LYNC-7123

Fanless 12.1” Industrial Panel PCs with Intel® Atom™ N2600 1.6GHz

User’s Manual

Version 1.0

P/N: 4012712300100P

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Revision History

Version	Time	Description
1.0	July 2013	Initial release

Copyright Notice

The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

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

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped or damaged.
    f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

Warning

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

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

Lithium Battery Replacement

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at: ftp://ftp.arbor.com.tw/pub/manual

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

http://www.arbor.com.tw

E-mail:info@arbor.com.tw

Warranty

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

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

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

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

Chapter 1

Introduction

1.1. The Computer

ARBOR's LYNC-7123 is a cost-effective industrial panel PC to feature light weight and slim form factor. The computer comes with rich I/O to meet the demand of the automation and manufacturing process required in modern factories. The system includes one programmable digital I/O port, five serial ports, four USB ports, one DVI-I port, one audio port and two LAN ports for wired data connection. The computer also supports one CFast card and features one 2.5" drive bay for extensive data storage. One PCI Express Mini-card is also built on the main board of the computer to enhance the system with Wi-Fi networking.

Product Highlights

- Less cable, fanless design
- 12.1" 1024 x 768 XGA LCD display w/ LED backlight
- Die-casting bezel, completely covered w/ membrane
- Flush front panel, IP65-compliant
- Brightness control button
- Outside-accessible push-pull CFast socket
- 2 x isolated serial ports (RS-485), w/ auto-flow control
- 1 x Mini-card socket for WiFi module
- SMA antenna holes for optional WiFi function
- 4-in / 4-out isolated DIO
- 9~36V wide-range DC input with reverse protection

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 in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

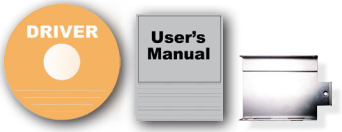
System	
CPU	Intel® Atom™ N2600 1.6GHz processor
BIOS	AMI Flash BIOS
Chipset	Intel® NM10
Memory	Soldered onboard 2GB DDR3 SDRAM
Ethernet Controller	Two Intel® 82583V GbE controllers
Watchdog Timer	1~255 levels reset
I/O Ports	
Serial Ports	One DB-44 connector for COM1~4: • COM1 and COM2 are RS-232. • COM3 and COM4 are RS-232/485 configurable.
	One DB-9 connector for COM5, which is set to RS232, w/ 5V / 500mA via pin-9.
USB Ports	Four Type-A USB 2.0 ports
LAN Ports	Two RJ-45 GbE ports
Expansion Bus	One Mini-card socket
	One Internal USB dongle space
Video Port	One DVI-I port (DVI + VGA)
WiFi	Two SMA antenna holes for optional WiFi function
Audio Port	Two 1W speakers
	One line-out jack
Storage	
1st Device	One outside-accessible CFast slot
2nd Device	One 2.5" drive bay
Qualification	
FCC	Class A certified
CE	Certified
Environmental	
Operating Temp.	-20 ~ 55°C (-4 ~ 131°F)
Storage Temp.	-20 ~ 70°C (-40 ~ 158°F)
Operating Humidity	10 ~ 95% @ 55°C (non-condensing)
Vibration	5 ~ 500Hz, 1Grms Random (with CF/SSD)
Shock	Operating 20G, 11ms Non-operating 40G, 11ms (with CF/SSD)

Mechanical	
Chassis	Panel-mounting chassis, aluminum front bezel and AL steel chassis
Weight (Net)	2.4 Kg (without VESA bracket)
Dimensions (W x D x H)	326 x 45.5 x 259 mm (12.8” x 1.79” x 10.2”)
Mounting	Panel-mounting and VESA-75/100 mounting
LCD Display	
Size/Type	12.1” TFT LCD Panel
Max. Resolution	1024 x 768 (XGA)
Max. Colors	16.2M
Luminance	500 cd/m²
Touch Screen	5-wired Analog Resistive
View Angle (U/D/R/L)	80°/80°/80°/80°
Power System	
Power Input	DC 9~36V
OS Support	
Windows	Windows XP Embedded / Windows 7 Embedded

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:

One **LYNC-7123 Industrial Panel PC**



One **Accessory Box** that contains the following items:

- Driver CD
- User's Manual
- Screws/Cable
- 3-pin plug for terminal block
- 2.5" HDD/SSD bracket

1.5. Ordering Information

LYNC-7123	Intel® Atom™ N2600 industrial panel PC

1.5.1. Optional Accessories

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

PAC-P065W	65W AC/DC ower adapter kit Power input: 100 ~ 240 VAC Power output: 19VDC, 3.4A	
PAC-P120W-FSP	LYNC-7123 VESA-mount Bracket Kit Material: Stainless Steel VESA support: 75 x 75 mm / 100 x 100 mm	

1.5.2. Configure-to-Order Service

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

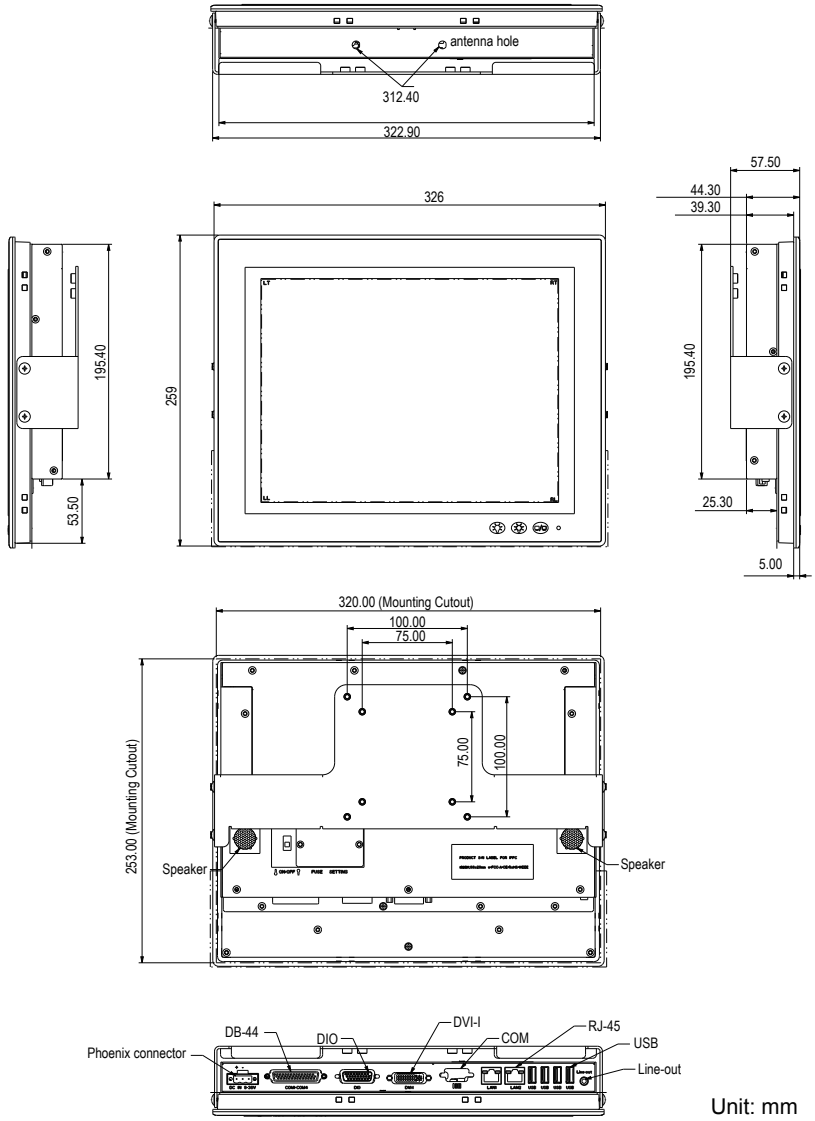
SSD-25040	Intel® 2.5" 40GB SATAII SSD Kit	
WIFI-IN1350	Intel® Centrino® Advanced-N 6205 WiFi Module w/ 20cm & 30cm internal wiring	
ANT-D11	2.4G/5G Dual-band WiFi Antenna	

Chapter 2

Getting Started

2.1. Dimensions

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



Unit: mm

2.2. Tour the Computer

Take a look around the computer and find the external controls and connectors.

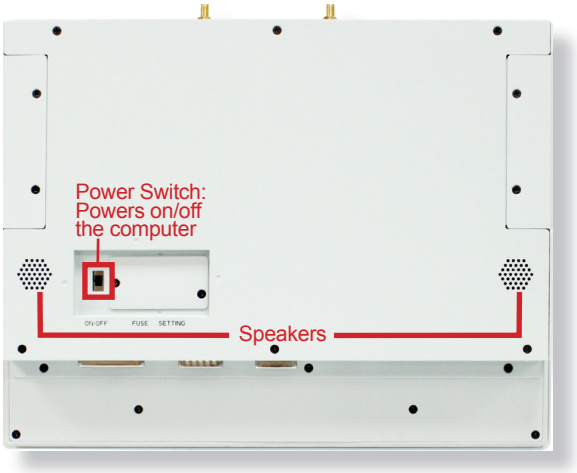
2.2.1. Front View

On the front side of the computer is a LCD display, a few function keys and one USB port recessed in the lower-right of the bezel.

Use the function keys to launch the following actions from the computer:

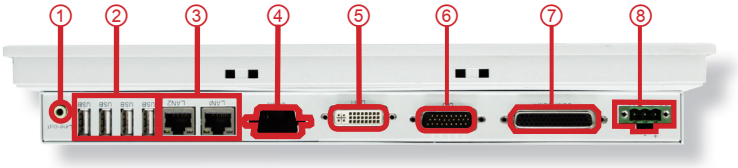
Icon	Description
	Turns on/off the LCD display.
	Decreases LCD backlight.
	Increases LCD backlight.

2.2.2. Rear View



2.2.3. Bottom View

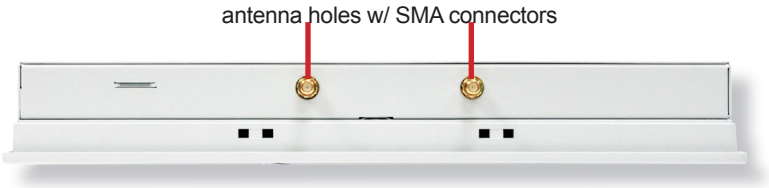
The bottom side of the computer is where the computer's I/O ports are.



No.	Description	No.	Description	No.	Description
①	Line-out	⑥	DB-26 connector (8 x isolated programmable DIO, 4 x digital inputs & 4 x digital outputs; the 4 digital outputs are with 3A relay)	⑦	DB-44 connector for COM1~4 (COM1 and COM2 are RS-232; COM3 and COM4 are RS-232/485 configurable)
②	Four USB 2.0 ports				
③	Two RJ-45 GbE ports				
④	DB-9 connector for COM5				
⑤	DVI-I port				
⑧	DC-in power connector				

2.2.4. Side View

2.2.5. Top View



2.3. Driver Installation Note

The computer supports the operating systems Windows 7 and Windows XP. Find the necessary device drivers on the CD that comes with your purchase. Always follow the sequence below to install all drivers to prevent errors:

Chipset→Graphics→Audio→LAN→touch→DIO

The path to find the device drivers on CD:

Windows XP

Device	Driver Path
Chipset	CHIPSET\Win7+WinXP\infinst_autol
Graphics	GRAPHIC\WIN XP\Utilities\SETUP
Audio	AUDIO\WinXP_ALC662\WDM_R267
LAN	ETHERNET\WinXP_82583V
touch	Touch Panel\PenMount Windows Universal Driver V2.2.0.283.(for XP Embedded)\SETUP
DIO	DIO\DIO3208B_Install-32_XP

Windows 7

Device	Driver Path
Chipset	CHIPSET\Win7+WinXP\infinst_autol
VGA	GRAPHIC\win7_x86_8.0.1.0.1083\Setup
Audio	Win7_ALC662\Vista_Win7_R267
LAN	ETHERNET\Win7_82583V
touch	Touch Panel\PenMount Windows Universal Driver V2.2.0.283. (Win7_32_64bit_WHQL)\SETUP
DIO	DIO\DIO3208B_Install-Win7

Chapter 3

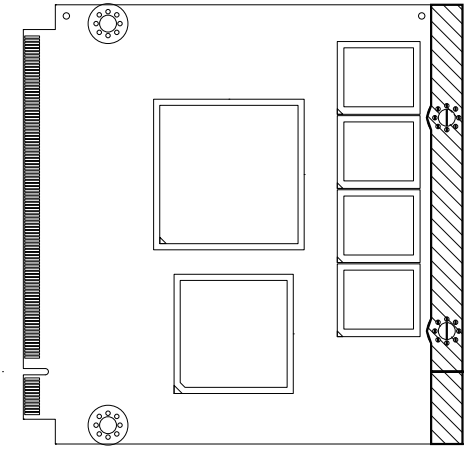
Engine of the Computer

3.1. Board Layout

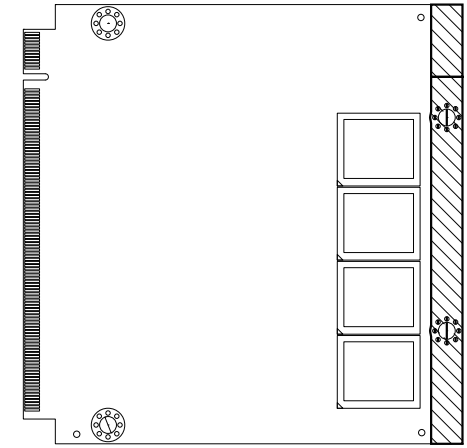
The engine of the computer is constructed by the CPU board EmQ-i2506, with the carrier board PBQ-9009.

3.1.1. CPU Board

Top View

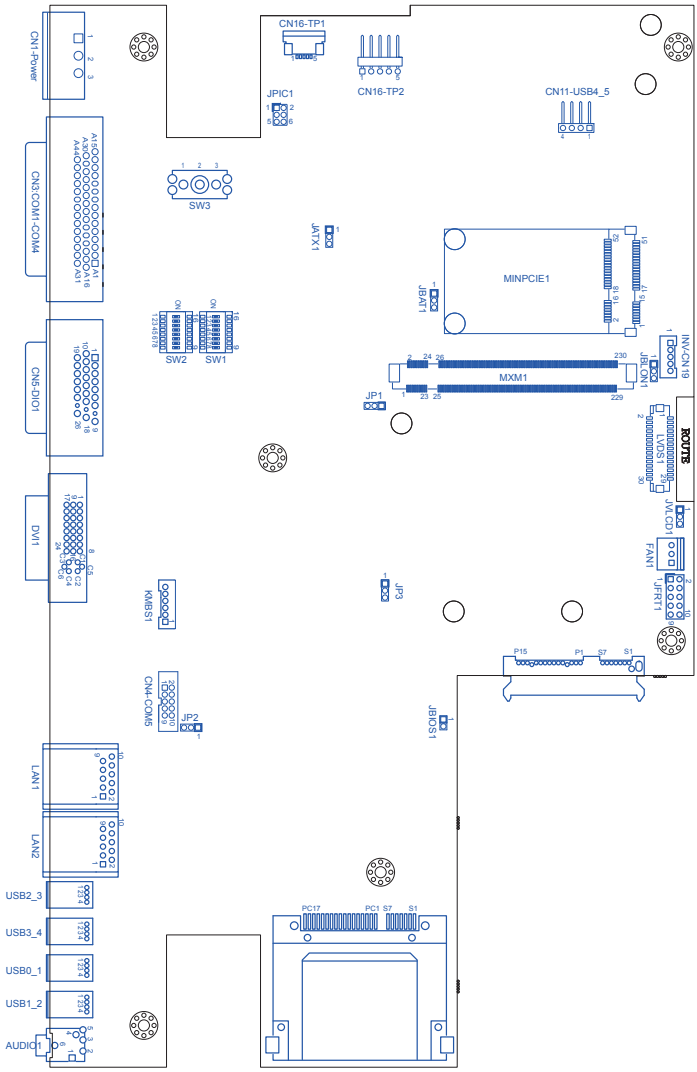


Bottom View

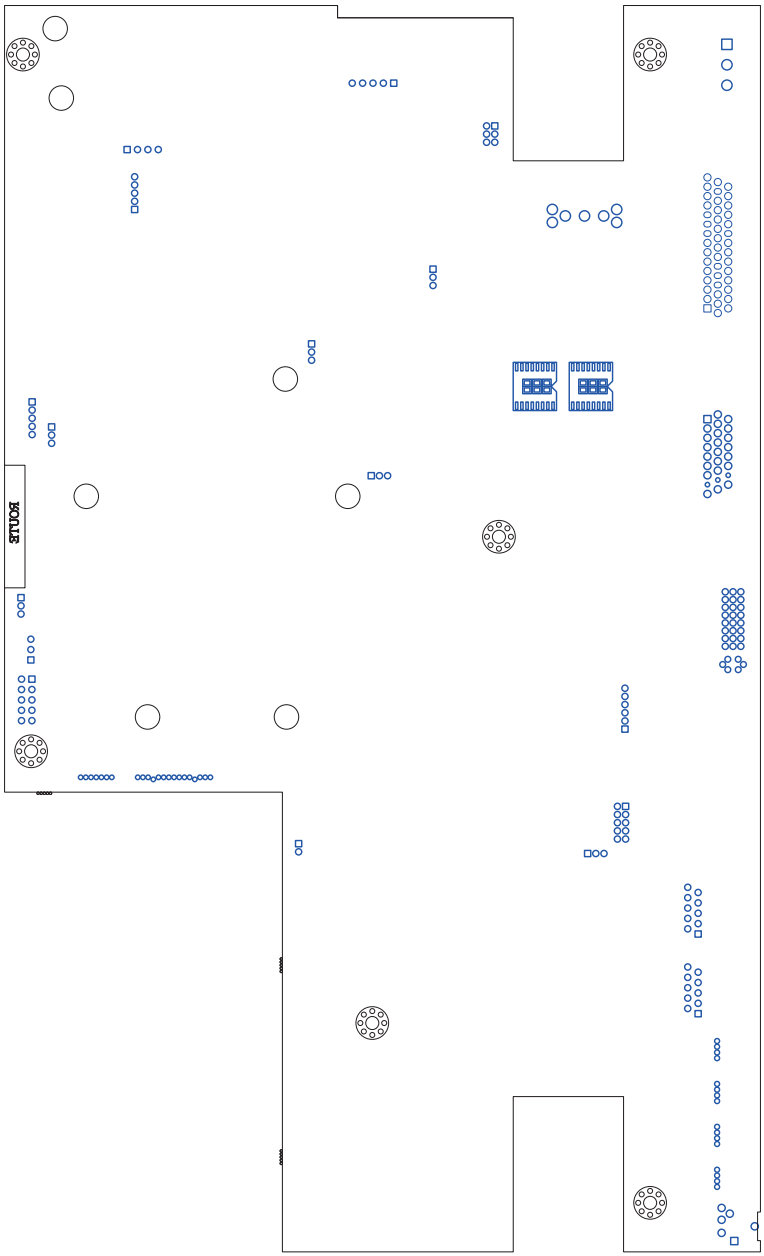


3.1.2. Carrier Board

PBQ-9009: Board Top



PBQ-9009: Board Bottom

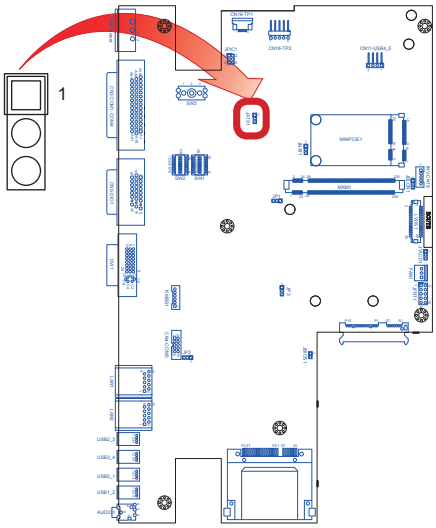


3.2. Jumpers, DIP Switches and Connectors

This chapter will explicate each of the jumpers, DIP switches and connectors on the carrier board of the computer.

3.2.1. Jumpers

JATX1

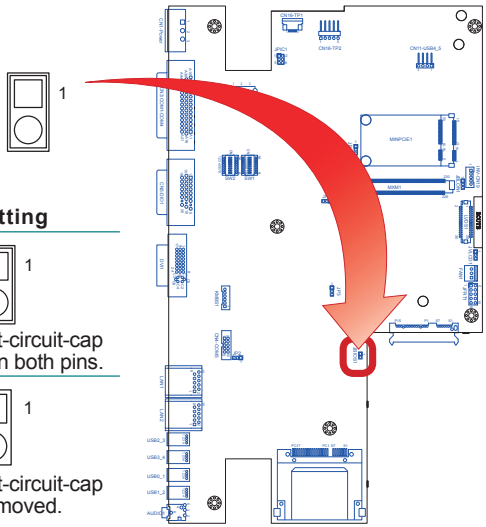


Function: Power supply mode setting
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP

Setting:

Pin	Description	Setting
1 & 2	AT	
2 & 3	ATX (default)	

JBIOS1



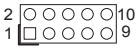
Function: BIOS selector
Jumper Type: 2.00mm-pitch 1x2-pin open type jumper

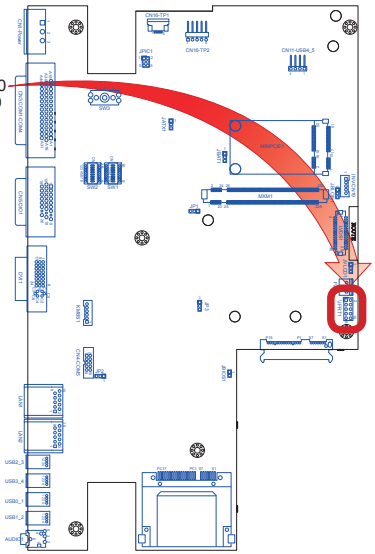
Setting:

Pin	Description	Setting
1 & 2	On: Boots the computer from the carrier board's flash ROM BIOS. (default)	 The short-circuit-cap is used on both pins.
None	Off: Boots the computer from the CPU board's flash ROM BIOS.	 The short-circuit-cap is removed.

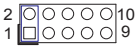
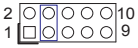
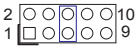
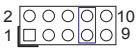
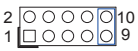
JFRT1

Function: Front panel LED indication
Jumper Type: 2.54mm-pitch 2x5-pin header, 180-degree DIP



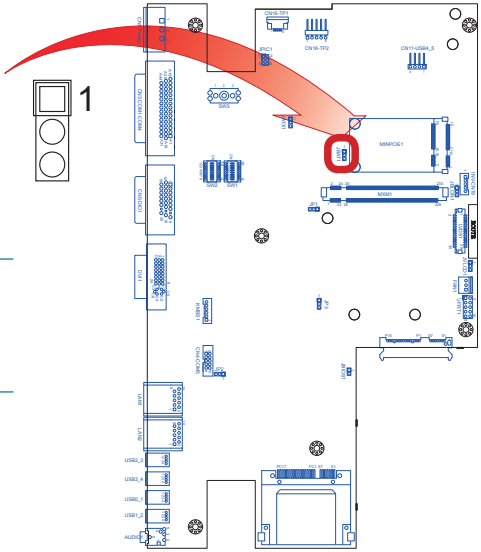


Setting:

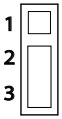
Pin	Function	Setting
1 & 2	System reset	
3 & 4	Power LED	
5 & 6	HDD LED	
7 & 8	Speaker	
9 & 10	Power Button	

JBAT1

Function: COMS setting
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP



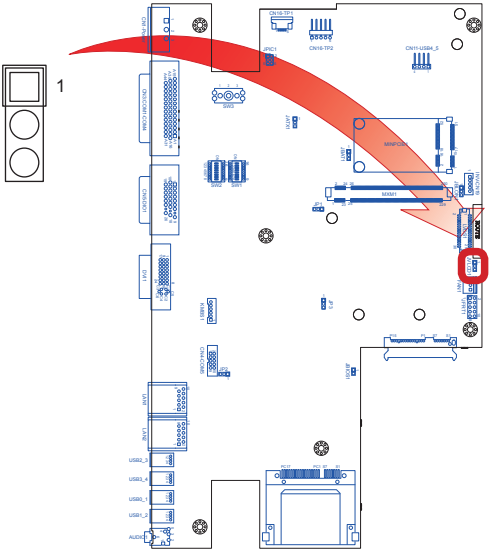
Setting:

Pin	Function	Setting
1 & 2	Keeps CMOS (default)	
2 & 3	Clears CMOS	

JVLCD1

Function: LCD power selection
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP

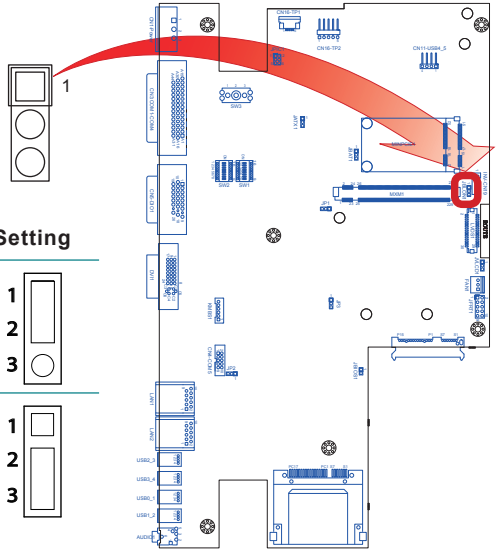
Pin	Function	Setting
1 & 2	5V	
2 & 3	3.3V (default)	



JBLON1

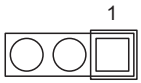
Function: LCD backlight activeness selection
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP

Pin	Function	Setting
1 & 2	Negative Active	
2 & 3	Positive Active (default)	

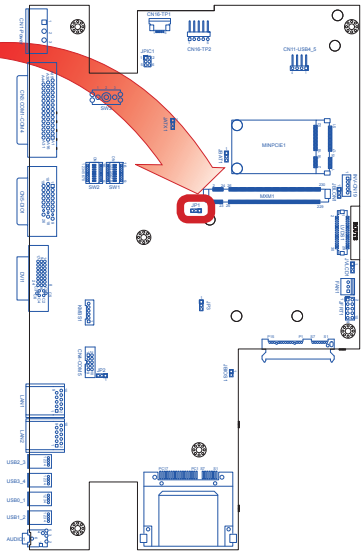


JP1

Function: COM1 function selection
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP

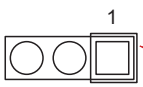


Pin	Function	Setting
1 & 2	For factory testing	
2 & 3	Normal (default)	

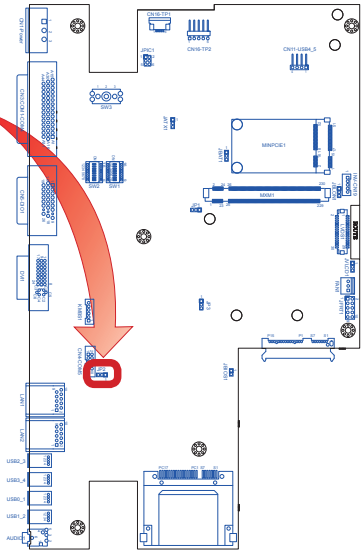


JP2

Function: COM5 pin RI function selection
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP

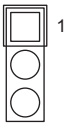


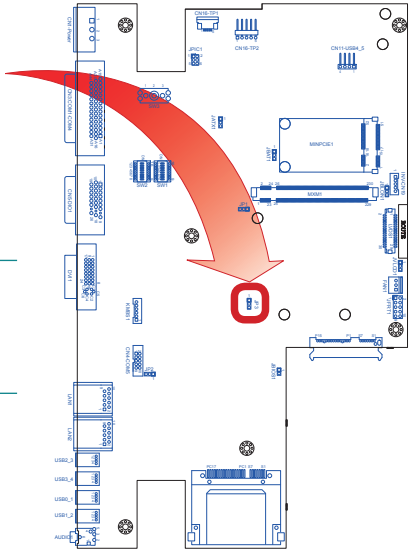
Pin	Function	Setting
1 & 2	5V (default)	
2 & 3	Normal	



JP3

Function: DIO mode selection
Jumper Type: 2.00mm-pitch 1x3-pin header, 180-degree DIP





Pin	Function	Setting
1 & 2	Resets output status after hot reset (default)	
2 & 3	Keeps output status after hot reset	

3.2.2. DIP Switches

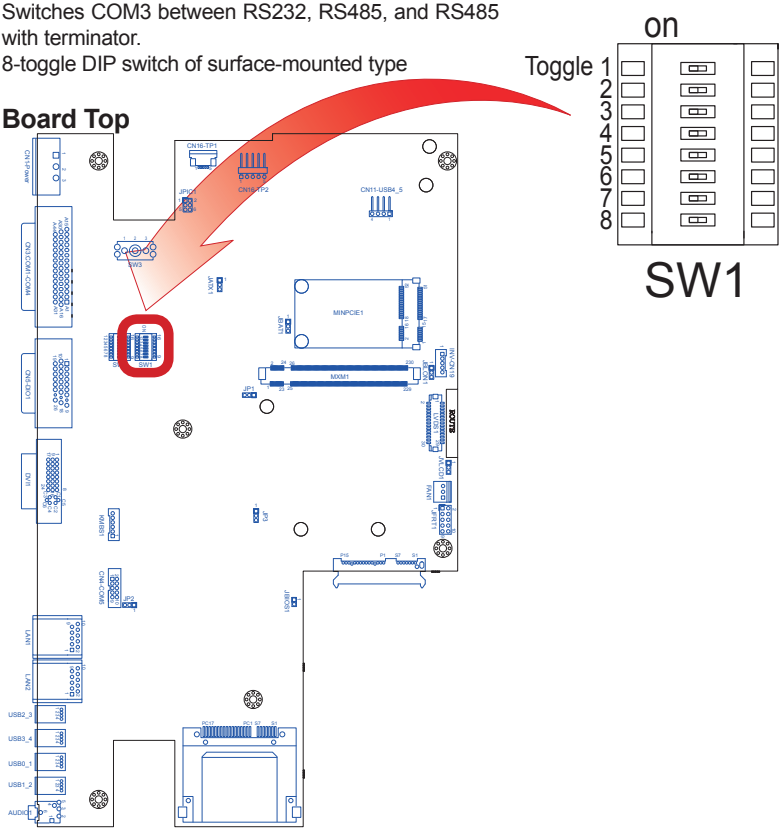
The computer comes with one DB-44 female connector for serial ports 1 to 4. COM1 and COM2 are fixed to RS232 while COM3 and COM4 are configurable between RS232, RS485 and RS485 with terminator. The computer's carrier board comes with two 8-toggle (16-pin) DIP switches, **SW1** and **SW2**, to control the data protocols for COM3 and COM4.

SW1 controls COM3 while **SW2** controls COM4. Both DIP switches **SW1** and **SW2** are only accessible after the rear panel is removed from the computer. See 4.2. Access Onboard DIP Switches on page 37 for more details.

SW1

Description: Switches COM3 between RS232, RS485, and RS485 with terminator.

Device Type: 8-toggle DIP switch of surface-mounted type



Follow the guide below to switch COM3 between RS232, RS485 and RS485 with terminator.

- **COM3 Settings**

COM3 RS232 (default)

Toggle	Position	Setting
1	on	
2	off	
3	off	
4	not applicable	
5	not applicable	
6	not applicable	
7	off	
8	off	

COM3 RS485

Toggle	Position	Setting
1	off	
2	on	
3	on	
4	not applicable	
5	not applicable	
6	off	
7	on	
8	on	

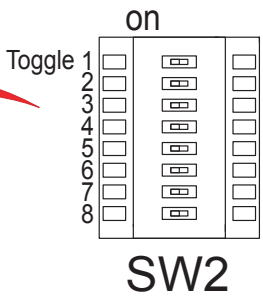
COM3 RS485 with terminator

Toggle	Position	Setting
1	off	
2	on	
3	on	
4	not applicable	
5	not applicable	
6	on	
7	on	
8	on	

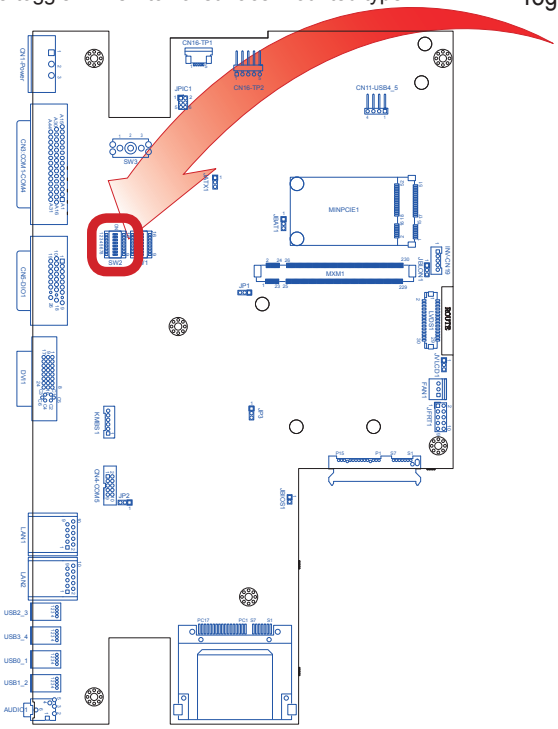
SW2

Description: Switches COM4 between RS232, RS485, and RS485 with terminator.

Device Type: 8-toggle DIP switch of surface-mounted type



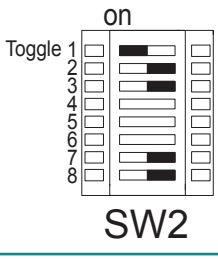
Board Top



Follow the guide below to switch COM4 between RS232, RS485 and RS485 with terminator.

- **COM4 Settings**

COM4 RS232 (default)

Toggle	Position	Setting
1	on	
2	off	
3	off	
4	not applicable	
5	not applicable	
6	not applicable	
7	off	
8	off	

COM4 RS485

Toggle	Position	Setting
1	off	
2	on	
3	on	
4	not applicable	
5	not applicable	
6	off	
7	on	
8	on	

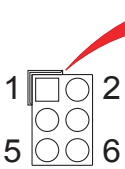
COM4 RS485 with terminator

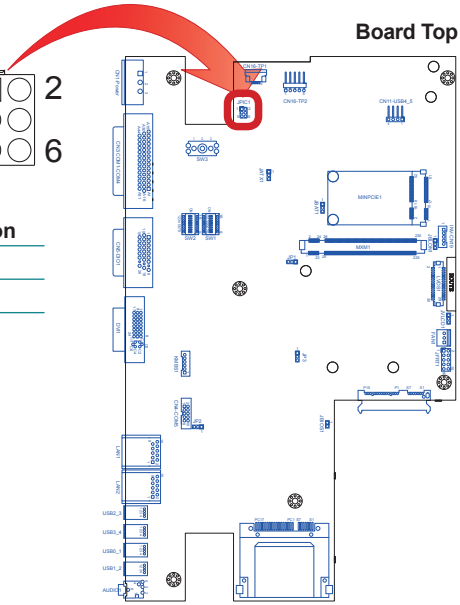
Toggle	Position	Setting
1	off	
2	on	
3	on	
4	not applicable	
5	not applicable	
6	on	
7	on	
8	on	

3.2.3. Connectors

JPIC1

Description: PIC MCU update port
Connector Type: 2.00mm-pitch 2x3-pin header, 180-degree DIP

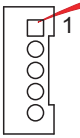


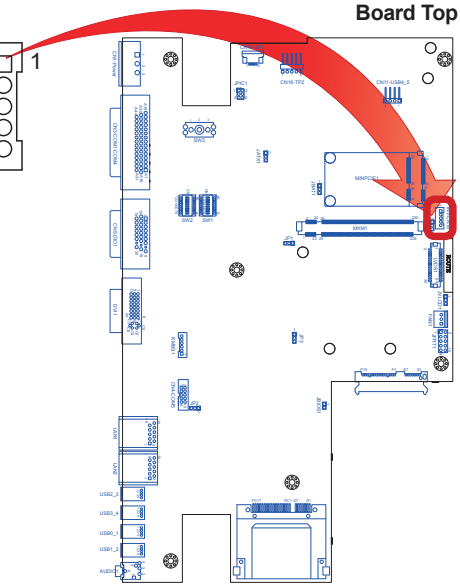


Pin	Description	Pin	Description
1	PIC_TX	2	Clock
3	Data	4	GND
5	5V	6	Reset

INV-CN19

Description: Inverter connector
Connector Type: 2.00mm-pitch 1x5-pin 4-wall wafer connector

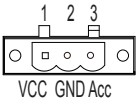




Pin	Description
1	+12V/+5V
2	GND
3	BL-ON
4	BL-Control
5	GND

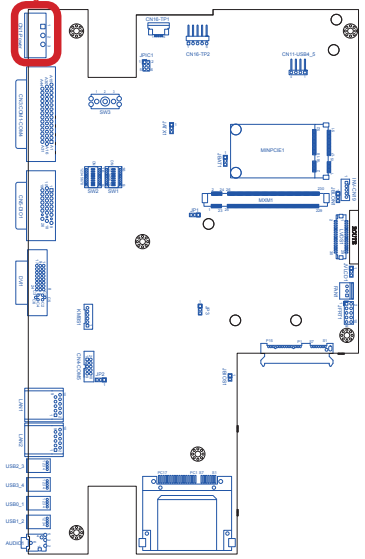
CN1-Power

Description: Power input
Connector Type: 5.00mm-pitch 3-pole male-type euro-style terminal block



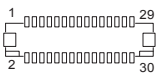
Pin	Description
1	VCC_IN 9~36V
2	GND
3	NC

Board Top



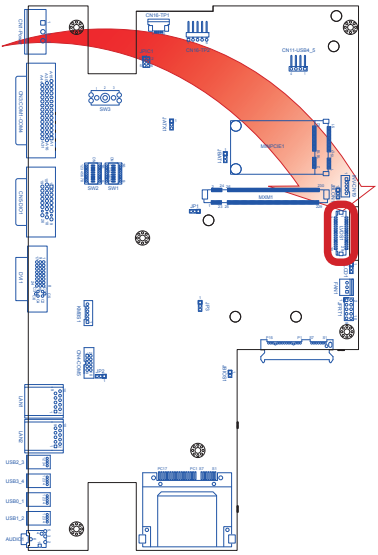
LVDS1

Description: LCD connector
Connector Type: 1.25mm-pitch 2x15-pin wire-to-board surface-mounted device with cap



Pin	Description	Pin	Description	Pin	Description
1	VDD1	11	TX1_D0-	21	TX1_D2+
2	VDD2	12	TX2_D0-	22	TX2_D2+
3	TX1_CLK+	13	GND2	23	TX1_D2-
4	TX2_CLK+	14	GND6	24	TX2_D2-
5	TX1_CLK-	15	TX1_D1+	25	GND4
6	TX2_CLK-	16	TX2_D1+	26	GND8
7	GND1	17	TX1_D1-	27	TX1_D3+
8	GND5	18	TX2_D1-	28	TX2_D3+
9	TX1_D0+	19	GND3	29	TX1_D3-
10	TX2_D0+	20	GND7	30	TX2_D3-
		H1	NC/FIX(1)	H2	NC/FIX(2)
		P1	NC/FIX(3)	P2	NC/FIX(4)

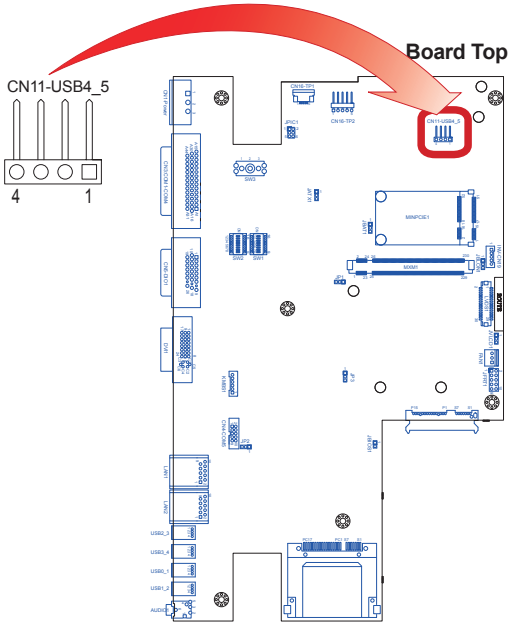
Board Top



CN11-USB4_5 & CN11-USB5_6

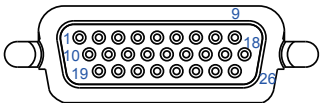
Description: USB connector
Connector Type: 2.54mm-pitch 1x4-pin header, 90-degree DIP

Pin	Description
1	5VCC
2	Data-
3	Data+
4	GND



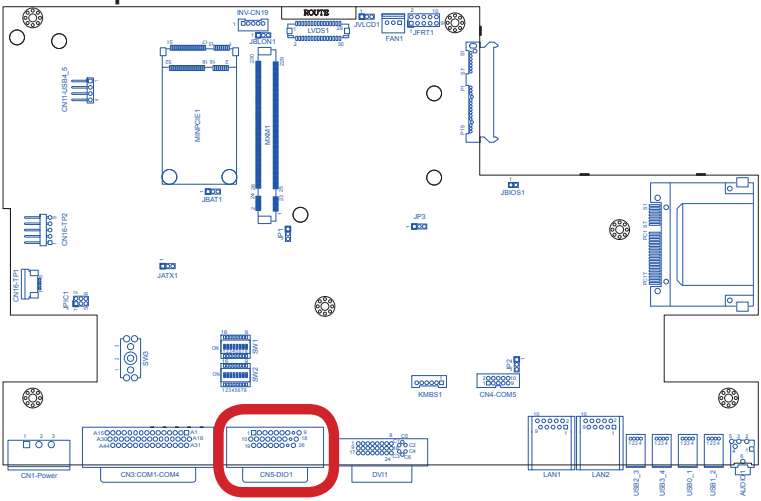
CN5-DIO1

Description: Digital input/output port
Connector Type: 26-pin male-type DSUB connector

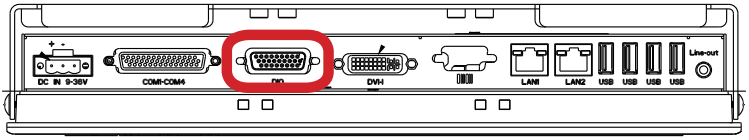


Pin	Description	Pin	Description	Pin	Description
1	DIN-0A	10	DIN-0B	19	DIN-3A
2	DIN-1A	11	DIN-1B	20	DIN-3B
3	DIN-2A	12	DIN-2B	21	DOUT0-NC
4	DOUT0-NO	13	DOUT0-COM	22	DOUT1-NC
5	DOUT1-NO	14	DOUT1-COM	23	DOUT2-NC
6	DOUT2-NO	15	DOUT2-COM	24	DOUT3-NC
7	DOUT3-NO	16	DOUT3-COM	25	NC
8	NC	17	NC	26	NC
9	NC	18	NC		

Board Top

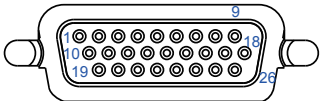


Bottom Panel



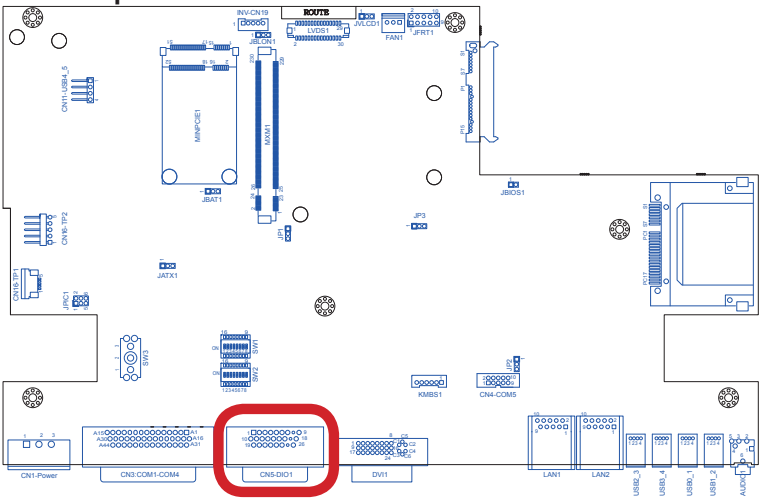
CN5-DIO1

Description: Digital input/output port
Connector Type: 26-pin male-type DSUB connector

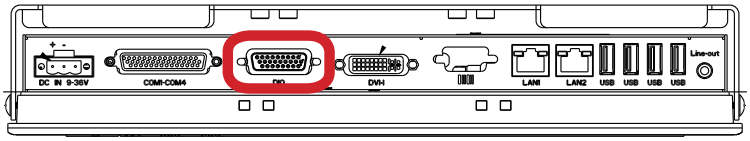


Pin	Description	Pin	Description	Pin	Description
1	DIN-0A	10	DIN-0B	19	DIN-3A
2	DIN-1A	11	DIN-1B	20	DIN-3B
3	DIN-2A	12	DIN-2B	21	DOUT0-NC
4	DOUT0-NO	13	DOUT0-COM	22	DOUT1-NC
5	DOUT1-NO	14	DOUT1-COM	23	DOUT2-NC
6	DOUT2-NO	15	DOUT2-COM	24	DOUT3-NC
7	DOUT3-NO	16	DOUT3-COM	25	NC
8	NC	17	NC	26	NC
9	NC	18	NC		

Board Top

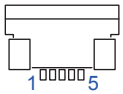


Bottom Panel



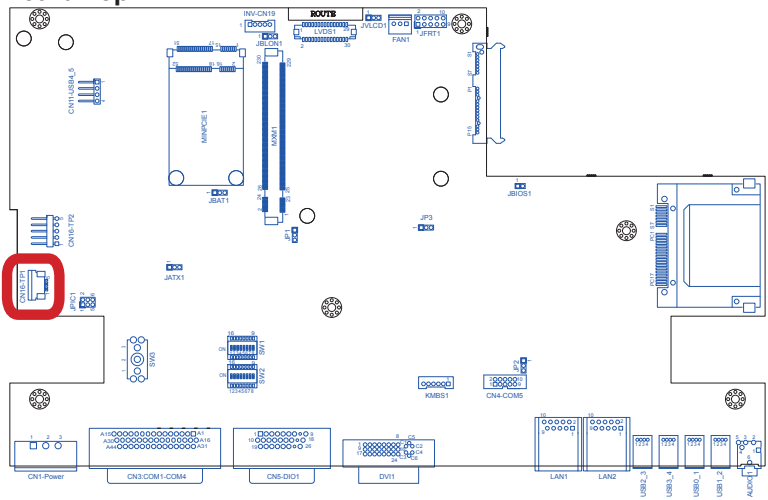
CN16-TP1

Description: Membrane connector
Connector Type: 1.00mm-pitch 1x5-pin FPC downside connector



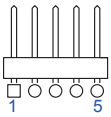
Pin	Description
1	Panel-PWM-
2	Panel-PWM+
3	Power SW
4	Power LED
5	GND

Board Top



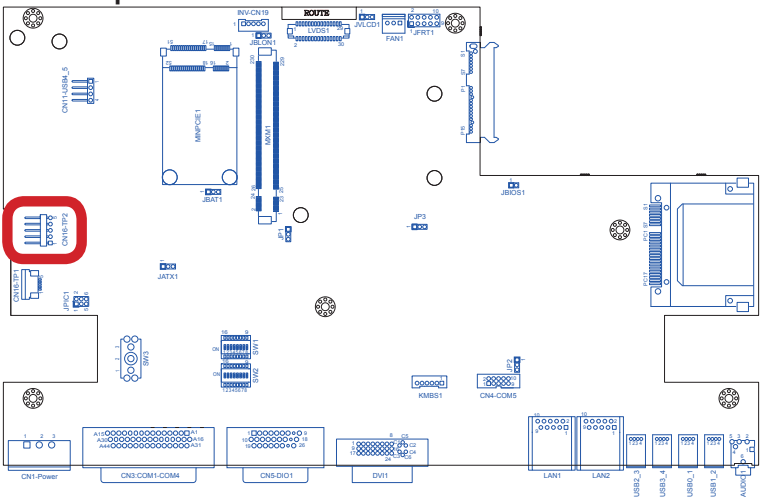
CN16-TP2

Description: Touch panel connector
Connector Type: 2.54mm-ptich 1x5-pin header, 90-degree DIP



Pin	Description
1	Y+
2	X+
3	Sense
4	Y-
5	X-

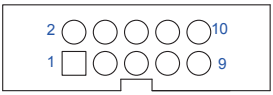
Board Top



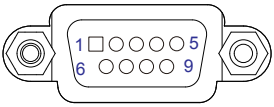
CN4-COM5

Description: Serial port connector

Connector type: 2.00mm-ptich 2x5-pin box header, 180-degree DIP

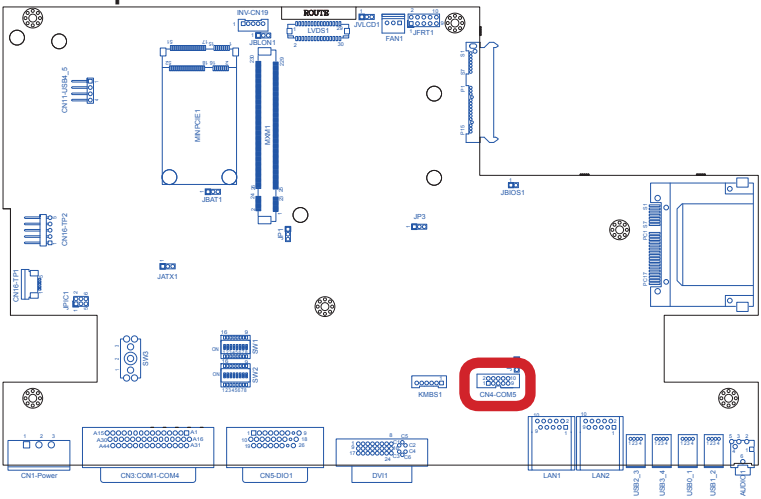


External port type: 9-pin male-type DSUB connector

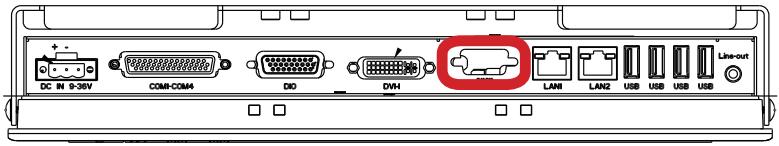


Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	5V
5	GND		

Board Top

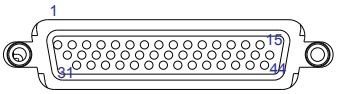


Bottom Panel



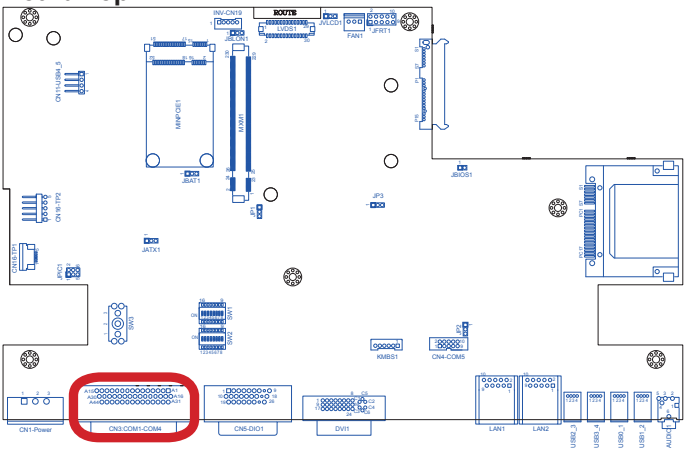
CN3:COM1~4

Description: Serial ports 1 to 4
Connector type: 44-pin female-type DSUB connector

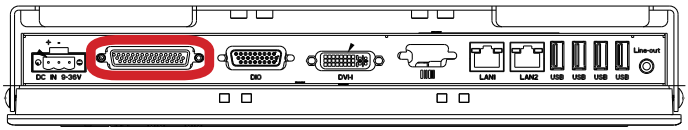


Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	DCD1	12	RXD2	23	TXD3	34	DTR4
2	RXD1	13	TXD2	24	DTR3	35	GND4
3	TXD1	14	DTR2	25	GND3	36	DSR4
4	DTR1	15	GND2	26	DSR3	37	RTS4
5	GND1	16	DSR2	27	RTS3	38	CTS4
6	DSR1	17	RTS2	28	CTS3	39	RI4
7	RTS1	18	CTS2	29	RI3	40	UR3_RS485+
8	CTS1	19	RI2	30	UR3_ RS485-	41	UR4_RS485-
9	RI1	20	UR3_RS485+	31	DCD4	42	UR4_RS485+
10	UR3_RS485-	21	DCD3	32	RXD4	43	UR4_RS485-
11	DCD2	22	RXD3	33	TXD4	44	UR4_RS485+

Board Top



Bottom Panel



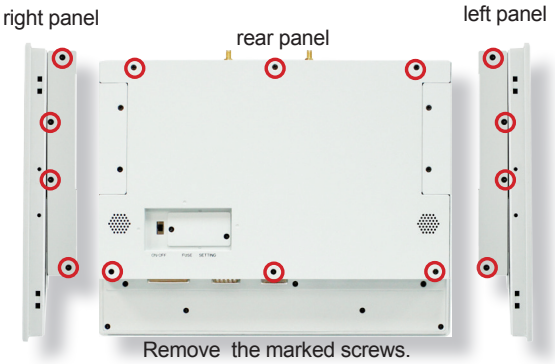
Chapter 4

Installation & Maintenance

4.1. Use Onboard Jumpers and Connectors

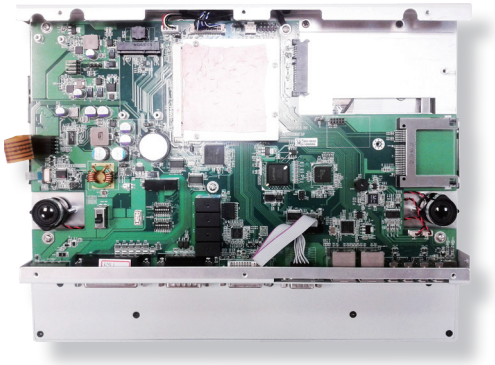
The computer's carrier board PBQ-9009 comes with some connectors to join some devices and also some jumpers to alter hardware configuration. Follow through the guide below to access these components inside the computer.

1. Loosen and remove the 6 screws from the computer's rear panel. And loosen and remove the 4 screws from each of the left and right panel of the computer. See the illustration below.



2. Dismount the rear cover from the computer.

   The inside of the computer comes to view.

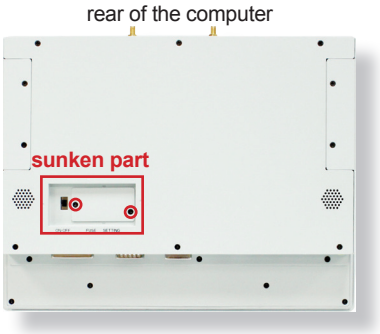


3. Adjust the jumpers or use the connectors on the carrier board as described in 3.2.1. Jumpers on page 17 and 3.2.3. Connectors on page 26.

4.2. Access Onboard DIP Switches

The computer's carrier board PBQ-9009 comes with two DIP switches to modulate the serial ports COM3 and COM4 between different data protocols. Follow through the guide below to access these DIP switches.

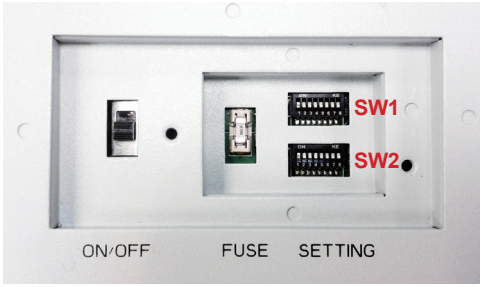
1. From the rear of the computer, find the sunken part as illustrated below.



2. From inside the sunken part, loosen and remove the two screws as illustrated above.

3. Remove the piece of metal that covers the DIP switches.

   The two DIP switches come to view.



4. Adjust the data protocols for the serial ports COM3 and COM4 as described in 3.2.2. DIP Switches on page 22.

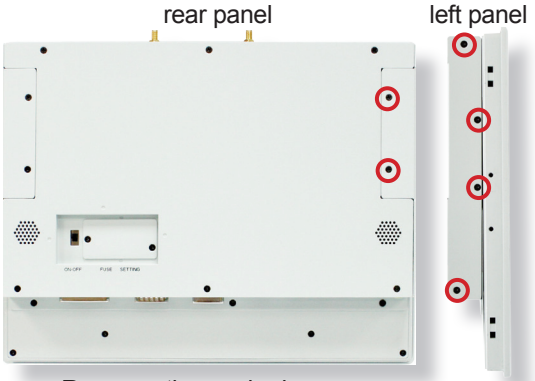
4.3. Install Hardware

The computer features outside-accessible ports for users to simplify the hardware installation to the computer. The following sections will guide you to the basic hardware installation for the computer.

4.3.1. Remove Left Door

To access both of the HDD/SSD connector and CFast socket, the computer's left door has to be removed. Follow through the steps below to remove the computer's left door cover.

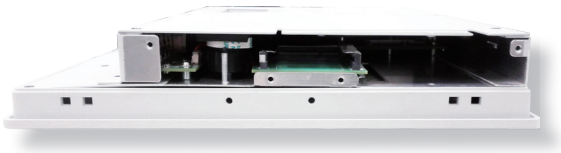
1. From the computer's rear and left panels, loosen and remove the screws as illustrated below.



Remove the marked screws.

2. Dismount the left door from the computer.

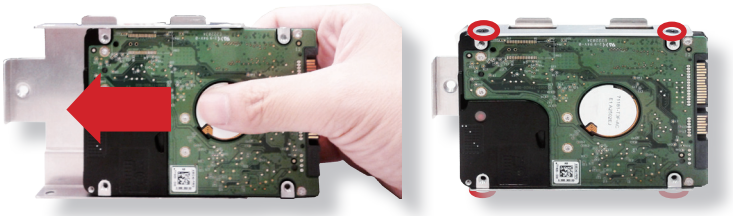
   The inside of the computer comes to view.



4.3.2. Install SSD or HDD

The computer supports a 2.5” HDD or SSD to work inside the computer. To install a 2.5” HDD or SSD storage device to the computer:

1. Have the HDD/SSD storage bracket from the Standard Accessories. Slide an 2.5” HDD or SSD storage device to the bracket. Fix them together by using four screws at the bracket’s both sides. See the illustration below.



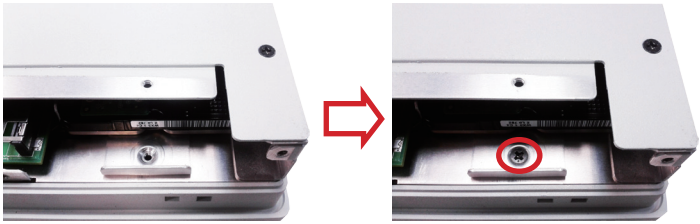
2. Dismount the computer’s left door as described in 4.3.1. Remove Left Door on page 38.

   The inside of the computer comes to view.

3. Along the computer’s top side, slide the storage assemblage into the computer. Fully slide the assemblage until it cannot be slid any more so the storage device is fully connected to the SATA connector inside.

Fully slide the storage assemblage until it cannot be slid any more.

4. Fix the storage assemblage inside the computer using one screw as illustrated below.



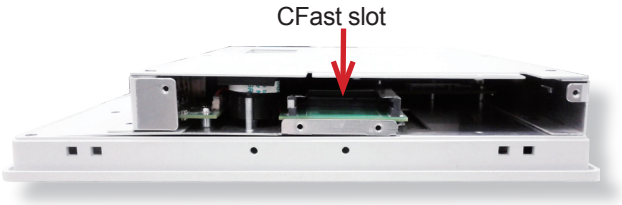
5. Restore the left door to the computer.

4.3.3. Install CFast Card

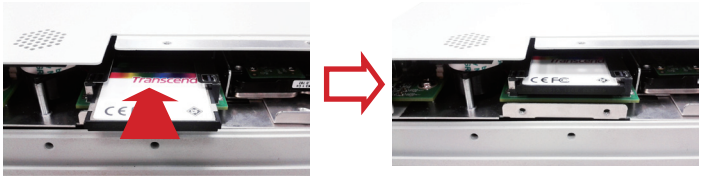
The computer comes with a CFast card slot to power the computer with a CFast storage. To install a CFast card to the computer:

1. Dismount the computer's left door as described in 4.3.1. Remove Left Door on page 38.

   The CFast slot comes to view.



2. Have a CFast card. Push the CFast card into the slot so the card can be clicked in place.



3. Restore the left door to the computer.

4.3.4. Install Wi-Fi Module

The computer comes with one **Mini-card** socket to load the computer with a wireless module of **PCI Express Mini-card** form factor. The configure-to-order Wi-Fi module available with the computer is **WIFI-IN1350**:

WIFI-IN1350
Intel® Centrino® Advanced-N 6205 WiFi Module w/ 20cm & 30cm internal wiring

(See also 1.5.2. Configure-to-Order Service on page 6.)

- If you have ordered the Wi-Fi module **WIFI-IN1350**, see Appendix A: WIFI-IN1350 Hardware/Software Installation to know how to install the hardware and software for the module.

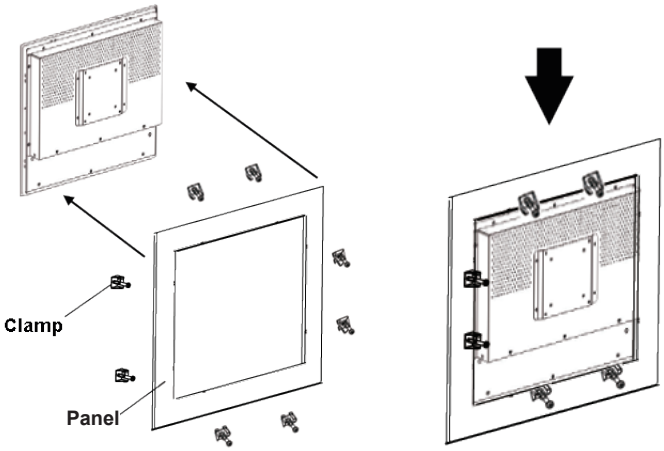
4.2. Mount the Computer

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

4.2.1. Panel Mounting with Clamps

Follow the guide below to mount the computer to a panel by using clamps.

1. Have the panel-mounting clamps included in the accessory pack.
2. Attach the clamps to the slots around the edges of the panel to mount.
3. Fix the computer to tje panel by using screws on the said clamps.



4.2.2. VESA Mounting

To support VESA-mounting, the computer needs a VESA bracket, which is available on option, to enable 75 x 75mm and 100 x 100mm VESA applications.

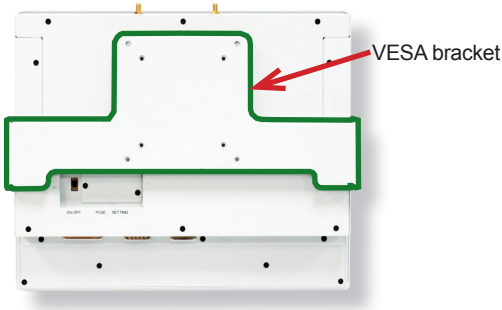
4.2.2.1. Install VESA Bracket

Follow the guide below to install the VESA bracket to the computer:

1. Have the VESA arm and the four mounting screws that come with it.

2. Place the computer on a flat surface, with the rear facing up.

3. Place the VESA bracket onto the computer.



4. Fix the VESA bracket to the computer by using two screws at each the left and right side of the computer.

Use two screws on the right side.

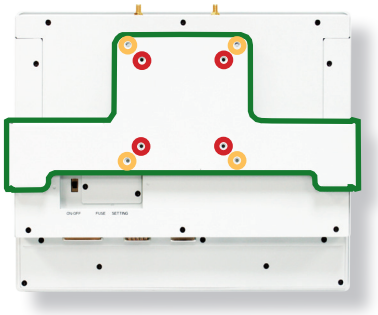
Use another two screws on the left side

4.2.2.2. Use VESA Arm

To integrate the computer to a VESA arm:

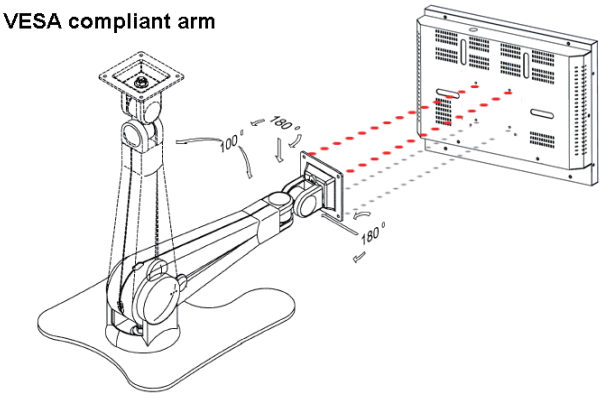
1. Install the VESA bracket to the computer as described in 4.2.2.1. Install VESA Bracket on page 44.

2. Find the VESA mounting holes at the rear of the computer.



3. Attach the VESA arm to the rear of the computer by meeting the mounting holes on the VESA arm and VESA bracket.

4. Fix the assemblage with four screws.

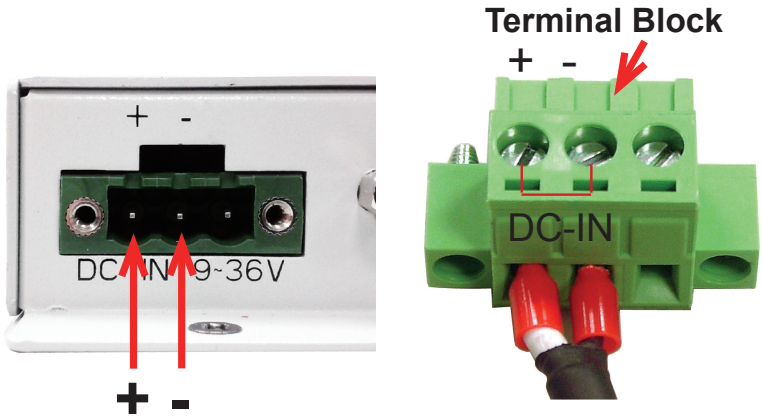


4.3. Wire DC-Input Power Source

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

Follow the instructions below to connect 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 voltages.
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.



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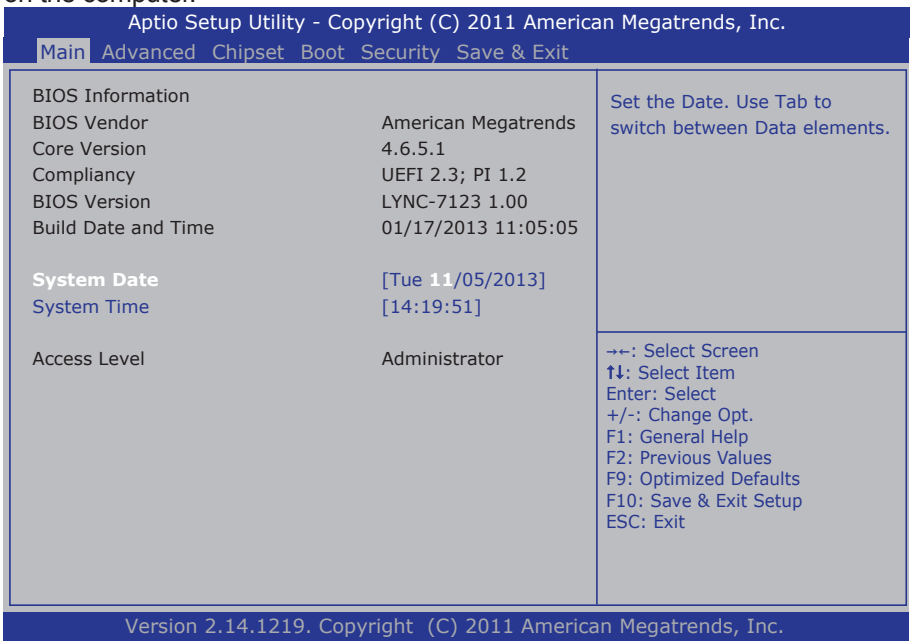
Chapter 5

BIOS

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

To enter the BIOS Setup utility, continuously hit the "Delete" key upon powering on the computer.



The featured menus are:

Menu	Description
Main	See 5.1. Main on page 52.
Advanced	See 5.2. Advanced on page 53.
Chipset	See 5.3. Chipset on page 64.
Boot	See 5.4. Boot on page 67.
Security	See 5.5. Security on page 69.
Save & Exit	See 5.6. Save & Exit on page 71.

Key Commands

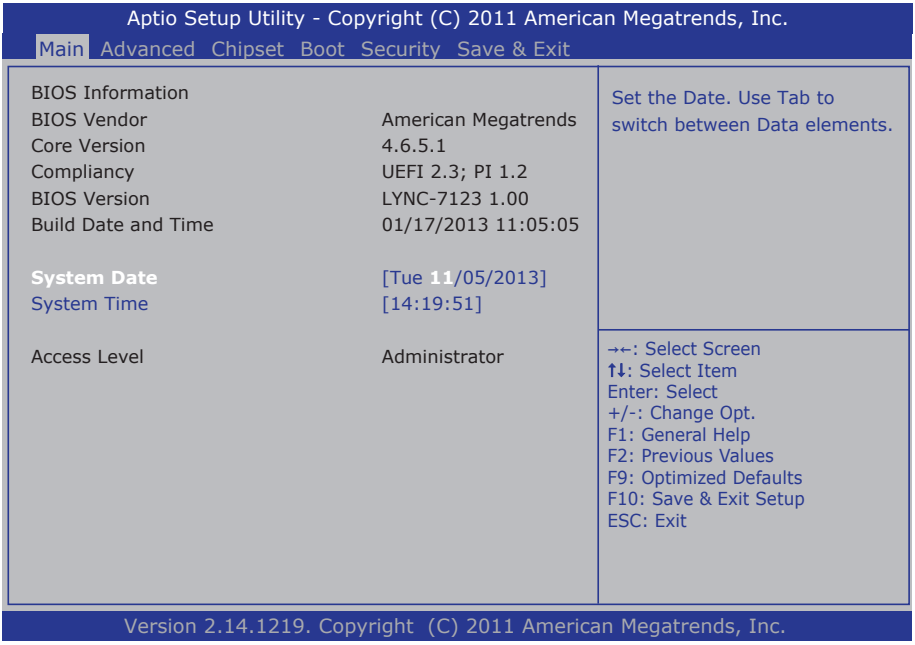
The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to navigate within the utility and use the utility.

Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	▸ On the top menus Hit **ESc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to return to the BIOS settings. ▸ On the submenus Hit **ESC** to quit current screen and return to the top menu.
Page Up / +	Increases current value to the next higher value or switches between available options.
Page Down / -	Decreases current value to the next lower value or switches between available options.
F1	Opens the **Help** of the BIOS Setup utility.
F10	Exits the utility saving the changes that have been made. (The screen then prompts a message asking you to select **OK** or **Cancel** to exit saving changes.)

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

5.1. Main

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



The BIOS info displayed is:

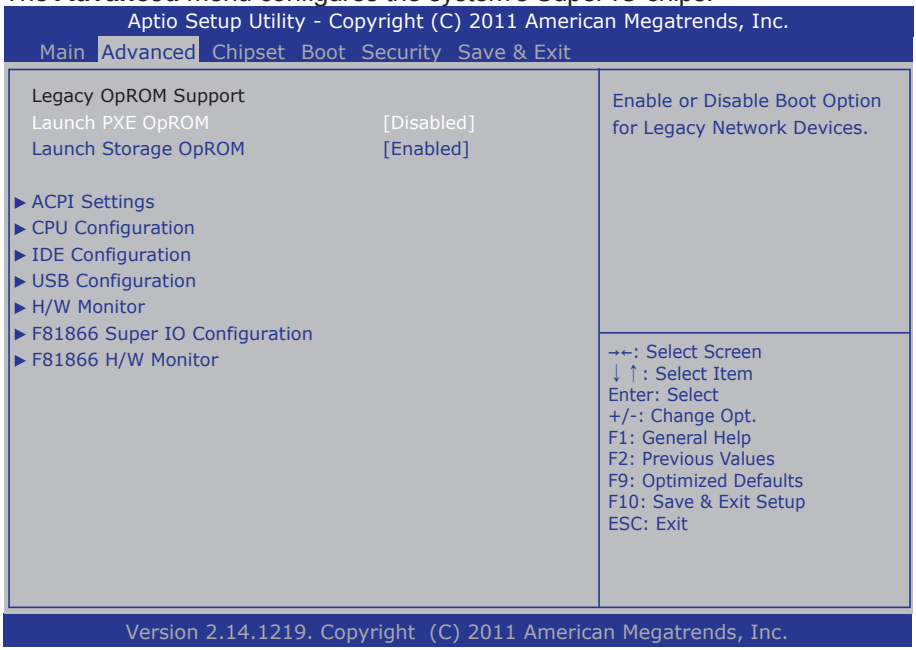
Info Item	Description
BIOS Vendor	Delivers the provider of the BIOS Setup utility.
Core Version	Delivers the version of the core.
Compliency	Delivers the UEFI support.
BIOS Version	Delivers the computer's BIOS version.
Build Date and Time	Delivers the date and time the BIOS Setup utility was made/updated.
Access Level	Delivers the level by which the BIOS Setup utility is being accessed at the moment. ▸ Only **Administrator** level is available on the computer.

The featured settings are:

Setting	Description
System Time	Sets system time.
System Date	Sets system date.

5.2. Advanced

The **Advanced** menu configures the system's Super IO chips.



The featured settings and submenus are:

Group / Setting		Description
Legacy OpROM Support	**Launch PXE OpROM**	Enables/disables the boot option for legacy network devices. ▸ **Disabled** is the default ▸ "PXE" means "Preboot Execution Environment", a series of methods to get a typical Windows-based computer to boot up without a hard drive or boot diskette.
	Launch Storage OpROM	Enables/disables the boot option for the legacy mass storage devices with Option ROM. ▸ **Enabled** is the default.
ACPI Settings		See 5.2.1. ACPI Settings on page 54.
CPU Configuration		See 5.2.2. CPU Configuration on page 55.
IDE Configuration		See 5.2.3. IDE Configuration on page 57.
USB Configuration		See 5.2.4. USB Configuration on page 59.
F81866 Super IO Configuration		See 5.2.5. F81866 Super IO Configuration on page 60.
F81866 H/W Monitor		See 5.2.6. F81866 H/W Monitor on page 63.

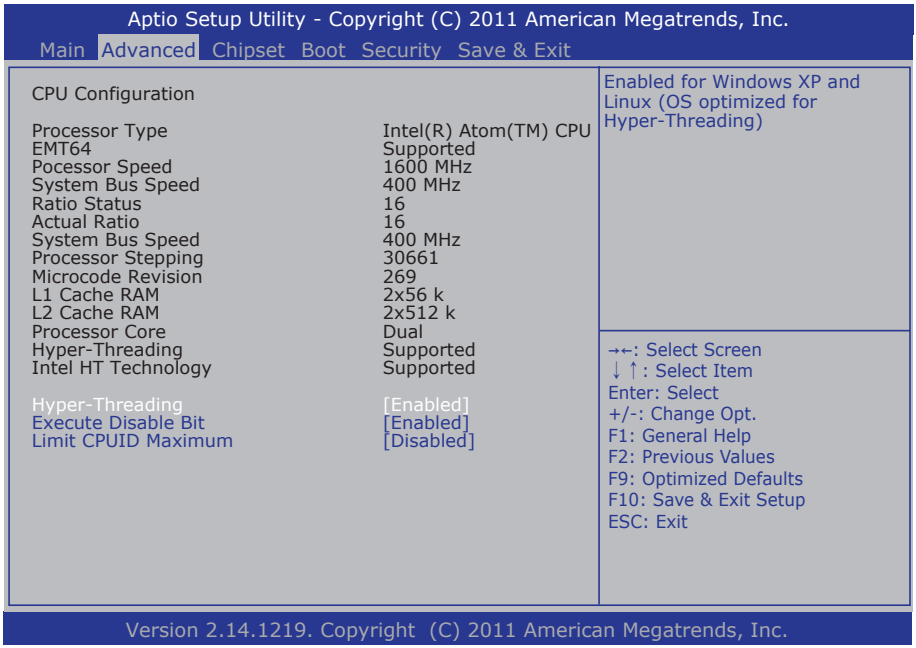
5.2.1. ACPI Settings

ACPI Settings configure the system's ACPI (Advanced Configuration and Power Interface). The featured settings are:

Setting	Description
Enable ACPI Auto Configuration	Sets whether to let BIOS auto-configure the ACPI feature. ▸ **Disabled** is the default.
Enable Hibernation	Enables/disables the system to/from hibernation (OS/S4 Sleep State). ▸ This setting is only available when **Enable ACPI Auto Configuration** is disabled. ▸ This setting may not be effective with some OS. ▸ **Enabled** is the default.
ACPI Sleep State	Sets the highest ACPI sleep state that system enters when the suspend button is hit. ▸ This setting is only available when **Enable ACPI Auto Configuration** is disabled. ▸ Options available are **Suspend Disabled** and **S1 (CPU Stop Clock)**. ▸ **S1 (CPU Stop Clock)** is the default.

5.2.2. CPU Configuration

This submenu configures Intel® Hyper-Threading support and delivers the info about the CPU, including the CPU's model name, processor stepping, max./min. processor speed, microcode revision, the amount of processor cores, EMT64 support and so on.



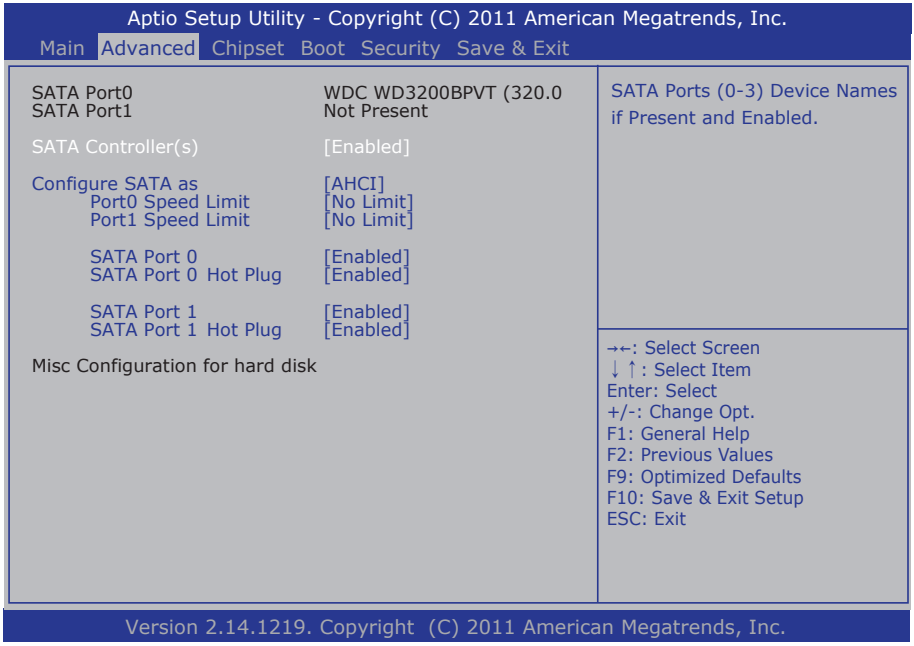
The featured settings are:

Setting	Description
Hyper-Threading Technology	Enables/disables the processor's Hyper-threading feature. ▸ Select **Enabled** for Windows XP and Linux, which are optimized for Hyper-threading technology. ▸ Select **Disabled** for other OS that are not optimized for Hyper-threading. ▸ **Enabled** is the default. ▸ When disabled, only one thread per en abled core is enabled.
Execute Disable Bit	Enables/disables the processor's capability to mark the memory as executable or non-executable, when the operating system supports. ▸ This feature can prevent some classes of viruses or worms that exploit buffer over run vulerabilities and can thus help improve the overall security of the system. ▸ **Enabled** is the default.

Limit CPUID Maximum	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.

5.2.3. IDE Configuration

IDE Configuration delivers the computer's SATA status and configures SATA device(s).



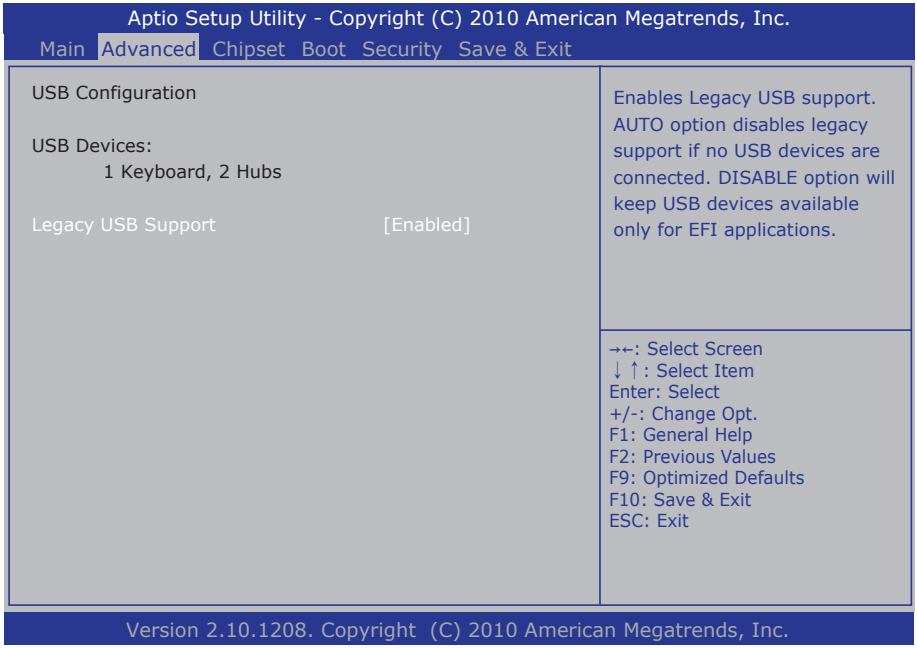
The featured settings are:

<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>SATA Controller(s)</td><td>Enables/disables the SATA device(s).
▸ Enabled is the default.</td></tr>
<tr><td>Configure SATA as</td><td>Configures how SATA controller(s) operate.
▸ Options available are AHCI (default) and IDE.
▸ When set to AHCI, the following settings become available:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Port0 Speed Limit</td><td>Sets the AHCI speed limit for SATA port 0.
▸ Options available are: No Limit (default), GEN1 Rate and GEN2 Rate.</td></tr>
</table></td></tr>
</table>

	Port1 Speed Limit	Sets the AHCI speed limit for SATA port 1. ▸ Options available are: **No Limit** (default), **GEN1 Rate** and **GEN2 Rate**.
	SATA Port 0	Enables/disables SATA port 0. ▸ **Enabled** is the default.
	SATA Port 0 Hot Plug	Enables/disables the hot pluggable feature for SATA port 0. ▸ **Enabled** is the default.
	SATA Port 1	Enables/disables SATA port 1. ▸ **Enabled** is the default.
	SATA Port 1 Hot Plug	Enables/disables the hot pluggable feature for SATA port 1. ▸ **Enabled** is the default.

5.2.4. USB Configuration

USB Configuration displays the status of USB connection and configures USB parameters.

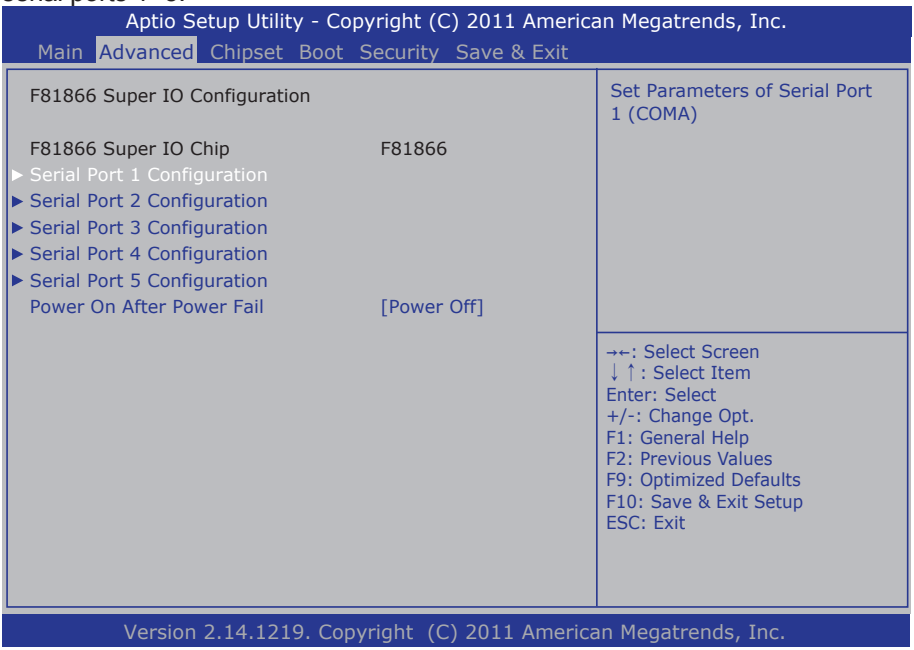


The featured setting is:

Setting	Description
Legacy USB Support	Enables/disables legacy USB support or leaves it on BIOS auto-detection. ▸ Options available are **Enabled** (default), **Disabled** and **Auto**. ▸ Select **Auto** to disable legacy support if no USB device are connected. ▸ Select **Disabled** to keep USB devices available only for EFI applications.
EHCI Hand-off	Enables/disables a workaround for the operating systems that have no EHCI hand-off support ▸ **Disabled** is the default..

5.2.5. F81866 Super IO Configuration

This submenu configures the computer's Super IO chip, Fintek F81866, for the serial ports 1~5.



The featured submenus and setting are:

<table>
<tr><th>Submenu / Setting</th><th>Description</th></tr>
<tr><td>Serial Port 1 Configuration</td><td>Configures the computer's COM1, which is fixed to RS232 and cannot be changed. The featured settings are:
<table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Serial Port</td><td>Enables/disables the serial port.
▸ Enabled is the default.</td></tr>
<tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port.
▸ Options available are:
IO=3F8h; IRQ=4; (default)
IO=3F8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F8h; IRQ=3,4,5,6,7,10,11,12;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
▸ This setting is only available when the serial port is enabled.</td></tr>
</table></td></tr>
</table>

Serial Port 2 Configuration

Configures the computer's COM2, which is fixed to RS232 and cannot be changed. The featured settings are:

Setting	Description
Serial Port	Enables/disables the serial port. ▸ **Enabled** is the default.
Change Settings	Sets the optimal IO address and IRQ info for the serial port. ▸ Options available are: **IO=2F8h; IRQ=3;** (default) **IO=3F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=3E8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2E8h; IRQ=3,4,5,6,7,10,11,12;** ▸ This setting is only available when the serial port is enabled.

Serial Port 3 Configuration

Configures the computer's COM3, which is configurable between RS232, RS485 and RS485 with terminator. The featured settings are:

Setting	Description
Serial Port	Enables/disables the serial port. ▸ **Enabled** is the default.
Change Settings	Sets the optimal IO address and IRQ info for the serial port. ▸ Options available are: **IO=3E8h; IRQ=10;** (default) **IO=3F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=3E8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2E8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2F0h; IRQ=3,4,5,6,7,10,11,12;** **IO=2E0h; IRQ=3,4,5,6,7,10,11,12;** ▸ This setting is only available when the serial port is enabled.

Serial Port 4 Configuration

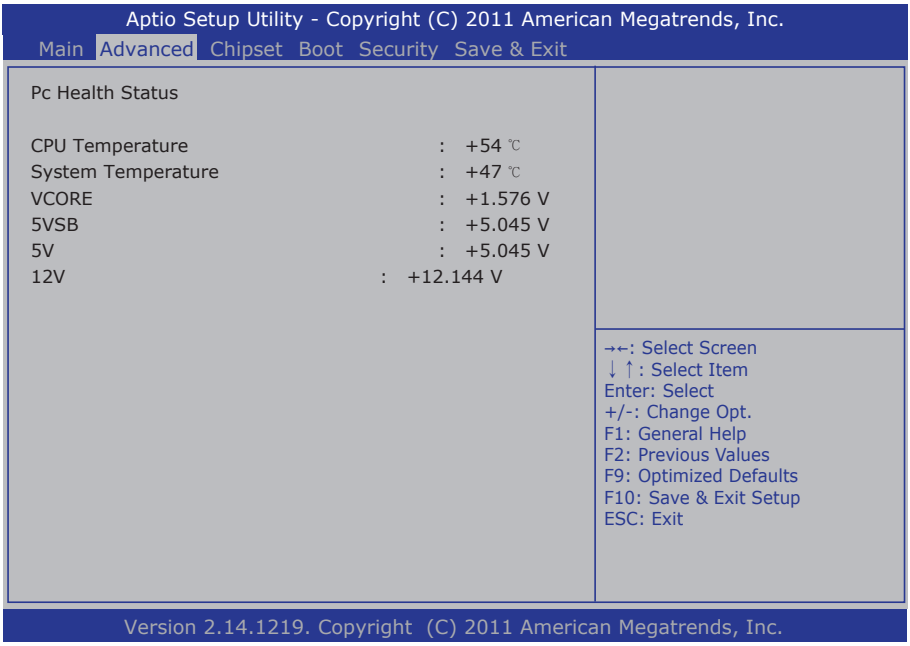
Configures the computer's COM4, which is configurable between RS232, RS485 and RS485 with terminator. The featured settings are:

Setting	Description
Serial Port	Enables/disables the serial port. ▸ **Enabled** is the default.
Change Settings	Sets the optimal IO address and IRQ info for the serial port. ▸ Options available are: **IO=2E8h; IRQ=11;** (default) **IO=3F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2F8h; IRQ=3,4,5,6,7,10,11,12;** **IO=3E8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2E8h; IRQ=3,4,5,6,7,10,11,12;** **IO=2F0h; IRQ=3,4,5,6,7,10,11,12;** **IO=2E0h; IRQ=3,4,5,6,7,10,11,12;** ▸ This setting is only available when the serial port is enabled.

<table>
<tr><td>Serial Port 5 Configuration</td><td>Configures the computer's COM5, which is fixed to RS232, with 5V / 500mA via pin 9. The featured settings are:<table><tr><th>Setting</th><th>Description</th></tr><tr><td>Serial Port</td><td>Enables/disables the serial port.
▸ Enabled is the default.</td></tr><tr><td>Change Settings</td><td>Sets the optimal IO address and IRQ info for the serial port.
▸ Options available are:
IO=2E8h; IRQ=11; (default)
IO=3F8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F8h; IRQ=3,4,5,6,7,10,11,12;
IO=3E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2E8h; IRQ=3,4,5,6,7,10,11,12;
IO=2F0h; IRQ=3,4,5,6,7,10,11,12;
IO=2E0h; IRQ=3,4,5,6,7,10,11,12;
▸ This setting is only available when the serial port is enabled.</td></tr></table></td></tr>
<tr><td>Power On After Power Fail</td><td>Sets whether the system should power on or power off when the power supply resumes after an power failure.
▸ Options are Power off (default) and Power on.</td></tr>
</table>

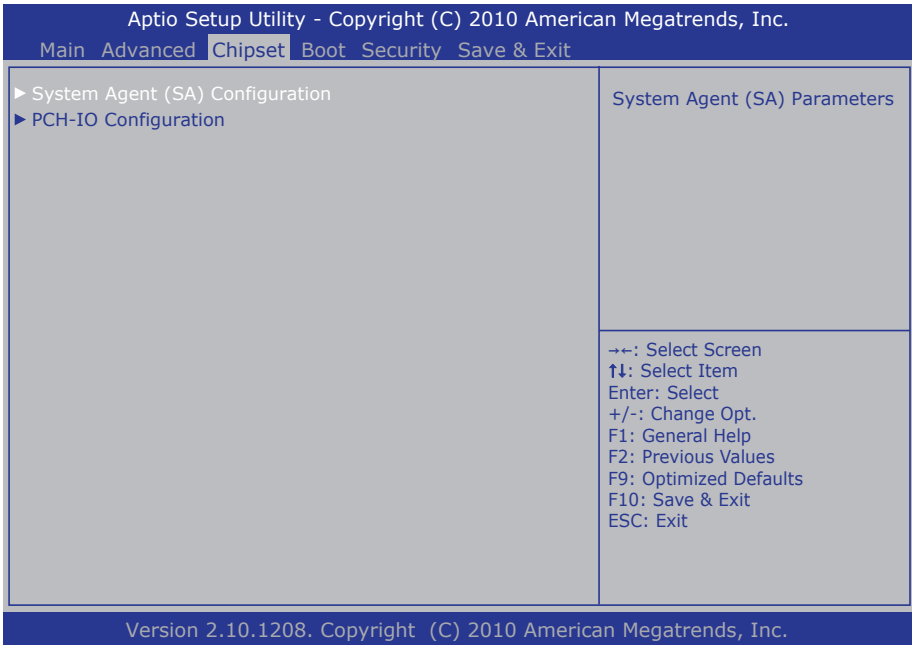
5.2.6. F81866 H/W Monitor

H/W Monitor monitors the CPU board's hardware status. Select **H/W Monitor** to run a report of the info including CPU/system temperatures and other voltage info.



5.3. Chipset

Use this **Chipset** menu to control the system's chipset features.



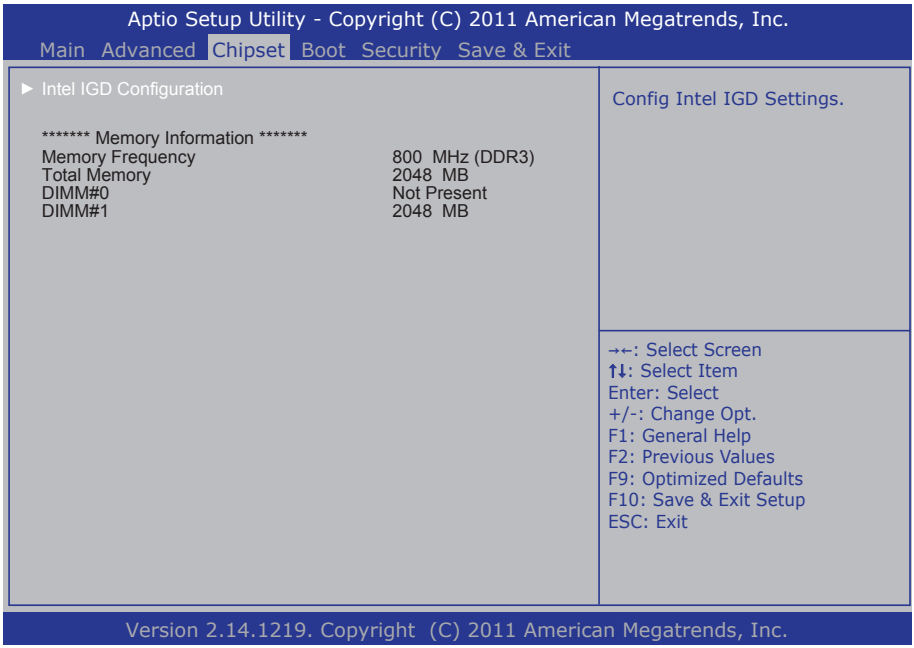
The featured submenu are **Host Bridge** and **South Bridge**, which are covered in the following sections.

Submenu overview:

Submenu	Description
Host Bridge	Configures the system's north bridge. ▸ See 5.3.1. Host Bridge on page 65.
South Bridge	Configures the system's south bridge. ▸ See 5.3.2. South Bridge on page 66.

5.3.1. Host Bridge

This submenu opens showing the memory information such as memory frequency, total memory and the memory module(s) presence. This submenu also features one submenu - **Intel IGD Configuration** to configure Intel IGD (Internal Graphics Device):

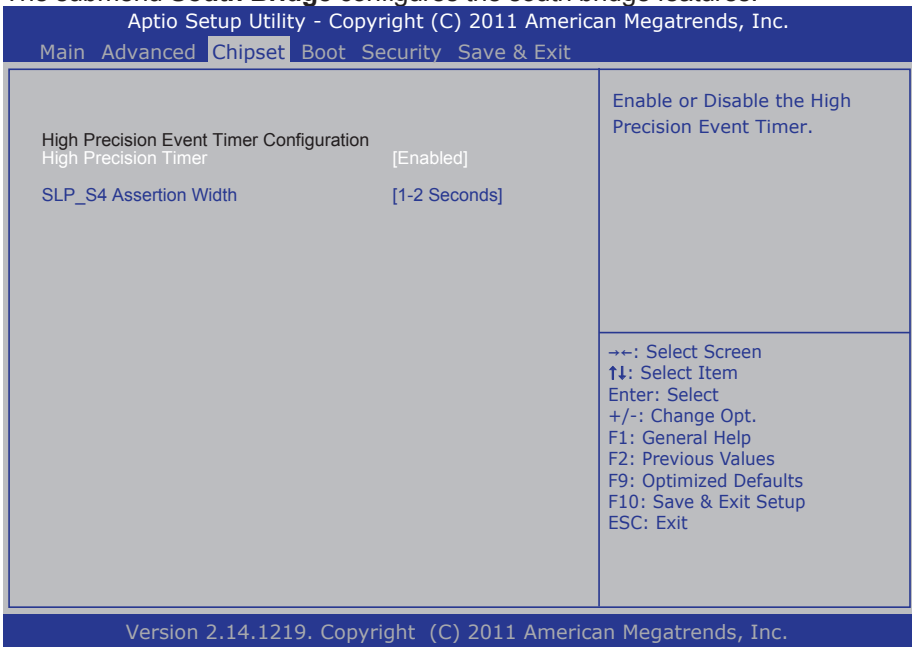


The featured submenu is:

Submenu	Description	
Intel IGD Configuration	Configures Intel IGD (internal graphics device) by the following settings:	
	Setting	**Description**
	Auto Disable IGD	Sets whether to auto-disable the internal graphics device upon detecting any external one. ‣ Options available are **Disabled** and **Enabled** (default).
	IGFX - Boot Type	Sets the video device to activate during POST. ‣ This setting has no effect if an external graphics device is detected. ‣ Options available are **CRT** (default) and **LVDS**.

5.3.2. South Bridge

The submenu **South Bridge** configures the south bridge features:

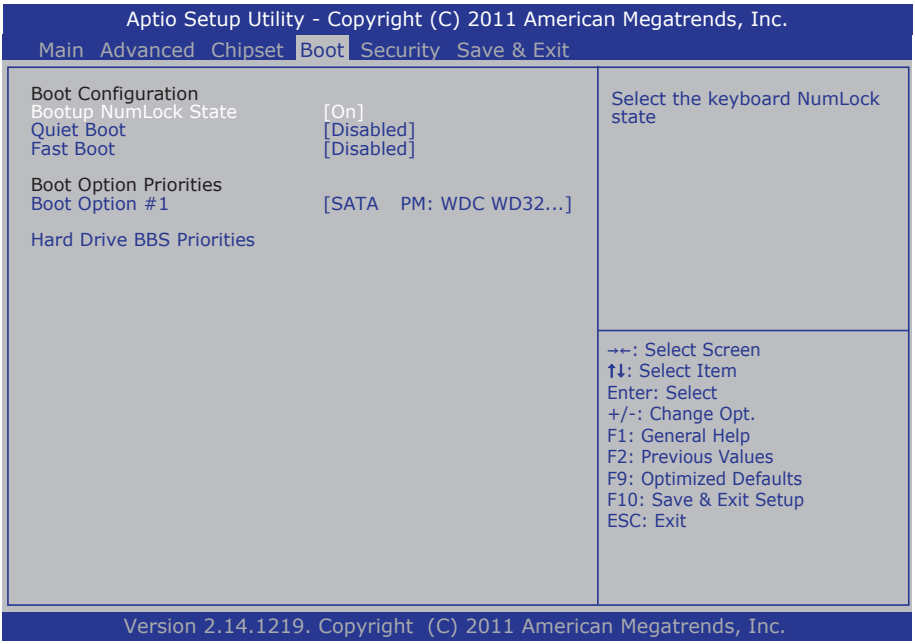


The featured settings are:

Setting	Description
High Precision Timer	Enables/disables the "High Precision Timer", which delivers more accurate controls for multimedia events. ▸ **Enabled** is the default.
SLP_S4 Assertion Width	Sets the minimum assertion width of the SLP_S4# signal to ensure the DRAMs have been safely power-cycled, or disables it. ▸ Options available are: **1 to 2 seconds** (default) **2 to 3 seconds** **3 to 4 seconds** **4 to 5 seconds**

5.4. Boot

The **Boot** menu configures how to boot up the system by defining boot device priority.



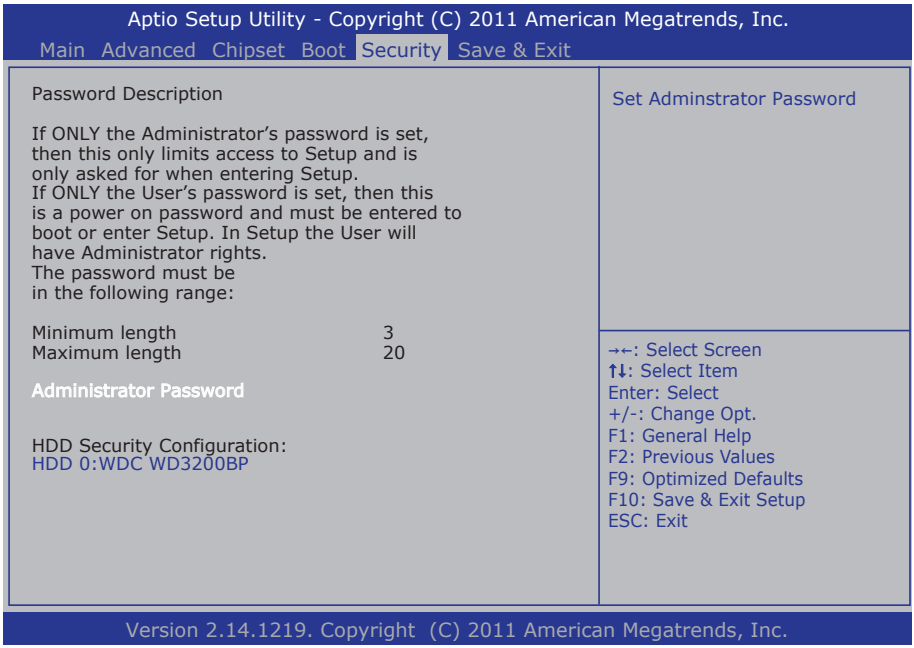
The featured settings are:

Setting	Description
Bootup NumLock State	Sets keyboard's NumLock state when the system boots up. ▸ Options available are **On** (default) and **Off**.
Quiet Boot	Sets whether to display the POST (power on self tests) message or the system manufacturer's full screen logo during booting. ▸ Leave it as **Disabled** (default) to display the normal POST message.
Fast Boot	Enables/disables initializing only a minimal set of devices required to launch the active boot options when booting up the system. ▸ **Disabled** is the default. ▸ This setting has no effect for BBS (BIOS Boot Specification) options. ▸ When enabled, the following settings become available:

<table>
<tr><td colspan="2"></td><td><table>
<tr><th>Setting</th><th>Description</th></tr>
<tr><td>Skip VGA</td><td>Enables/disables skipping EFI VGA driver when booting up the system.
▸ Disabled is the default.</td></tr>
<tr><td>Skip USB</td><td>Enables/disables skipping USB devices when booting up the system.
▸ When enabled, the USB devices won't be available until OS startup.
▸ When disabled, the USB devices are available before OS startup. This is the default.</td></tr>
<tr><td>Skip PS2</td><td>Enables/disables skipping PS2 (keyboard and mouse) devices when booting up the system.
▸ Disabled is the default.</td></tr>
</table></td></tr>
<tr><td>Boot Option Priorities</td><td>Boot Option #1</td><td>Sets the very 1st boot device among the available device types.
▸ Option(s) available are the available device type(s), which is the default, and Disabled.</td></tr>
<tr><td colspan="2">Hard Drive BBS Priority</td><td>Sets the very 1st boot device among the available hard disk drives.
▸ Option(s) available are the available storage device(s) and Disabled.</td></tr>
</table>

5.5. Security

The **Security** menu sets up an administrator password to limit the access to the BIOS Setup utility. Users will be asked for such password each time he/she tries to access the BIOS Setup utility.



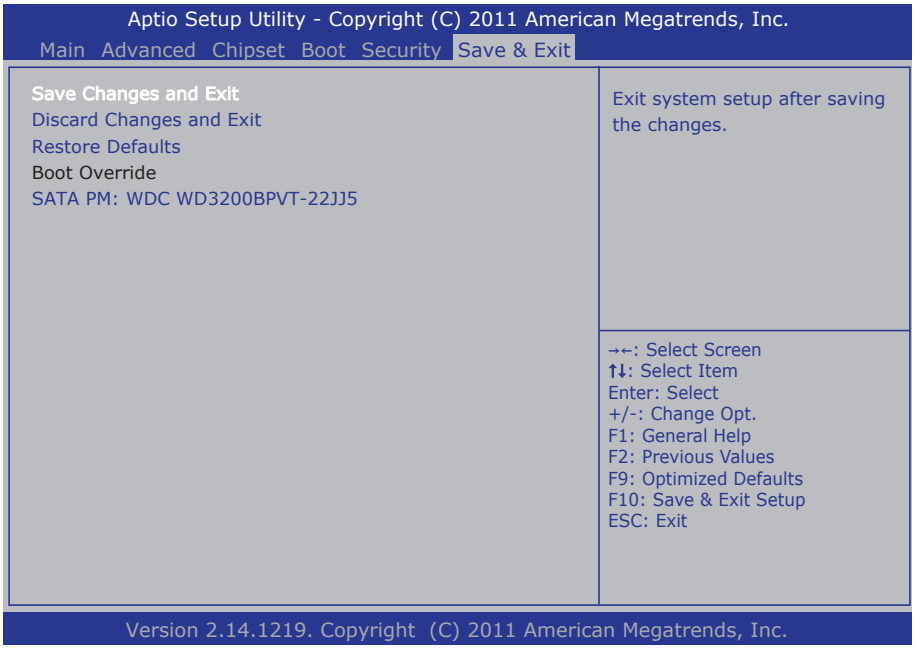
The featured settings are:

Group	Setting	Description
Administrator Password		Sets up an administrator password. To set up an administrator password: 1. Select **Administrator Password**. An **Create New Password** dialog then opens 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. ▸ 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.

<table>
<tr>
<td>HDD Security Configuration</td>
<td>Storage device name</td>
<td>Enables the security to protect the storage device from unauthorized access by creating the following passwords:
<table>
<tr><th>Password</th><th>Description</th></tr>
<tr><td>User Password</td><td>This password will be requested during the POST.</td></tr>
<tr><td>Master Password</td><td>This password is only requested if the User Password is wrongly entered for three times during the POST. Use the Master Password to delete the User Password.</td></tr>
</table>
</td>
</tr>
</table>

5.6. Save & Exit

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



The featured settings are:

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

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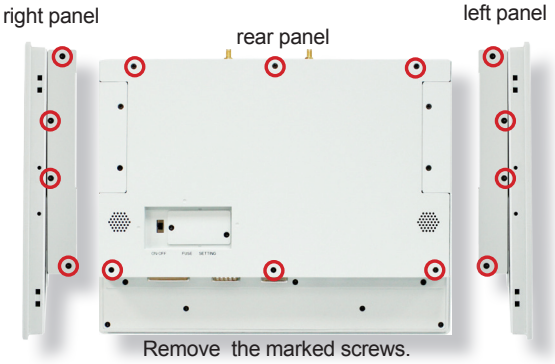
Appendices

Appendix A: WIFI-IN1350 Hardware/Software Installation

To use Wi-Fi, hardware-wise the computer needs a Wi-Fi module installed, and software-wise the computer needs the device driver and an application program. This appendix will guide you to install the Wi-Fi module **WIFI-IN1350** and the device driver. (To have a copy of the device driver, please contact ARBOR customer service by the contact info described in Technical Support on page vii.)

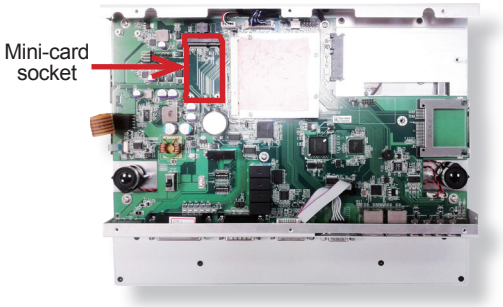
A.1. Install WIFI-IN1350

1. Loosen and remove the 6 screws from the computer's rear panel. And loosen and remove the 4 screws from each of the left and right panel of the computer. See the illustration below.



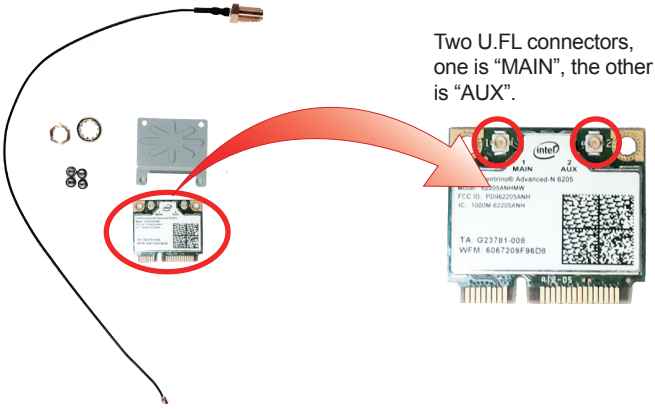
2. Dismount the rear cover from the computer.

   The inside of the computer comes to view.



3. Find the Mini-card socket as illustrated above.

4. Prepare the **WIFI-IN1350** 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".

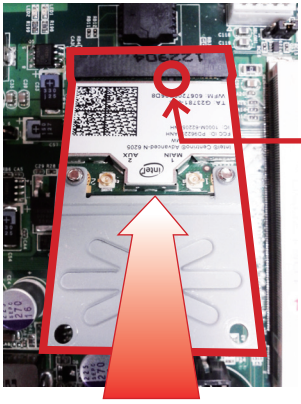


5. In order to make the half-size Wi-Fi module compatible with the **Mini-card** socket, extend the WiFi module with a "mini half bracket". Join them together by using two screws.

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

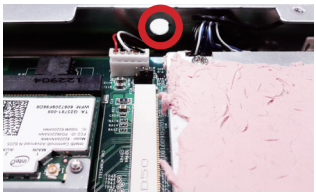
Join the WiFi module and the "mini half bracket" by using two screws.

6. Plug the **WIFI-IN1350** to the connector by a slanted angle. Fully plug the module, and note the notch on the **Wi-Fi module** should meet the break on the connector.

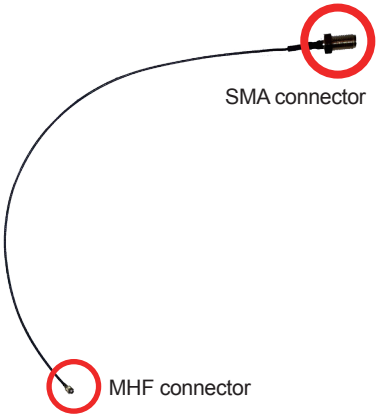


7. Press down the module and fix the module in place using two screws.

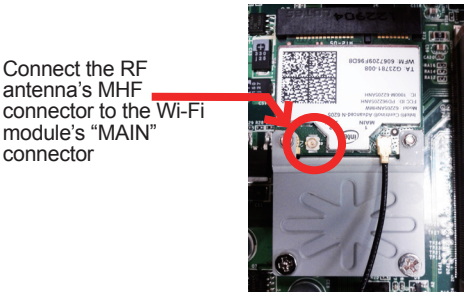
8. Remove the plastic plug from the computer's top panel to make an antenna hole. Keep the plastic plug for any possible restoration in the future.



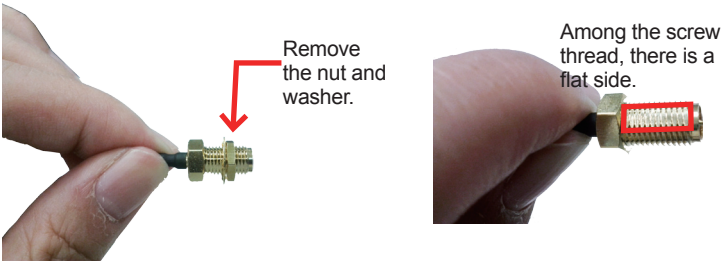
9. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.



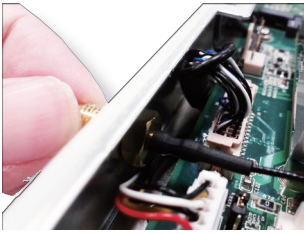
10. Connect the RF antenna's MHF connector to the Wi-Fi module's "MAIN" connector.

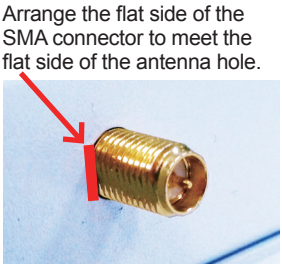


11. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Save the washer and nut for later use. Note the SMA connector has the form of a threaded bolt, with one flat side.

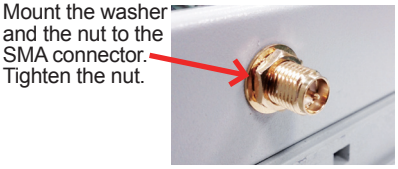


12. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flat side with the antenna hole's flat side.

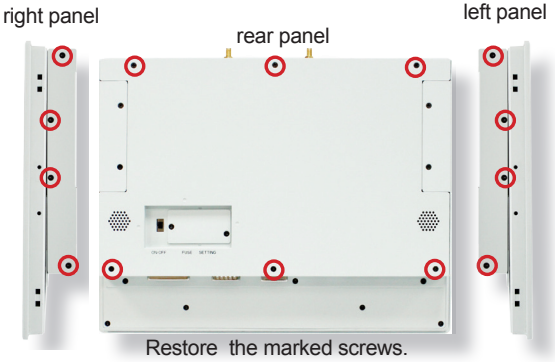




13. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.



14. Restore the rear panel to the computer.



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

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

A.2. Install Device Driver & Application Program

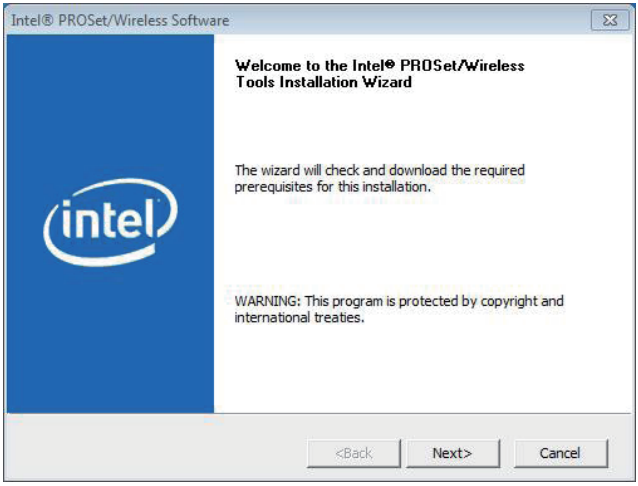
After the drivers for the chipset, graphics, audio and Ethernet are installed, you can proceed to install the driver for the Wi-Fi module.

The device driver of **WIFI-IN1350** will install the application program (the utility) as well. Follow the guide below to install **WIFI-IN1350** driver (and the application program):

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

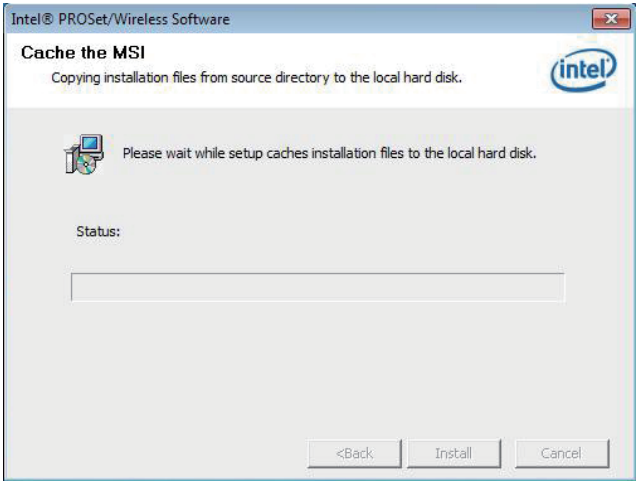
2. Run the executable file of the device driver, for example **Advanced-N 6205 WinXP_14.2.0.10_x32.exe**.

   The installer then opens.

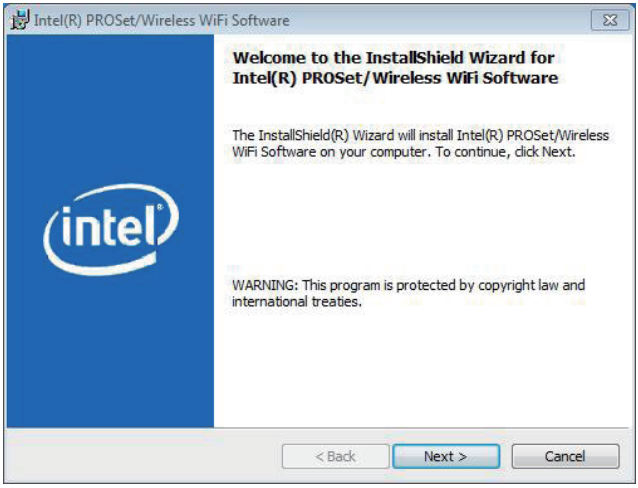


3. Click the **Next** butoon to proceed.

   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.

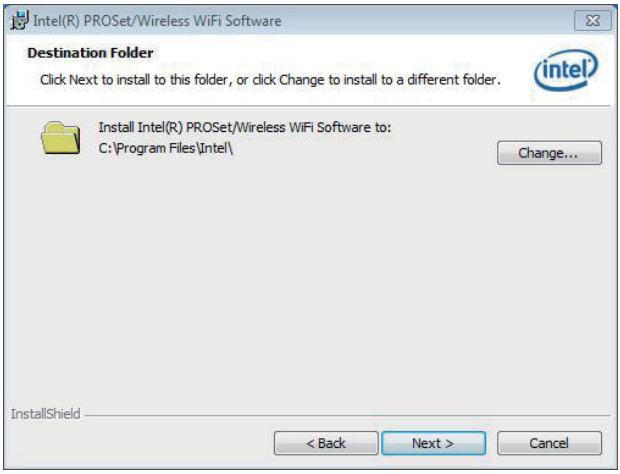


4. Click the **Next** button to proceed.

   The installer then prompts the license agreement.

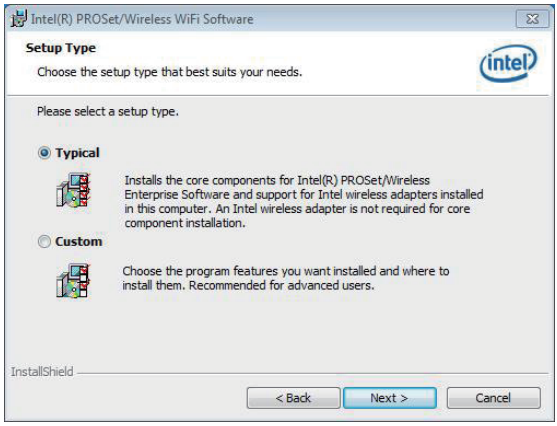
5. Select **I accept the terms in the license agreement** and click the **Next** button to proceed.

   The installer then asks where to install the software.



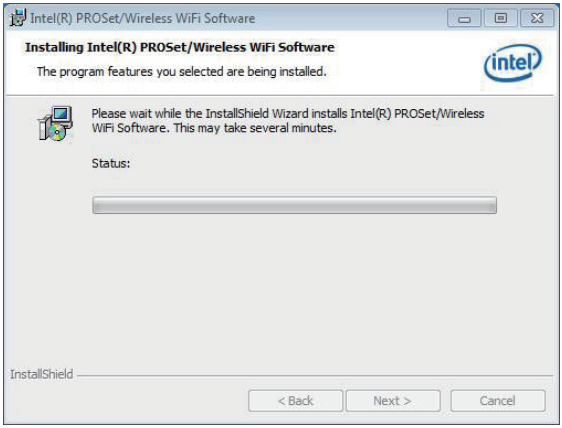
6. Click the **Change...** button to browse for an alternate folder to install the software to, or simply click the **Next** button to install the software to the suggested folder.

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

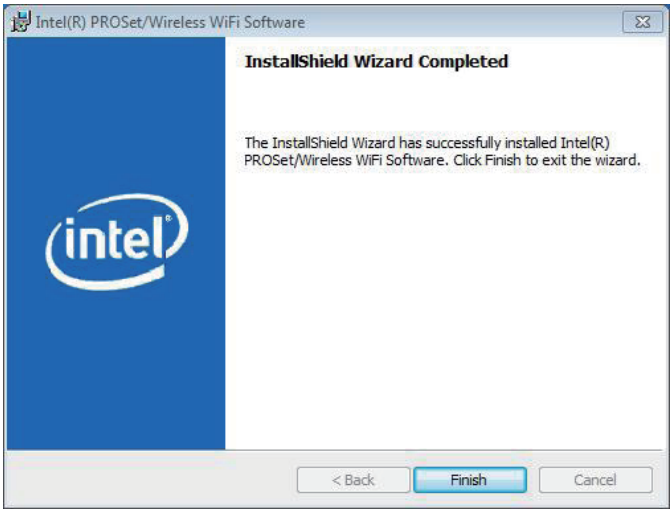


7. Select **Typical** to install both the driver and the application program (recommended) or select **Custom** to choose the features to install. Then click the **Next** button to proceed.

   The software installation then starts, progresses and finishes.



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

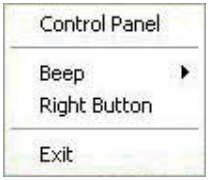


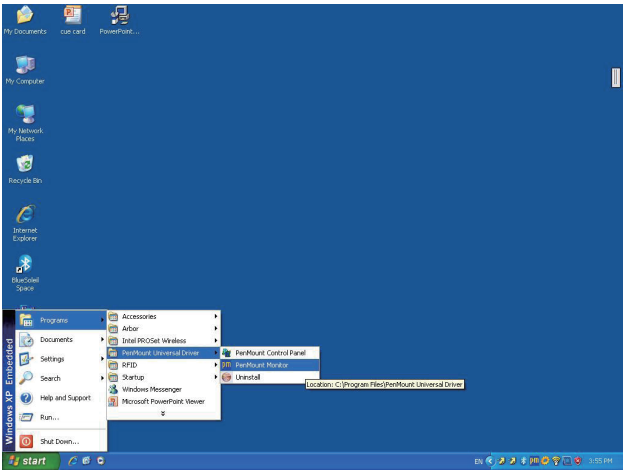
9. The computer's Wi-Fi feature is ready-to-use, see the document of the application program to know how to connect the computer to a Wi-Fi hotspot.

Appendix B: PenMount Utilities

B.1. PenMount Monitor

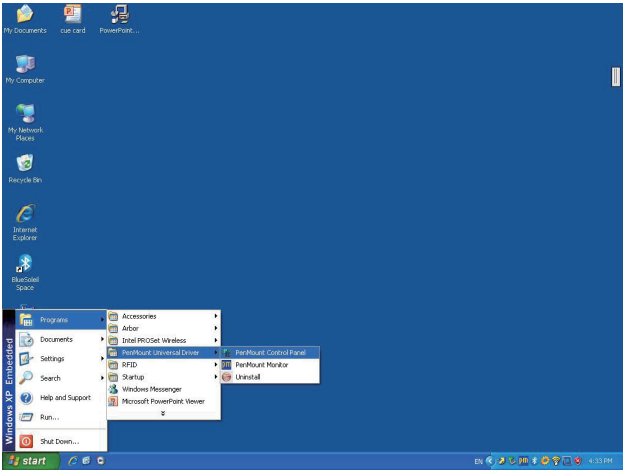
The PenMount Monitor icon (pm) will appear in the system tray at the bottom-right corner after you turn on ***PenMount Monitor*** from ***Programs/ PenMount Universal Driver/PenMount Monitor.*** Right-click the pm icon in system tray and display its submenu.





PenMount Monitor has the following functions:

Control Panel	Launch the **PenMount Control Panel** utility. You may also launch it from ***Programs***.
Beep	Set the Beep function for each device.
Right Button	After ticking this item, a mouse icon  appears on the right side of your screen.
Exit	Exits the PenMount Monitor function.

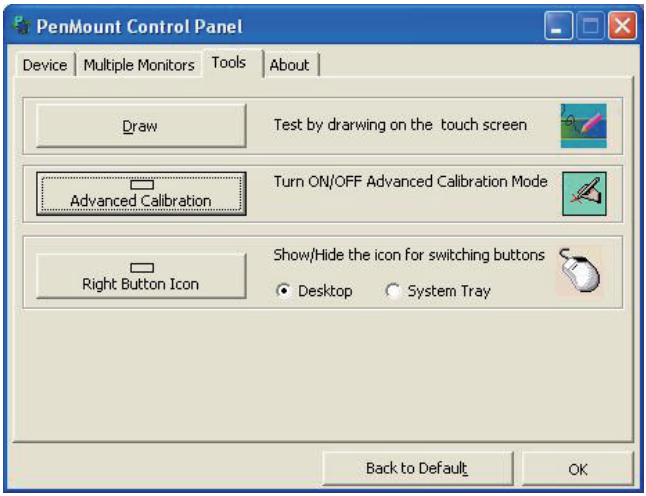

My Documents
cue card
PowerPoint...
My Computer
My Network Places
Recycle Bin
Internet Explorer
BlueSoleil Space
Programs
Documents
Settings
Search
Help and Support
Run...
Shut Down...
Windows XP Embedded
Accessories
Arbor
Intel PROSet Wireless
PenMount Universal Driver
RFID
Startup
Windows Messenger
Microsoft PowerPoint Viewer
PenMount Control Panel
PenMount Monitor
Uninstall
start

B.2. PenMount Control Panel

After you have selected the ***Control Panel*** item on the pop-up menu or open it up from ***Programs*** (as shown on previous page), the PenMount Control Panel utility UI appears as below. The functions of the **PenMount Control Panel** such as Device, Calibrate, Setting, Multiple Monitors, Tools and About are explained in the following sections.

The Tools Tab

When you click the PenMount icon in the system tray and select "Control Panel" from the menu, "PenMount Control Panel" will appear. Among the four tabs - Device, Multiple Monitors, **Tools** and About - the function of Tools should be described first as follows:



Draw

Tests or demonstrates the PenMount touch screen operation.

Advanced Calibration

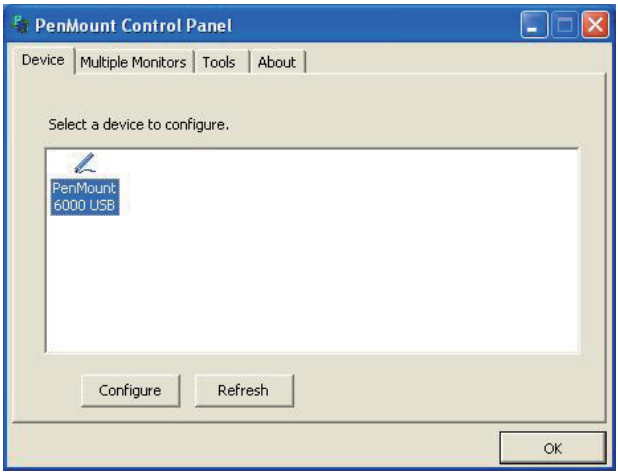
Enable Advanced Calibration function.

Right Button Icon

Enable right button function. The icon can be shown on Desktop or in the system tray at the bottom-right corner.

The Device Tab

In this window, you can find out how many devices are detected on your system. On the **Device** tab, select the device icon and tap **Configure,** or double tap the device icon for touch screen calibration.



And then another window with the **Calibrate** tab appears.

Device Calibration Dialog

The Calibrate Tab

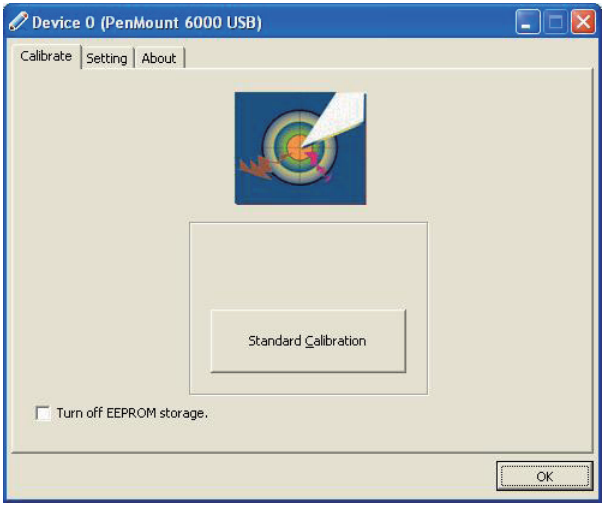
This function offers two ways to calibrate your touch screen. '**Standard Calibration**' adjusts most touch screens while '**Advanced Calibration**' adjusts aging touch screens.

Standard Calibration

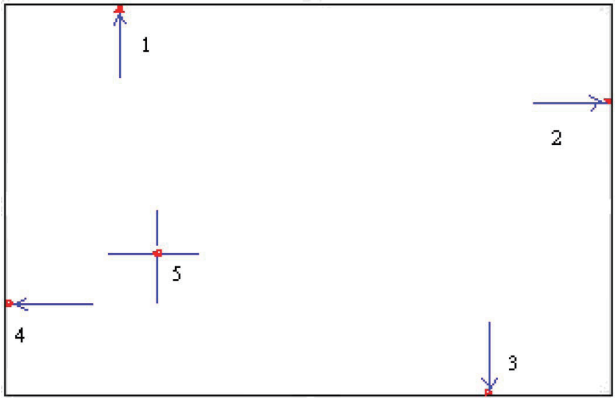
The Standard Calibration function lets you match the touch screen to your display so that the point you touch is accurately tracked on screen. Standard Calibration only requires four points for calibration and one point for confirmation. Under normal circumstance Standard Calibration is all you need to perform an accurate calibration.

By default, only the Standard Calibration button is available.

1. Please tap the Standard Calibration button to start calibration procedures.



2. After tapping the button, the arrow appears pointing to a red square. Use your finger or stylus to touch the red square and hold down until the screen shows the message - "Lift off to proceed".
3. And then the next arrow appears. After the fifth red point calibration is complete, the program will jump out automatically, or you may press ESC key to quit it manually.

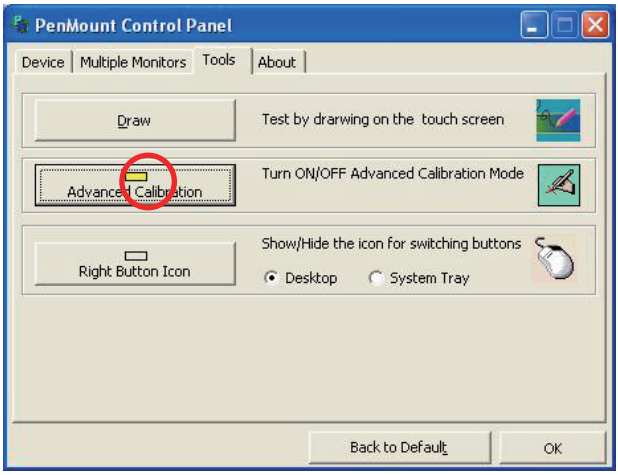


Note: The older the touch screen gets, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for better accuracy. Please follow the step as below:

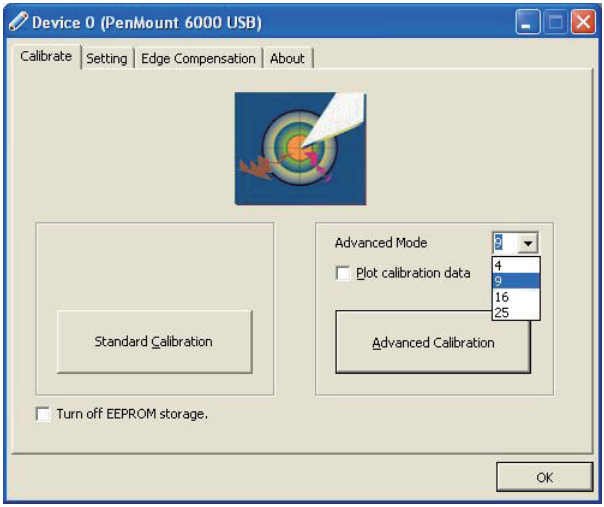
Advanced Calibration

The Advanced Calibration function improves the accuracy of calibration by using more involved engineering calculations. Use this function only if you have tried the Standard Calibration and there is still a discrepancy in the way the touch screen maps to the display. You can choose 4, 9, 16 or 25 points to calibrate, though we suggest that you first try 9 points, if it is still not tracking well then try 16 or 25 points. The more points you use for calibration, the greater the accuracy is. Errors in calibration may occur due to viewing angle, or individual skill, and there may be little difference in using 16 or 25 points. Note that a stylus is recommended for most accurate results.

1. Come back to PenMount Control Panel and select the **Tools** tab. Tap the Advanced Calibration button to enable it (when enabled, the small rectangle in the middle appears in yellow).

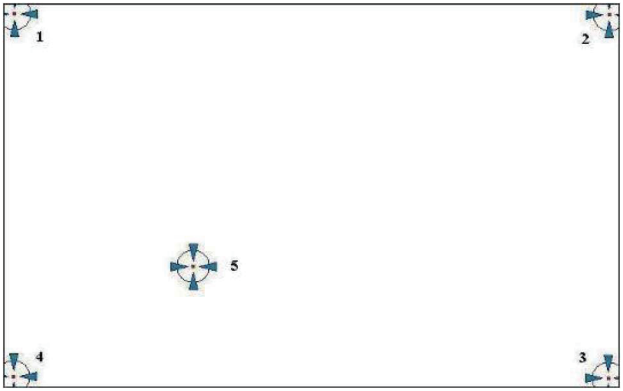


2. Select **Device** to calibrate, and then you can start to do "Advanced Calibration". Tap the arrow to pull down the drop-down menu and select the number determining how many points will be used for calibration.



Note: You are recommended to use a stylus during Advanced Calibration for greater accuracy.

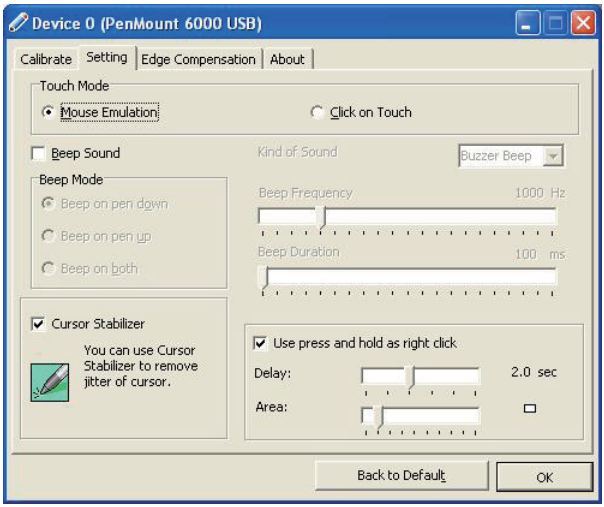
3. After tapping the button, a crosshair will appear on screen. Use your finger or stylus to touch the red spot inside it and hold down until the screen shows this message - “Lift off to proceed” and then the next crosshair will appear. After all crosshairs are clicked, the program will jump out automatically, or you may press ESC key to quit it manually.



Plot Calibration Data
Check this function to have touch panel linearity comparison graph appear when you finish Advanced Calibration. The black lines reflect the ideal linearity assumed by PenMount's application program while the blue lines show the approximate linearity calculated by PenMount's application program as the result of user's execution of Advance Calibration.

Turn off EEPROM storage
Tick this function to disable the write-in of calibration data in Controller.

The Setting Tab



Touch Mode	This mode enables and disables the mouse's ability to drag on-screen icons.
Mouse Emulation	Select this mode and the mouse functions as normal and allows dragging of icons.
Click on Touch	Select this mode and the mouse only provides a click function, and dragging is disabled.

Beep Sound	Turn On/Off Beep Sound.
Beep on Pen Down	Beep occurs when pen is down.
Beep on Pen Up	Beep occurs when pen is up.
Beep on Both	Beep occurs when pen is down or up.
Beep Frequency	Modifies sound frequency.
Beep Duration	Modifies sound duration.
Cursor Stabilizer	Enable the function supporting to prevent cursor shake.
Use press and hold as right click	You can set the time out and area as you need.

The Edge Compensation Tab

This tab is the edge compensation settings for the advanced calibration. You can adjust the settings from 0 to 30 for accommodating the difference of each touch panel.