ARES-1973 Series

Machine Vision Controller with 6th/7th Gen. Intel® Core™ i7/i5/i3 / Celeron® Processor

User's Manual

Version 1.1

P/N: 4017197300110P

2020.06

Revision History

Version	Date	Description
1.0	2018.12	Initial release
1.1	2020.06	• Added model of ARES-1973C-4898 • Update product image of ARES-1973H-2WD8F. • Revise driver installation instructions • Added "Appendix A. 32-bit DIO Signal Connections"

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.

Warning

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

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer 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.

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.

https://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. About this Manual

This manual covers several models of the ARES-1973 series. Product features, installation images and BIOS screens may vary from model to model. Also, it 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.

The ARES-1973 series includes the following models:

	Outlook	Chipset	I/O	Fan
ARES-1973H-2WD8F		Intel® H110	2 x COM,16 x DI/DO,1 x GbE LAN, 4 x PoE and 8 x USB	With fan
ARES-1973C-4898		Intel® C236	4 x COM, 4 x DI/DO, 9 x GbE LAN and 8 x USB	Fanless
ARES-1973C-48C8		Intel® C236	4 x COM, 4 x DI/DO, 1 x GbE LAN, 2 x SFP+ 10 GbE LAN and 8 x USB	Fanless

1.2. Specifications

System		
CPU	ARES-1973H-2WD8F	Socket LGA1151 for 6th / 7th Intel® Core i7 / i5 / i3 / Celeron®, Max.65W TDP
	ARES-1973C-4898 ARES-1973C-48C8	Socket LGA1151 for 6th / 7th Intel® Core i7 / i5 / i3 / Celeron®, Max.35W TDP
Memory	2 x 260-pin DDR4 SO-DIMM sockets, supporting 2133MHz SDRAM up to 32GB	
Chipset	ARES-1973H-2WD8F	Intel® H110
	ARES-1973C-4898 ARES-1973C-48C8	Intel® C236
Graphics	Intel® Gen9 Graphics DX 11/12, OGL4.3/4.4	
LAN Chipset	ARES-1973H-2WD8F	1 x Intel® i219LM PCIe controller w/ iAMT 11.0 (except Core i3 and Celeron series) 4 x Intel® i211AT PCIe controller for PoE, (Co-Layout i210-IT)
	ARES-1973C-4898	1 x Intel® i219LM PCIe controller w/ iAMT 11.0 (except Core i3 and Celeron series) 8 x Intel® i211AT PCIe controller (Co-Layout i210-IT)
	ARES-1973C-48C8	1 x Intel® i219LM PCIe controller w/ iAMT 11.0 (except Core i3) 1 x Intel® X710-BM2 PCIe controller
Watchdog Timer	1~255 levels reset	
I/O		
Serial Port	ARES-1973H-2WD8F	2 x RS232/422/485 DB-9 connectors
	ARES-1973C-4898 ARES-1973C-48C8	2 x RS232/422/485 DB-9 connectors 2 x RS232 ports DB-9 connectors
USB Port	4 x USB 3.0/2.0 Type A connectors 4 x USB 2.0 Type A connectors 1 x Vertical USB 2.0 (type A) internal	
LAN	ARES-1973H-2WD8F	4 x RJ-45 ports for PoE, IEEE802.3af 1 x RJ-45 port for Giga LAN
	ARES-1973C-4898	9 x RJ-45 ports for Giga LAN
	ARES-1973C-48C8	1 x RJ-45 port for Giga LAN 2 x SFP+ port for 10 GbE LAN

Video Port	1 x DisplayPort 1.2, up to 4K (UHD)	
	1 x VGA	
Storage	1 x SATA 3.0 Port and 1 x SATA Power connector	
	1 x M.2 M-key for SSD, 2242/2280 (PCIe x4+SATA3.0)	
Digital I/O	ARES-1973H-2WD8F	16 x DI, 16 x DO (1.5KV isolation protection / DO supports current 24V 200mA)
	ARES-1973C-4898 ARES-1973C-48C8	4 x DI, 4 x DO Optional 32 bit DIO for ARES-1973C-48C8
Expansion Bus	1 x M.2 M-key for SSD, 2242/2280 (PCIe x4+SATA3.0)	
Environmental		
Operating Temp.	-20 ~ 50 °C (-4 ~ 131°F), ambient w/ air flow	
Storage Temp.	-30 ~ 80°C (-22 ~ 176°F)	
Operating Humidity	10-95% @ 50°C (non-condensing)	
Vibration	5~500Hz 3 Grms X,Y,Z axis w/SSD, according to IEC 68-2-64	
Shock & Crash	10G peak acceleration (11 m sec. duration), operation	
	30G peak acceleration (11 m sec. duration), nonoperation	
	According to IEC 68-2-27	
Qualification		
Certification	CE, FCC Class A	
Power Requirement		
Power Input	DC 12~24V	
Power Consumption	ARES-1973H-2WD8F	Max. 150W (w/o I/O card)
	ARES-1973C-4898	Max. 90W (w/o I/O card)
	ARES-1973C-48C8	Max. 80W (w/o I/O card)
Storage		
Type	1 x 2.5” internal drive bay for HDD/SSD	
	1 x M.2 M-key for SSD, 2242/2280	

Mechanical		
Construction	ARES-1973H-2WD8F	Metal
	ARES-1973C-4898 ARES-1973C-48C8	Metal + Aluminum Alloy
Mounting	Wall-mount / DIN-rail	
Weight	ARES-1973H-2WD8F	2.6Kg
	ARES-1973C-4898 ARES-1973C-48C8	4.2Kg
Dimensions (W x D x H)	ARES-1973H-2WD8F	230 x 155 x 90 mm (9.06" x 6.10" x 3.54")
	ARES-1973C-4898 ARES-1973C-48C8	254 x 170 x 94 mm (10" x 6.7" x 3.7")
OS Support		
Windows 10 IoT (For 7th Gen Intel® Processor) Windows 7/ Window8.1/ Window 10 IoT (For 6th Gen Intel® Processor) Linux: Ubuntu (Kernel: 3.1X)		

1.3. 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 ARES-1973 (Product outlook varies according to your model)

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

- User's manual
- Screws/cable
- 3-pin plug for terminal block

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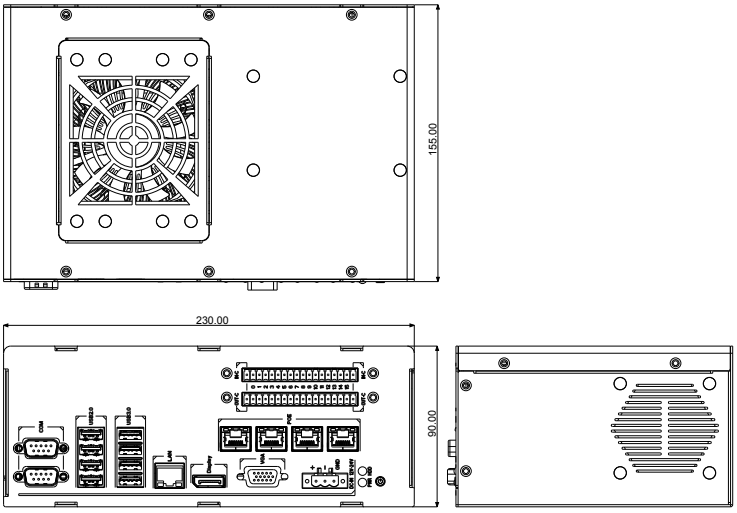
Chapter 2

Getting Started

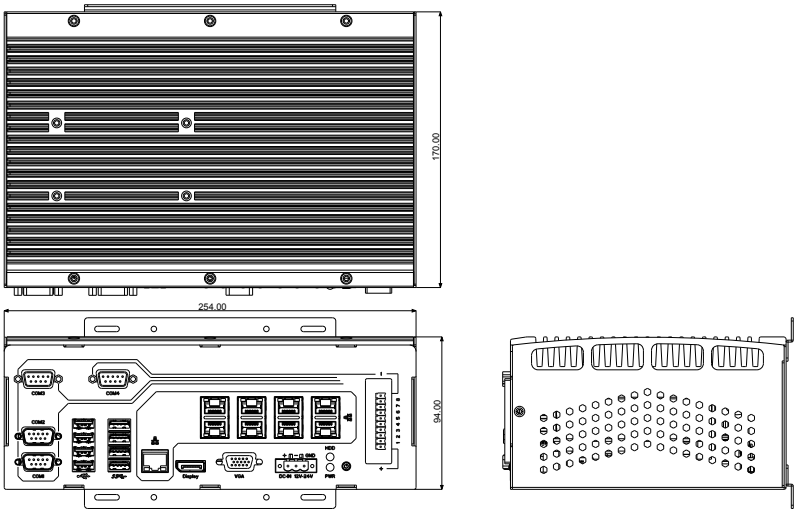
2.1. Dimensions

2.1.1. ARES-1973H-2WD8F



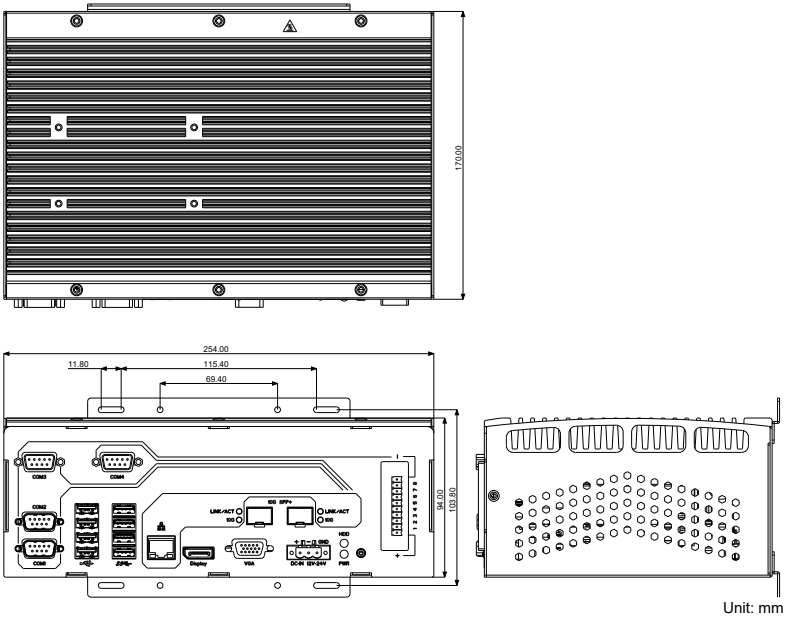
Unit: mm

2.1.2. ARES-1973C-4898



Unit: mm

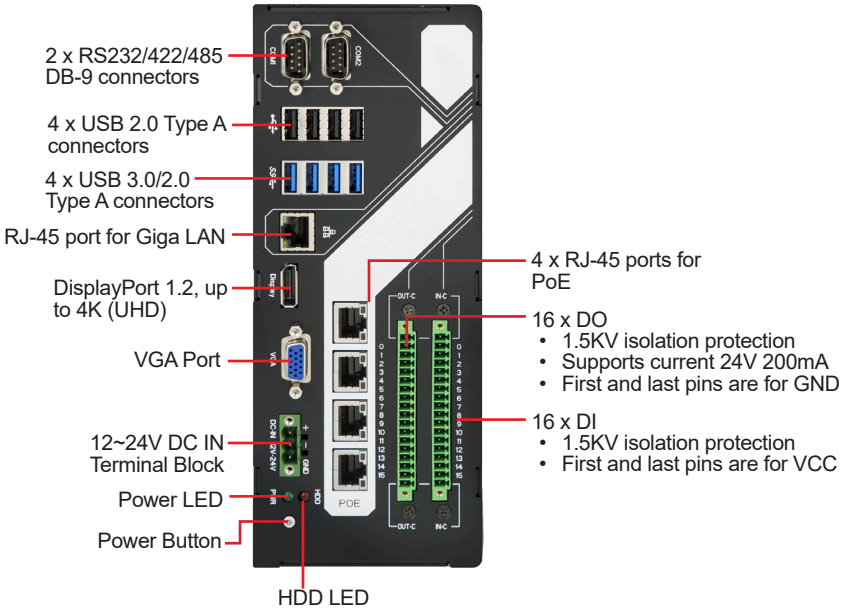
2.1.2. ARES-1973C-48C8



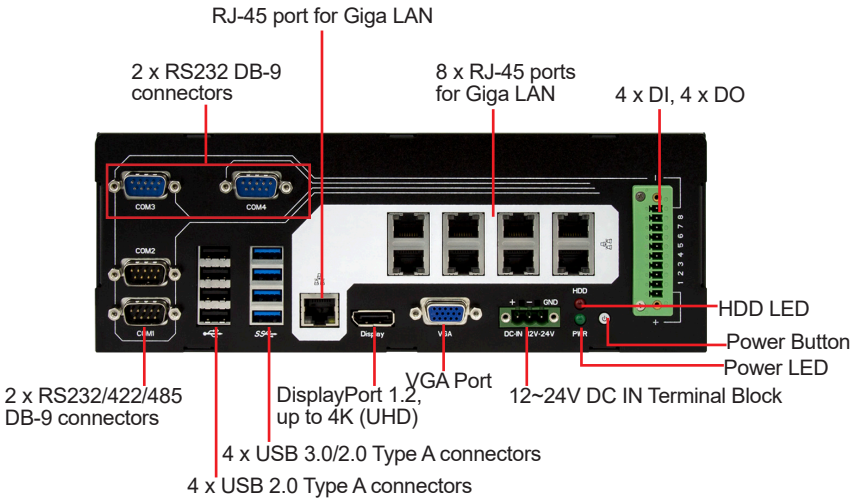
Unit: mm

2.2. Tour the Computer

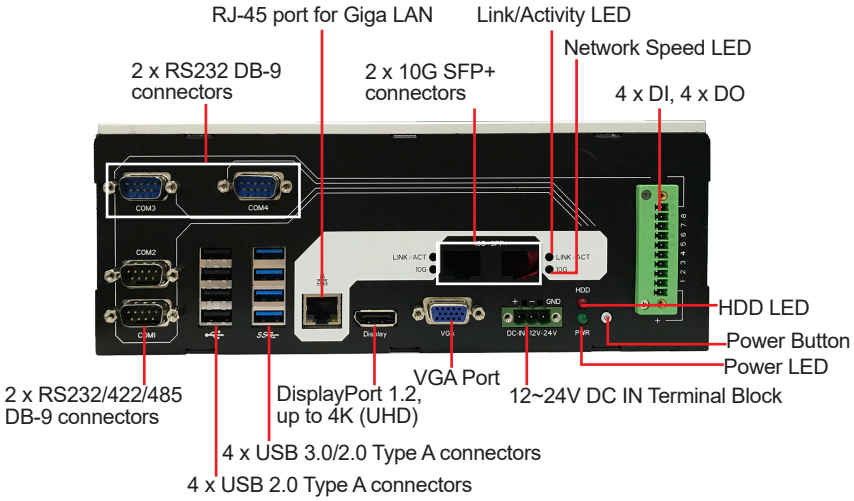
2.2.1. ARES-1973H-2WD8F



2.2.2. ARES-1973C-4898



2.2.2. ARES-1973C-48C8



2.3. LED Status

LED	Color	Description
PWR LED	Green	On: The power supply is functioning correctly. Off: The system is off.
HDD LED	Red	Blink: HDD read/write operations are in progress.
Power button	Green	Solid: The system is in operation(S0 status)
	Red	Solid: The system is in sleep/hibernation state (S3/S4) or power off mode (S5)
For ARES-1973C-48C8		
LYNC/ACT	Yellow	Off: There is no link On: Link is established Blink: The port is transmitting or receiving data on the network.
10G	Green	On: The port is operating at 10G speed. Off: The port is operating at a speed lower than 10G. **Note:** Actual connection speed varies depending on the service provided by the cable operator and the network environment.

2.4. Driver Installation Note

For operating system of Windows 10, please go to our website at **www.arbor-technology.com** and download the driver pack from the product page. Then unzip the downloaded file and follow the sequence below to install the drivers to prevent errors:

For ARES-1973H-2WD8F & ARES-1973C-4898
Chipset → Graphics → Ethernet → ME → Audio

For ARES-1973C-48C8
Chipset → Graphics → 10G LAN Driver → Ethernet → ME → Audio

Note: For ARES-1973C-48C8, make sure to install the 10G LAN driver and then the Ethernet LAN driver to ensure all the LAN ports operate normally.

Chapter 3

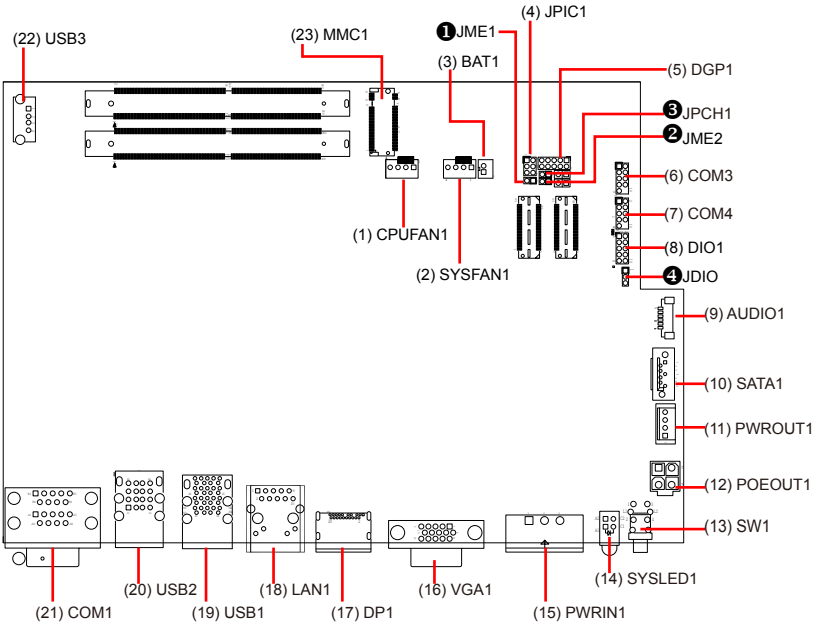
Engine of the Computer

3.1. Boards Overview

The PCBs of the computer varies according to the models. The following table lists the PCBs of each model:

	Outlook	Main Board	Daughter Board
ARES-1973H-2WD8F		FMB-i89Q5	SCDB-129Q SCDB-348B SCDB-348C
ARES-1973C-4898		FMB-i89Q5	SCDB-129S
ARES-1973C-48C8		FMB-i89Q5	SCDB-129U

3.2. Main Board - FMB-i89Q5



Jumpers

Label	Description
❶JME1	ME FLASH Selection
❷JME2	SRTC Reset Selection
❸JPCH1	Clear CMOS Selection
❹JDIO	DIO Voltage Setting.

Connectors

Label	Description
(1) CPUFAN1	CPU Fan Power Connector
(2) SYSFAN1	System Fan Power Connector
(3) BAT1	RTC Battery Connector
(4) JPIC1	External PIC Programming Pin Header
(5) DGP1	External 80 Debug Port
(6) (7) COM3/4	RS-232 DB9 connector
(8) DIO1	Digital IO Connector
(9) AUDIO1	Audio Connector
(10) SATA1	SATA Connector
(11) PWROUT1	SATA Power Input
(12) POEOUT1	POE Power Output
(13) SW1	Power Button
(14) SYSLED1	HDD and PWR LED
(15) PWRIN1	Power Input Terminal Block
(16) VGA1	VGA Connector
(17) DP1	DisplayPort 1.2 Connector
(18) LAN1	RJ-45 Ethernet Connector
(19) USB1	USB 3.0 Stacked Connectors
(20) USB2	USB 2.0 Stacked Connectors
(21) COM1	RS-232/422/485 Selectable Serial Port
(22) USB3	USB 2.0 Connector
(23) MMC1	M.2 M-Key Connector

3.2.1. Jumpers

❶ JME1

Function: ME Flash Selection
Jumper Type: 2.54 mm pitch, 1x2-pin header
Setting:

Pin	Description	
Short	ME Flash disabled	
Open	ME Flash enabled (default)	

❷JME2

Function: SRTC Reset Selecction
Jumper Type: 2.54 mm pitch 1x2-pin header
Setting:

Pin	Description	
Short	Clears ME RTC	
Open	Normal (default)	

❸JPCH1

Function: Clear CMOS Selection
Jumper Type: 2.54 mm pitch 1x2-pin header
Setting:

Pin	Description	
Short	Clears CMOS	
Open	Keeps CMOS (default)	

❹ JDIO1

Function: DIO Voltage Setting
Jumper Type: 2.00 mm pitch 1x3-pin header
Setting:

Pin	Description	
1-2	+12V	
2-3	+5V (default)	

3.2.2. Connectors

(1) CPUFAN1

Function: CPU fan power connector (The fan must be a +12V fan.)
Connector Type: 2.54mm-pitch 1x4-pin wafer connector with one wall
Pin Assignment:

Pin	Description
1	GND
2	+12V
3	RPM
4	Control

(2) SYSFAN1

Function: System fan power connector (The fan must be a +12V fan.)
Connector Type: 2.54 mm-pitch 1x4-pin wafer connector with one wall
Pin Assignment:

Pin	Description
1	GND
2	+12V
3	RPM
4	Control

(3) BAT1

Function: RTC battery connector
Connector Type: Onboard 2x1-pin box connector
Pin Assignment:

Pin	Desc.
1	BAT+
2	BAT-

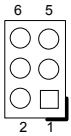
(4) JPIC1

Function: External PIC programming pin header

Connector Type: Onboard 2.00 mm pitch 3x2-pin header

Pin Assignment:

Pin	Desc.	Pin	Desc.
1	PIC_TX	2	ICSP-CLK
3	ICSP-DAT	4	GND
5	VCC5	6	MCU_RST



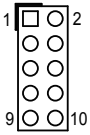
(5) DGP1

Function: External 80 Debug port

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

Pin Assignment:

Pin	Desc.	Pin	Desc.
1	CLK	2	GND
3	FRAME#	4	LAD0
5	PLTRST#	6	NC
7	LAD3	8	LAD2
9	VCC3	10	LAD1



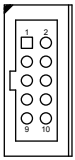
(6)(7) COM3/4 (COM3/4 on front panel, for ARES-1973C-4898 only)

Function: RS232 DB9 connector

Connector Type: 2.00 mm pitch 2x5 pin box header

Pin Assignment:

	Pin	Desc.	Pin	Desc.
RS232	1	DCD	2	RXD
	3	TXD	4	DTR
	5	GND	6	DSR
	7	RTS	8	CTS
	9	RI	10	NC



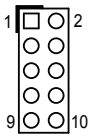
(8) DIO1

Function: Digital IO Connector

Connector Type: 2.00 mm pitch 2x5 pin box header

Pin Assignment:

Pin	Desc.	Pin	Desc.
1	DIO0	6	DIO4
2	DIO1	7	DIO5
3	DIO2	8	DIO6
4	DIO3	9	DIO7
5	+5V	10	GND



(9) AUDIO1

Function: Audio Connector

Connector Type: 1.25 mm pitch 1x6 wire to board connector

Pin Assignment:

Pin	Desc.
1	MIC_L
2	MIC_R
3	GND
4	GND
5	Line Out_L
6	Line Out_R

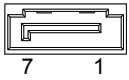
(10) SATA1

Function: SATA Connector

Connector Type: On-board 7-pin Serial ATA Connector

Pin Assignment:

Pin	Desc.
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



(11) PWROUT1

Function: SATA Power Input

Connector Type: 2.54 mm pitch 1x4-pin one-wall connector

Pin Assignment:

Pin	Desc.
1	+5V
2	GND
3	GND
4	+12V

(12) POEOUT1

Function: POE Power Connector

Connector Type: 2.54 mm pitch 1x4 pin header

Pin Assignment:

Pin	Desc.	Pin	Desc.
1	GND	2	GND
2	DCIN	4	DCIN

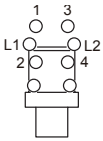
(13) SW1

Function Power Button

Connector Type: LED tact switch with green and red colors

Pin Assignment:

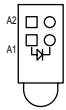
Pin	Description	Pin	Description
1	GND	2	N/A
3	BTN	4	N/A
L1	SW1_LED_N	L2	SW1_LED_P



(14) SYSLED1

Function Power Button

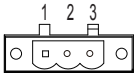
Connector Type: LED indicator with the green and red colors



(15) PWRIN1

Function: Power input terminal block
Connector Type: 1x3-pin Terminal block
Pin Assignment:

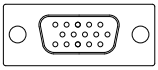
Pin	Desc.
1	VCC+
2	VCC-
3	GND



(16) VGA1

Function: VGA Connector
Connector Type: D-Sub 15-pin female connector
Pin Assignment:

Pin	Description	Pin	Description
1	RED	9	5V
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	D-DATA
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	D-DCLK
8	GND		

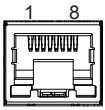


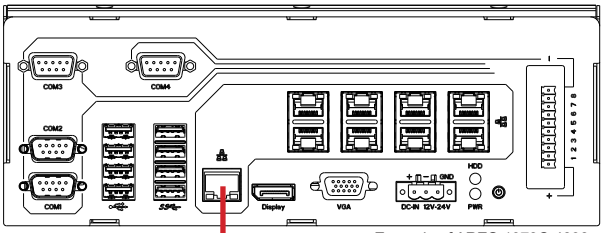
(17) DP1

Function: DisplayPort 1.2 Connector
Connector Type: Connect the display device to the DisplayPort 1.2 Connector
Pin Assignment: The pin assignments conform to the industry standard.

(18) LAN1

Function: RJ-45 Ethernet connectors
Connector Type: RJ-45 connector that supports 10/100/1000Mbps fast Ethernet
Pin Assignment: The pin assignments conform to the industry standard.

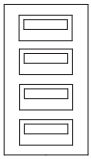




Example of ARES-1973C-4898

(19) USB1

Function: USB 3.0/2.0 Stacked Connectors
Connector Type: Quad-stacked USB 3.0/2.0 type A connectors
Pin Assignment: The pin assignments conform to the industry standard.



(20) USB2

Function: USB 2.0 Stacked Connectors
Connector Type: Quad-stacked USB 2.0 type A connectors
Pin Assignment: The pin assignments conform to the industry standard.

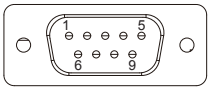
(21) COM1 (COM1 & 2 on front panel)

Function: RS-232/422/485 Selectable Serial Port

Connector Type: External 9-pin D-sub male connector

Pin Assignment:

	Pin	Desc.	Pin	Desc
RS232	1	DCD	6	DSR
	2	RXD	7	RTS
	3	TXD	8	CTS
	4	DTR	9	RI
	5	GND		



	Pin	Description
RS422	1	COM_422 TX-
	2	COM_422 TX+
	3	COM_422 RX+
	4	COM_422 RX-
	5	GND

	Pin	Description
RS485	1	COM_485 D-
	2	COM_485 D+
	5	GND

(22) USB3

Function: Internal USB 2.0 Connector

Connector Type: USB 2.0 type A connector

Pin Assignment: The pin assignments conform to the industry standard.

(23) MMC1

Function: M.2 M-Key Connector

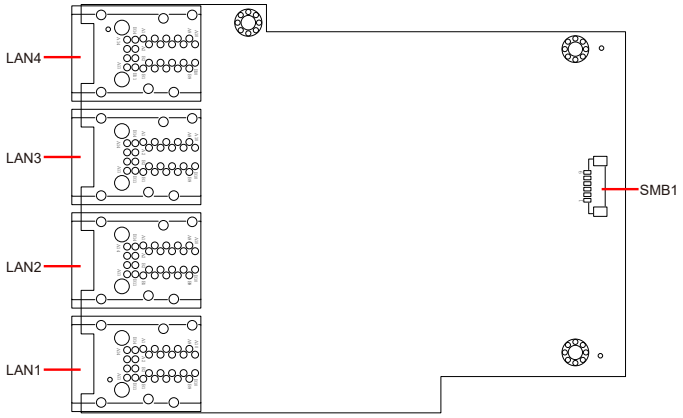
Connector Type: M.2 75-pin M-Key (socket 3) connector for PCIe x4/SATA-III SSD storage, supporting 22x42 / 22x80 modules

Pin Assignment: The pin assignments conform to the industry standard.

3.3. Daughter Board - SCDB-129S

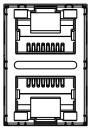
Function: GbE daughter board

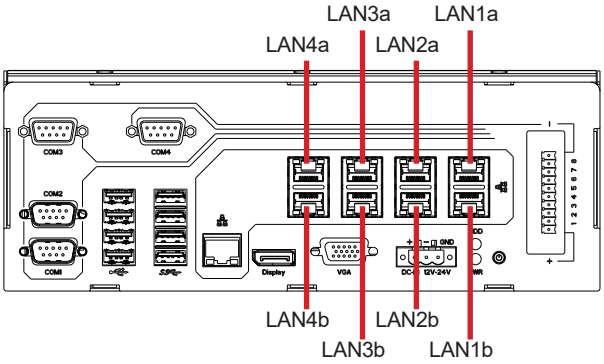
Applicable models: ARES-1973C-4898



LAN1~4

Function:	RJ-45 port for Giga Lan
Connector Type:	Double-stacked RJ-45 connector that supports 10/100/1000Mbps fast Ethernet
Pin Assignment:	The pin assignments conform to the industry standard.





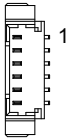
SMB1

Function: SMbus Wafer connector for DIO

Connector Type: 1.25mm pitch 1x6 wafer connector

Pin Assignment:

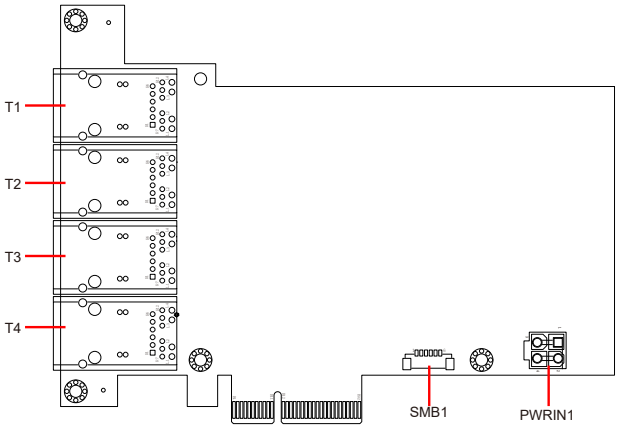
Pin	Desc.
1	+V3.3S
2	GND
3	CLK
4	GND
5	DATA
6	+V12S



3.4. Daughter Board - SCDB-129Q

Function: PoE daughter board

Applicable model: ARES-1973H-2WD8F

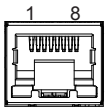


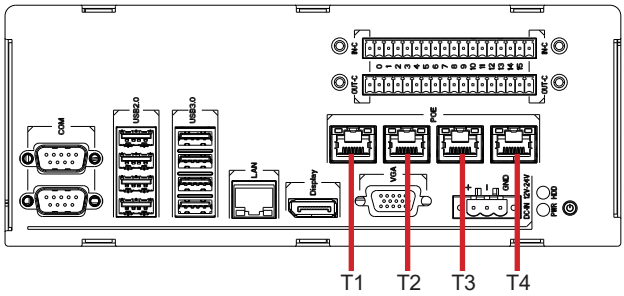
T1~4

Function: RJ-45 Ethernet connectors for PoE

Connector Type: RJ-45 connector that supports 10/100Mbps Ethernet w/ PoE function

Pin Assignment: The pin assignments conform to the industry standard.





SMB1

Function: SMbus Wafer connector for DIO

Connector Type: 1.25mm pitch 1x6 wafer connector

Pin Assignment:

Pin	Desc.
1	+V3.3S
2	GND
3	CLK
4	GND
5	DATA
6	+V12S

PWRIN1

Function: POE power connector

Connector Type: 2.54mm pitch 1x4 pin header

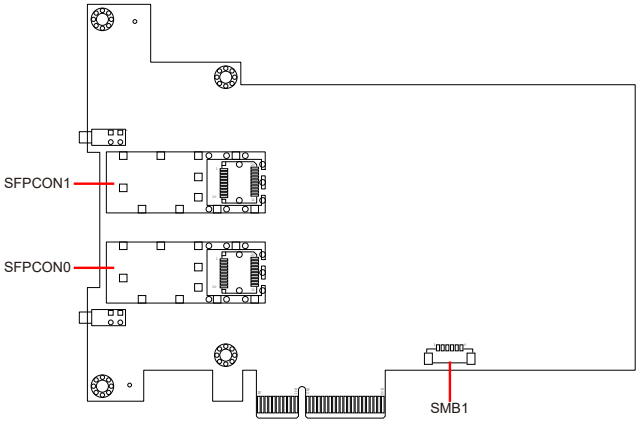
Pin Assignment:

Pin	Desc.	Pin	Desc.
1	GND	2	GND
2	DCIN	4	DCIN

3.5. Daughter Board - SCDB-129U

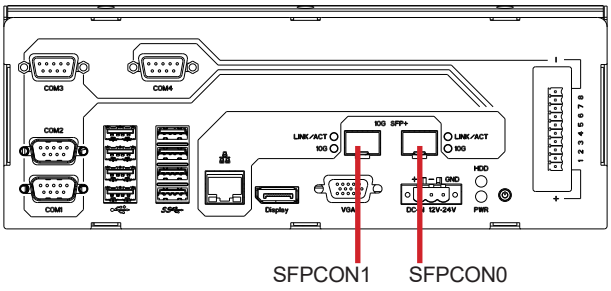
Function: PoE daughter board

Applicable model: ARES-1973C-48C8



SFPCON0, 1

Function: SFP+ port for 10 GbE LAN
Connector Type: SFP+ port for 10 GbE LAN
Pin Assignment: The pin assignments conform to the industry standard.



SMB1

Function: SMbus Wafer connector for DIO

Connector Type: 1.25mm pitch 1x6 wafer connector

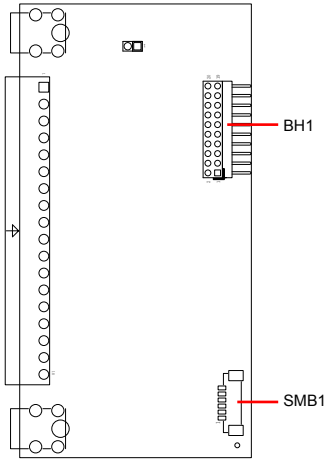
Pin Assignment:

Pin	Desc.
1	+V3.3S
2	GND
3	CLK
4	GND
5	DATA
6	+V12S

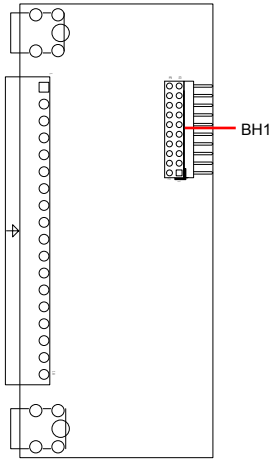
3.6. Daughter Board - SCDB-348B / SCDB-348C

Function: DIO daughter board

Applicable model: ARES-1973H-2WD8F



SCDB-348B



SCDB-348C

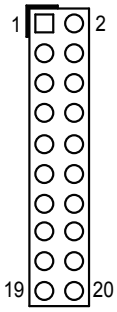
BH1

Function: DI board connector

Connector Type: 2.00 mm-pitch 2x10-pin header for connection to DI Board (SCDB-348C)
2.00 mm-pitch 2x10-pin header for connection to DO Board (SCDB-348B)

Pin Assignment:

Pin	Description	Pin	Description
1	DI_VDD	2	+V5S
3	GND	4	GND
5	GPIO17	6	GPIO16
7	GPIO15	8	GPIO14
9	GPIO13	10	GPIO12
11	GPIO11	12	GPIO10
13	GPIO27	14	GPIO26
15	GPIO25	16	GPIO24
17	GPIO23	18	GPIO22
99	GPIO21	20	GPIO20



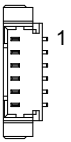
SMB1

Function: SMbus Wafer connector for DIO

Connector Type: 1.25mm pitch 1x6 wafer connector

Pin Assignment:

Pin	Desc.
1	+V3.3S
2	GND
3	CLK
4	GND
5	DATA
6	+V12S



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Chapter 4

Installation & Maintenance

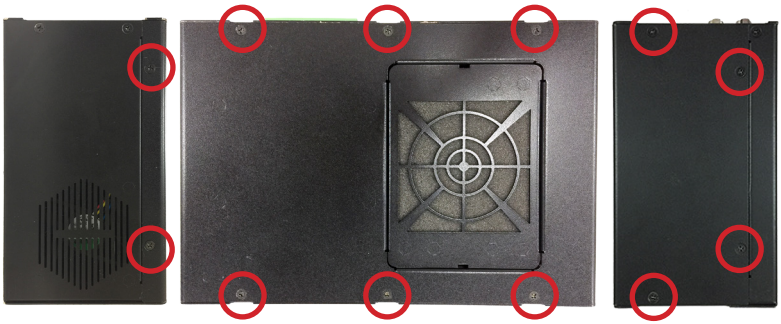
4.1. Disassembling and Assembling the Computer

4.1.1. Disassembling the Computer

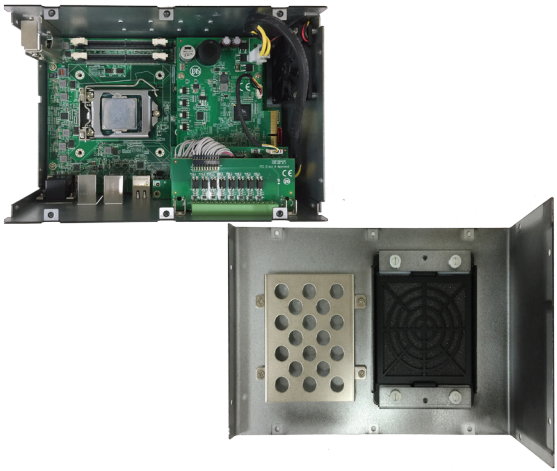
To use onboard jumpers/connectors or to install/remove internal components, you will need to open the computer to access the inside of the computer. Follow through the guide below to disassembly the computer.

4.1.1.1. ARES-1973H-2WD8F

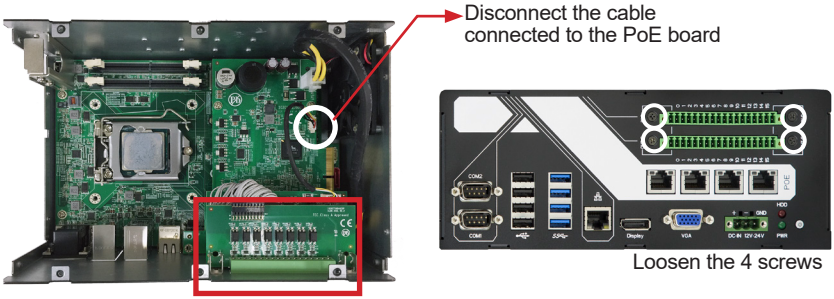
1. Position the computer with the top side facing up and remove the screws securing the L shape chassis as shown below .



2. Then lift the L shape chassis away from the from the assembly.

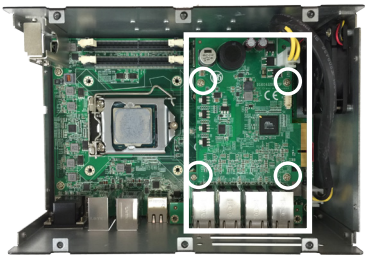


3. For ARES-1973H-2WD8F, you need to remove the I/O board assembly first:
   - Disconnect the PoE power cable connected to the PoE board
   - Disconnect the digital I/O cable connected to the SMBus connector on the PoE board
   - Loosen the 4 screws securing the digital board assembly and then remove it from the computer

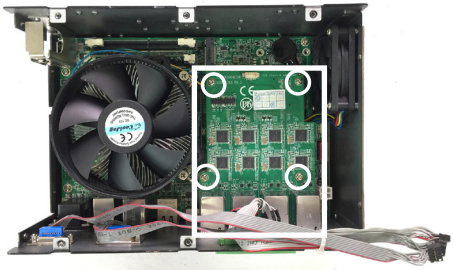


ARES-1973H-2WD8F

4. Remove the 4 screws securing the PoE/GbE LAN daughter board and lift it away from the computer. As the PoE/GbE LAN board is connected to the main board via board-to-board connector(s) underneath the card, you may have to lift the PoE/GbE LAN board firmly to remove it.

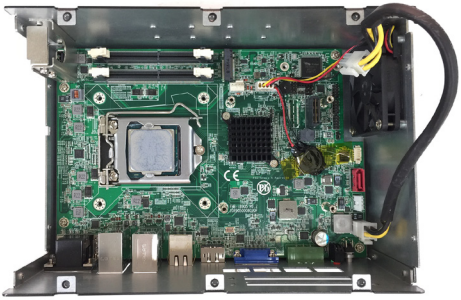


To remove the PoE board SCDB-129Q



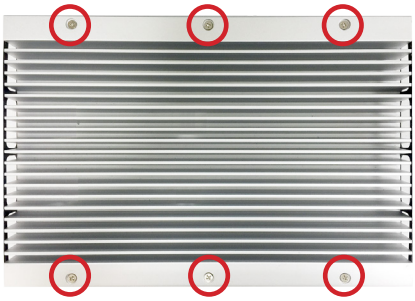
To remove the GbE LAN board SCDB-129S

5. Then you are ready to access the components on the main board and make required configurations and connections.

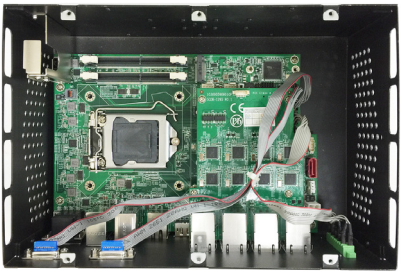


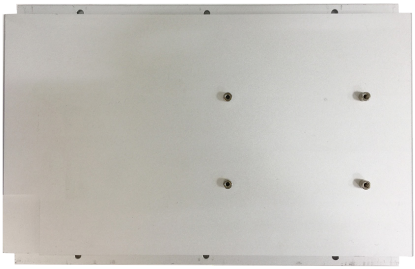
4.1.1.2. ARES-1973C-4898

1. Position the computer with the top side facing up and remove the 6 screws on the top chassis.

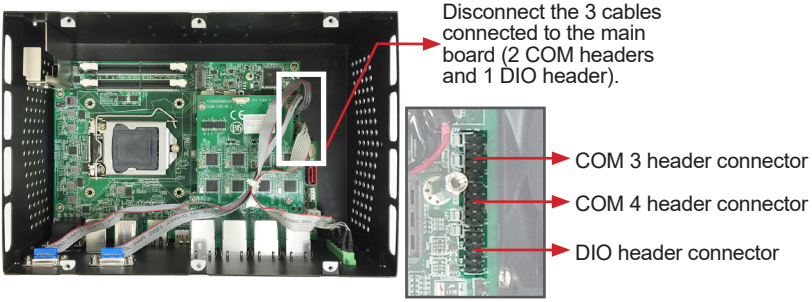


2. Then lift the top chassis away from the from the assembly.





3. Disconnect the 3 cables connected to the main board's 2 COM headers and 1 DIO header.



ARES-1973C-4898

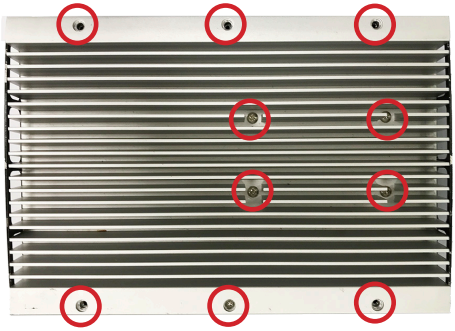
4. Remove the 4 screws securing the LAN daughter board and lift it away from the computer. As the LAN board is connected to the main board via board-to-board connector(s) underneath the card, you may have to lift the LAN board firmly to remove it.

To remove the LAN board SCDB-129S

5. Then you are ready to access the components on the main board and make required configurations and connections.

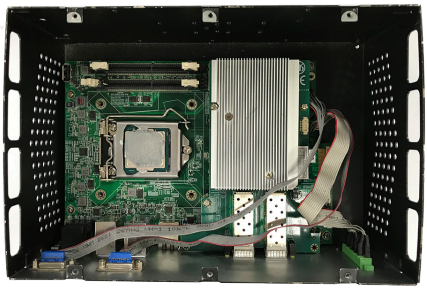
4.1.1.3. ARES-1973C-48C8

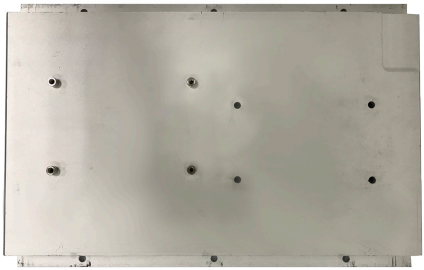
1. Position the computer with the top side facing up and remove the 6 screws on the top chassis.



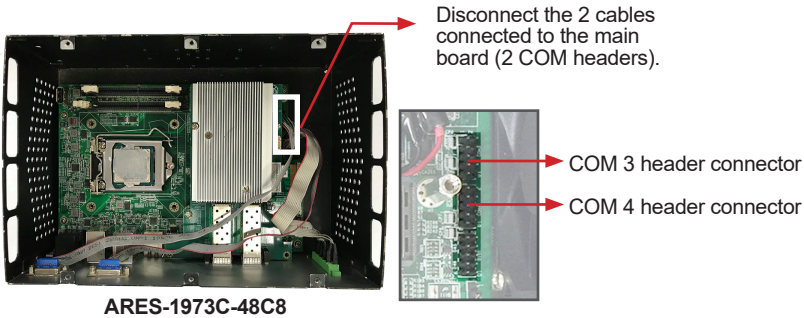
2. Then lift the top chassis away from the from the assembly.

3. Then lift the top chassis away from the from the assembly.



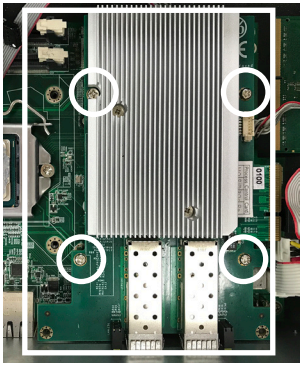


4. Disconnect the 3 cables connected to the main board's 2 COM headers and 1 DIO header.



ARES-1973C-48C8

5. Remove the 4 screws securing the LAN daughter board and lift it away from the computer. As the LAN board is connected to the main board via board-to-board connector(s) underneath the card, you may have to lift the LAN board firmly to remove it.



To remove the LAN board SCDB-129U

6. Then you are ready to access the components on the main board and make required configurations and connections.

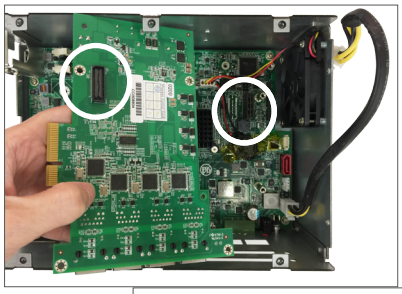
4.1.2. Assembling the Computer

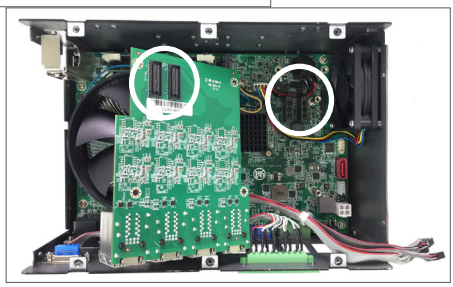
After you make required hardware installation and jumpers settings, assemble the computer by performing the proceeding steps in reverse order.

Notice for Installing LAN or PoE Board

When installing the LAN/PoE board back to the main board, make sure to align the board-to-board connector(s) underneath the board with the connector(s) on the main board.

Then press the board firmly into place and refasten its 4 screws to secure it to the main board.



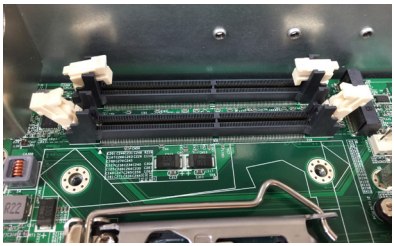


4.2. Installing Hardware

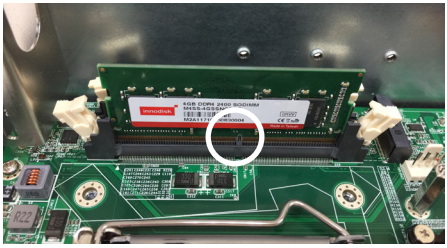
4.2.1. Installing Memory Module

The computer has two 260-pin DDR4 SO-DIMM sockets that support up to 8 GB maximum system memory. To install a memory module:

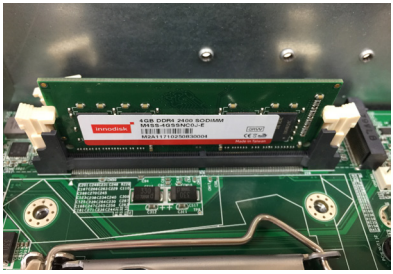
1. Open the latches fully at both ends of the memory module sockets.



2. Align the notch on the memory module with the key in the module socket.



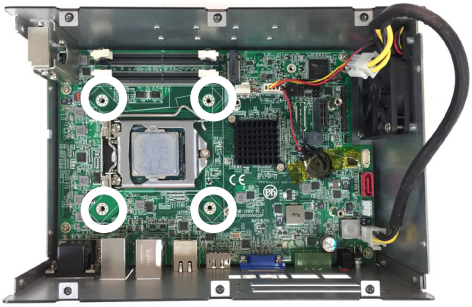
3. Press it fully into the socket until the latches lock in place.



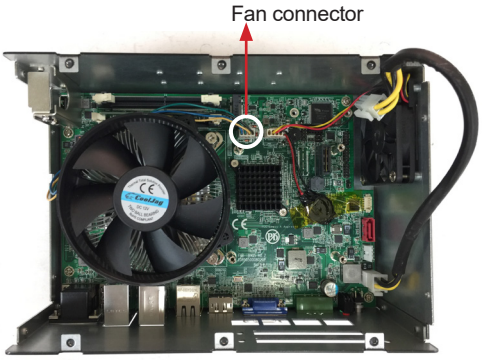
4.2.2. Installing CPU Fan and Heat Sink Assembly

This section applies only to fan model of ARES-1973H-2WD8F.

1. Position the CPU fan and heat sink on top of the processor and align the four spring-loaded screws with the holes on the system board.

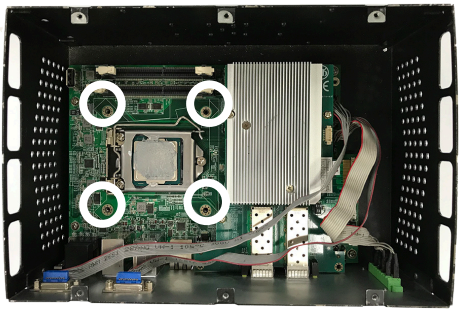


2. Tighten the four spring-loaded screws by partially tightening one pair of diagonally opposite screws and then tightening the remaining pair.
3. Connect the fan cable to the connector on the system board

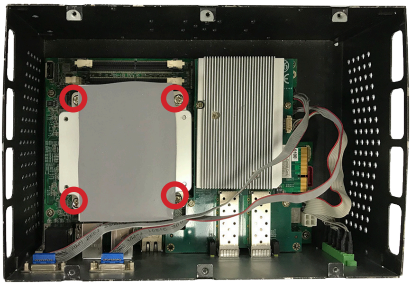


This section applies only to fan model of ARES-1973C-48C8.

1. Position the CPU fan and heat sink on top of the processor and align the four spring-loaded screws with the holes on the system board.



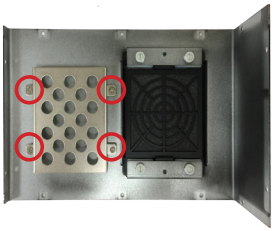
2. Tighten the four spring-loaded screws by partially tightening one pair of diagonally opposite screws and then tightening the remaining pair.



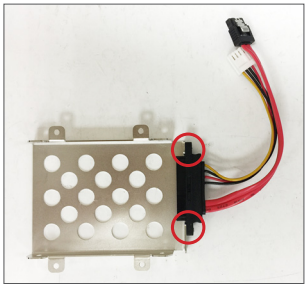
4.2.3. Installing/Replacing a SSD or HDD

4.2.3.1. ARES-1973H-2WD8F

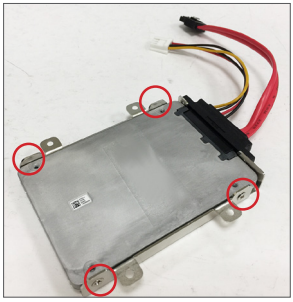
1. Remove the hard drive bay from the L-shape chassis by loosening the 4 screws.



2. Secure the SATA cable to the drive bay by fastening the two screws.

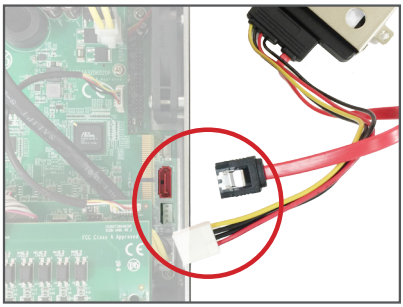


3. Slide the 2.5” HDD or SSD storage device into the drive bay and ensure it connects to the SATA connector.
4. Using 4 screws coming with the storage device kit, fix the storage device in place.

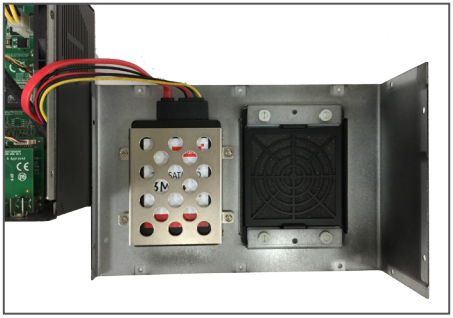


5. Connect the SATA interface and power cables to the SATA & power connectors on the main board.

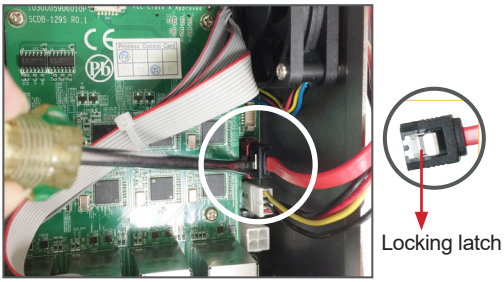
   The SATA cable comes with a locking latch. When the metal tab is engaged, you will hear a click.



6. Secure the drive bay back to the L-shape chassis by fastening the 4 screws you removed in Step 1.

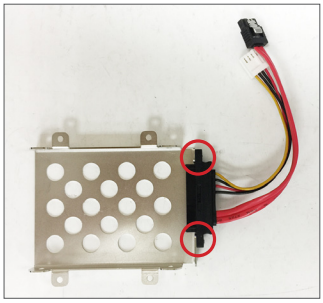


In case you need to replace the hard drive and you don't want to disassemble the daughter board(s), use a flat screwdriver to press the SATA interface connector's metal latch to unlock it to disconnect it.

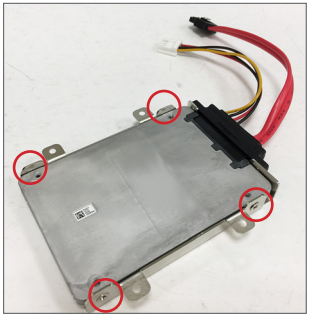


4.2.3.2. ARES-1973C-4898/ARES-1973C-48C8

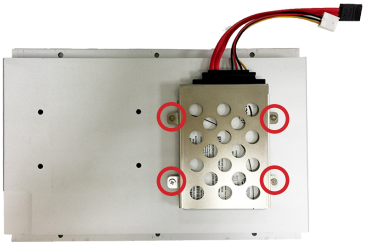
1. Secure the SATA cable to the drive bay by fastening the two screws.



2. Slide the 2.5” HDD or SSD storage device into the drive bay and ensure it connects to the SATA connector.
3. Using 4 screws coming with the storage device kit, fix the storage device in place.



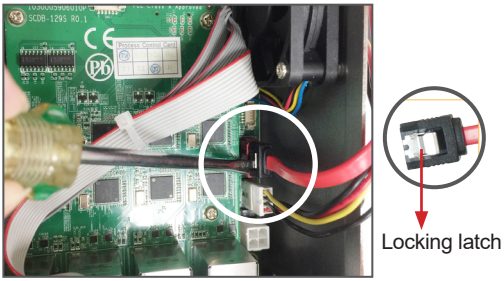
4. Secure the drive bay to the top chassis by fastening the 4 screws.



5. Connect the SATA interface and power cables to the SATA & power connectors on the main board.

   The SATA cable comes with a locking latch. When the metal tab is engaged, you will hear a click.

In case you need to replace the hard drive and you don't want to disassemble the daughter board(s), use a flat screwdriver to press the SATA interface connector's metal latch to unlock it to disconnect it.



4.2.4. Installing M.2 Module

The computer has a M.2 M-Key socket for PCIe x4/SATA-III SSD storage. It supports 22 x 42 / 22 x 80 form factors. This section will use a 22 x 80 form factor as the installation example.

1. Locate the M.2 on-board connector.

2. Insert the standard standoff into the main board.

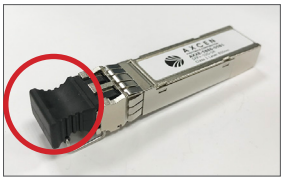
3. Insert the M.2 module into the socket by aligning the notch on the module with the small slot on the M.2 socket.

4. Insert and fasten the screw into the standoff.

4.2.4. Installing SFP+ Fiber Transceiver

If you need to install the optional SFP+ Fiber Transceiver:

1. Remove the rubber safety cap of the SFP+ Fiber Transceiver:



Note: Do not remove the rubber safety cap unless you want to install the transceiver. The rubber safety cap keep the port clean and prevents accidental exposure to laser light.

2. Insert the SFP+ Fiber Transceiver all the way into the SFP+ port.

3. Then you can connect the ARES-1973C-48C8 to your network device via a fiber-optic cable.

The SFP+ fiber transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes. Do not look directly into the fiber-optic transceiver or into the ends of fiber-optic cables.

4.3. Mounting

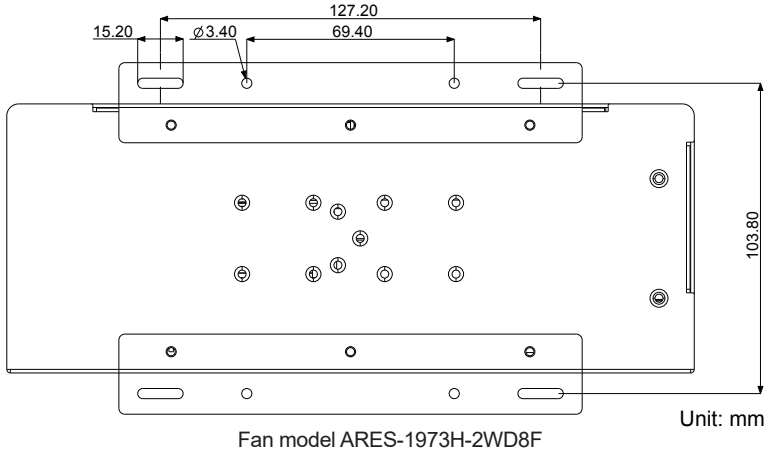
4.3.1 Wall Mount

To wall mount the computer using the provided wall-mount kit:

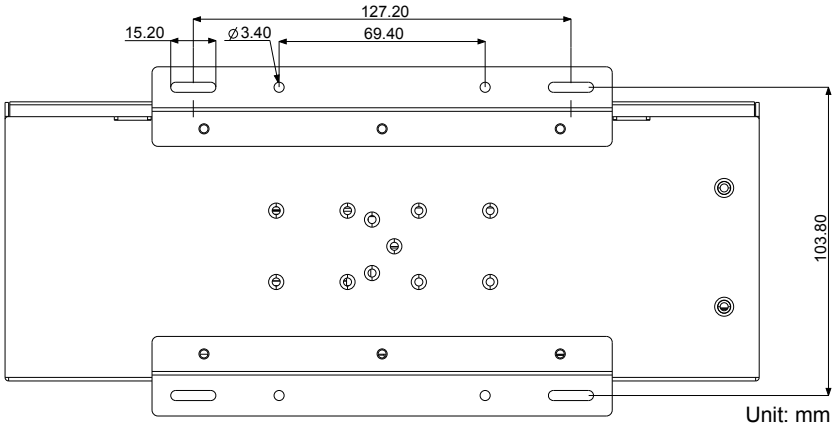
1. Select a proper mounting location with adequate wall strength to support the mounted unit.
2. Locate the 6 screw holes on the computer's rear side. Use the screws included in the wall-mount kit to assemble the brackets to the computer’s rear side.

   Suggested mounting screws. M3x3mm screws (qty: 6).

3. Use the other screw holes and cutouts on both wall-mount brackets to mount the computer to a wall.



Fan model ARES-1973H-2WD8F
Mounting Dimensions

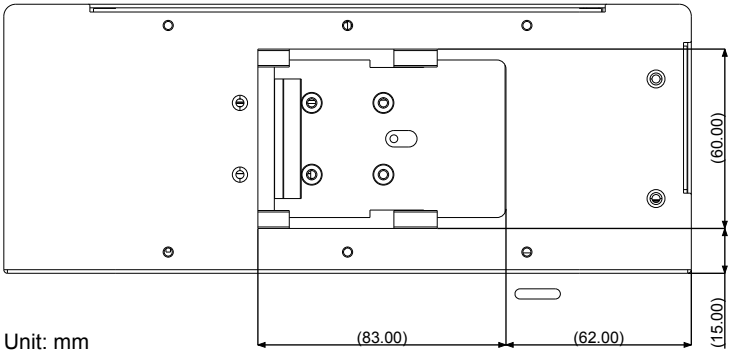


Fanless Model (ARES-1973C-4898) Mounting Dimensions

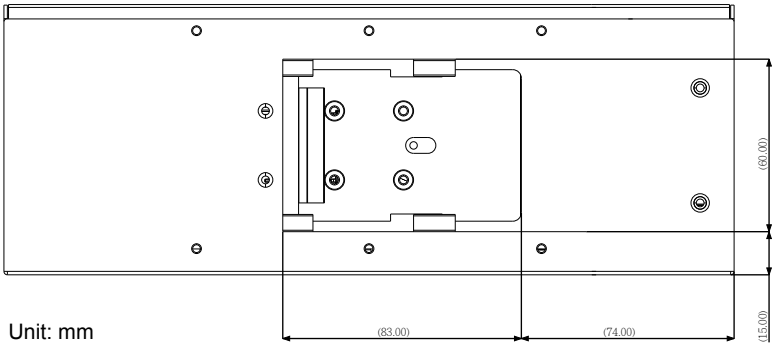
4.3.1 DIN-Rail Mounting

To mount the computer using the provided DIN-rail mounting kit:

1. Select a proper mounting location with adequate wall strength to support the mounted unit.
2. Screw the DIN-rail mounting clip to the rear side of the computer.



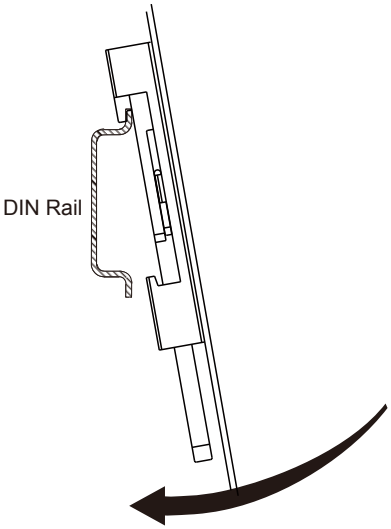
Fan model ARES-1973H-2WD8F
Mounting Dimensions



Fanless Model (ARES-1973C-4898) Mounting Dimensions

After you screw the DIN-rail mounting clip to the computer:

1. Snap the DIN Rail clip to the upper edge of the DIN Rail.
2. Press the computer firmly downward towards the DIN Rail until the DIN Rail clip tab engages and snaps to the bottom edge of the DIN Rail.



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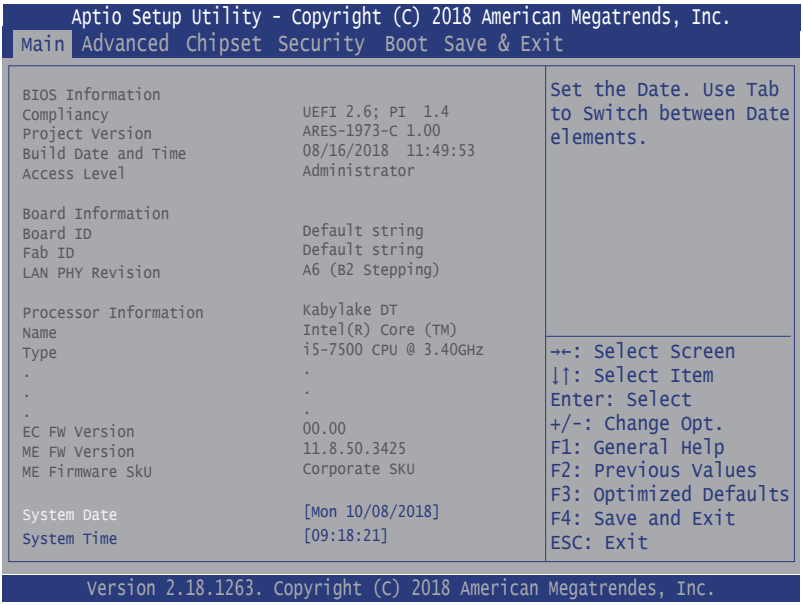
Chapter 5

BIOS

The BIOS Setup utility is featured by American Megatrends Inc to configure the system settings stored in the system's BIOS ROM. The BIOS is activated once the computer powers on. When the computer is off, the battery on the main board supplies power to BIOS RAM.

To enter the BIOS Setup utility, keep hitting the "Delete" key upon powering on the computer.



Note: Actual model name and board information varies according to your model.

Menu	Description
Main	See 5.1. Main on page 56
Advanced	See 5.2. Advanced on page 57
Chipset	See 5.3. Chipset on page 72
Security	See 5.4 Security on page 81
Boot	See 5.5. Boot on page 82
Save & Exit	See 5.6. Save & Exit on page 83

Key Commands

The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to navigate within the utility and use the utility.

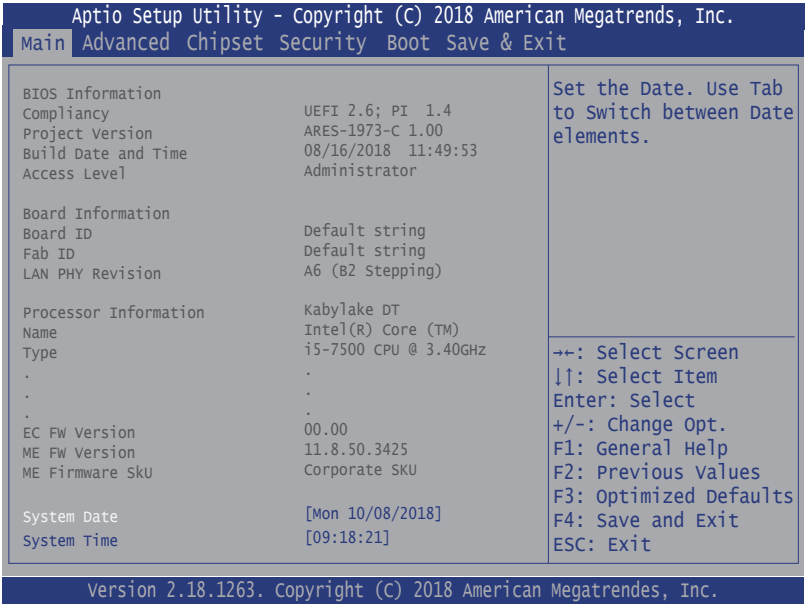
Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	► On the top menus: Use **Esc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to exit discarding changes. ► On the submenus: Use **Esc** to quit current screen and return to the top menu.
Page Up / +	Increases current value to the next higher value or switches between available options.
Page Down / -	Decreases current value to the next lower value or switches between available options.
F1	Opens the **Help** of the BIOS Setup utility.
F4	Exits the utility saving the changes that have been made. (The screen then prompts a message asking you to select **OK** or **Cancel** to exit saving changes.)

Note: Pay attention to the "WARNING" that shows at the left pane onscreen when making any change to the BIOS settings.

This BIOS Setup utility is updated from time to time to improve system performance and hence the screenshots hereinafter may not fully comply with what you actually have onscreen.

5.1. Main

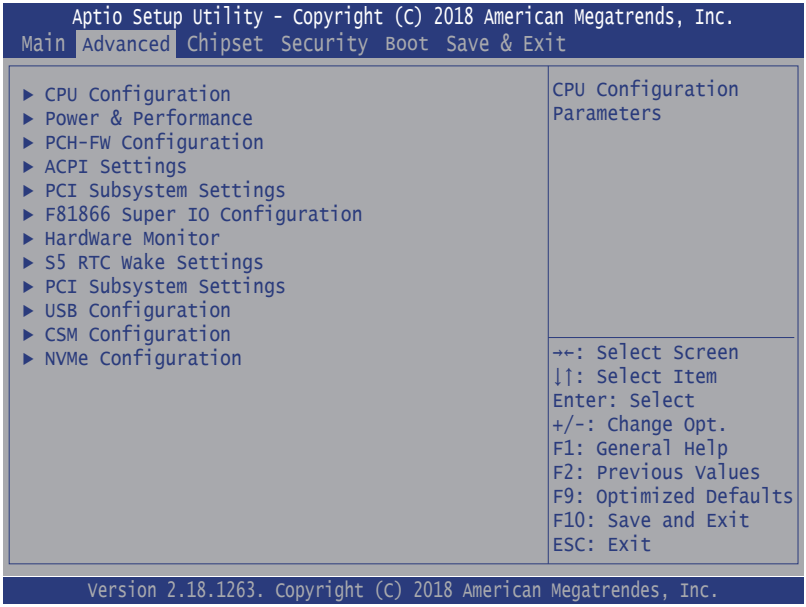
The **Main** menu features the settings of **System Date** and **System Time** and displays some BIOS info.



Note: Actual model name and board information varies according to your model.

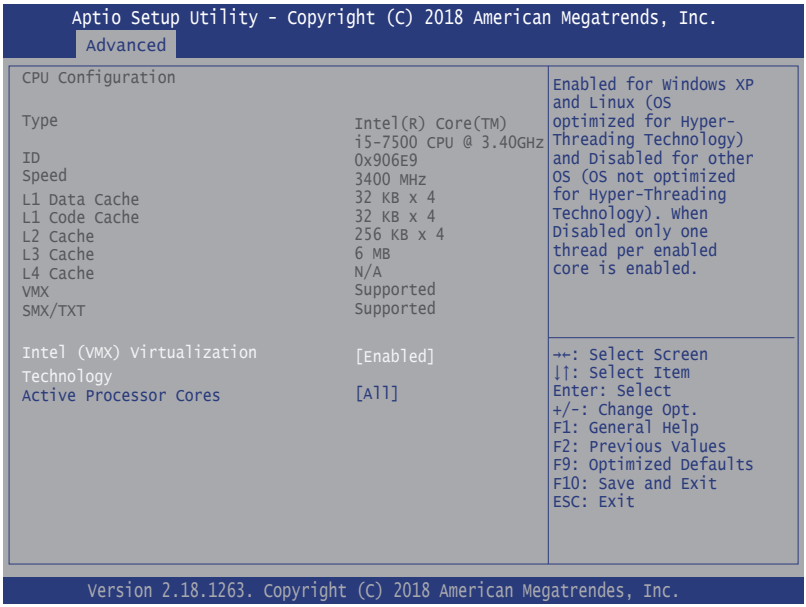
Setting	Description
Project Name	Delivers the model name of the computer.
BIOS Version	Delivers the computer's BIOS version.
Build Date and Time	Delivers the date and time when the BIOS Setup utility was made/ updated.
Access Level	Delivers the level that the BIOS is being accessed at the moment.
System Date	Sets system date.
System Time	Sets system time.

5.2. Advanced



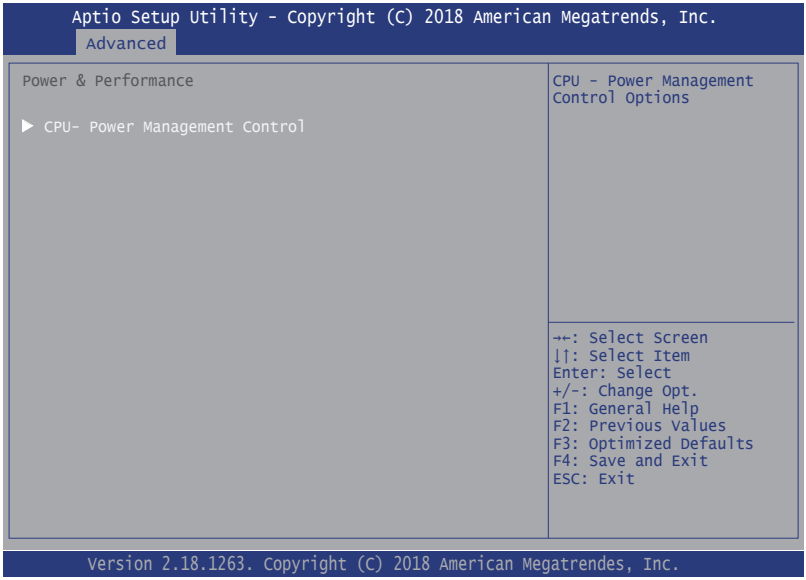
Setting	Description
CPU Configuration	See 5.2.1. CPU Configuration on page 58
Power & Performance	See 5.2.2. Power & Performance on page 59.
PCH-FW Configuration	See 5.2.3. PCH-FW Configuration on page 61.
ACPI Settings	See 5.2.4. ACPI Settings on page 62
F81866 Super IO Configuration	See 5.2.5. F81866 Super IO Configuration on page 63.
Hardware Monitor	See 5.2.6. Hardware Monitor on page 64
S5 RTC Wake Settings	See 5.2.7. S5 RTC Wake Settings on page 66
PCI Subsystem Settings	See 5.2.8. PCI Sybsystem Settings on page 67
USB Configuration	See 5.2.9. USB Configuration on page 68
CSM Configuration	See 5.2.10. CSM Configuration on page 70
NVMe Configuration	See 5.2.11. NVME Configuration on page 71.

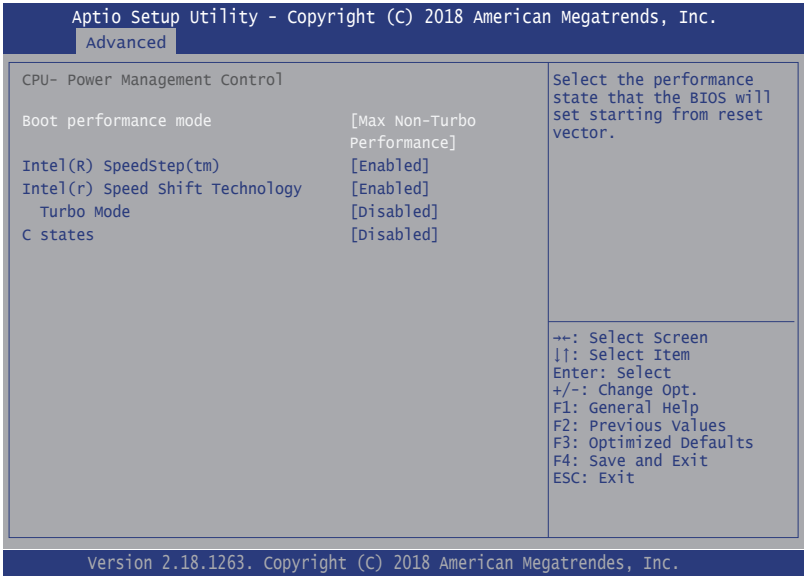
5.2.1. CPU Configuration



Setting	Description
Intel Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided 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**.
Hyper-Threading	This item is used to enable or disable the processor's Hyper-threading feature. Enabled for Windows XP and Linux (OS optimized for Hyper-threading Technology) and disabled for other OS (OS not optimized for Hyper-threading Technology). When disabled, only one thread per enabled core is enabled. ► Options: **Enabled** (default) or **Disabled** * This setting may not be available depending on the CPU.

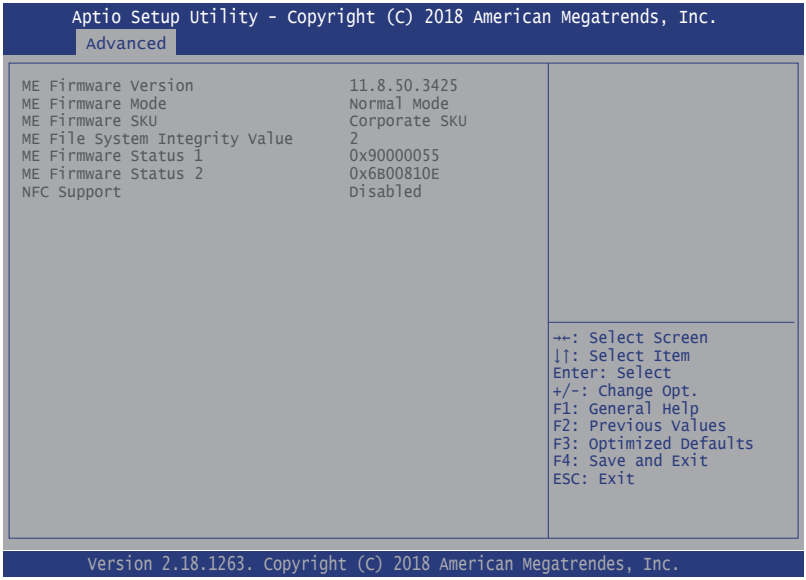
5.2.2. Power & Performance





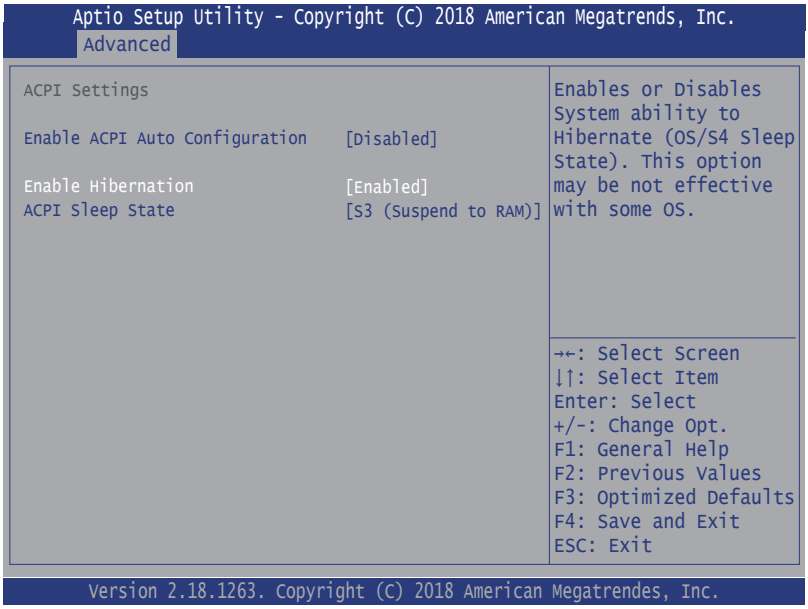
Setting	Description
Boot performance Mode	Set the performance state that the BIOS will set before the OS handoff. ► Options: **Max Non-Turbo Performance** (default), **Max Battery** and **Turbo Performance**
Intel (R) Speed Step (tm)	**Enable** (default) / **Disable** Intel SpeedStep
Intel (R) Speed Shift Technology	**Enable** (default) / **Disable** Intel Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Only available when Intel Speed Step is **Enabled**. **Enable** / **Disable** (default) Turbo Mode. * This setting may not be available depending on the CPU.
CPU C States	**Enable** / **Disable** (default) CPU C States

5.2.3. PCH-FW Configuration



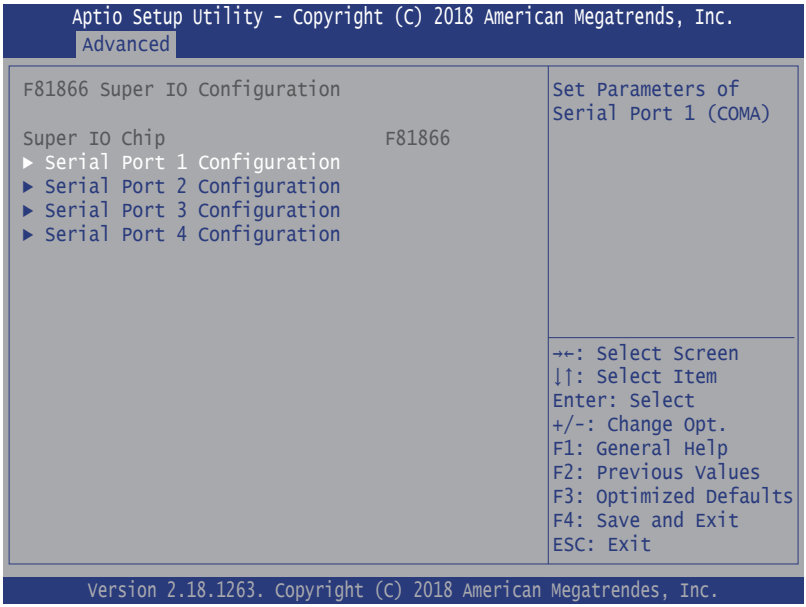
Select this submenu to view the ME firmware related information.

5.2.4. ACPI Settings



Setting	Description
Enable ACPI Auto Configuration	**Enable** or **Disable** (default) BIOS ACPI Auto Configuration
Enable Hibernation	Only available when BIOS ACPI Auto Configuration is enabled. **Enables** (default) or **Disables** System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Only available when BIOS ACPI Auto Configuration is enabled. Select ACPI sleep state the system will enter when the SUSPEND button is pressed. ► **Options: Suspend Disabled** and **S3 (Suspend to RAM)** (default)

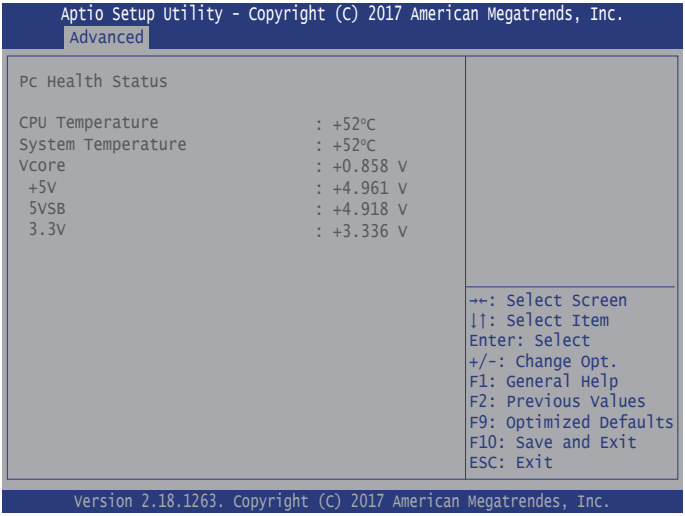
5.2.5. F81866 Super IO Configuration



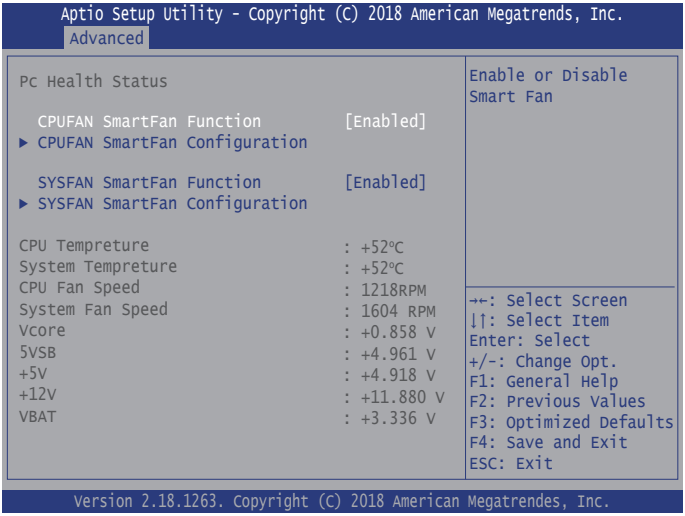
Note: The quantity of serial ports varies according to your model.

Setting	Description
Serial Port 1/2/3/4 Configuration	To configure each COM port settings. Note: The quantity of serial ports varies according to your model.
Serial Port	**Enable** (default) or **Disable** the Serial Port (COM).
COM1/2 Mode Select	For Serial Port 1/2: Select **RS-232** (default), **RS-422** or **RS-485**.

5.2.6. Hardware Monitor



Example of Fanless Models

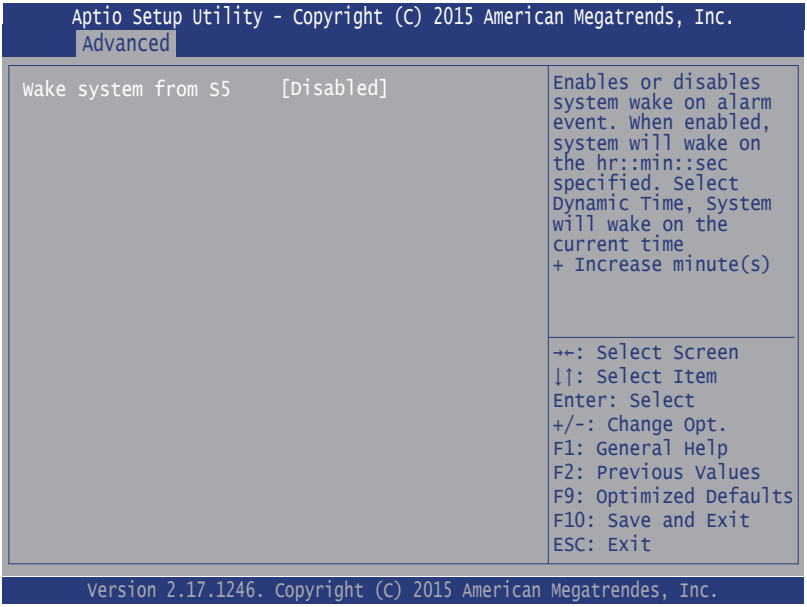


Example of Fan Models

Setting	Description
CPUFAN SmartFan Function	**Enables** (default) or **Disables** CPU Smart Fan
CPUFAN SmartFan Configuration`	**Temperature 1~4 & RPM Percentage 1~4** Auto CPU fan speed control. Fan speed will follow different temperature by different PRM 1-100.
SYSFAN SmartFan Function	**Enables** (default) or **Disables** system Smart Fan
SYSFAN SmartFan Configuration`	**Temperature 1~4 & RPM Percentage 1~4** Auto system fan speed control. Fan speed will follow different temperature by different PRM 1-100.

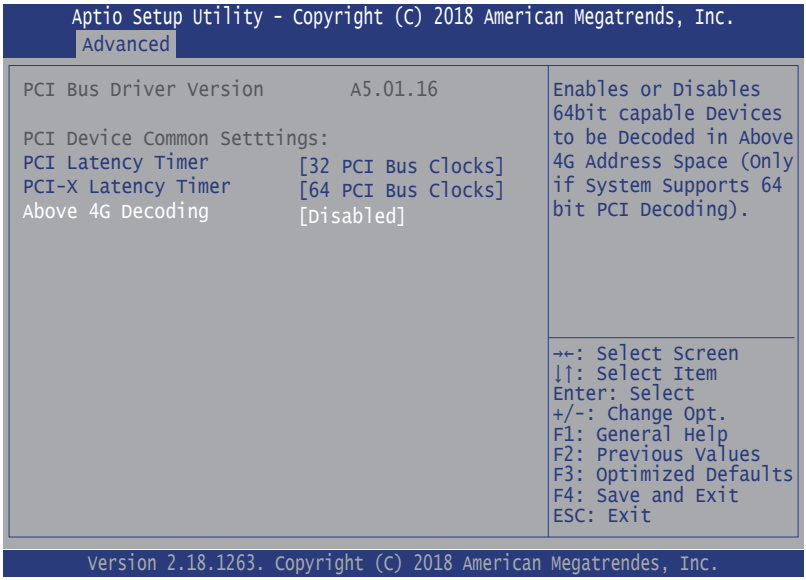
Note: CPUFAN & SYSFAN functions only apply to SKUs with smart fan. If your SKU doesn't come with smart fan, ignore these settings.

5.2.7. S5 RTC Wake Settings



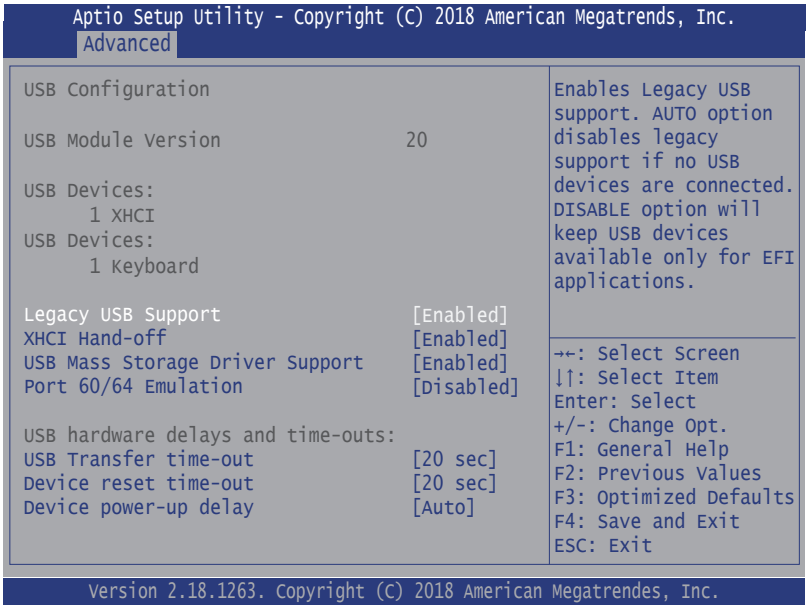
Setting	Description
Wake System from S5	**Enable** or **Disable** (default) system wake on alarm event. ► Options available are: **Disabled** (default): **Fixed Time:** System will wake on the hr::min::sec specified. **DynamicTime:** If selected, you need to set **Wake up minute increase** from 1 - 5.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

5.2.8. PCI Sybsystem Settings



Setting	Description
PCI Latency Timer	Value to be programmed into PCI Latency Timer Register. ► **Options: 32** (default), **64**, **96**, **128**, **160**, **192**, **224** and **248 PCI Bus Clocks**.
PCI-X Latency Timer	Value to be programmed into PCI-X Latency Timer Register. ► **Options: 32**, **64** (default), **96**, **128**, **160**, **192**, **224** and **248 PCI Bus Clocks**.
Above 4G Decoding	**Enable/Disable** (default) 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

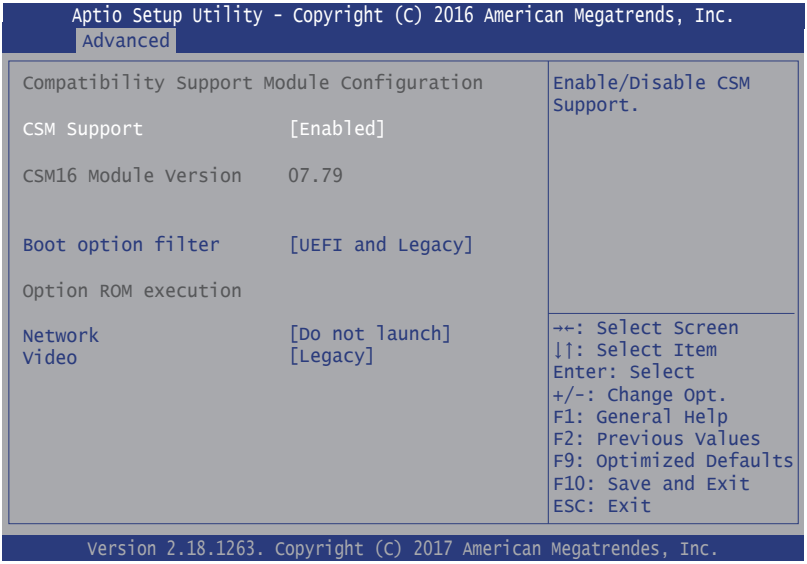
5.2.9. USB Configuration



Setting	Description
Legacy USB Support	Enables/disables legacy USB support. ► Options available are **Enabled** (default), **Disabled** and **Auto**. ► Select **Auto** to disable legacy support if no USB device are connected. ► Select **Disabled** to keep USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. ► The optional settings are: **Enabled** (default) **/ Disabled**.
USB Mass Storage Driver Support	Enables/disables USB Mass Storage Driver Support. ► The optional settings are: **Enabled** (default) **/ Disabled**.
Port 60/64 Emulation	**Enables** / **Disables** (default) I/O port 60/64h emulation 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: **1 sec, 5 sec, 10 sec, 20 sec** (default)

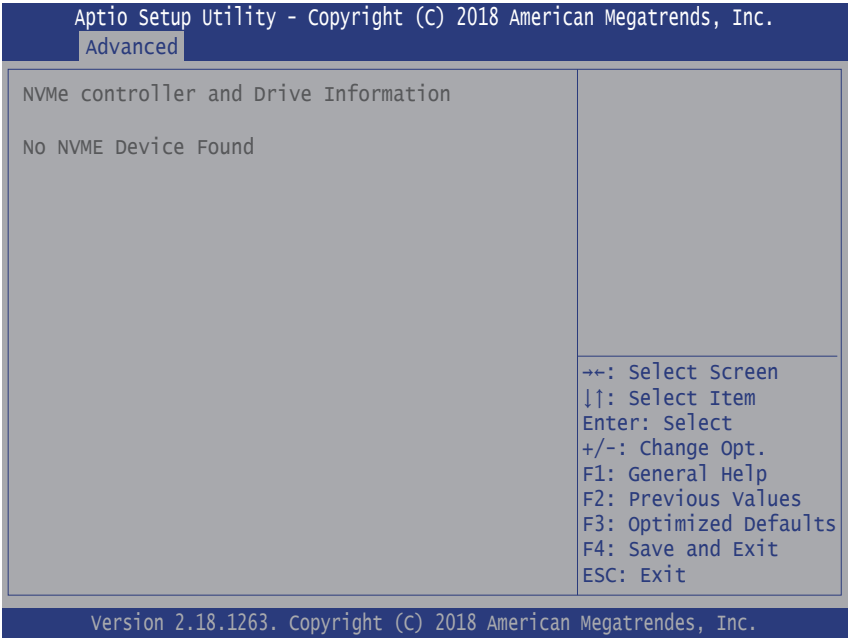
Device reset time-out	Use this item to set USB mass storage device start unit command time-out. ► Options available are: **10 sec, 20 sec** (default)., **30 sec, 40 sec**
Device power-up delay	Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. ► Options available are: **Auto**: Default **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.

5.2.10. CSM Configuration



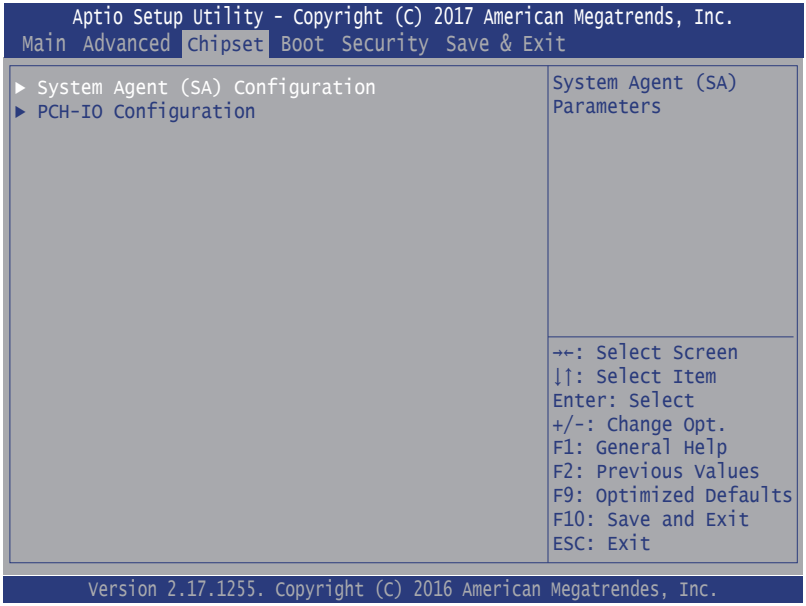
Setting	Description
CSM Support	**Enable** (default) or **Disable** CSM Support.
Boot option filter	Control the Legacy/UEFI ROMs priority. ► Options: **UEFI and Legacy** (default), **Legacy only**, **UEFI only**
Network	Control the execution of UEFI and Legacy PXE OpROM ► Options: **Do not launch** (default)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

5.2.11. NVME Configuration



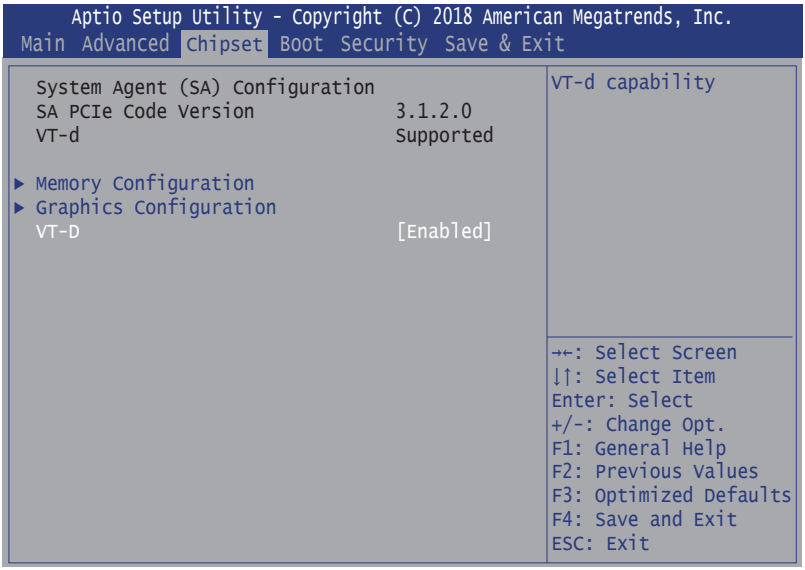
Access this submenu to view the NVMe controller and driver information.

5.3. Chipset



Submenu	Description
System Agent (SA) Configuration	See 5.3.1. System Agent (SA) Configuration on page 73
PCH-IO Configuration	See 5.3.2. PCH-IO Configuration on page 78

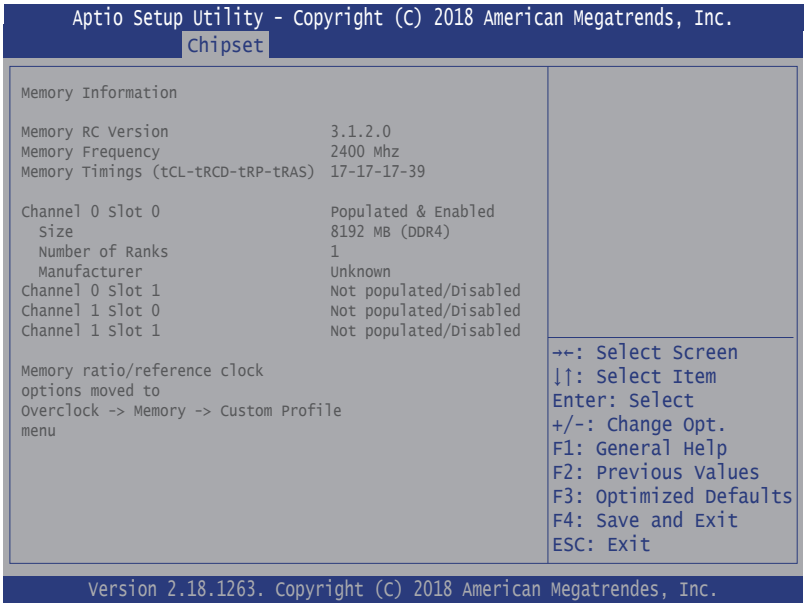
5.3.1. System Agent (SA) Configuration



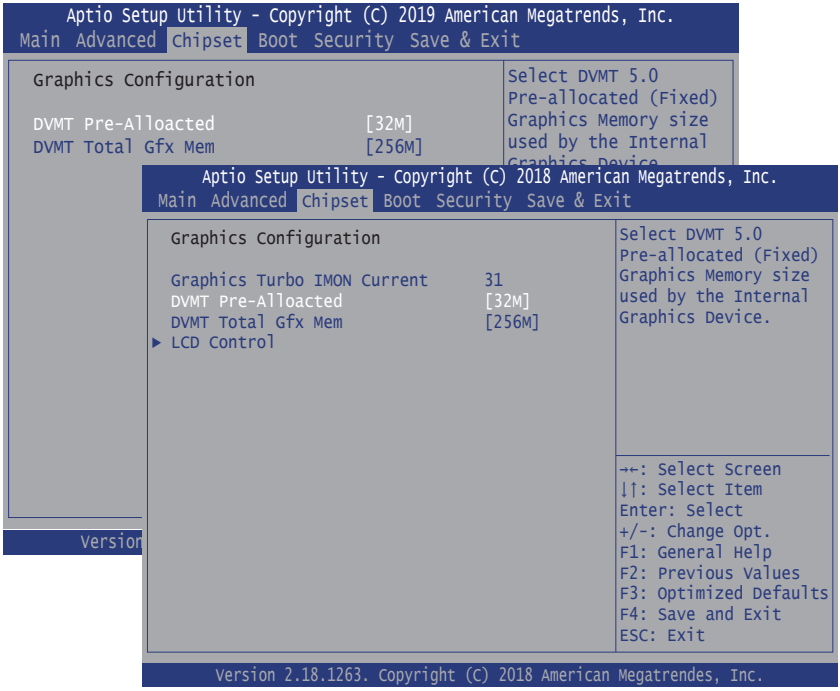
Submenu	Description
System Agent (SA) Configuration	
Memory Configuration	See 5.3.1.1. Memory Configuration on page 74
Graphics Configuration	See 5.3.1.2. Graphics Configuration on page 75
VT-d	**Enable** (default) or **Disable** VT-d function

5.3.1.1. Memory Configuration

Access this submenu to view the memory configuration.



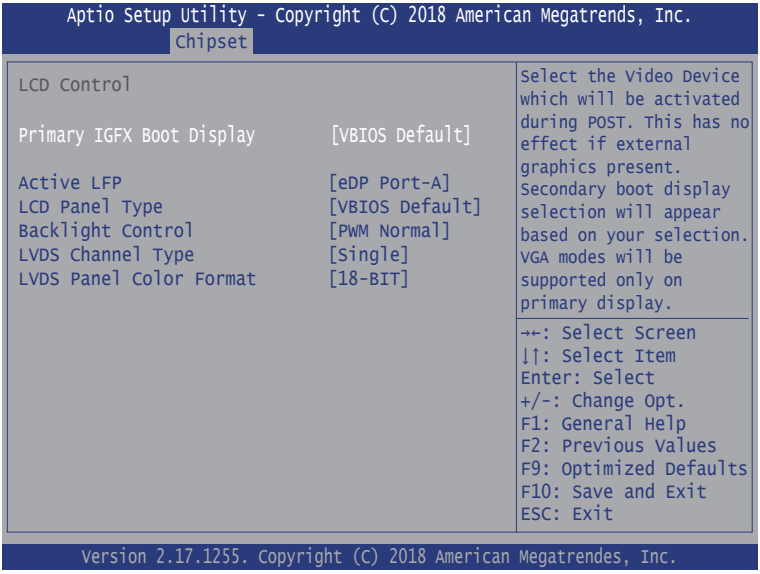
5.3.1.2. Graphics Configuration



Note: This page varies according to your model.

Setting	Description
Graphics Turbo IMON Current	This setting is for ARES-1973H-2WD8F only. Sets the graphics turbo IMON current values. ► Options available are 14 to 31. 31 is the default.
DVMT Pre-Allocated	Select the DVMT 5.0 Pre-allocated (Fixed) Graphic Memory size used by the Internal Graphic Device. ► 32M is the default.
DVMT Total Gfx Mem	Select the DVMT 5.0 Total Graphic Memory size used by the Internal Graphic Device. ► Options: **128MB, 256MB** (default) and **Max.**
LCD Control	This setting is for ARES-1973H-2WD8F only. See next section for details.

LCD Control

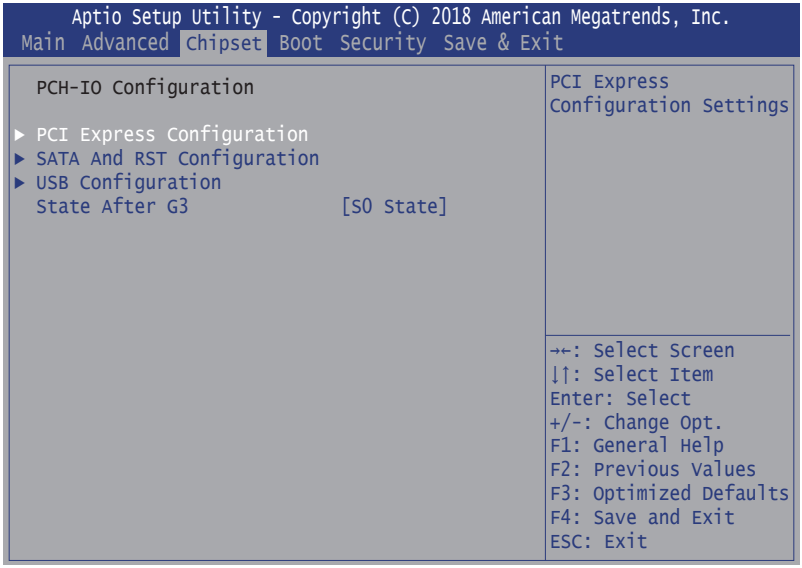


Note: This setting is for ARES-1973H-2WD8F only.

Setting	Description
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), **EFP**, **LFP**, **EFP3**, **EFP2** and **EFP4**.
LCD Panel Type	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item. ► Default: : **VBIOS Default**
Panel Scaling	Select the LCD panel scaling option used by the Internal Graphics Device. ► Options: **Auto** (default), **Off** and **Force Scaling**.
Backlight Control	Set the Back Light Control. ► Options: **PWM Inverted** and **PWM Normal** (default)

Active LFP	Configuring LFP usage ► Options: **No eDP** (default) and **eDP Port-A**
LVDS Panel Depth	Select LVDS color display mode ► Options: **24 Bit** and **18 Bit** (default)
LVDS Channel Type	Select VBIOS brightness. ► Range: **0** ~ **255** (default)

5.3.2. PCH-IO Configuration



Setting	Description
PCI Express Configuration	See 5.3.2.1. PCI Express Configuration on page 79
SATA And RST Configuration	See 5.3.2.2. SATA And RST Configuration on page 80
USB Configuration	See 5.3.2.3. USB Configuration on page 80
State After G3	Specify what state to go to when power is re-applied after a power failure (G3 state). ► Options available are **Power On** (default), **Power Off** and **Last State**.

5.3.2.1. PCI Express Configuration

Setting	Description
PCI Express Root Port	PCI Express Root Port Settings.
PCI Express Root Port X	"X" indicates the root port number, which varies according to your model. **Enable** (default) or disable the PCI Express Port.
ASPM Support	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**.
PCIe Speed	Select PCI Express port speed. ► Options: **Auto** (default), **Gen1**, **Gen2** and **Gen3**

*Refer to the table below for the mapping of Root Port number and the physical ports:

PCIe Root Port	ARES-1973H-2WD8F	ARES-1973C-4898	ARES-1973C-48C8
5	T1 (PoE)	LAN1b (Giga LAN)	-
6	T2 (PoE)	LAN1a (Giga LAN)	SFPCON0, 1 (SFP port)
7	T3 (PoE)	LAN2b (Giga LAN)	-
8	T4 (PoE)	LAN2a (Giga LAN)	-
17	-	LAN3b (Giga LAN)	Reserved
18	-	LAN3a (Giga LAN)	Reserved
19	-	LAN4b (Giga LAN)	Reserved
20	-	LAN4a (Giga LAN)	Reserved

For the connector label, refer to the following sections:

- 3.3. Daughter Board - SCDB-129S on page 24
- 3.4. Daughter Board - SCDB-129Q on page 25
- 3.5. Daughter Board - SCDB-129U on page 27

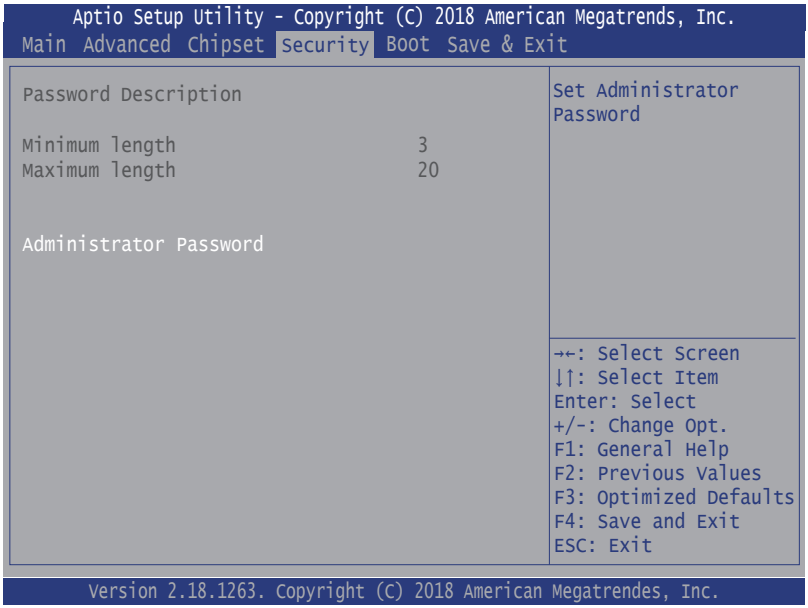
5.3.2.2. SATA And RST Configuration

Setting	Description
SATA Controller(s)	**Enables** (default) / **disables** SATA device(s).
SATA Mode Selection	Configures how SATA controller(s) operate. ► Options: **AHCI** (default) and **Intel RST premium With Intel Optane System Acceleration**.
Serial ATA Port 0/1	SATA device information. *Available SATA ports depend on your model.
Port 0/1	**Enables** (default) / **disables** the SATA port.
SATA Port 0/1 DevSlp	**Enables** / **disables** (default) the SATA port DevSlp. Board rework for LP needed before enable.

5.3.2.3. USB Configuration

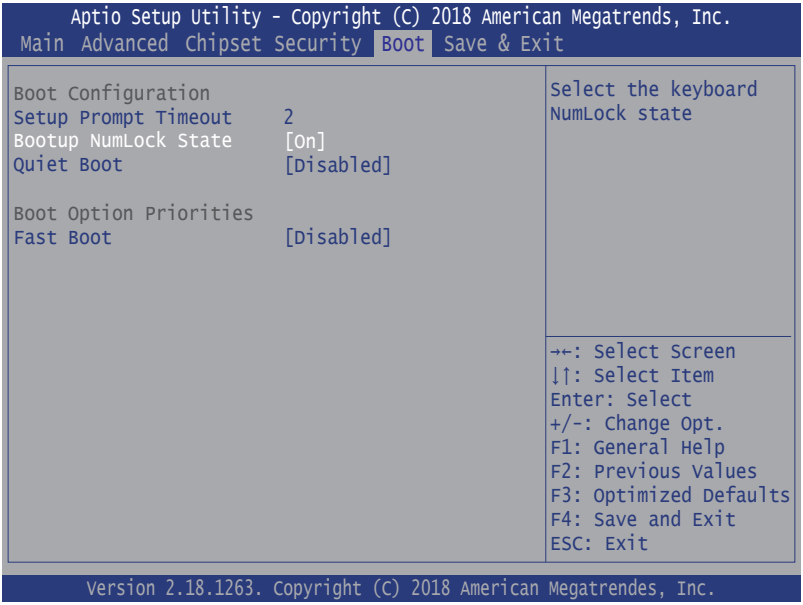
Setting	Description
XHCI Disable Compliance Mode	Options to disable Compliance Mode. Default is **FALSE** (default) to not disable Compliance Mode. Set **TRUE** to disable Compliance Mode.
xDCI Support	**Enable**/**disable** (default) xDCI (USB OTG Device).
USB Port Disable Override	Selectively **enable**/**disable** (default) the corresponding USB port from reporting a Device Connection to the controller.

5.4. Security



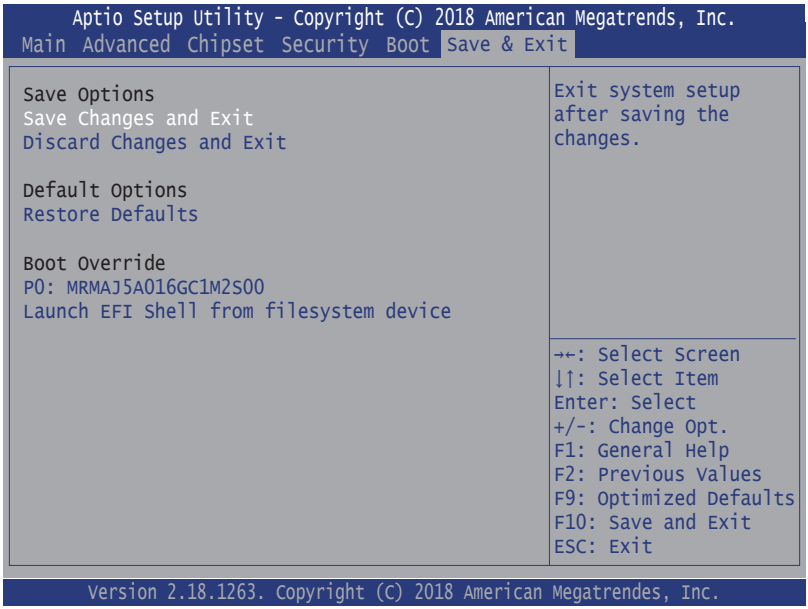
Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.

5.5. Boot



Setting	Description
Setup Prompt Timeout	Set how long to wait for the prompt to show for entering BIOS Setup. ► The default setting is **2** (sec). ► Set it to **65535** to wait indefinitely.
Bootup NumLock State	Sets whether to enable or disable the keyboard's NumLock state when the system starts up. ► Options available are **On** (default) and **Off**.
Quiet Boot	Sets whether to display the POST (Power-on Self Tests) messages or the system manufacturer's full screen logo during booting. ► Select **Disabled** to display the normal POST message, which is the default.
Fast Boot	Enables or disables (default) boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
Boot Option Priority	Set the system boot priorities.
Hard Drive BBS Priorities	Sets the order of the legacy devices in this group. BBS means "BIOS Boot Specification".

5.6. Save & Exit



Setting	Description
Save Changes and Reset	Saves the changes and quits the BIOS Setup utility.
Discard Changes and Exit	Quits the BIOS Setup utility without saving the change(s).
Restore Defaults	Restores all settings to defaults. ► This is a command to launch an action from the BIOS Setup utility.
Boot Override	**Boot Override** presents a list in context with the boot devices in the system. ► **P0:** Select the device to boot up the system regardless of the currently configured boot priority. ► **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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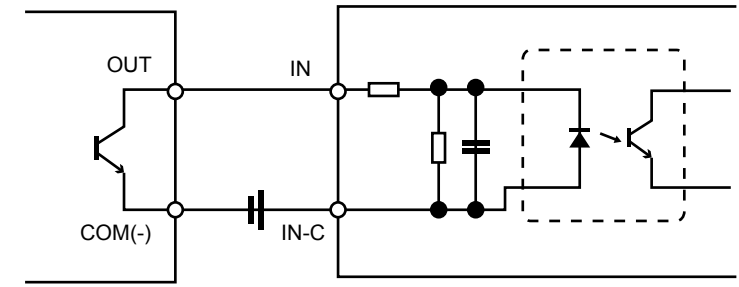
Appendix

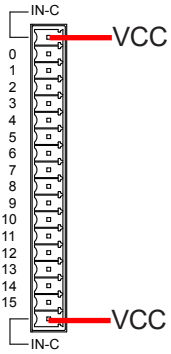
Appendix A. 32-bit DIO Signal Connections

A.1. Isolated Digital Input Connections

The input (IN-C) will accept supply voltages of up to 24 V. Make sure the Von (IN-C to IN) is more than 12V and Voff (IN-C to IN) is less than 5V. The following diagram shows the connection between outside signal and the system.

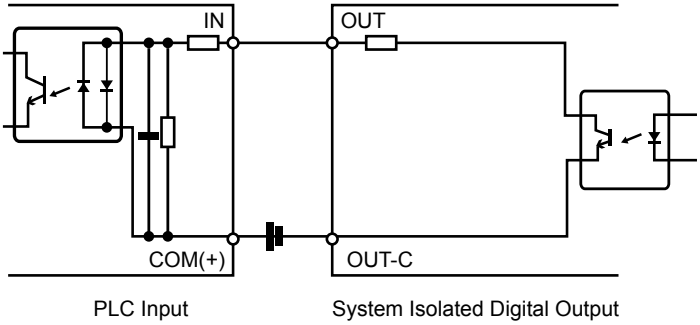


Note that the input's (IN-C) first and last pins are for VCC.



A.2. Isolated Digital Output Connections

When an isolated output channel is being used as an output channel, if an external voltage (maximum 24V) is applied, the current will flow from the external voltage source to the system. Make sure that the current through each out pin does not exceed 200 mA.



Note that the output's (OUT-C) first and last pins are for GND.