ARES-1500-A10
ARES-1500-B10

Robust Box Computers with AMD G-T40N Platform

User's Manual

Version 1.0

P/N: 4012150002100P 2013.12

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Revision History

Version	Date	Description
1.0	Dec 2013	Initial release for ARES-1500-A10 & ARES-1500-B10

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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 consult the user's manual first at: ftp://ftp.arbor.com.tw/pub/manual

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

http://www.arbor.com.tw

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. Product Highlights

- Fanless Design
- Ultra Low Profile Enclosure
- AMD G-T40N Dual-Core 1.0 GHz Processor
- Rich I/O (4 x USB ports, 4 x serial ports, 2 x GbE LAN ports, 1 x DVI-I connector)
- Aluminum Chassis for Harsh Environment
- Optional WiFi or 3G networking
- Slim, Compact & Cable-free Design

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 Kernel	
Processor	Soldered onboard AMD G-T40N Dual Core 1.0GHz processor
BIOS	AMI BIOS
Chipset	AMD A50M
Graphics	Graphics Integrated AMD G-Series
System Memory	1 x 204-pin DDR3 SO-DIMM socket, supporting 800/1066 MHz SDRAM, up to 4GB
Serial ATA	1 x serial ATA port for mSATA
Ethernet Controller	2 x Realtek 8111E Gigabit Ethernet controllers
Watchdog Timer	1 ~ 255 levels reset
I/O Ports	
Serial Port	4 x RS-232 serial ports (RS-232/422/485 selectable for COM1)
USB Port	4 x USB 2.0 ports
LAN Port	2 x RJ-45 ports for Gigabit Ethernet
Video Port	1 x DVI-I female connector for digital video output
Audio	Mic-in/Line-out
Expansion Bus	1 x MiniCard socket interconnected with SIM card socket for optional WiFi or HSUPA module
	1 x SIM card socket
Storage	
Type	1 x mSATA
Qualification	
Certification	CE, FCC Class A
Environment	
Operating Temp.	-25 ~ 55°C (-3 ~ 131°F), ambience w/ air flow
Storage Temp.	-40 ~ 80°C (-40 ~ 176°F)
Relative Humidity	10 ~ 95% @ 40°C (non-condensing)
Vibration	3 Grms/5 ~ 500Hz/random operation
Shock	Operating 20G (11ms); Non-operating 60G with HDD Operating 40G (11ms); Non-operating 80G with SSD

Mechanical	
Construction	Aluminum alloy
Mounting	VESA-mount / wall-mount
Weight	0.93 kg (2.05 lb) 1.1 kg (2.42 lb)
Dimensions (W x D x H)	System = 188 x 149.5 x 30 mm (7.4" x 5.88" x 1.18") Packing = 304 x 294 x 355 mm (11.97" x 11.57" x 13.98")
Power Requirement	
Power Input	DC12V input by 2.5mm power jack for A10 DC 9-36V by 3-pin terminal block for B10
Power Consumption	Max. 14W (12V/1.14A)

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-1500-A10

or

ARES-1500-B10

1 x ARES-1500-A10
or ARES-1500-B10
Robust System

1 x Driver CD
1 x User's Manual

1.5. Ordering Information

ARES-1500-A10-16S2G	Box PC w/ 16GB SSD and 2GB memory
ARES-1500-A10	Barebone system w/o storage device and memory
ARES-1500-B10-16S2G	Box PC w/ 16GB SSD and 2GB memory
ARES-1500-B10	Barebone system w/o storage device and memory

1.5.1. Optional Accessories

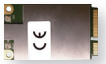
The following items are normally optional, but some vendors may include them as a standard package, or some vendors may not carry all the items.

ARES-1500-A10	**PAC-P060W-01**	12V/5A 60W AC/DC adapter kit	
	VMK-1000	VESA mount kit	
ARES-1500-B10	**PAC-P065W**	19V/3.4A 65W AC/DC adapter kit	
	VMK-1000	VESA mount kit	

1.5.2. Configure-to-Order Service

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

4GB SO-DIMM	DDR3-1333 4GB SDRAM
2GB SO-DIMM	DDR3-1333 2GB SDRAM

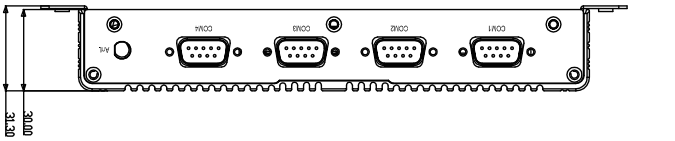
WIFI-IN1130	Intel® Centrino® Advanced-N 6205 WiFi module w/ 10cm & 20cm internal wiring	
ANT-H11	1 x 2dBi HSUPA antenna	
ANT-D11	1 x WiFi Dual-band 2.4G/5G antenna	
HSPA-SI1400	HSUPA 3.75G module kit & internal wiring	
SSD	mSATA MLC 16GB	
	mSATA MLC 32GB	

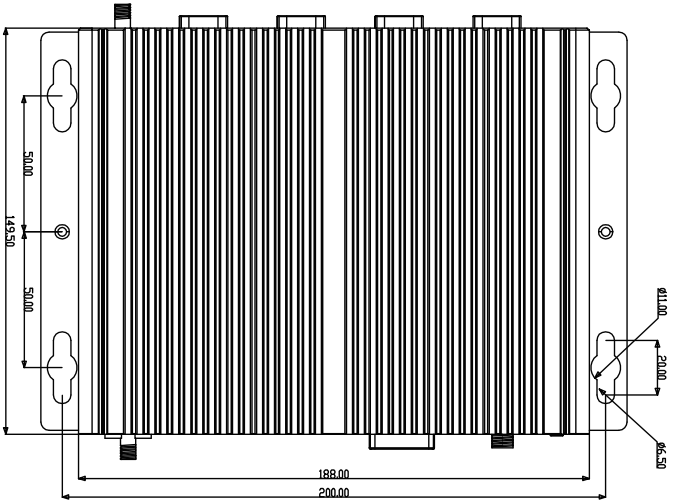
Chapter 2

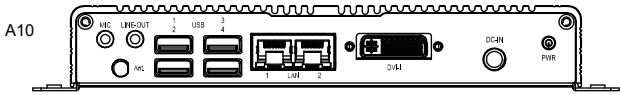
Getting Started

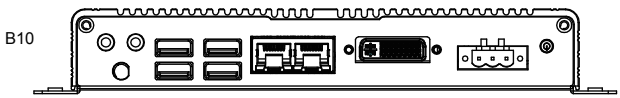
2.1. Dimensions

The following illustration shows the dimensions of ARES-1500-A10, with the measurements in width, depth, and height called out.









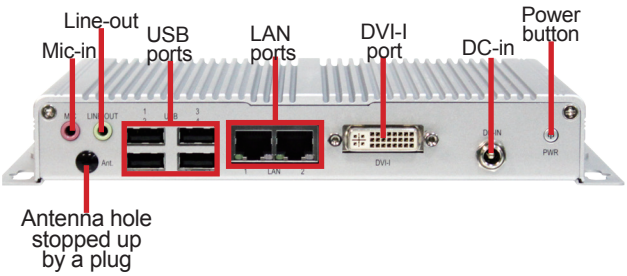
Unit: mm

2.2. Take A Tour

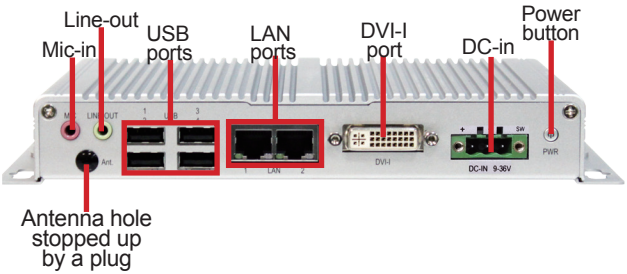
The computer has some I/O ports, status LED light and controls on the front and rear panels. The following illustrations show all the components called out for ARES-1500-A10..

Front View

ARES-1500-A10



ARES-1500-B10

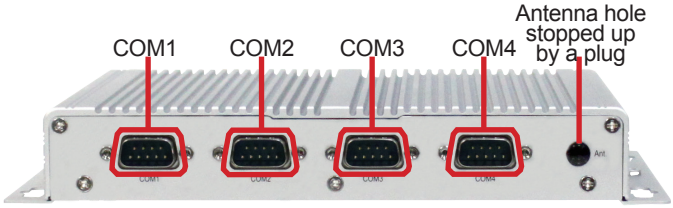


- **Power button**

  Press-and-hold the power button to power on the computer. The power button features a dual-color LED to signify the following conditions:

LED Color	Description
Red	External power is connected.
Green	The computer is powered on.

Rear View



Side View

ARES-1500-A10

ARES-1500-B10

2.3. Driver Installation Notes

The ARES-1500-A10 supports the operating systems of Windows XP and Windows 7. For these operating systems, find the necessary device drivers on the CD that comes with your purchase. For different operating systems, the installation of drivers/utilities may vary slightly, but generally they are similar. **DO** follow the sequence below to install the drivers to prevent errors:

Chipset→.NET Framework→Audio→LAN

Paths to find various drivers on the CD:

Windows XP

Device	Driver Path
Chipset	Chipset\setup
LAN	LAN\PCIE_Install_5810_01222013\setup
Audio	Audio\Windows 2000,XP,2003(32,64 bits)\WDM_R270
.NET Framework	Net framework 4.0\dotNetFx40_Full_x86_x64

Windows 7

Device	Driver Path
Chipset	Chipset\setup
LAN	LAN\Install_Win7_7067_01222013\setup
Audio	Audio\Windows Vista,7,8(32,64bits)\Vista_Win7_Win8_R270
.NET Framework	Net framework 4.0\dotNetFx40_Full_x86_x64

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Chapter 3

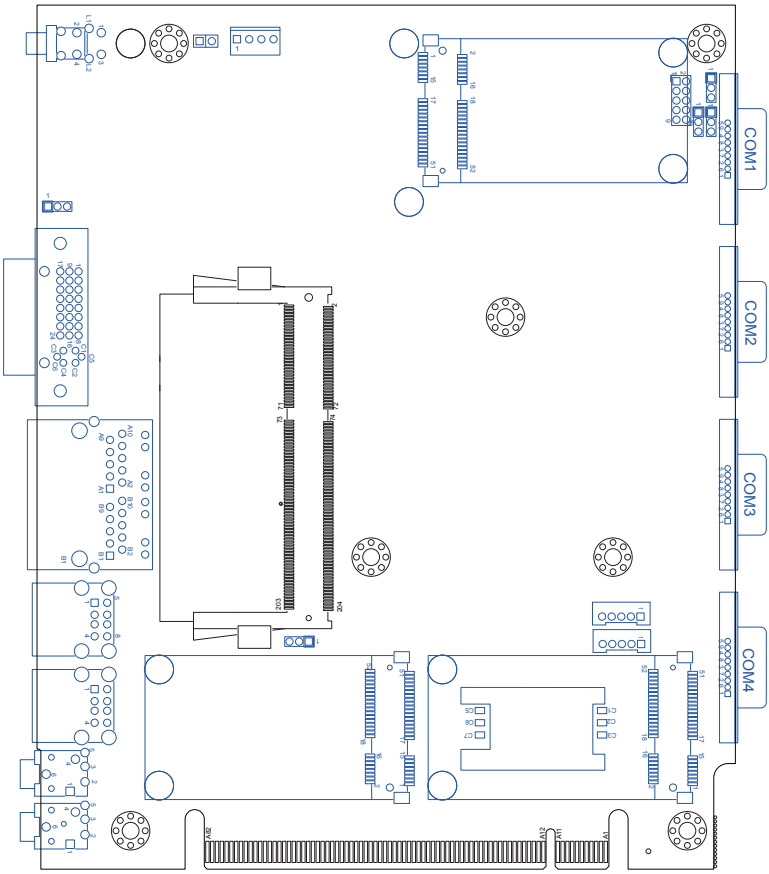
System Configuration

3.1. Board Layout

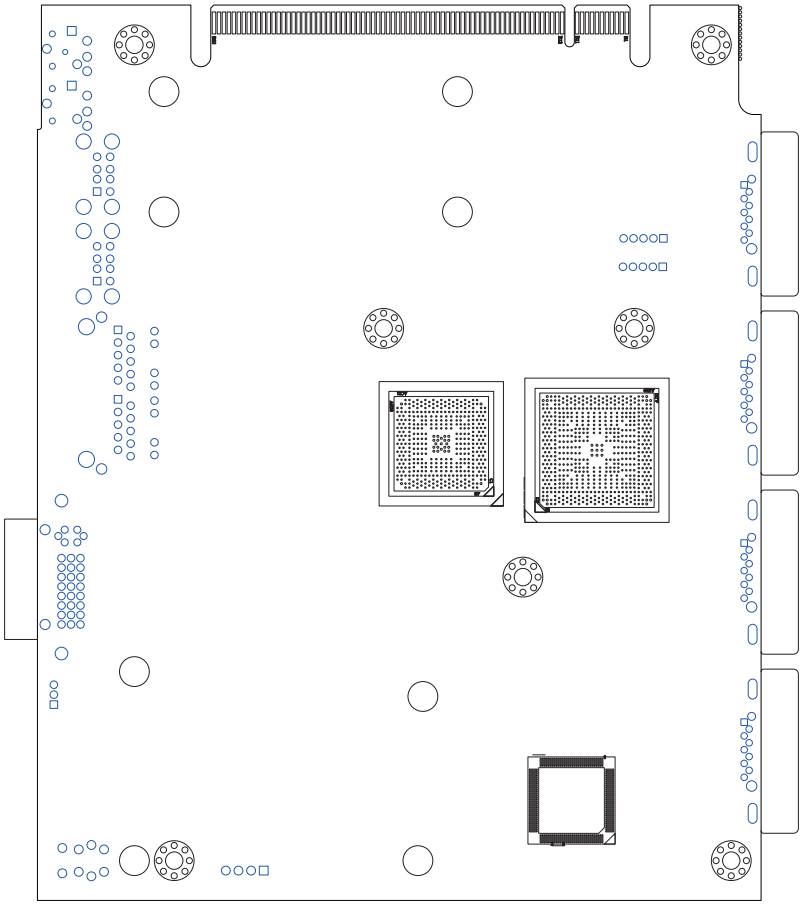
The main board FMB-a50M3 solely forms the engine of the ARES-1500-A10 while the ARES-1500-B10 relies on both the said main board and the daughter (power) board SCDB-1277 for its engine. This section will provide an thorough view of these boards.

3.1.1. Mother Board: FMB-a50M3

Board Top

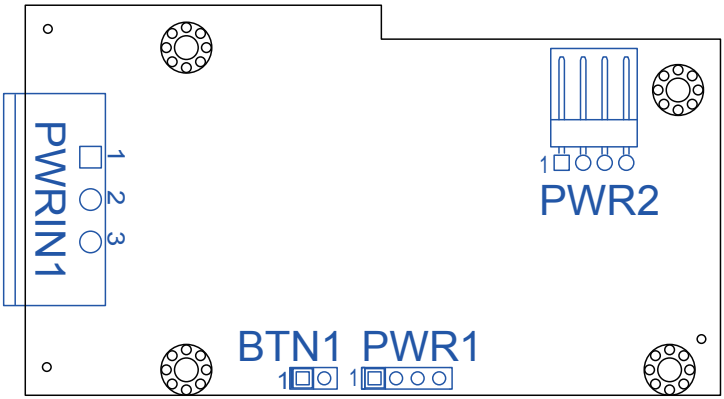


Board Bottom

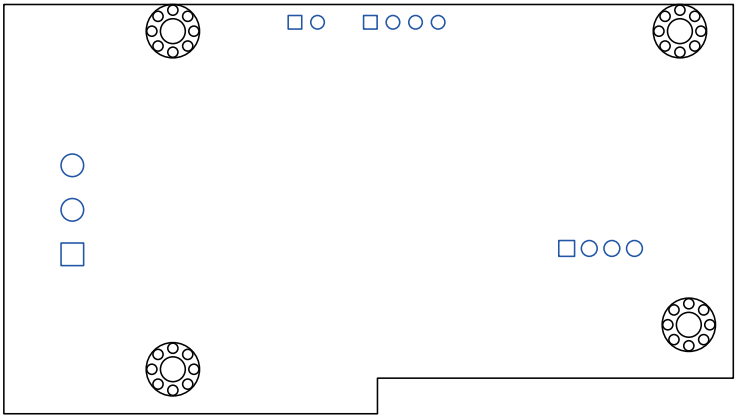


3.1.2. Daughter Board: SCDB-1277

Board Top



Board Bottom



3.2. Jumpers and Connectors

The mother board FMB-a50M3 comes with some connectors to join some devices and jumpers to alter hardware configuration. The daughter (power) board SCDB-1277 also comes with some connectors. The following in this chapter will explicate each of these components one-by-one.

3.2.1. Mother Board Jumpers

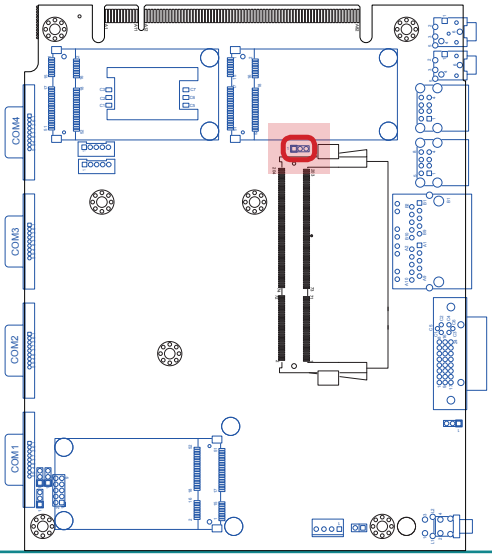
This section will guide you through the jumpers on the mother board FMB-a50M3.

J1

Function: CMOS Setting
Jumper Type: Onboard 2.54mm pitch 1x3-pin header
Setting:

Pin	Function	Setting
1-2	Clears CMOS	
2-3	Keeps CMOS (Default)	

Board Top



JV1

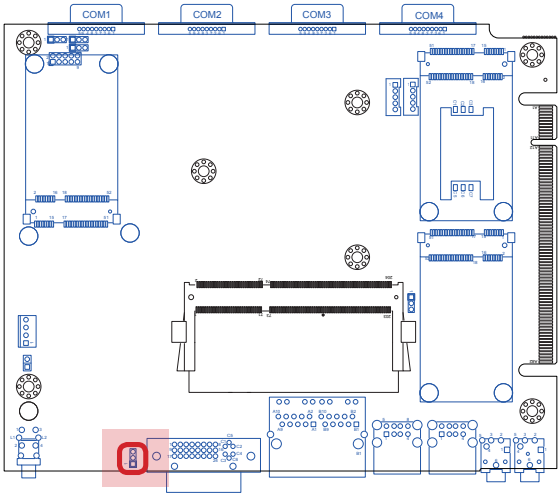
Function: Controls power supply mode
Jumper Type: Onboard 2.54mm pitch 1x3-pin header

Setting:

Pin	Description	Setting
1-2	Sets the power supply to ATX mode (default)	
2-3	Sets the power supply to AT mode	

- Note this setting should be consistent with **BIOS** | **Advanced** | **ACPI Settings** | **AC Power Shutdown mode** to prevent conflict. See 5.2.1. ACPI Settings on page 66.

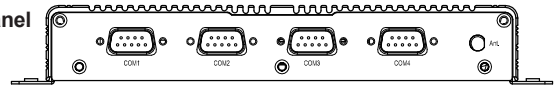
Board Top



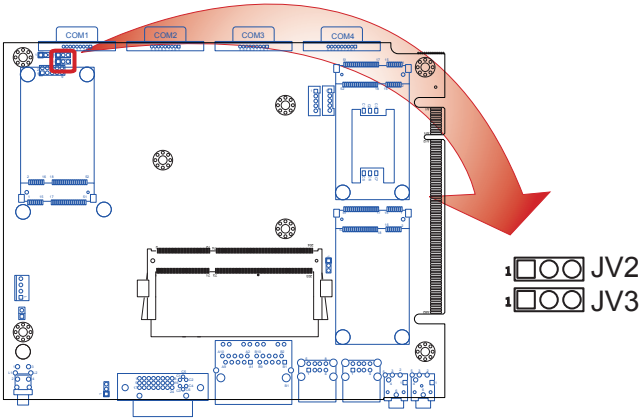
JV2 & JV3

Function: COM1 RS232/RS422/RS485 setting
Jumper Type: Onboard 2.54mm pitch 1x3-pin header

Rear Panel



Board Top



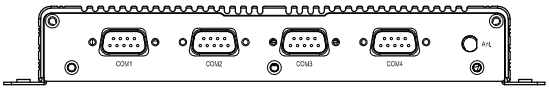
- **COM1 Settings**

Serial Port	Protocol	Jumpers	Pin	Setting
COM1	loop-back	JV2	1 & 2	
		JV3	1 & 2	
	RS232	JV2	2 & 3	
		JV3	1 & 2	
	RS422	JV2	2 & 3	
		JV3	2 & 3	
	RS485	JV2	1 & 2	
		JV3	2 & 3	

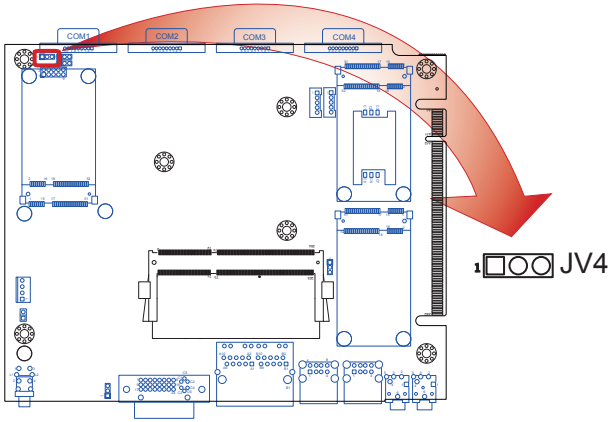
JV4

Function: Reserved
Jumper Type: Onboard 2.54mm pitch 1x3-pin header

Rear Panel



Board Top



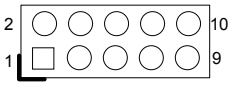
3.2.2. Mother Board Connectors

This section will guide you through the connectors on the mother board FMB-a50M3.

LPC1

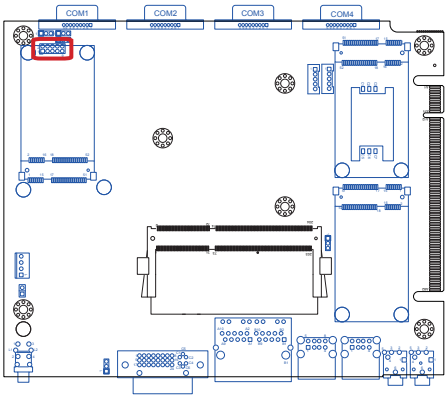
Function: Board debugging (for factory use only)

Jumper Type: Onboard 2.00mm pitch 2x5-pin header



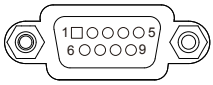
Pin	Description	Pin	Description
1	PCLK_FWH	6	NC
2	GND	7	LAD3
3	LFRAME#	8	LAD2
4	LAD0	9	3V3S
5	BUF_PLTRST_N	10	LAD1

Board Top



COM1

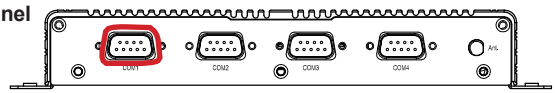
Function: Serial port 1, configurable for RS232/RS422/ RS485. See JV2 & JV3 for the configuration.



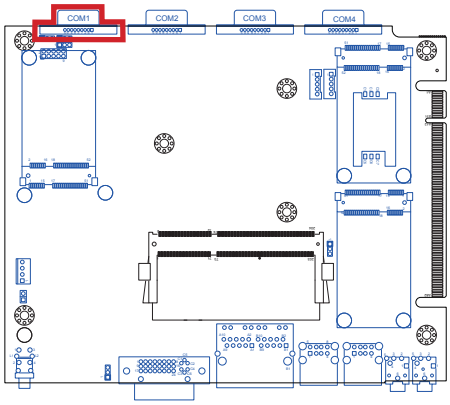
Connector Type: 9-pin male DB connector

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

Rear Panel



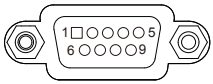
Board Top



COM2, COM3 and COM4

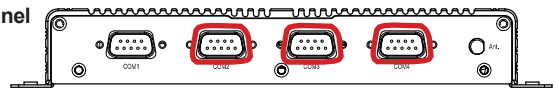
Function: Serial ports 2/3/4, all are RS232-interfaced.

Connector Type: 9-pin male DB connector

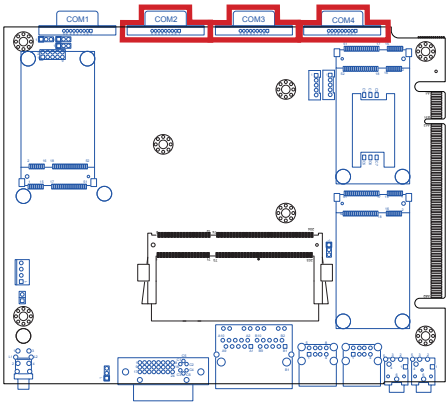


Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

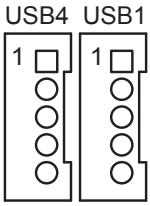
Rear Panel



Board Top



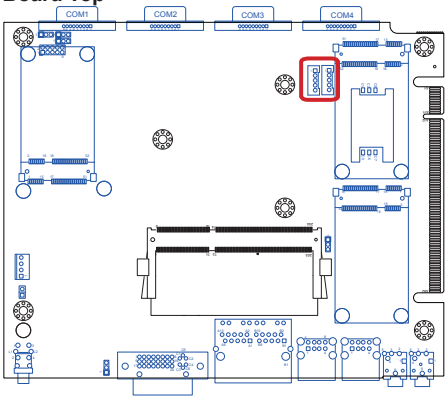
USB3 & USB4



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

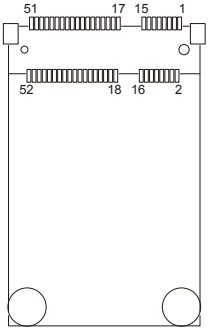
USB3		USB4	
Pin	**Desc.**	**Pin**	**Desc.**
1	5V	1	5V
2	USBP_12N_CON	2	USBP_13N_CON
3	USBP_12P_CON	3	USBP_13P_CON
4	GND	4	GND
5	GND	5	GND

Board Top



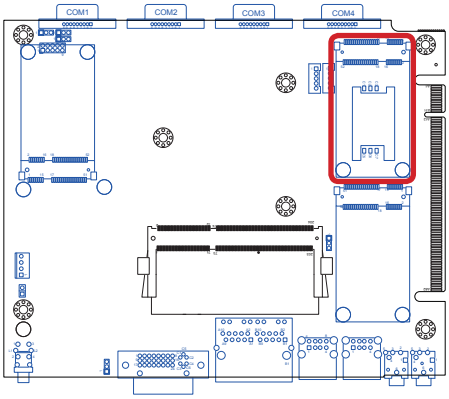
MC1

Description: PCI Express Mini-card socket
Connector Type: Onboard 0.8mm pitch 52-pin edge card connector interconnected with SIM card socket



Pin	Desc.	Pin	Desc.	Pin	Desc.
1	Wake	20	W_Disable#	36	USB_D-
2	+3.3V	21	GND	37	GND
3	COEX1	22	PERST#	38	USB_D+
4	GND	23	PERn0	39	+3.3V
5	COEX2	24	+3.3V	40	GND
6	+1.5V	25	PERp0	41	+3.3V
7	CLKREQ#	26	GND	42	LED_WWAN#
8	UIM_PWR	27	GND	43	GND
9	GND	28	+1.5V	44	LED_WLAN#
10	UIM_DATA	29	GND	45	Reserved
11	REFCLK-	30	SMB_CLK	46	LED_WPAN#
12	UIM_CLK	31	PETn0	47	Reserved
13	REFCLK+	32	SMB_DATA	48	+1.5V
14	UIM_RESET	33	PETp0	49	Reserved
15	GND	34	GND	50	GND
16	UIM_VPP	35	GND	51	Reserved
17	UIM_C8/Reserved			52	+3.3V
18	GND				
19	UIM_C4/Reserved				

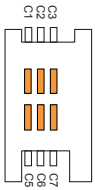
Board Top



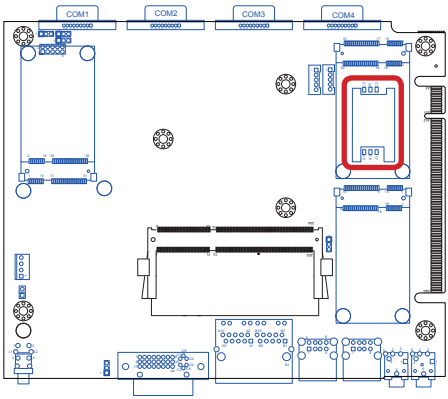
SIM1

Destription: SIM card socket
Connector Type: 6-pin SIM card socket with a hinged cover

Pin	Description
C1	VCC
C2	RST
C3	CLK
C5	GND
C6	VPP
C7	I/O

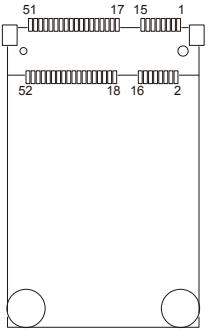


Board Top



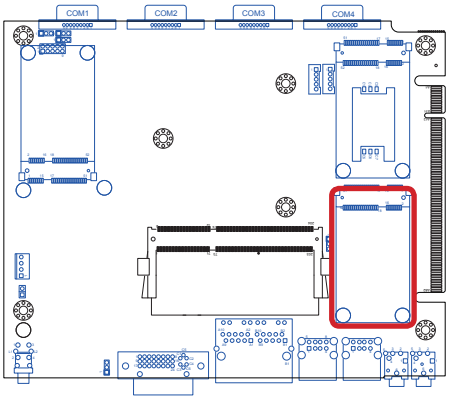
MC3

Description: PCI Express Mini-card socket
Connector Type: Onboard 0.8mm pitch 52-pin edge card connector



Pin	Desc.	Pin	Desc.	Pin	Desc.
1	WAKE#	20	W_DISABLE#	36	USB_D-
2	+3.3Vaux	21	GND	37	GND
3	COEX1	22	PERST#	38	USB_D+
4	GND	23	PERn0	39	+3.3V
5	COEX2	24	+3.3V	40	GND
6	+1.5V	25	PERp0	41	+3.3V
7	CLKREQ#	26	GND	42	LED_WWAN#
8	None	27	GND	43	GND
9	GND	28	+1.5V	44	LED_WLAN#
10	None	29	GND	45	Reserved
11	REFCLK-	30	SMB_CLK	46	LED_WPAN#
12	None	31	PETn0	47	Reserved
13	REFCLK+	32	SMB_DATA	48	+1.5V
14	None	33	PETp0	49	Reserved
15	GND	34	GND	50	GND
16	None	35	GND	51	Reserved
17	None			52	+3.3V
18	GND				
19	None				

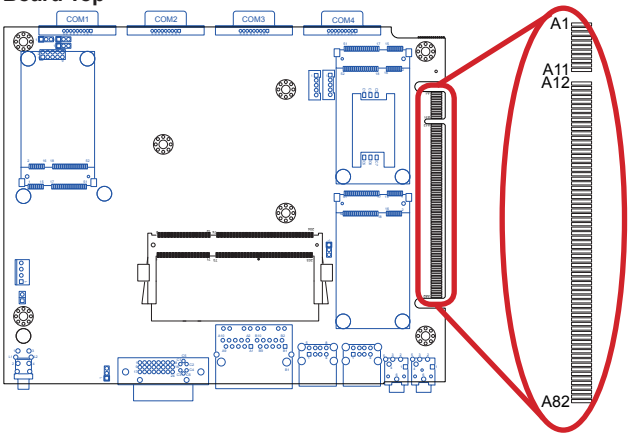
Board Top



GIF2

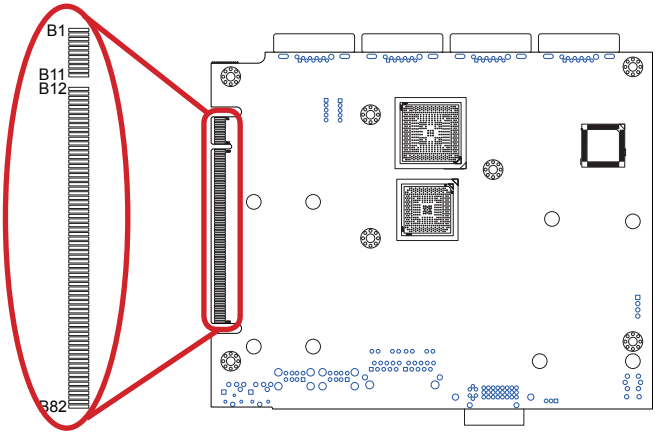
Description: PCI Express bus
Connector Type: 164-pin PCI Express edge connector

Board Top



Pin	Desc.	Pin	Desc.	Pin	Desc.	Pin	Desc.
A1	PRSNT1#	**A22**	HSIN_1	**A43**	HSIP_6	**A63**	GND60
A2	+12V4	**A23**	GND17	**A44**	HSIN_6	**A64**	HSIP_11
A3	+12V5	**A24**	GND18	**A45**	GND35	**A65**	HSIN_11
A4	GND6	**A25**	HSIP_2	**A46**	GND36	**A66**	GND61
A5	JTAG2	**A26**	HSIN_2	**A47**	HSIP_7	**A67**	GND62
A6	JTAG3	**A27**	GND19	**A48**	HSIN_7	**A68**	HSIP_12
A7	JTAG4	**A28**	GND20	**A49**	GND37	**A69**	HSIN_12
A8	JTAG5	**A29**	HSIP_3	**A50**	RSVD8	**A70**	GND63
A9	+3.3V2	**A30**	HSIN_3	**A51**	GND54	**A71**	GND64
A10	+3.3V3	**A31**	GND21	**A52**	HSIP_8	**A72**	HSIP_13
A11	PWRGD	**A32**	RSVD6	**A53**	HSIN_8	**A73**	HSIN_13
A12	GND7	**A33**	RSVD7	**A54**	GND55	**A74**	GND65
A13	REF CLK+	**A34**	GND30	**A55**	GND56	**A75**	GND66
A14	REF CLK-	**A35**	HSIP_4	**A56**	HSIP_9	**A76**	HSIP_14
A15	GND8	**A36**	HSIN_	**A57**	HSIN_9	**A77**	HSIN_14
A16	HSIP_0	**A37**	GND31	**A58**	GND57	**A78**	GND67
A17	HSIN_0	**A38**	GND32	**A59**	GND58	**A79**	GND68
A18	GND9	**A39**	HSIP_5	**A60**	HSIP_10	**A80**	HSIP_15
A19	RSVD5	**A40**	HSIN_5	**A61**	HSIN_10	**A81**	HSIN_15
A20	GND16	**A41**	GND33	**A62**	GND59	**A82**	GND69
A21	HSIP_1	**A42**	GND34				

Board Bottom

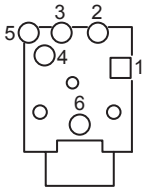


Pin	Desc.	Pin	Desc.	Pin	Desc.	Pin	Desc.
B1	+12V1	**B22**	GND11	**B43**	GND26	**B63**	HSON_11
B2	+12V2	**B23**	HSOP_2	**B44**	GND27	**B64**	GND44
B3	+12V3	**B24**	HSON_2	**B45**	HSOP_7	**B65**	GND45
B4	GND1	**B25**	GND12	**B46**	HSON_7	**B66**	HSOP_12
B5	SMCLK	**B26**	GND13	**B47**	GND28	**B67**	HSON_12
B6	SMDAT	**B27**	HSOP_3	**B48**	PRSNT2#2	**B68**	GND46
B7	GND2	**B28**	HSON_3	**B49**	GND29	**B69**	GND47
B8	+3.3V1	**B29**	GND14	**B50**	HSOP_8	**B70**	HSOP_13
B9	JTAG1	**B30**	RSVD3	**B51**	HSON_8	**B71**	HSON_13
B10	3.3VAUX	**B31**	PRSNT2#1	**B52**	GND38	**B72**	GND48
B11	WAKE#	**B32**	GND15	**B53**	GND39	**B73**	GND49
B12	RSVD2	**B33**	HSOP_4	**B54**	HSOP_9	**B74**	HSOP_14
B13	GND3	**B34**	HSON_4	**B55**	HSON_9	**B75**	HSON_14
B14	HSOP_0	**B35**	GND22	**B56**	GND40	**B76**	GND50
B15	HSON_0	**B36**	GND23	**B57**	GND41	**B77**	GND51
B16	GND4	**B37**	HSOP_5	**B58**	HSOP_10	**B78**	HSOP_15
B17	PRSNT2#	**B38**	HSON_5	**B59**	HSON_10	**B79**	HSON_15
B18	GND5	**B39**	GND24	**B60**	GND42	**B80**	GND52
B19	HSOP_1	**B40**	GND25	**B61**	GND43	**B81**	PRSNT2#1
B20	HSON_1	**B41**	HSOP_6	**B62**	HSOP_11	**B82**	RSVD4
B21	GND10	**B42**	HSON_6				

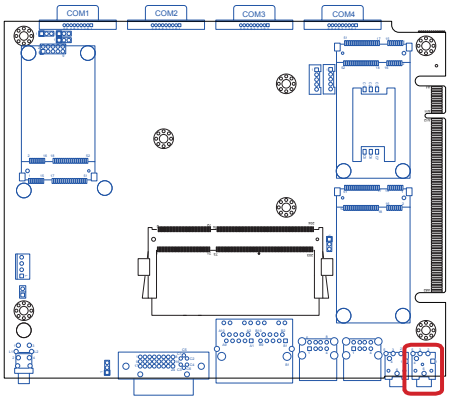
MIC1

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

Pin	Description
1	MICL
2	N/A
3	MIC_R
4	MIC1_JD
5	AU_GND
6	AU_GND

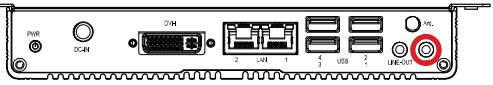


Board Top



Front Panel

A10



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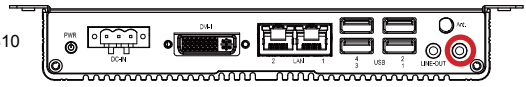
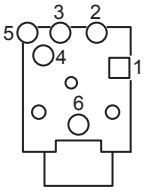


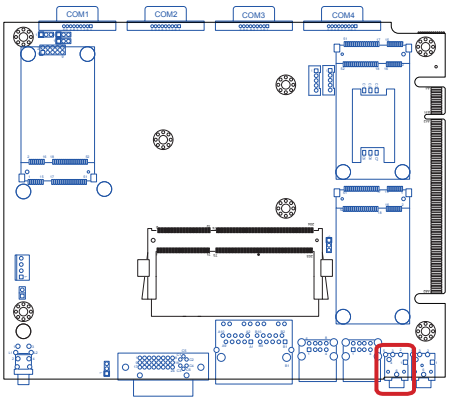
LOUT1

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

Pin	Description
1	LOUT-L
2	LOUT-L
3	LOUT-R
4	FRONT_JD
5	AU_GND
6	AU_GND

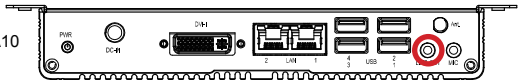


Board Top



Front Panel

A10



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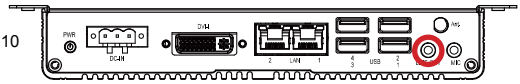
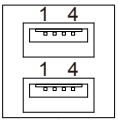
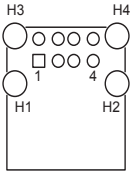


USB1 & USB2

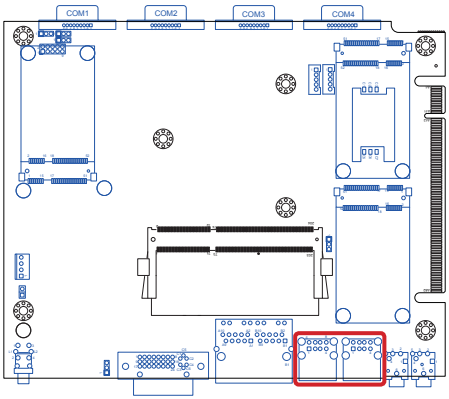
Destription: USB Ports
Connector Type: Double-stacked type-A USB connectors



Pin	Description	Pin	Description
1	VCC-1	2	DNEG-1
3	DPOS-1	4	GND-1
5	VCC-2	6	DNEG-2
7	DPOS-2	8	GND-2
H1	MNT-HOLE1	H2	MNT-HOLE2
H3	MNT-HOLE3	H4	MNT-HOLE4

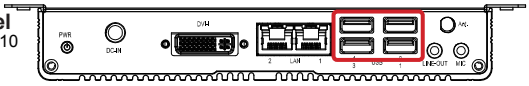


Board Top

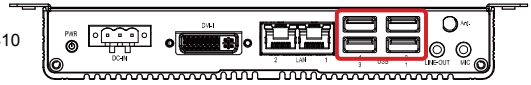


Front Panel

A10

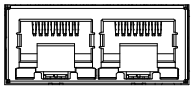


B10

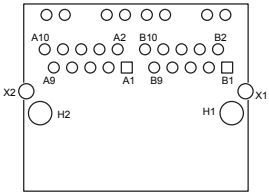


LAN1

Destription: LAN Ports
Connector Type: Two 8P8C RJ-45 connectors with LED and shield

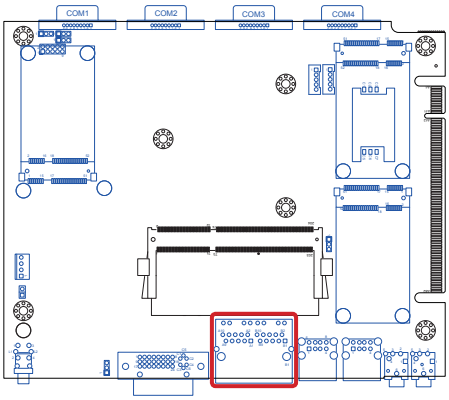


Pin	Description	Pin	Description
A1	LAN1_MDIP0	B1	LAN2_MDIP0
A2	LAN1_MDIN0	B2	LAN2_MDIN0
A3	LAN1_MDIP1	B3	LAN2_MDIP1
A4	LAN1_MDIN1	B4	LAN2_MDIN1
A5	GND	B5	GND
A6	GND	B6	GND
A7	LAN1_MDIP2	B7	LAN2_MDIP2
A8	LAN1_MDIN2	B8	LAN2_MDIN2
A9	LAN1_MDIP3	B9	LAN2_MDIP3
A10	LAN1_MDIN3	B10	LAN2_MDIN3
LA1	LA_1	LB1	LB_1
LA2	LA_2	LB2	LB_2
LA3	LA_3	LB3	LB_3
LA4	LA_4	LB4	LB_4



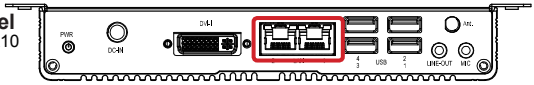
Pin	Description
H1	MNT-HOLE1
H2	MNT-HOLE2
X1	CGND1
X2	CGND2

Board Top



Front Panel

A10



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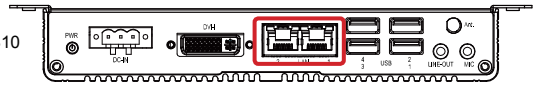
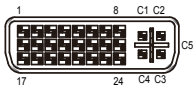


DVI1

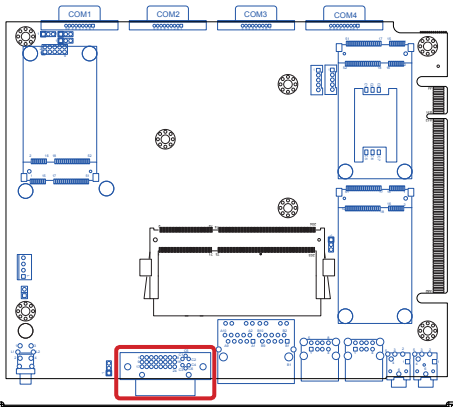
The computer features a DVI (digital visual interface) port, supporting DVI-I (digital and analog).

Description: DVI-I port (digital and analog)
Connector Type: 29-pin DIP-type female connector



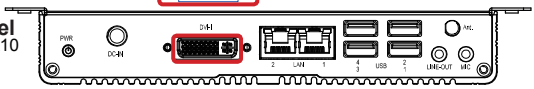
Pin	Desc.	Pin	Desc.	Pin	Desc.
1	T.M.D.S DATA 2-	11	T.M.D.S DATA 1/3 SHIELD	21	T.M.D.S DATA 5+
2	T.M.D.S DATA 2+	12	T.M.D.S DATA 3-	22	T.M.D.S CLOCK SHIELD
3	T.M.D.S DATA 2/4 SHIELD	13	T.M.D.S DATA 3+	23	T.M.D.S CLOCK+
4	T.M.D.S DATA 4-	14	+5V Power	24	T.M.D.S CLOCK-
5	T.M.D.S DATA 4+	15	GND	C1	ANALOG RED
6	DDC CLOCK	16	HOT PLUG DETECT	C2	ANALOG GREEN
7	DDC DATA	17	T.M.D.S DATA 0-	C3	ANALOG BLUE
8	ANALOG VERT. SYNC	18	T.M.D.S DATA 0+	C4	ANALOG HORZ SYNC
9	T.M.D.S DATA 1-	19	T.M.D.S DATA 0/5 SHIELD	C5	ANALOG GROUND
10	T.M.D.S DATA 1+	20	T.M.D.S DATA 5-		

Board Top

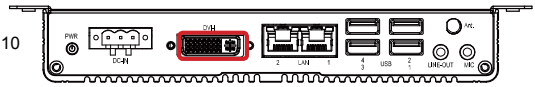


Front Panel

A10

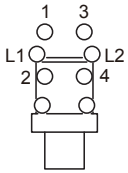


B10



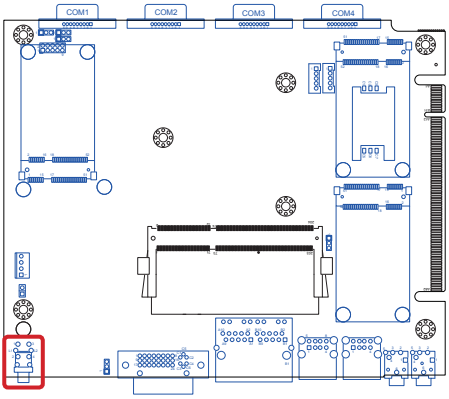
PWBT1

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



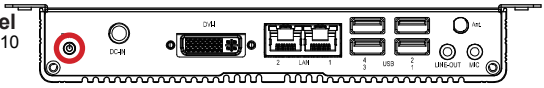
Pin	Description	Pin	Description
1	GND	2	N/A
3	BTN	4	N/A
L1	SW1_LED_N	L2	SW1_LED_P

Board Top

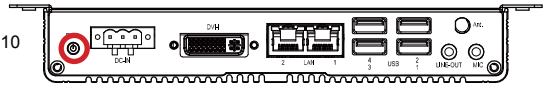


Front Panel

A10



B10

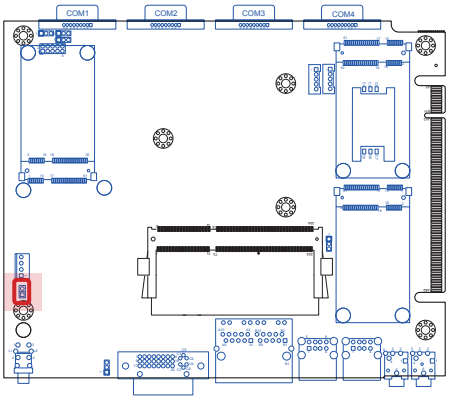


BTN1

Description: Connector for power button
Connector Type: Onboard 1x2-pin header

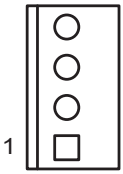
Pin	Description
1	PWR_IN_SW#
2	GND

Board Top



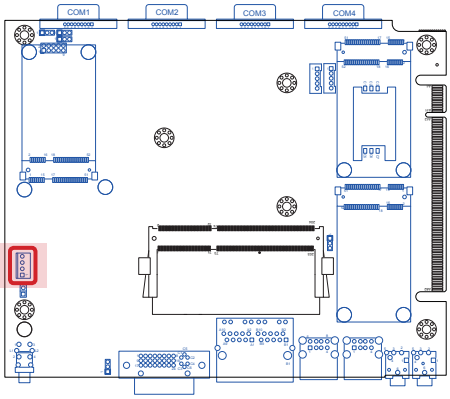
PWR1

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



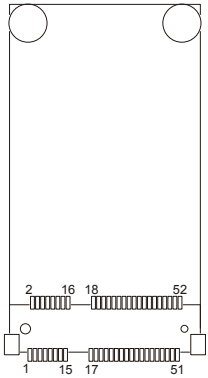
Pin	Description	Pin	Description
1	PWRINV+	2	PWRINV+
3	GND	4	GND

Board Top



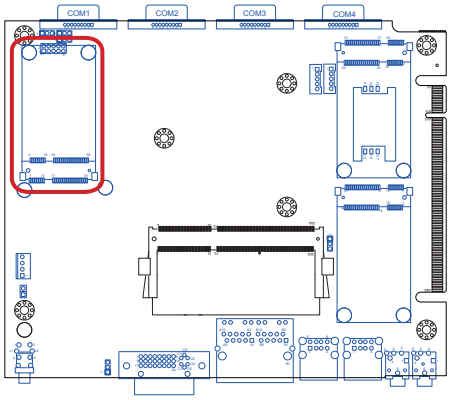
MC2

Description: mSATA socket
Connector Type: Onboard 0.8mm pitch 52-pin edge card connector



Pin	Desc.	Pin	Desc.	Pin	Desc.
1	NC	20	NC	36	NC
2	+3.3V	21	GND	37	GND
3	NC	22	NC	38	NC
4	GND	23	TX+	39	+3.3V
5	NC	24	+3.3V	40	GND
6	NC	25	TX-	41	+3.3V
7	NC	26	GND	42	NC
8	NC	27	GND	43	GND
9	GND	28	NC	44	NC
10	NC	29	GND	45	NC
11	NC	30	NC	46	NC
12	NC	31	RX-	47	NC
13	NC	32	NC	48	NC
14	NC	33	RX+	49	NC
15	GND	34	GND	50	GND
16	NC	35	GND	51	NC
17	NC			52	+3.3V
18	GND				
19	NC				

Board Top



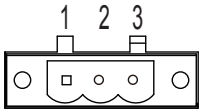
3.2.3. Daughter Board Connectors (ARES-1500-B10 only)

This section will guide you through the connectors on the daughter board SCDB-1277.

PWRIN1

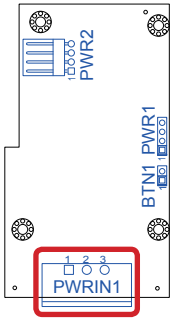
Description: DC-in power receptacle

Connector Type: 5.00mm-pitch 3-pole Euro-Type terminal block



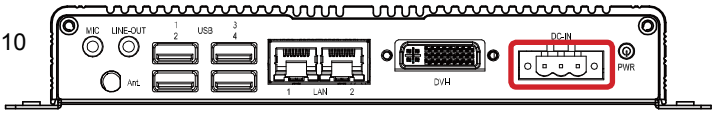
Pin	Desc.
1	PWRINV+
2	GND
3	PWR_IN_SW#

SCDB-1277 Board Top



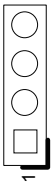
Front Panel

B10



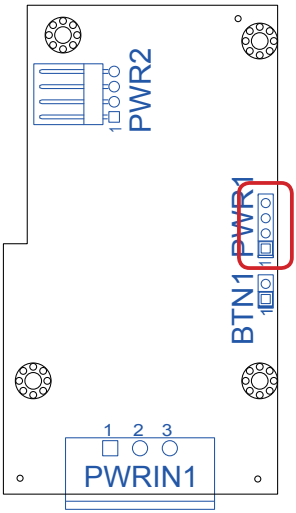
PWR1

Description: Computer's power jack
Connector Type: Onboard 1x4-pin header



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

SCDB-1277 Board Top

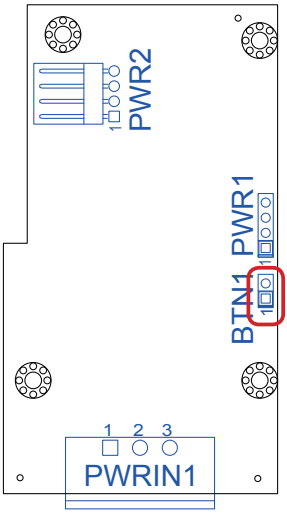


BTN1

Description: Connector for power button
Connector Type: Onboard 1x2-pin header

Pin	Description
1	PWR_IN_SW#
2	GND

SCDB-1277 Board Top



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Chapter 4

Installation and Maintenance

4.1. Install Hardware

The ARES-1500-A10 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.

4.1.1. Open the Computer

For the computer, removing the bottom cover is essential to open the computer and access the inside. Follow through the steps below to remove the bottom cover from the computer.

4.1.1.1. Remove Bottom Cover

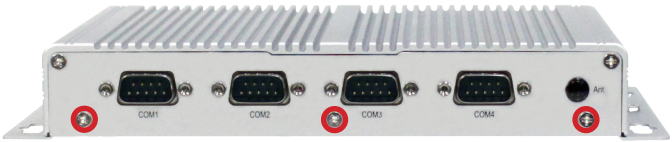
All jumpers, connectors, PCI Express Mini-card sockets and SDRAM SO-DIMM slot are built on the top side of the main board. To access these components, the computer's bottom cover has to go. Follow through the steps below to remove the bottom cover.

1. Place the computer on a flat surface. Loosen and remove the 4 screws from the front panel of the computer as marked in the illustration below.

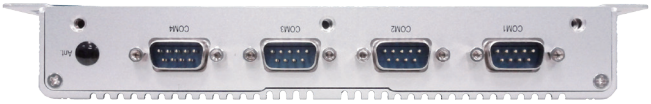
ARES-1500-A10

ARES-1500-B10

2. Loosen and remove the 3 screws from the rear panel of the computer as marked in the illustration below.

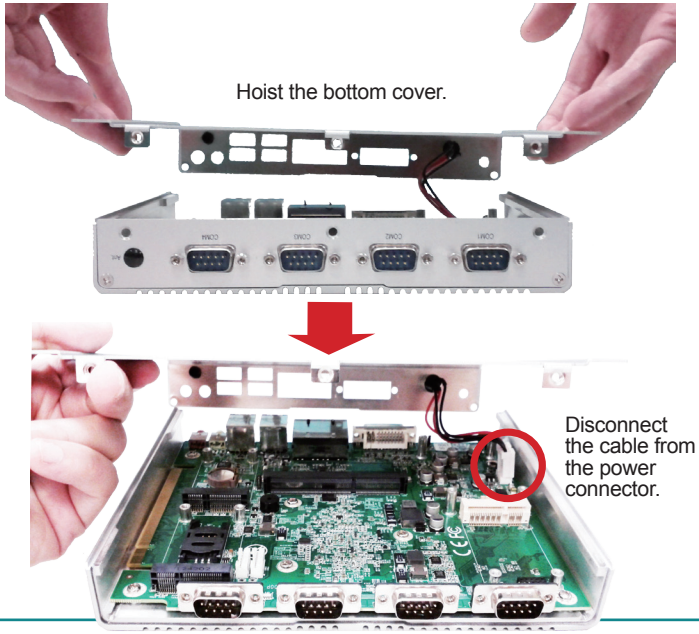


3. Turn the computer over.

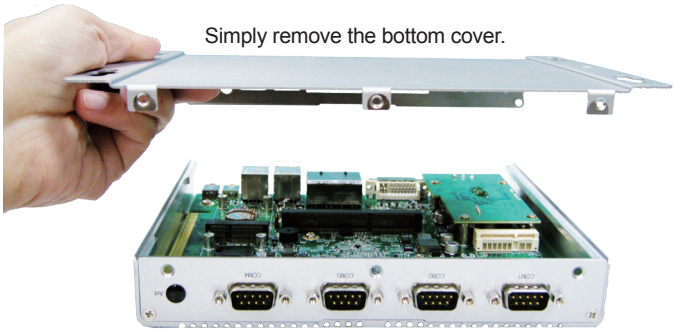


4. For ARES-1500-A10, hoist the bottom and disconnect the cable from the power connector. Then part the bottom cover completely from the main board. For ARES-1500-B10, simply remove the bottom cover.

ARES-1500-A10

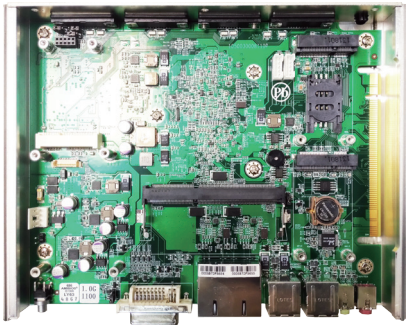


ARES-1500-B10

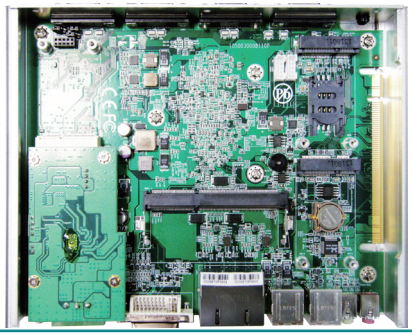


The inside of the computer comes to view.

ARES-1500-A10



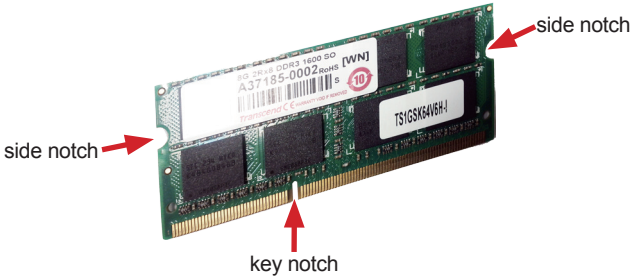
ARES-1500-B10



- To adjust jumpers or connect/disconnect devices to/from the main board, see 3.2. Jumpers and Connectors on page 17.
- To install a memory module to the computer, see 4.1.2. Install Memory Module on page 48.
- To install the wireless modules based on **PCI Express Mini-card** form factor, see 4.1.5. Install Wireless Modules on page 55.

4.1.2. Install Memory Module

The main board has one dual inline memory module (DIMM) sockets. Load the computer with a memory module of higher capacity to make programs run faster. 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.

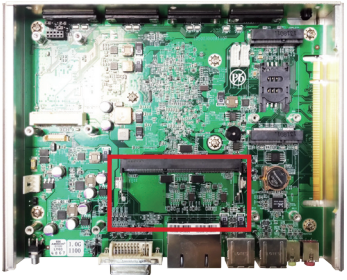


To install a DDR3 memory module:

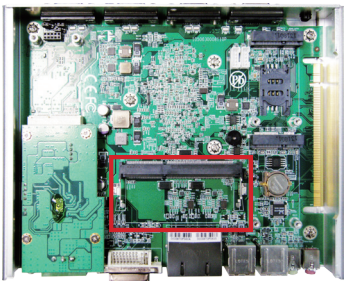
1. Remove the bottom cover from the computer as described in 4.1.1.1. Remove Bottom Cover on page 44.

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

ARES-1500-A10

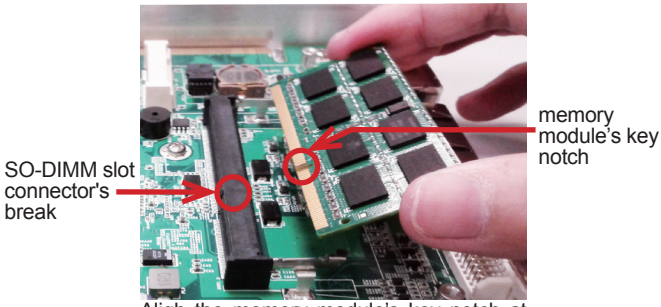


ARES-1500-B10



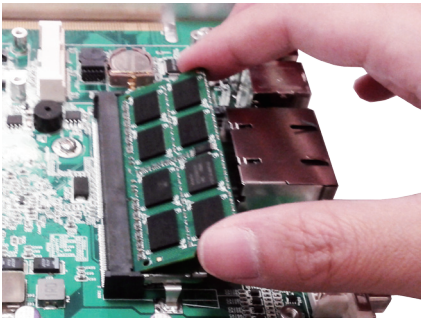
The SO-DIMM socket is horizontal type, and it has two spring-loaded locks to fix the memory module.

3. 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.

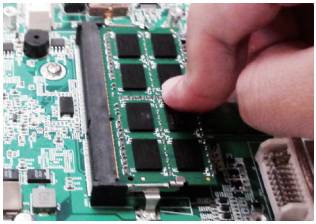


Aligh the memory module's key notch at the SO-DIMM slot connector's break.

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



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



6. Restore the bottom cover to the computer.

To uninstall the DDR3 memory module:

1. Pull back both locks from the memory module.

   The DDR3 memory module will be auto-released from the socket.

2. Remove the memory module.

3. Restore the bottom cover to the computer.

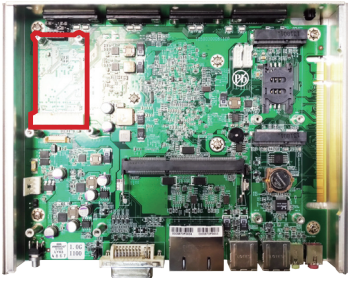
4.1.3. Install mSATA Storage

To install an mSATA storage module to the computer:

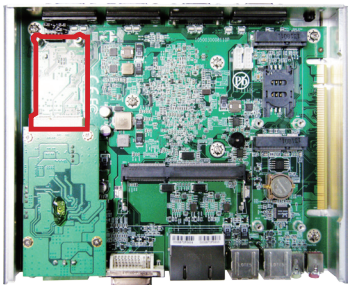
1. Remove the bottom cover from the computer as described in 4.1.1. Open the Computer on page 44.

2. See the illustration below and find the **PCI Express Mini-card** socket for an mSATA storage.

ARES-1500-A10



ARES-1500-B10



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

6. Restore the bottom cover to the computer.

4.1.4. Install SIM Card

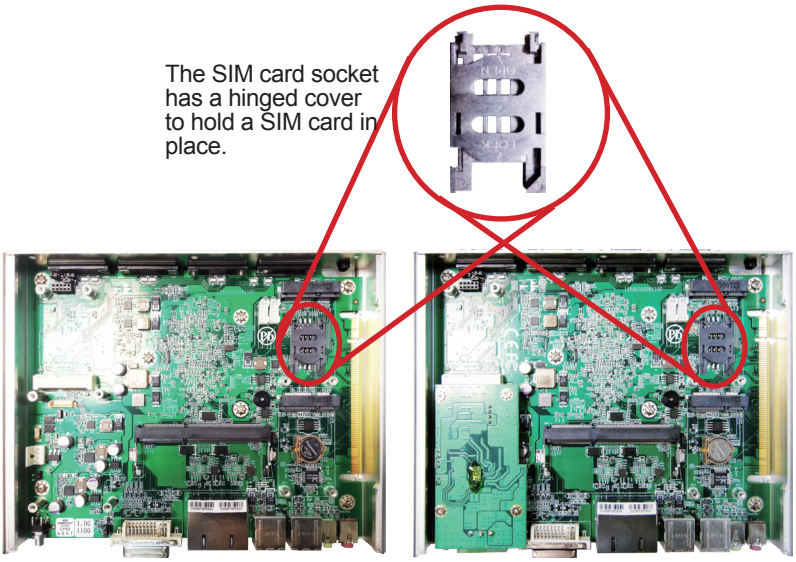
The computer comes with a SIM socket for 3G networking. Follow through the guide below to install a SIM card to the computer.

Note: To make use of a SIM card for 3G networking, a 3G module is also needed on the computer, see Appendix B to install the 3G module **HSPA-SI1400**.

1. Remove the bottom cover from the computer as described in 4.1.1. Open the Computer on page 44.

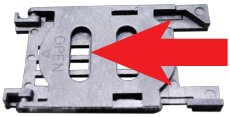
   The inside of the computer comes to view.

2. See the illustration below and find the **SIM Card** socket for 3G networking.

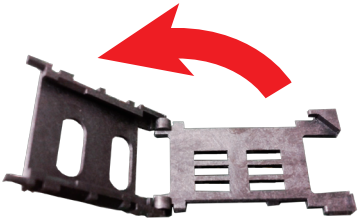


ARES-1500-A10 ARES-1500-B10

3. Push back the hinged cover to open the socket.

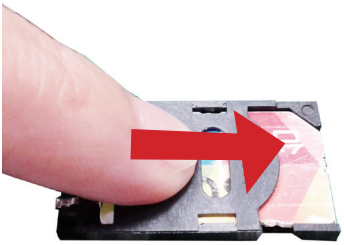


4. Swivel the hinged cover.



5. The hinged cover is also the card holder. Slide a SIM card along the hinged cover. Note the notch on the SIM card should meet the notch on the socket.

6. Put down the hinged cover and push it forward to lock the SIM card in place.



4.1.5. Install Wireless Modules

The computer comes with two **Mini-card** sockets to load the computer with the wireless modules of **PCI Express Mini-card** form factor. The configure-to-order wireless modules available with the computer are the 3G module **HSPA-SI1400** and the Wi-Fi moldue **WIFI-IN1300**:

HSPA-SI1400
HSUPA 3.75G module kit & internal wiring

WIFI-IN1300
Intel® Centrino® Advanced-N 6205 Wi-Fi module w/ 20cm internal wiring

(See also 1.5.2. Configure-to-Order Service on page 5.)

- If you have ordered the 3G module **HSPA-SI1400**, see Appendix B to know how to install the hardware and software for the module.

- If you have ordered the Wi-Fi module **WIFI-IN1300**, see Appendix C to know how to install the hardware and software for the module.

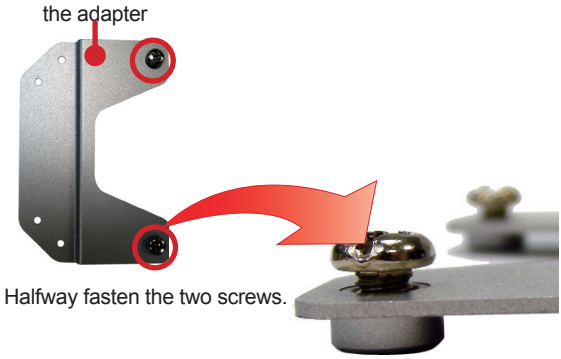
4.2. Mount the Computer

Integrate the computer to where it works by mounting it to a wall in the surroundings or to the rear of a display monitor.

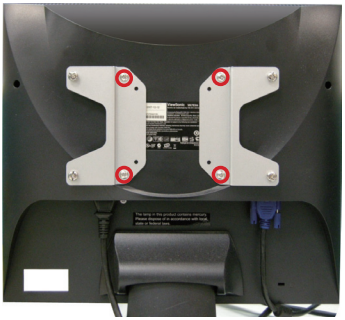
4.2.1. VESA-Mount

Mounting the computer to the rear of a display monitor relies on VMK-1000, a VESA mount kit, which is available on your option. Follow the guide below to mount the computer to a display monitor using VMK-1000.

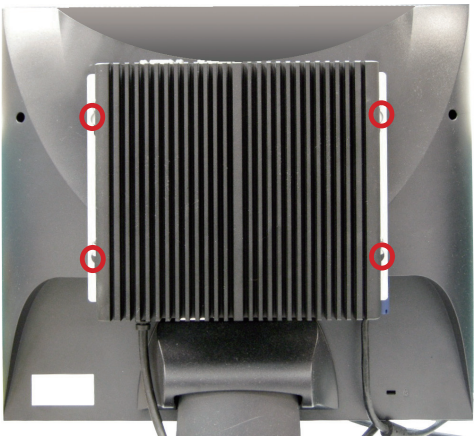
1. Prepare the VMK-1000 VESA mount kit, which includes two adapters. Halfway fasten two screws to each of the adapters as marked in the illustration below.



2. Mount the two adapters to the rear of the display monitor by fastening the four screws as marked in the illustration below:



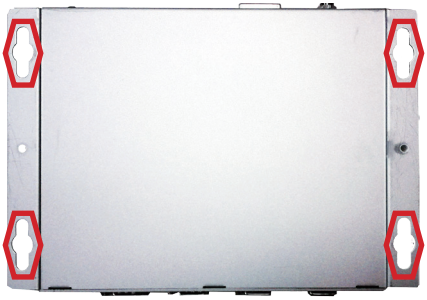
3. Hang the computer onto the VMK-1000 VESA mount kit, and fully tighten the four halfway-fastened screws as previously mentioned.



4.2.2. Wall-Mount

Follow through the guide below to mount the computer to a wall.

1. Find the four cutouts as marked in the illustration below:



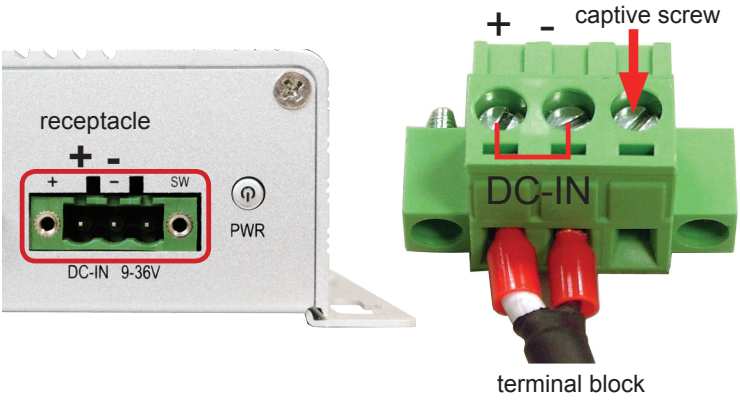
2. Mount the computer to a wall by the said cutouts.

4.3. Wire DC-Input Power Source

> **Warning** Only trained and qualified personnel are allowed to install or replace this equipment.

Follow the instructions below for connecting the computer to a DC-input power source.

1. Before wiring, make sure the power source is disconnected.
2. Find the terminal block in the accessory box.
3. Use the wire-stripping tool to strip a short insulation segment from the output wires of the DC power source.
4. Identify the positive and negative feed positions for the terminal block connection. See the symbols printed on the rear panel indicating the polarities and DC-input power range in voltage.
5. Insert the exposed wires into the terminal block plugs. Only wires with insulation should extend from the terminal block plugs. Note that the polarities between the wires and the terminal block plugs must be positive to positive and negative to negative.
6. Use a slotted screwdriver to tighten the captive screws. Plug the terminal block firmly, which wired, into the receptacle on the rear panel.



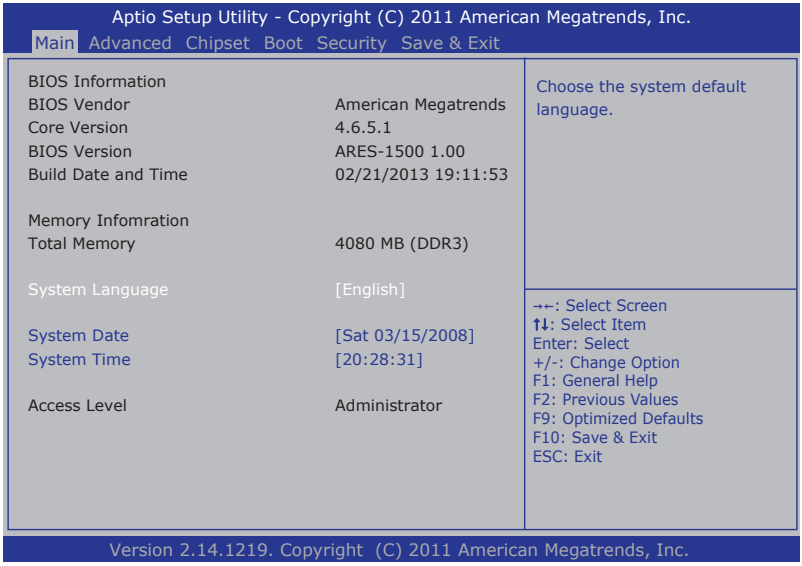
Chapter 5

BIOS

BIOS

The BIOS Setup utility for the computer 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.



The BIOS' featured menus are:

Menu	Description
Main	See 5.1. Main on page 62.
Advanced	See 5.2. Advanced on page 64.
Chipset	See 5.3. Chipset on page 73.
Boot	See 5.4. Boot on page 76.
Security	See 5.5. Security on page 78.
Save & Exit	See 5.6. Save & Exit on page 79.

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.

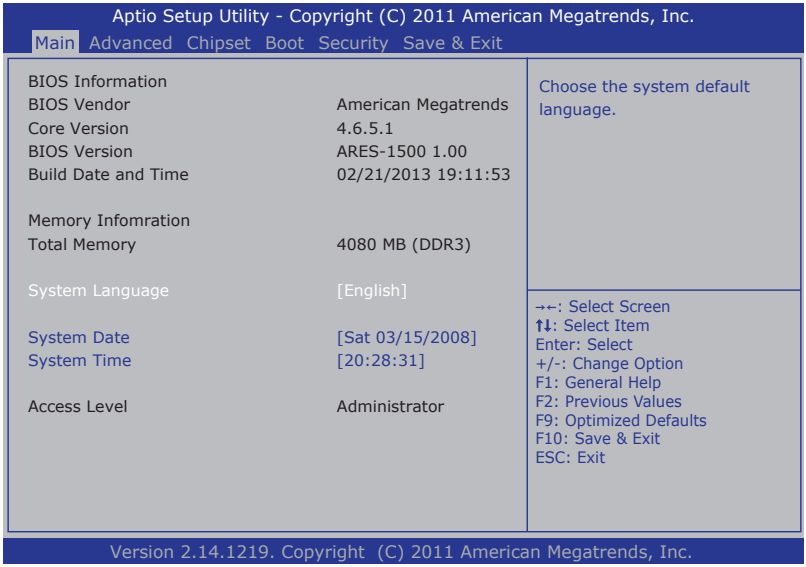
Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	▸ On the top menus: Use **Esc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to exit discarding changes. ▸ On the submenus: Use **Esc** to quit current screen and return to the top menu.
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.
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:

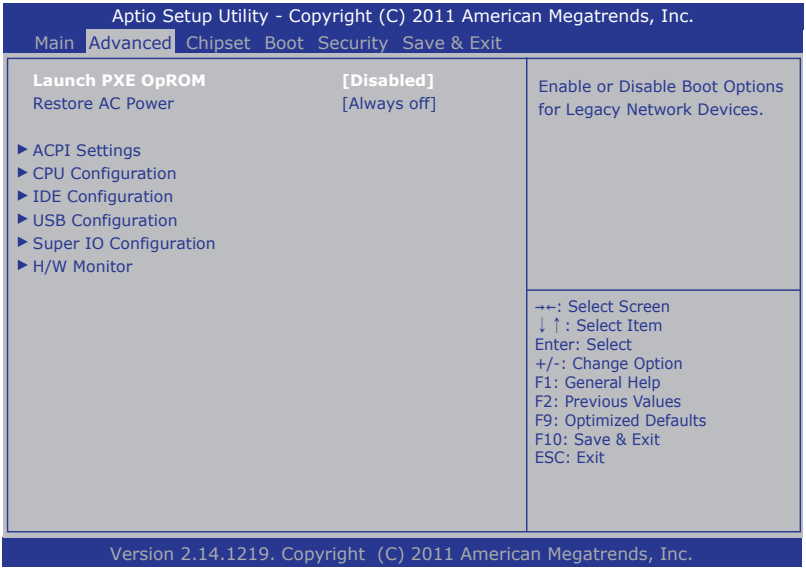
Info	Description
BIOS Vendor	Delivers the provider of the BIOS Setup utility.
Core Version	Delivers the version of the core.
BIOS Version	Delivers the computer's BIOS version.
Build Date and Time	Delivers the date and time when the BIOS Setup utility was created/updated.
Memory Information	Delivers the capacity of the DDR3 SDRAM present in the system.
Access Level	Delivers the level that the BIOS is being accessed at the moment. (Only **Administrator Level** is available.)

The featured settings are:

Setting	Description
System Language	Sets the BIOS Setup utility's default language. ▸ Only **English** is available.
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
Launch PXE OpROM	Enables/disables the boot option for legacy network devices. ► **Disabled** is the default ► "PXE" means "Preboot Execution Environment", a series of methods to get a typical Windows-based computer to boot up without a hard drive or boot diskette.
Restore AC Power	Sets the AC power state when power is resumed after a power failure. ► Options available are **Always on** and **Always off** (default).
ACPI Settings	See 5.2.1. ACPI Settings on page 66.
CPU Configuration	See 5.2.2. CPU Configuration on page 67.
IDE Configuration	See 5.2.3. IDE Configuration on page 68.

USB Configuration	See 5.2.4. USB Configuration on page 68.
Super IO Configuration	See 5.2.5. Super IO Configuration on page 69.
H/W Monitor	See 5.2.6. H/W Monitor on page 72.

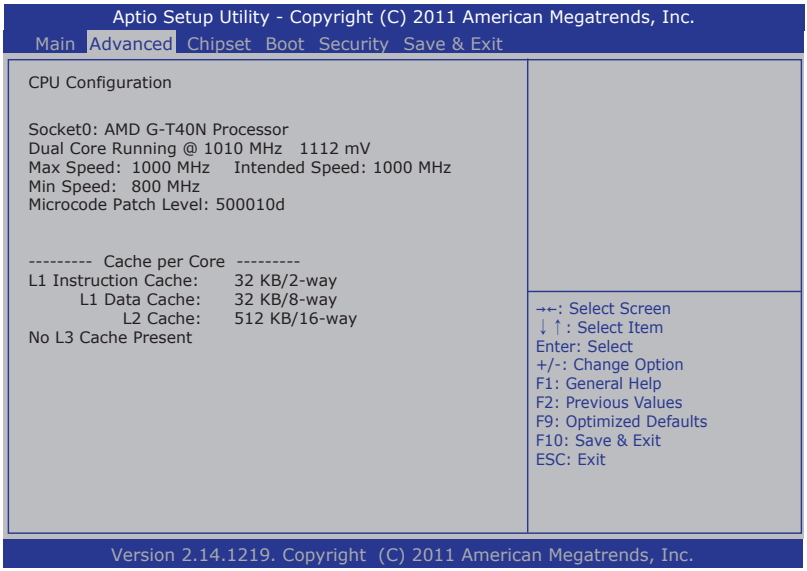
5.2.1. ACPI Settings

The submenu **ACPI Settings** allow users to configure the system's ACPI (Advanced Configuration and Power Interface) by the following settings:

Setting	Description
Enable Hibernation	Enables/disables the system to/from hibernation (OS/S4 Sleep State). ▸ This option may not be effective with some OS. ▸ **Enabled** is the default.
ACPI Sleep State	Sets the highest ACPI sleep state for the system to enter when the suspend button is hit. ▸ Options available are: **Suspend Disabled** **S1 only (CPU Stop Clock)** (default) **S3 only (Suspend to RAM)**
AC Power Shutdown mode	Sets the power-supply type. ▸ Options available are **AT** and **ATX** (default). ▸ Note this setting should be consistent with jumper J1 to prevent possible conflict. See J1 on page 44 for J1 jumper setting.

5.2.2. CPU Configuration

Select **CPU Configuration** to run a report of the CPU's details including: model name, processor speed, microcode revision, max./min. processor speeds, the amount of processor core(s), and CPU caches. See the depiction below:



5.2.3. IDE Configuration

Select **IDE Configuration** to view the information about the mSATA storage present in the system.

5.2.4. USB Configuration

Select this submenu to view the status of the USB ports and configure USB features. The featured settings are:

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.
EHCI Hand-off	Enables/disables a workaround for the operating systems that have no EHCI hand-off support ▸ **Disabled** is the default..
Device power-up delay	Sets the maximum time that elapses before a USB device reports itself to the controller. ▸ Select **Auto** (default) to apply a 100 ms delay to the root port and make the hub port use the delay from Hub descriptor. ▸ Select **Manual** to customize a delay from 1 to 40 seconds.

5.2.5. Super IO Configuration

This submenu configures the Super IO chip for the computer's COM1 to COM4. The featured submenus are:

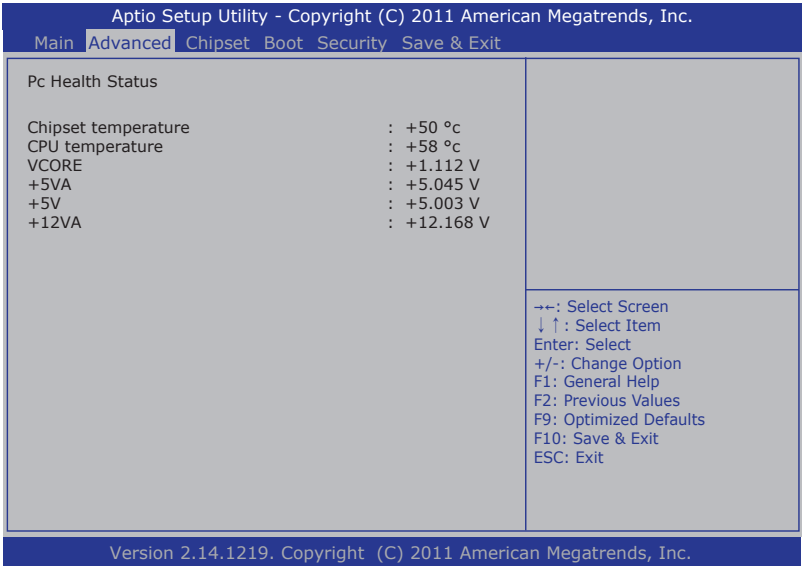
<table>
<tr><th>Submenu</th><th>Description</th></tr>
<tr><td rowspan="3">Serial Port 0 Configuration</td><td colspan="2">Configures the computer's COM1, which is RS232/RS422/RS485 configurable. The featured settings are:</td></tr>
<tr><td>Setting</td><td>Description</td></tr>
<tr><td>Serial Port</td><td>Enables/disables the serial port.
‣ Enabled is the default.</td></tr>
<tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port, or leaves it on BIOS auto-detection.
‣ Options available are:
Auto; (default)
IO=3F8h; IRQ=4;
IO=3F8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F8h; IRQ=3,4,5,6,7,10,11,12;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
‣ This setting is only available when the serial port is enabled.</td></tr>
<tr><td>COM1 RS485 AutoFlow</td><td>Enables/disables RS485 mode.
‣ Disabled is the default.
‣ Note this setting needs to be consistent with the jumpers JV2 and JV3 settings to prevent possible conflict. See also JV2 & JV3 on page 19.</td></tr>
</table>

<table>
<tr><td>Serial Port 1 Configuration</td><td>Configures the computer's COM2, which is fixed to RS232 and cannot be changed. The featured settings are:<table><tr><th>Setting</th><th>Description</th></tr><tr><td>Serial Port</td><td>Enables/disables the serial port.
▸ Enabled is the default.</td></tr><tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port, or leaves it on BIOS auto-detection.
▸ Options available are:
Auto; (default)
IO=2F8h; IRQ=3;
IO=3F8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F8h; IRQ=3,4,5,6,7,10,11,12;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
▸ This setting is only available when the serial port is enabled.</td></tr></table></td></tr>
<tr><td>Serial Port 2 Configuration</td><td>Configures the computer's COM3, which is fixed to RS232 and cannot be changed. The featured settings are:<table><tr><th>Setting</th><th>Description</th></tr><tr><td>Serial Port</td><td>Enables/disables the serial port.
▸ Enabled is the default.</td></tr><tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port, or leaves it on BIOS auto-detection.
▸ Options available are:
Auto; (default)
IO=3E8h; IRQ=7;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F0h; IRQ=3,4,5,6,7,10,11,12;
IO=2E0h; IRQ=3,4,5,6,7,10,11,12;
▸ This setting is only available when the serial port is enabled.</td></tr></table></td></tr>
</table>

<table>
<tr><td>Serial Port 0 Configuration</td><td>Configures the computer's COM4, which is fixed to RS232 and cannot be changed. The featured settings are:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Serial Port</td><td>Enables/disables the serial port.
▸ Enabled is the default.</td></tr>
<tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port, or leaves it on BIOS auto-detection.
▸ Options available are:
Auto; (default)
IO=2E8h; IRQ=7; (default)
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F0h; IRQ=3,4,5,6,7,10,11,12;
IO=2E0h; IRQ=3,4,5,6,7,10,11,12;
▸ This setting is only available when the serial port is enabled.</td></tr>
</table></td></tr>
</table>

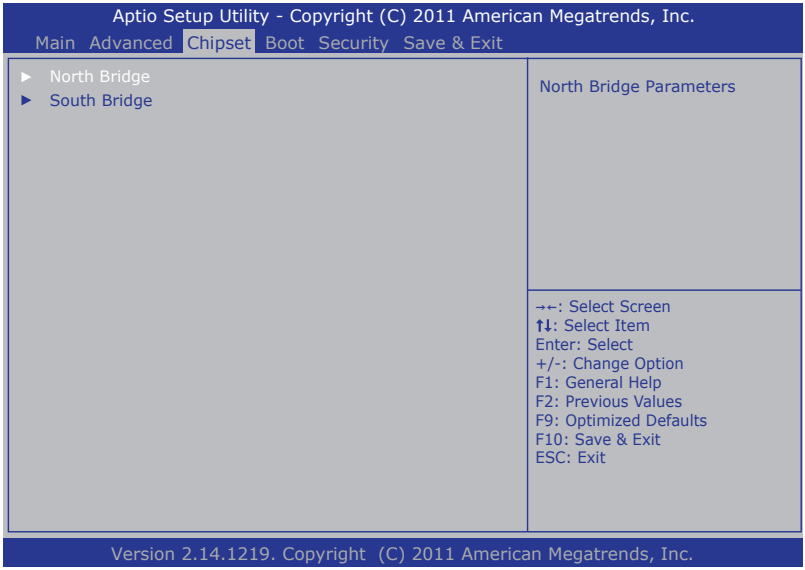
5.2.6. H/W Monitor

Select this submenu to view the main board's hardware status. Select it to run a report of various info as depicted below:



5.3. Chipset

The **Chipset** menu controls the system's chipset, including the north bridge and the south bridge.



The featured submenus are **North Bridge** and **South Bridge**, which are detailed in the following of this section.

Submenu overview:

Submenu	Description
North Bridge	Configures the north bridge. See 5.3.1. North Bridge Configuration on page 74 for the settings.
South Bridge	Configures the south bridge. See 5.3.2. South Bridge Configuration on page 75 for the settings.

5.3.1. North Bridge Configuration

Select this submenu to access the north bridge configuration, which covers the submenus **GFX Configuration** and **PCIE Ports Configuration**:

<table>
<tr><th>Submenu</th><th>Description</th></tr>
<tr><td>GFX Configuration</td><td>Configures the system's graphics. The featured setting is:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Display Port Output</td><td>Sets the system's video output:
▸ Options available are:
Single Link DVI-I (default)
Disabled</td></tr>
</table></td></tr>
<tr><td>PCIE Ports Configuration</td><td>Configures the north bridge PCI Express ports by the following settigs:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Mini PCIe Slot</td><td>Enables/disables the computer's PCI Express Mini-card sockets.
▸ Enabled is the default.</td></tr>
<tr><td>ASPM Mode Control</td><td>Configures the ASPM (Active State Power Management) support for the PCI Express ports.
▸ Options available are:
Disabled
L0s Entry
L1 Entry
L0s and L1 Entry (default)</td></tr>
<tr><td>Link Speed</td><td>Configures north bridge root port PCI Express link speed, which may be overwritten by Pspp settings.
▸ "Pspp" means the processor-supported "PCIe speed power policy", the dynamic change of the link frequency due to the changes in system configuration and power policy.
▸ Options available are:
Auto (default, which means to leave the link speed on BIOS auto-detection)
Pcie Gen1
Pcie Gen2</td></tr>
</table></td></tr>
<tr><td>LAN1</td><td>Enables/disables the system's LAN port 1.
▸ Enabled is the default.</td></tr>
<tr><td>LAN2</td><td>Enables/disables the system's LAN port 2.
▸ Enabled is the default.</td></tr>
</table>

5.3.2. South Bridge Configuration

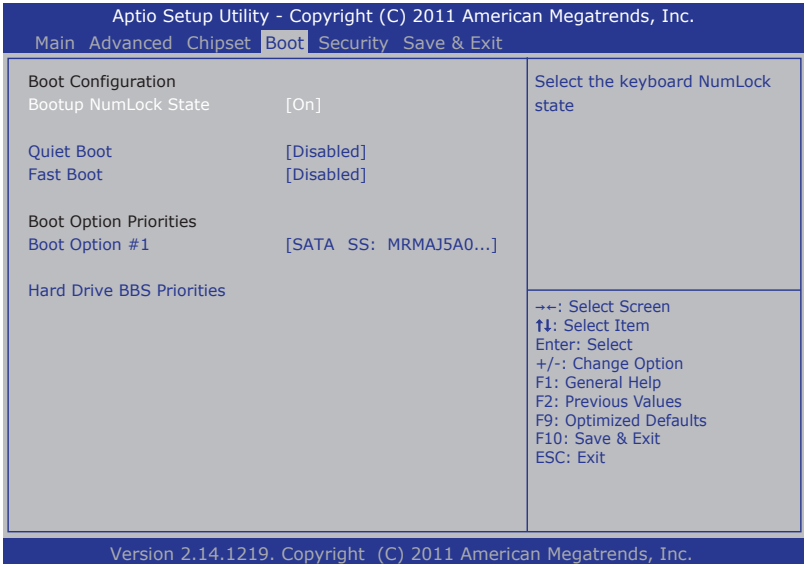
Select this submenu to view the south bridge's CIM (common information model) version and configure the system's south bridge:

The featured submenus are:

<table>
<tr><th>Submenu</th><th>Description</th></tr>
<tr><td>SB SATA Configuration</td><td>Configures the south bridge's SATA features by the following settings:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>OnChip SATA Channel</td><td>Enables/disables the system's serial ATA features:
▸ Enabled is the default.</td></tr>
<tr><td>OnChip SATA Type</td><td>Set's the system's SATA type:
▸ Options available are:
Native IDE (default)
AHCI
Legacy IDE
▸ This setting is only available when OnChip SATA Channel is set to Enabled.</td></tr>
<tr><td>OnChip IDE mode</td><td>Sets how to run the IDE:
▸ Options available are:
Legacy mode (default)
Native mode</td></tr>
<tr><td>SATA IDE Combined Mode</td><td>Enables/disables SATA IDE combined mode:
▸ Enabled is the default.
▸ This setting is only available when OnChip SATA Channel is set to Enabled.</td></tr>
<tr><td>Combined Mode Option</td><td>Set how to combine the IDE and SATA:
▸ Options available are:
SATA as primary (default)
SATA as secondary
▸ This setting is only available when both OnChip SATA Channel and SATA IDE Combined Mode are set to Enabled.</td></tr>
</table></td></tr>
<tr><td>SB USB Configuration</td><td>Enables/disables the computer's USB ports.</td></tr>
<tr><td>SB HD Azalia Configuration</td><td>Configures the system's high-definition audio by the following setting:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>HD Audio Azalia Device</td><td>Enables/disables the system's HD audio Azalia device:
▸ Enabled is the default.</td></tr>
</table></td></tr>
</table>

5.4. Boot

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



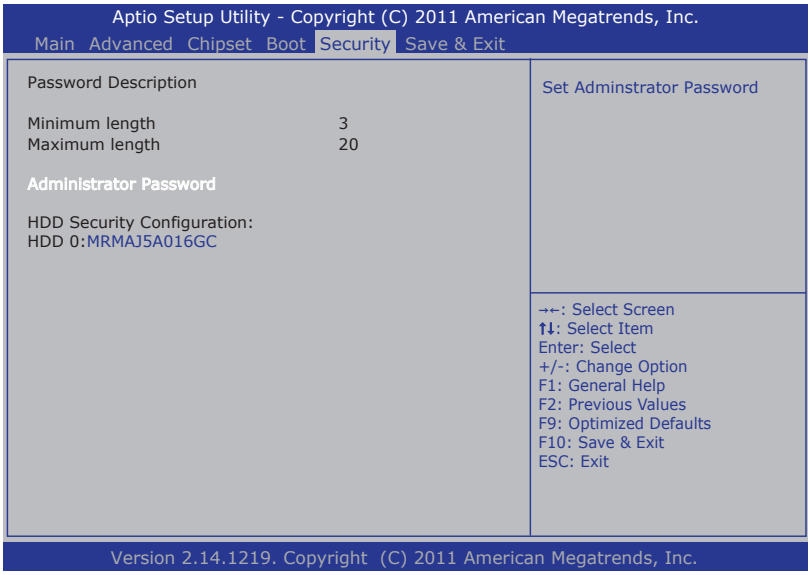
The featured settings are:

Setting	Description
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.

<table>
<tr><td colspan="2">Fast Boot</td><td>Enables/disables initializing only a minimal set of devices required to launch the active boot options when booting up the system.
‣ Disabled is the default.
‣ This setting has no effect for BBS (BIOS Boot Specification) options.
‣ When enabled, the following settings become available:
<table><tr><th>Setting</th><th>Description</th></tr><tr><td>Skip VGA</td><td>Enables/disables skipping EFI VGA driver when booting up the system.
‣ Disabled is the default.</td></tr><tr><td>Skip USB</td><td>Enables/disables skipping USB devices when booting up the system.
‣ When enabled, the USB devices won't be available until OS startup.
‣ When disabled, the USB devices are available before OS startup. This is the default.</td></tr><tr><td>Skip PS2</td><td>Enables/disables skipping PS2 (keyboard and mouse) devices when booting up the system.
‣ Disabled is the default.</td></tr></table></td></tr>
<tr><td>Boot Option Priorities</td><td>Boot Option #1</td><td>Sets the very 1st boot device among the available device types.
► Option(s) available are the available device type(s), which is the default, and Disabled.</td></tr>
<tr><td colspan="2">Hard Drive BBS Priority</td><td>Sets the very 1st boot device among the available hard disk drives.
► Option(s) available are the available storage device(s) and Disabled.</td></tr>
</table>

5.5. 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.

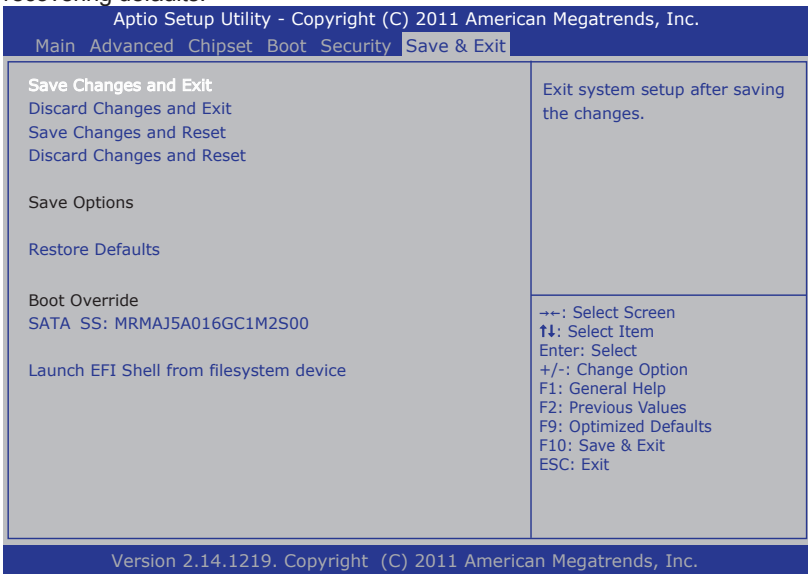


The featured setting is:

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

5.6. Save & 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
Save Changes and Exit	Saves the changes and quits the BIOS Setup utility.
Discard Changes and Exit	Quits the BIOS Setup utility without saving the change(s).
Save Changes and Reset	Saves the changes and restarts the system.
Discard Changes and Reset	Restarts the system 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 rather than a setting.

Boot Override	**Boot Override** presents a list in context with the boot devices in the system. Select the device to boot up the system regardless of the currently configured boot priority. ▸ This is a command to launch an action from the BIOS Setup utility rather than a setting.
Launch EFI Shell from filesystem device	Triggers the attempt to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

Appendices

Appendix A: Watchdog Timer (WDT) Setting

WDT is widely used for industry application to monitor the activity of CPU. Application software depends on its requirement to trigger WDT with adequate timer setting. Before WDT time out, the functional normal system will reload the WDT. The WDT never time out for a normal system. The WDT will not be reloaded by an abnormal system, then WDT will time out and auto-reset the system to avoid abnormal operation.

This computer supports 255 levels watchdog timer by software programming I/O ports.

Below is an assembly program example to disable and load WDT.

Sample Codes:

```
/*-----  Include Header Area -----*/
#include "math.h"
#include "stdio.h"
#include "dos.h"

#define SIO_INDEX       0x2E                /* or index = 0x4E */
#define SIO_DATA        0x2F                /* or data  = 0x4F */

/*-----  routing, sub-routing -----*/
void main()
{
    outportb(SIO_INDEX, 0x87);              /* SIO - Enable */
    outportb(SIO_INDEX, 0x87);

    outportb(SIO_INDEX, 0x07);              /* LDN - WDT */
    outportb(SIO_DATA,  0x07);

    outportb(SIO_INDEX, 0x30);              /* WDT - Enable */
    outportb(SIO_DATA,  0x01);

    outportb(SIO_INDEX, 0xF6);             /* WDT - Timeout Value : 5sec */
    outportb(SIO_DATA,  0x05);

    outportb(SIO_INDEX, 0xFA);              /* WDOUT - Enable */
    outportb(SIO_DATA,  0x01);

    outportb(SIO_INDEX, 0xF5);              /* WDT - Configuration */
    outportb(SIO_DATA,  0x31);

    outportb(SIO_INDEX, 0xAA);              /* SIO - Disable */

}
```

Appendix B: 3G Module HSPA-SI1400 Hardware/Software Installation

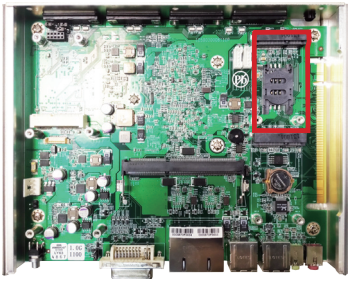
To be able to network with 3G, hardware-wise the computer needs a 3G module installed and a SIM card inserted (as described in 4.1.4. Install SIM Card on page 53) and software-wise the computer needs the device driver and an application program. This appendix will guide you to install the 3G module **HSPA-SI1400** and the device driver. (To have a copy of the device driver, please contact ARBOR customer service as described in Technical Support on page viii.)

B.1. Install HSPA-SI1400

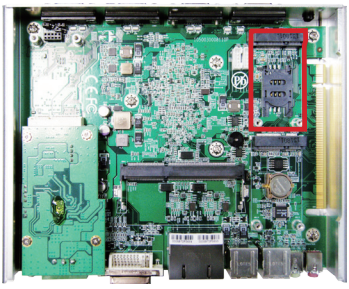
1. Remove the computer's bottom cover as described in 4.1.1. Open the Computer on page 44.

   The inside of the computer comes to view.

ARES-1500-A10

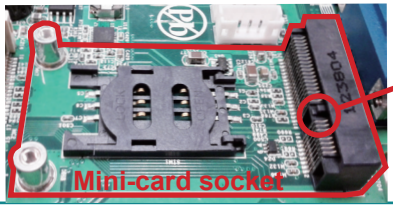


ARES-1500-B10

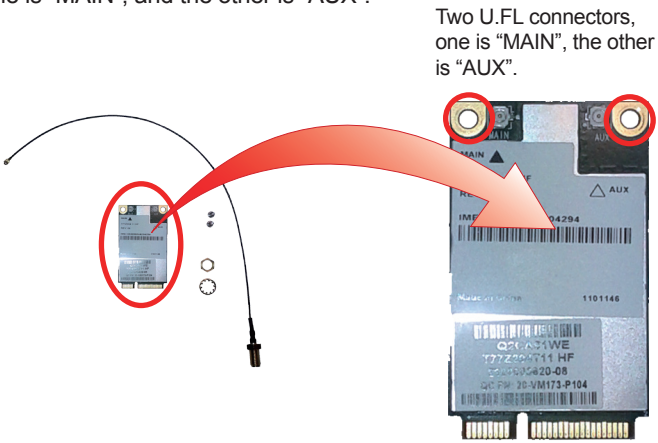


2. Find the **PCI Express Mini-card** socket for 3G modules as the illustration above shows.

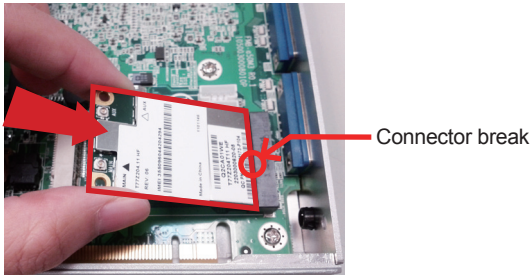
   The socket has a break among the connector .



3. Have the **HSPA-SI1400** 3G module kit. The 3G module is a full-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 3G 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.

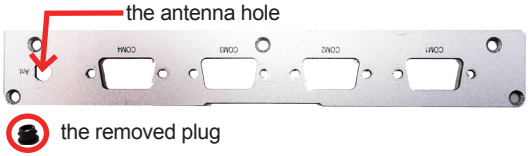


Fully plug the module.

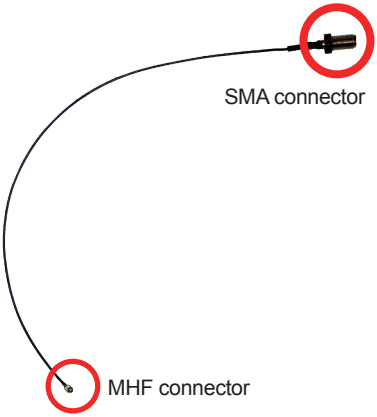
5. Press down the module and fix the module in place using two screws.

6. If you are using the antenna hole on the computer's rear panel, remove the rear panel by loosening and removing the screws as shown in the illustration below:
(If you are not using the antenna hole on the computer's rear panel, skip this step.)

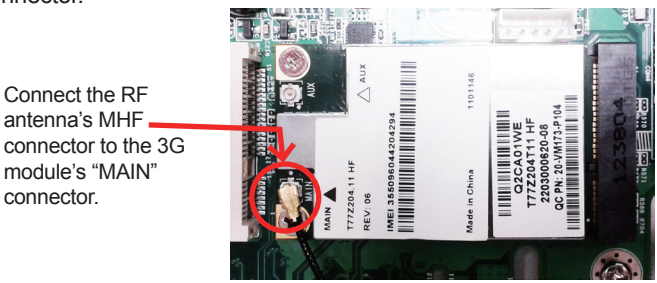
7. Remove the plastic plug from the computer's rear (or front) panel to make an antenna hole. Keep the plastic plug for any possible restoration in the future.



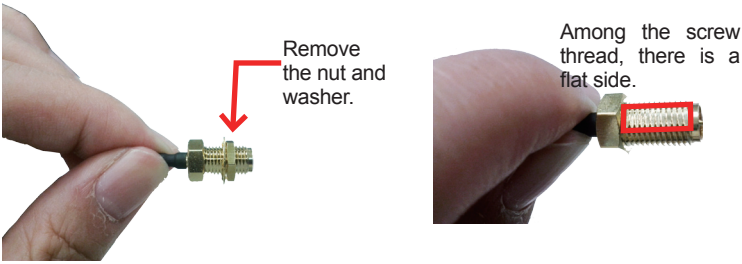
8. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.



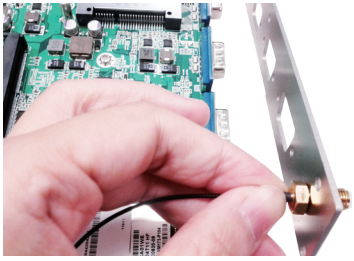
9. Connect the RF antenna's MHF connector to the 3G module's "MAIN" connector.

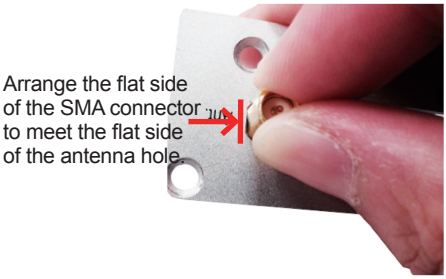


10. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Save the washer and nut for later use. Note the SMA connector has the form of a threaded bolt, with one flattened side.

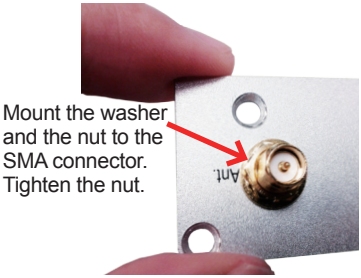


11. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flattened side with the antenna hole's flat side.





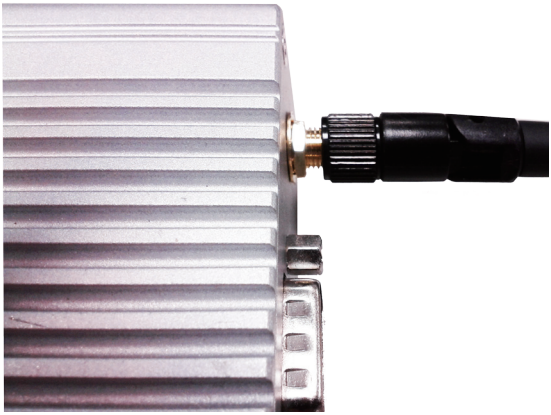
12. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.



13. Restore the rear panel to the computer. (If you are not using the antenna hole on the computer's rear panel, skip this step.)

14. Restore the computer's bottom cover.

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



16. Swivel the antenna to an angle of best signals.

B.2. Install Device Driver

As described in 2.3. Driver Installation Notes on page 11, after the drivers for the chipset, .NET Framework, audio and Ethernet are installed, you can proceed to install the driver for the wireless modules such as 3G module or Wi-Fi module.

To install the driver for the 3G module **HSPA-SI1400**:

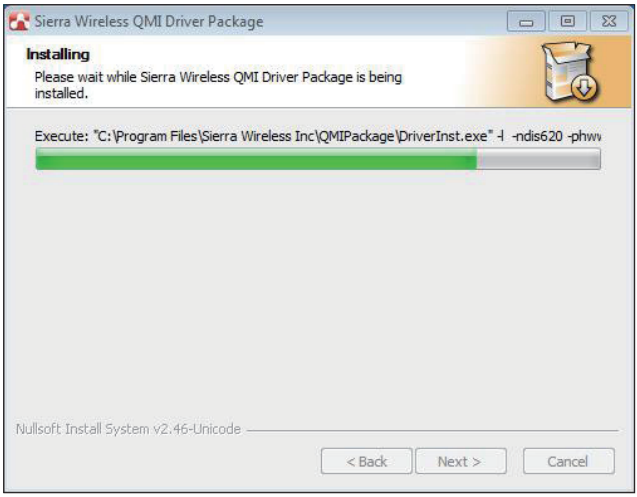
1. Request a copy of the device driver from ARBOR customer service by the contact info as described in Technical Support on page viii.

2. Run the executable file **SWIQMISetup.exe**.

   The installer then opens.

3. Click the **Next** button to proceed.

   The driver installation then starts, progresses and finishes.



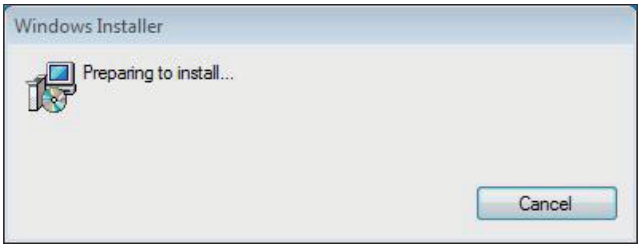
4. Click the **Finish** button to quit the driver installation.

B.3. Install Application Program

1. Request a copy of the application program from ARBOR customer service by the contact info as described in Technical Support on page viii.

2. Run the Windows Installer file **Watcher_Generic.msi**.

   The installer opens and prepares to install.



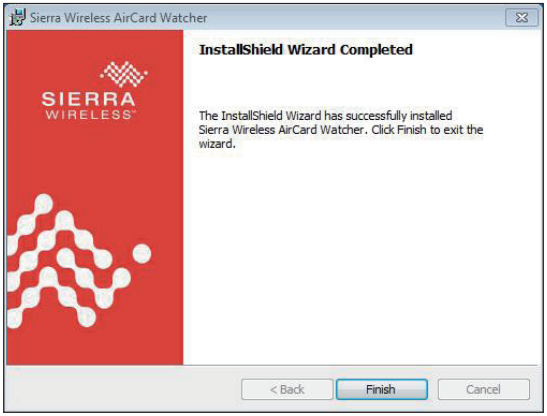
   Once the preparation finishes, the installer prompts to install **Sierra Wireless AirCard Watcher** on the computer.

3. Click the **Next** button to proceed.

   The installer then prompts the license agreement.

4. Select **I accept the terms in the license agreement**. Click the **Change...** button to browse for an alternate folder to install the application program to, or simply click the **Next** button to install the application program to the suggested folder.

   The installation then starts, progresses and finishes.



5. Click the **Finish** button to quit the installation.

   An **AirCard Watcher** icon then shows up on the desktop.

6. Double-click the **AirCard Watcher** icon to launch the application program.

   The **AirCard Watcher** opens.

7. See the document of the **AirCard Watcher** to know how to use the application program.

Appendix C: Wi-Fi Module WIFI-IN1300 Hardware/Software 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 **WIFI-IN1300** and the device driver. (To have a copy of the device driver, please contact ARBOR customer service by the contact info described in Technical Support on page viii.)

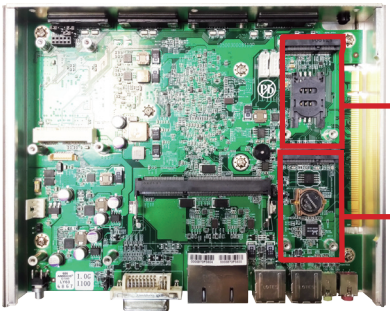
C.1. Install WIFI-IN1300

1. Remove the computer's bottom cover as described in 4.1.1.1. Remove Bottom Cover on page 44.

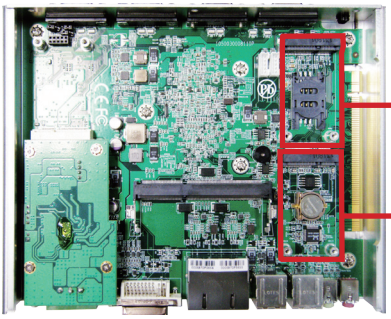
   The inside of the computer comes to view.

2. Find the two **Mini-card** sockets for wireless modules on the board as the illustration below shows. Either socket goes for Wi-Fi modules. However, it is suggested that you install the Wi-Fi module to the socket without a SIM card socket and reserve the socket interconnected with the SIM card socket for 3G modules.

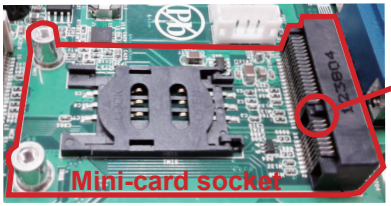
   ARES-1500-A10



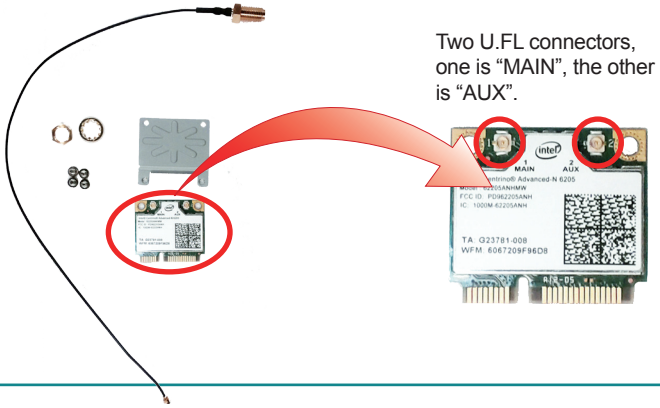
ARES-1500-B10



The socket has a break among the connector.



3. Prepare the **WIFI-IN1300** 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“.

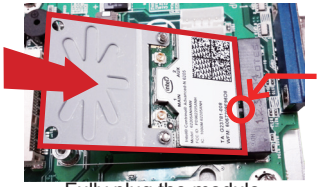


4. In order to make the half-size Wi-Fi module compatible with the **Mini-card** socket, extend the WiFi module with a “mini half bracket”. Join them together by using two screws.

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

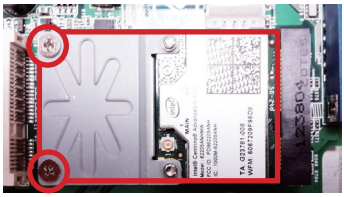
Join the WiFi module and the “mini half bracket” by using two screws.

5. 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.



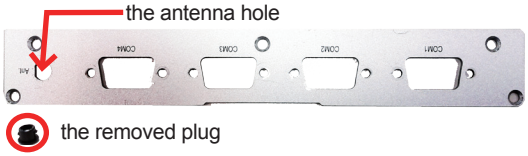
Fully plug the module.

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

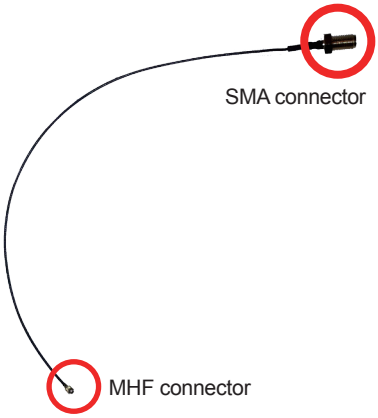


7. If you are using the antenna hole on the computer's rear panel, remove the rear panel by loosening and removing the screws as shown in the illustration below:
(If you are not using the antenna hole on the computer's rear panel, skip this step.)

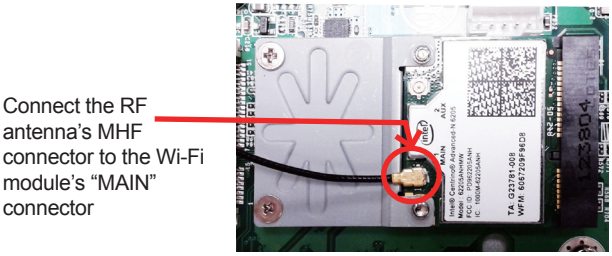
8. Remove the plastic plug from the computer's rear (or front) panel to make an antenna hole. Keep the plastic plug for any possible restoration in the future.



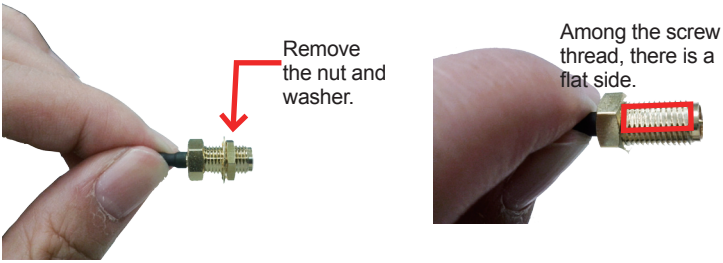
9. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.



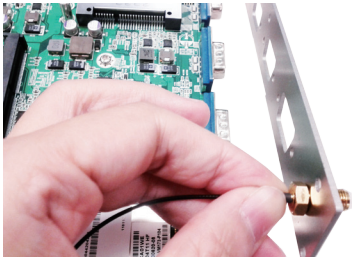
10. Connect the RF antenna's MHF connector to the Wi-Fi module's "MAIN" connector.

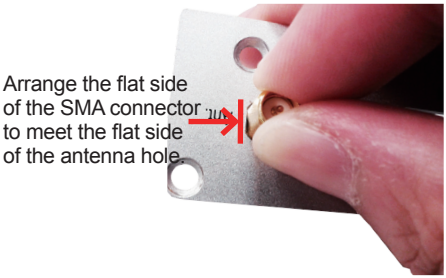


11. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Save the washer and nut for later use. Note the SMA connector has the form of a threaded bolt, with one flat side.

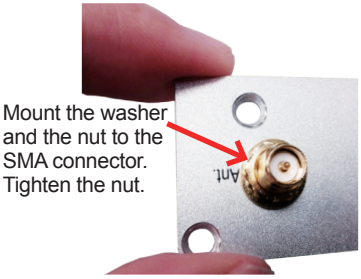


12. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flat side with the antenna hole's flat side.





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

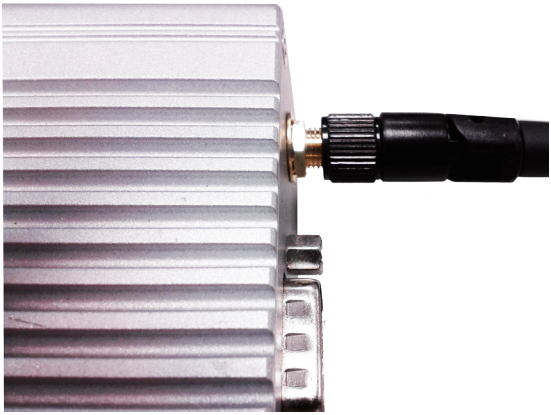


14. Restore the rear panel to the computer. (If you are not using the antenna hole on the computer's rear panel, skip this step.)

Refasten these screws.

15. Restore the computer’s bottom cover.

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



17. Swivel the antenna to an angle of best signals.

C.2. Install Device Driver & Application Program

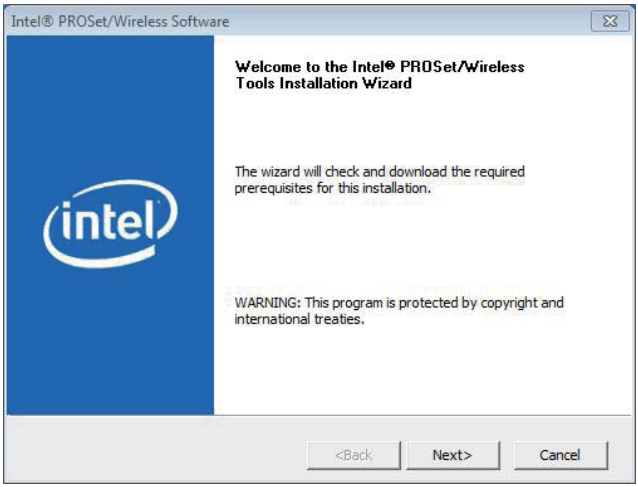
As described in 2.3. Driver Installation Notes on page 11, after the drivers for the chipset, .NET Framwork, audio and Ethernet are installed, you can proceed to install the driver for the wireless modules such as 3G module or Wi-Fi module.

The device driver of **WIFI-IN1300** will install the application program (the utility) as well. Follow the guide below to install **WIFI-IN1300** driver (and the application program):

1. Request a copy of the device driver from ARBOR customer service by the contact info as described in Technical Support on page viii.

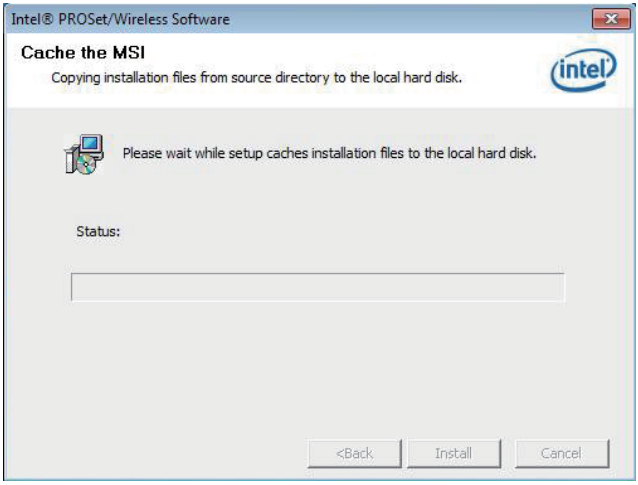
2. Run the executable file of the device driver, for example **Advanced-N 6205 WinXP_14.2.0.10_x32.exe**.

   The installer then opens.

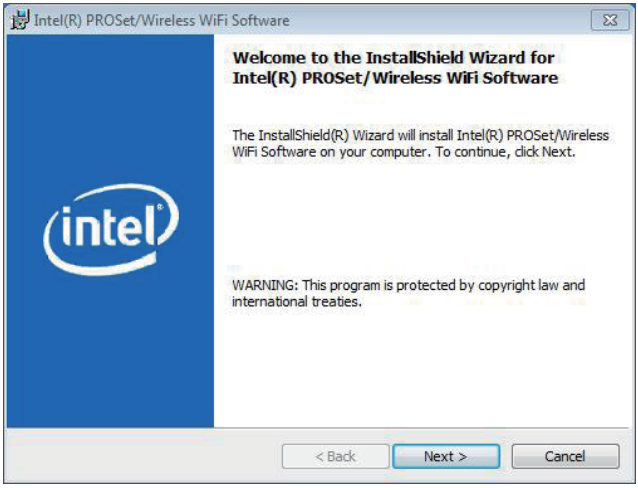


3. Click the **Next** butoon to proceed.

   The installer then starts to prepare for the setup.

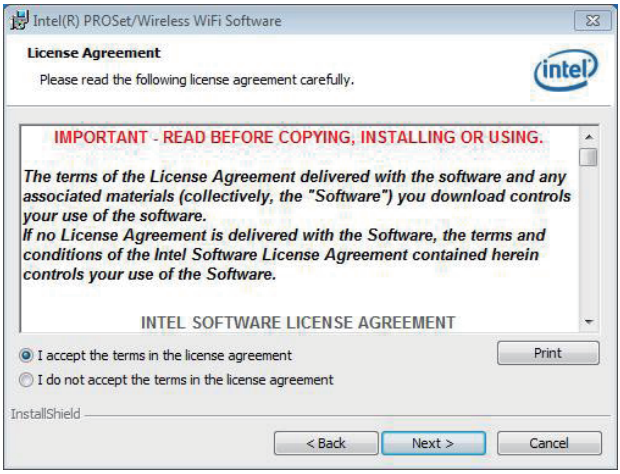


   When the preparation finishes, the installer prompts to install **Intel(R) PROSet/Wireless WiFi Softwar**e on the computer.



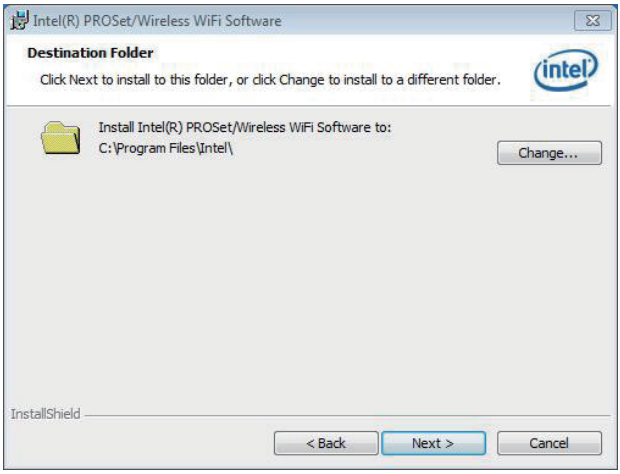
4. Click the **Next** button to proceed.

   The installer then prompts the license agreement.



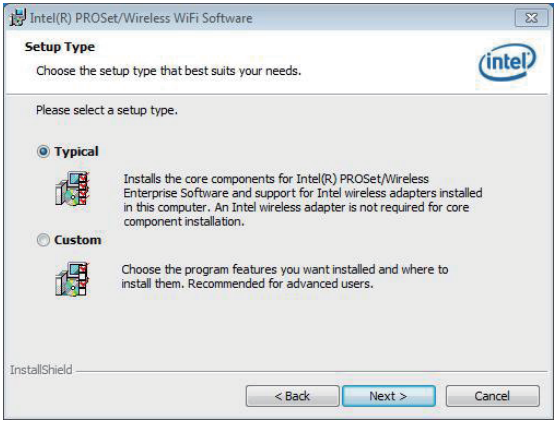
5. Select **I accept the terms in the license agreement** and click the **Next** button to proceed.

   The installer then asks where to install the software.



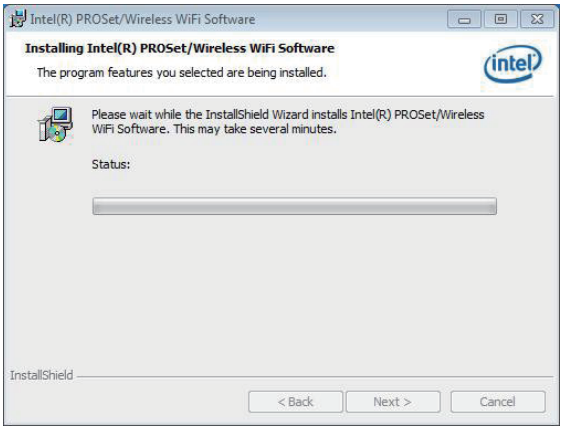
6. Click the **Change...** button to browse for an alternate folder to install the software to, or simply click the **Next** button to install the software to the suggested folder.

   The installer then opens a **Setup Type** selection.

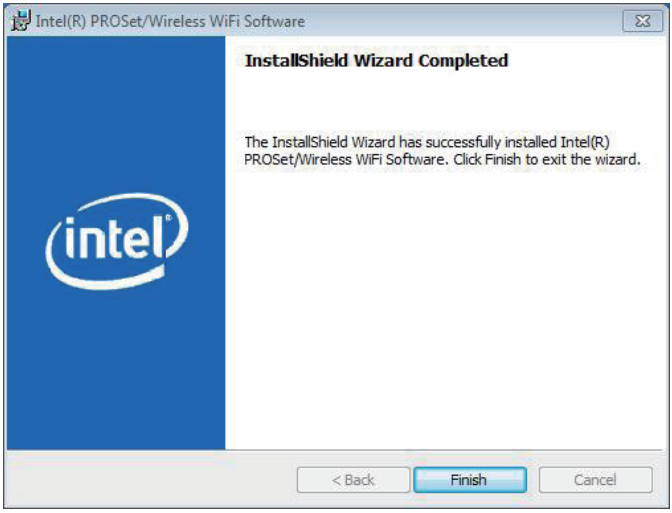


7. Select **Typical** to install both the driver and the application program (recommended) or select **Custom** to choose the features to install. Then click the **Next** button to proceed.

   The software installation then starts, progresses and finishes.



8. Click the **Finish** button to quit the software installation.



9. The computer's Wi-Fi feature is ready-to-use, see the document of the application program to know how to connect the computer to a Wi-Fi hotspot.