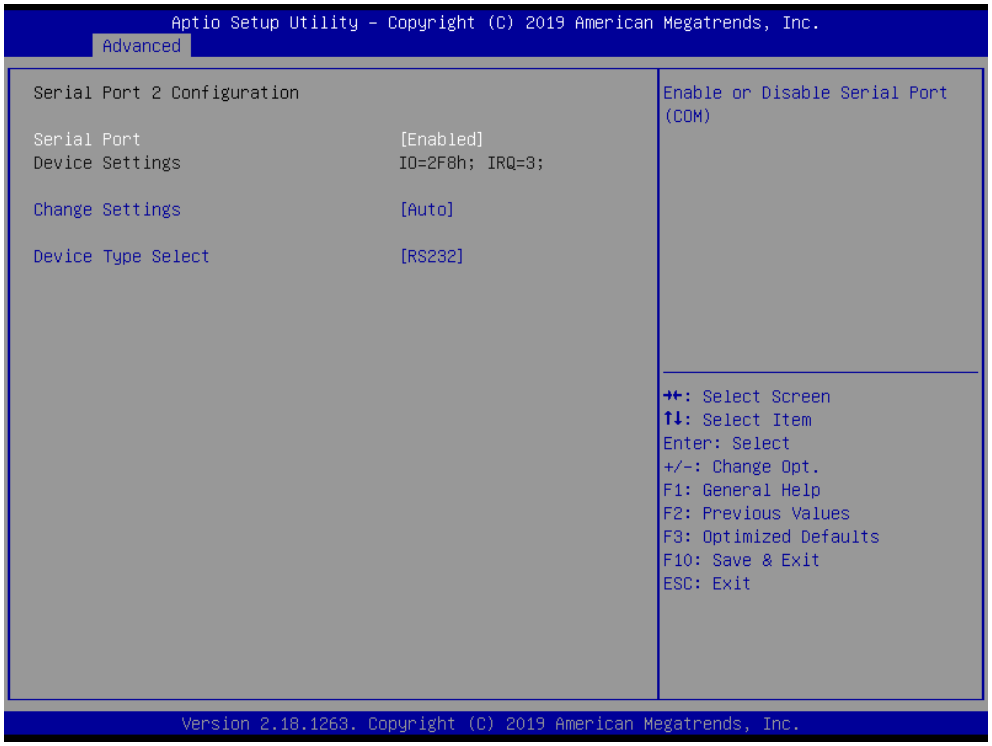


■ Serial Port 1 Configuration



Arestech
Embedded & Automation Solutions

Serial Port 2 Configuration



Serial Port 3 Configuration

Arestech
Embedded & Automation Solutions

Serial Port 4 Configuration

Serial Port 5 Configuration

Serial Port 6 Configuration

- **Serial Port**
  This item allows you to enable or disable serial port.

- **Change Settings**
  This item allows you to change the address & IRQ settings of the specified serial port.

- **Device Type Select**
  To change the Serial interface, please select <RS232>, <RS422 Full Duplex> or <RS485 Half Duplex> interface.

- **Watch Dog Function**
  This setting allows you to set up the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected.

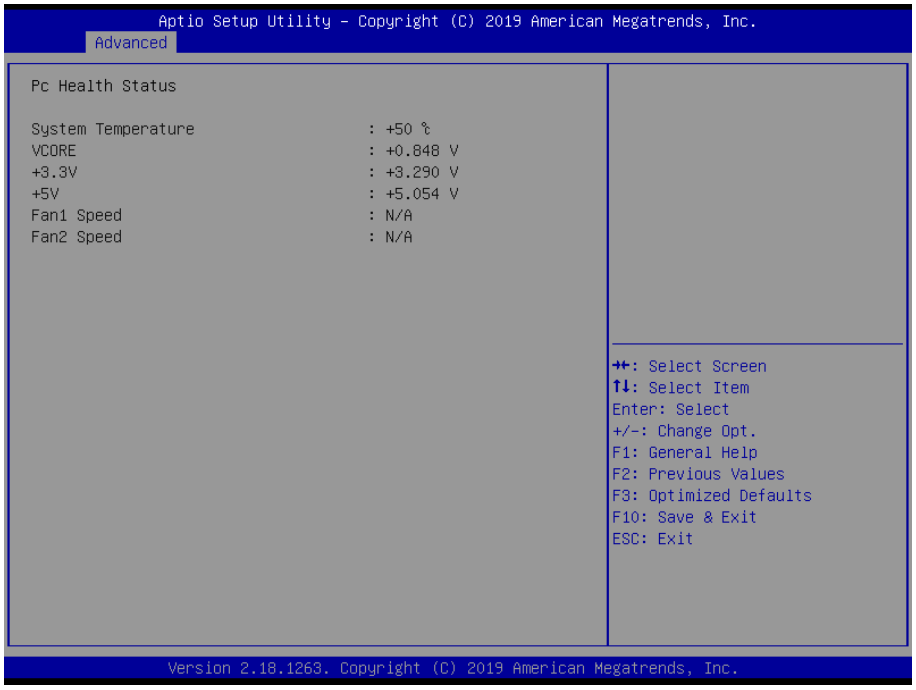
  Watch Dog Mode:
  Change the Watch dog mode. Select <Second Mode> or <Minute Mode> mode.

  Watch Dog Timer:
  User can set a value in the range of 0 to 255.

Arestech
Embedded & Automation Solutions

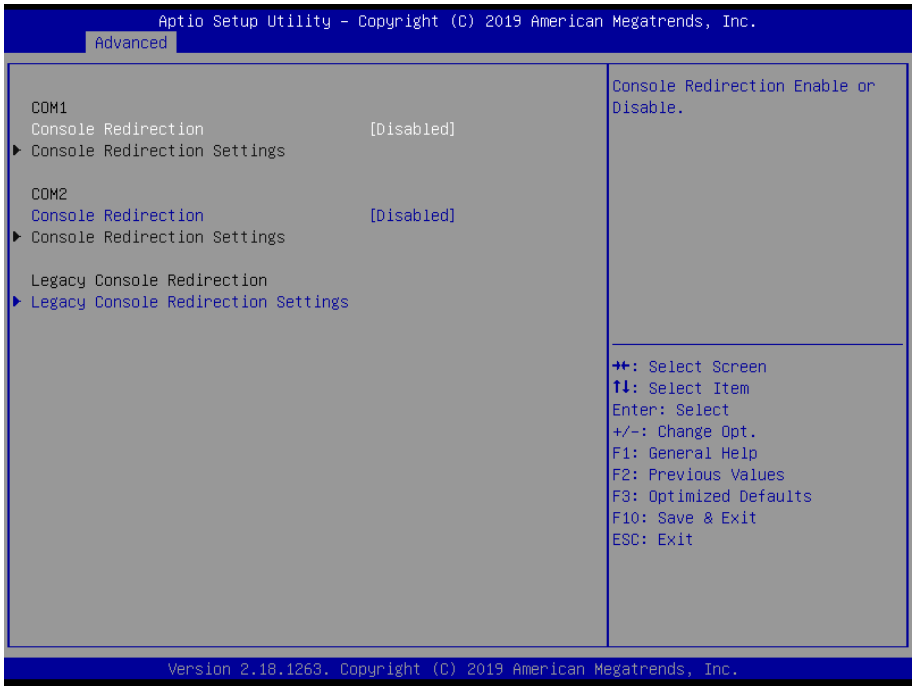
4.3.4 Hardware Monitor

These items display the current status of all monitored hardware devices / components such as voltages and temperatures.



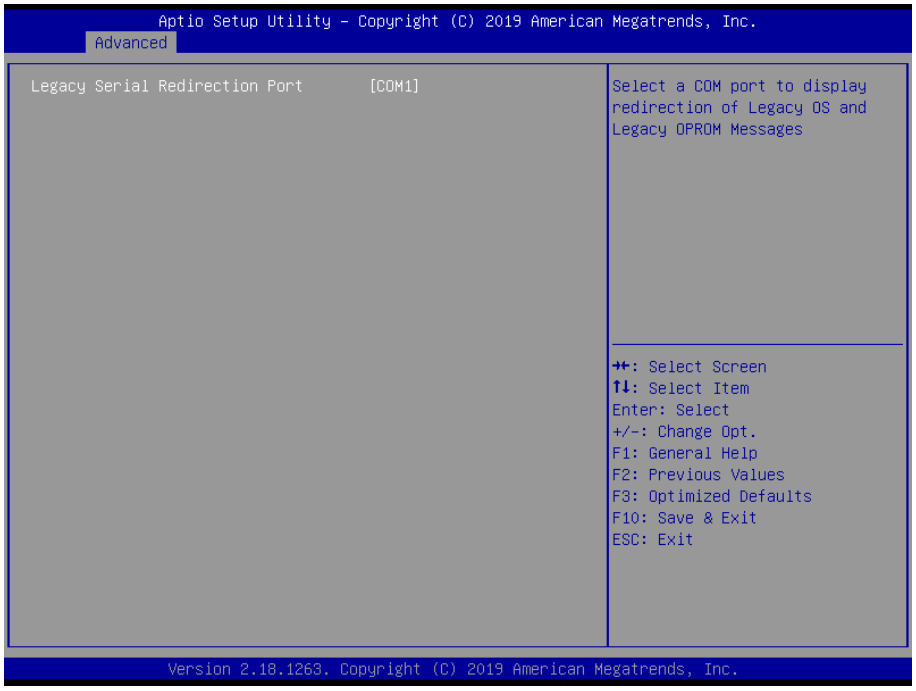
Arestech
Embedded & Automation Solutions

4.3.5 Serial Port Console Redirection



- **Console Redirection**
  These items allows you to enable or disable COM1~COM6 console redirection.

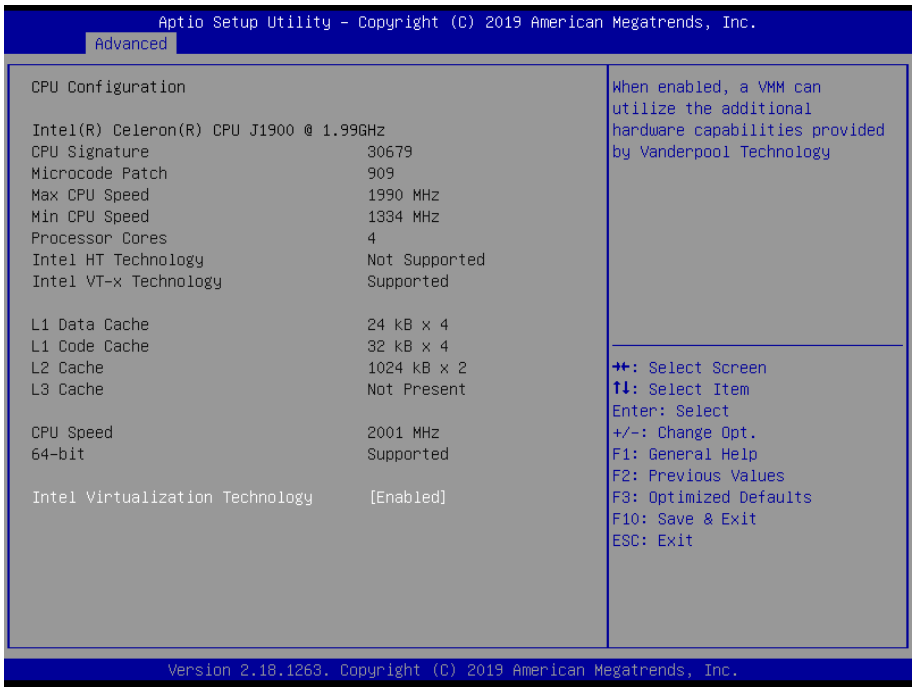
- **Legacy Console Redirection Settings**
  Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.



- **Intel Virtualization Technology**
  Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

Arestech
Embedded & Automation Solutions

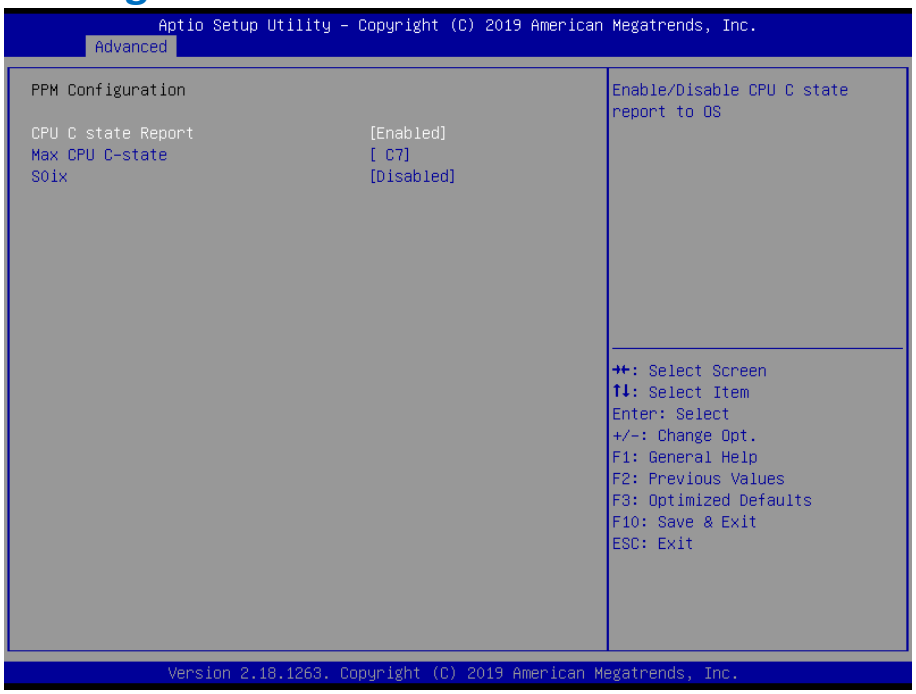
4.3.6 CPU Configuration



- **Intel Virtualization Technology**
  Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple Virtual systems.

Arestech
Embedded & Automation Solutions

4.3.7 PPM Configuration



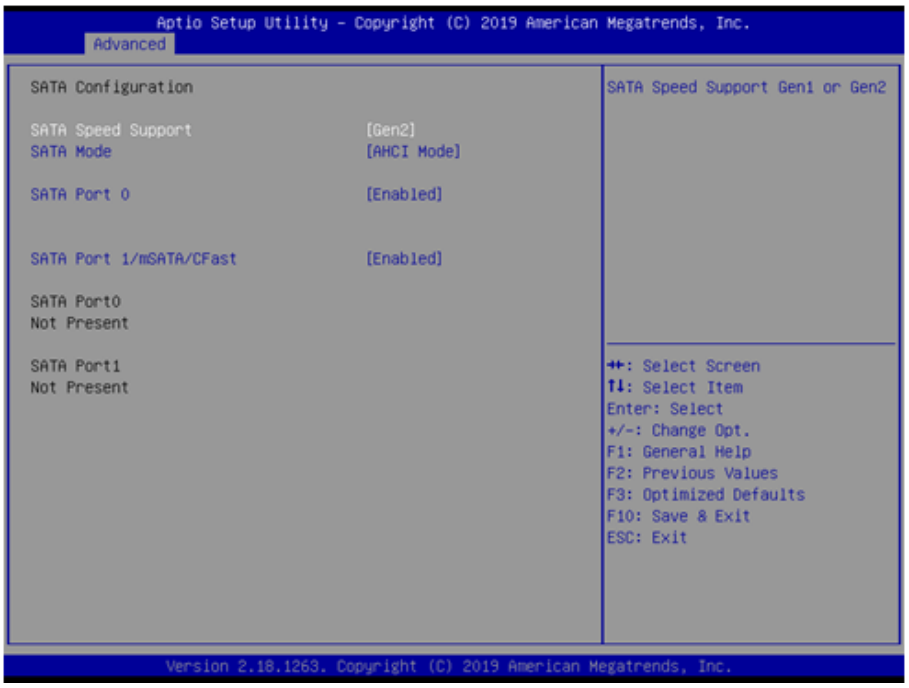
- **CPU C state Report**
  This item allows you to enable or disable CPU C state report to OS..

- **Max CPU C- State**
  This option controls Max C state that the processor will support.

- **S0ix**
  This item allows you to enable or disable CPU S0ix state.

Arestech
Embedded & Automation Solutions

4.3.8 SATA Configuration



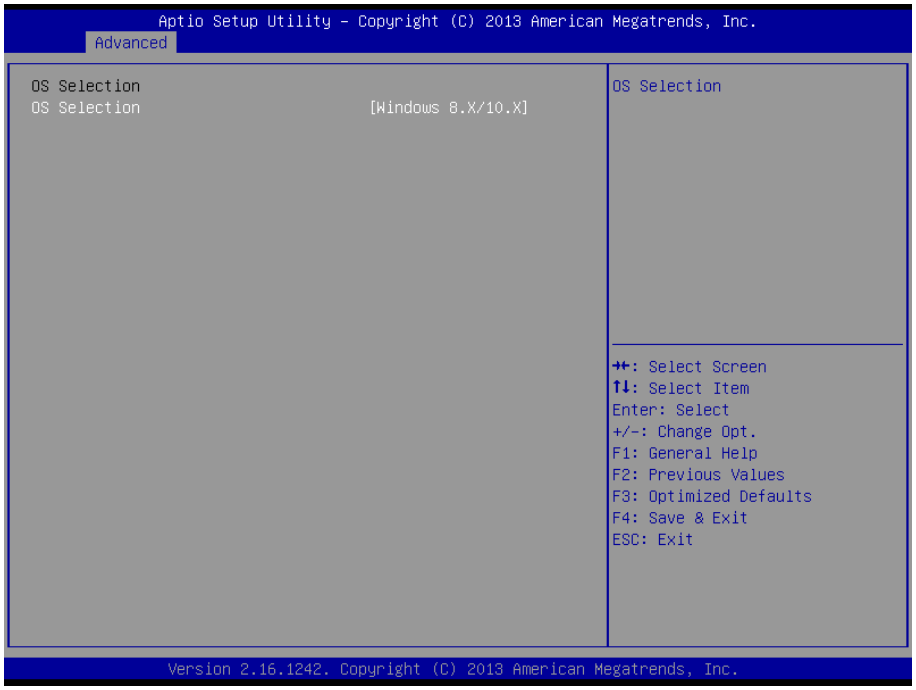
- **SATA Speed Support**
  Change the SATA Speed. Select <Gen1> or <Gen2> speed.

- **SATA Mode**
  This item allows you to select IDE or AHCI Mode.

- **SATA Port 0**
  This item allows you to enable or disable SATA Port 0.

- **SATA Port 1/mSATA/CFast**
  This item allows you to enable or disable SATA Port 1/mSATA/CFast.

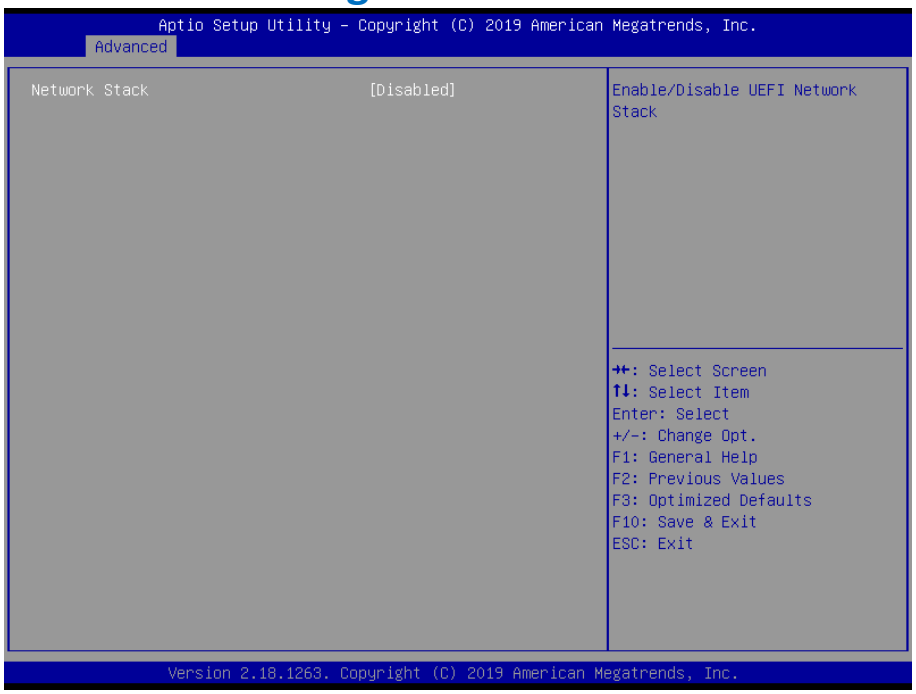
4.3.9 OS Selection



- **OS Selection**
  This item allows you to to select Windows 7 or Windows 8.X/10.X OS.

Arestech
Embedded & Automation Solutions

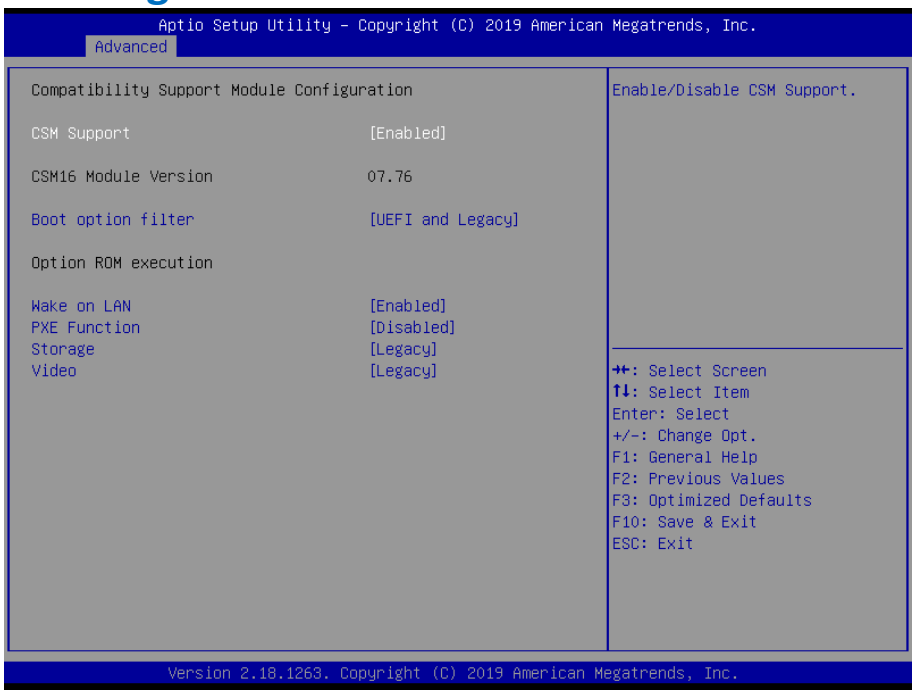
4.3.10 Network Stack Configuration



- **Network Stack**
  Use this item to enable or disable UEFI Network Stack.

Arestech
Embedded & Automation Solutions

4.3.11 CSM Configuration



- **CSM Support**
  Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

- **Boot Option Filter**
  This item allows you to select which type of operating system to boot.

  UEFI and Legacy:
  Allows booting from operating systems that support legacy option ROM or UEFI option ROM.

  Legacy only:
  Allows booting from operating systems that only support legacy option ROM.

  UEFI only:
  Allows booting from operating systems that only support UEFI option ROM.
  This item is configurable only when CSM Support is set to Enabled.

- **PXE Function**
  This item allows you to enable or disable PXE function.

- **Storage**
  This setting allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller.

  Do not launch: Disables option ROM.
  UEFI only: Enables UEFI option ROM only.
  Legacy only: Enables legacy option ROM only.

- **Video**
  Controls the execution of UEFI and Legacy Video OpROM

  Do not launch: Disables option ROM.
  UEFI only: Enables UEFI option ROM only.
  Legacy only: Enables legacy option ROM only.

4.3.12 USB Configuration

- **Legacy USB Support**
  Allows USB keyboard / mouse to be used in MS-DOS.

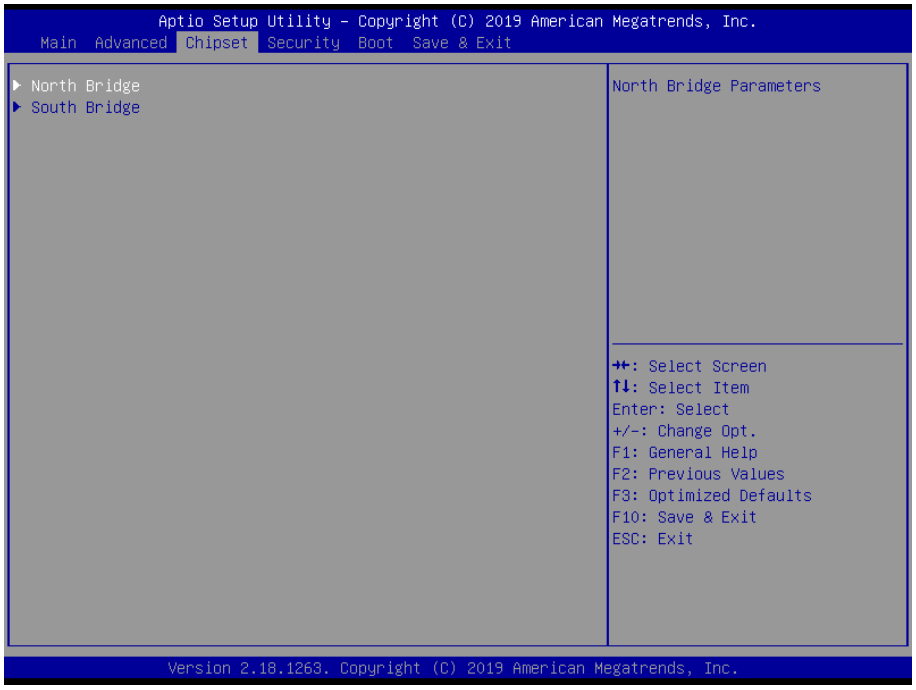
- **XHCI Hand-off**
  Determines whether to enable XHCI (USB3.0) Hand-off feature for an operating system without XHCI (USB3.0) Hand-off support.

- **EHCI Hand-off**
  Determines whether to enable EHCI Hand-off feature for an operating system without EHCI Hand-off support.

- **USB Mass Storage Driver Support**
  Enables or disables support for USB storage devices.

Arestech
Embedded & Automation Solutions

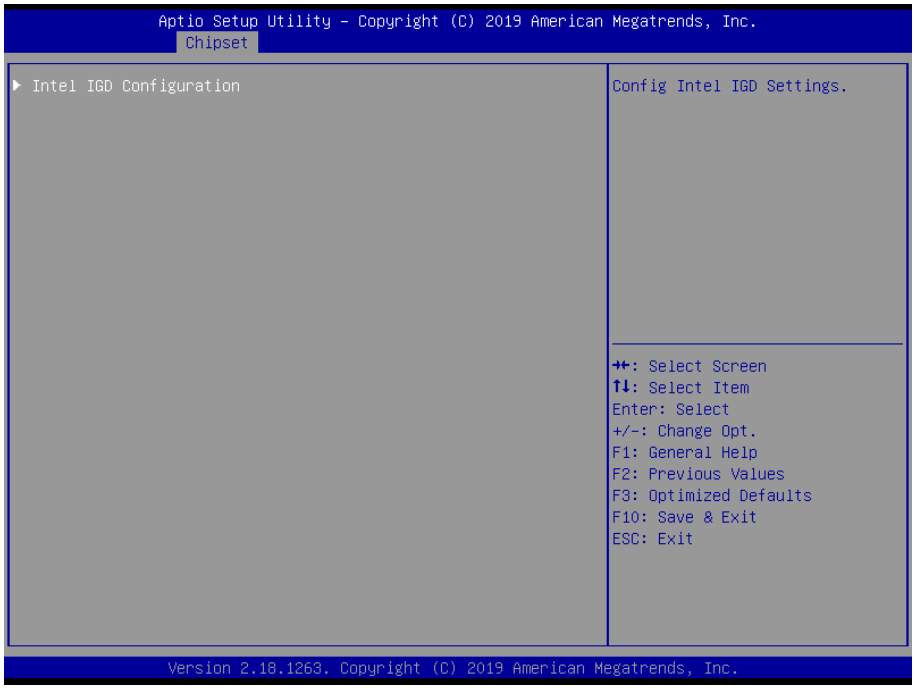
4.4 Chipset



Arestech
Embedded & Automation Solutions

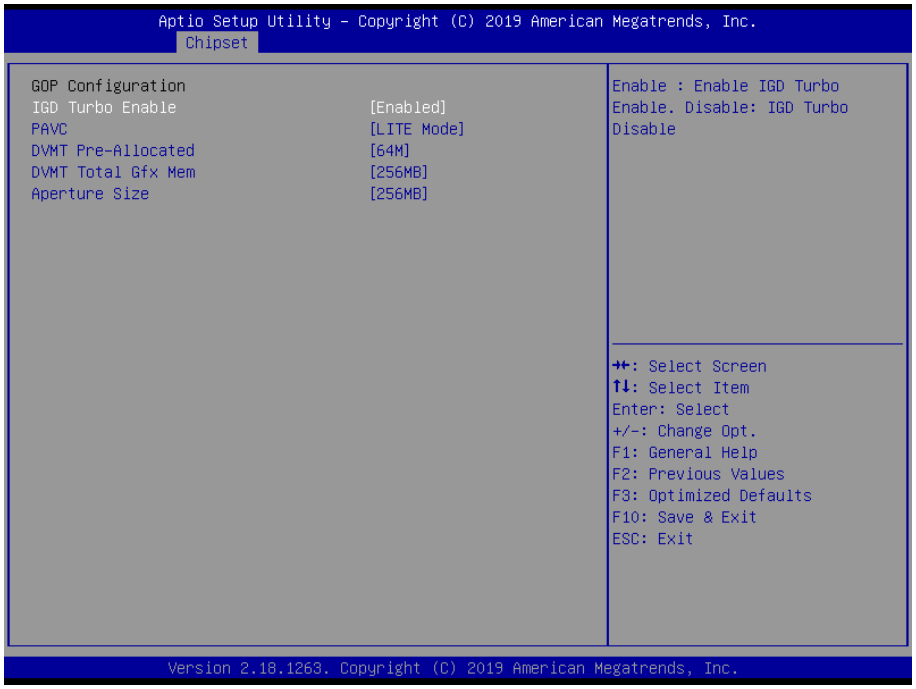
4.4.1 North Bridge

This section provides information on the installed memory size and memory/onboard graphics-related configuration options.



- **IGD Configuration**

  This section provides onboard graphics-related configuration options.



- **IGD Turbo Enable**

  This item allows you to enable or disable IGD Turbo.

Arestech
Embedded & Automation Solutions

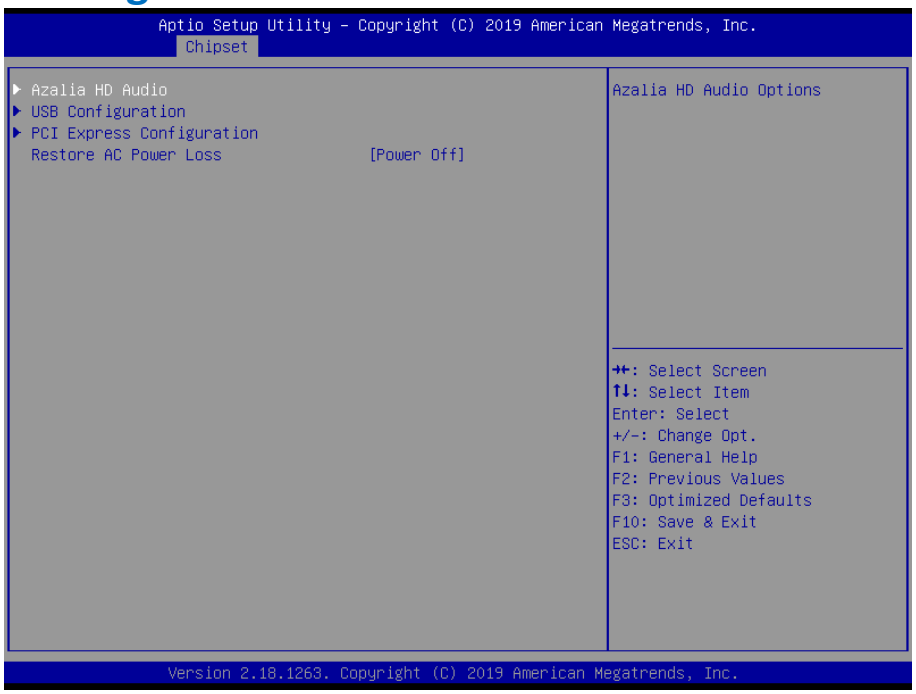
- **PAVC**
  This item enables/disables Protected Audio Video Control. Select <Disabled>, <LITE Mode> or <SERPENT Mode>.

- **DVMT Pre-Allocated**
  This item selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device. Select <64M>, <96M>, <128M>, <160M>, <192M>, <224M>, <256M>, <288M>, <320M>, <352M>, <384M>, <416M>, <448M>, <480M> or <512M>.

- **DVMT Total Gfx Mem**
  This item selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device. Select <128MB>, <256MB> or <Max>.

- **Aperture Size**
  This item selects the Aperture Size. Select <128MB>, <256MB> or <512MB>.

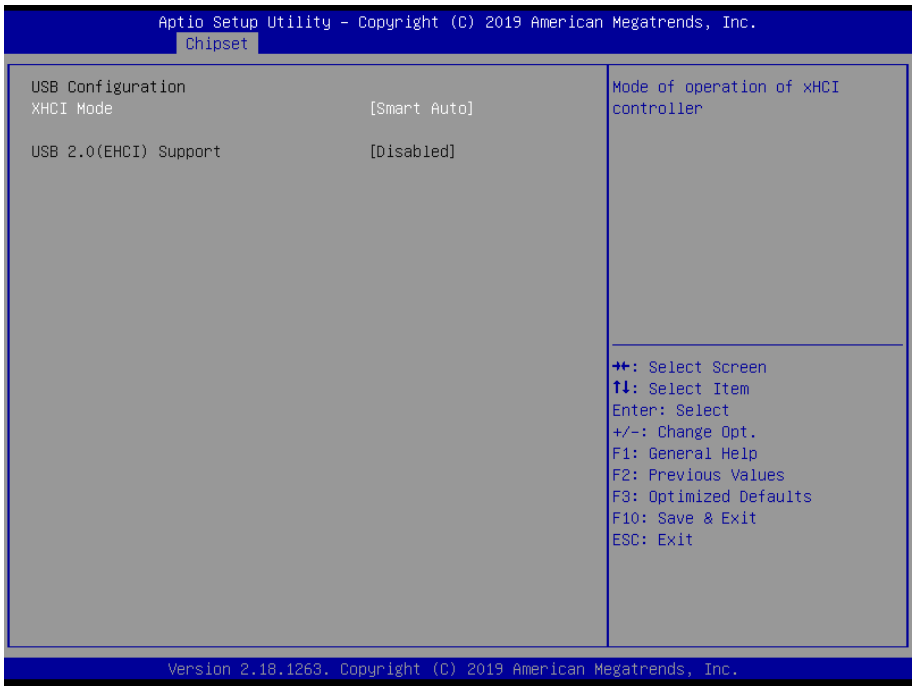
4.4.2 South Bridge



- **Azalia HD Audio**
  Control detection of the Azalia device.

  Audio Controller
  Enabled: Azalia will be unconditionally enabled.
  Disabled: Azalia will be unconditionally disabled.

- **USB Configuration**

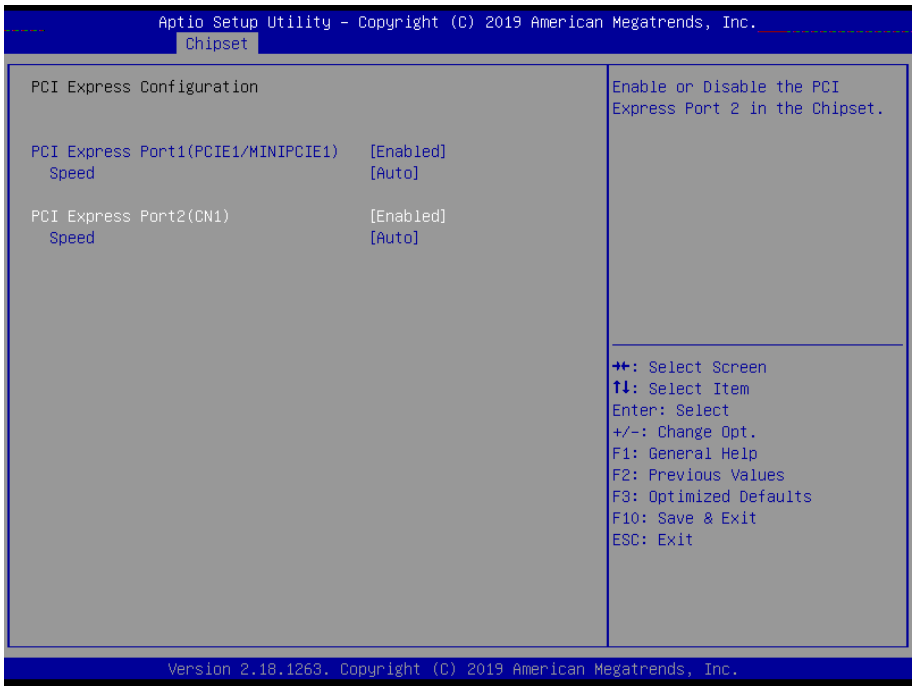


Arestech
Embedded & Automation Solutions

- **XHCI Mode**
  This item allows you to enable or disable the USB XHCI controller.

- **USB 2.0 (EHCI) Support**
  This item allows you to enable or disable the USB EHCI support.

- **PCI Express Configuration**
  Control detection of the Azalia device.



- PCI Express Port 1 (PCIE1/MINIPCIE1)
  This item allows you to enable or disable PCI Express Port 1 (PCIE1/MINIPCIE1) in the chipset.

  Speed: Change the PCIe Port Speed. Select <AUTO> ,<Gen 2> or <Gen 1>

- PCI Express Port 2 (CN1)
  This item allows you to enable or disable PCI Express Port 2 (CN1) in the chipset.

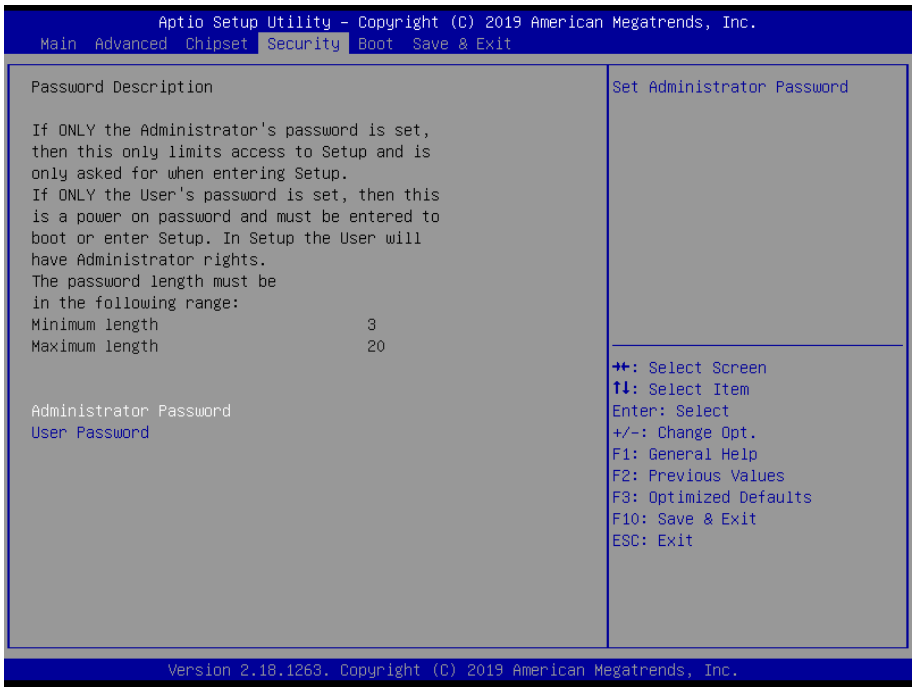
  Speed: Change the PCIe Port Speed. Select <AUTO> ,<Gen 2> or <Gen 1>

- Restore AC Power Loss
  This item specifies whether your system will reboot after a power failure or interrupt occurs.
  Available settings are:
  Power Off: Leave the computer in the power off state.
  Power On: Leave the computer in the power on state.
  Last State: Restore the system to the previous status before a power failure or interrupt occurs.

Arestech
Embedded & Automation Solutions

4.5 Security

Security menu allows you to change administrator password and user password settings.



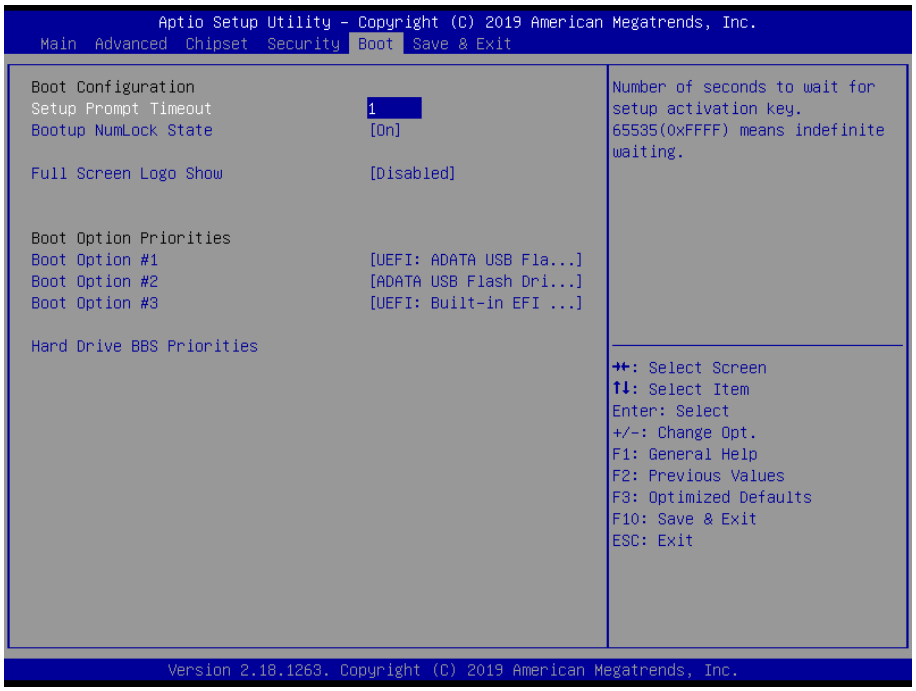
- **Administrator Password**
  This item allows you to set Administrator Password.

- **User Password**
  This item allows you to set User Password.

Arestech
Embedded & Automation Solutions

4.6 Boot

This menu allows you to setup the system boot options.



- **Setup Prompt Timeout**
  This item sets number of seconds to wait for setup activation key.

- **Bootup NumLock State**
  This item selects the keyboard NumLock state. Select <On> or <Off>.

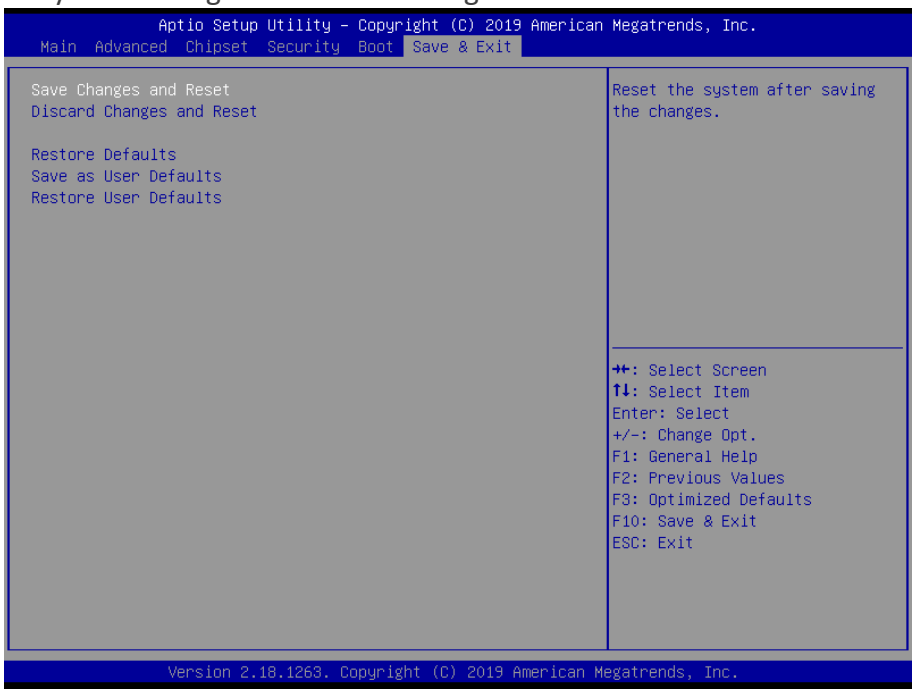
- **Full Screen Logo Show**
  This item allows you to enable or disable Full Screen Logo Show function.

- **Boot Option Priorities**
  The items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

Arestech
Embedded & Automation Solutions

4.7 Save & Exit

This setting allows you to configure the boot settings.



- **Save Changes and Reset**
  This item allows you reset the system after saving the changes.

- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration.

- **Restore Defaults**
  This selection allows you to reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system.

- **Save as User Defaults**
  This item allows user to save the changes done so far as user defaults.

- **Restore User Defaults**
  This item allows user to restore the user defaults to all the options.

Arestech
Embedded & Automation Solutions