ARES-5300

Programmable Embedded Controller with Intel® Celeron® J1900

User's Manual

Version 1.1

$$C\,E$$

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Revision History

Version	Date	Description
1.0	March 2014	Initial release
1.1	Dec 2017	Power input "2-pin terminal" is revised to "3-pin terminal". Related photot, specification and pin description is updated accordingly.

Contents

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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-technology.com
>
> E-mail:info@arbor.com.tw

Warranty

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

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

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

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

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Chapter 1

Introduction

1.1. Product Highlights

- **Fanless, Cable-less and Modularized Design**
- **Wide Range DC Power Input (9 ~ 36V)**
- **Easy Installation/Maintenance**
- **Outside accessible CFast Slot**

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/ Chipset	Soldered onboard Intel® Celeron® J1900 2.0GHz processor
BIOS	Insyde BIOS
Graphics	Intel® Integrated HD Graphic Engine Gen7
System Memory	1 x 204-pin DDR3L SO-DIMM socket, supporting 1333MHz SDRAM up to 8GB
Ethernet Controller	2 x Intel® i210IT GbE controllers
I/O Ports	
USB Port	4 x USB 2.0 ports 1 x USB type A connector (Internal)
LAN Port	2 x RJ-45 Gigabit Ethernet ports
Video Port	1 x DB-15 female connector for analog RGB
Expansion Bus	1 x Half size Mini-Card socket
Storage	
Type	1 x mSATA socket
	1 x CFast socket which is outside accessible
Qualification	

Certification	CE, FCC Class A
Environment	
Operating Temp.	-30 ~ 60°C (-22 ~ 140°F), ambient w/ air flow
Storage Temp.	-20 ~ 70°C (-4 ~ 158°F)
Relative Humidity	10 ~ 90% @ 60°C (non-condensing)
Vibration	5~500Hz, 3G rms X,Y,Z axis w/ SSD, according to IEC 68-2-64
Shock	40G peak acceleration (11 m sec. duration), operation 60G peak acceleration (11 m sec. duration), non operation According to IEC 68-2-27
Mechanical	
Construction	Whole aluminum chassis
Mounting	DIN-rail mount
Weight (Net / Gross)	1.5 kg (3.3 lb) (Barebone)
Dimensions (W x D x H)	155 x 125 x 70 mm (6.14" x 4.92" x 2.76")
Power Requirement	
Power Input	DC 9-36V by 3-pin terminal block
Power Consumption	Max. 25W

1.4. Inside the Package

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

1 x ARES-5300 Programmable Embedded Controller

1 x Driver CD
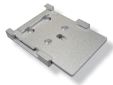1 x User's Manual
1 x 1x3 terminal block for Power

1.5. Ordering Information

ARES-5300	Barebone system w/ Intel® Celeron J1900 processor

1.5.1. Standard Accessories

DRK-5300 DIN Rail mounting kit for ARES-5300	AI6063	
	DIN Rail 35 mm	

1.5.2. 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.

PAC-P060W-2	12V/5A, 60W AC/DC adapter kit	
16GB SSD	mSATA MLC 16GB	
32GB SSD	mSATA MLC 32GB	
MM-3CL-2G	DDR3L-1600 2GB SDRAM	
MM-3CL-4G	DDR3L-1600 4GB SDRAM	
MM-3CL-8G	DDR3L-1600 8GB SDRAM	
WiFi-AT2300	Atheros AR9462 Wi-Fi module w/ 20cm internal wiring	
ANT-D11	1 x Wi-Fi Dual-band 2.4G/5G antenna	

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Chapter 2

Getting Started

2.1. Dimensions

The following illustration shows the dimensions of ARES-5300, with the measurements in width, depth, and height called out.

Unit:mm
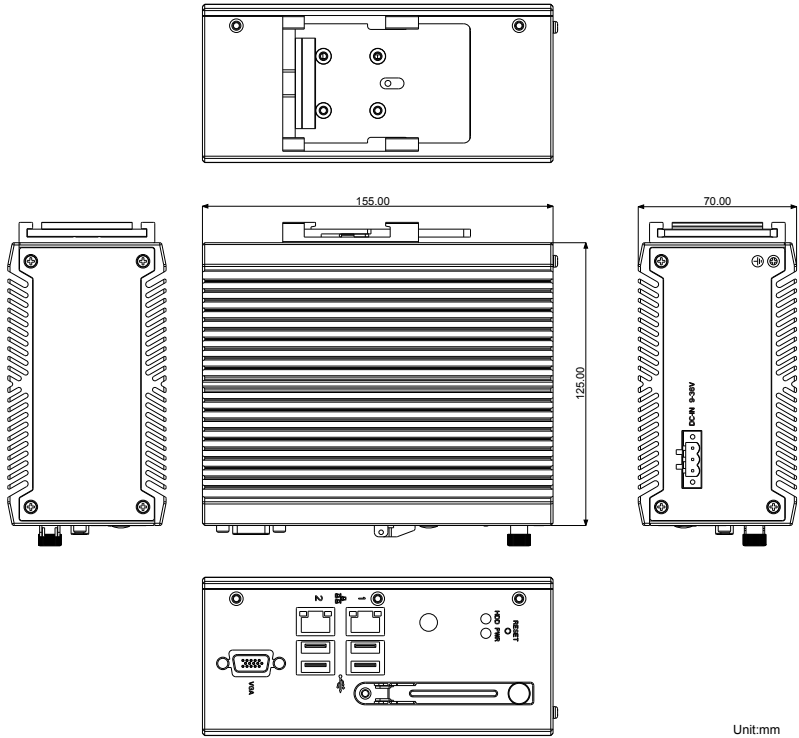
2.2. Take A Tour

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-5300.

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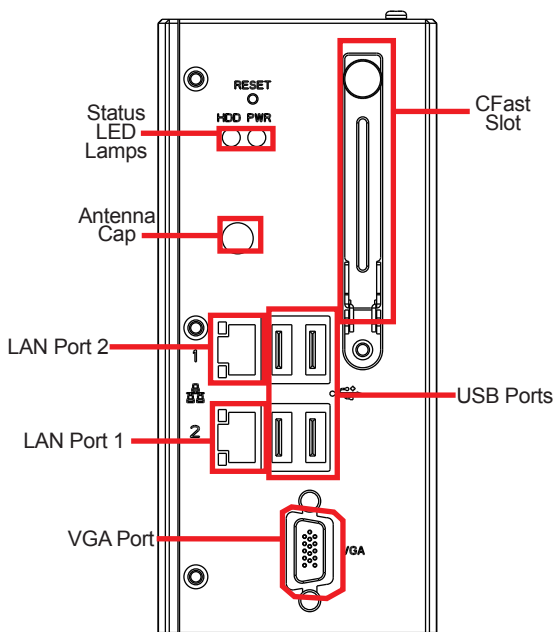
• **Status LED Lamps**
  LED lamps are recessed on the front side of the computer to draw users' prompt awareness of the computer's contiguous events such as power on/off, data transmission and so on.
  These lamps and the notifications delivered are summarized as following:

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

Side View

DC-in
power jack

DC-IN 9-36V

Rear View

DIN rail clip
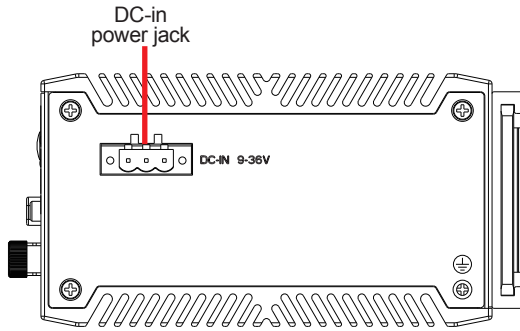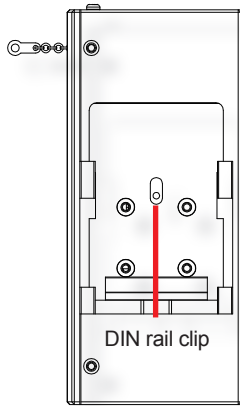
2.3. Driver Installation Notes

The ARES-5300 supports the operating systems of Windows 8.1 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:

<div align="center">

Chipset→Graphics→Ethernet→TXE→USB

</div>

Paths to find various drivers on the CD:

Windows 7

Device		Driver Path
Chipset		\Chipset\ (SetupChipset.exe)
Graphics	32Bit	\Graphics\32Bit\WIN7_32 (setup.exe)
	64Bit	\Graphics\64Bit\WIN7_64 (setup.exe)
Ethernet	32Bit	\Network\LAN\ (PROWin32.exe)
	64Bit	\Network\LAN\ (PROWinx64.exe)
TXE		\TXE\Installers\ (SetupTXE.exe)
USB3.0		\USB3.0\ (Setup.exe)

Windows 8

Device		Driver Path
Chipset		\Chipset\ (SetupChipset.exe)
Graphics	32Bit	\Graphics\32Bit\WIN8_32 (setup.exe)
	64Bit	\Graphics\64Bit\WIN8_64 (setup.exe)
Ethernet	32Bit	\Network\LAN\ (PROWin32.exe)
	64Bit	\Network\LAN\ (PROWinx64.exe)
TXE		\TXE\Installers\ (SetupTXE.exe)

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Chapter 3

System Configuration

3.1. Board Layout

The engine of the computer is comprised of a main board and a power board. This section will provide an thorough view of these boards.

3.1.1. Main Board

Board Top
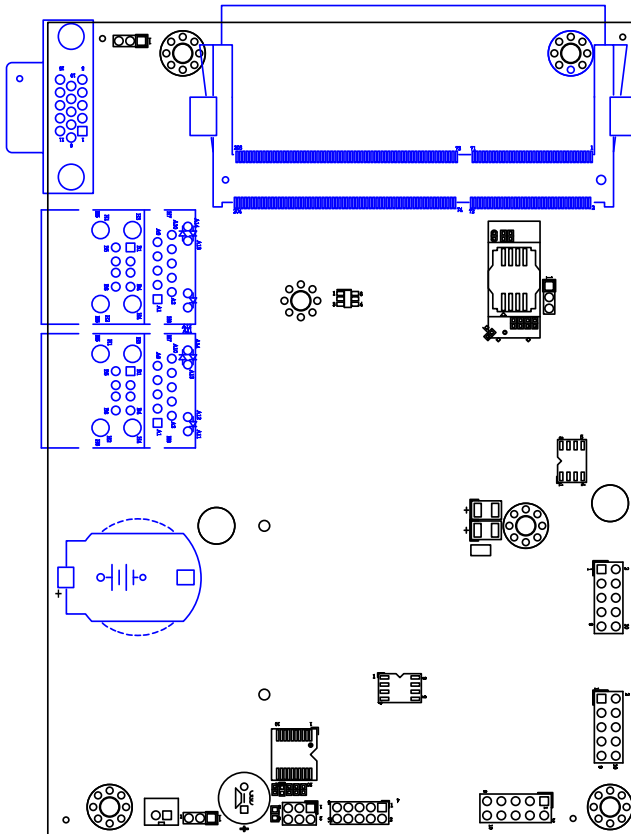
Board Bottom
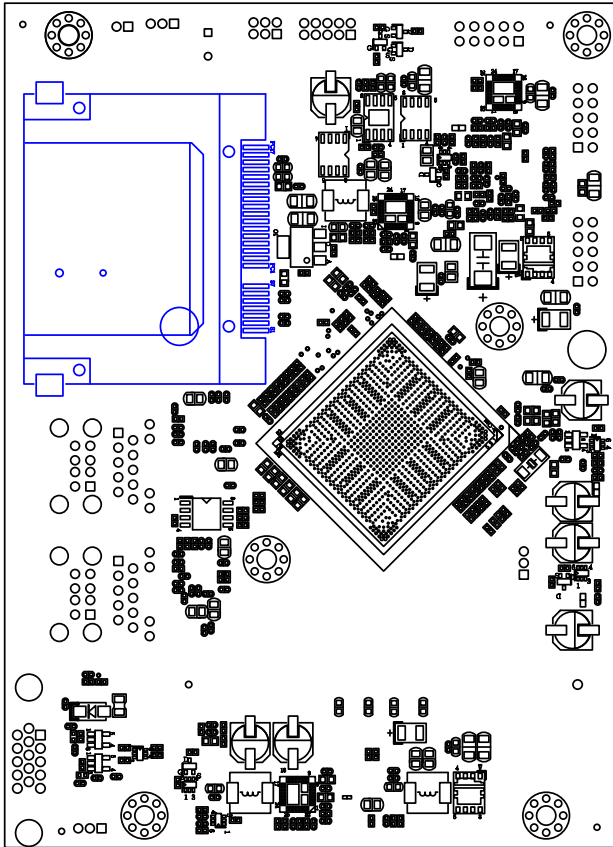
3.1.2. Power Board

Board Top
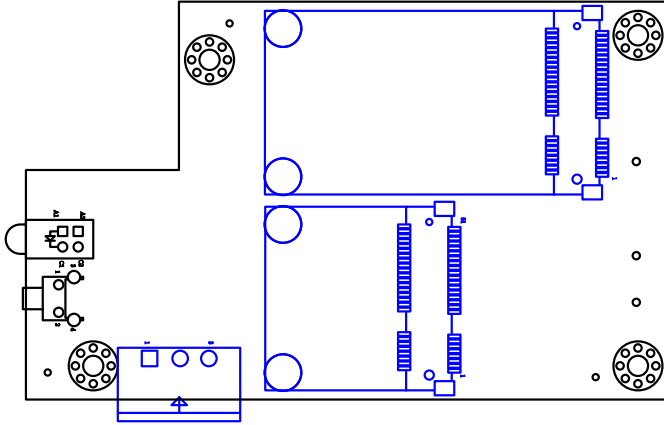
Board Bottom
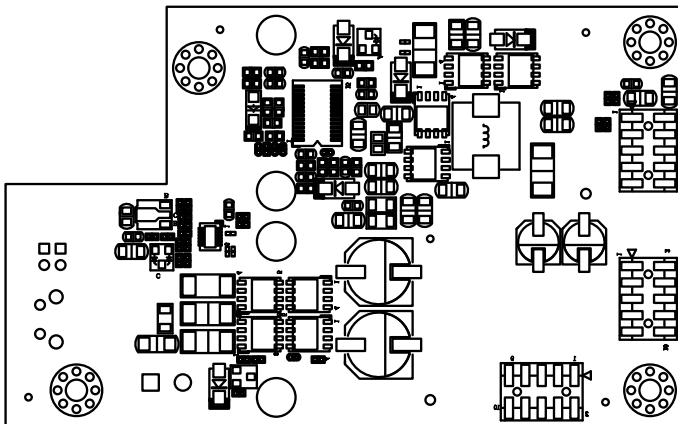
3.2. Jumper & Connectors

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

3.2.1. Main Board Connectors

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

LANUSB1&2

Function:	RJ-45+USB stacked ports
Connector Type:	RJ-45 LAN port with LED lamps and double-stacked USB 2.0 Type A connectors

Pin Assignment:

LAN (RJ-45)	
LED	**Definition**
Speed	Amber:1000M Green: 10/100M
Link/Act	On: Linked Blink: Network Activity Off: No Link

Main Board Top
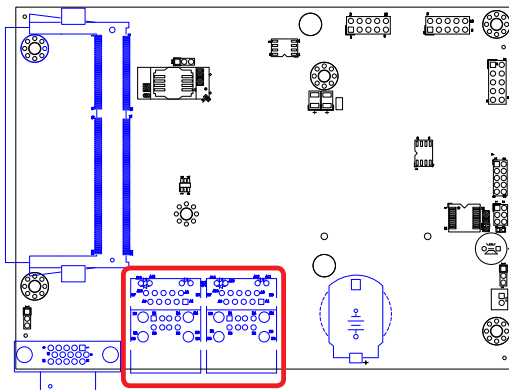
Front Panel
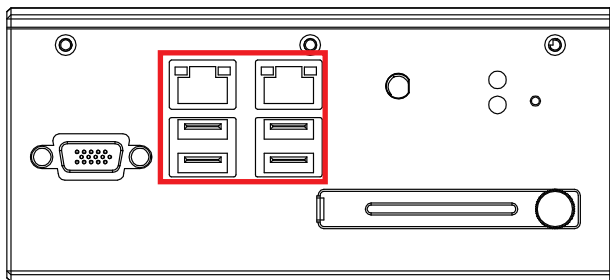
VGA

Function: External VGA port for CRT display
Connector Type: D-sub 15-pin female connector

Pin	Description	Pin	Description
1	CRT_R	2	CRT_G
3	CRT_B	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC5	10	N/C
11	N/C	12	DCC_DATA
13	HSYNC	14	VSYNC
15	DDC_CLK		
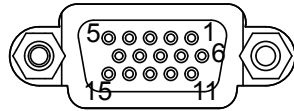
Front Panel
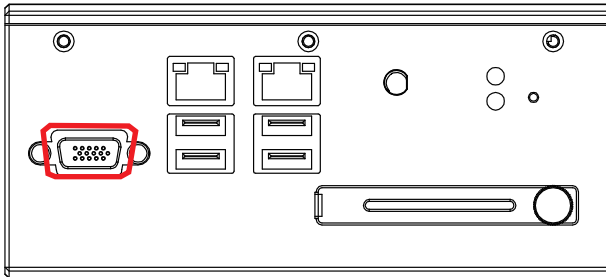
CF1

| **Function:** | CFast socket |
| **Connector type:** | 24-pin push-push CFast connector, 8.35mm high. |

Pin	Desc.	Pin	Desc.	Pin	Desc.
S1	GND	PC1	N/C	PC10	N/C
S2	SATA_TX1+	PC2	GND	PC11	N/C
S3	SATA_TX1-	PC3	N/C	PC12	N/C
S4	GND	PC4	N/C	PC13	+3.3V
S5	SATA_RX1-	PC5	N/C	PC14	+3.3V
S6	SATA_RX1+	PC6	N/C	PC15	GND
S7	GND	PC7	GND	PC16	GND
		PC8	N/C	PC17	N/C
		PC9	N/C		
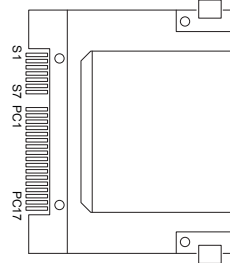
Main Board Bottom
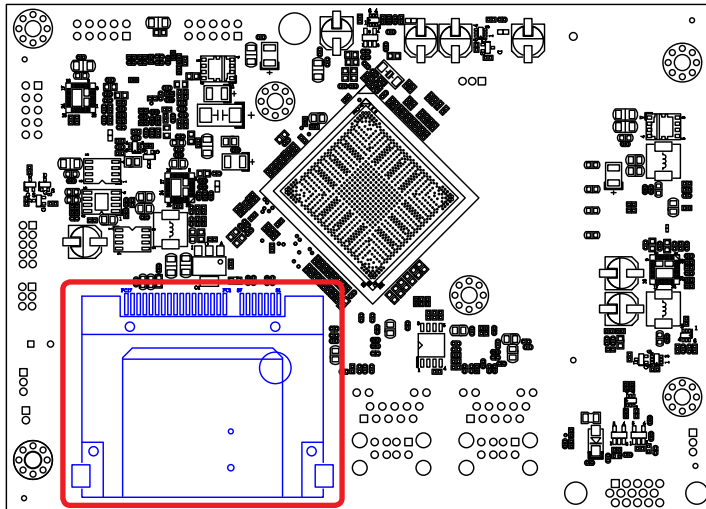
3.2.3. Power Board Connectors

This section will guide you through the connector s on the power board.
CN3

Description:	PCI Express Mini-card socket
Connector Type:	Onboard 0.8mm-pitch 52-pin edge card connector
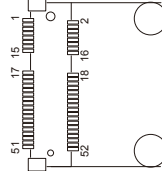
Pin	Desc.	Pin	Desc.	Pin	Desc.	Pin	Desc.
1	WAKE#	16	N/C				
2	+3.3V	17	N/C				
3	N/C	18	GND				
4	GND	19	N/C				
5	N/C	20	W_DISABLE#	31	PE_CAD3_TX-	42	N/C
6	+1.5V	21	GND	32	SMB_DATA	43	GND
7	CLKREQ#	22	PCIE_ARST#	33	PE_CAD3_TX+	44	N/C
8	N/C	23	PE_CAD3_RX-	34	GND	45	N/C
9	GND	24	+3.3V	35	GND	46	N/C
10	UIM_DATA_A	25	PE_CAD3_RX+	36	N/C	47	N/C
11	REFCLK-	26	GND	37	GND	48	+1.5V
12	N/C	27	GND	38	N/C	49	N/C
13	REFCLK+	28	+1.5V	39	+3.3V	50	N/C
14	N/C	29	GND	40	GND	51	N/C
15	GND	30	SMB_CLK	41	+3.3V	52	+3.3V

Board Top
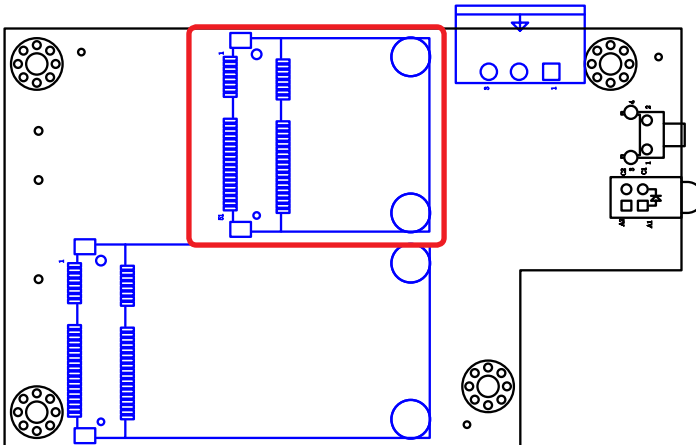
CN10

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				

Main Board Top

- 22 -
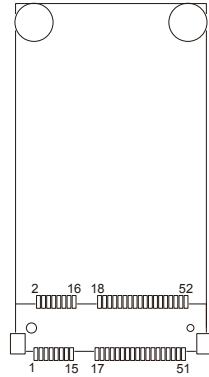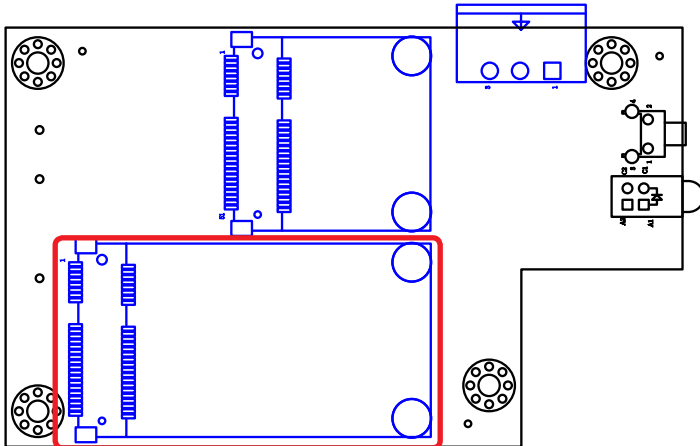
PWRIN1

Function: DC-IN power port
Connector Type: 3-pin terminal block

Pin	Description
1	VCC +9~36V
2	GND
3	C-GND
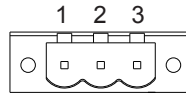
Power Board Top
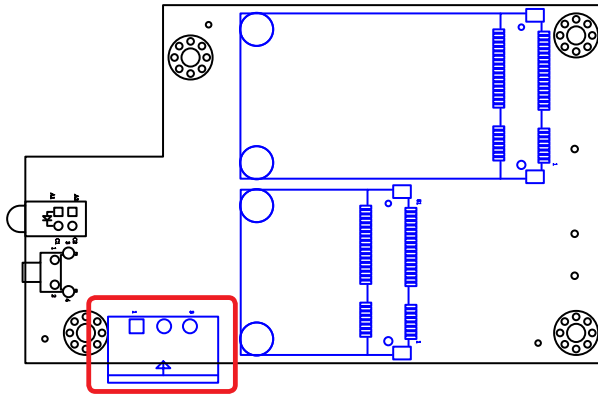
Side Panel
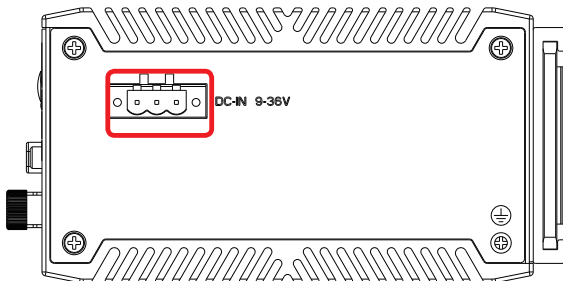
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Chapter 4

Installation and Maintenance

4.1. Install Hardware

The ARES-5300 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

Most of the connectors are built on the top side of the main board. To access these components, the computer's top cover has to go. Follow through the steps below to remove the top cover from the computer.

1. Place the computer on a flat surface. Loosen and remove the 10 screws from the computer's four edges as shown in the illustration below:

2. Remove the 2 side covers completely from the computer.

3. Remove the upper cover completely from the computer.

4. The inside of the computer comes to view.
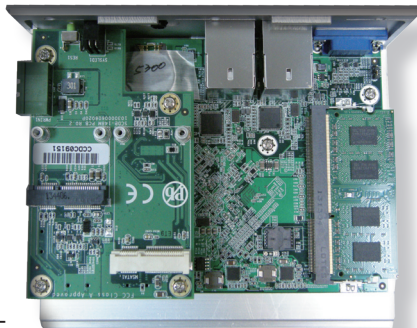
4.1.2. Restore the upper cover

1. Combine the upper cover with the bottom cover.

2. Restore the side covers and fasten the screws.

3. Fasten the screws on the front and back sides to complete the assembly.
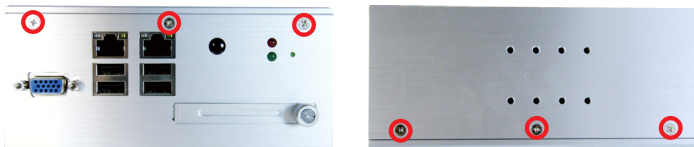
4.1.3. Install Memory Module

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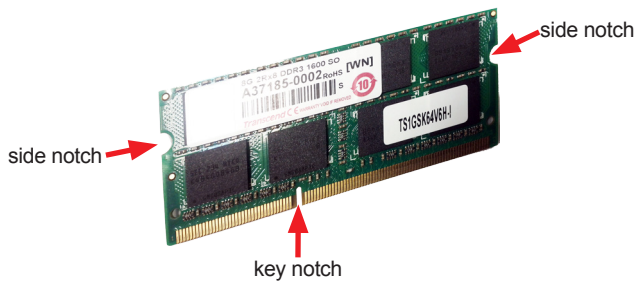
To install a DDR3 memory module:

1. Remove the bottom cover from the computer as described in on page.

    The inside of the computer comes to view.

2. Find the SO-DIMM socket on the board as marked in the illustration below.
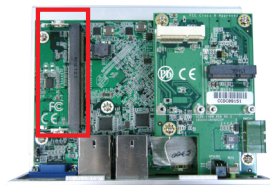
    The SO-DIMM socket is horizontal type, and it has two spring-loaded locks to fix the memory module.

3. 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.

SO-DIMM slot connector's break

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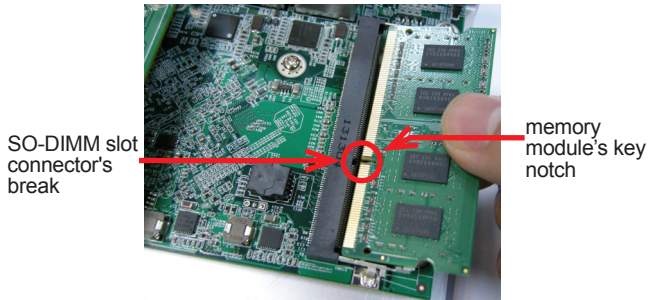
Aligh the memory module's key notch at the SO-DIMM slot connector's break.

4. By a slanted angle, fully plug the memory module until it cannot be plugged any more.
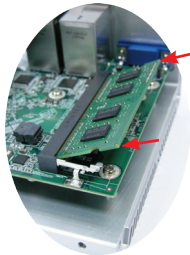
5. Press down the memory module until it is auto-locked in place.
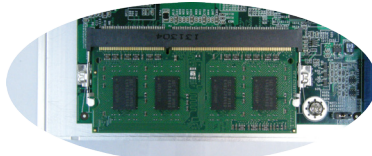
6. Restore the upper cover to the computer.

4.2. DIN-rail Mount

Integrate the computer to where it works by mounting it to a DIN-rail in the surroundings. Such integration relies on the DIN-rail clip on the rear side of the computer. Follow through the guide below to mount/dismount the computer to/from a DIN-rail.

4.2.1. Mount the Computer

1. Find the DIN-rail clip on the rear side of the computer as illustrated below:
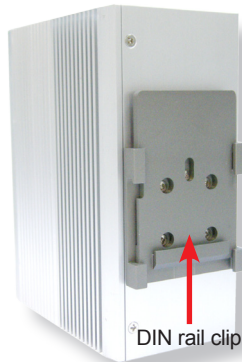
DIN rail clip

2. Hold the computer in a portrait orientation.
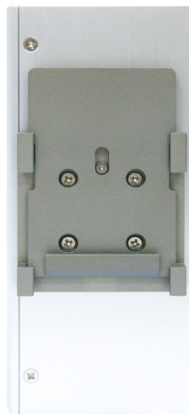
3. To mount the unit on a DIN rail, slot the bottom part of the Din-rail clip into the bottom guide of the rail and lift the computer until the top side of the Din-rail hook clicks into place.
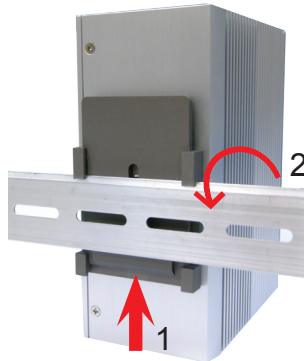
If the computer cannot be successfully fixed onto the DIN-rail, reverse the computer and clip the computer onto the DIN-rail by the bottom side.

Computer mounted on DIN-rail

4.2.2. Dismount the Computer

Power off the computer and disconnect all cables before proceeding to dismount the computer off the DIN-rail.

1. Push the bottom side of the computer up, with both hands to release the top part of clip from the DIN-rail.

2. Once the clip is released from the DIN-rail, completely dismount the computer off the DIN-rail by pulling the computer's top side.
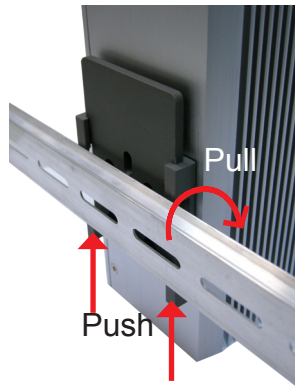
4.3. Ground the Computer

Follow the instructions below to ground the computer to land. Be sure to follow every grounding requirement in your place.

> ⚠ **Warning** Whenever the unit is installed, the ground connection must always be made first of all and disconnected lastly.

1. See the illustration below. Remove the ground screw from the side panel.

2. Attach a ground wire to the rear panel with the screw.
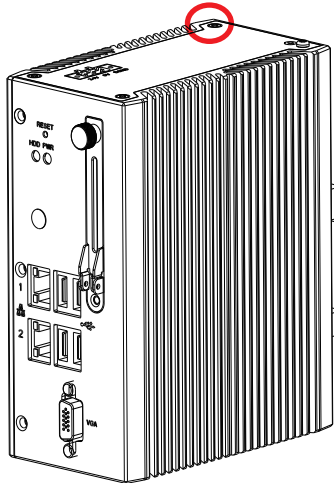
4.4. Wire DC-in Power Source

⚠ **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.

VCC GND CGND

terminal block
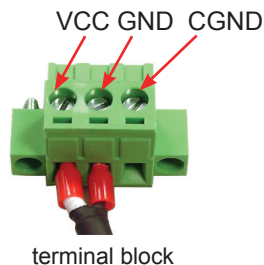
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Chapter 5

BIOS

BIOS

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

```
                          InsydeH20 Setup Utility                     Rev. 5.0
   Main   Advanced   Security   Power   Boot   Exit

 BIOS Version                    R0.05                    Set the current default language
 Project Name                   ARES-5300                used by the InsydeH2O.
 Build Date                     02/25/2014
 Build Time                     10:16:18

 Platform firmware information
 VLV SOC                        OC (B3 Stepping)
 MRC Version                    0.95
 PUNIT FW                       0x2D
 KSC FW                         N/A
 PMC FW Patch                   0x3_18
 TXE FW Version                 1.1.0.10x89
 IGD VBIOS Version              1007
 Microcode Revision             320
 CPU Flavor                     VLV Desktop (2)
 Board ID                       BALEY BAY (20)
 Fab ID                         FAB3 (03)

 Processor                      Intel(R) Celeron(R) CPU J1900 @1.99GHz
 System Bus Speed               83 MHz
 System Memory Speed            1333 MHz
 Cache RAM                      1024 KB
 Total Memory                   2048 MB
 Channal A
 SODIMM0                        2048 MB
 SODIMM1                        [Not Installed]
 Channal B
 SODIMM0                        [Not Installed]
 SODIMM1                        [Not Installed]
 Language                       <English>
 System Time                    [17:04:19]
 System Date                    [03/17/2014]

 F1    Help      ↑↓ Select Item   F5/F6  Change Values      F9    Setup Defaults
 ESC   Exit      ↔  Select Menu   Enter  Select ► SubMenu   F10   Save and Exit
```

The BIOS featured menus are:

Menu	Description
Main	See 5.1. Main on page 40.
Advanced	See 5.2. Advanced on page 41.
Security	See 5.3. Security on page 47.
Power	See 5.4. Power on page 48.
Boot	See 5.4.1 Advanced CPU Control on page 49.
Exit	See 5.6. Exit on page 53.

Key Commands

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

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

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

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

5.1. Main

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

```
                          InsydeH20 Setup Utility                    Rev. 5.0
   Main   Advanced   Security   Power   Boot   Exit

 BIOS Version                      R0.05              Set the current default language
 Project Name                      ARES-5300          used by the InsydeH2O.
 Build Date                        02/25/2014
 Build Time                        10:16:18

 Platform firmware information
 VLV SOC                           OC (B3 Stepping)
 MRC Version                       0.95
 PUNIT FW                          0x2D
 KSC FW                            N/A
 PMC FW Patch                      0x3_18
 TXE FW Version                    1.1.0.10x89
 IGD VBIOS Version                 1007
 Microcode Revision                320
 CPU Flavor                        VLV Desktop (2)
 Board ID                          BALEY BAY (20)
 Fab ID                            FAB3 (03)

 Processor                         Intel(R) Celeron(R) CPU J1900 @1.99GHz
 System Bus Speed                  83 MHz
 System Memory Speed               1333 MHz
 Cache RAM                         1024 KB
 Total Memory                      2048 MB
 Channal A
 SODIMM0                           2048 MB
 SODIMM1                           [Not Installed]
 Channal B
 SODIMM0                           [Not Installed]
 SODIMM1                           [Not Installed]
 Language                          <English>
 System Time                       [17:04:19]
 System Date                       [03/17/2014]

 F1    Help      ↑↓  Select Item    F5/F6  Change Values      F9    Setup Defaults
 ESC   Exit      ↔   Select Menu    Enter  Select ► SubMenu   F10   Save and Exit
```

The BIOS info displayed are:

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

The featured settings are:

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

5.2. Advanced

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

```
                          InsydeH20 Setup Utility                    Rev. 5.0
     Main    Advanced    Security    Power    Boot    Exit

  ►Boot Configuration                                Configures Boot Settings.
  ►PCI Express Configuration
  ►USB Configuration
  ►Video Configuration
  ►Thermal Configuration
  ►SATA Configuration
  ►ACPI Table/Feature Control




  F1    Help        ↑↓  Select Item     F5/F6  Change Values     F9    Setup Defaults
  ESC   Exit        ↔   Select Menu     Enter  Select ► SubMenu  F10   Save and Exit
```

The featured settings and submenus are:

Setting	Description
Boot Configuration	See 5.2.1. Boot Configuration on page 42
PCI Express Configuration	See 5.2.2. PCI Express Configuration on page 42
USB Configuration	See 5.2.3. USB Configuration on page 43
Video Configuration	See 5.2.4. Video Configuration on page 44
Thermal Configuration	See 5.2.5. Thermal Configuration on page 45
SATA Configuration	See 5.2.6. SATA Configuration on page 45
ACPI Table/Feature Control	See 5.2.7. ACPI Table/Feature Control on page 46

5.2.1. Boot Configuration

Setting	Description
Numlock	Select Power-on state for Num lock

5.2.2. PCI Express Configuration

Configures PCI Express by the following settings:

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

5.2.3. USB Configuration

Select this submenu to view the status of the USB ports and configure USB features.

The featured settings are:

Setting	Description
XHCI Pre-Boot Mode Support	Enables/Disables XHCI Pre-Boot mode support
xHCI Mode	Set the mode of operation of xHCI controller Options are Disabled/Enabled/Auto/Smart Auto(default)
XCHI Controller	Enables/Disables XHCI controller
USB2 Link Power Management	Enables/Disables USB2 Link Power Management.
XCHI Streams	Enables/disables XHCI Stream
USB OTG Support	Enables/disables USB OTG Support
USB VBUS	Turn ON/OFF USB VBUS. Turn ON in HOST mode, and turn OFF in OTG device mode.
USB Per-Port Controll	Enables/Disables USB Per-port controll

5.2.4. Video Configuration

Configure video settings

The featured setting is:

Setting	Description
Intergrated Graphics Device	Enables/disables Intergrated Graphics Device.
Primary Display	Set IGD or PCI graphic device as the Primary Display. Options are Auto/IGD/PCie.
RC6 (Render Standby)	Enables/Disables Render standby support.
PAVC	Enables/disables Protected Audio Video control
Power Managment lock	Enables/disables Power mangement lock.
DOP CG	Enables/disables DOP Clock gating.
GTT Size	Set the GTT Size Options are 1MB/2MB
Apeture Size	Set the Aperture size Options are 128MB/256MB/512MB
IGD-DVMT Pre-Allocated	Set the DVMT5.0 Pre-Allocated (Fixed) Graphics Memory size used by the IGD.
IGD-DVMT total Gfx Mem	Set the size of DVMT 5.0 used by IGD
IGD Turbo	Enables/disables IGD Turbo
IGD Thermal	Enables/disables IGD Thermal
Spread Spectrum clock	Enables/disables Spread Spectrum clock

5.2.5. Thermal Configuration

Access this submenu to configure the thermal configuration.

The featured submenus are:

Setting	Description
Critical Trip Point	Set the value of temperature of the ACPI critical Trip point When this point is reached, the OS will shut down the system.
Passive Trip Point	Set the value of temperature of the ACPI Passive Trip point When this point is reached, the OS will begin to throttling the processor.
Active Trip Points	Set the value of temperature of the ACPI Active Trip point

5.2.6. SATA Configuration

Select this submenu to configure the SATA controller and HD.

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

5.2.7. ACPI Table/Feature Control

Setting	Description
FACP - RTC S4 Wakeup	This function will be avalible only when ACPI is enabled. Enables/disables S4 Wakup from RTC.
APIC - IO APIC Mode	This item is valid only for WIN2K and WINXP. Also, a frech install of the OS must occur when APIC mode is desired. Enables/disables the APIC mode
DSDT - ACPI S1	Enables/disables ACPI S1 state
DSDT - ACPI S3	Enables/disables ACPI S3 state
DSDT - ACPI S4	Enables/disables ACPI S4 state
BGRT - ACPI BGRT	Enables/disables ACPI BGRT Table

5.3. Security

The **Security** menu sets up the TPM (Trusted Platform Module) device and 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.

```
                          InsydeH20 Setup Utility                        Rev. 5.0
    Main   Advanced   Security   Power   Boot   Exit

  Select TPM Device                 <TPM 1.2>                  Select TPM Device to Initialize
  TPM 1.2 Status                    Not Installed
  TPM Operation                     <No operation>
  Supervisor Password               Not Installed

  Set Supervisor Password




  F1    Help        ↑↓  Select Item    F5/F6  Change Values       F9    Setup Defaults
  ESC   Exit        ↔   Select Menu    Enter  Select ► SubMenu    F10   Save and Exit
```

The featured setting is:

Setting	Description
Select TPM Device	Select TPM device to initialize if a TPM device is installed.
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.

5.4. Power

The **Security** menu sets up the password for the system's administrator account. Once the administrator password is set up, this BIOS Setup utility is limited to access and will ask for the password each time any access is attempted.
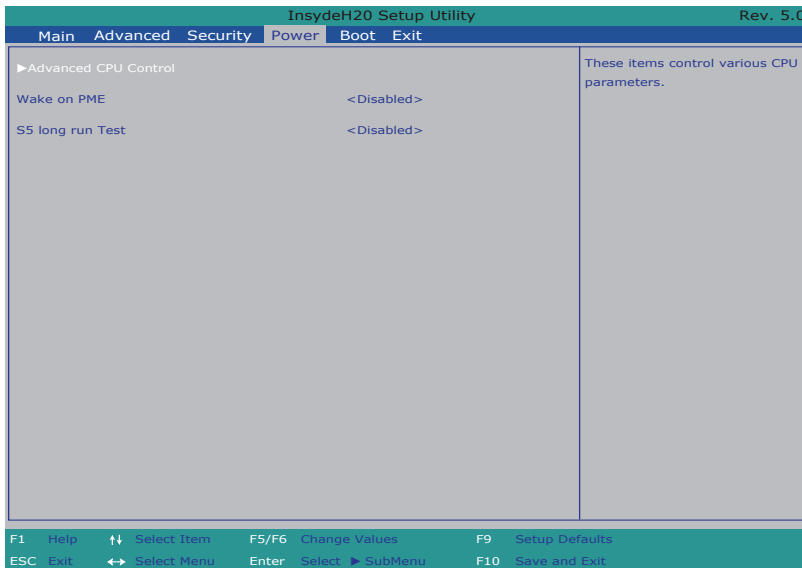
```
                          InsydeH20 Setup Utility                    Rev. 5.0
      Main    Advanced   Security   Power   Boot   Exit

   ►Advanced CPU Control                              These items control various CPU
                                                     parameters.
    Wake on PME                       <Disabled>

    S5 long run Test                  <Disabled>

 F1    Help      ↑↓  Select Item    F5/F6  Change Values    F9   Setup Defaults
 ESC   Exit      ↔   Select Menu    Enter  Select ► SubMenu F10  Save and Exit
```

The featured setting is:

Setting	Description
Advanced CPU Control	See 5.4.1 Advanced CPU Control on page 49
Wake on PME	Enables or diables Wake on PME. Determines the action taken when the system power is off and a PCI Power Management Enable wake up event occurs.
S5 Long run test	If enabled, force the system to enable RTC S5 wake up, even if OS disable it. Support ipwrtest to do RTC S5 wakeup. Options are Enabled/Disabled.

5.4.1 Advanced CPU Control

```
                        InsydeH20 Setup Utility                    Rev. 5.0
    Main    Advanced    Security    Power    Boot    Exit

    Advanced CPU Control                              Enable or disable processor XD
                                                      capability
    Use XD Capability              <Enabled>
    Limit CPUID Max value          <Disabled>
    Bi-Directional PROCHOT#        <Enabled>
    VTX-2                          <Enabled>
    TM1 and TM2                    <Enabled>
    AESNI Feature                  <Enabled>
    DTS                            <Enabled>
    Active Processor Cores         <ALL>

    P-States(IST)                  <Enabled>
    Boot Performance Mode          <Max Performance>
    Turbo Mode                     <Auto>
    C-States                       <Enabled>
    Enhanced C-States              <Disabled>
    Max C-States                   <C7>
    S0ix                           <Disabled>




    F1    Help       ↑↓ Select Item    F5/F6  Change Values    F9   Setup Defaults
    ESC   Exit       ↔  Select Menu    Enter  Select ▶ SubMenu  F10  Save and Exit
```

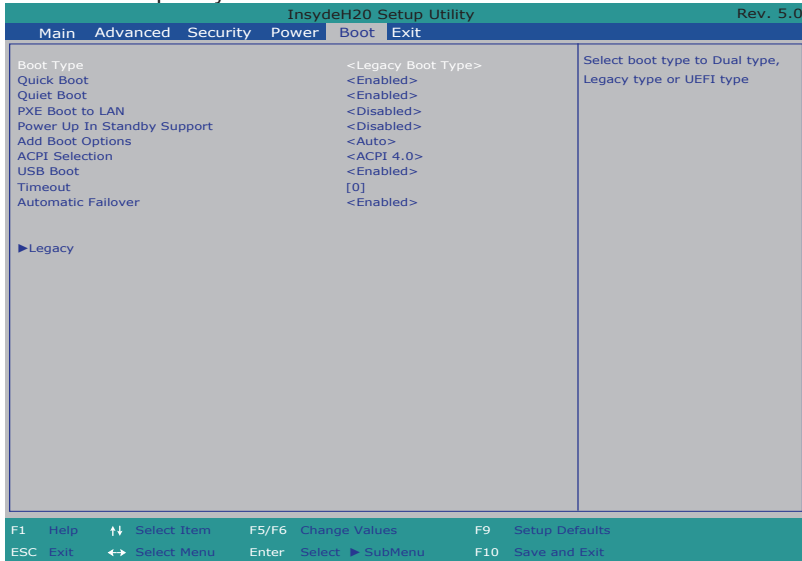| Setting	Description
Use XD Capability	Enables or disables processor XD capability.
Limit CPUID Max value	Sets whether the processor should limit the maximum CPUID input value to 03h when the operating system queries it upon startup. ▸ Select **Enabled** to allow a processor with Intel® Hyper-Threading technology to work with an operating system that doesn't support it. ▸ **Disabled** is the default.
Bi-Directional PROCHOT#	When a processor thermal sensor trips(either core), the PROCHOT# will be driven. If Bi-Directional is enable, external agents can drive PROCHOT# to throttle.
VTX-2	Enables/disables the CPU's VTX-2 function.
TM1 and TM2	Enable/disables TM1/TM2
AESNI Feature	Enable/disables AESNI
DTS	Enable/disables CPU Digital Thermal Sensor function.

Active Processor Cores	Set the Number of cores to enable in each processor package. Options are ALL/1
P-States(IST)	Enables/disables processor performance states (P-States)
Boot Performance Mode	Select the performance state that BIOS will set before OS handoff
Turbo Mode	Enables/disables processor Turbo mode (EMTTM enabled is required)
C-States	Enables/disables processor idle power saving states (C-states)
Enhanced C-States	Enables/disables P-state transitions to occur in combination with C-states.
Max C-States	Set the Max CPC state C7/C6/C1
S0ix	Enables/disables the platform to configure S0ix support.

5.5. Boot

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

```
                    InsydeH20 Setup Utility                    Rev. 5.0
    Main    Advanced   Security   Power   Boot   Exit

  Boot Type                          <Legacy Boot Type>    Select boot type to Dual type,
  Quick Boot                         <Enabled>             Legacy type or UEFI type
  Quiet Boot                         <Enabled>
  PXE Boot to LAN                    <Disabled>
  Power Up In Standby Support        <Disabled>
  Add Boot Options                   <Auto>
  ACPI Selection                     <ACPI 4.0>
  USB Boot                           <Enabled>
  Timeout                            [0]
  Automatic Failover                 <Enabled>

  ►Legacy




  F1    Help        ↑↓  Select Item   F5/F6  Change Values    F9   Setup Defaults
  ESC   Exit        ↔   Select Menu    Enter  Select ► SubMenu F10  Save and Exit
```

The featured settings are:

Setting	Description
Quick Boot	Allow InsydeH20 to Skip certain tests while booting . This will descrese the time need to boot the system.
Quiet Boot	Disables or enables booting in text mode.
PXE boot to LAN	Disables or enables PXE boot to LAN.
Power Up In Standby Support	Disable or enable Power Up In Standby Support.
Add Boot Option	Position in Boot Order for Shell, Network and Removables. Options are First, Last, and Auto.
APCI Selection	Select boot to Acpi 3.0/Acpi 1.0B Options are Acpi 1.0B/Acpi 3.0/Acpi 4.0/Acpi 5.0

USB Boot	Disables or enables booting to USB boot devices.
Timeout	Set the waiting seconds before booting the default boot selection
Automatic Failover	Enables/disables the Automatic Failover.
Legacy	**Boot Device Priority** **Normal Boot Menu** Select Normal boot option priority or Advance boot option Priority. **Boot type order** Change boot type order **Hard Disk Drive** Change CD/DVD-ROM Drive Boot order

5.6. Exit

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

```
                        InsydeH20 Setup Utility                    Rev. 5.0
     Main   Advanced   Security   Power   Boot   Exit

   Exit Saving Changes                            Exit system setup and save
   Save Changes Without Exit                      your changes.
   Exit Discarding Changes
   Load Optimal Defaults
   Load Customer Defaults
   Save Customer Defaults
   Discard Changes












 F1    Help      ↑↓  Select Item      F5/F6  Change Values      F9   Setup Defaults
 ESC   Exit      ↔   Select Menu      Enter  Select ► SubMenu   F10  Save and Exit
```

The features settings are:

Setting	Description
Exit Saving Changes	Saves the changes and quits the BIOS Setup utility.
Save Changes Without Exit	Save Changes but does not quit the BIOS.
Exit Discard Changes	Quits the BIOS Setup utility without saving the change(s).
Load Optimal Defaults	Restores all settings to defaults. ▸ This is a command to launch an action from the BIOS Setup utility rather than a setting.
Load Custom Default	Load custome default values
Save Custom Default	Save current setting as custome default
Discard Changes	Discard all changes without Exit.

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Appendices

Appendix A: Install mSATA Storage

To install an mSATA storage module to the computer:

1. Remove the top cover from the computer as described in <u>4.1.1. Open the Computer</u> on page <u>26</u>.

    The inside of the computer comes to view.
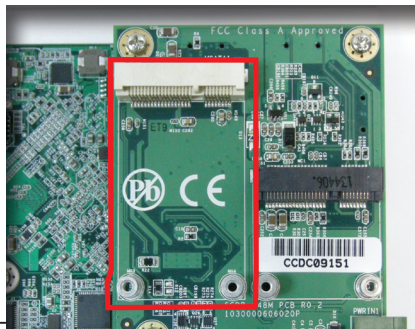
2. Find the socket for mSATA module as the picture above shows.

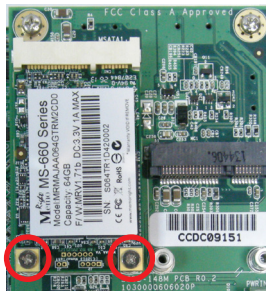3. Confront the mSATA module's edge connector with the socket's connector. Align the module's key notch the connector's break.
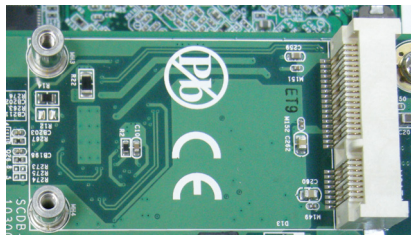
The module's key notch should meet
the connector's break.

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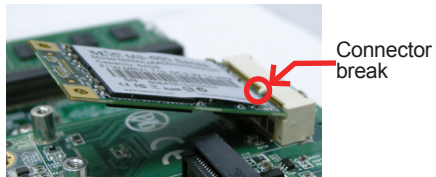
Connector break

Fully plug the module.

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

6. Restore the upper cover to the computer.

Appendix B: Wi-Fi Module WIFI-IN1300 Hardware/Software Installation   This page is intentionally left blank.

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 <u>Technical Support</u> on page <u>viii</u>.)

B.1. Install WIFI-IN1300

1. Remove the computer's upper cover as described in <u>4.1.1. Open the Computer</u> on page <u>26</u>.

2. Dismantle the power board from the main board.

   The **PCI Express Mini-card** socket for wireless modules comes to view.
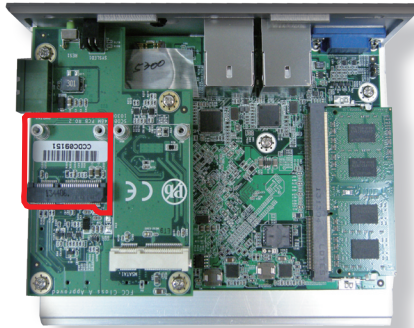
   Note the socket has a break among the connector .
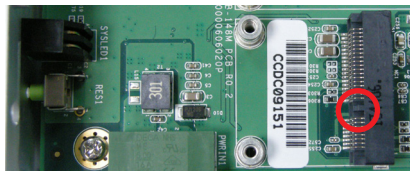
   The module's key notch should meet the connector's break.

3. Prepare the **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".

Two U.FL connectors, one is "MAIN", the other is "AUX".
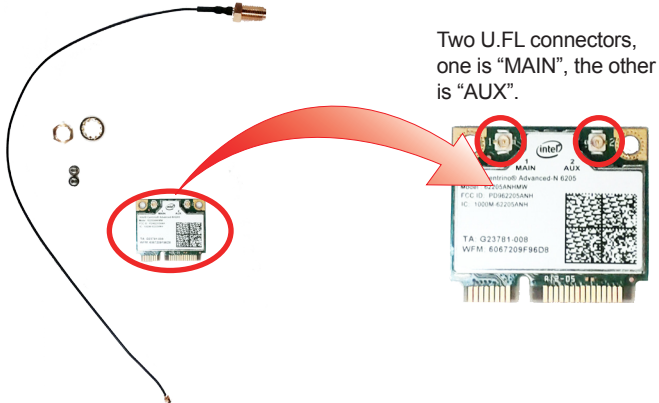
4. Plug the Wi-Fi module to the socket's connector by a slanted angle. Fully plug the module, and note the notch on the wireless module should meet the break of the connector.

Connector break

Fully plug the module.

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

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

the antenna hole

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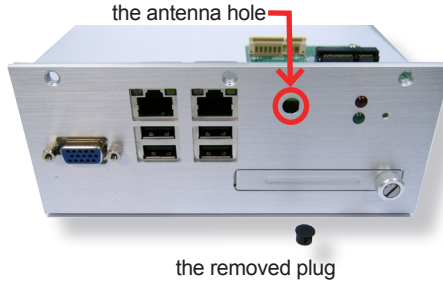
7. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.

SMA connector
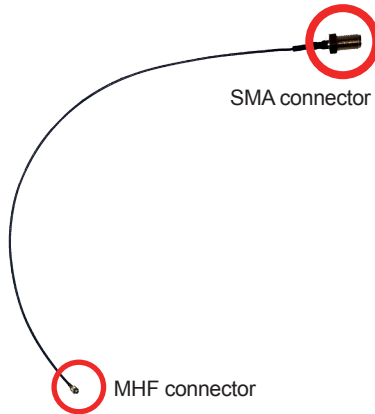
MHF connector

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

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

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

Remove the nut and washer.

Among the screw thread, there is a flat side.
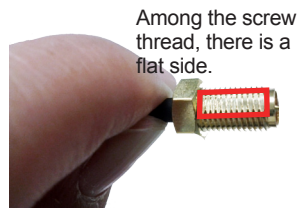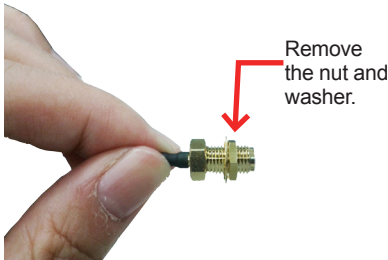
10. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flattened side with the antenna hole's flat side.

Arrange the flat side of the SMA connector to meet the flat side of the antenna hole.
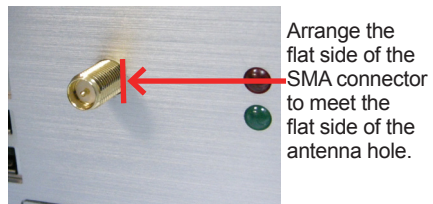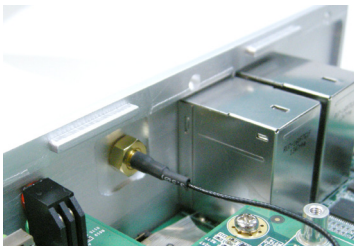
11. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.

Mount the washer and the nut to the SMA connector. Tighten the nut.
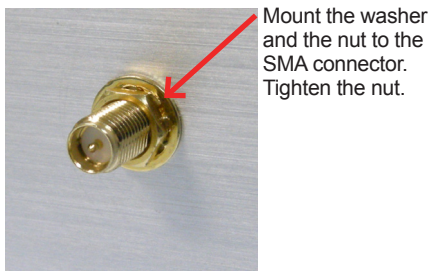
12. Restore the computer's side covers and top cover.

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

B.2. Install Device Driver & Application Program

As described in <u>2.3. Driver Installation Notes</u> on page <u>11</u>, 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 <u>Technical Support</u> on page <u>viii</u>.

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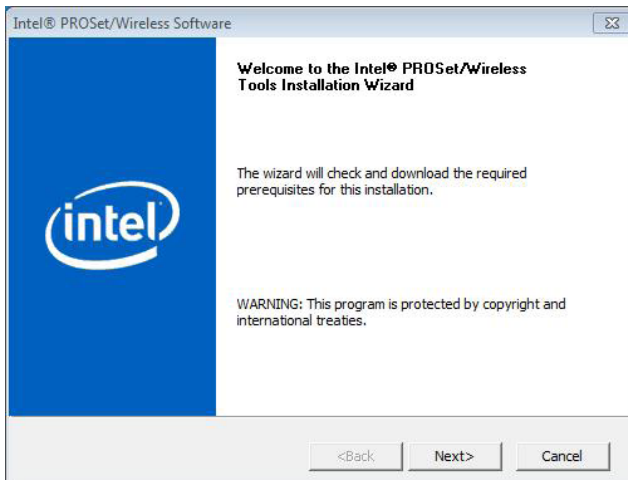
   The installer then opens.

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

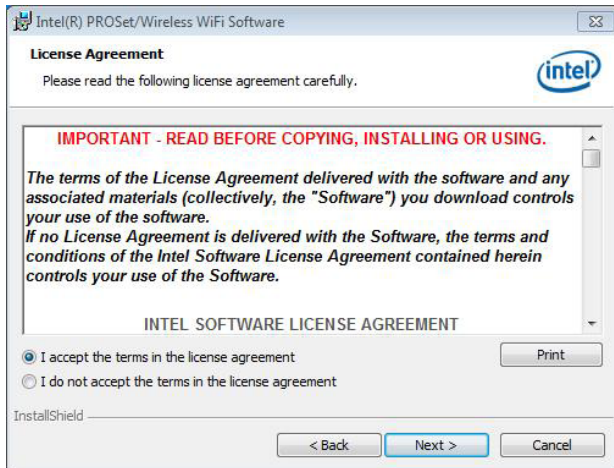   The installer then starts to prepare for the setup.
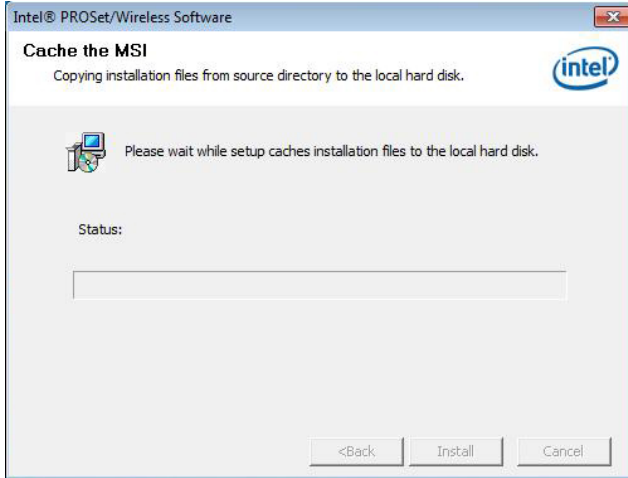
    When the preparation finishes, the installer prompts to install **Intel(R) PROSet/Wireless WiFi Softwar**e on the computer.
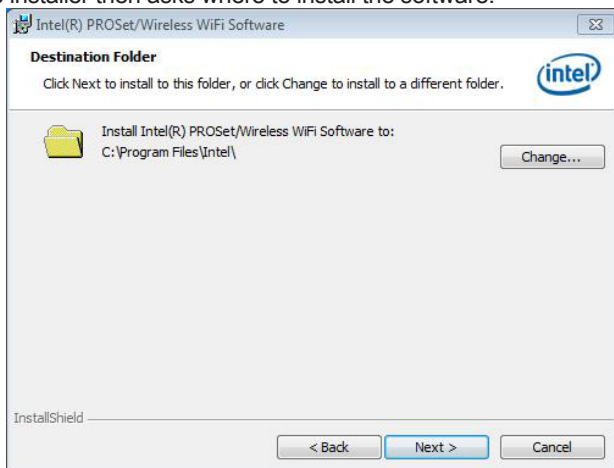
4. Click the **Next** button to proceed.

   The installer then prompts the license agreement.

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

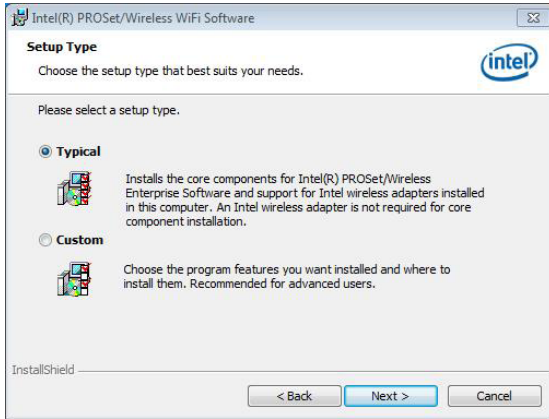   The installer then asks where to install the software.

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.

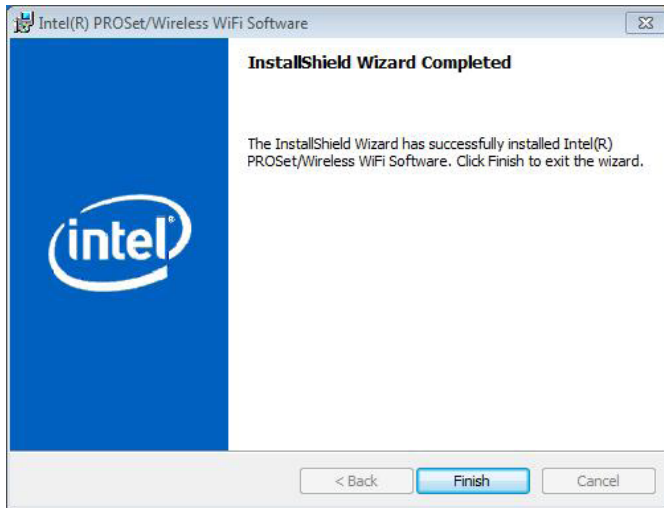   The installer then opens a **Setup Type** selection.

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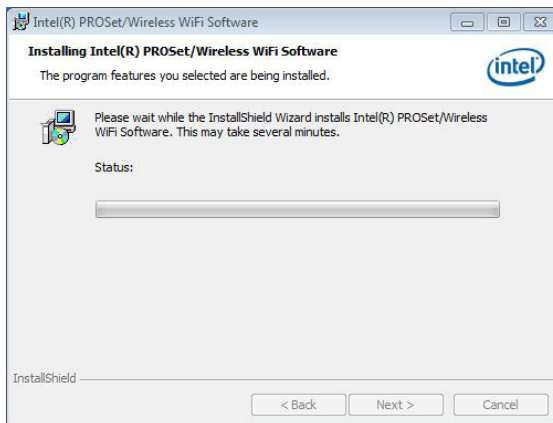
8. Click the **Finish** button to quit the software installation.

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.