ARES-1230 Series

Fanless Embedded Controller with Intel® Bay Trail SoC Processor

User's Manual

Version 1.2

P/N: 4016123000120P

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Revision History

Version	Date	Description
1.0	November, 2015	Initial release
1.1	May, 2018	Add ARES-1230-POS related information
1.2	July, 2018	Revise serial port information in 1.3. Specifications and 5.2.6. SIO Fintek 81216/81866D.

Contents

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 the computer 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.

Product Heat

The computer generates heat during operation. Contact the computer's chassis with your body could cause discomfort or even a skin burn.

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.

Replacing Lithium Battery

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 contact us at:
https://www.arbor-technology.com

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.

Chapter 1

Introduction

1.1. Product Highlights

- Intel® Celeron N2930 Quad Core™ 2.16 GHz SoC
- DDR3L 1600MHz SO-DIMM memory support up to 8GB
- Fanless Design
- Ultra Low Profile Enclosure
- Expandable I/O Module
- Wall Mounting kit


ARES-1230


ARES-1230-E


ARES-1230-POS

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 herein, 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	Intel® Quad-Core Processor N2930
Memory	1 x SO-DIMM 204Pin modules supports up to 8GB DDR3L -1600MHz
Chipset	Intel® SoC
Graphics	Intel® HD Graphics
LAN Chipset	2 x Intel® i210AT PCIe controller
Watchdog Timer	1~255 levels reset
I/O	
Serial Port	ARES-1230: N/A ARES-1230-E: 2 x RS-232/485 ARES-1230-POS: 2 x RS-232/422/485, 4 x RS-232/485

USB Port	1 x USB3.0/2.0 + 1 x USB2.0 ports 2 x additional USB2.0 ports (ARES-1230-E)
LAN Port	2 x RJ-45 ports for GbE
Video Port	1 x DVI-I connector 1 x HDMI connector
Audio	Mic-in/Line-out
WiFi	1 x SMA antenna hole for optional WiFi function (ARES-1230/ ARES-1230-POS) 2 x SMA antenna holes for optional WiFi function (ARES-1230-E)
Digital I/O	4 x DI, 4 x DO (ARES-1230-E)
Expansion Bus	1 x Full-Size mPCIE (PCIex1+USB2.0) 1 x Half-Size mPCIE (PCIex1+USB2.0) 1 x SIM card socket (ARES-1230-POS, ARES-1230-E)
Environmental	
Operating Temp.	-20 ~ 70°C (-4 ~ 158°F), ambient with air flow
Storage Temp.	-40 ~ 85°C (-40 ~ 185ºF)
Operating Humidity	10 ~ 95% @ 70°C (non-condensing)
Vibration	5~500Hz 3G rms X,Y,Z axis w/SSD, according to IEC 68-2-64
Shock & Crash	40G peak acceleration (11 m sec. duration), operation
	60G peak acceleration (11 m sec. duration), non operation
	According to IEC 68-2-27
Qualification	
Certification	CE, FCC Class A
Power Requirement	
Power Input	DC 12V Input w/ DC-Jack (ARES-1230/ ARES-1230-POS) DC 9~36V Input w/ 3-PIN Terminal Block (ARES-1230-E)
Power Consumption	15W (ARES-1230) 20W (ARES-1230-E/ ARES-1230-POS)
Storage	
Type	1 x mSATA for SATA interface SSD Supports 600MB/s HDD transfer rate
Mechanical	
Construction	Aluminum alloy

Mounting	Wall-Mount
Weight	770g (1.7lb) (ARES-1230) 900g (1.98lb) (ARES-1230-E) 933g (2.06lb) (ARES-1230-POS)
Dimensions (W x D x H)	180 x 130 x 25 mm (ARES-1230) 180 x 130 x 40 mm (ARES-1230-E/ ARES-1230-POS)
OS Support	
Windows 7 / Windows 8.1 / Windows 7/8.1 Embedded / Windows 10	

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:

ARES-1230

ARES-1230-E

ARES-1230-POS

1 x ARES-1230 Series Fanless Embedded Controller with Intel® Bay Trail SoC Processor

1 x Driver CD
1 x User's Manual

1.5. Ordering Information

ARES-1230	Intel® Quad-Core Processor N2930, barebone, 12V Input
ARES-1230-E	Intel® Quad-Core Processor N2930, barebone, with extended I/O, 9~36V Input
ARES-1230-POS	Intel® Bay Trail Atom™ N2930 bare-bone, 12V Input / 6 x COM ports

1.5.1. Optional Accessories

Make the computer more tailored to your needs by selecting one or more components from the list below to be fabricated to the computer.

PAC-P060W-01	60W AC/DC Adapter Kit (ARES-1230/ ARES-1230-POS)	
PAC-P065W	19V/3.4A 65W AC/DC adapter kit (ARES-1230-E)	
WiFi-AT2130	Atheros AR9462 WiFi module w/ 10cm & 20cm internal wiring	
ANT-D11	1 x Wi-Fi Dual-band 2.4G/5G antenna	
MM-3IL-2G	Industrial DDR3L-1333 2GB SO-DIMM SDRAM	
MM-3IL-4G	Industrial DDR3L-1333 4GB SO-DIMM SDRAM	
32GB SSD	mSATA MLC 32GB	
64GB SSD	mSATA MLC 64GB	

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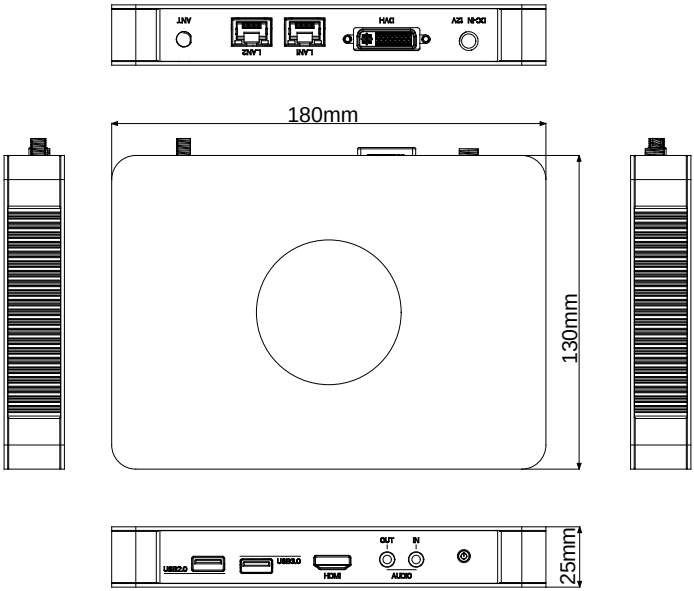
Chapter 2

Getting Started

2.1. Dimensions

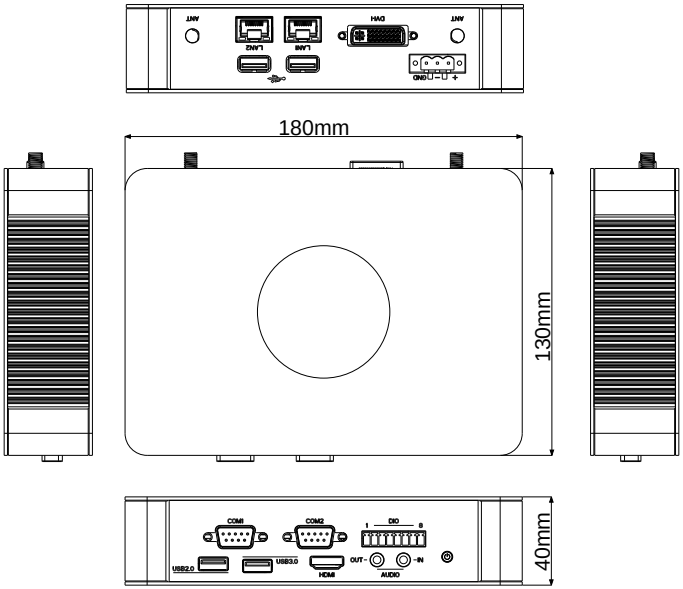
The following illustration shows the dimensions of ARES-1230 series, with the measurements in width, depth, and height called out.

ARES-1230



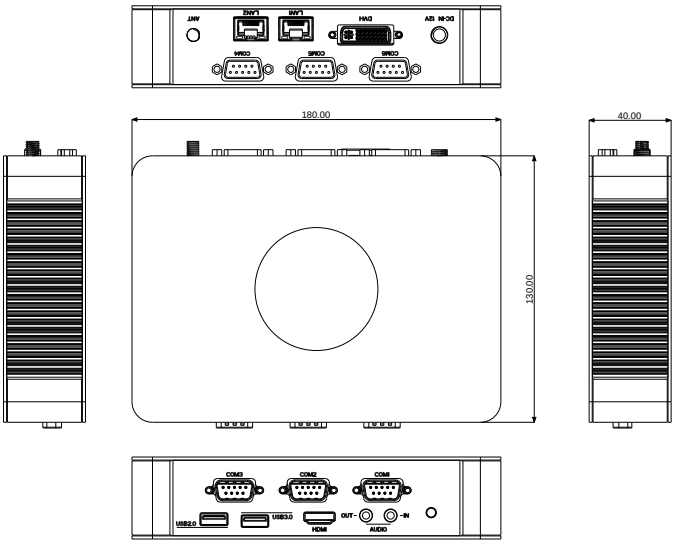
Unit: mm

ARES-1230-E



Unit: mm

ARES-1230-POS

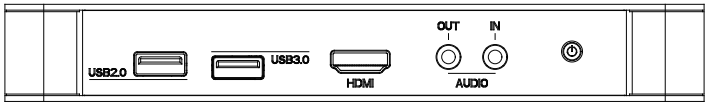


Unit: mm

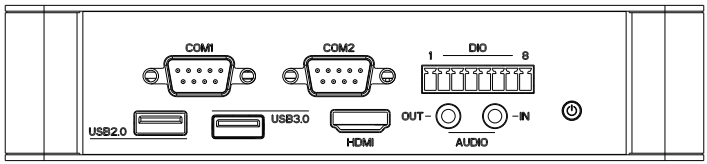
2.2. Take A Tour

The computer has some I/O ports, status LED light and controls on the front and rear panels. The following illustrations show all the components called out for ARES-1230 series.

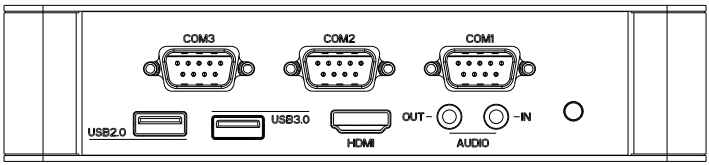
Front View



ARES-1230



ARES-1230-E

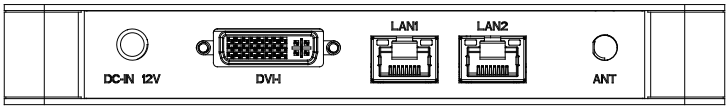


ARES-1230-POS

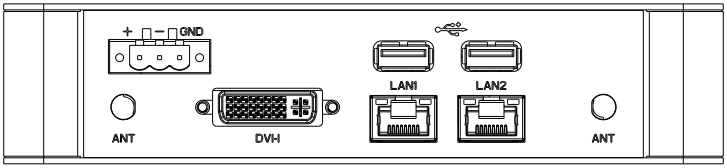
- **Status LED Lamps**
  LED lamps are recessed on the front side of the computer to draw users' prompt awareness of the computer's contiguous events such as power on/ off, data transmission and so on.
  These lamps and the notifications delivered are summarized as following:

LED Lamp	Color	State	Description
PWR	Green	on	Power is on.
	N/A	off	No power input.

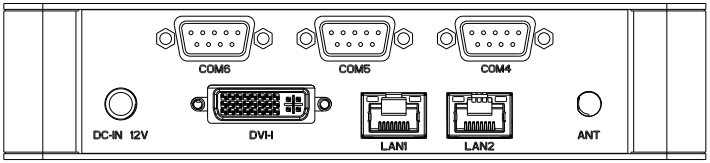
Rear View



ARES-1230



ARES-1230-E



ARES-1230-POS

2.3. Driver Installation Notes

The ARES-1230 series supports Windows 7, Windows 8.1 and Windows 10. Find the necessary drivers on the CD that comes with your purchase. For different OS, the driver/utility installation may vary slightly, but generally they are similar.

Find the drivers on CD by the following paths:

Windows 7

Device		Driver Path
Chipset		\Win7_Win8\Chipset\SetupChipset.exe
Ethernet	**32Bit**	\Win7_Win8\LAN\Win7\PROWin32.exe
	64Bit	\Win7_Win8\LAN\Win7\PROWinx64.exe
USB3.0		\Win7_Win8\USB3.0\Setup.exe
VGA	**32Bit**	\Win7_Win8\Graphic\WIN7_32bit\Setup.exe
	64Bit	\Win7_Win8\Graphic\WIN7_64bit\Setup.exe
TXE		\Win7_Win8\TXE\SetupTXE.exe Patch files (for fix unknown device issue in device manager, Windows 7 only)
	32Bit	\Win7_Win8\TXE\kmdf-1.11-Win-6.1-x86.exe
	64Bit	\Win7_Win8\TXE\kmdf-1.11-Win-6.1-x64.exe
Audio	**32Bit**	\Win7_Win8\Audio\32bit_Win7_Win8_Win81_R275.exe
	64Bit	\Win7_Win8\Audio\64bit_Win7_Win8_Win81_R275.exe

Windows 8.1

Device		Driver Path
Chipset		\Win7_Win8\Chipset\SetupChipset.exe
Ethernet	**32Bit**	\Win7_Win8\LAN\Win8.1\PROWin32.exe
	64Bit	\Win7_Win8\LAN\Win8.1\PROWinx64.exe
USB3.0		\Win7_Win8\USB3.0\Setup.exe
VGA	**32Bit**	\\Win7_Win8\Graphic\WIN8_8.1_32bit\Setup.exe
	64Bit	\\Win7_Win8\Graphic\WIN8_8.1_64bit\Setup.exe
TXE		\Win7_Win8\TXE\SetupTXE.exe
Audio	**32Bit**	\Win7_Win8\Audio\32bit_Win7_Win8_Win81_R275.exe
	64Bit	\Win7_Win8\Audio\64bit_Win7_Win8_Win81_R275.exe
MBI		\Win7_Win8\MBI\Setup.exe

Windows 10

Device		Driver Path
Chipset		\Win10\Chipset\SetupChipset.exe
LAN	**64Bit**	\Win10\LAN_21.0\64bit\PROWinx64.exe
VGA	**64Bit**	\Win10\Graphic\Intel HD Graphics Driver for Windows 7, 8.1, 10 (3rd Gen & BYT)\win64_153339.exe
Audio	**64Bit**	\Win10\AUDIO\64bit\0006-64bit_Win7_Win8_Win81_Win10_R279.exe
TXE	**64Bit**	\Win10\TXE_1.1.4.1145_Win7_8.1_10\SetupTXE.exe
MBI	**64Bit**	\Win10\MBI\n15hn02w.exe

Chapter 3

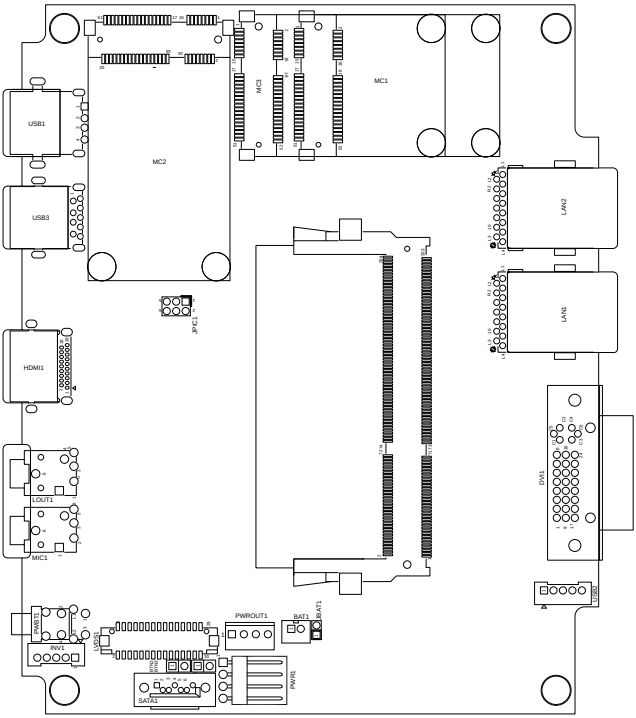
System Configuration

3.1. Board Layout

The engine of the computer is the main board. This section will provide an thorough view.

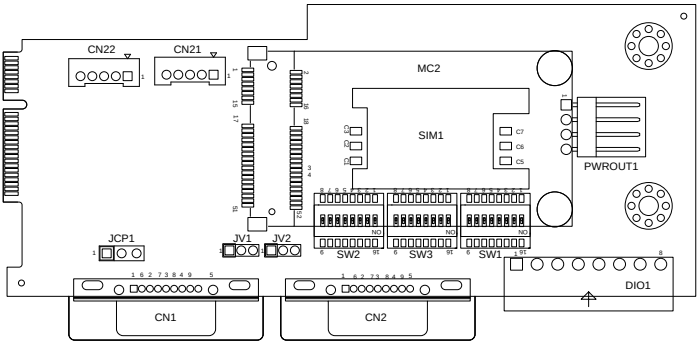
3.1.1. FMB-1230H (Main Board)

Board Top



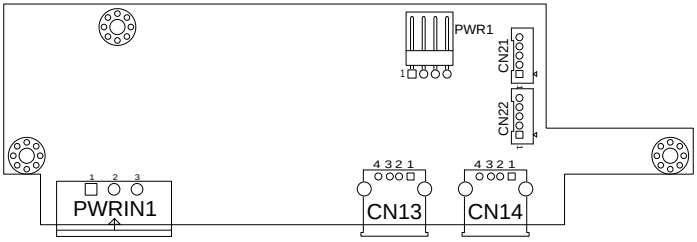
3.1.2. SCDB-1289A (for ARES-1230-E)

Board Top



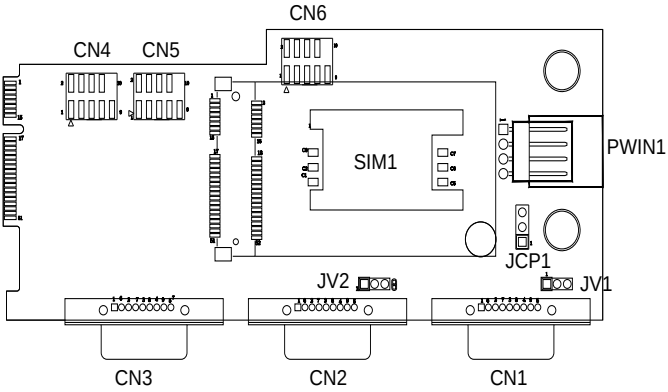
3.1.3. SCDB-1289B (for ARES-1230-E)

Board Top



3.1.4. SCDB-1314 (for ARES-1230-POS)

Board Top



3.2. Jumper & Connectors

The main board comes with some connectors to join some devices and some jumpers to alter hardware configuration. The power board also comes with some connectors. The following in this chapter will explicate each of these components.

3.2.1. Jumpers

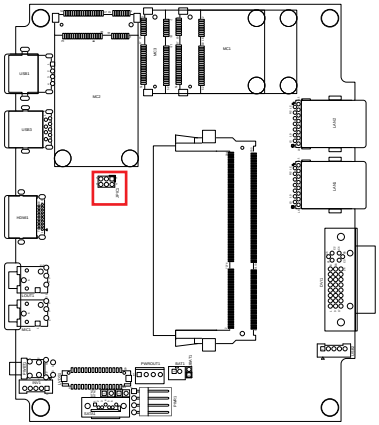
3.2.1.1 FMB-1230H (Main Board)

JPIC1

Function: Sets the AT/ATX mode
Jumper Type: 2.00mm pitch 2x3-pin header
Setting:

Pin	Description	
2-4	AT	
4-6	ATX mode (default)	

Board Top

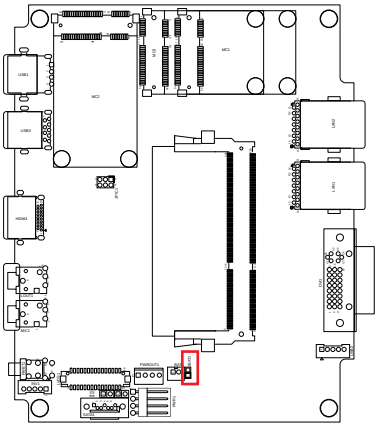


JBAT1

Function: Clears/keeps CMOS
Jumper Type: 2.00 mm pitch 1x2-pin header
Setting:

Pin	Description	
Short	Clears CMOS	**1 2** 
Open	Keeps CMOS (default)	**1 2** 

Board Top



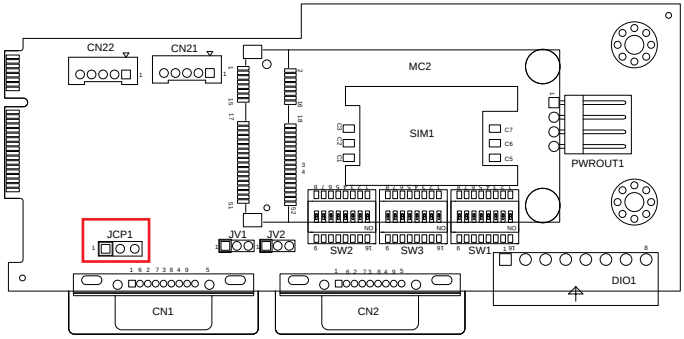
3.2.1.2 SCDB-1289A (for ARES-1230-E)

JCP1

Function: COM Port Power Selection
Jumper Type: 2.54 mm pitch 1x3-pin header
Setting:

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

Board Top

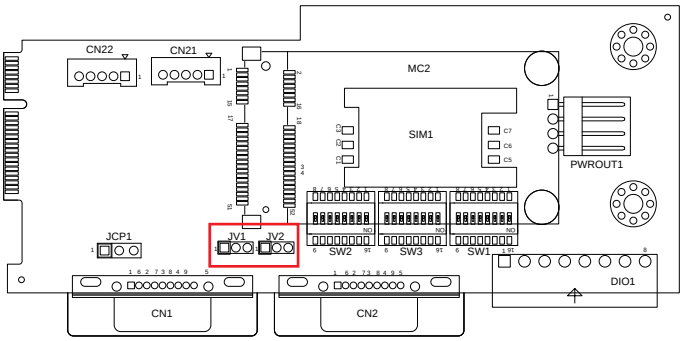


JV1,2

Function: RI/5V/12V (Pin 9) Selection for COM Port
Jumper Type: 2.00 mm pitch 1x3-pin header
Setting:

Pin	Description	
1-2	RI (default)	
2-3	5V or 12V (depends on JCP1)	

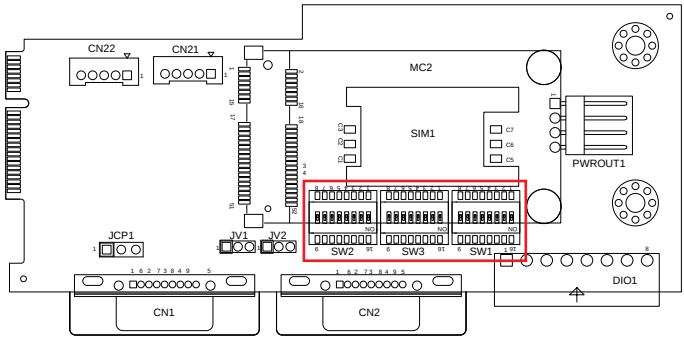
Board Top



SW1, SW2 : CN1 Data Transmission Interface Setting

It relies on SW1 and SW2 to set the data transmission interface for CN1. To set CN1 to RS-232 or RS-485, apply the following setting:

Board Top

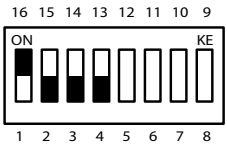


► **RS-232 (Default)**

SW1

Toggle	Pins	Position
1	1 - 16	On
2	2 - 15	Off
3	3 - 14	Off
4	4 - 13	Off

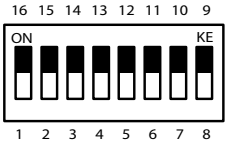
Setting



SW2

Toggle	Pins	Position
1	1 - 16	On
2	2 - 15	On
3	3 - 14	On
4	4 - 13	On
5	5 - 12	On
6	6 - 11	On
7	7 - 10	On
8	8 - 9	On

Setting

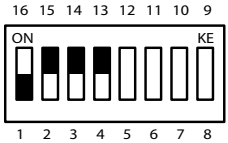


► RS-485

SW1

Toggle	Pins	Position
1	1 - 16	Off
2	2 - 15	On
3	3 - 14	On
4	4 - 13	On

Setting



SW2

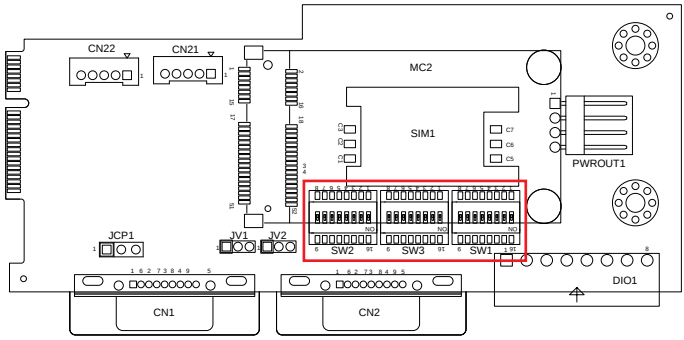
Toggle	Pins	Position
1	1 - 16	Off
2	2 - 15	Off
3	3 - 14	Off
4	4 - 13	Off
5	5 - 12	Off
6	6 - 11	Off
7	7 - 10	Off
8	8 - 9	Off

Setting

SW1, SW3 : CN2 Data Transmission Interface Setting

It relies on SW1 and SW3 to set the data transmission interface for CN2. To set CN2 to RS-232 or RS-485, apply the following setting:

Board Top

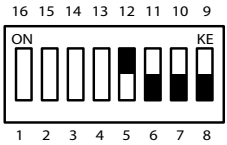


► **RS-232 (Default)**

SW1

Toggle	Pins	Position
5	5 - 12	On
6	6 - 11	Off
7	7 - 10	Off
8	8 - 9	Off

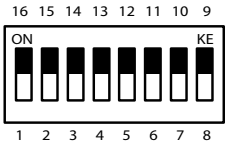
Setting



SW3

Toggle	Pins	Position
1	1 - 16	On
2	2 -15	On
3	3 - 14	On
4	4 - 13	On
5	5 - 12	On
6	6 - 11	On
7	7 - 10	On
8	8 - 9	On

Setting

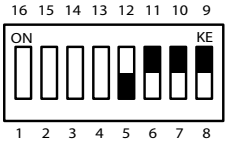


► RS-485

SW1

Toggle	Pins	Position
5	5 - 12	Off
6	6 - 11	On
7	7 - 10	On
8	8 - 9	On

Setting



SW3

Toggle	Pins	Position
1	1 - 16	Off
2	2 -15	Off
3	3 - 14	Off
4	4 - 13	Off
5	5 - 12	Off
6	6 - 11	Off
7	7 - 10	Off
8	8 - 9	Off

Setting

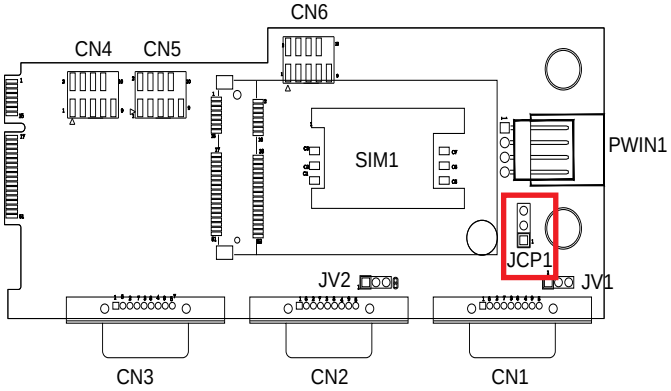
3.2.1.3 SCDB-1314 (for ARES-1230-POS)

JCP1

Function: COM Port Power Selection
Jumper Type: 2.54 mm pitch 1x3-pin header
Setting:

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

Board Top

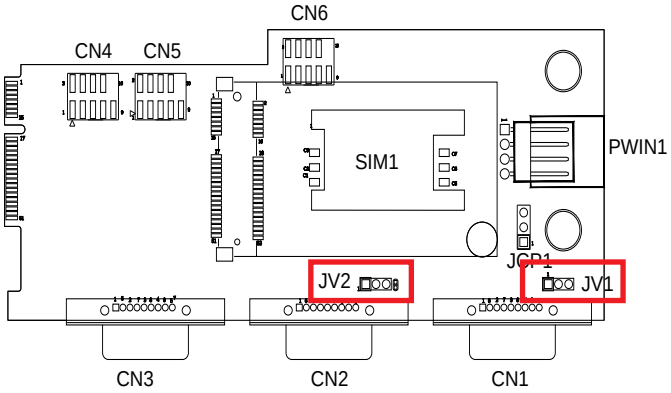


JV1,2

Function: RI/5V/12V (Pin 9) Selection for COM Port
Jumper Type: 2.00 mm pitch 1x3-pin header
Setting:

Pin	Description	
1-2	RI (default)	
2-3	5V or 12V (depends on JCP1)	

Board Top



3.2.2 Connectors

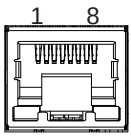
This section will guide you through the connectors on the main board and daughter board.

3.2.2.1 FMB-1230H (Main Board)

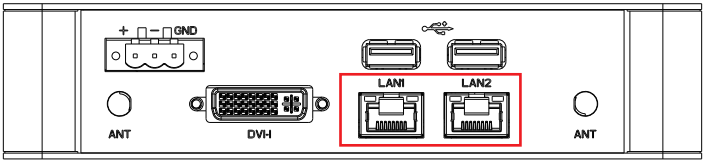
Note: The panel illustration in this section is using ARES-1230-E as example. Acutal appearance varies according to your model.

LAN1&2

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

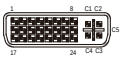


Rear Panel

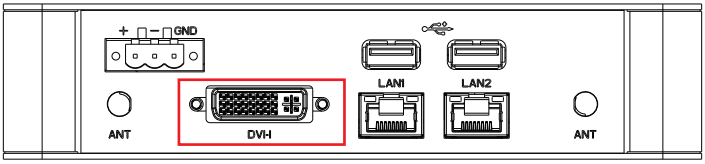


DVI1

Function:	DVI-I connector
Connector Type:	29-pin DIP-type female connector
Pin Assignment:	The pin assignments conform to the industry standard.

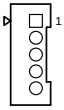


Rear Panel



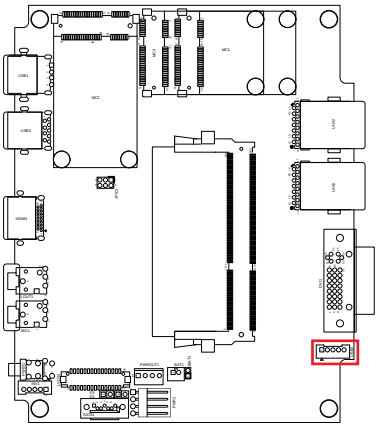
USB2

Destription: Connectors for the internal USB ports
Connector Type: Pitch 2.00mm 5-pin wafer connectors
Pin Assignment:



Pin	Desc.
1	VCCUSB1
2	USBLN0
3	USBLP0
4	GND
5	GND

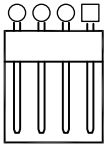
Board Top



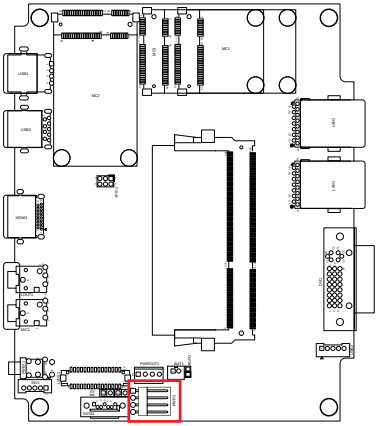
PWR1

Destription: Connectors for DC-in power.
Connector Type: Onboard 4-pin one-wall wafer connector
Pin Assignment:

Pin	Description
1	PWRINV+
2	PWRINV+
3	GND
4	GND



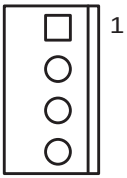
Board Top



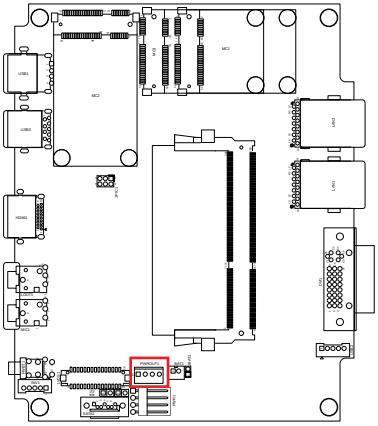
PWROUT1

Destription: Connectors for SATA power.
Connector Type: Onboard 4-pin one-wall wafer connector
Pin Assignment:

Pin	Description
1	5VS
2	GND
3	GND
4	12VS

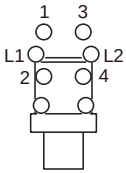


Board Top



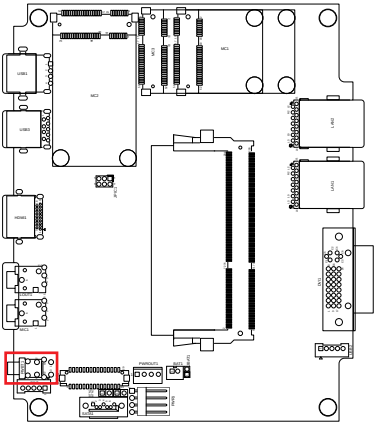
PWBT1

Destription: Power Button
Connector Type: LED tact switch with green and red colors

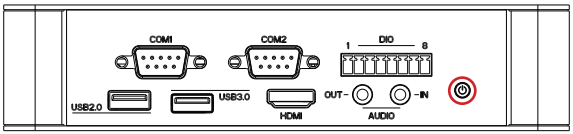


Pin	Description	Pin	Description
1	GND	2	N/A
3	BTN	4	N/A
L1	SW1_LED_N	L2	SW1_LED_P

Board Top



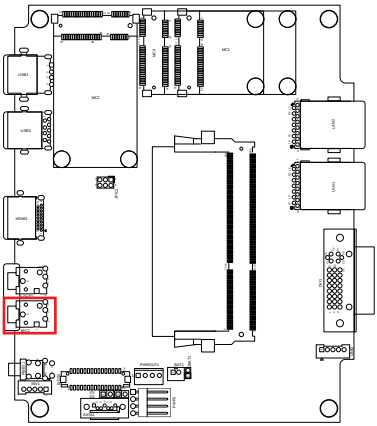
Front Panel



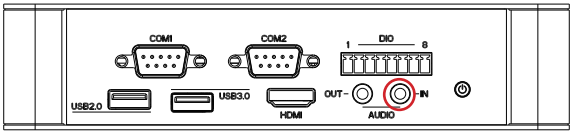
MIC1

Destription: Mic-in Port
Connector Type: Pink 3.5mm audio jack

Board Top



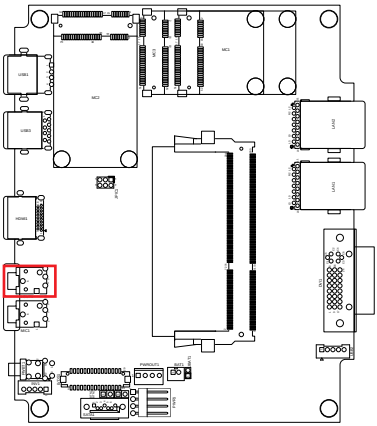
Front Panel



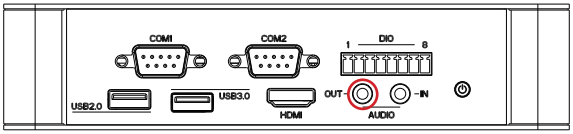
LOUT1

Destription: Line-out Port
Connector Type: Lime green 3.5mm audio jack

Board Top

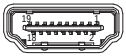


Front Panel



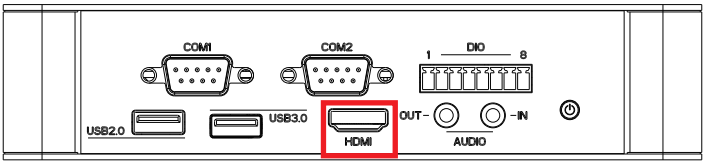
HDMI1

Function: HDMI connector
Connector Type: 19-pin HDMI connector with flange
Pin Assignment:



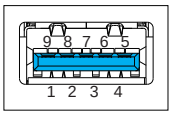
The pin assignments conform to the industry standard.

Front Panel



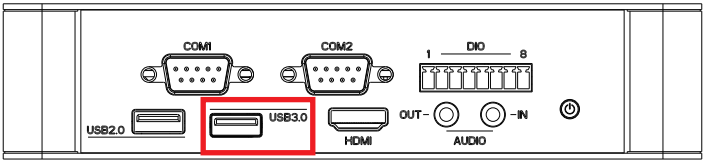
USB3

Function: USB 3.0 connector
Connector Type: USB 3.0/2.0 type-A connectors
Pin Assignment:



The pin assignments conform to the industry standard.

Front Panel

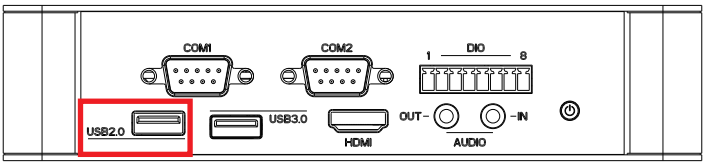


USB1

Function: USB 2.0 connectors
Connector Type: USB 2.0/1.0 type-A connectors
Pin Assignment:

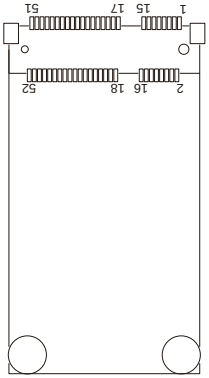
The pin assignments conform to the industry standard.

Front Panel

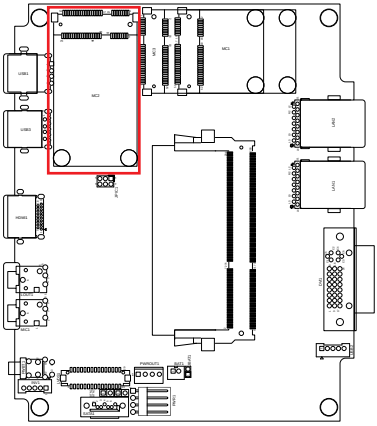


MC2

Description:	Mini-card Full Size socket
Connector Type:	Onboard 0.8mm pitch 52-pin edge card connector
Pin Assignment:	The pin assignments conform to the industry standard.

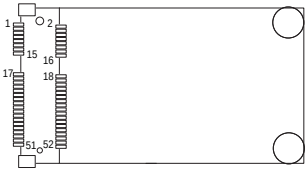


Board Top



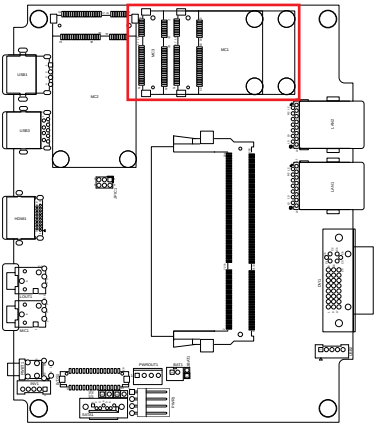
MC3

Function: mSATA socket
Connector Type: Onboard 0.8mm pitch 52-pin edge card connector
Pin Assignment:



The pin assignments conform to the industry standard.

Board Top

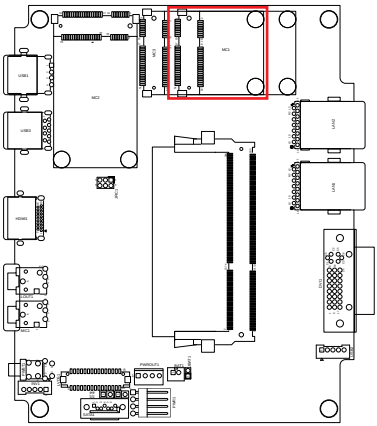


MC1

Function: Mini-card half-size socket
Connector Type: Onboard 0.8mm-pitch 52-pin edge card connector
Pin Assignment:

Pin	Desc.	Pin	Desc.	Pin	Desc.
1	3.3AUX	21	GND		
2	3.3AUX	22	BUF_PLT_RST#		
3	COEX1	23	PCIE_RXN3		
4	GND	24	3.3AUX		
5	Reserved	25	PCIE_RXP3		
6	1.5VS_MINI	26	GND		
7	3.3AUX	27	GND		
8	Reserved	28	1.5VS_MINI	41	3.3AUX
9	GND	29	GND	42	Reserved
10	UIM_IO	30	SMB_CLK_MAIN	43	GND
11	PCIE_CLKN3	31	PCIE_TXN3	44	Reserved
12	UIM_CLK	32	SMB_DATA_MAIN	45	Reserved
13	PCIE_CLKP3	33	PCIE_TXP3	46	Reserved
14	UIM_RESET	34	GND	47	Reserved
15	GND	35	GND	48	1.5VS_MINI
16	Reserved	36	USBN2	49	Reserved
17	Reserved	37	GND	50	GND
18	GND	38	USBP2	51	Reserved
19	Reserved	39	3.3AUX	52	3.3AUX
20	Reserved	40	GND		

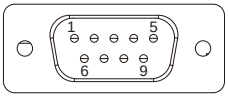
Board Top



3.2.2.2 SCDB-1289A (for ARES-1230-E)

CN1(COM1),CN2(COM2)

Function: Serial port
Connector Type: External 9-pin D-sub male connector



Pin Assignment:

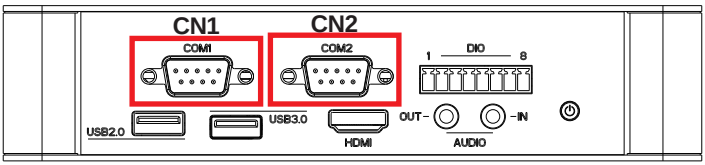
RS232

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

RS485

Pin	Description	Pin	Description
1	485-	2	485+
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

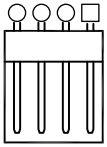
Front Panel



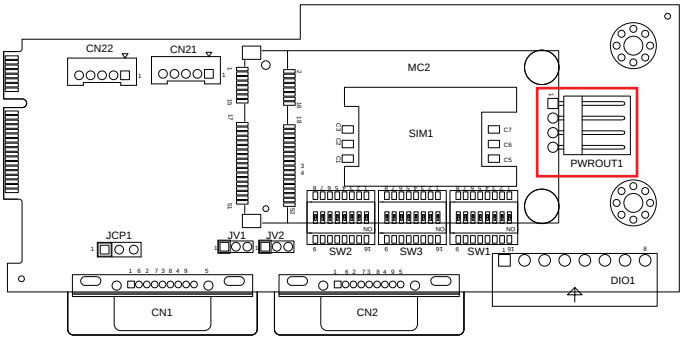
PWROUT1

Destription: Connectors for DC-in power.
Connector Type: Onboard 4-pin one-wall wafer connector
Pin Assignment:

Pin	Description
1	VCC5
2	GND
3	GND
4	+12V



Board Top



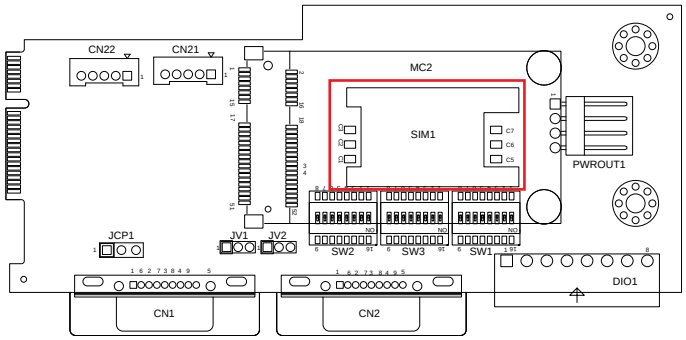
SIM1

Function: SIM card socket
Connector Type: SIM card socket

Pin Assignment:

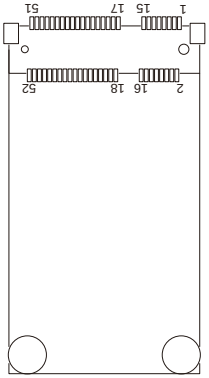
Pin	Description	Pin	Description
3	CLK	7	I/O
2	RST	6	VPP
1	VCC	5	GND

Board Top

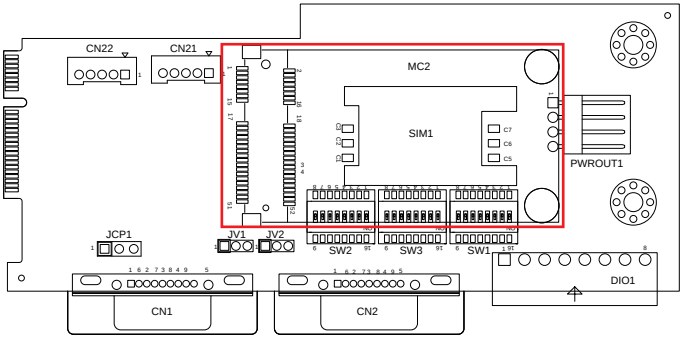


MC2

Description:	Mini-card Full Size socket
Connector Type:	Onboard 0.8mm pitch 52-pin edge card connector
Pin Assignment:	The pin assignments conform to the industry standard.

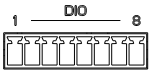


Board Top



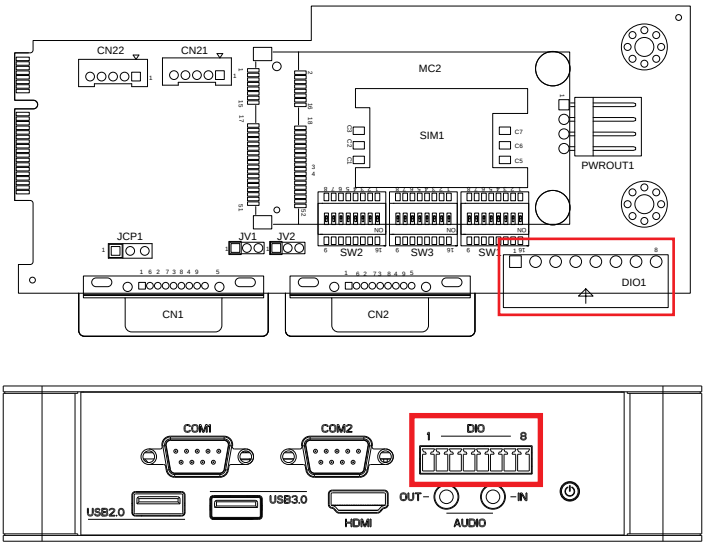
DIO1

Destription: Digital I/O Connectors (4-in/4-out)
Connector Type: Onboard 1x8-pin box connector
Pin Assignment:



Pin	Description
1	DO0
2	DO1
3	DO2
4	DO3
5	DI0
6	DI1
7	DI2
8	DI3

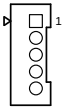
Board Top



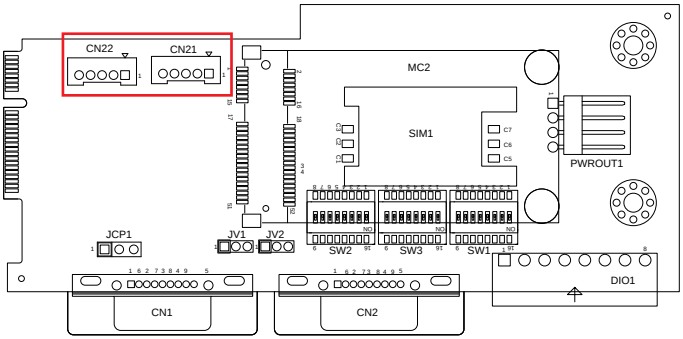
CN21&22

Destription: Connectors for the internal USB ports
Connector Type: Pitch 2.00mm 5-pin wafer connectors
Pin Assignment:

Pin	Desc.
1	5VCC
2	Data-
3	Data+
4	GND
5	GND



Board Top



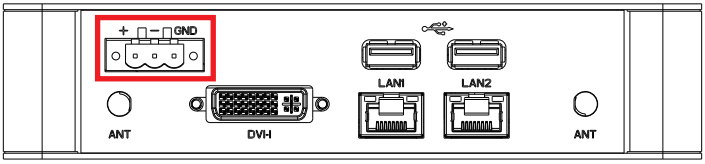
3.2.2.3 SCDB-1289B (for ARES-1230-E)

PWRIN1

Destription: DC Adapter Power Input
Connector Type: 1x3-pin Terminal block
Pin Assignment:

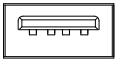
Pin	Desc.
1	DCIN
2	GND
3	PWR_IN_SW#

Rear Panel



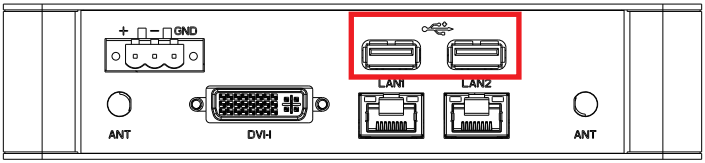
CN13&14

Function: USB 2.0 connectors
Connector Type: USB 2.0/1.0 type-A connectors
Pin Assignment:



The pin assignments conform to the industry standard.

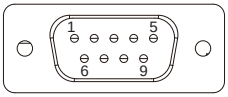
Rear Panel



3.2.2.3 SCDB-1314 (for ARES-1230-POS)

CN1(COM1),CN2(COM2)

Function: RS-232/422/485 selectable serial port
Connector Type: External 9-pin D-sub male connector



Pin Assignment:

RS232

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

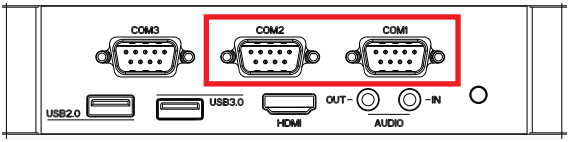
RS422

Pin	Description	Pin	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	NC
7	NC	8	NC
9	NC		

RS485

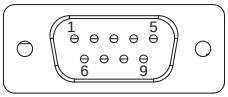
Pin	Description	Pin	Description
1	485 D-	2	485 D+
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

Front Panel



CN3(COM3)

Function: RS-232/485 selectable serial port
Connector Type: External 9-pin D-sub male connector



Pin Assignment:

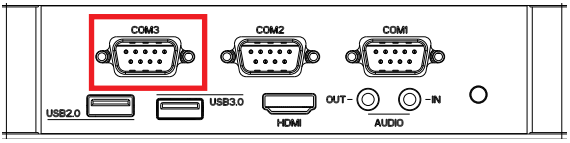
RS232

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

RS485

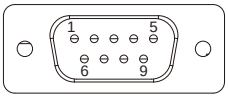
Pin	Description	Pin	Description
1	485 D-	2	485 D+
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

Front Panel



CN4(COM4), CN5(COM5), CN6(COM6)

Function: RS-232/485 selectable serial port
Connector Type: External 9-pin D-sub male connector



Pin Assignment:

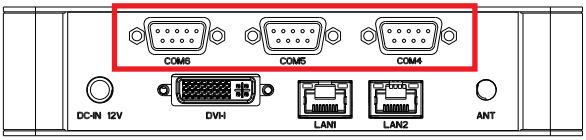
RS232

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

RS485

Pin	Description	Pin	Description
1	485 D-	2	485 D+
3	NC	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

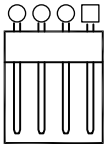
Rear Panel



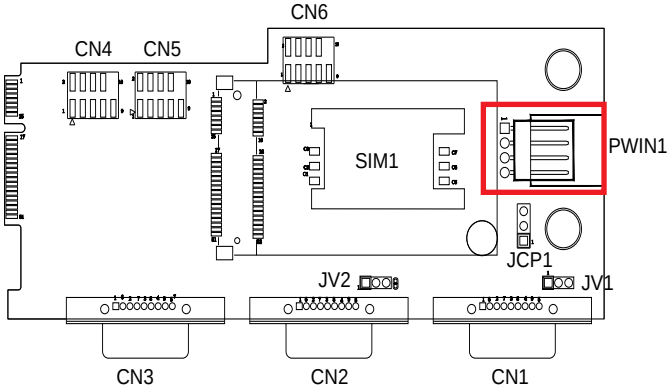
PWROUT1

Destription: Connectors for DC-in power.
Connector Type: Onboard 4-pin one-wall wafer connector
Pin Assignment:

Pin	Description
1	VCC5
2	GND
3	GND
4	+12V



Board Top



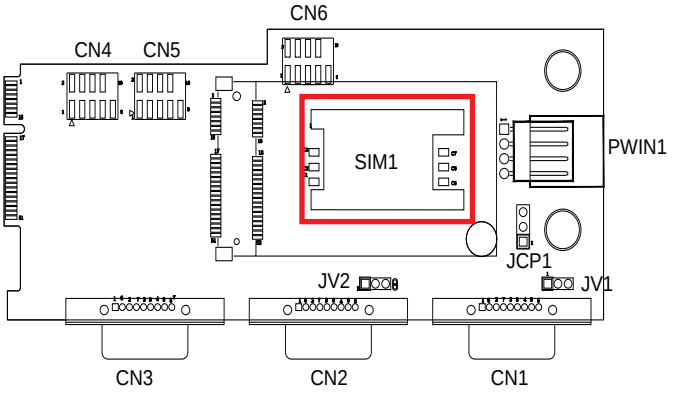
SIM1

Function: SIM card socket
Connector Type: SIM card socket

Pin Assignment:

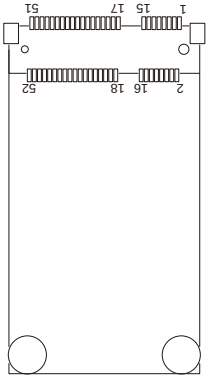
Pin	Description	Pin	Description
3	CLK	7	I/O
2	RST	6	VPP
1	VCC	5	GND

Board Top

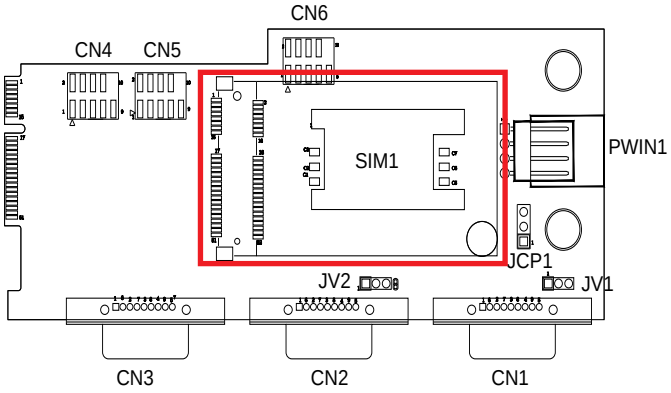


MC2

Description:	Mini-card Full Size socket
Connector Type:	Onboard 0.8mm pitch 52-pin edge card connector
Pin Assignment:	The pin assignments conform to the industry standard.



Board Top



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Chapter 4

Installation and Maintenance

4.1. Install Hardware

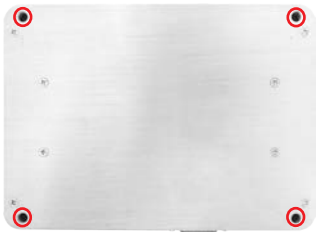
The ARES-1230 series is constructed based on modular design to make it easy for users to add hardware or to maintain the computer. The following sections will guide you to the simple hardware installations for the computer.

The appearance of each model is different, but the installation procedures are basically the same. The following description will use ARES-1230-E as the example.

4.1.1. Open the upper cover of the Computer

Most of the connectors are built on the top side of the main board. To access these components, you need to remove the computer's top cover. Follow the following steps to remove the top cover from the computer.

1. Place the computer upside down on a flat surface. Loosen and remove the 4 screws as shown in the illustration below:



2. Turn over the computer and remove the upper cover completely from the computer.

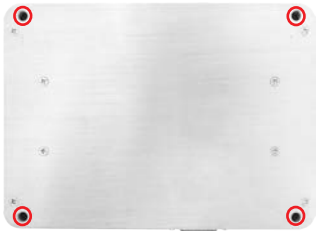
Upper cover

3. The inside of the computer comes to view.

4.1.2. Restore the upper cover

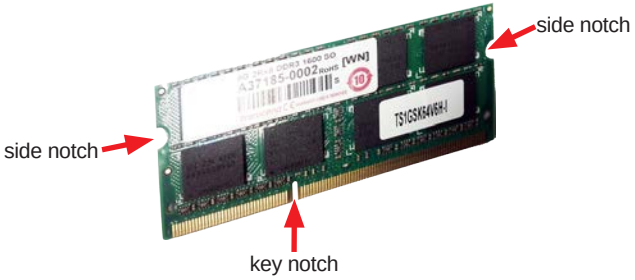
1. Restore the upper cover with the box.

2. Fasten the screws to complete the assembly.



4.1.3. Install Memory Module

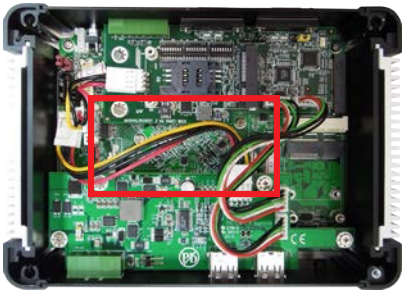
The main board has one dual inline memory module (DIMM) socket. Load the computer with a memory module to make the computer run programs. The memory module for the computer's SO-DIMM socket should be a 204-pin DDR3 with a "key notch" off the centre among the pins, which enables the memory module for particular applications. There are another two notches at each left and right side of the memory module to help fix the module in the socket.



To install a memory module:

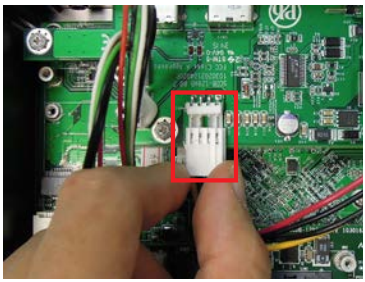
1. Remove the upper cover from the computer as described in 4.1.1. Open the upper cover of the Computer on page 56.

2. Find the SO-DIMM socket on the board as marked in the illustration below.

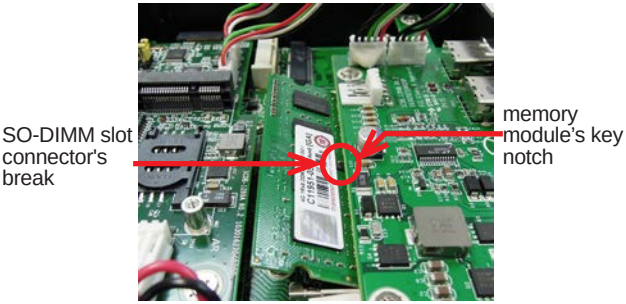


The SO-DIMM socket is horizontal type, and it has two spring-loaded locks to fix the memory module.

3. To prevent from interfering during installation, unplug the power connector.



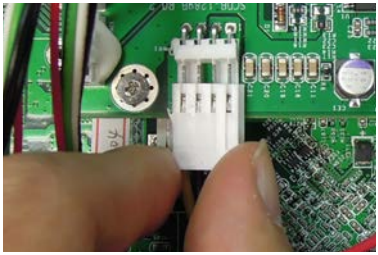
4. Confront the memory module's edge connector with the SO-DIMM slot connector. Align the memory module's key notch at the break on the SO-DIMM slot connector. By a slanted angle, fully plug the memory module until it cannot be plugged any more.



Aligh the memory module's key notch at the SO-DIMM slot connector's break.

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

6. Plug the power connector into the socket.

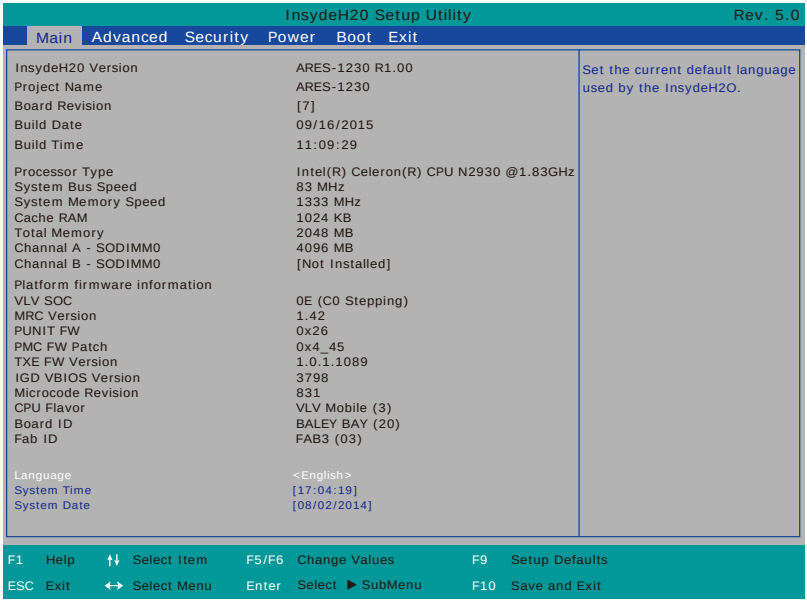


Chapter 5

BIOS

The BIOS Setup utility for the computer is 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 "Esc" key upon powering on the computer.



Note: The screenshots are based on ARES-1230-E as example and may be slightly different from model to model.

The BIOS featured menus are:

Menu	Description
Main	See 5.1. Main on page 64.
Advanced	See 5.2. Advanced on page 65.
Security	See 5.3. Security on page 70.
Power	See 5.4. Power on page 71.
Boot	See 5.5. Boot on page 72.

Exit	See 5.6. Exit on page 73.

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 configure the utility.

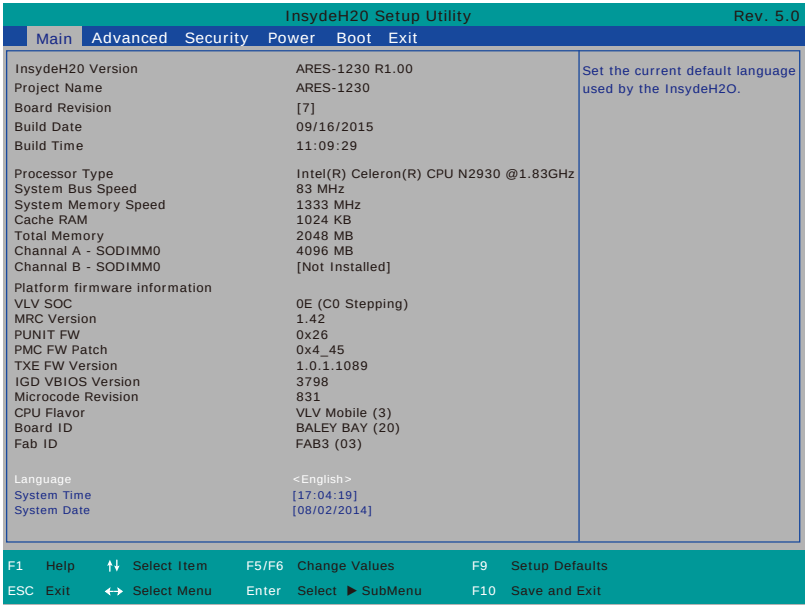
Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	▸ On the top menus: Use **Esc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to exit discarding changes. ▸ On the submenus: Use **Esc** to quit current screen and return to the top menu.
F5	Increases current value to the next higher value or switches between available options.
F6	Decreases current value to the next lower value or switches between available options.
F1	Opens the **Help** of the BIOS Setup utility.
F9	Restore the Setup Default (The screen then prompts a message asking you to select **OK** or **Cancel** to restore to default.)
F10	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 and system info.



The BIOS info displayed are:

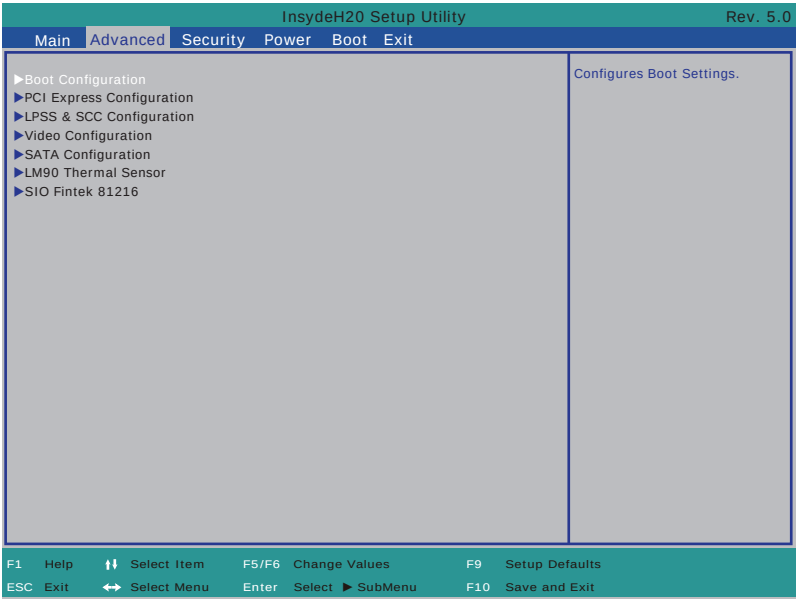
Info	Description
InsydeH20 Version	Delivers the computer's BIOS version.
Project name	Delivers the name of the project. The name varies according to your model.
Build Date and Time	Delivers the date and time when the BIOS Setup utility was created/updated.
Platform firmware Information	Delivers the Platform firmware Information

The featured settings are:

Setting	Description
Language	Select the current default language used by the InsydeH20
System Time	Sets system time.
System Date	Sets system date.

5.2. Advanced

Access the **Advanced** menu to manage the computer's system configuration including the Super IO chip.



The featured settings and submenus are:

Setting	Description
Boot Configuration	See 5.2.1. Boot Configuration on page 66
PCI Express Configuration	See 5.2.2. PCI Express Configuration on page 66
Video Configuration	See 5.2.3. Video Configuration on page 67
SATA Configuration	See 5.2.4. SATA Configuration on page 68
LM90 Thermal Sensor	5.2.5. LM90 Thermal Sensor on page 69
SIO Fintek 81216/81866D	See 5.2.6. SIO Fintek 81216/81866D on page 69

5.2.1. Boot Configuration

Setting	Description
Numlock	Select Power-on state for Num lock

5.2.2. PCI Express Configuration

Configures PCI Express by the following settings:

Setting	Description
PCI Express Root Port 1/2/3/4	▸ PCI Express Root Port 1/2/3/4 Enables/disables this PCIe port. ▸ PCIE Port 1/2/3/4 Speed Options are: Auto (default), Gen 1, Gen 2 Auto is the default. ▸ PCIE Port 1/2/3/4 ASPM Options are: Disable : disables ASPM L0s : force all links to L0s state L1 : force all links to L1 state L0sL1 : force all links to L0s+L1 state Auto : BIOS auto configure (default)

5.2.3. LPSS & SCC Configuration

Select this submenu to configure LPSS & SCC device.

The featured settings are:

Setting	Description
LPSS & SCC Device Mode	Set the mode of LPSS & SCC Device Options are **ACPI mode**(default)/**PCI mode**
OS Selection	Set the mode of OS Selection. Options are Windows(default)/Android

5.2.3. Video Configuration

5.2.4.1 Video Configuration

Configure video settings. The featured setting is:

Setting	Description
Logo & SCU Resolution	Set Logo & SCU Resolution. Options are Auto/640 x480/800 x 600/1024 x 768
Multi EDID Support	Enables/disables Multi EDID support for BIOS Video [INI10] Driver. ▸ **Disabled** is the default.

5.2.4.2 VBT Hook Configuration

Setting	Description
Configure CRT as	Set the option of CRT. Options are Default / CRT / No Device
CRT EDID Support	Enables/Disables CRT EDID Support
Configure DDI0 as	Set the option of DDI0. Options are Default/DisplayPort/ HDMI/DVI /DisplayPort with HDMI/DVI Compatible / No Device
Configure DDI1 as	Set the option of DDI1. Options are Default/ LVDS/ DisplayPort/ HDMI/DVI / DisplayPort with HDMI/DVI Compatible / No Device
Configure eDP Panel Number as	Set the option of VBIOS eDP Panel Number. Options are 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16.
LFP EDID Support	Enables/Disables LFP EDID Support
EFP EDID Support	Enables/Disables EFP EDID Support

5.2.4.3 PTN3460 (eDP to LVDS) Configuration

Setting	Description
PTN3460 Output Format	Set the Output Format of PTN3460. Options are (00) VESA (24bpp) / (01) VESA or JEIDA (18bpp) / (10) JEIDA (24bpp) / (11) JEIDA (24bpp)
PTN3460 Channel Control	Set the Channel Options are Single / Dual
PTN3460 EDID Table	Set the EDID Table of PTN3460.

5.2.4. SATA Configuration

Select this submenu to configure the SATA controller and HD.

Setting	Description
SATA Controller(s)	Enables/disables the present SATA controller. ▸ **Enabled** is the default.
SATA Speed	Configures SATA Speed ▸ Options are: Gen 1, Gen 2 (default)
Configures SATA Mode	Configures how to sun the SATA drives. ▸ Options available are **AHCI** (default) and **IDE**.
SATA Port 0 Hot Plug Capability	Enables/disables hot-pluggable feature for the SATA port. ▸ **Enabled** is the default.
SATA Port 1 Hot Plug Capability	
SATA Port 0 Connect to an ODD	Enables/disables the SATA port connect to an ODD If enabled, when you connect an ODD to a SATA port. The software auto detection for media insert and tray will be enabled. ▸ **Disabled** is the default.
SATA Port 1 Connect to an ODD	
Serial ATA Port 0	Delivers the SATA port Media information and Security Mode.
Serial ATA Port 1	

5.2.5. LM90 Thermal Sensor

Setting	Description
Local Temperature	Display Local Temperature
Remote Temperature	Display Remote Temperature
Thermal Status	Display Thermal Status

5.2.6. SIO Fintek 81216/81866D

For ARES-1230-E:

Setting	Description
Serial Port 1/2	▸ Serial Port 1/2 Enables/disables the Serial port. ▸ Base I/O Address Setup the Base I/O Address of the Serial Port. ▸ Interface Setup the interface of the Serial Port. Options are RS232 / RS485 ▸ Interrupt Setup the Interrupt of the Serial Port

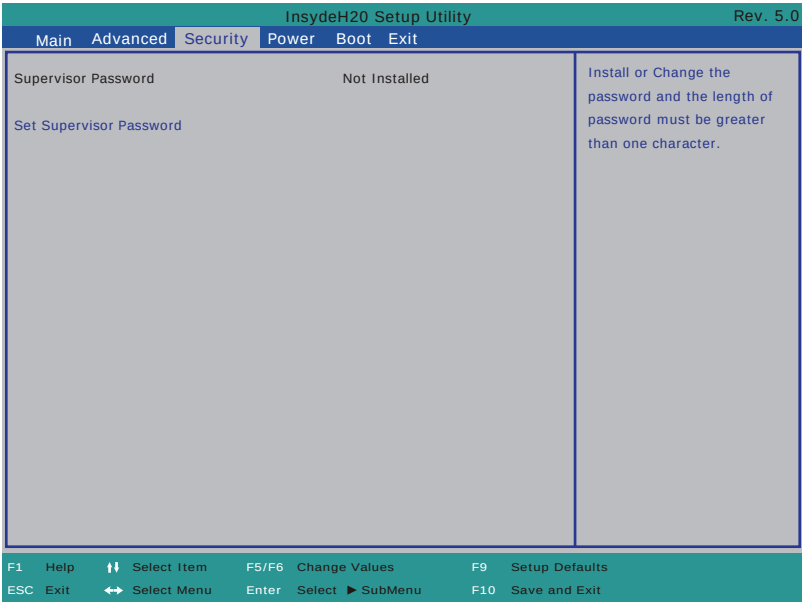
For ARES-1230-POS:

Serial Port A~F	▸ Serial Port A~F Enables/disables the Serial port. ▸ Base I/O Address Setup the Base I/O Address of the Serial Port. ▸ Interrupt Setup the Interrupt of the Serial Port ▸ Com Port Type Setup the interface of the Serial Port. For Serial Port A/B, options are RS232 / RS422 / RS485 For Serial Port C~F, options are RS232/ RS485

Note: Serial ports A to F respectively correspond to the CN1 to CN6 of the board number and ports COM1 to COM6 on the box housing.

5.3. Security

The **Security** menu sets up the password for the system's administrator account. Once the administrator password is set up, this BIOS Setup utility is limited to access and will ask for the password each time any access is attempted.

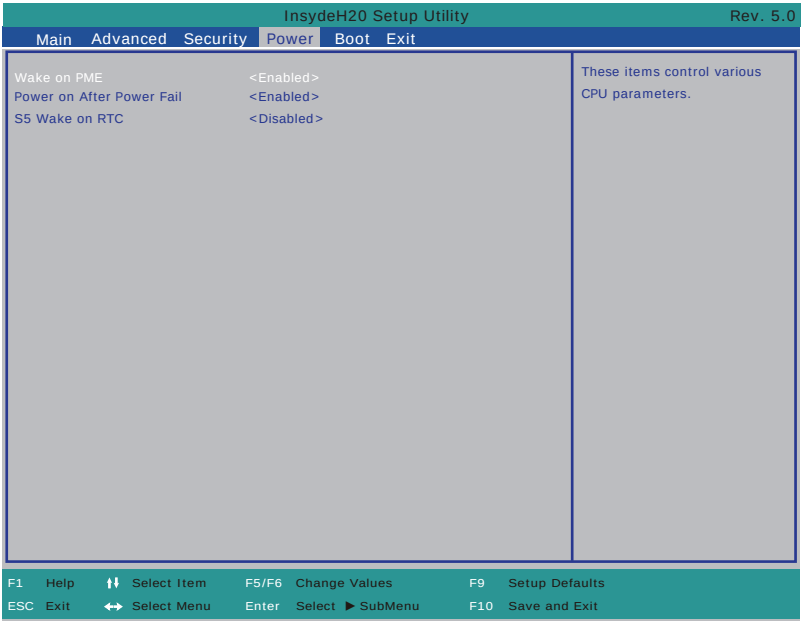


The featured setting is:

Setting	Description
Set Supervisor Password	To set up a supervisor password. 1. After selecting **Set Supervisor Password**, a dialog box then pops up on-screen. Enter and confirm your desired password. The length of the password must be greater than one character. 2. To change an existing supervisor password, you will need to enter the original password.

5.4. Power

The **Security** menu sets up the password for the system's administrator account. Once the administrator password is set up, this BIOS Setup utility is limited to access and will ask for the password each time any access is attempted.

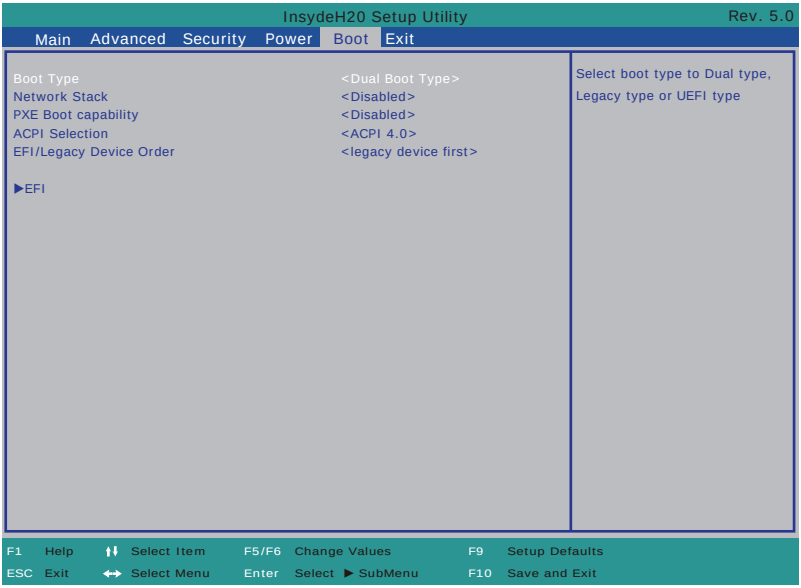


The featured setting is:

Setting	Description
Wake on PME	Enables or diables Wake on PME. Determines the action taken when the system power is off and a PCI Power Management Enable wake up event occurs.
Power On After Power Fail	Specify what state to go to when power is reapplied after a power failure.
S5 Wake on RTC	Wake on RTC from S5 state, By day of Month or fix time of every day. Options are Disabled(default) / By Every Day / By Day of Month

5.5. Boot

The **Boot** menu configures how to boot up the system such as the configuration of boot device priority.

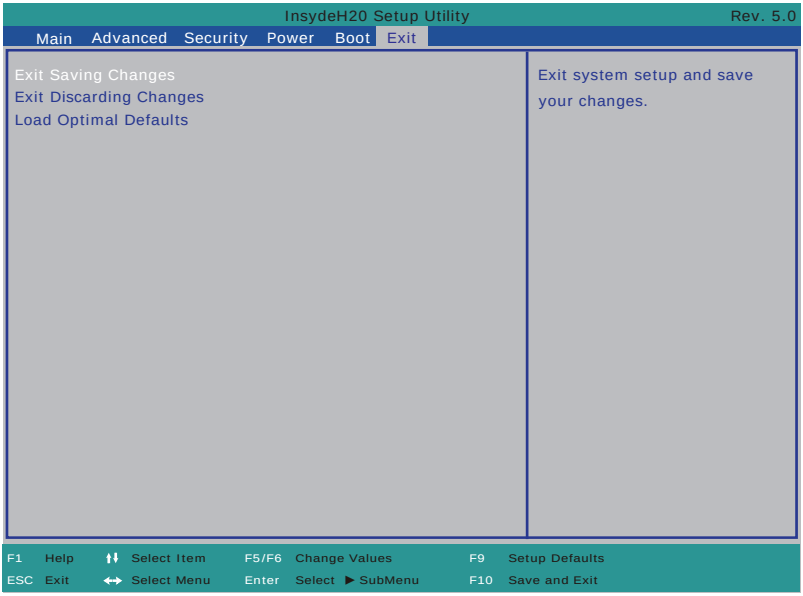


The featured settings are:

Setting	Description
Boot Type	Select Boot Type. Options are **Legacy Boot Type** and **Dual Boot Type** (default)**.**
Network Stack	Enables or disables newtork stack support: Windows 8 Bit locker unlock, UEFI IPv4/IPv6 PXE, Legacy PXE OPROM.
PXE boot capability	Disables or enables PXE boot to LAN. ▸ **Disabled** is the default.
ACPI Selection	Select boot to Acpi 3.0/Acpi 1.0B Options are Acpi 1.0B/Acpi 3.0/Acpi 4.0/Acpi 5.0
EFI/Legacy Device Order	Determine EFI device first or legacy device first. Options are EFI device first, Legacy device first, Smart Mode.
EFI	Shows EFI boot order settings.

5.6. Exit

The **Save & Exit** menu features a handful of commands to launch actions from the BIOS Setup utility regarding saving changes, quitting the utility and recovering defaults.



The features settings are:

Setting	Description
Exit Saving Changes	Saves the changes and quits the BIOS Setup utility.
Exit Discard Changes	Quits the BIOS Setup utility without saving the change(s).
Load Optimal Defaults	Restores all settings to defaults. ▸ This is a command to launch an action from the BIOS Setup utility rather than a setting.

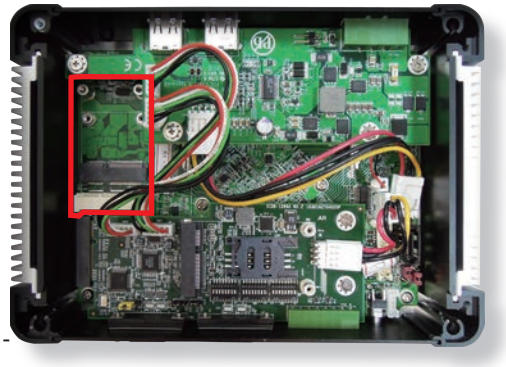
Appendices

Appendix A: Install mSATA Storage

To install an mSATA storage module to the computer:

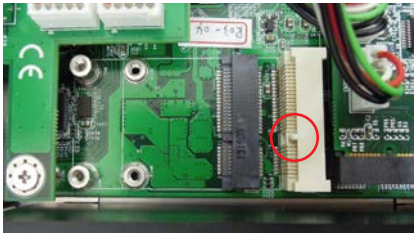
1. Remove the top cover from the computer as described in 4.1.1. Open the upper cover of the Computer on page 56.

   The inside of the computer comes to view.



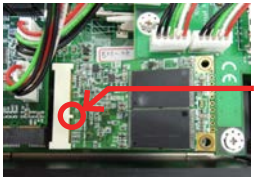
2. Find the socket for mSATA module as the picture above shows.

3. Confront the mSATA module’s edge connector with the socket's connector. Align the module’s key notch the connector's break.



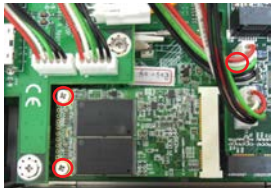
The module's key notch should meet the connector's break.

4. Fully plug the module until it cannot be plugged any more.



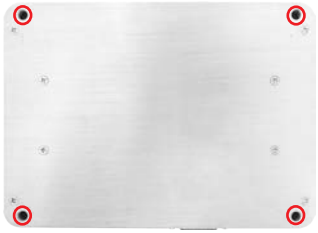
Fully plug the module.

5. Press the module down and fix the module in place using two screws.



6. Restore the upper cover to the computer.

7. Fasten the screws on sides to complete the assembly.

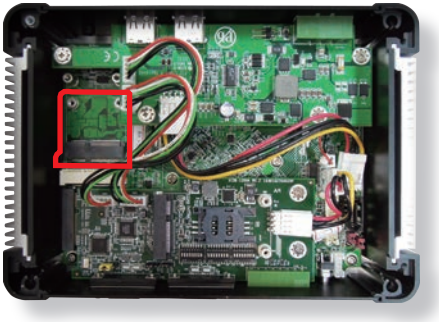


Appendix B: Wi-Fi Module Hardware Installation

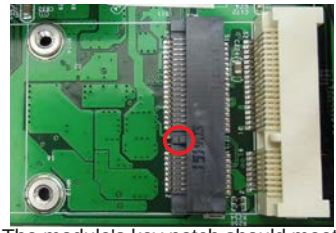
To use Wi-Fi, hardware-wise the computer needs a Wi-Fi module installed, and software-wise the computer needs the device driver and an application program. This appendix will guide you to install the Wi-Fi module. (To have a copy of the device driver, please contact ARBOR customer service by the contact info described in Technical Support on page vii.)

1. Remove the computer's upper cover as described in 4.1.1. Open the upper cover of the Computer on page 56.

2. The **PCI Express Mini-card** socket for wireless modules comes to view.

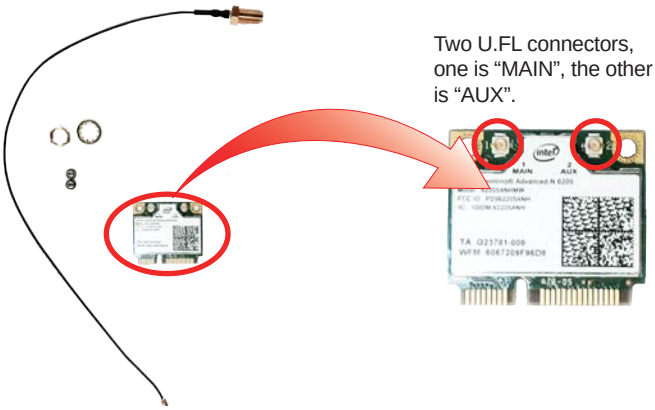


Note the socket has a break among the connector .

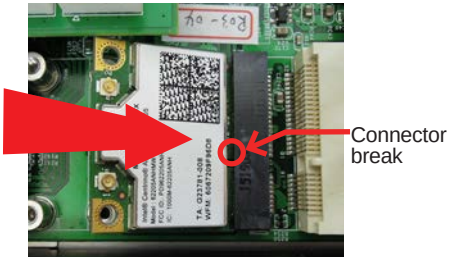


The module's key notch should meet the connector's break.

3. Prepare the Wi-Fi module kit. The module is a half-size module of **PCI Express Mini-card** form factor, with two U.FL connectors, one is “MAIN“, and the other is “AUX“.



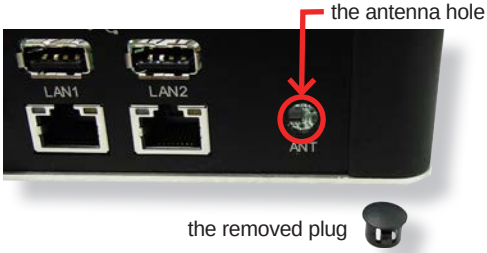
4. Plug the Wi-Fi module to the socket’s connector by a slanted angle. Fully plug the module, and note the notch on the wireless module should meet the break of the connector.



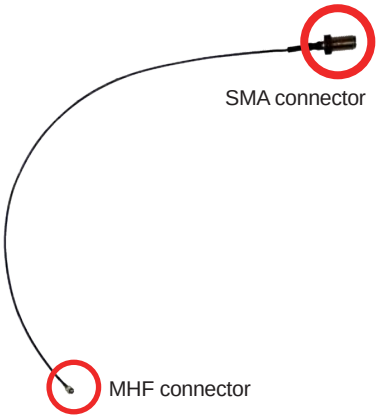
Fully plug the module.

5. Press the module down and fix the module in place using two screws.

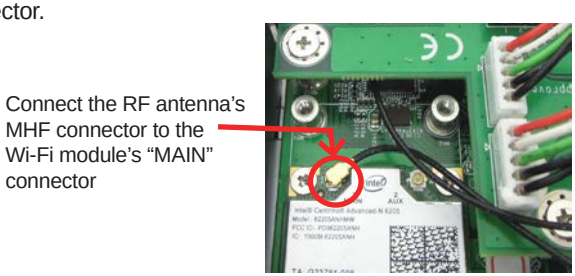
6. Remove a plastic plug from the computer's rear (or front) panel to make an antenna hole. Keep the plastic plug for any possible restoration in the future.



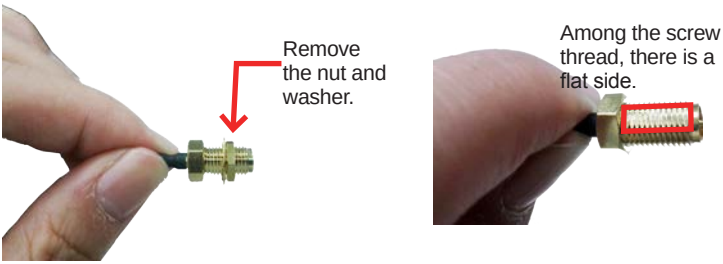
7. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.



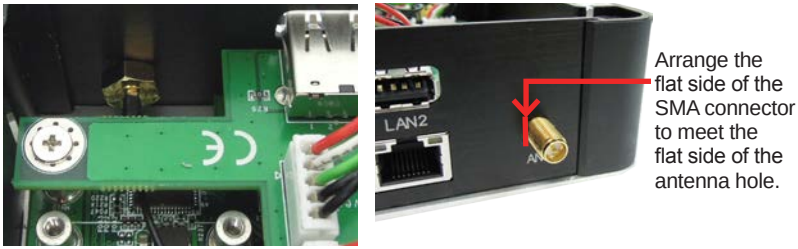
8. Connect the RF antenna's MHF connector to the Wi-Fi module's "MAIN" connector.



9. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Save the washer and nut for later use. Note the SMA connector has the form of a threaded bolt, with one flat side.



10. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flattened side with the antenna hole's flat side.



11. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.

Mount the washer and the nut to the SMA connector. Tighten the nut.

12. Restore the computer's bottom cover and fasten the screws

13. Have an external antenna. Screw and tightly fasten the antenna to the SMA connector.

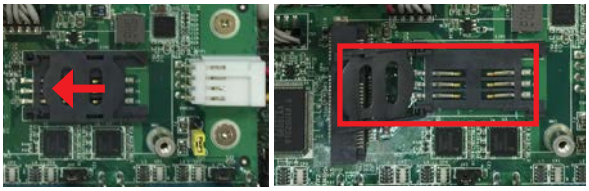
Appendix C: Install SIM Card

For models with SIM card socket, refer to the instructions below to install the SIM card.

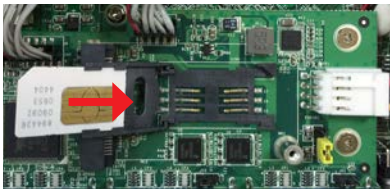
1. Remove the computer's upper cover as described in 4.1.1. Open the upper cover of the Computer on page 56.

2. Locarte the SIM card socket.

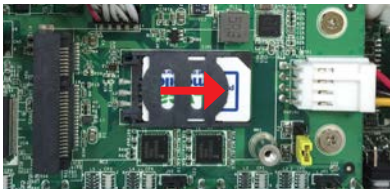
3. Slide the the SIM card holder cover towerds the OPEN edge and then lift the cover to open the .



4. Insert the SIM card into the card holder as shown below.



5. Close the SIM card holder door and slide the door to the LOCK edge to lock into place.



Appendix D: Install mPCIe Module

D.1 Install Full-Size mPCIe Module

For models with mPCI card socket on daughter board, in case you need to install mPCIe module, refer to the instructions below to proceed.

1. Remove the computer's upper cover as described in 4.1.1. Open the upper cover of the Computer on page 56.

2. Locarte the mPCIe card socket.

3. Confront the mPCIe module's edge connector with the socket's connector. Align the module's key notch with the connector's break and fully plug the module until it cannot be plugged any more.

4. Press the module down and fix the module in place using two screws

D.2 Install Half-Size mPCIe Module

1. If you are to install a half-size mPCIe module, you will need to extend the half-size module with a “mini half bracket”. Join them together by using two screws as shown below.

Position the WiFi module and the “mini half bracket” exactly as shown.

Join the WiFi module and the “mini half bracket” by using two screws.

2. Confront the mPCIe module’s edge connector with the socket's connector. Align the module’s key notch with the connector's break and fully plug the module until it cannot be plugged any more.

3. Press the module down and fix the module in place using one screw.