User Manual
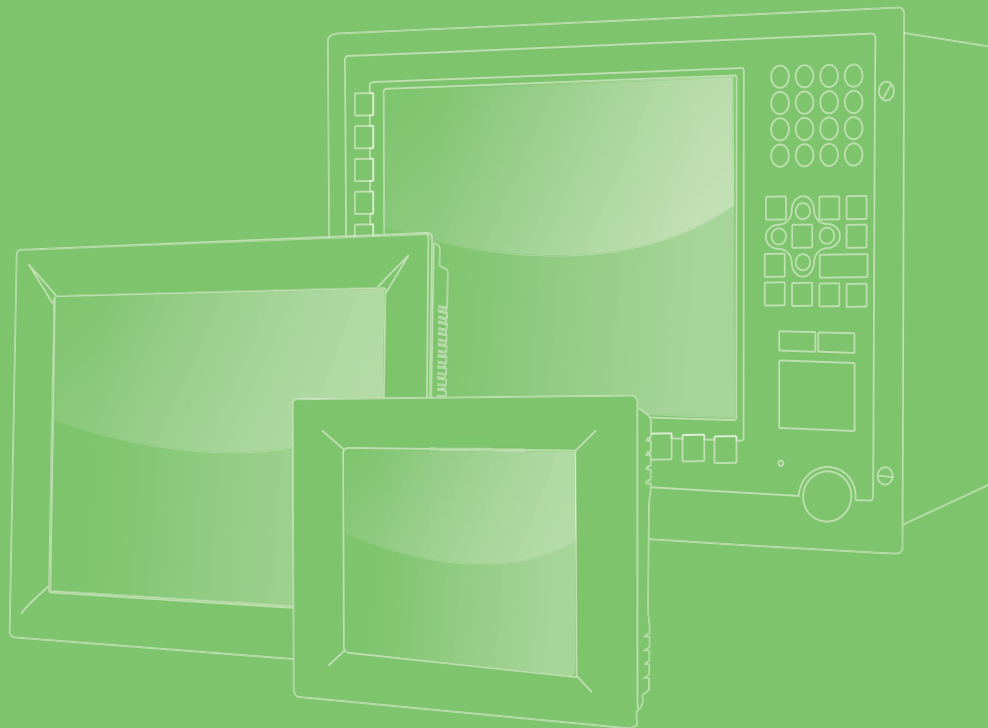
PPC-3150/3170

Intel® Atom E3845 Processor based panel PC, with 15"/17" color TFT LCD display

ADVANTECH

Enabling an Intelligent Planet

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Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

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If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Part No. 200K315010   Edition 1

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Declaration of Conformity

CE

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

CE

This product has passed the CE test for environwaremental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

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 environwarement. 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.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   – Product name and serial number
   – Description of your peripheral attachments
   – Description of your software (operating system, version, application software, etc.)
   – A complete description of the problem
   – The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - ■ The power cord or plug is damaged.
    - ■ Liquid has penetrated into the equipment.
    - ■ The equipment has been exposed to moisture.
    - ■ The equipment does not work well, or you cannot get it to work according to the user's manual.
    - ■ The equipment has been dropped and damaged.
    - ■ The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVironwareMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVironwareMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Power Warning

The power is fit for areas with an altitude of 5000 M below.

Battery Information

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

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Contents

Chapter 1

General Information

This chapter gives background information on PPC-3150/3170 panel PC.

Sections include:
- Introduction
- Specifications
- Dimensions

1.1 Introduction

The PPC-3150&3170 with 15"&17" Fanless panel PC doesn't only deliver high performance by Intel Atom processor but also supports a wide operating temp. (-20 ~ 60° C) and wide range of power input (9 ~ 32 Vdc). It consolidates performance and reliability in one system. With rich I/Os as four COM (two internal ports optional for COM module), one USB 3.0, one isolated RS-422/485 and dual Intel Gigabit Ethernet make it easier to connect to devices and be integrated into machine building industry. The PCI/PCIe expansion is allowed to add on field bus or proprietary card makes more application possibility.

1.2 Specifications

1.2.1 Specification Comparison

Product	PPC-3150	PPC-3170
LCD Specification	15" LCD	17" LCD
Display Type	15" TFT LCD (LED backlight)	17" TFT LCD (LED backlight)
Max. Resolution	1024 x 768	1280 x 1024
Color	16.7M	16.7M
Dot matrix	0.297 x 0.297mm	0.264 x 0.264mm
Viewing Angle	80 (left), 80 (right), 70 (top), 70 (bottom)	80 (left), 80 (right) 60 (top), 80 (bottom)
Brightness	400 cd/m2	350 cd/m2
Contrast	700	800
Backlight Lifecycle	50, 000 hours	50, 000 hours
Weight	5.3 kg (11.6 lb)	6.27 kg (13.9 lb)
Dimensions	396.5 x 317.6 x 65.3 (mm) (15.6" x 12.5" x 2.57")	442.0 x 362.0 x 69.5 (mm) (17.4" x 14.25" x 2.73")

1.2.2 General Specifications

	Model No.	Frequency	Cache
CPU	Atom E3845	1.91 GHz	2 M
Chipset	Intel Atom Processor E3800 Series		
Memory	1 x 204-pin slot support up to 4 GB DDR3L		
Storage 1	1 x 2.5" SATA bay		
Optional Storage & I/O	Either one ■ 1 x Full size mSATA ■ CFast card (optional module) ■ CF card (optional module) ■ Internal USB connector for USB dongle (optional module) ■ 2 x DB9 for two RS-232 or one RS-232 and one GPIO (optional module)		
Network (LAN)	2 x Gigabit Ethernet (Intel I210)		
I/O Ports	■ 1 x isolated RS-422/485 ■ 4 x RS-232 (2 internal for optional COM module) ■ 1 x GPIO (8 channels, TTL level) (Reserved) ■ 1 x USB 3.0 + 3 x USB 2.0 ■ 2 x Gigabit Ethernet ■ 1 x D-SUB VGA port ■ 1 x DP1.1a port ■ 1 x Line-out, 1 x Mic-in, 2 x 1 W speaker (internal)		
Expansion Slots	Either one: ■ 1 x PCI (standard) ■ 1 x PCIe x 1 (in the accessory box)		
Other Expansions	1 x Full-size Mini PCIe slot		
OS Support	WES7 / Windows 7 / Windows 8		

1.2.3 Power Specifications

Model Name	PPC-3170	PPC-3150
Power Consumption	34 W (Test system: Win7 32 bit)	30 W (Test system: Win7 32 bit)
Output Power	50 W	
Input Voltage	9 ~ 32 V_{DC}, 6 A ~ 2 A	

Note! *For test conditions for above power consumption, please refer to Note 1 and Note 2.*

1.2.4 Touchscreen Specifications

Type	5-wire Resistive
Resolution	2048 x 2048
Light Transmission	81%+/-3%
Controller	USB interface
Durability (Touches)	36 million
Software Driver Support	Windows 7/ Windows 8

1.2.5 Environwarement Specifications

Operation Temperature	0 ~ 50° C (32 ~ 122° F) with 2.5" SATA HDD -20 ~ 60° C (-4 ~ 140° F) with -40 ~ 85 ° C mSATA or 2.5" SSD
Storage Temperature	-40 ~ 60° C (-40 ~ 140° F)
Relative Temperature	10 ~ 95% @ 40° C (non-condensing)
Shock	10 G peak acceleration (11 msec duration), IEC 60068-2-27 compliant
Vibration	5 ~ 500 Hz, 1 Grms, IEC 60068-2-64 compliant

1.2.6 Certification Specifications

EMC	BSMI, CE, FCC Class A
Safety	CB, CCC, BSMI, UL

1.2.7 IP

Front Panel IP Grade	IP65 compliant

Note 1:

Test conditions of power consumption for PPC-3170:

Test Condition	Test Configuration	Test System	Power Consumption (W)
Burn-in 7.0	Memory: 4G DDR3L 1333 HDD: 500G 2.5"SATAIII MSATA: MSATA 32G MLC IO: COM Port RS232 loopback x 4, USB 3.0 x 1, USB 2.0 x 4	ATOM E3845 2M 1.91G	Window 7 32 bit	34

Note 2:

Test conditions of power consumption for PPC-3150:

Test Condition	Test Configuration	Test System	Power Consumption (W)
Burn-in 7.0	Memory: 4G DDR3L 1333 HDD: 500G 2.5"SATAIII MSATA: MSATA 32G MLC IO: COM Port RS232 loopback x 4, USB 3.0 x 1, USB 2.0 x 4	ATOM E3845 2M 1.91G	Window 7 32 bit	30

1.3 Dimensions

PPC-3150:

381.0

302.0

CUT OUT
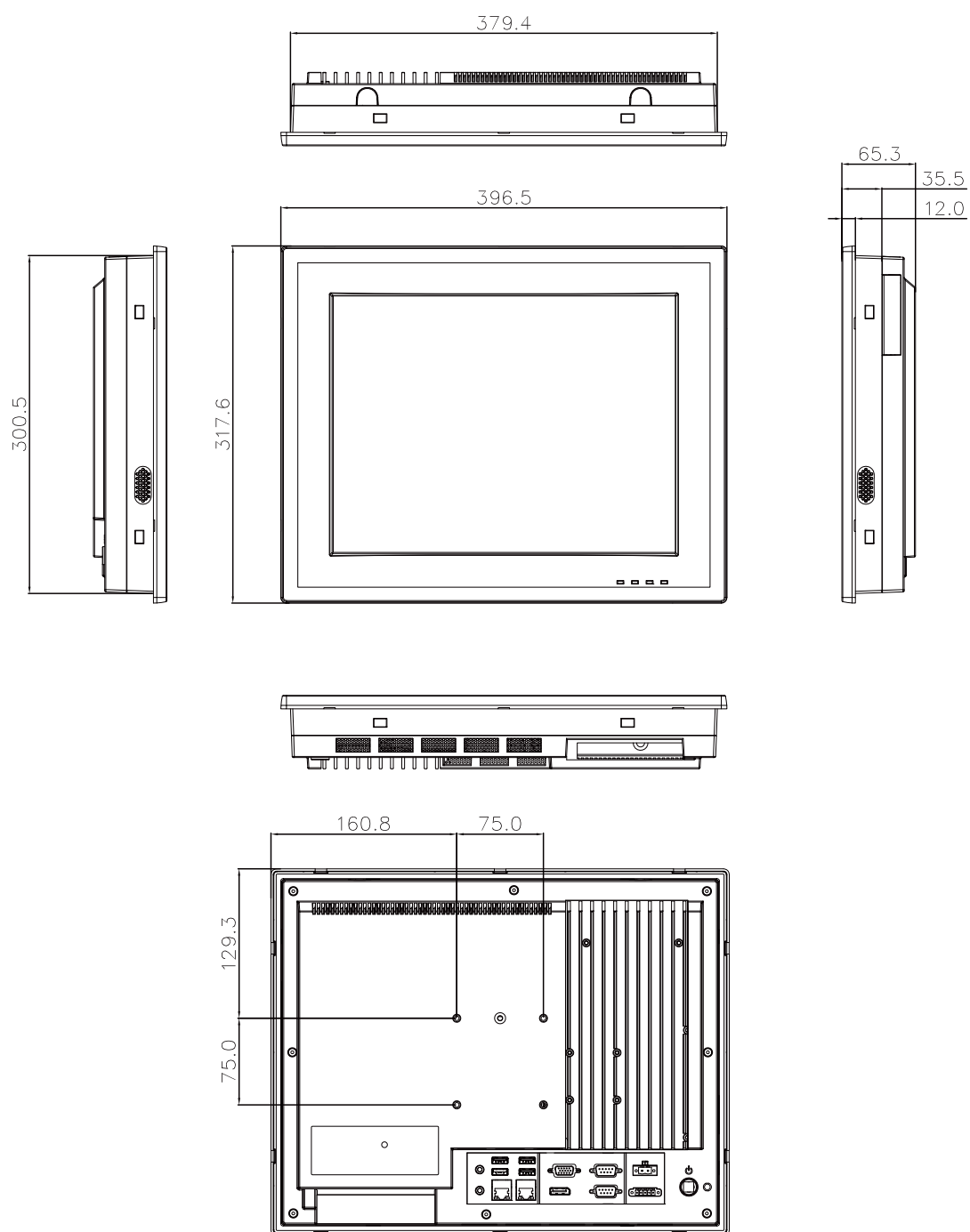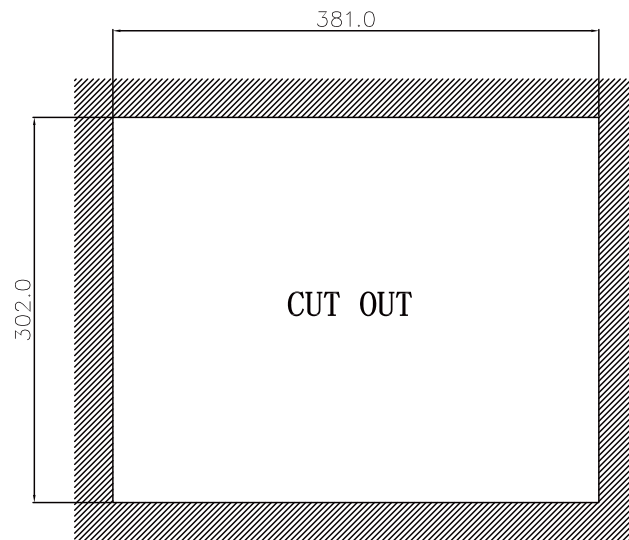
Unit: mm

Figure 1.1 PPC-3150 dimensions

Warning! *Fixed VESA screw specification: M4; screw depth: 8 mm (Max).*
Use suitable mounting apparatus to avoid risk of injury.

PPC-3170:

427.0

347.0

CUT OUT
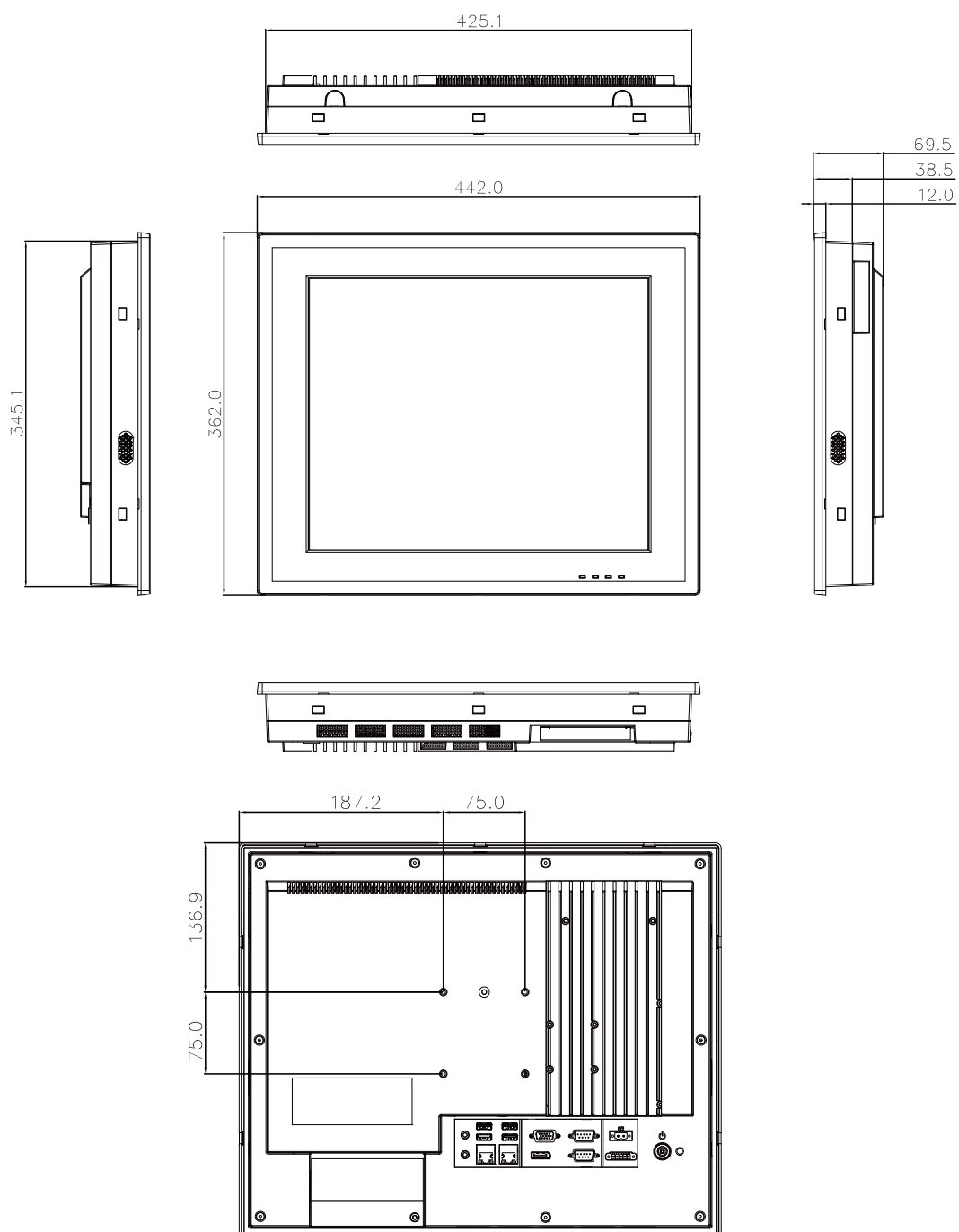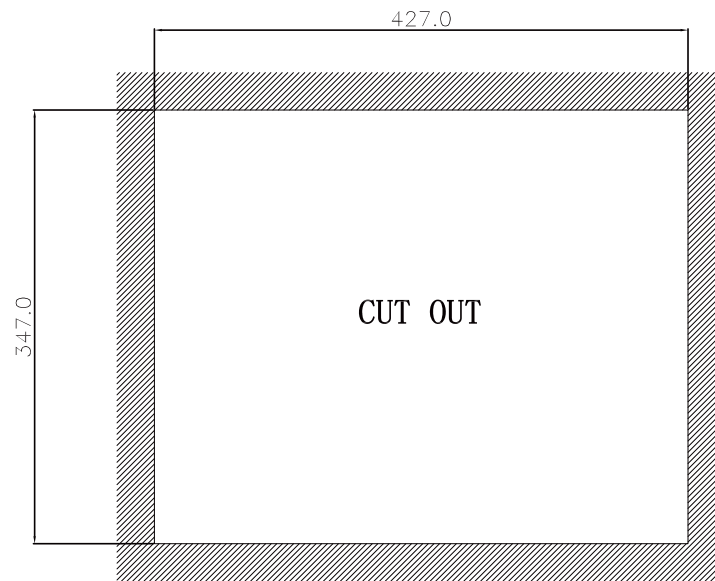
Unit: mm

Figure 1.2 PPC-3170 dimensions

Warning! *Fixed VESA screw specification: M4; screw depth: 8 mm (Max).*
Use suitable mounting apparatus to avoid risk of injury.

Chapter 2

System Installation & Setup

Sections include:
- Quick Installation Guide
- Installation Procedures
- Installing HDD
- Installing Mini SATA
- Install Wireless LAN Card
- Install Riser Card
- AT/ATX Function Switch
- Hook Installation
- Installing Optional Modules

2.1 Quick Installation Guide

Before you start to set up the panel PC, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below.

When you place the panel PC upright on the desktop, its front panel appears asshown in Figure 2.1.

Figure 2.1 Front Panel

1. (Network status LED) LAN LED
2. (HDD status LED) HDD LED
3. (Power status LED) POWER LED

Status	LAN LED		HDD LED	POWER LED
	LAN1	**LAN2**		
Power off (S5)	Off	Off	Off	Off
Power on (S0)	Yellow (Operating, blinking)	Green (Operating, blinking)	Yellow (Operating, blinking)	Green
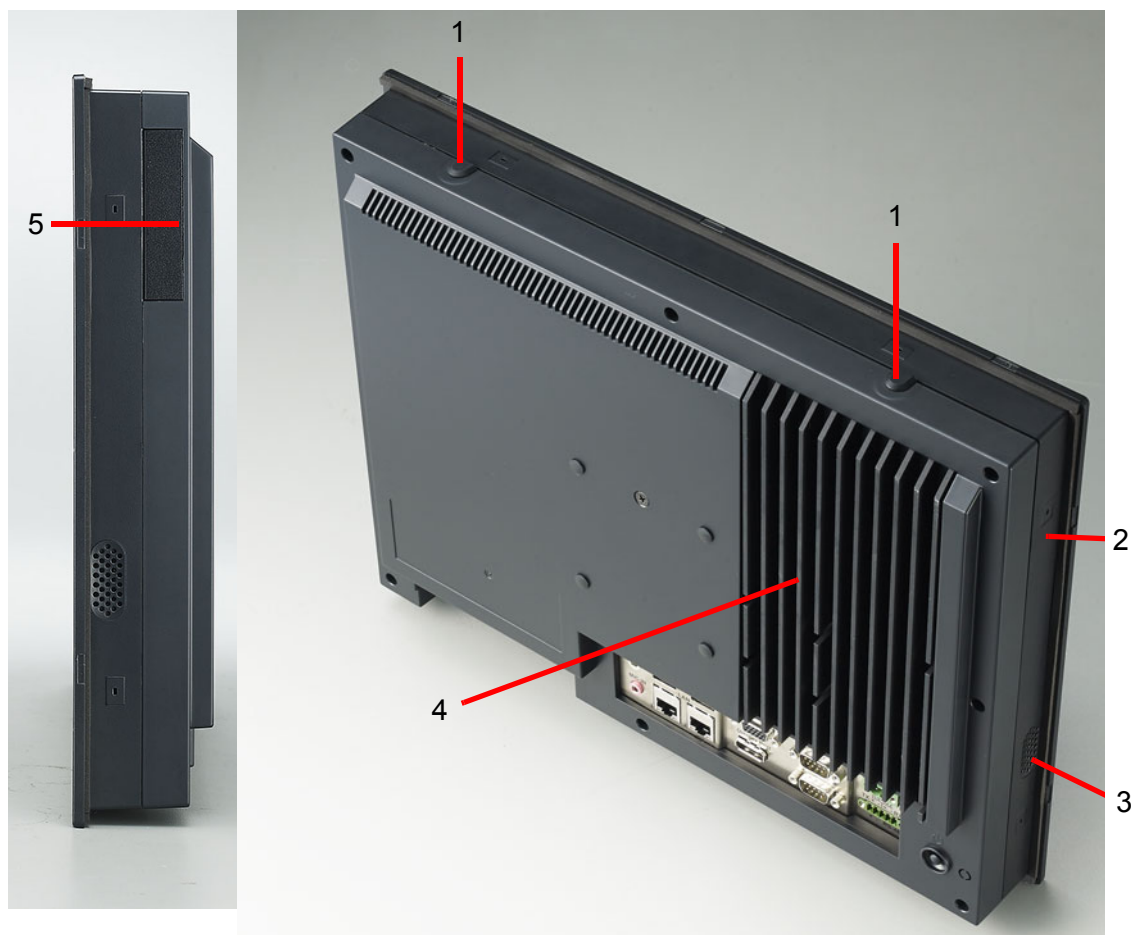
Figure 2.2 Side View

1. Antenna hole
2. Panel mounting hook hole
3. Speakers (right and left)
4. CPU heatsink
5. Optional module expansion slot

Note! *Fixed VESA screw specification: M4; screw depth: 8 mm (Max).*

I/O connectors:
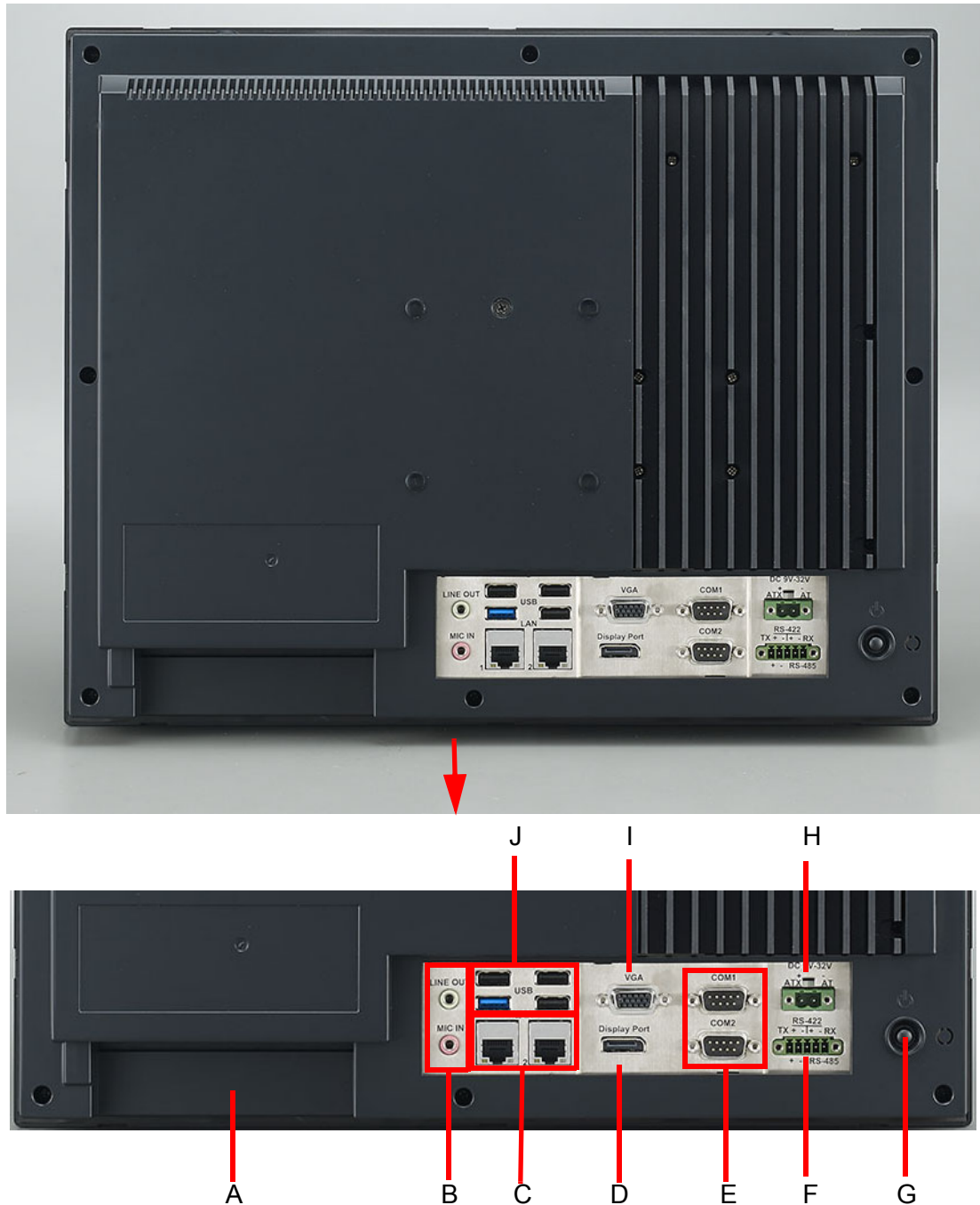
Figure 2.3 I/O Connectors

A: Expansion slot (PCI or PCIe x1)   F: Isolated RS-422/485 port
B: Line_out/Mic-in   G: Power button
C: 2 x Giga Ethernet ports   H: DC jack and AT/ATX switch
D: Display port   I: VGA port
E: 2 x RS-232 port   J: 1 x USB 3.0 + 3 x USB 2.0

2.2 Installation Procedures

2.2.1 Connecting Power Cable

The panel PC has DC power socket (9 ~ 32 V). When connecting the power cable, please hold the plug end. Please follow the procedures below:

1. If you want to use AT power, please switch to AT mode as shown in below figure (ATX mode is by default).
2. Connect 2-pin male connector of the power cable to power socket (2-pin male connector is in accessory box).

Figure 2.4 Connect Power Cable

2.2.2 Connect Keyboard and Mouse

Connect the keyboard and mouse to panel PC's I/O interfaces.

2.2.2.1 Connecting Power

The power button is located in the right bottom side of the panel PC.

> **Note!** *Power cable and adapter are optional.*

2.3 Install Memory Card

1. Remove the 11 screws and take down the 4 plugs of the rear cover. (See Figure 2.5 and 2.6)

Figure 2.5

Figure 2.6

2. Loosen the 8 screws of the heat sink and then remove it. (See Figure 2.7)
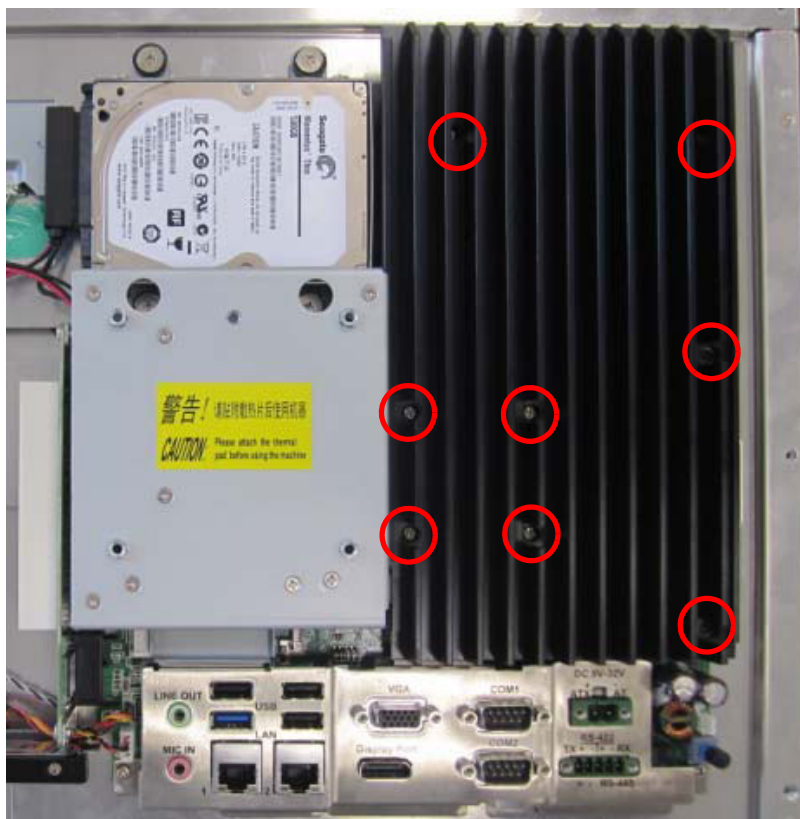
Figure 2.7

3. Insert the memory card into the slot as indicated in the red square below, and take out the thermal pad for the memory and CPU from the accessory box, then the installation of memory card is finished. (See Figure 2.11)
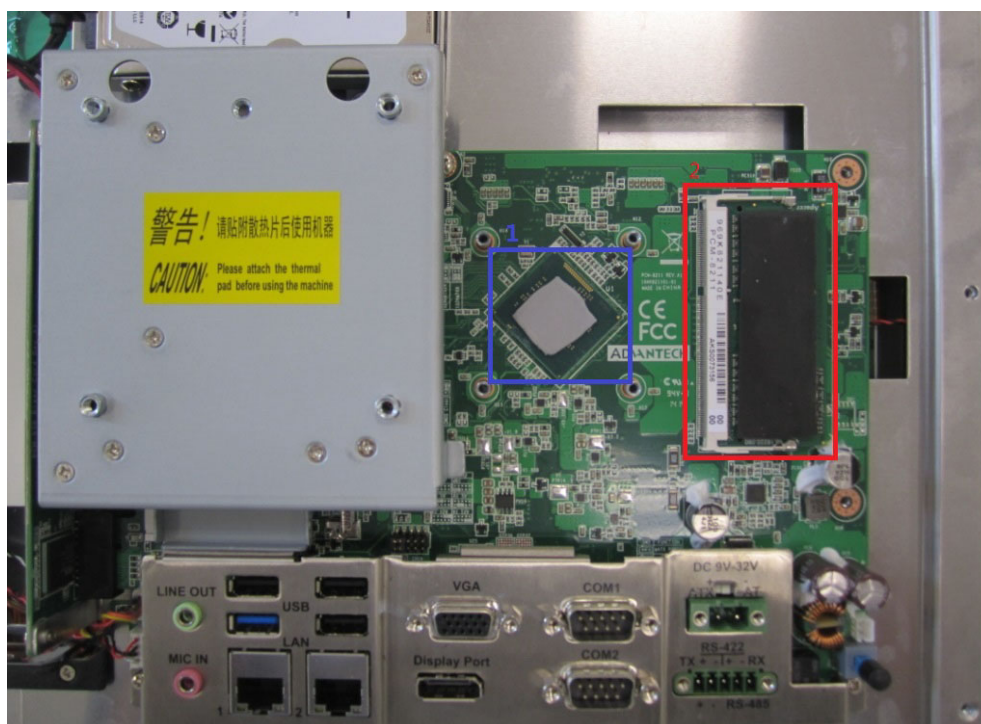
Figure 2.8

2.4 Installing HDD

1. Remove the 11 screws on rear cover and take down the 4 plugs. (See Figure 2.5 and 2.6)
2. Remove the four screws on VESA ironware. (See Figure 2.9)

Figure 2.9

3. Unscrew the four screws on HDD ironware and remove it. (See Figure 2.10)
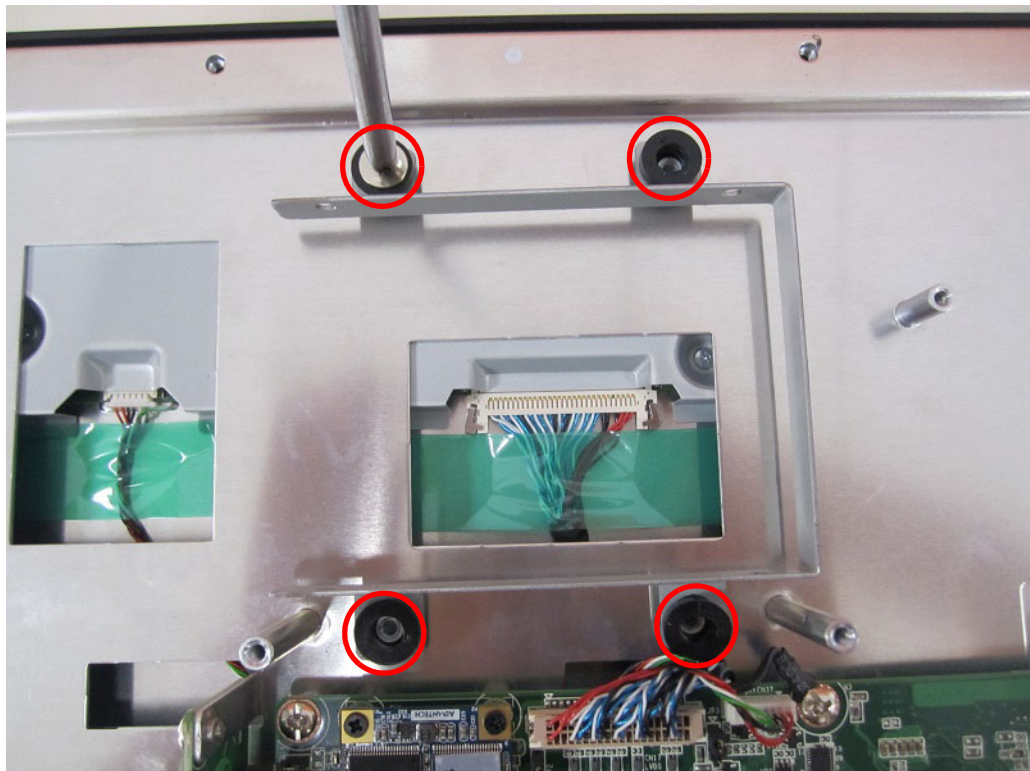
Figure 2.10

4. Take out 4 screws from the accessory box and fix them to the HDD ironware bracket (See Figure 2.11). Then take out the HDD data cable from the accessory box and connect it to the HDD, the assembled HDD module is shown as Figure 2.12.

Figure 2.11

Figure 2.12

5. Relock the HDD bracket, and connect the data cable to the mainboard. (See Figure 2.13)
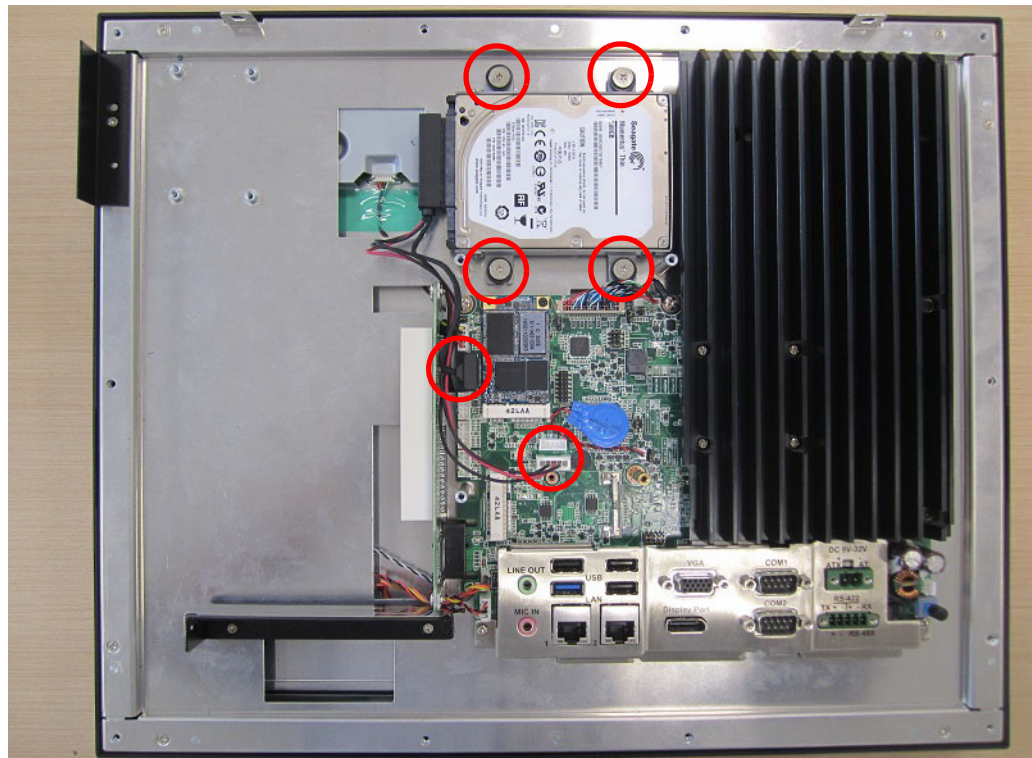
Figure 2.13

2.5 Installing MiniSATA

1. Follow installation steps 1 ~ 2 in the Section 2.4, and you'll see the disassembled machine as shown in Figure 2.14.
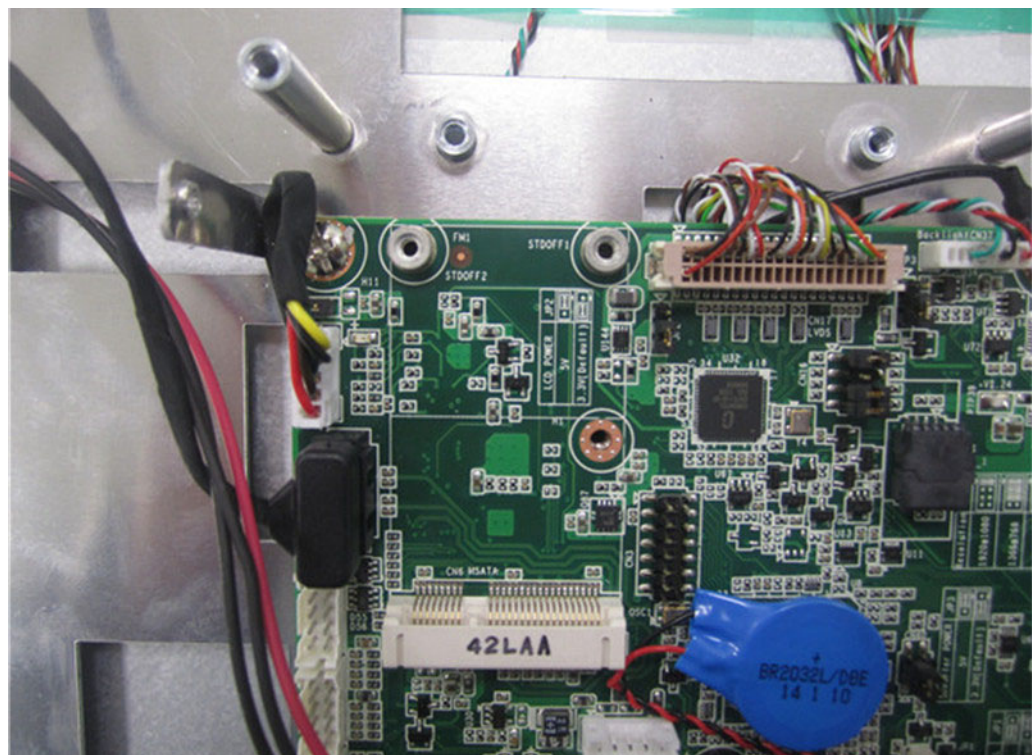
Figure 2.14

2. When installing MiniSATA long card, insert Mini SATA card into the correct main-board slot, and fix it with two M2.5x4 screws in the accessory box. Then take out the thermal pad from the accessory box and attach it onto MiniSATA card. (See Figure 2.15)
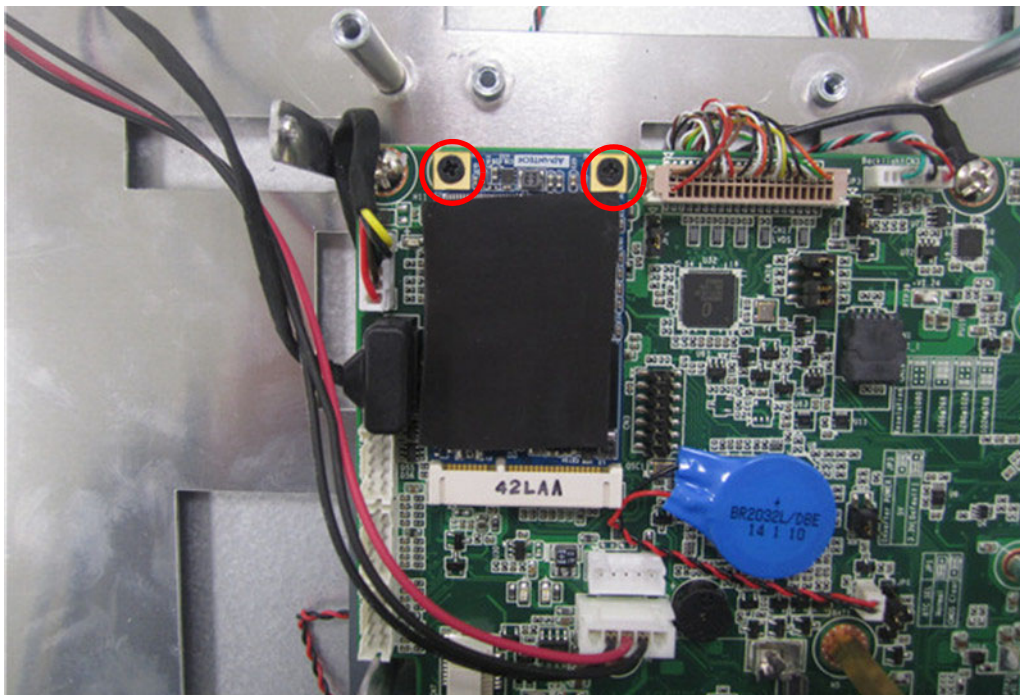
Figure 2.15

3. When installing MiniSATA short card, first fix it with a copper cylinder screw from the accessory box. (See Figure 2.16) Then insert the short card into the correct mainboard slot, finally fix it with a screw and attach the thermal pad onto the card, which can both be found in the accessory box. (See Figure 2.17 and Figure 2.18)
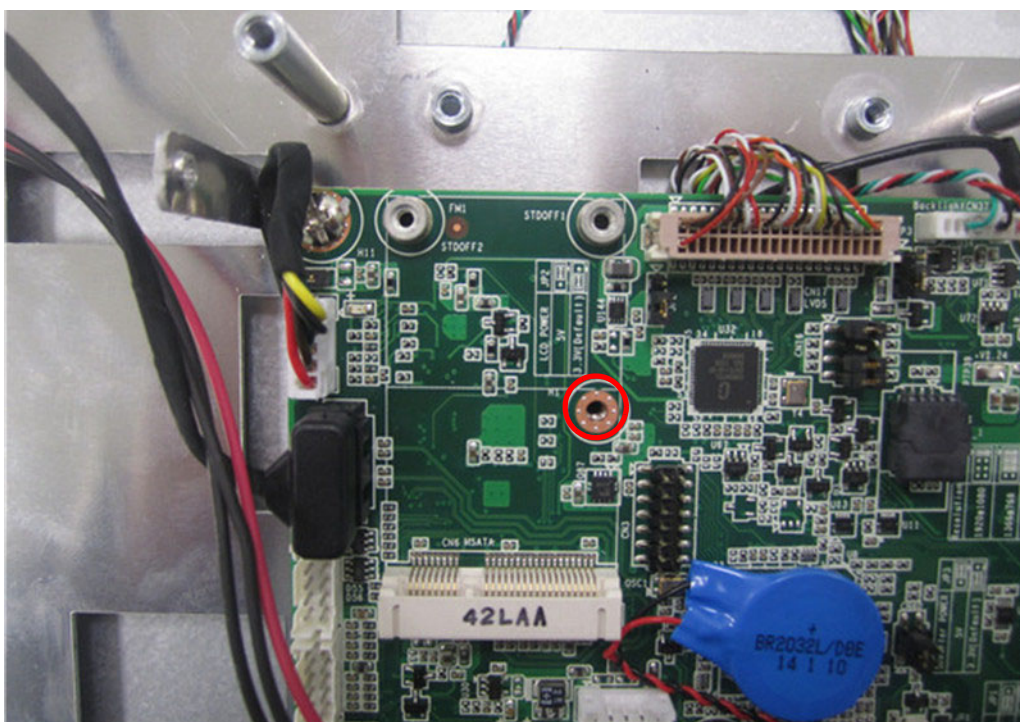
Figure 2.16
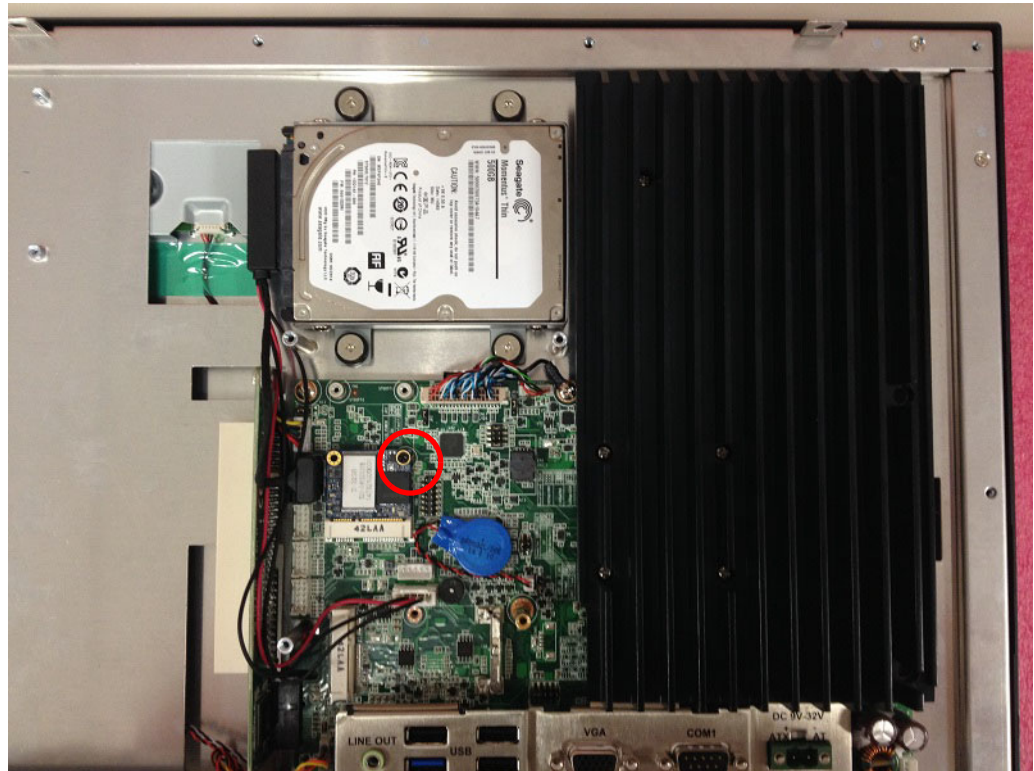
Figure 2.17
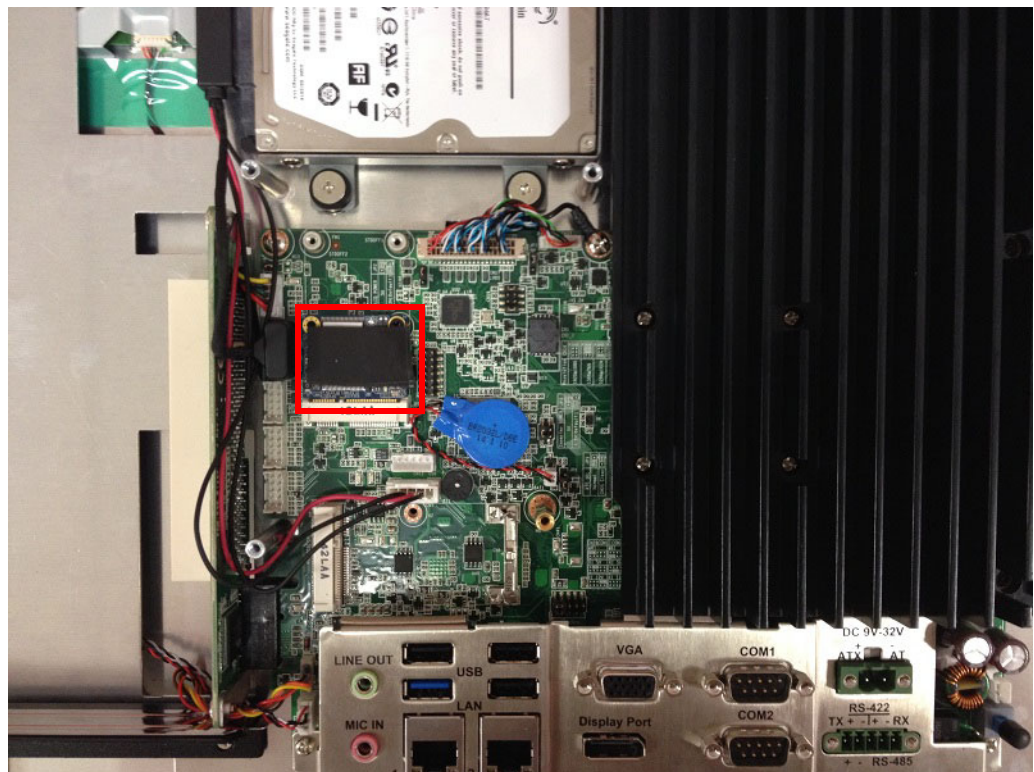
Figure 2.18

4. Follow disassemble steps to replace and fix VESA ironware and rear cover.

2.6 Install Wireless LAN Card

1. Follow installation steps 1 ~ 2 in the Section 2.4, and you'll see the disassembled machine as shown in Figure 2.19.
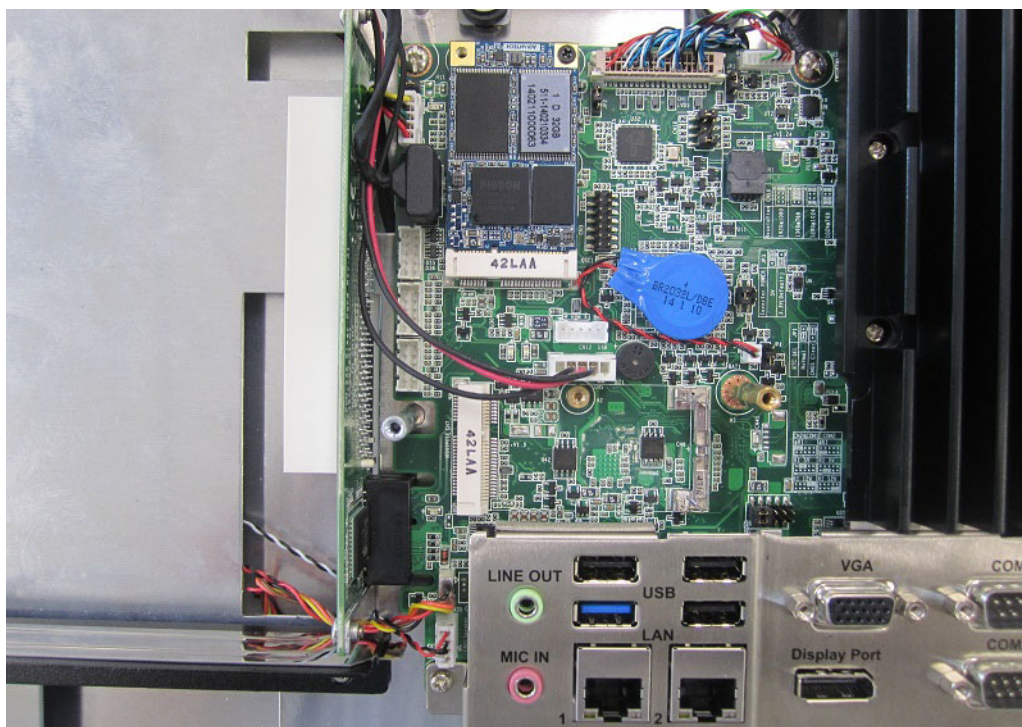
Figure 2.19

2. When installing Wireless short card, first take out a hexagonal screw from the accessory box and fix it to the below area. (See Figure 2.20) Then insert the short card into the correct mainboard slot, and fix it with a screw from the accessory box. (See Figure 2.21)
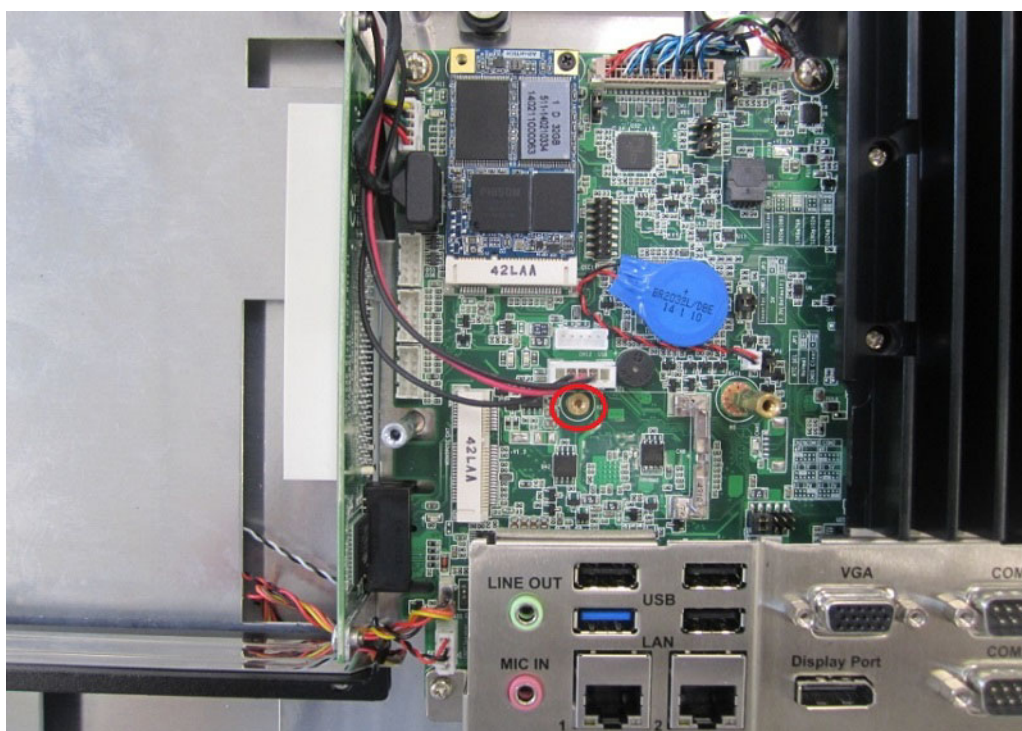
Figure 2.20
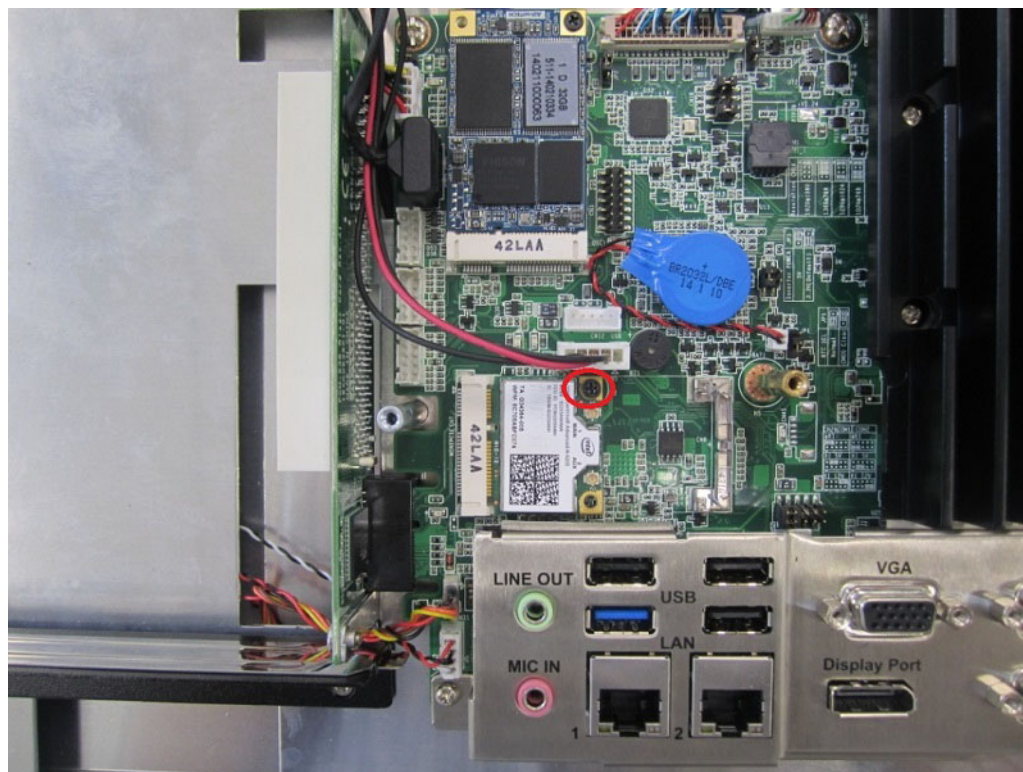
Figure 2.21

3. Take down the antenna holder in the upper left corner and upper right corner of the machine. (See Figure 2.22) (This step is only for PPC-3150)
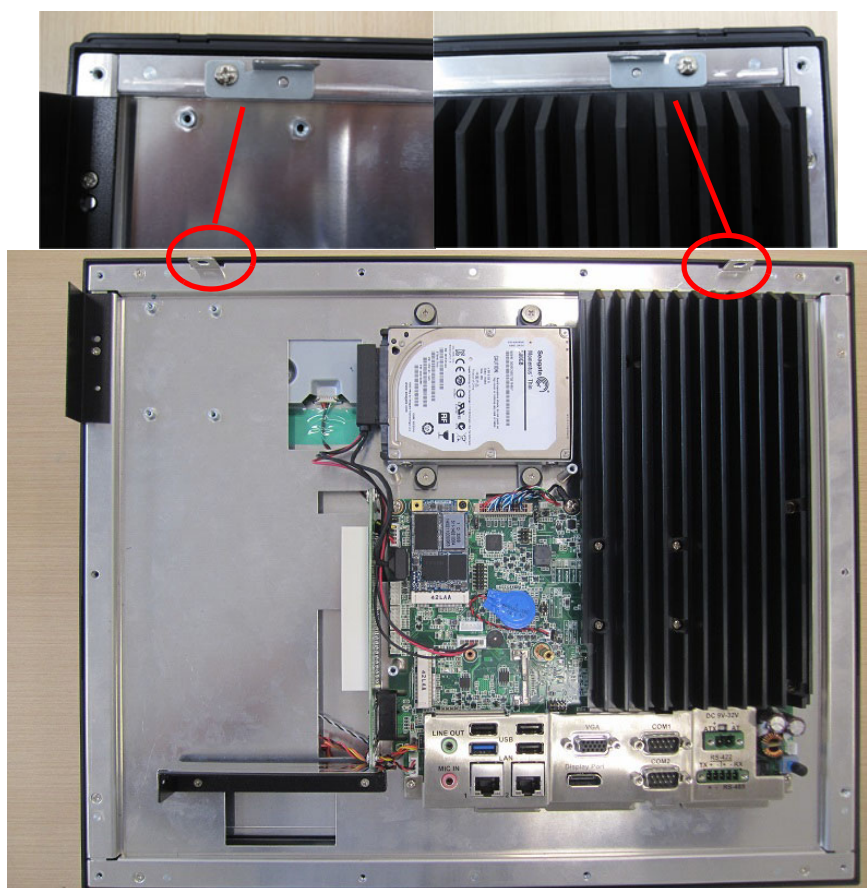
Figure 2.22

4.   Connect the cables of the wireless LAN card to the antenna holder. Please note
      the installation direction of the cable end and nut / washer. (See Figure 2.23)
      (This step is only for PPC-3150)
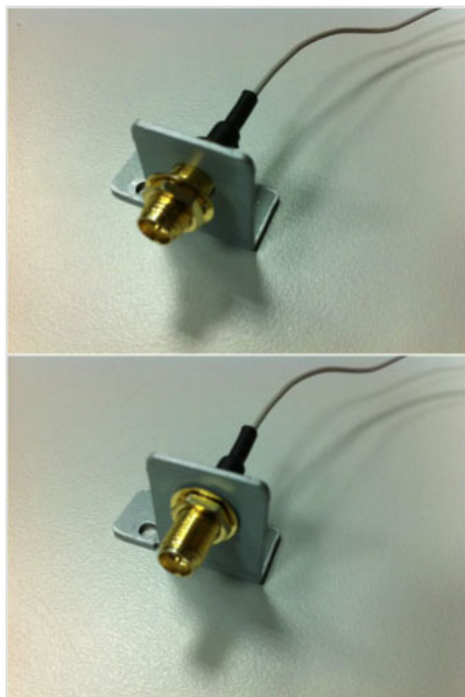
Figure 2.23

5.   Lock the assembled antenna holder onto the machine, and connect the cable to
      wireless LAN card. (See Figure 2.24) Then take out the thermal pad from the
      accessory box and attach it onto the wireless LAN card.

Figure 2.24

6. Relock the VESA ironware, and take down the two plugs of the top rear cover. (See Figure 2.25) Then return the rear cover and finish the installation of wireless LAN card module and antenna. (See Figure 2.26)
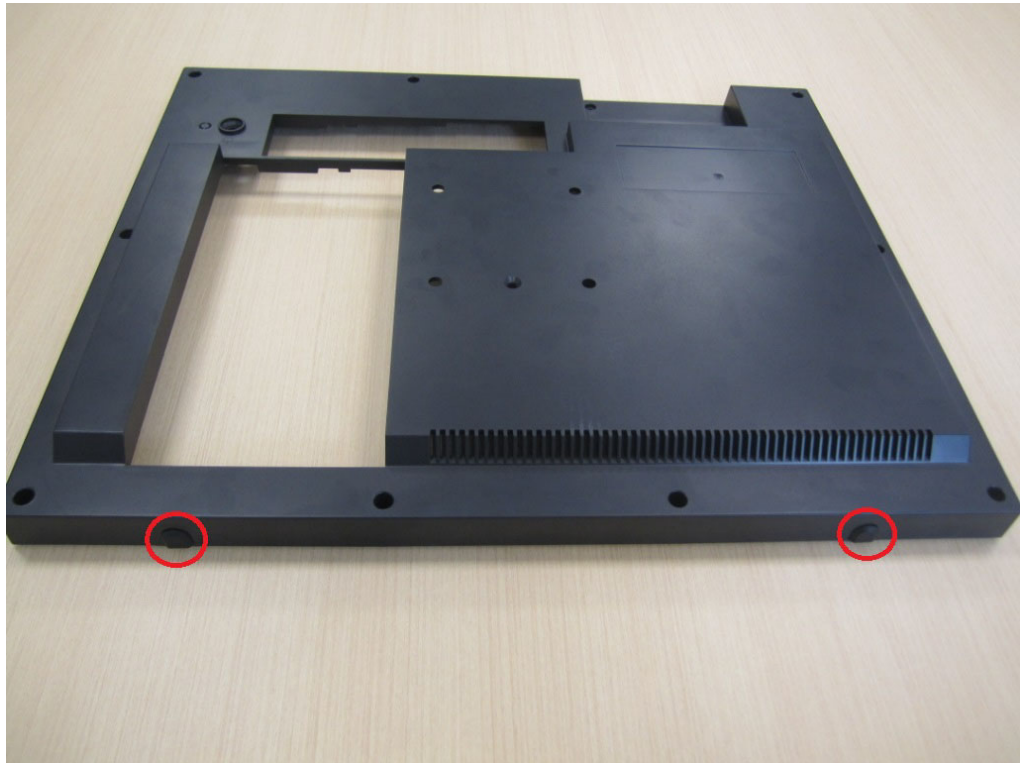
Figure 2.25

Figure 2.26

Note! *In above installation procedures of wireless LAN card, PPC-6150-WLANE ia actually adopted.*

2.7 Install Riser Card

1. Remove the rear cover of the panel PC.
2. Insert the riser card into the slot, and fix with two screws. (See Figure 2.27)
   The riser card is PCIE to PCI by system default, and the one in the accessory box is PCIE to PCIE, which allows users to select by themselves.
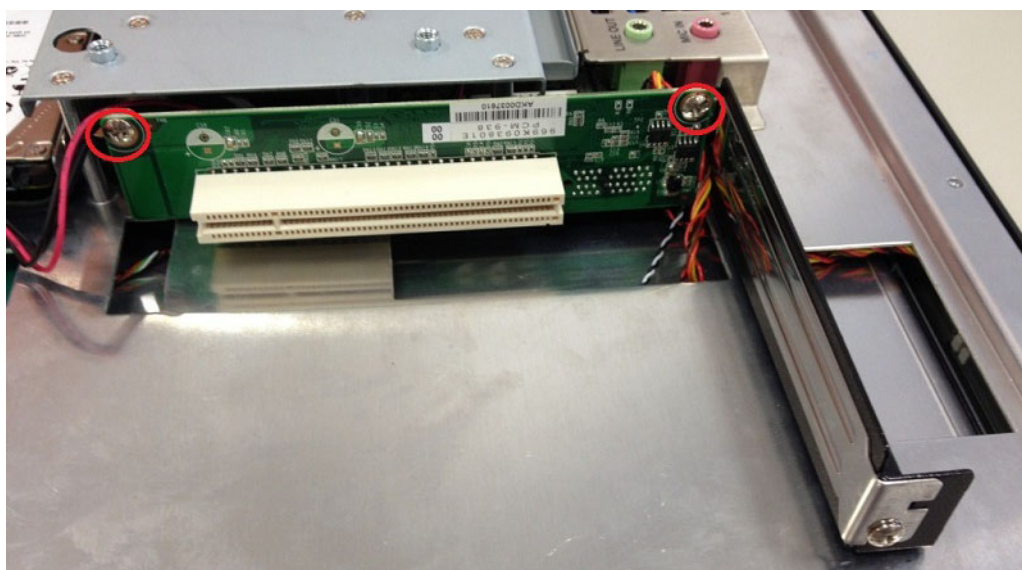
Figure 2.27

3. Remove the card slot shield and insert the card (see Figure 2.28), then tighten the screws and return the rear cover.

Figure 2.28

> **Note!** *The maximum dimension of the riser card is 176 mm x 107 mm for both PPC-3150 and PPC-3170.*

2.8 AT/ATX Function Switch

The switch built into the machine, lets you choose between AT/ATX functions without removing the rear cover. (See Figure 2.29 and Figure 2.30)

Figure 2.29 ATX Mode
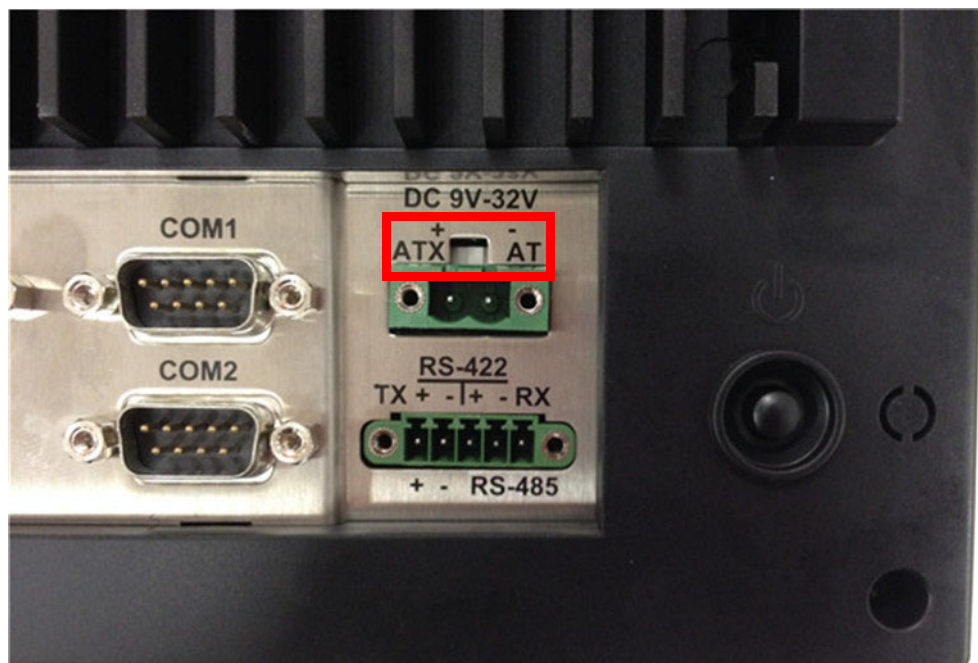
Figure 2.30 AT Mode

2.9 Hook Installation

Follow the figures below:

Wall Mount Bracket Installation

Plastic plug

Take out the plastic plugs around the machine by the tweezers.

wall mount bracket

Put machine into the cabinet and prepare the wall mount brackets.

Put the plastic plugs into hole according to the arrow and hookup machine.

screw

Lock screw and fixed machine
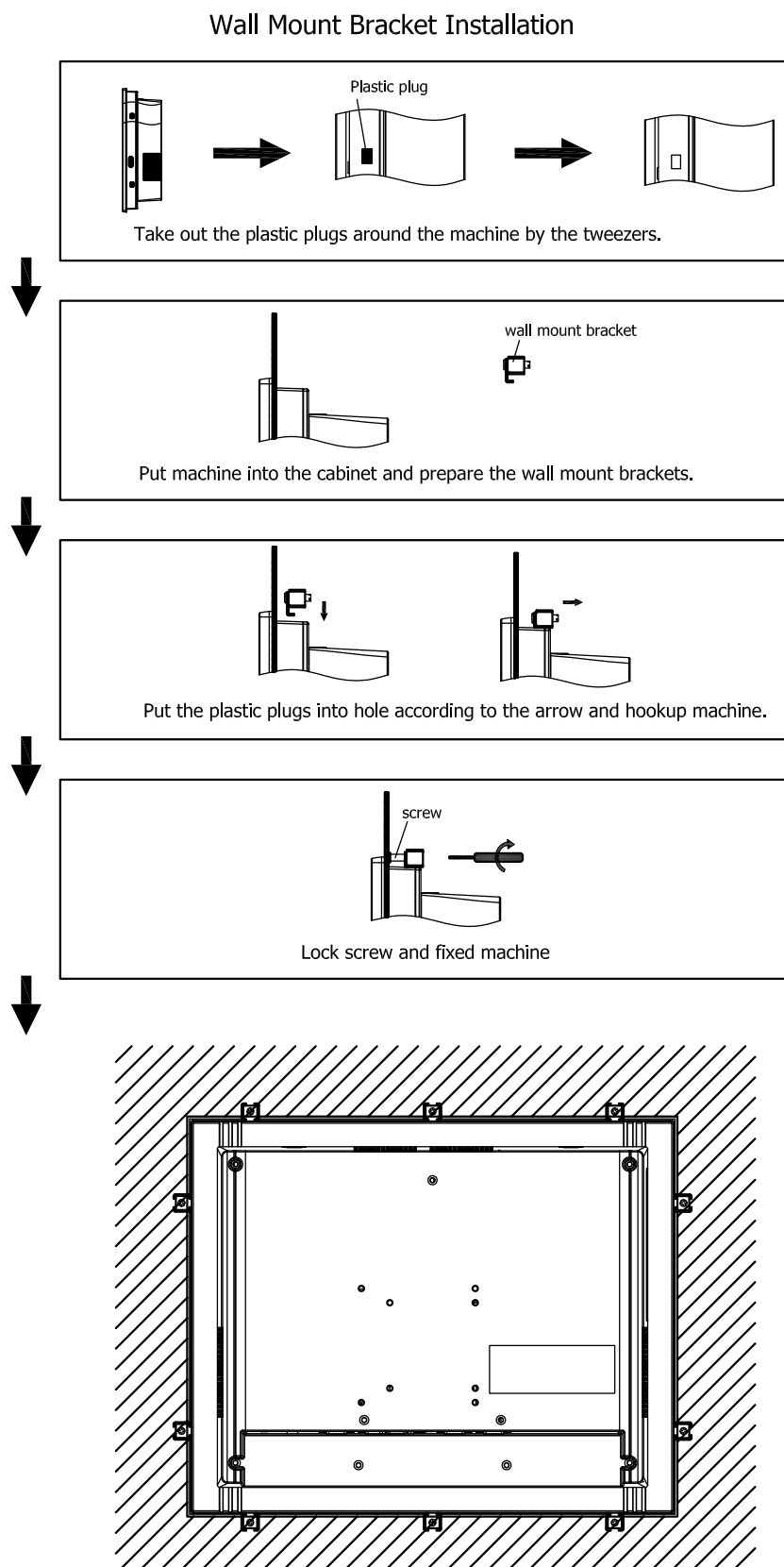
Figure 2.31

2.10 Installing Optional Modules

PPC-3150/3170 supports four optional modules: USB module, CFast module, CF module and COM module (See Figure 2.32).

For detailed installation procedures, see Section A, B, C and D in the below.

USB Module   CFast Module   CF Module   COM Module
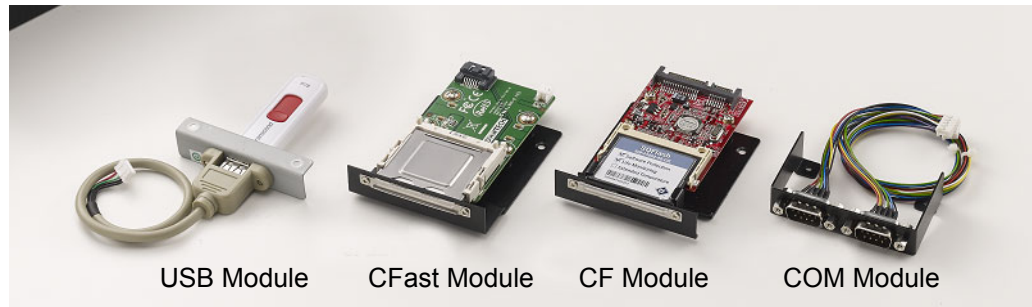
Figure 2.32

A. Installing CFast Module

1. Remove the eleven screws and take down the four plugs of the rear cover. (See Figure 2.33 and 2.34)
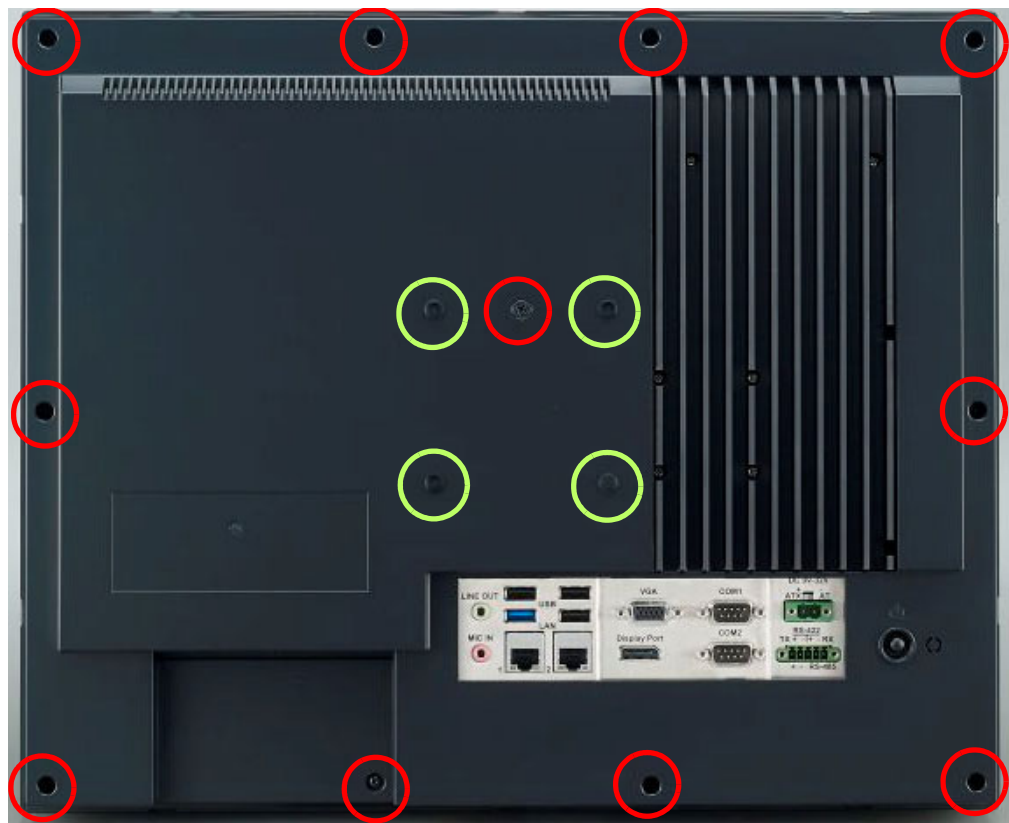
Figure 2.33
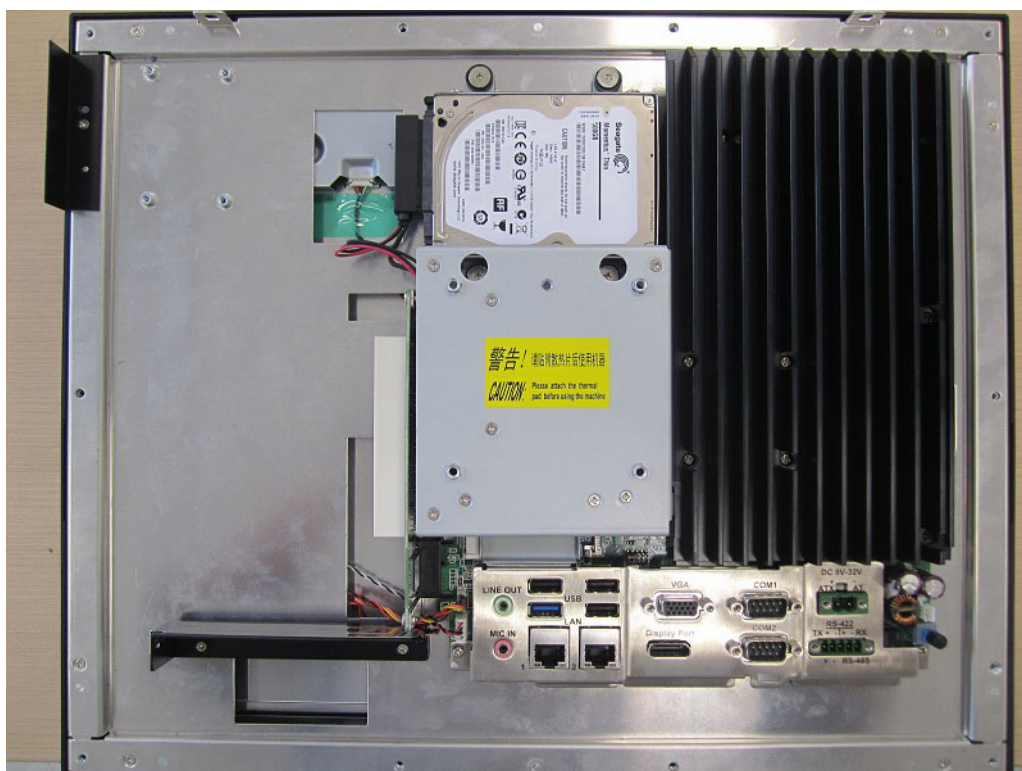
Figure 2.34

2. Remove the four screws on VESA ironware. (See Figure 2.35)
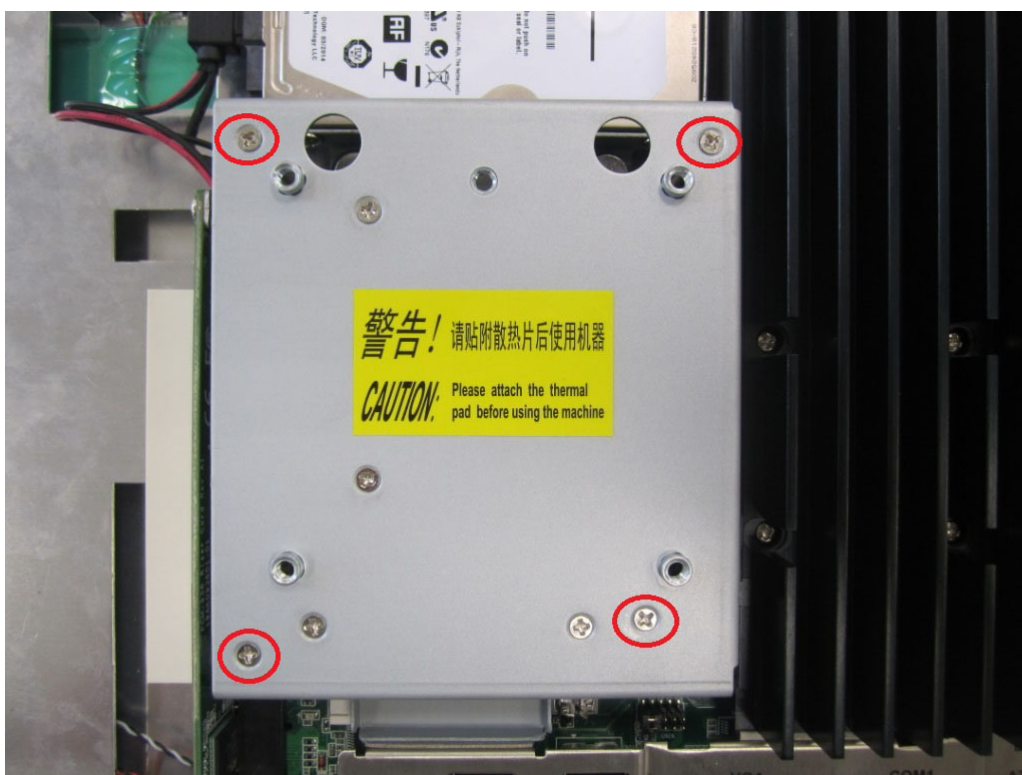
Figure 2.35

3. Remove a screw on the side of I/O ironware. (See Figure 2.36)

Note! *Please keep the ironware properly for future use when the module is not installed.*
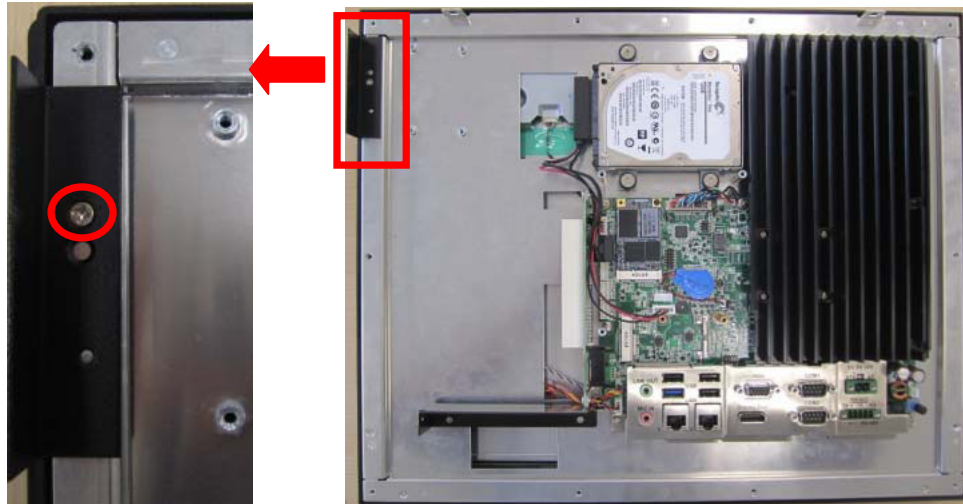
Figure 2.36

4. Take CFast module out of module box and remove the two screws on its side. Fix the iron tray to the top of CFast card, and insert it in the direction as indicated in the below figure. Then tighten the two screws and connect the red SATA cables. (See Figure 2.37)
The assembled CFast module is shown as Figure 2.38.

Note! *When installing CFast card, the iron try should be installed on the top.*
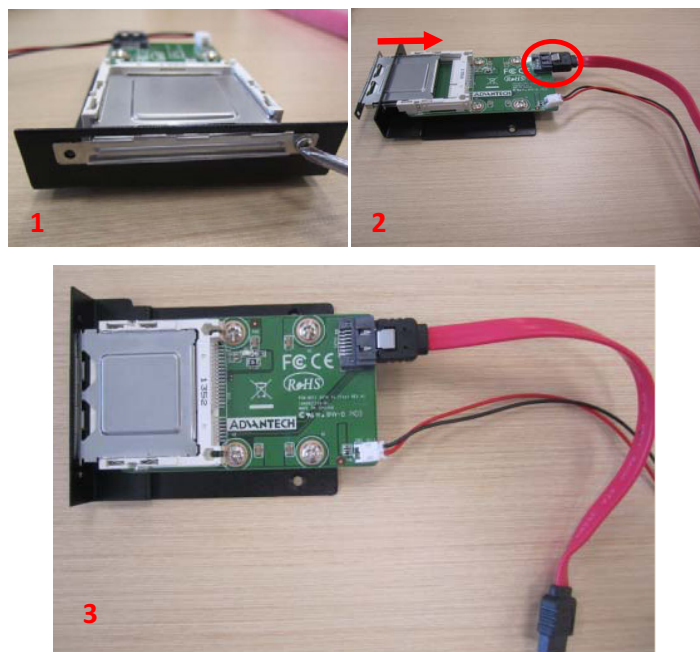
Figure 2.37
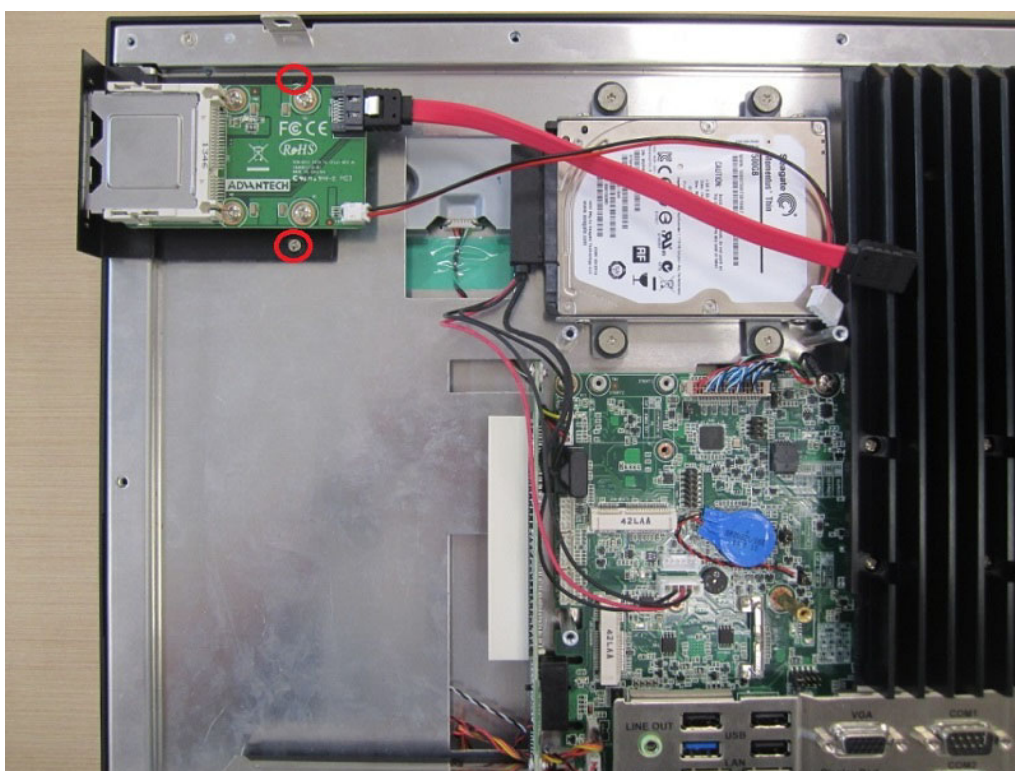
Figure 2.38

5. Take out a copper cylinder and fix it to the position marked with red circle in Figure 2.39. Then take out a screw to secure MiniSATA to SATA Micro ATX board onto the position marked with red rectangle in FIgure 2.40.
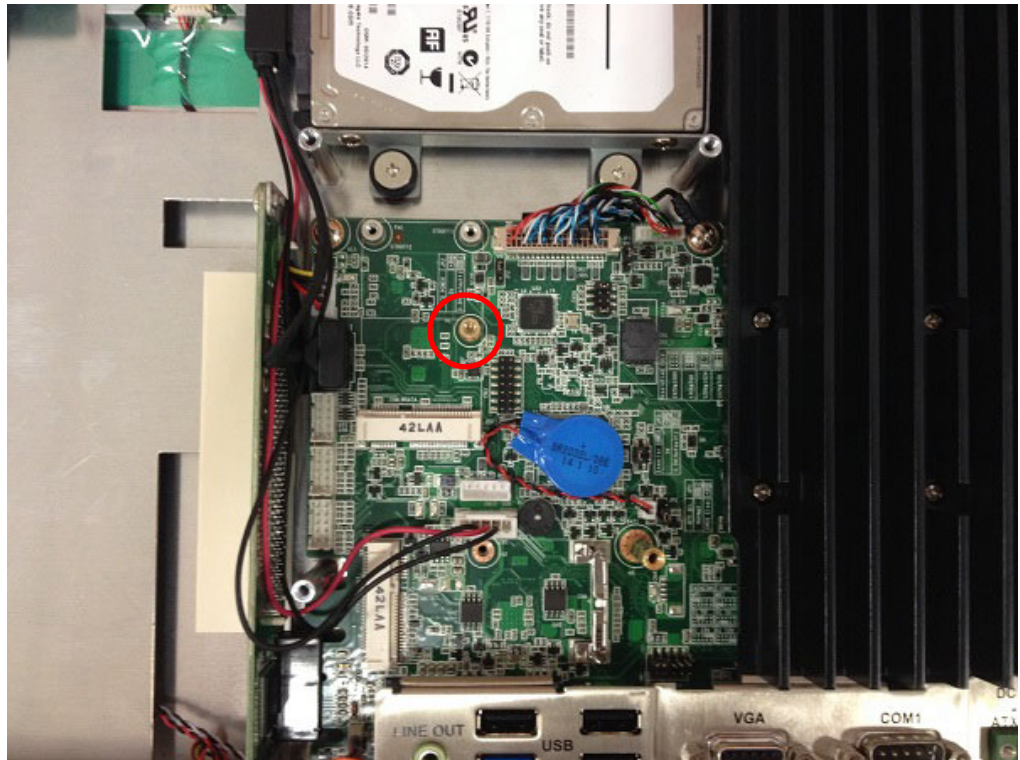
Figure 2.39
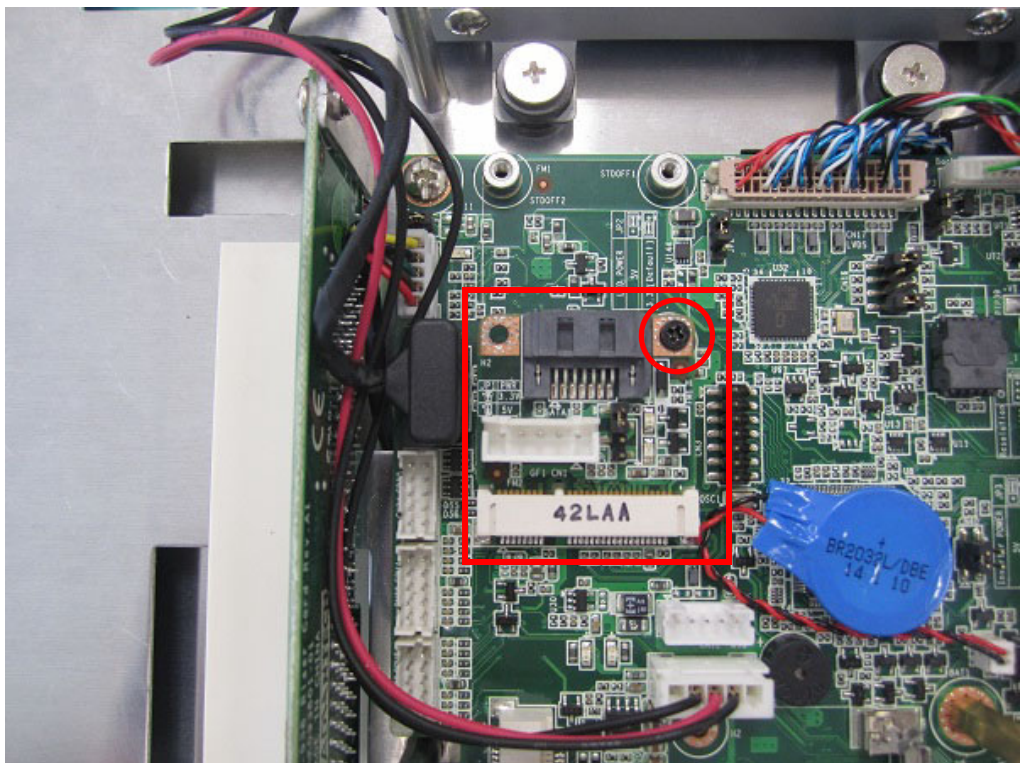
Figure 2.40

6. Connect red SATA cable and power cable to their respective connector, then bind them with cable tie. (See Figure 2.41)

Figure 2.41

7. Remove the iron plate on the rear side of VESA ironware. (See Figure 2.42) Then lock VESA ironware as shown in Figure 2.43. Lastly, replace the rear cover and fix it to finish the installation.

> *Note!* *Please properly keep the two screws removed from VESA ironware for future installation of MSATA.*

Figure 2.42

Figure 2.43

B. Installing CF Card Module

1. Follow the steps 1 ~ 3 in Section A.
2. Take CF module out of module box and remove the two screws on iron tray. Fix the iron tray to the bottom of CF card, and insert it in the direction as indicated in the below figure. Then connect SATA+SATA Power line. (See Figure 2.34)
   The assembled CF card module is shown as Figure 2.44.

Note! *When installing CF card, the iron tray should be installed on the bottom.*
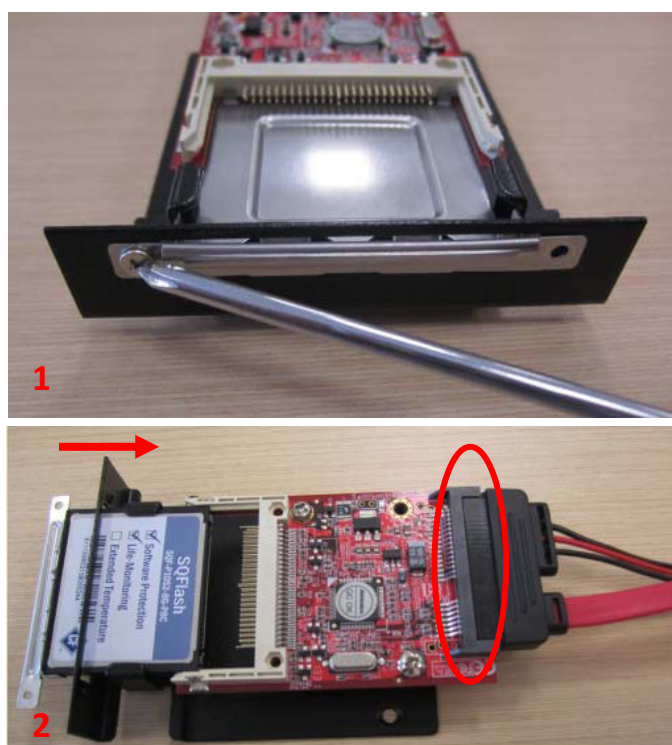
Figure 2.44
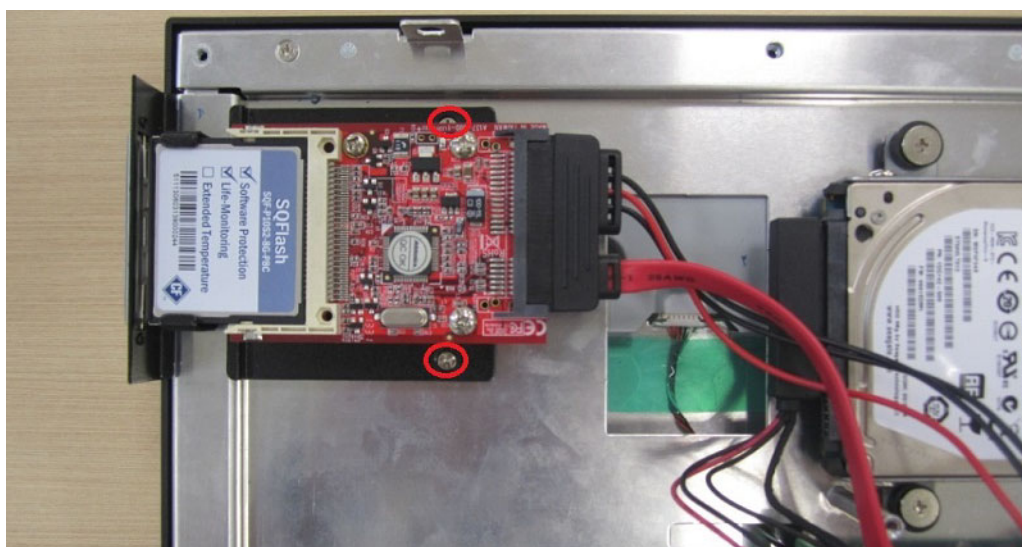
Figure 2.45

3. Follow Step 5 in Section A to fix MiniSATA to SATA board.
4. Connect the other end of SATA+SATA Power line, then bind the cables with cable tie. (See Figure 2.46)

Figure 2.46

5. Follow Step 7 in Section A to fix VESA ironware.(See Figure 2.47) Then replace the rear cover and fix it to finish the installation.
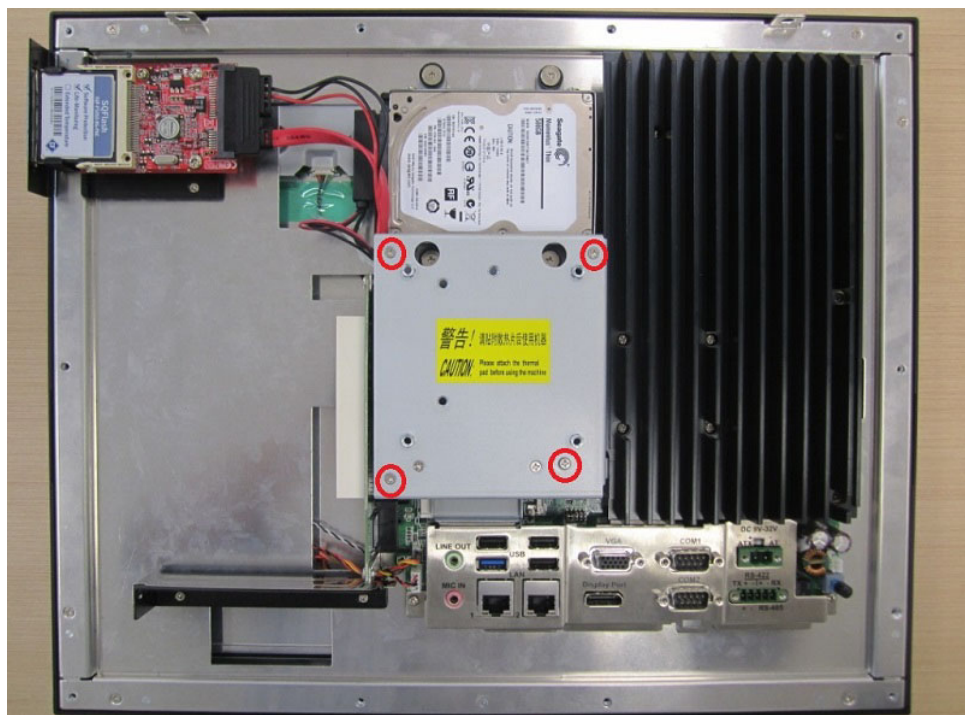
Figure 2.47

Note! *The module does not support AHCI mode, which should be configured in BIOS. Please refer to Section 4.2.8 for details.*

C. Installing USB Module

1. Follow the step 1 ~ 2 in Section A.
2. Take USB module out of module box and use the two screws to fix it. Then con-
    nect the other end of the USB cable and bind it with cable tie. (See Figure 2.48)

Figure 2.48

3. Fix VESA ironware as shown in Figure 2.49. Then replace the rear cover and fix
    it to finish the installation.
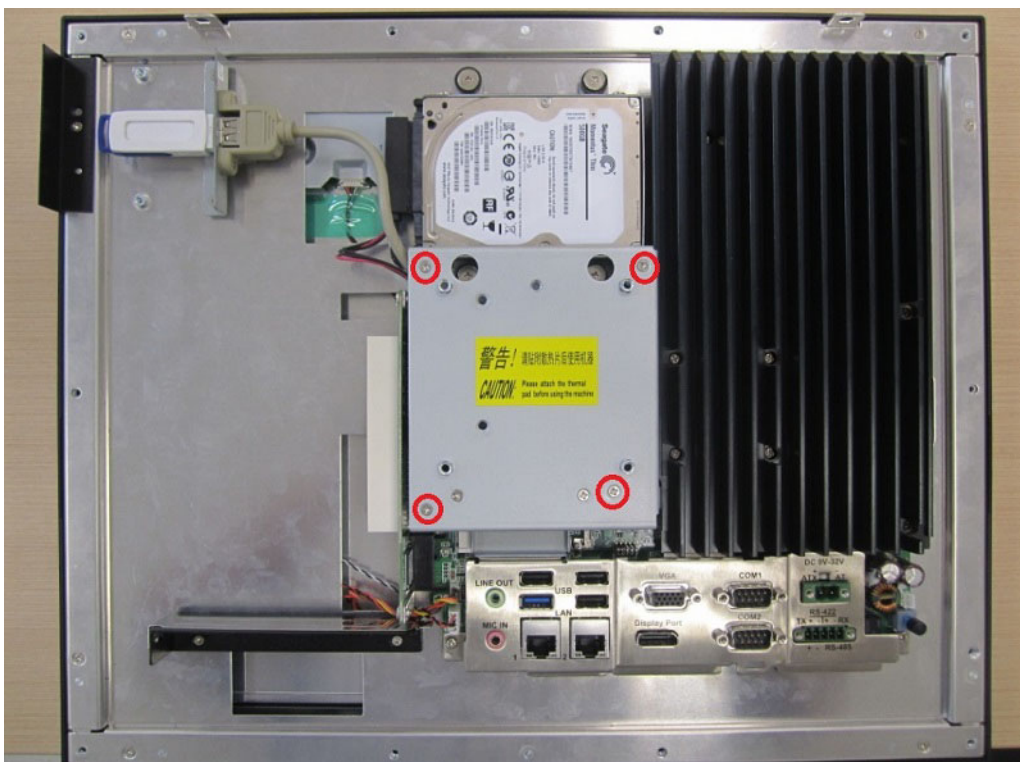
Figure 2.49

Note! *If a USB device is inserted, the length of it should not exceed 65 mm.*
(See Figure 2.50)
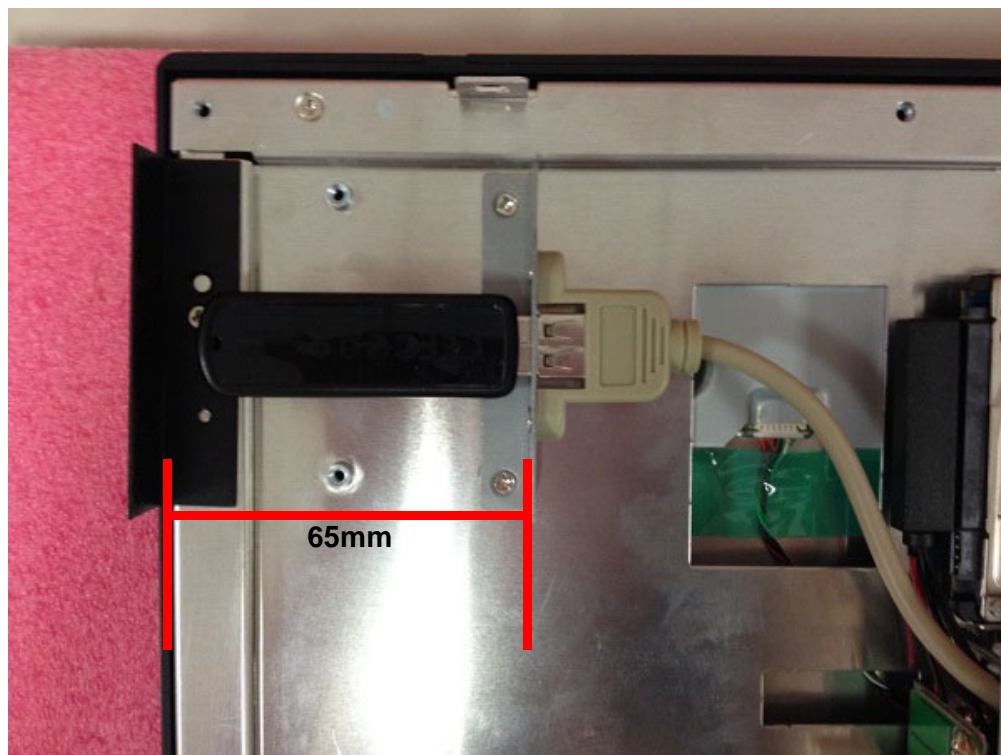
Figure 2.50

D. Installing COM Module

There are two ways to fix COM cable: One is to fix it onto COM ironware (default); the other is to fix in onto the shield of the expansion card. Please see below for the details.

D.1 Installing COM module onto the side I/O shield:

1. Follow the steps 1 ~ 3 in Section A.
2. Take COM module out of module box and fix it with two screws.
    Then connect COM cable and bind it with cable tie. (See Figure 2.51)
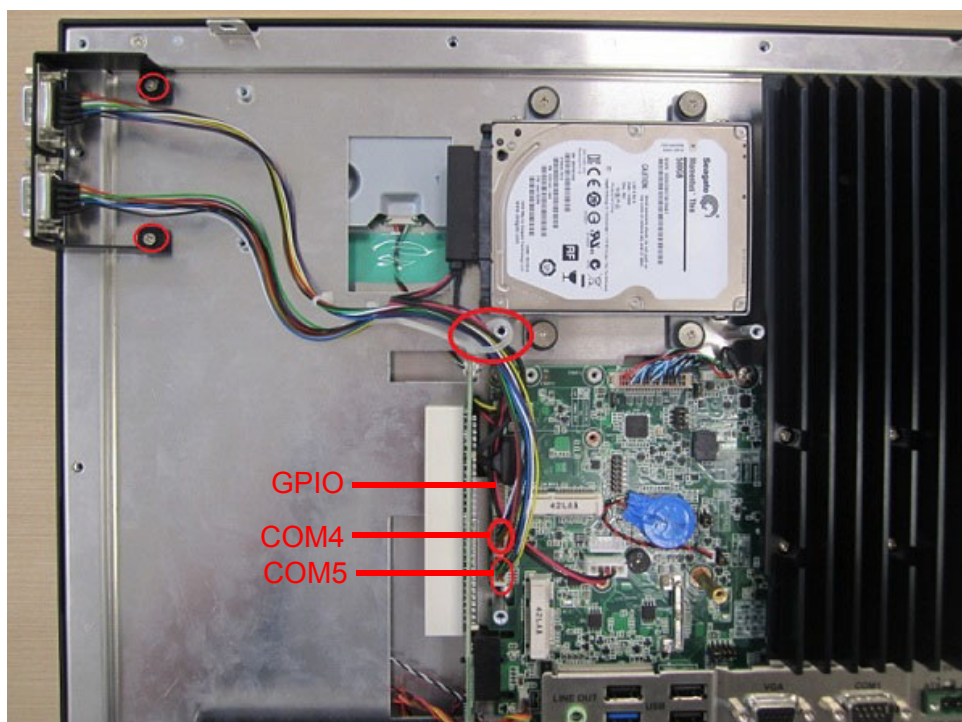
Figure 2.51

3. Fix VESA ironware as shown in Figure 2.52. Then replace the rear cover and fix it to finish the installation.
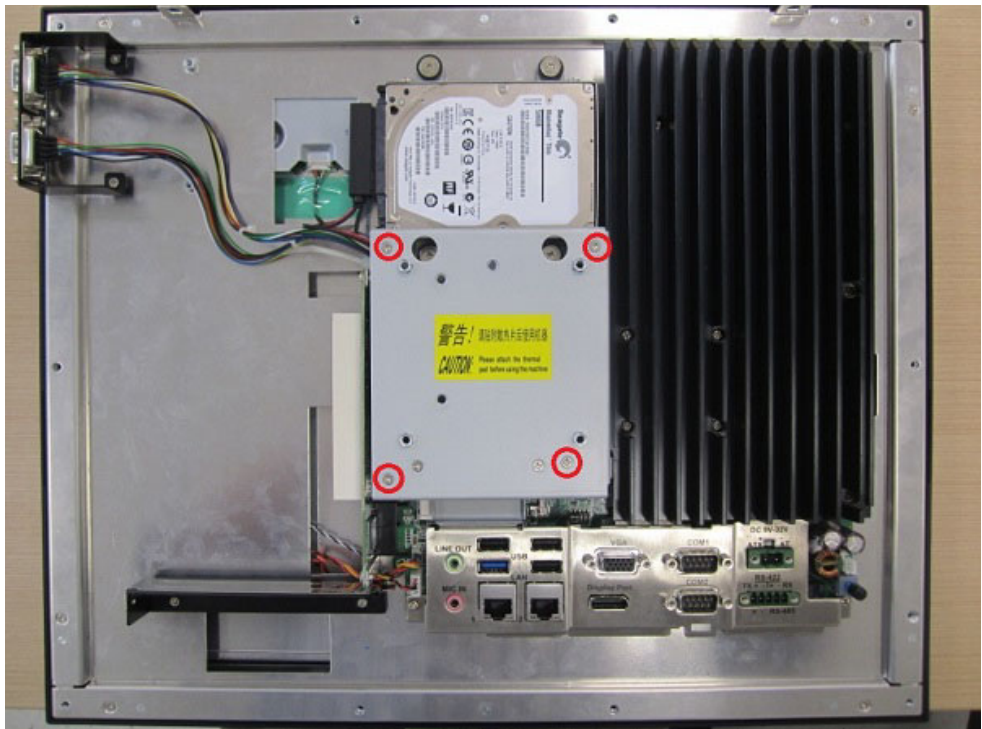
Figure 2.52

D.2 Installing COM module on the expansion slot:
1. Follow the steps 1 ~ 2 in Section A.
2. Remove two COM cables from COM ironware and fix it onto the shield of expansion slot. (See Figure 2.53)
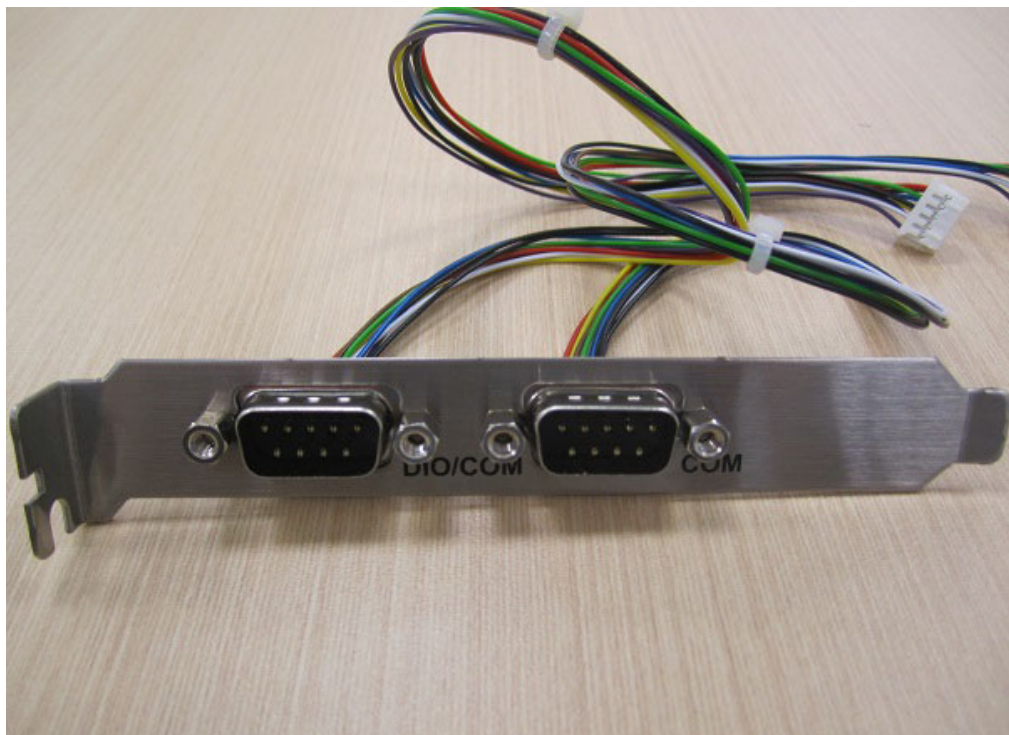
Figure 2.53

3. Remove the two screws on the riser card and the screw on the shield of expansion slot. (See Figure 2.54)
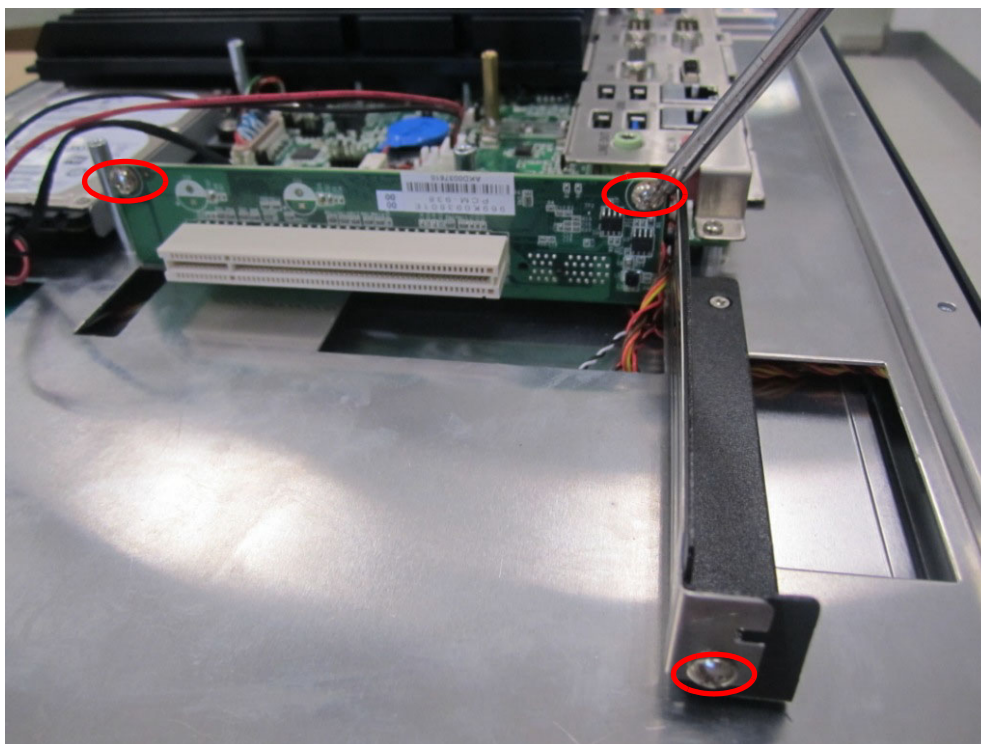
Figure 2.54

4. Fix COM module on the blade of expansion slot. Then connect two COM cables and bind them with cable tie. (See Figure 2.55)
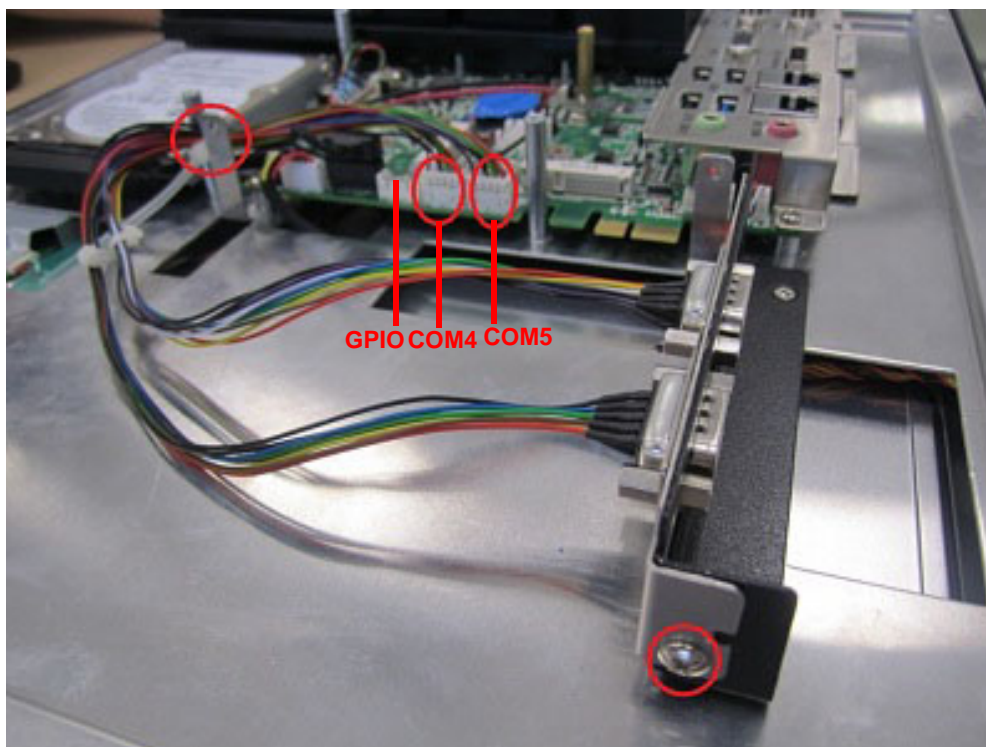
Figure 2.55

5. Fix VESA ironware as shown in Figure 2.56. Then replace the rear cover and fix it to finish the installation.
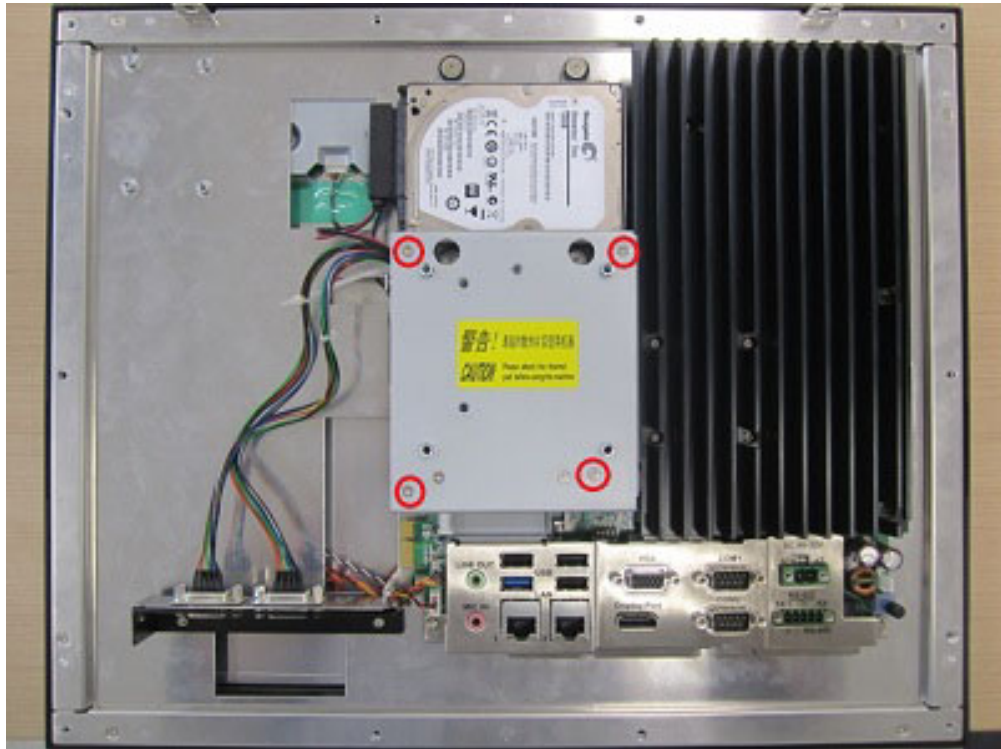
Figure 2.56

Chapter **3**

Jumper Setting

Sections include:

- **Jumpers and Connectors**
- **External COM Ports and Pin Definitions**

3.1 Jumpers and Connectors
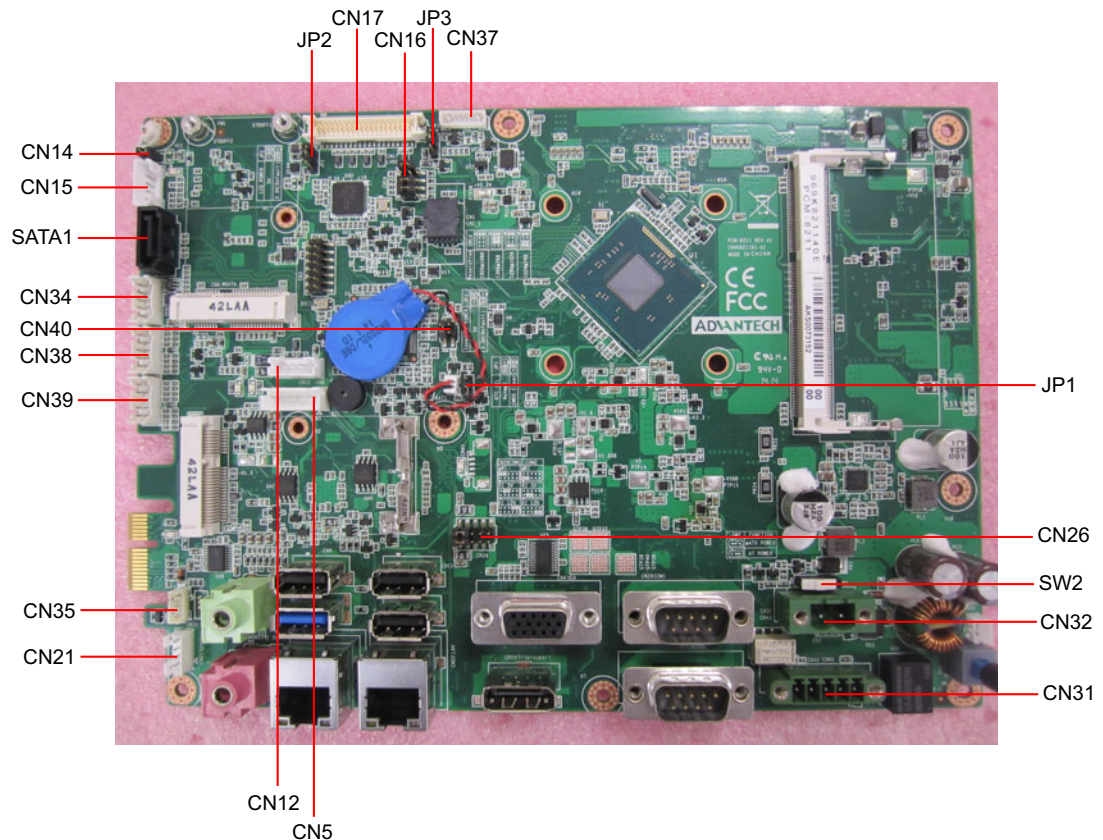
Figure 3.1

Connector	Function
CN5	SATA1 power
CN12	Internal USB
CN14	Touchscreen power
CN15	Touchscreen connector
CN16	LCD selection
CN17	LVDS
CN21	Speaker
CN26	Pin9 power selection (COM1 & COM2)
CN31	Isolated COM
CN32	Input power
CN33	Power button
CN34	GPIO
CN35	SMBUS
CN37	Driving board
CN38/39	COM4/COM5
CN40	USB HUB (Select by switch)
SW2	ATX/AT switch
JP1	Clear CMOS
JP2/JP3	LCD power selection
SATA1	SATA1

JP1	Icon	RTC Selection	
(2-3)	P1	Normal*	Default*
(3-4)	P2	Clear CMOS	

P1   P2

JP2	Icon	LCD Power	
(1-2)	P3	5V	
(2-3)	P4	3.3V	Default*

P3   P4

JP3	Icon	Driving Board Power	
(1-2)	P5	5V	
(2-3)	P6	3.3V	Default*

P5   P6

CN16	Icon	Resolution	
(1-2)(5-6)(7-8)	P7	1024*768 24bit	Default* (PPC-3150)
(1-2)(7-8)	P8	1280*1024 24bit	Default* (PPC-3170)
(1-2)(3-4)(5-6)	P9	1366*768 18bit	
(1-2)	P10	1920*1080 24bit	
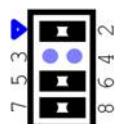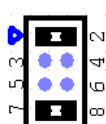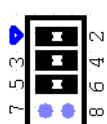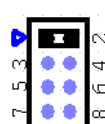
P7   P8   P9   P10

CN26		COM1/2 RI Type Selection	
(1-3)/(2-4)	P11/P12	COM2/COM1 RI	Default*
(3-5)/(4-6)	P13/P14	COM2/COM1 5V	
(7-9)/(8-10)	P15/P16	COM2/COM1 12V	
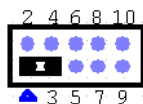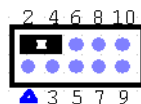
P11   P12
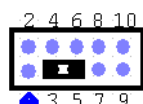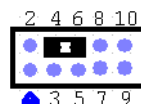
P13   P14
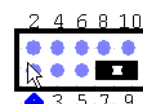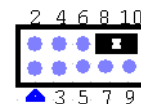
P15   P16

SW2		AT/ATX Selection	
1-3	P17	ATX power	Default*
2-3	P18	AT power	
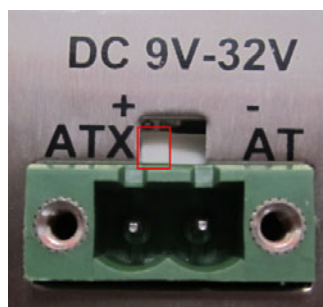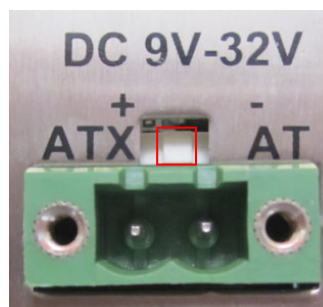
P17   P18

3.2 External COM Ports and Pin Definitions
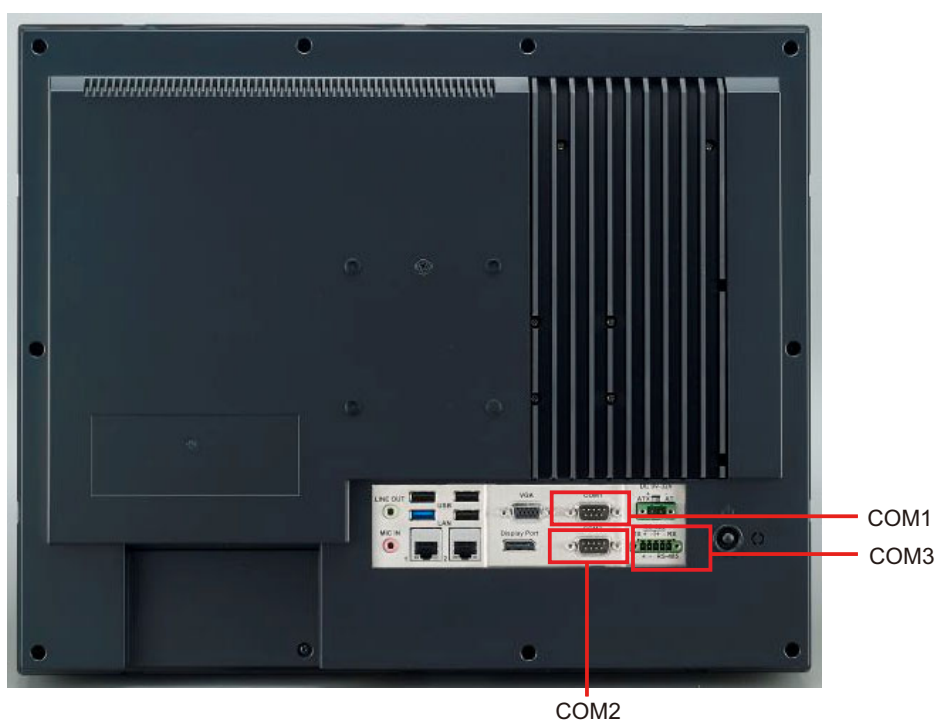
COM1
COM3
COM2

Figure 3.2

COM 1 and COM 2: RS232, COM1 Pin9 support 5V/12V input.

COM 3: RS-422/485

COM1:

COM Pin9 is set as RI signal by default and also can be set as 5 V or 12 V output via jumper setting.

> *Note!* *COM2 does not support RING function.*

Pin	COM 1	COM 2	COM4/COM5 (Internal)
1	DCD	DCD	DCD
2	RXD	RXD	RXD
3	TXD	TXD	TXD
4	DTR	DTR	DTR
5	GND	GND	GND
6	DSR	DSR	DSR
7	RTS	RTS	RTS
8	CTS	CTS	CTS
9	RING or 5V/12V input	For UPS	RING
10			+5V
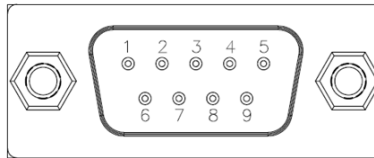
COM1&2
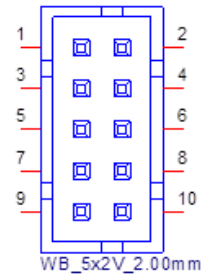
COM4&5

COM3: RS422/485 isolated 1000 V_{DC}, which can be set in BIOS.
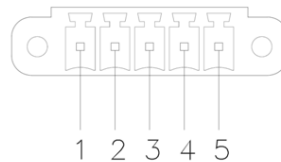
Pin	1	2	3	4	5
RS422	TX+	TX-	RX+	RX-	GND
RS485	D+	D-			GND

UART RS485 Auto Flow Control

COM3 supports RS485 auto flow control function.

When RS485 auto flow control function is enabled, it will drive RTS# pin to high or low level.

In order to enable RS485 auto flow control function, please refer to the below three ways to set parity bit and stop bit.

(1) 8 data bits + 1 parity bit + 1stop bits

(2) 8 data bits + 1 parity bit + 2 stop bits

(3) 8 data bits + 2 stop bits

Chapter 4

Software Setup

Sections include:
- **Installing Drivers**
- **BIOS Setup Program**

4.1 Installing Drivers

When you install the OS to panel PC for the first time, you should install the corresponding drivers to make sure all the functions will work properly. Take CD-ROM out of the accessory box and insert it into the system.

Windows 7: All drivers needed when installing Windows 7.

Windows 8: All drivers needed when installing Windows 8.

User manual: Digital copy of the PC's user manual.

Please complete the installation based on the OS you use. The drivers in CD-ROM may not be the latest version, please get the latest ones from the below websites:

http://www.advantech.com/

> **Note!** *Before Windows 8.x or Android is installed, please firstly change BIOS settings as explained in page 60; otherwise, the installation will fail. If Windows 7 is installed, it is not required to change BIOS settings.*

4.2   BIOS Setup Program

4.2.1 Update BIOS

1.   When entering BIOS menu, select "Advanced → Security configuration → TXE HMRFPO → enable".
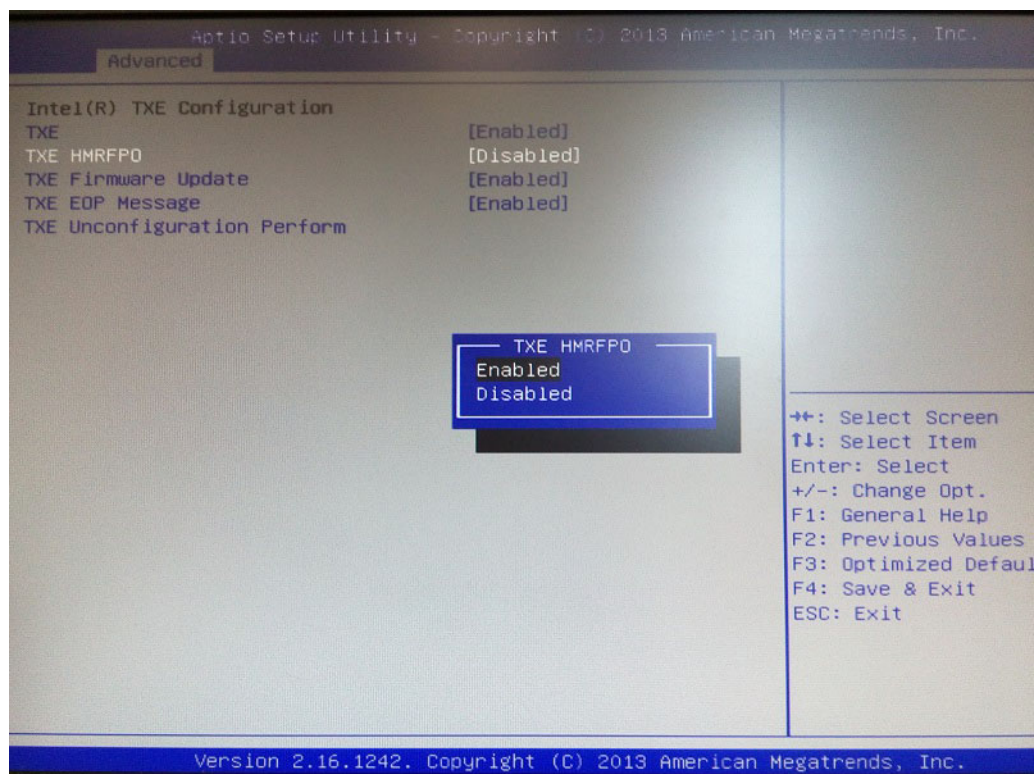
2.   Restart the computer.
3.   Execute AFUDOS 8211BIOS.bin /P /B /N /X /ME.
4.   Power on the system again after it is powered off.
5.   Then the BIOS has been updated.

4.2.2 Entering BIOS Setup

When the power is turned on, press <Del> button to enter BIOS setup screen.

Whenever any setting is made, press <F4> to save and exit; otherwise the settings will not be saved in BIOS.

```
         Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

 BIOS Information                                    Set the Date. Use Tab to
 BIOS Vendor              American Megatrends        switch between Date elements.
 Core Version             5.0.0.9   0.14 x64
 Compliancy               UEFI 2.3; PI 1.2
 Project Version          PCM 8211X016
 Build Date and Time      06/30/2014 15:46:14

 BayTrail SoC             B3 Stepping
 TXE FW Version           01.01.00.1089

 System Date              [Tue 07/08/2014]
 System Time              [08:25:13]

 Access Level             Administrator              →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit

         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.2.3 Adjustment of LCD Brightness

1. Select "Host Bridge" in "Chipset" tab.

```
         Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

 ▶ North Bridge                                      North Bridge Parameters
 ▶ South Bridge


                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit

         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```
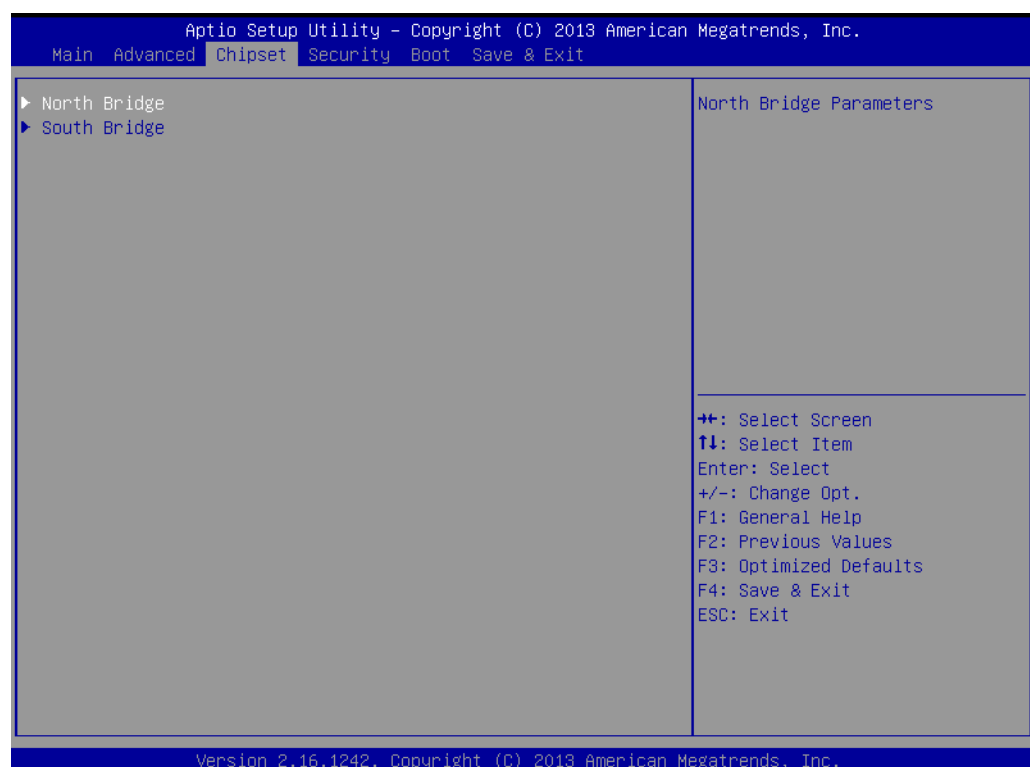
2.   Then select "Intel IGD Configuration".

```
             Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Chipset

▶ Intel IGD Configuration                                    Config Intel IGD Settings.

  Memory Information

  Total Memory                    4096 MB (LPDDR3)

  Max TOLUD                       [Dynamic]




                                                             ➜←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




             Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

3.   "LCD Brightness Control" is set to "Manual Mode" by default, which means you
      should adjust the brightness by yourself.
      Select "Brightness Manual Control" under "Brightness Control" and there will be
      six brightness levels to choose.

```
             Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Chipset

  Primary IGFX Boot Display       [Auto]             Fixed Brightness 100%, 80%,
                                                     60%, 40%, 20%, 10%
  DVMT Pre-Allocated              [64M]
  DVMT Total Gfx Mem              [256MB]

  Brightness Manual Control       [ 80%]

                      ┌──── Brightness Manual Control ────┐
                      │ 100%                              │
                      │  80%                              │
                      │  60%                              │
                      │  40%                              │
                      │  20%                    Select Screen
                      │  10%                    Select Item
                      └──────────────────────  er: Select
                                               : Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Exit
                                               ESC: Exit




             Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.2.4 COM3 Mode Selection (RS422/RS485)

1. Select "Super IO Configuration" in "Advanced" tab.

```
              Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
        Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ ACPI Settings                                          System Super IO Chip
   ▶ Super IO Configuration                                 Parameters.
   ▶ Hardware Monitor
   ▶ S5 RTC Wake Settings
   ▶ CPU Configuration
   ▶ PPM Configuration
   ▶ IDE Configuration
   ▶ CSM Configuration
   ▶ USB Configuration
   ▶ Security Configuration


                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

2. Select "Serial Port 3 Configuration" and then click "COM Port Mode" to choose the COM3 operation mode.

```
              Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
        Advanced

   Serial Port 3 Configuration                              COM Port Mode Select

   Device Settings                    IO=3E8h; IRQ=7;

   COM Port Mode                      [RS-485 Mode]
   COM3 Terminal                      [Disabled]



                              ┌─── COM Port Mode ───┐
                              │ RS-422 Mode          │
                              │ RS-485 Mode          │
                              └──────────────────────┘
                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



              Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.2.5 COM3 RS485 Terminal Selection

1. Select "Super IO Configuration" in "Advanced" tab.

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

 ▶ ACPI Settings                                          System Super IO Chip
 ▶ Super IO Configuration                                 Parameters.
 ▶ Hardware Monitor
 ▶ S5 RTC Wake Settings
 ▶ CPU Configuration
 ▶ PPM Configuration
 ▶ IDE Configuration
 ▶ CSM Configuration
 ▶ USB Configuration
 ▶ Security Configuration



                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



            Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

2. Set "COM3 Terminal" under "Serial Port 3 Configuration" to "Enabled".

```
            Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Advanced

 Serial Port 3 Configuration                             COM3 Terminal Select

 Device Settings                  IO=3E8h; IRQ=7;

 COM Port Mode                    [RS-485 Mode]
 COM3 Terminal                    [Disabled]


                        ┌──── COM3 Terminal ────┐
                        │ Enabled               │
                        │ Disabled              │
                        └───────────────────────┘
                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



            Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

4.2.6 Wake on LAN

1. Select "South Bridge" in "Chipset" tab.

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

▶ North Bridge                                           South Bridge Parameters
▶ South Bridge







                                                         →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit




         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

2. Set "Wake on Function" to "Enabled".

```
         Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
              Chipset

  OS Selection                    [Windows 8.X]           Enable or disable
                                                          PCIE/LAN/Ring to wake the
  XHCI Mode                       [Enabled]               system.

  Restore AC Power Loss           [Power Off]

  Wake On Function                [Disabled]


                           ┌──── Wake On Function ────┐
                           │ Enabled                  │
                           │ Disabled                 │
                           └──────────────────────────┘    →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit



         Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

A. Wake on LAN in Windows 7

1. Save the settings and exit the OS.
2. Right-click "Computer" and select "Manage" to open "Computer Management" window.
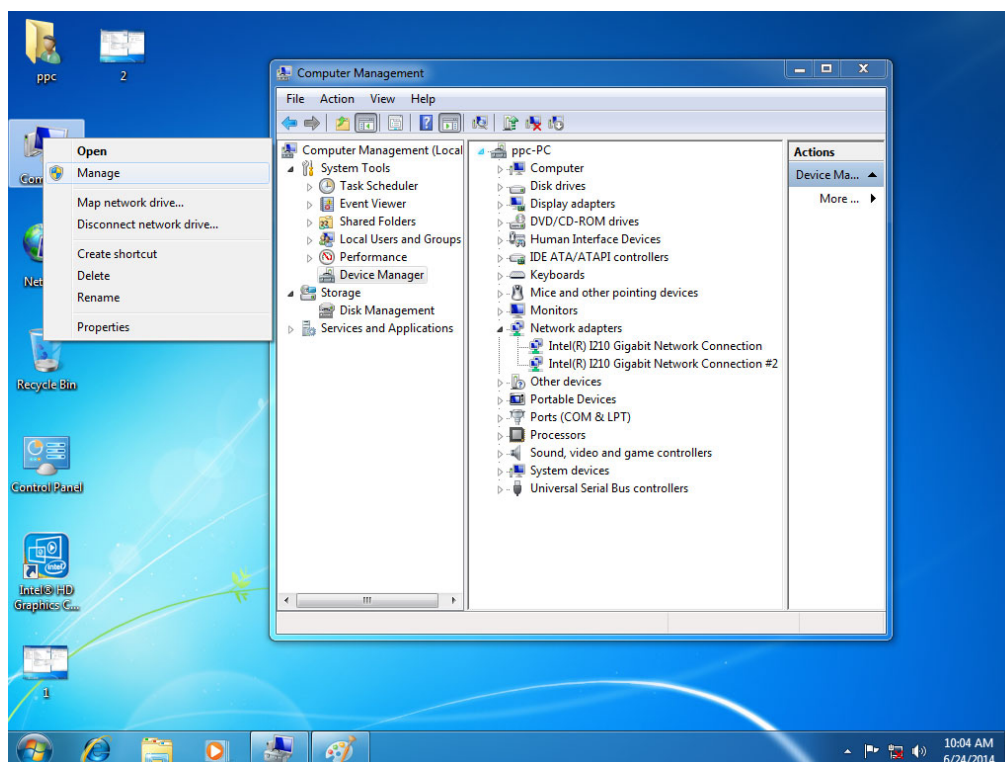
3. Click "Device Manager" and select "Network adapters". Right-click the desired LAN port and select "Properties" to open "Intel GBE Network Controller Properties" window.
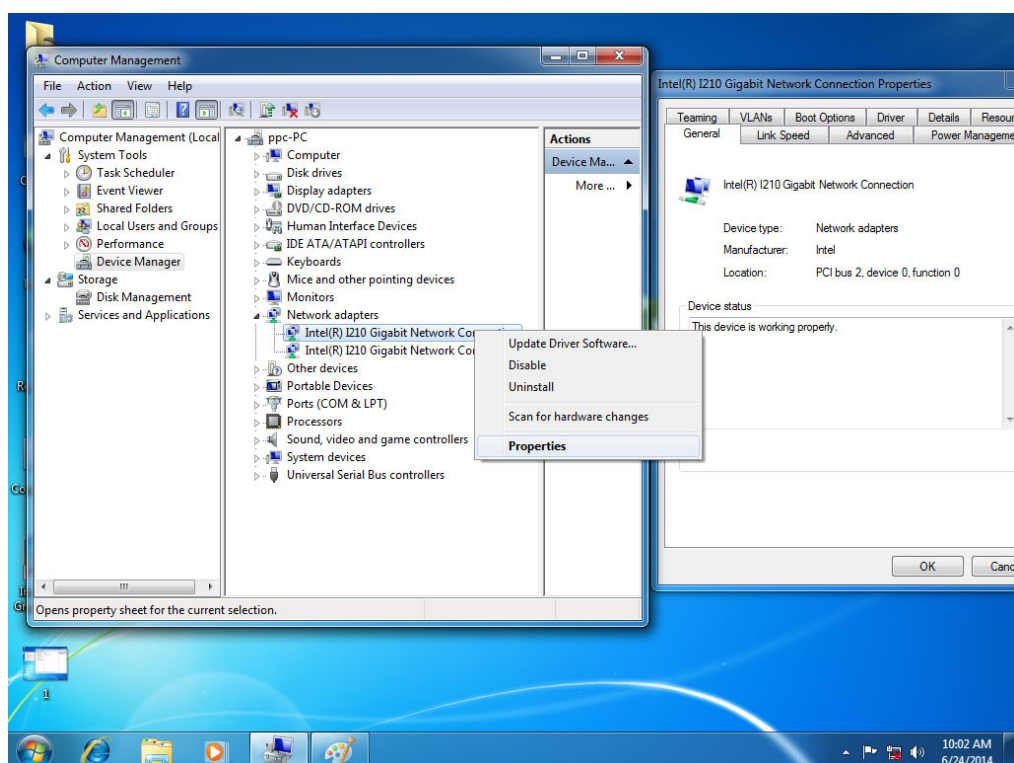
4. Select "Power Management" tab in "Intel GBE Network Controller Properties" window and make sure "Wake on link setting "box is checked.
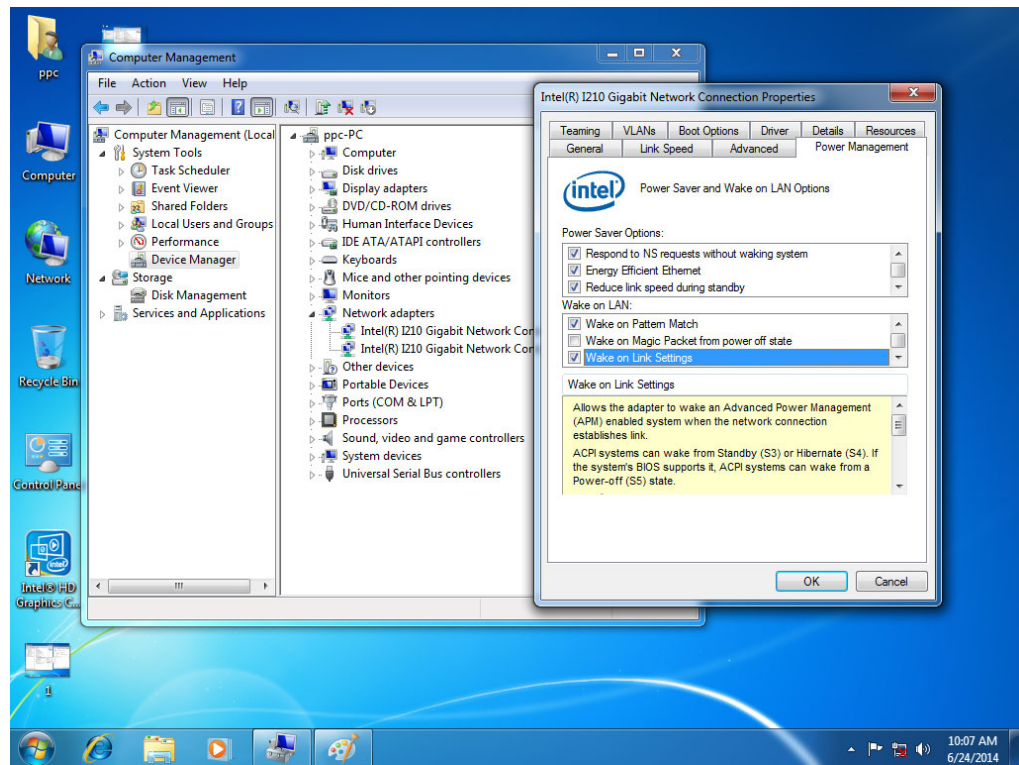
B. Wake on LAN in Windows 8

1. Save the settings and exit the OS.
2. Right-click "Computer" and select "Manage" to open "Computer Management" window.
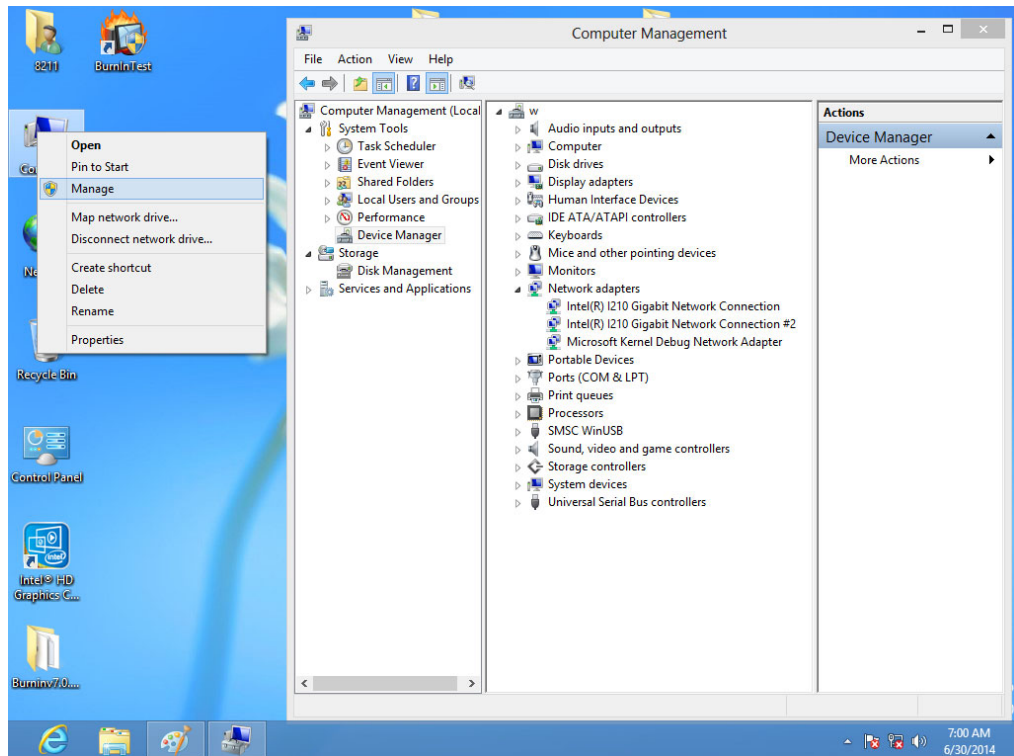
3. Click "Device Manager" and select "Network adapters". Right-click the desired LAN port and select "Properties" to open "Intel GBE Network Controller Properties" window.
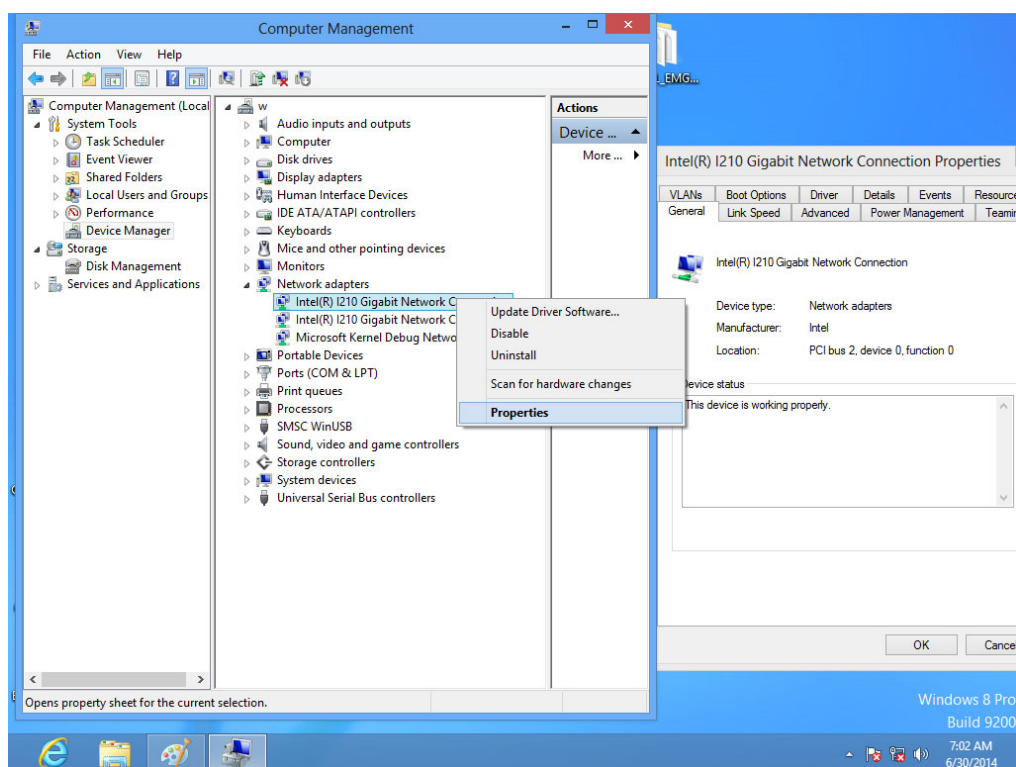
4. Select "Power Management" tab in "Intel GBE Network Controller Properties" window and make sure "Wake on link setting" box is checked.
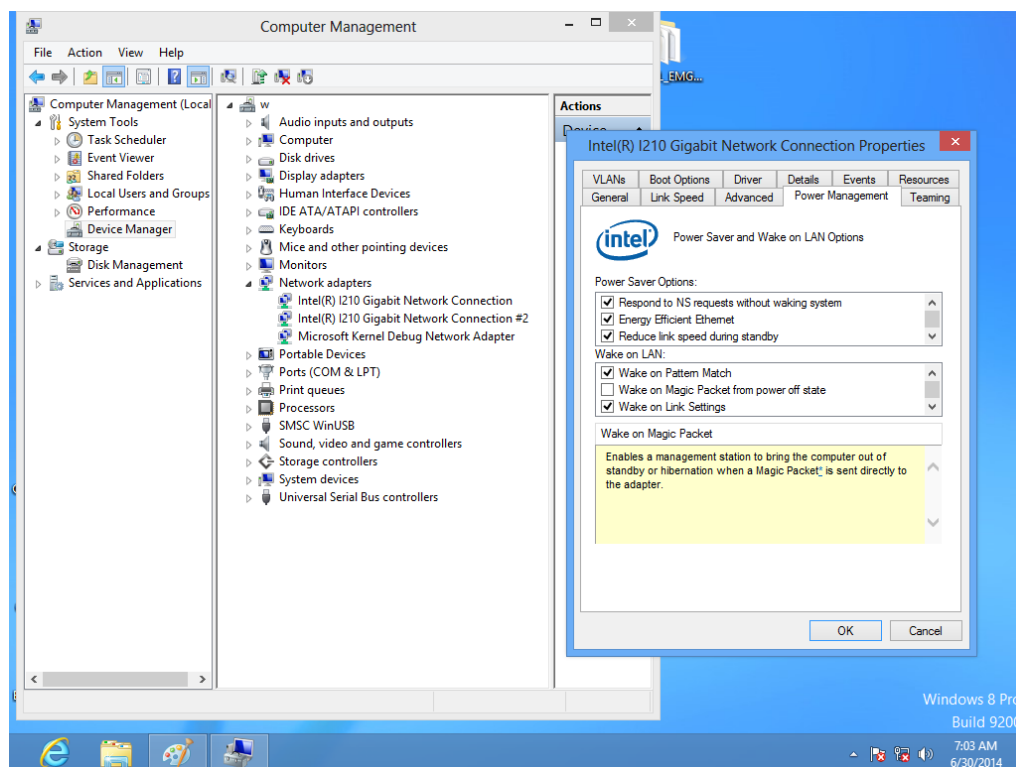
4.2.7 AT & ATX Setup

1. Select "South Bridge" in "Chipset" tab.

```
             Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

▶ North Bridge                                          South Bridge Parameters
▶ South Bridge




                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




             Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.
```

2. In "Restore AC Power Loss", set "Power On" to "AT" and "Power Off" to "ATX".

```
             Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                      Chipset

 OS Selection                    [Windows 8.X]          Select AC power state when
                                                        power is re-applied after a
 XHCI Mode                       [Enabled]              power failure.

 Restore AC Power Loss           [Power Off]

 Wake On Function                [Disabled]


                       ┌──── Restore AC Power Loss ────┐
                       │ Power Off                     │
                       │ Power On                      │  →←: Select Screen
                       │ Last State                    │  ↑↓: Select Item
                       └───────────────────────────────┘  nter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

4.2.8 OS Selection

1.   Select "South Bridge" in "Chipset" tab.

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

 ▶ North Bridge                                        South Bridge Parameters
 ▶ South Bridge




                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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```

2.   Different OS can be selected through "OS Selection".

Note!   *"OS Selection" is preset as Windows 7, which needs to be changed when Windows 8.X or Android OS is installed.*

```
              Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
                  Chipset

 OS Selection                       [Windows 8.X]     OS Selection

 XHCI Mode                          [Enabled]

 Restore AC Power Loss              [Power Off]

 Wake On Function                   [Disabled]



                          ┌───── OS Selection ─────┐
                          │ Windows 8.X            │
                          │ Android                │
                          │ Windows 7              │    →←: Select Screen
                          └────────────────────────┘    ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Opt.
                                                         F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit



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```

4.2.9 SATA Mode Selection

1. Select "IDE Configuration" in "Advanced" tab.

Note!   *The default mode is AHCI. IDE mode can only be selected when CF module is used.*

```
                 Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ ACPI Settings                                        IDE Devices Configuration
   ▶ Super IO Configuration
   ▶ Hardware Monitor
   ▶ S5 RTC Wake Settings
   ▶ CPU Configuration
   ▶ PPM Configuration
   ▶ IDE Configuration
   ▶ CSM Configuration
   ▶ USB Configuration
   ▶ Security Configuration


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit




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```

2. Select "SATA Mode".

```
                 Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
      Advanced

   IDE Configuration                                      Select IDE / AHCI

   SATA Speed Support             [Gen2]
   SATA ODD Port                  [No ODD]
   SATA Mode                      [AHCI Mode]

   Serial-ATA Port 0              [Enabled]
   SATA Port0 HotPlug             [Disabled]

   Serial-ATA Port 1              [Enabled]
   SATA Port1 HotPlug          ┌─── SATA Mode ───┐
                               │  IDE Mode       │
   SATA Port0                  │  AHCI Mode      │
   Not Present                 └─────────────────┘
                                                          →←: Select Screen
   SATA Port1                                             ↑↓: Select Item
   SQF-SMSM4-32G- (32.0GB)                                Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit




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```

4.2.10 Boot Options

1.   Select "CSM Configuration" in "Advanced" tab.

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ ACPI Settings                                    CSM configuration:
  ▶ Super IO Configuration                           Enable/Disable, Option ROM
  ▶ Hardware Monitor                                 execution settings, etc.
  ▶ S5 RTC Wake Settings
  ▶ CPU Configuration
  ▶ PPM Configuration
  ▶ IDE Configuration
  ▶ CSM Configuration
  ▶ USB Configuration
  ▶ Security Configuration


                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit



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```

2.   Select "Boot option filter".

Note!   *Boot option is set as "Legacy only" by default. If "UEFI only" is selected, only Windows 7 64bits or Windows 8.x 64bits can be supported. If UEFI 32bit OS is required, please update BIOS.*

```
          Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
    Advanced

  Compatibility Support Module Configuration        This option controls
                                                    Legacy/UEFI ROMs priority
  Option ROM Messages              [Force BIOS]

  Boot option filter              [UEFI and Legacy]

  Option ROM execution

  Network                         [Do not launch]
  Video                           [Legacy]
  Other PCI devices          ┌──── Boot option filter ────┐
                             │ UEFI and Legacy            │
                             │ Legacy only                │
                             │ UEFI only                  │
                             └────────────────────────────┘
                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

Appendix A

PCI/PCIE Photos

A.1 PCI/PCIE Photos

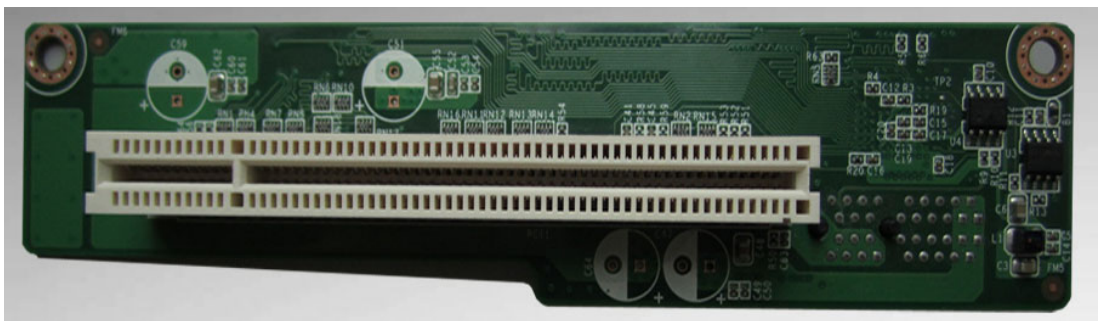PCM-938 PCIEx1 to PCI slot (Default. This riser card is only for PPC-3170).
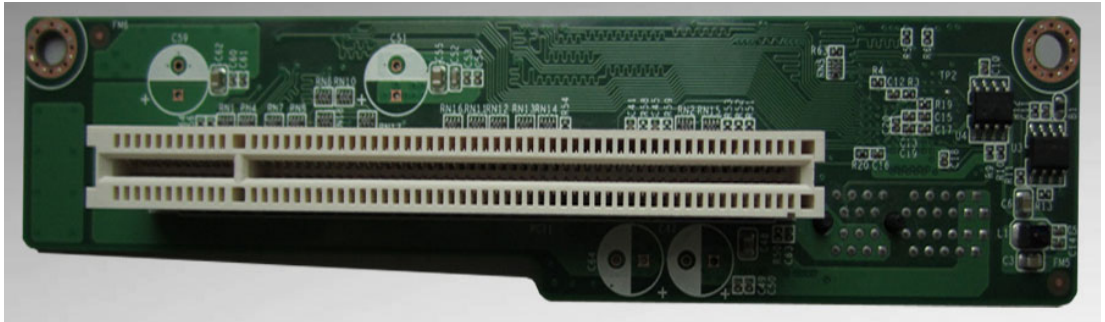
PCM-939 PCIEx1 to PCIEx1 slot (In accessory box. This riser card is only for PPC-3170).

969K821120E PCIEx1 to PCIEx1 slot (In accessory box. This riser card is only for PPC-3150).

969K821130E PCIEx1 to PCI slot (Default. This riser card is only for PPC-3150).

Note!

The maximum length of PCI or PCIE card should not exceed 176 mm, and its maximum width should not exceed 107 mm.

The space above the card should not exceed 18 mm, and it below the card should not exceed 10 mm.

The total load current the PCIE expansion slot supports is as follows:

12 V	0.5 A
3.3 V	3 A
3.3 SB	0.375 A

The total output power for 12 V, 3.3 V and 3.3 SB should not exceed 17 W.

The total load current the PCI expansion slot supports is as follows:

12 V	0.5 A
5 V	2 A
3.3 V	3 A
-12 V	0.1A

The total output power for 12 V, 5V, 3.3 V and -12 V should not exceed 25 W.

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