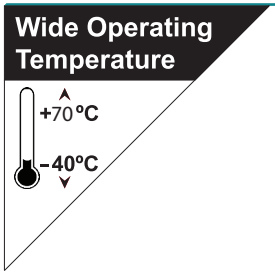

IEC-3902

Digital Signage Player with 8th Generation Intel® Core™ i5/ Celeron processor

User's Manual

Version 1.0

P/N: 4012390200100P

2020.10

Revision History

Version	Date	Description
1.0	2020.10	Initial release

Copyright Notice

The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped or damaged.

f. The equipment has obvious signs of breakage.

11. Keep this User's Manual for later reference.

Caution: This equipment is not suitable for use in locations where children are likely to be present.

Hot Parts!
Burned fingers when handling the parts.
Wait one-half hour after switching off before handling parts.

Warning

The equipment and its components contain very delicately Integrated Circuits (IC). To protect the equipment and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect the equipment from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling equipment components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.
4. The equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

Lithium Battery Replacement

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at: http://www.arbor.com.tw

Please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

http://www.arbor-technology.com

E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1. Features

- 8th Gen. Intel® Core™ i5/ Celeron processor installed
- Support 2 x HDMI 2.0 with independent video outputs
- Support 1 x COM, 4 x USB3.0, 1 x GbE port
- Support Intel® vPro & AMT
- Wide range operating temperature: -40 ~70˚C

1.2. About this Manual

This manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

System	
CPU	Soldered onboard 8th Gen. Intel® Core™ i5-8365UE 1.7GHz (base)/ 4.4GHz (Turbo); Celeron 4305UE 2.2GHz (base); Processor
Memory	Two DDR4 SO-DIMM sockets, supporting up to 16GB memory
Graphics	Integrated Intel HD Graphics 620
Storage	M.2 m-key 2280 socket, supporting SATA SSD upgradable to 128GB
LAN Chipset	1 x Intel® i219LM PCIe GbE PHY, support vPro & AMT
Watchdog Timer	1~255 levels reset
I/O	
Serial Port	1 x RS-232 port with RJ-45 connector
USB Port	4 x USB 3.0 ports
LAN	1 x RJ-45 ports for GbE
Video Port	2 x HDMI 2.0 video outputs, support 4K/60Hz on both HDMI ports simultaneouslly
Environmental	
Operating Temp.	-40 ~ 70°C (-40 ~ 158°F), ambient w/ air flow
Storage Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10 ~ 95% @ 70°C (non-condensing)
Vibration	1.0 Grms, IEC 60068-2-64, random, 5 ~500 Hz, 1 Oct./min, 1 hr/axis, operation
Shock	Operating 10G (11ms), non-operating 20G
Qualification	
Certification	CE, FCC Class A
Power Requirement	
Power Input	DC 24V/2A input (16V~28V)
Power Consumption	Max. 60W (90W for Wide Temperature)
Mechanical	
Construction	Aluminum alloy

Mounting	Wall-mount
Weight	0.73 Kg (1.61 lb)
Dimensions (W x D x H)	130 x 124 x 35 mm (5.12” x 4.88” x 1.37”)
OS Support	
Windows 10 IoT / Linux	

1.4. Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:

1 x IEC-3902

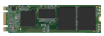
1 x **Accessory Box** that contains the following items:

- User’s manual
- Screws
- 60W power adapter (90W for Wide Temperature) / EU & US power cords

1.5. Ordering Information

IEC-3902-8365UE	Digital Signage Player with Intel® Core™ i5-8365UE, w/ 2xHDMI, power adapter
IEC-3902-4305UE	Digital Signage Player with Intel® Celeron 4305UE, w/ 2xHDMI, power adapter

1.6. Optional Accessories & CTOS

Optional Configuration (CTOS* Kit)		
SSD	64GB M.2 SSD	
SSD	128GB M.2 SSD	
DDR4 4GB	260-pin DDR4-2133 4GB SO-DIMM	
DDR4 8GB	260-pin DDR4-2133 8GB SO-DIMM	
COM port cable	RJ-45 to DB-9 male cable	
Bracket	IEC-3900 series bracket	

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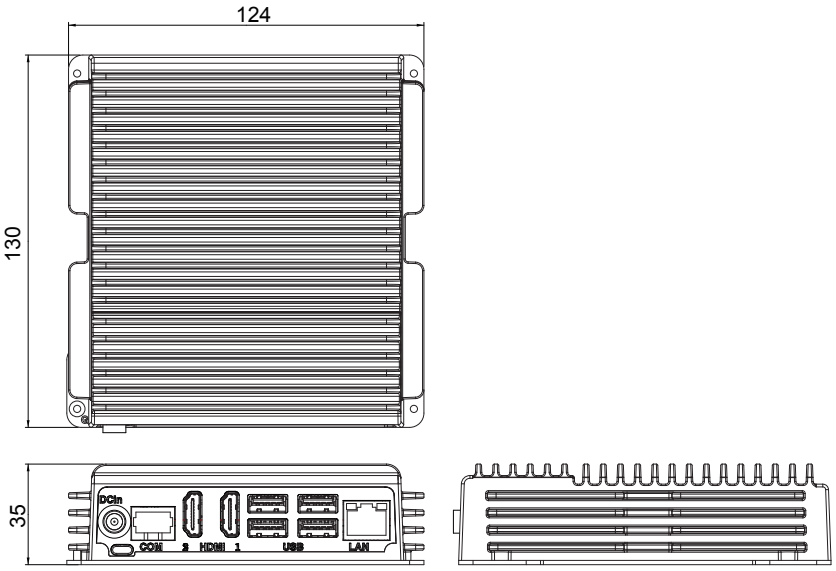
Chapter 2

Getting Started

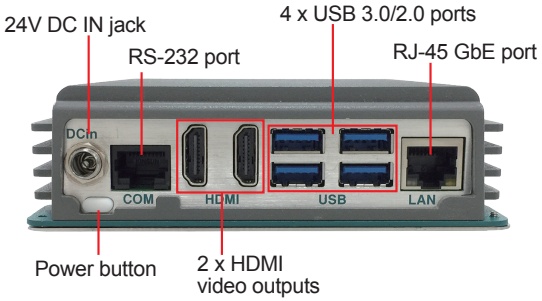
2.1. Dimensions



Unit: mm

2.2. Tour the Computer

Take a look around the computer and find the external controls and connectors.



2.3. Driver (7.4A) Installation Note

To install the drivers, please go to our website at **www.arbor-technology.com** and download the driver pack from the product page.

Windows 10 64-bit	
Chipset	\EmETXe-i91U0\Chipset
Graphic	\EmETXe-i91U0\Graphic\igfx_win10_100.7212
Audio	\EmETXe-i91U0\Audio\Win10_Win8.1_Win8_Win7_WHQLx64
Ethernet	\EmETXe-i91U0\Ethernet
ME	\EmETXe-i91U0\ME

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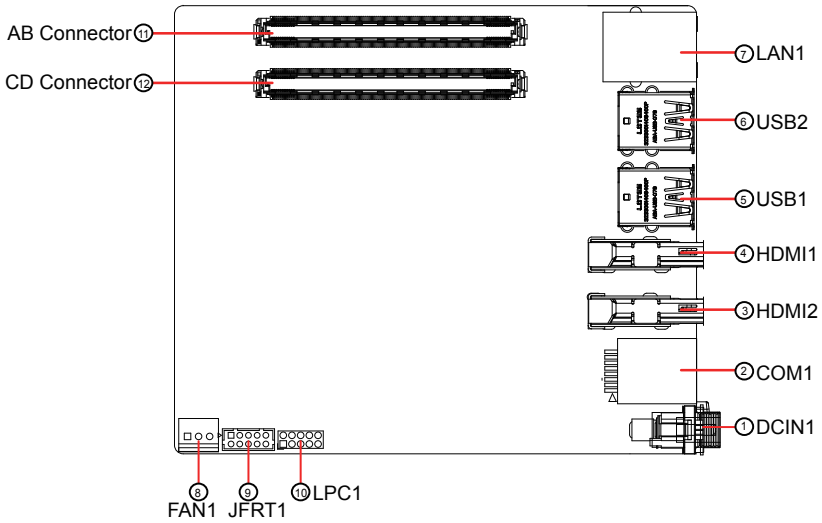
Chapter 3

Engine of the Computer

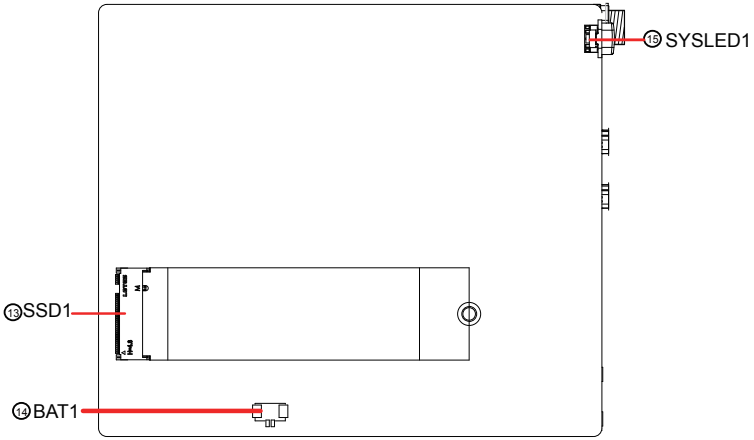
3.1. Board Layout

3.1.1. Carrier Board

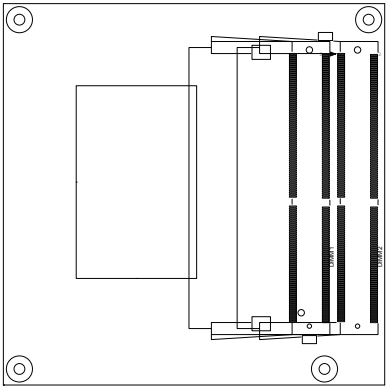
Board Top

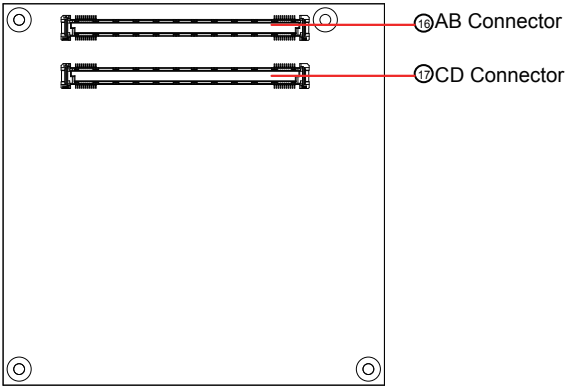


Board Bottom



3.1.2. COM Express Compact Type 6 CPU Module





3.2. Connectors Quick Reference

Connectors

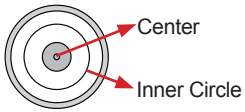
Label	Description
①DCIN1	DC jack
②COM1	RS-232 Serial Port
③④HDMI2, 1	HDMI Vertical Connector
⑤⑥USB1, 2	Stacked USB 3.0/2.0 Connector
⑦LAN1	RJ-45 GbE Connector
⑧FAN1	CPU Fan Power Connector
⑨JFRT1	Front-panel Connector
⑩LPC1	Low Pin Count Connector
⑪AB Connector	COM Express AB Connector (on carrier board)
⑫CD Connector	COM Express CD Connector (on carrier board)
⑬SSD1	M.2 M-key Socket
⑭BAT1	RTC Battery Connector
⑮SYSLED1	Power LED & System Power On/Off button
⑯AB Connector	COM Express AB Connector (on CPU module)
⑰CD Connector	COM Express CD Connector (on CPU module)

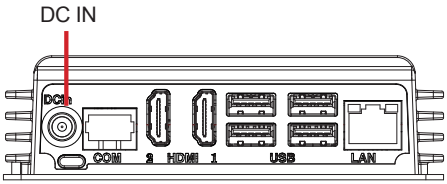
3.2.1. Connectors

① DCIN1

Function: 24V Adapter in DC jack
Connector Type: 2.5φ DC jack with nut and washer

Pin	Description
Center	24V
Inner circle	GND





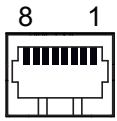
② COM1

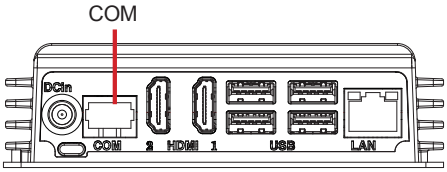
Function: RS-232 Serial Port

Connector Type: RS-232 port with RJ-45 connector

Pin Assignment:

Pin	Desc.
1	DSR#
2	DCD#
3	DTR#
4	GND
5	RXD
6	TXD
7	CTS#
8	RTS#





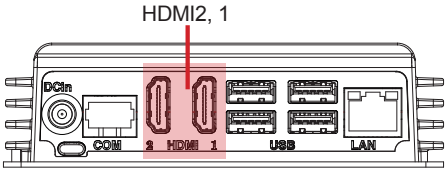
③④ HDMI2, 1

Function: HDMI Vertical Connector

Connector Type: 19-pin HDMI connector

Pin Assignment:

The pin assignments conform to the industry standard.



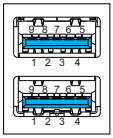
⑤⑥ USB1, 2

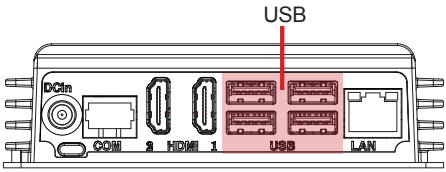
Function: Stacked USB 3.0/2.0 Connector

Connector Type: Double-stacked USB 3.0/2.0 type-A connector

Pin Assignment:

The pin assignments conform to the industry standard.





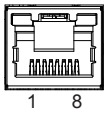
⑦ LAN1

Function: RJ-45 GbE Connector

Connector Type: 10/100/1000Mbps fast Ethernet RJ-45 connector

Pin Assignment:

The pin assignments conform to the industry standard.



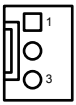
⑧ FAN1

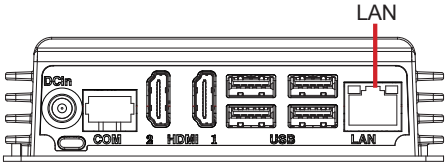
Function: CPU Fan Power Connector

Connector Type: 2.54mm pitch 1x3-pin one-wall connector

Pin Assignment:

Pin	Description
1	GND
2	+VFANS
3	CPU_TACCH





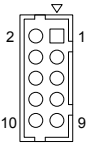
⑨ JFRT1

Function: Front-panel Connector

Connector Type: 2.00mm pitch 2x5-pin wafer header

Pin Assignment:

Pin	Desc.	Pin	Desc.
2	HDDLED+	1	PWLED+
4	HDDLED-	3	PWLED-
6	RESET-	5	PWRBT_IN+
8	RESET+	7	PWRBT_IN-
10	Speaker+	9	Speaker-



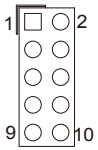
⑩ LPC1

Function: Low Pin Count Connector

Connector Type: 2.00mm pitch 2x5-pin header

Pin Assignment:

Pin	Desc.	Pin	Desc.
1	CLK_PCI_TPM	2	GND
3	LFRAME#	4	LAD0
5	CB_RESET#	6	INT_SERIRQ
7	LAD3	8	LAD2
9	+V3.3S	10	LAD1



⑪ AB Connector

⑫ CD Connector

Refer to 3.2.2. COM Express Connectors on page 20.

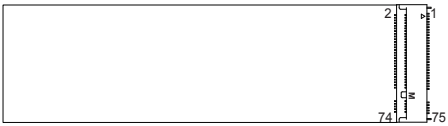
⑬ SSD1

Function: M.2 M-Key Socket

Connector Type: M.2 M-key 2280 Socket for SSD

Pin Assignment:

The pin assignments conform to the industry standard.



⑭ BAT1

Function: RTC Battery connector
Connector Type: 2.00 mm pitch 1x2-pin header
Setting:

Pin	Desc.
1	GND
2	3V

⑮ SYSLED1

Function: Power LED & System Power On/Off button

⑯ COM Express AB Connector

⑰ COM Express CD Connector

Refer to 3.2.2. COM Express Connectors on page 20.

3.2.2. COM Express Connectors

AB Connector

B1	GND	GND (FIXED)	A1
B2	LAN_LED_ACT#	LAN1_MDI3N	A2
B3	LPC_FRAME#	LAN1_MDI3P	A3
B4	LPC_AD0	LAN_LED_100#	A4
B5	LPC_AD1	LAN_LED_1000#	A5
B6	LPC_AD2	LAN1_MDI2N	A6
B7	LPC_AD3	LAN1_MDI2P	A7
B8	LPC_LDRQ0-	LAN_LED_LNK#	A8
B9	LPC_LDRQ1-	LAN1_MDI1N	A9
B10	LPC_CLK	LAN1_MDI1P	A10
B11	GND	GND (FIXED)	A11
B12	CB_PWRBTN#	LAN1_MDI0N	A12
B13	SMB_CLK	LAN1_MDI0P	A13
B14	SMB_DATA	0V9_LAN	A14
B15	SMB_ALERT#	SLP_S3#	A15
B16	SATA_TXP1	SATA_TXP0	A16
B17	SATA_TXN1	SATA_TXN0	A17
B18	SUS_STAT#	SLP_S4#	A18
B19	SATA_RXP1	SATA_RXP0	A19
B20	SATA_RXN1	SATA_RXN0	A20
B21	GND	GND (FIXED)	A21
B22	N/C	N/C	A22
B23	N/C	N/C	A23
B24	CB_PWROK	SLP_S5#	A24
B25	N/C	N/C	A25
B26	N/C	N/C	A26
B27	WDT	PM_BATLOW#	A27
B28	N/C	SATALED-	A28
B29	HDA_SDIN1	HDA_SYNC	A29
B30	HDA_SDIN0	HDA_RST-	A30
B31	GND	GND	A31
B32	SPKR	HDA_BIT_CLK	A32
B33	I2C_CLK	HDA_SDOUT	A33
B34	I2C_DAT	BIOS_DIS0#	A34
B35	THRM#	CB_TRIP#	A35
B36	USBP_7N	USBP_6N	A36
B37	USBP_7P	USBP_6P	A37
B38	USBOC_45-	USBOC_67-	A38
B39	USBP_5N	USBP_4N	A39
B40	USBP_5P	USBP_4P	A40
B41	GND	GND	A41
B42	USBP_3N	USBP_2N	A42
B43	USBP_3P	USBP_2P	A43
B44	USBOC_01-	USBOC_23-	A44
B45	USBP_1N	USBP_0N	A45
B46	USBP_1P	USBP_0P	A46
B47	PLTRST#_BUFF	VCC_RTC	A47
B48	EXCD1_CCPE#	PLTRST#_BUFF	A48
B49	CB_SYSRST#	EXCD0_CCPE#	A49
B50	CB_RESET#	LPC_SERIRQ	A50
B51	GND	GND	A51
B52	PCIE_RXP7	PCIE_TXP7	A52
B53	PCIE_RXN7	PCIE_TXN7	A53
B54	DIO_1	DIO_0	A54
B55	PCIE_RXP6	PCIE_TXP6	A55
B56	PCIE_RXN6	PCIE_TXN6	A56
B57	DIO_2	GND	A57
B58	PCIE_RXP4	PCIE_TXP4	A58
B59	PCIE_RXN4	PCIE_TXN4	A59
B60	GND	GND	A60
B61	PCIE_RXP3	PCIE_TXP3	A61
B62	PCIE_RXN3	PCIE_TXN3	A62
B63	DIO_3	DIO_1	A63
B64	PCIE_RXP2	PCIE_TXP2	A64
B65	PCIE_RXN2	PCIE_TXN2	A65
B66	PCH_WAKE#	GND	A66
B67	EC_WAKE_IN#	DIO_2	A67
B68	PCIE_RXP1	PCIE_TXP1	A68
B69	PCIE_RXN1	PCIE_TXN1	A69
B70	GND	GND	A70
B71	LVDSB_DATA0	LVDSA_DATA0	A71
B72	LVDSB_DATA0-	LVDSA_DATA0-	A72
B73	LVDSB_DATA1	LVDSA_DATA1	A73
B74	LVDSB_DATA1-	LVDSA_DATA1-	A74
B75	LVDSB_DATA2	LVDSA_DATA2	A75
B76	LVDSB_DATA2-	LVDSA_DATA2-	A76
B77	LVDSB_DATA3	LVDS_VDD_EN	A77
B78	LVDSB_DATA3-	LVDSA_DATA3	A78
B79	LVDS_BKLT_EN	LVDSA_DATA3-	A79
B80	GND	GND	A80
B81	LVDSB_CLK+	LVDSA_CLK+	A81
B82	LVDSB_CLK-	LVDSA_CLK-	A82
B83	COM_BKLT_CTRL	LVDS_DDC_CLK	A83
B84	VCC_5V_SBY	LVDS_DDC_DATA	A84
B85	VCC_5V_SBY	DIO_3	A85
B86	VCC_5V_SBY	H_RCIN#	A86
B87	VCC_5V_SBY	A20GATE	A87
B88	BIOS_DIS1#	COM_EXP_CLK_P	A88
B89	N/C	COM_EXP_CLK_N	A89
B90	GND	GND	A90
B91	CRT_GREEN	+V3.3A	A91
B92	CRT_BLUE	SPI_MISO	A92
B93	CRT_HSYNC	DIO_0	A93
B94	CRT_VSYNC	SPI_CLK	A94
B95	CRT_DDC_CLK	SPI_MOSI	A95
B96	CRT_DDC_DATA	COM_TMP_PP	A96
B97	SPI_CS1#	N/C	A97
B98	N/C	UART_TX0	A98
B99	N/C	UART_RX0	A99
B100	GND	GND	A100
B101	FAN_PWMOUT	UART_TX1	A101
B102	FAN_TACHIN	UART_RX1	A102
B103	SLEEP#	LID#	A103
B104	VCC_12V	VCC_12V	A104
B105	VCC_12V	VCC_12V	A105
B106	VCC_12V	VCC_12V	A106
B107	VCC_12V	VCC_12V	A107
B108	VCC_12V	VCC_12V	A108
B109	VCC_12V	VCC_12V	A109
B110	GND	GND	A110

CD Connector

D1	GND (FIXED)	GND (FIXED)	C1
D2	GND	GND	C2
D3	USB_SSTX0-	USB_SSRX0-	C3
D4	USB_SSTX0+	USB_SSRX0+	C4
D5	GND	GND	C5
D6	USB_SSTX1-	USB_SSRX1-	C6
D7	USB_SSTX1+	USB_SSRX1+	C7
D8	GND	GND	C8
D9	USB_SSTX2-	USB_SSRX2-	C9
D10	USB_SSTX2+	USB_SSRX2+	C10
D11	GND (FIXED)	GND (FIXED)	C11
D12	USB_SSTX3-	USB_SSRX3-	C12
D13	USB_SSTX3+	USB_SSRX3+	C13
D14	GND	GND	C14
D15	DDI1_CTRLCLK_AUX+	N/C	C15
D16	DDI1_CTRLCLK_AUX-	N/C	C16
D17	N/C	RSVD	C17
D18	N/C	RSVD	C18
D19	PCIE_TX6+	PCIE_RX6+	C19
D20	PCIE_TX6-	PCIE_RX6-	C20
D21	GND(FIXED)	GND(FIXED)	C21
D22	PCIE_TX7+	PCIE_RX7+	C22
D23	PCIE_TX7-	PCIE_RX7-	C23
D24	N/C	DDI1_HPD	C24
D25	N/C	N/C	C25
D26	DDI1_PAIR0+	N/C	C26
D27	DDI1_PAIR0-	RSVD	C27
D28	N/C	RSVD	C28
D29	DDI1_PAIR1+	N/C	C29
D30	DDI1_PAIR1-	N/C	C30
D31	GND(FIXED)	GND (FIXED)	C31
D32	DDI1_PAIR2+	DDI2_CTRLCLK_AUX+	C32
D33	DDI1_PAIR2-	DDI2_CTRLCLK_AUX-	C33
D34	DDI1_DDC_AUX_SEL	DDI2_DDC_AUX_SEL	C34
D35	N/C	RSVD	C35
D36	DDI1_PAIR3+	N/C	C36
D37	DDI1_PAIR3-	N/C	C37
D38	N/C	N/C	C38
D39	DDI2_PAIR0+	N/C	C39
D40	DDI2_PAIR0-	N/C	C40
D41	GND(FIXED)	GND(FIXED)	C41
D42	DDI2_PAIR1+	N/C	C42
D43	DDI2_PAIR1-	N/C	C43
D44	DDI2_HPD	N/C	C44
D45	N/C	RSVD	C45
D46	DDI2_PAIR2+	N/C	C46
D47	DDI2_PAIR2-	N/C	C47
D48	N/C	RSVD	C48
D49	DDI2_PAIR3+	N/C	C49
D50	DDI2_PAIR3-	N/C	C50
D51	GND (FIXED)	GND (FIXED)	C51
D52	N/C	N/C	C52
D53	N/C	N/C	C53
D54	PEG_LANE_RV#	N/C	C54
D55	N/C	N/C	C55

D56	N/C	N/C	C56
D57	TYPE2#	N/C	C57
D58	N/C	N/C	C58
D59	N/C	N/C	C59
D60	GND (FIXED)	GND (FIXED)	C60
D61	N/C	N/C	C61
D62	N/C	N/C	C62
D63	N/C	N/C	C63
D64	N/C	N/C	C64
D65	N/C	N/C	C65
D66	N/C	N/C	C66
D67	N/C	N/C	C67
D68	N/C	N/C	C68
D69	N/C	N/C	C69
D70	GND (FIXED)	GND (FIXED)	C70
D71	N/C	N/C	C71
D72	N/C	N/C	C72
D73	GND	GND	C73
D74	N/C	N/C	C74
D75	N/C	N/C	C75
D76	GND	GND	C76
D77	N/C	N/C	C77
D78	N/C	N/C	C78
D79	N/C	N/C	C79
D80	GND (FIXED)	GND (FIXED)	C80
D81	N/C	N/C	C81
D82	N/C	N/C	C82
D83	N/C	N/C	C83
D84	GND	GND	C84
D85	N/C	N/C	C85
D86	N/C	N/C	C86
D87	GND	GND	C87
D88	N/C	N/C	C88
D89	N/C	N/C	C89
D90	GND (FIXED)	GND (FIXED)	C90
D91	N/C	N/C	C91
D92	N/C	N/C	C92
D93	GND	GND	C93
D94	N/C	N/C	C94
D95	N/C	N/C	C95
D96	GND	GND	C96
D97	N/C	N/C	C97
D98	N/C	N/C	C98
D99	N/C	N/C	C99
D100	GND (FIXED)	GND (FIXED)	C100
D101	N/C	N/C	C101
D102	N/C	N/C	C102
D103	GND	GND	C103
D104	VCC_12V	VCC_12V	C104
D105	VCC_12V	VCC_12V	C105
D106	VCC_12V	VCC_12V	C106
D107	VCC_12V	VCC_12V	C107
D108	VCC_12V	VCC_12V	C108
D109	VCC_12V	VCC_12V	C109
D110	GND (FIXED)	GND (FIXED)	C110

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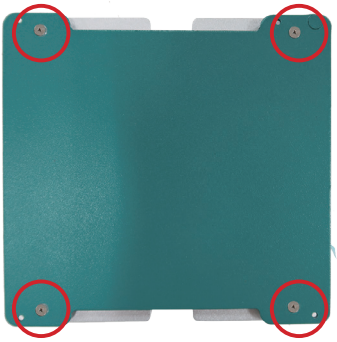
Chapter 4

Installation & Maintenance

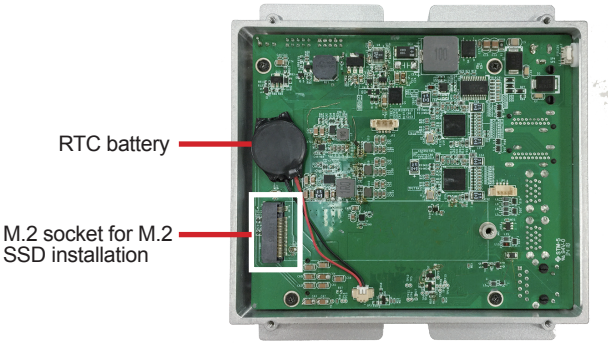
4.1. Access the Inside of the Computer

To use onboard jumpers/connectors or to install/remove internal components, you will need to open the computer to access the inside of the computer. Follow through the guide below to access the inside of the computer.

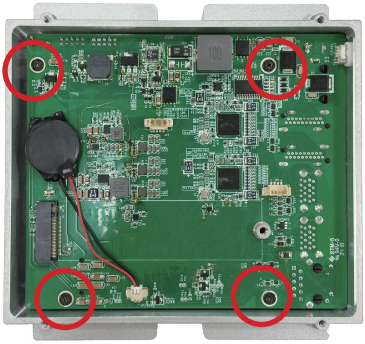
1. Remove the 4 screws on the bottom case as shown below.



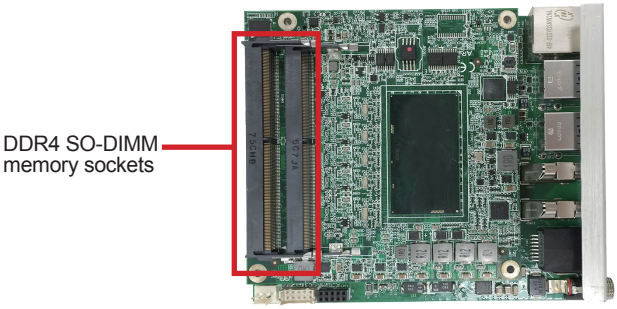
2. Then you can access the M.2 socket and the RTC battery on the daughter board.



3. If you want to access the main board beneath, remove the 4 scrwes as shown.



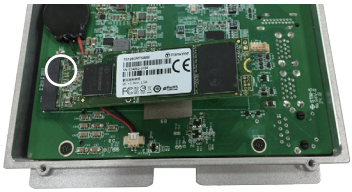
4. Then you can access the memory sockets and the connectors on the main board.



4.2. Installing M.2 SSD

The computer comes with a M.2 m-key 2280 socket for SSD installation. To install the SSD module:

1. Rerfer to "4.1. Access the Inside of the Computer" to locate the M.2 socket for storage installation.
2. Confront the SSD module's edge connector with the M.2 socket. Align the SSD module's key notch at the break on the M.2 socket. By a slanted angle, fully plug the memory module until it cannot be plugged any more.

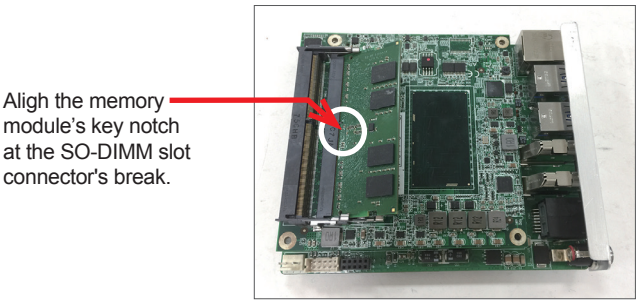


3. Using the screw coming with the SSD module kit, fix the SSD module in plac

4.3. Installing Memory Module

The computer comes with 2 DDR4 SO-DIMM memory sockets for RAM installation. To install the memory module:

1. Rerfer to "4.1. Access the Inside of the Computer" to locate the memory module socket on the main board for memory installation.
2. Confront the memory module's edge connector with the memory socket. Align the memory module's key notch at the break on the memory socket. By a slanted angle, fully plug the memory module until it cannot be plugged any more.

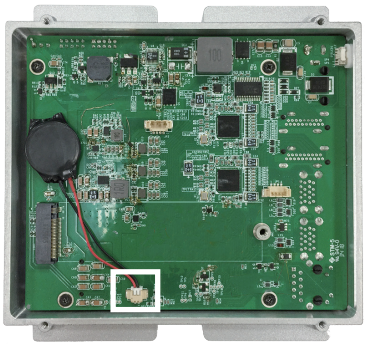


3. Press down the memory module until it is auto-locked in place.

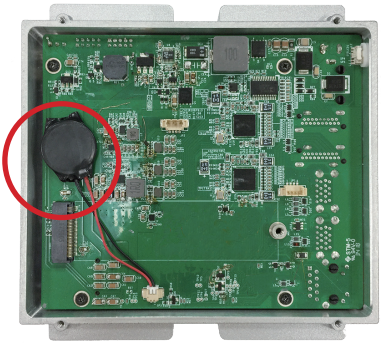
4.4. Replacing RTC Battery

If your computer is losing its time or date settings, or you are receiving a message about CMOS error, then the RTC battery needs to be replaced. To replace the RTC battery, contact ARBOR Technology to get the new RTC battery and follow the steps below.

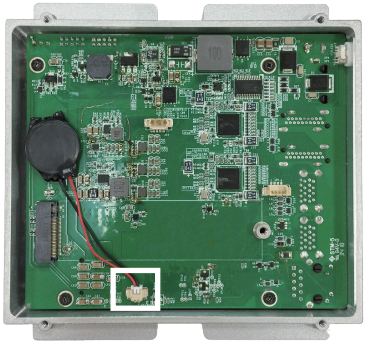
1. Rerfer to "4.1. Access the Inside of the Computer", locate the RTC battery.
2. Disconect the existing RTC battery's connector from the system board.



3. Using a non-metallic tool, pry up the RTC battery from the adhesive that secures the battery.



4. With the adhesive side down, place the new RTC battery into position on the system board.
5. Connect the RTC battery cable to the RTC connector on the system board.

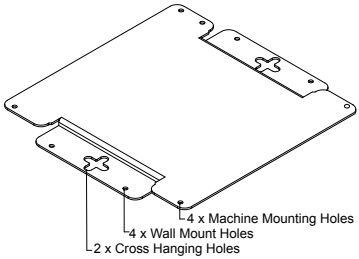


4.5. Wall Mount the Computer

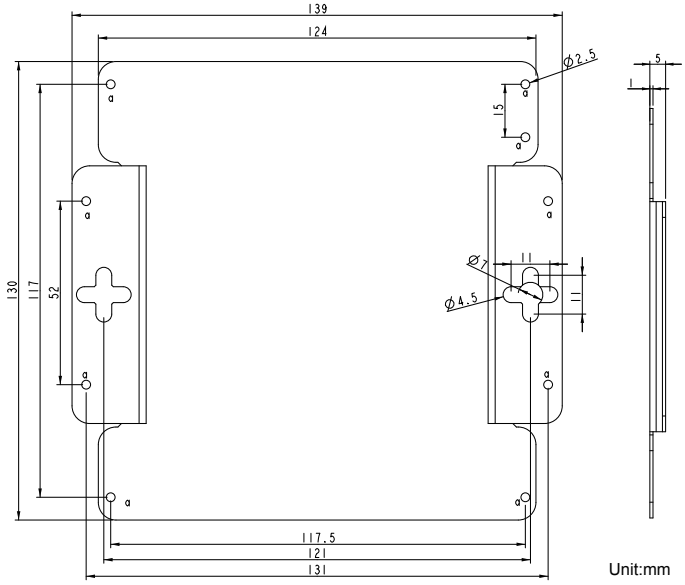
Note: The computer is only suitable for mounting at heights < 2 m.

To mount the computer to a wall or to the rear of a display monitor, you will need a wall mount bracket from ARBOR Technology. The wall mount bracket pack includes:

- 8 x M2.5x4 screws
- 1 x Wall Mount Bracket

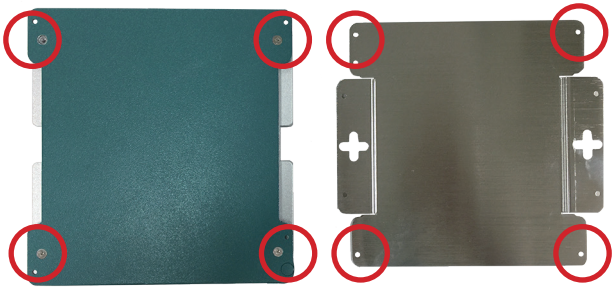


The wall mount bracket dimension is shown as below:



To wall mount the equipment, follow the steps below to proceed.

1. Using the provided M2.5x4 screws, fasten the wall mount bracket to the computer as shown below.



2. Using the cutouts of the bracket, mount the assembly to intended wall or location using the provided M2.5x4 screws.

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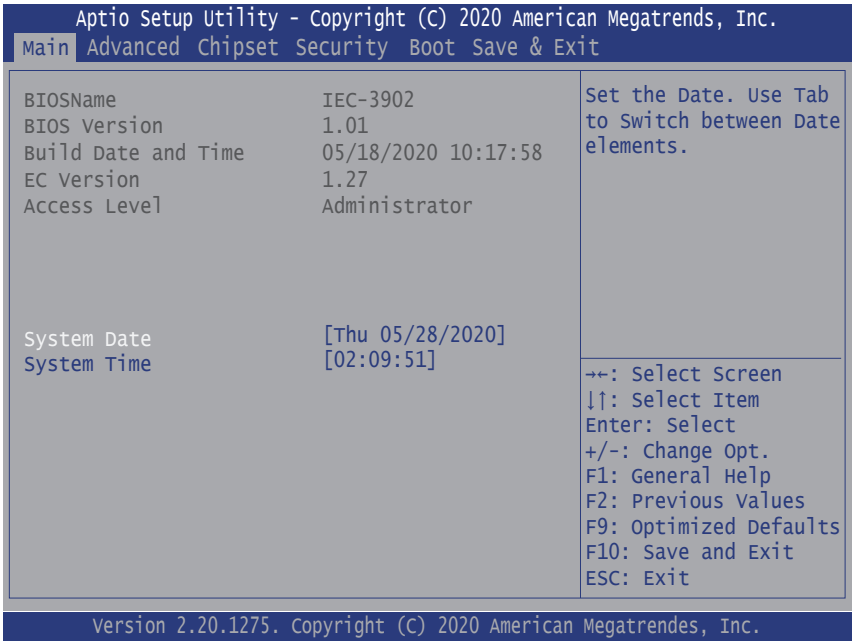
Chapter 5

BIOS

5.1. Main

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press **"Delete"** once the power is turned on.

The **Main Setup** screen lists the following information:



Setting	Description
System Language	Choose the system default language.
System Date	Set the system date. Use Tab to switch between Data elements. Note that the 'Day' automatically changes when you set the date. ► The date format is: **Day:** Sun to Sat **Month:** 1 to 12 **Date:** 1 to 31 **Year:** 1998 to 2099

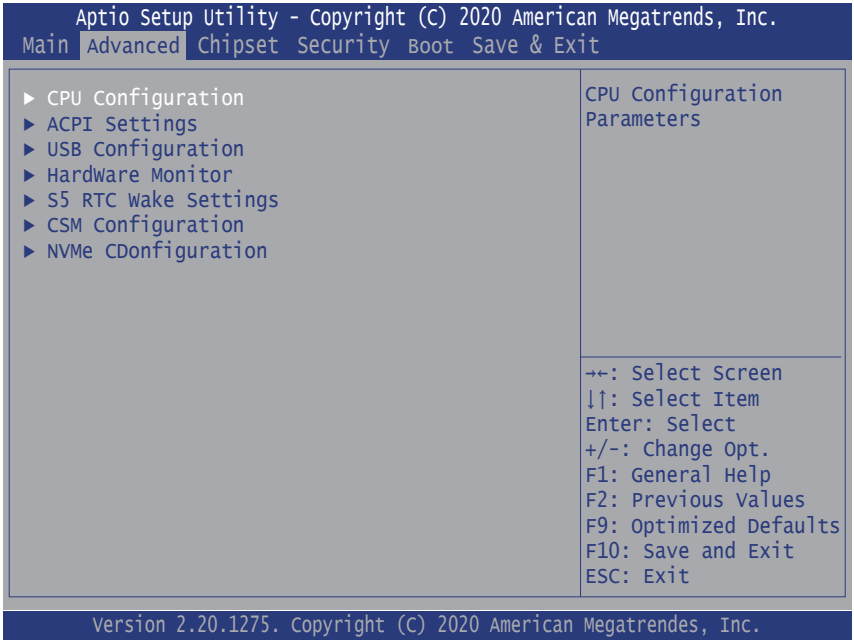
System Time	Set the system time. Use Tab to switch between Time elements. ► The time format is: **Hour:** 00 to 23 **Minute:** 00 to 59 **Second:** 00 to 59

Key Commands

BIOS Setup Utility is mainly a key-based navigation interface. Please refer to the following key command instructions for navigation process.

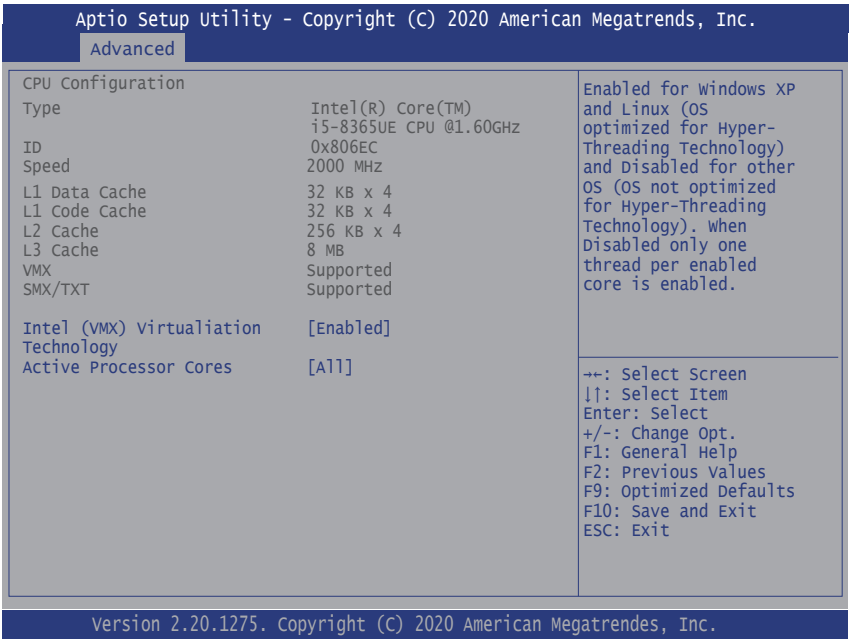
Keystroke	Function
◄ ►	Move to highlight a particular configuration screen from the top menu bar / Move to highlight items on the screen
▼ ▲	Move to highlight previous/next item
Enter	Select and access a setup item/field
Esc	On the Main Menu – Quit the setup and not save changes into CMOS (a message screen will display and ask you to select “OK” or “Cancel” for exiting and discarding changes. Use “←” and “→” to select and press “Enter” to confirm) On the Sub Menu – Exit current page and return to main menu
Page Up / +	Increase the numeric value on a selected setup item / make change
Page Down / -	Decrease the numeric value on a selected setup item / make change
F1	Activate “General Help” screen
F10	Save the changes that have been made in the setup and exit. (a message screen will display and ask you to select “OK” or “Cancel” for exiting and saving changes. Use “←” and “→” to select and press “Enter” to confirm)

5.2. Advanced



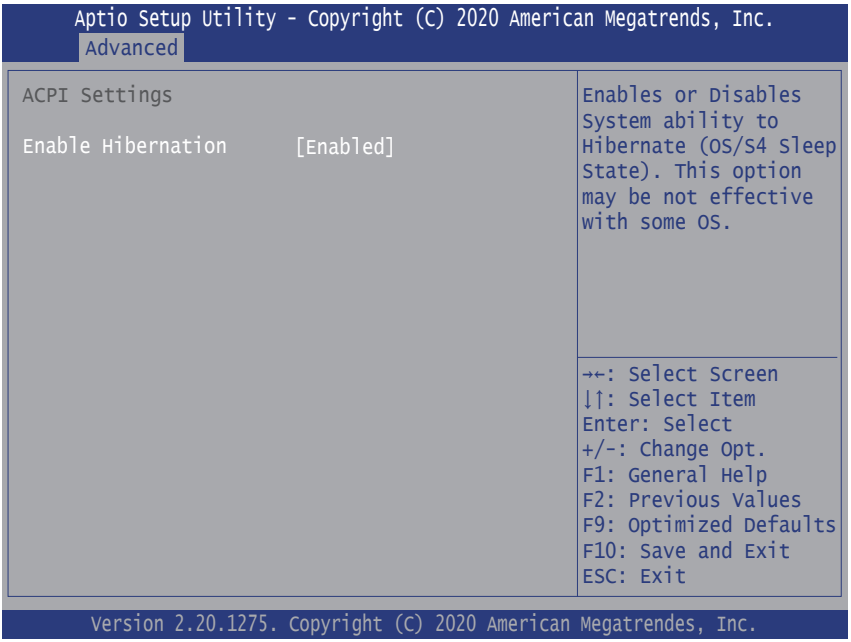
Setting	Description
CPU Configuration	See section 5.2.1. CPU Configuration on page 37
ACPI Settings	See section 5.2.2. ACPI Settings on page 38
USB Configuration	See section 5.2.3. USB Configuration on page 39
Hardware Monitor	See section 5.2.4. Hardware Monitor on page 41
S5 RTC Wake Settings	See section 5.2.5. S5 RTC Wake Settings on page 42
CSM Configuration	See section 5.2.6. CSM Configuration on page 43

5.2.1. CPU Configuration



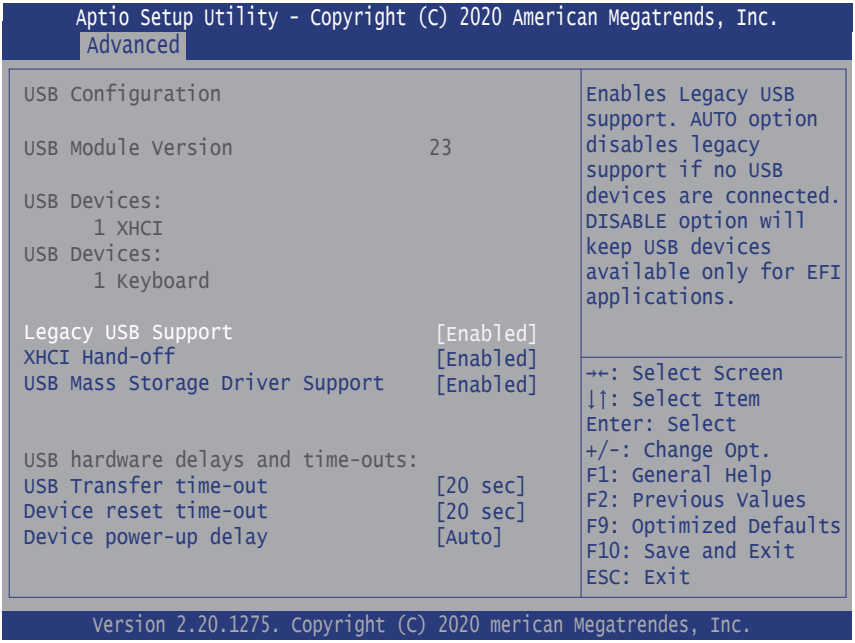
Setting	Description
Intel (VMX) Virtualization	Enable or disable Intel virtualization technology. When enabled, a VMM can utilize the additional hardware capabilities provide by Vanderpool Technology. ► Options: **Enabled** (default) or **Disabled**
Active Processor Cores	Number of cores to enable in each processor package. ► Options: **All** (default), **1, 2** and **3**

5.2.2. ACPI Settings



Setting	Description
Enable Hibernation	**Enable** (default) or **Disable** System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

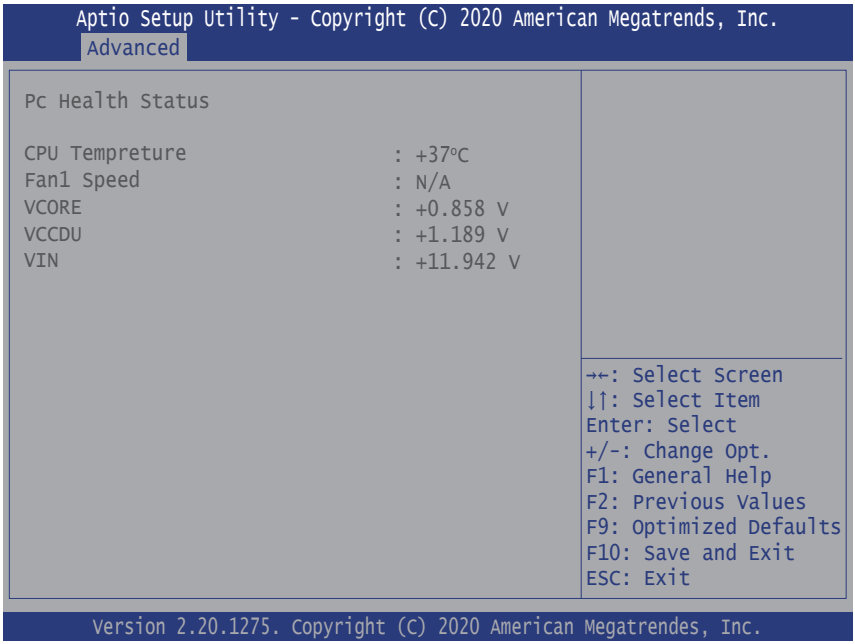
5.2.3. USB Configuration



Setting	Description
Legacy USB Support	Sets legacy USB support. ► Options: **Enabled** (default), **Disabled** and **Auto**. **AUTO** option disables legacy support if no USB devices are connected. **Disable** option will keep USB devices available only for EFI applications.
XHCI Hand-off	**Enable** (default) or **Disable** XHCI Hand-off This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	**Enable** (default) or **Disable** USB Mass Storage Driver Support.
USB hardware delay and time-out	

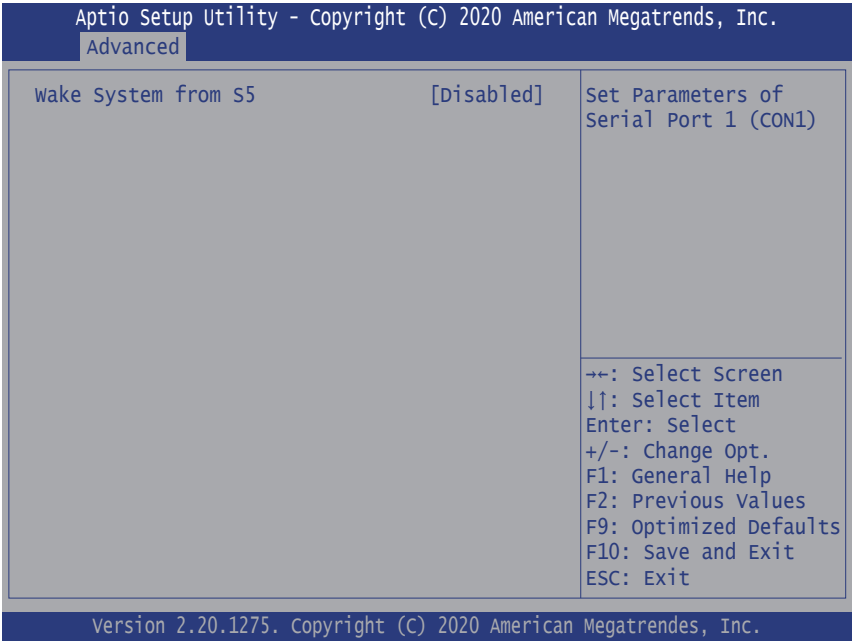
USB Transfer time-out	Use this item to set the time-out value for control, bulk, and interrupt transfers. ▸ Options available are: **1 sec, 5 sec, 10 sec, 20 sec** (default)
Device reset time-out	Use this item to set USB mass storage device start unit command time-out. ▸ Options available are: **10 sec, 20 sec** (default)**, 30 sec, 40 sec**
Device power-up delay	Use this item to set maximum time the device will take before it properly reports itself to the host controller. ▸ Options available are: **Auto** (Default): 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. **Manual**: Select **Manual** you can set value for the following sub-item: '**Device Power-up delay in seconds**', the delay range in from 1 to 40 seconds, in one second increments.

5.2.4. Hardware Monitor



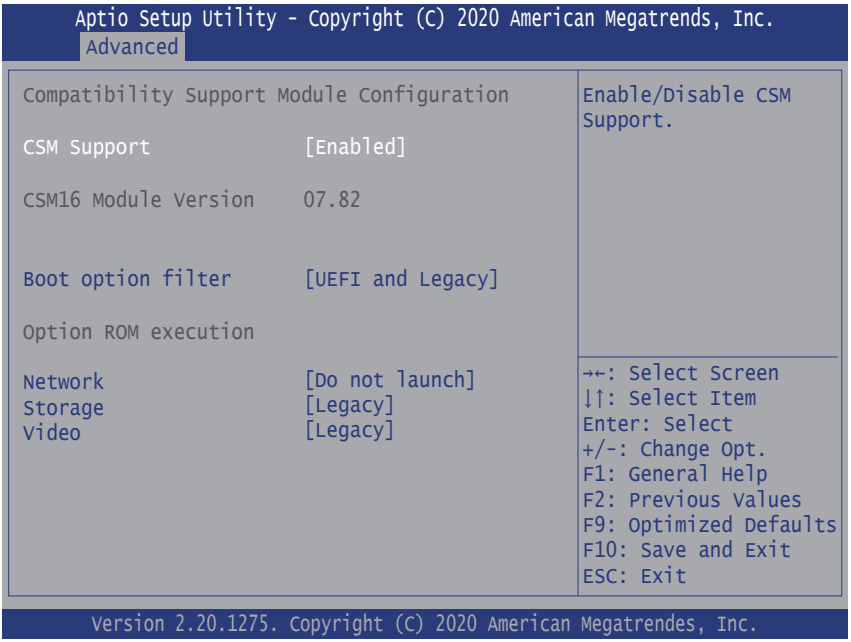
Access this submenu to monitor the hardware status.

5.2.5. S5 RTC Wake Settings



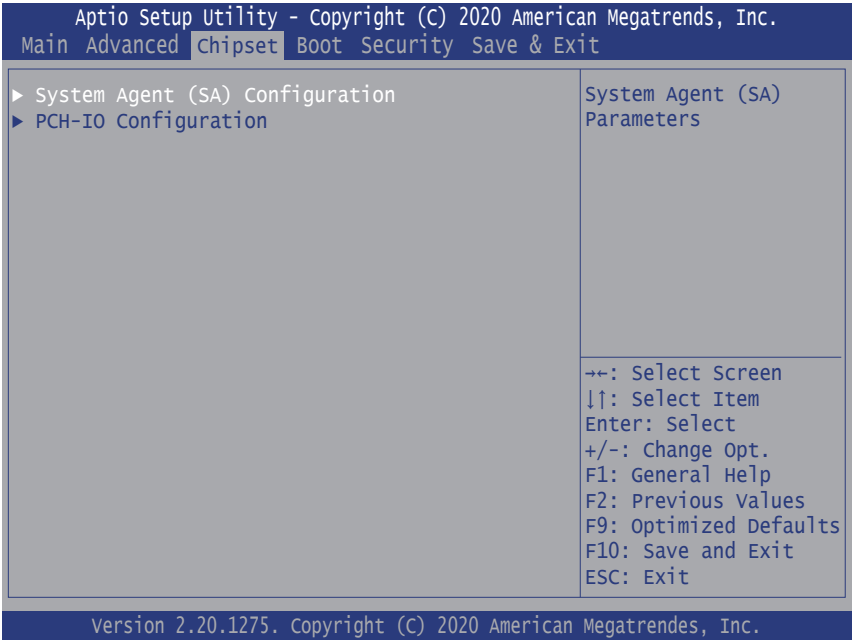
Setting	Description
Wake System from S5	**Enable** or **Disable** (default) system wake on alarm event. ► Options available are: **Disabled** (default): **Fixed Time:** System will wake on the hr::min::sec specifiedc. **DynamicTime:** If selected, you need to set **Wake up minute increase** from 1 - 5. System will wake on the current time + increase minute(s).

5.2.6. CSM Configuration



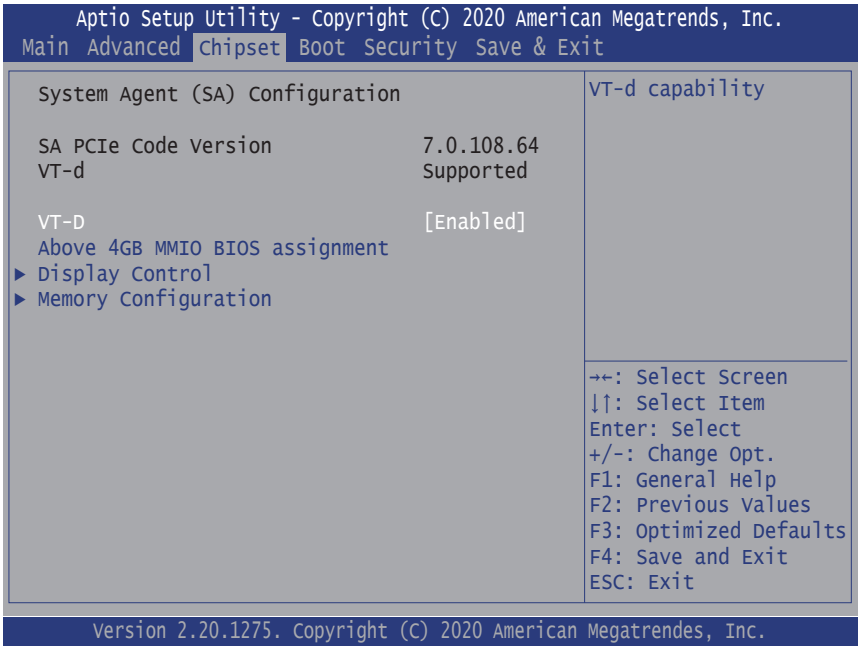
Setting	Description
CSM Support	**Enable** (default) or **Disable** CSM Support.
Boot option filter	Control the Legacy/UEFI ROMs priority. ► Options: **UEFI and Legacy** (default), **Legacy only** and **UEFI only**
Network	Control the execution of UEFI and Legacy PXE OpROM ► Options: **Do not lauch** (default) and **Legacy**
Storage	Control the execution of UEFI and Legacy Storage OpROM ► Options: **Do not lauch** and **Legacy** (default)
Video	Control the execution of UEFI and Legacy Video OpROM ► Options: **Do not lauch** and **Legacy** (default)

5.3. Chipset



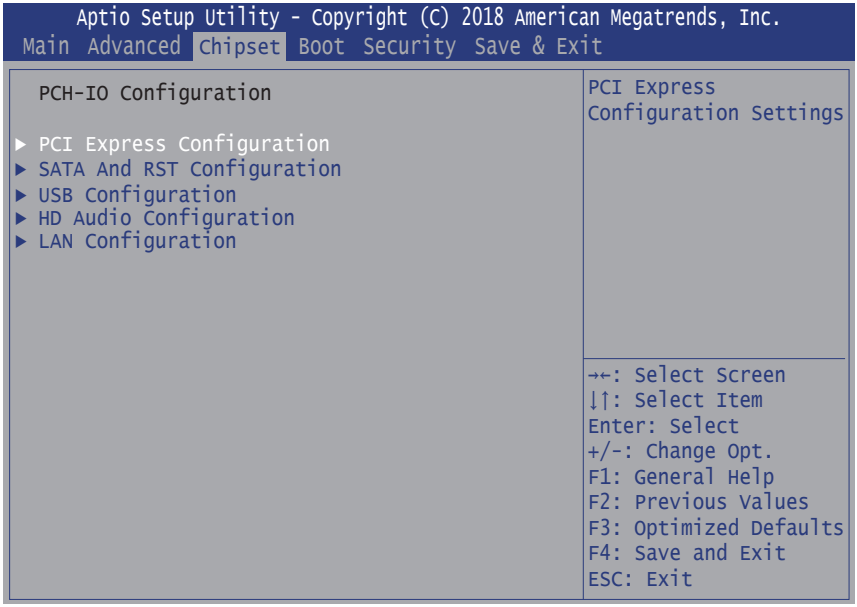
Setting	Description
System Agent (SA) Configuration	See 5.3.1 System Agent (SA) Configuration on page 45
PCH-IO Configuration	See 5.3.2 PCH-IO Configuration on page 47

5.3.1. System Agent (SA) Configuration



Setting	Description
VT-d	**Enable** (default) or **Disable** VT-d function
Above 4GB MMIO BIOS assignment	**Enable** or **Disable** (default) Above 4GB MmemoryMapped BIOS assignment. This is automatically enabled when Aperture Size is set to 2048MB.
Display Control	
Primary IGFX Boot Display	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display. ► Options: **VBIOS Default** (default), **LFP**, **EFP2**, **EFP** and **EFP3**.
Active LFP	Configuring LFP usage ► Options: **No eDP** (default) and **eDP Port-A**
Memory Configuration	Access this submenu to view the memory configuration.

5.3.2. PCH-IO Configuration



Setting	Description
PCI Express Configuration	See 5.3.2.1 PCI Express Configuration on page 47
SATA Configuration	See 5.3.2.2 SATA Configuration on page 47
USB Configuration	See 4.3.2.3 USB Configuration on page 48
HD Audio Configuration	See 4.3.2.4 HD Audio Configuration on page48
PCH LAN Controller	See 4.3.2.5 PCH LAN Controller on page 48

5.3.2.1 PCI Express Configuration

Setting	Description
PCIE1, 2 3 & MC1, 2	**Enable** (default) or disable PCIE3/1/2 and MC1/2.
Topology	Identify the SATA Topology if it is default, ISATA , Flex, DirectConnect or M2. ► Options: **Basic specific**, **Unknown**, **x1** (default), **x4, Sata Express** and **M2**
ASPM	Disable or set the ASPM level. Force L0s will force all inks to L0s state. “Auto” will allow BIOS to auto configure.”Disable” will disable ASPM. ► Options: **Disabled** (default), **L0s**, **L1**, **L0sL1** and **Auto**.
Hot Plug	**Enable** or **disable** (default) PCI Express Hot Plug.
PCIe Speed	Select PCI Express port speed. ► Options: **Auto** (default), **Gen1**, **Gen2** and **Gen3**

5.3.2.2 SATA Configuration

Setting	Description
SATA Controller`(s)	**Enable** (default) or **disable** SATA Device.
SATA Mode Selection	Determines how SATA controller(s) operate. ► Options: **AHCI** (default) and **RAID**
Port 0/1	**Enable** or **disable**(default) SATA Port.
Hot Plug	**Enable** or **disable** (default) the port as pluggable.
SATA Device Type	Identify the SATA port is connected to Solid State Drive or hard Disk Drive. ► Options: **Hard Disk Drive** and **Solid State Drive** (default).

54.3.2.3 USB Configuration

Setting	Description
USB Port Disable Override	Selectively enable/disable (default) the corresponding USB port from reporting a Device Connection to the controller. ► Options: **Disable Link** (default) and **Select Per-Pin**

5.3.2.4 HD Audio Configuration

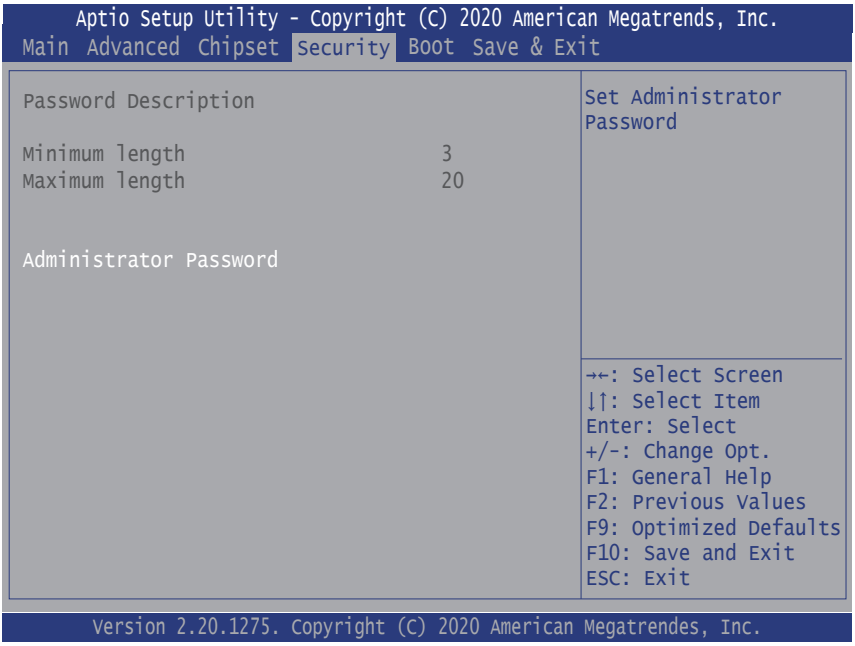
Setting	Description
HD Audio Configuration	Control Detection of the HD-Audio device. ► Options available are: **Disabled**: HDA will be unconditionally disabled **Enabled** (default): HDA will be unconditionally Enabled

5.3.2.5 PCH LAN Controller

Setting	Description
PCH LAN Controller	Enables/Disables onboard NIC. ► Options: **Enabled** (default) and **Disabled** If enabled, “Wake on LAN” option will be available to **Enable** (default) / **Disable** integrated LAN to wake the system. (the Wake On LAN cannot be disabled if ME is on at Sx state.)

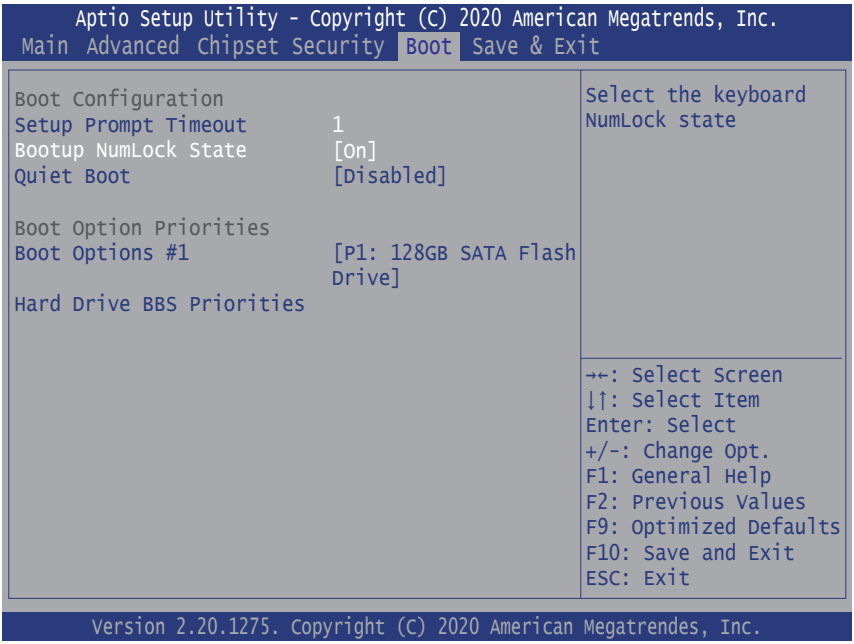
5.4. Security

The **Security** menu sets up the administrator password.



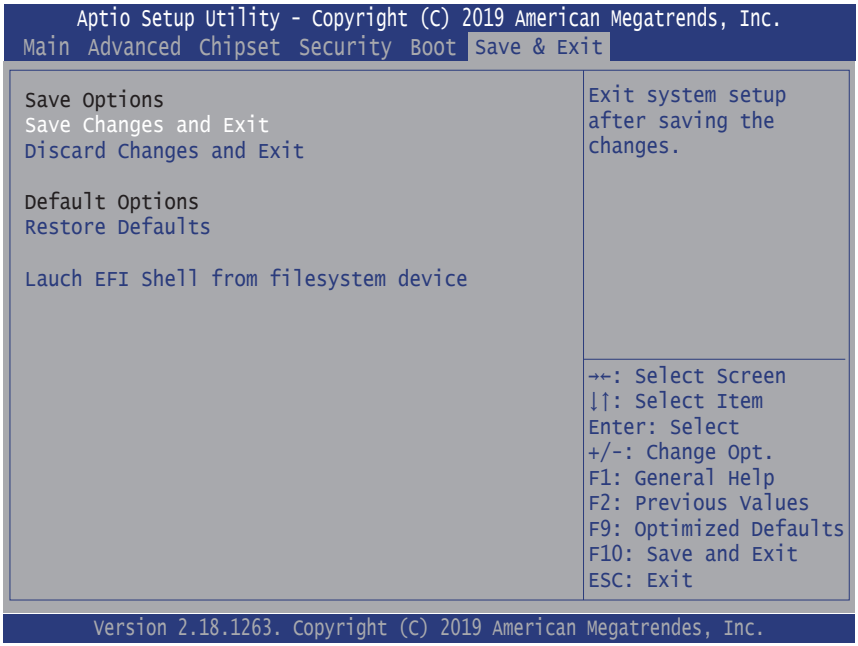
Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. The screen then pops up an **Create New Password** dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

5.5. Boot



Setting	Description
Setup Prompt Timeout	Sets how long to wait for the prompt for entering BIOS Setup to show. Set it to **65535** to wait indefinitely. The default setting is **1** (sec)
Boot NumLock State	Select the keyboard NumLock state. ► Options: **On** (default) and **Off**.
Quiet Boot	**Enable** (default) or **Disable** Quiet Boot option.
Boot Option	Sets the system boot order. The options depends on yourinstallation
Hard Drive BBS Priorities	Only available if mSATA or USB storage device is installed. Usethis option to set the order of the legacy devices in this group

5.6. Save & Exit



Setting	Description
Save Changes and Exit	Exit system setup after saving the changes. ► Enter the item and then a dialog box pops up: **Save configuration and exit? (Yes/ No)**
Discard Changes and Exit	Exit system setup without saving the changes. ► Enter the item and then a dialog box pops up: **Quit without saving? (Yes/ No)**
Restore Defaults	Restore/Load Default values for all the setup options. ► Enter the item and then a dialog box pops up: **Load Optimized Defaults? (Yes/ No)**
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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