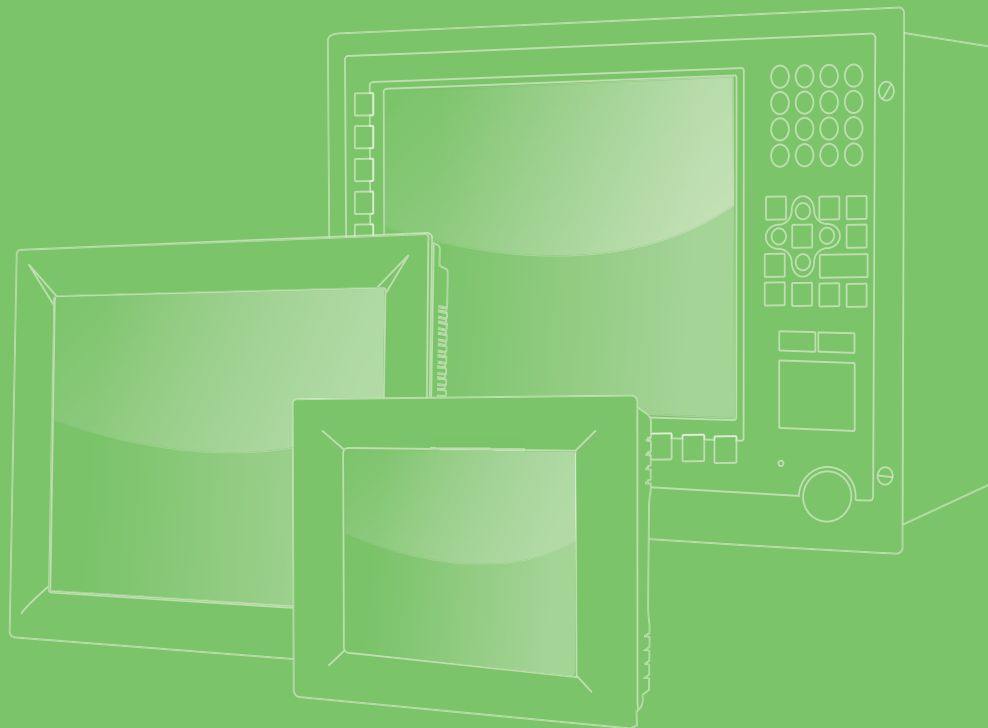


User Manual



PPC-3100S/3120S/3150S

Intel® Celeron® N2930 Panel PC with
10.4"/12.1"/15" Color TFT LCD
Display

ADVANTECH

VICPAS
HMI Parts Center

Enabling an Intelligent Planet

Copyright

The documentation and the software included with this product are copyrighted 2017 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements to the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. The information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties that may result from its use.

Acknowledgements

Intel and Celeron are trademarks of Intel Corporation.

Microsoft Windows is registered trademark of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

Product Warranty (2 years)

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

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. However, if an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers are billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

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 displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any relevant information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number on the outside, and ship the package prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend using shielded cables. Such cables is available from Advantech. Please contact your local supplier for ordering information.

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from damage resulting from electrostatic discharge (ESD) or electromagnetic interference (EMI) leakage, we strongly recommend using CE-compliant industrial enclosure products.

Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> to obtain the latest product information.
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 to hand before calling:
 - 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. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment 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. Ensure that the power source voltage is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. 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 from transient overvoltage.
12. Never pour 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 occurs, have 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 is malfunctioning or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
15. Do not store the equipment in an environment where the temperature fluctuates below $-40\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$) or above $60\text{ }^{\circ}\text{C}$ ($140\text{ }^{\circ}\text{F}$) as this may cause damage. The equipment should be stored in a controlled environment.
16. Batteries are at risk of exploding if incorrectly installed. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
17. Power to the equipment should be supplied by an approved power adapter or DC power source with an output rating of $15\text{ }^{\sim}\text{ }24\text{V}_{\text{DC}}$, $4\text{ }^{\sim}\text{ }2.5\text{A}$ (for board A) and $12\text{ }^{\sim}\text{ }24\text{V}_{\text{DC}}$, $5\text{ }^{\sim}\text{ }2.5\text{A}$ (for board B), and $50\text{ }^{\circ}\text{C}$ TMA.

In compliance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).

DISCLAIMER: These instructions are provided according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Safety Precaution - Static Electricity

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

- To avoid electrical shock, always disconnect the power from the PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the equipment is powered on.
- Disconnect the power before executing any configuration changes. A sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

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 local regulations.



Manual Conventions

Warning! Warnings indicate conditions that, if not observed, can cause personal injury!



Caution! Cautions are included to prevent hardware damage and data loss.



For example, "Batteries are at risk of exploding if replaced with an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions."

Note! Notes provide additional optional information.



Revision

Date	Version	Description/Change
May 2016	1.0	Initial
Feb 2017	1.1	PPC-3150S specifications added
April 2017	1.2	PPC-3100S-PBE specifications added

Contents

Chapter 1	General Information	1
1.1	Introduction	2
1.2	Key Features.....	2
1.3	Front Panel.....	2
	Figure 1.1 PPC-31x0S front panel.....	2
1.4	Rear Panel	3
	Figure 1.2 PPC-31x0S rear panel.....	3
1.5	Panel Underside.....	3
	Figure 1.3 PPC-31x0S underside (excluding PPC-3100S-PBE). 3	
	Figure 1.4 PPC-3100S-PBE panel underside.....	4
1.6	Dimensions	4
	Figure 1.5 PPC-3100S dimensions	4
	Figure 1.6 PPC-3120S dimensions	4
	Figure 1.7 PPC-3150S dimensions	5
1.7	Specifications	5
	1.7.1 Specifications Comparison	5
1.8	Ordering Information	7
Chapter 2	System Installation and Setup	9
2.1	Quick System Tour.....	10
	Figure 2.1 Panel PC front view	10
	Figure 2.2 Panel PC rear view	10
	Figure 2.3 Panel PC underside with I/O	11
2.2	Installation Procedures.....	11
2.2.1	Memory Card Installation	11
	Figure 2.4 Retention screws on rear cover.....	11
	Figure 2.5 Disconnect E-Eye display cable from the main board ..	12
	12
	Figure 2.6 Memory card installation.....	12
	Figure 2.7 Thermal pad placed on the memory card.....	13
2.2.2	HDD Installation	13
	Figure 2.8 Retention screws on HDD bracket	13
	Figure 2.9 HDD module bracket	14
	Figure 2.10SATA cable connected to SATA HDD.....	14
	Figure 2.11Secure SATA HDD with screws	15
	Figure 2.12SATA HDD connected to the main board	15
2.2.3	mSATA Installation	16
	Figure 2.13mSATA module installation	16
2.2.4	Wireless LAN Card Installation	16
	Figure 2.14Installing the wireless LAN card	16
	Figure 2.15Hexagonal screw location.....	17
	Figure 2.16Installing the half-size mini PCIe card	17
	Figure 2.17Full-size mini PCIe LAN antenna cables	18
	Figure 2.18Half-size mini PCIe LAN antenna cables.....	18
	Figure 2.19Removing plugs for the antennae.....	18
	Figure 2.20Replacing the rear cover	19
	Figure 2.21Location of external antennae	19
2.3	Mounting the System	20
2.3.1	Wall Mounting	20
	Figure 2.22Wall mount plate	20
	Figure 2.23Screw locations on the rear panel	21
	Figure 2.24Mounting the panel PC on a wall.....	21
	Figure 2.25Securing the panel PC.....	22

2.3.2	Panel Mounting.....	22
	Figure 2.26PPC-3100S cut out dimensions	22
	Figure 2.27PPC-3120S cut out dimensions	23
	Figure 2.28PPC-3150S cut out dimensions	23
	Figure 2.29Hook brackets for panel mounting.....	24
	Figure 2.30Hook brackets location	24
	Figure 2.31Fasten the hook bracket.....	25
	Figure 2.32Panel mount rear view.....	25
2.3.3	Arm Mounting	26
	Figure 2.33Arm mount for panel PC.....	26
2.3.4	Stand Mounting.....	27
	Figure 2.34VESA mount screw holes.....	27
	Figure 2.35Securing the VESA mount base.....	28
	Figure 2.36Securing the VESA mount bracket.....	28
	Figure 2.37Securing the stand mount hinge cover.....	29
	Figure 2.38Completed stand mount	29

Chapter 3 Jumper Settings 31

3.1	Motherboard Layout.....	32
	Figure 3.1 Motherboard layout diagram	32
3.2	Internal Jumpers and Connectors.....	32
	Table 3.1: Internal Jumpers and Connectors	32
3.2.1	LVDS Power Select Jumper	33
3.2.2	LVDS PWM Power Select Jumper	33
3.2.3	LVDS Enable Power Select Jumper	33
3.2.4	RTC Select	33
3.2.5	COM1 Pin 9 Power Select.....	34
3.2.6	ATX/AT Select	34
3.3	External COM Ports and Pin Definitions	34
	Figure 3.2 Location of COM1 and COM2 ports	34

Chapter 4 Software Setup..... 37

4.1	Driver Installation	38
4.2	BIOS Setup Program	38
4.2.1	Update BIOS.....	38
4.2.2	Entering BIOS Setup	39
4.2.3	Adjustment of LCD Brightness.....	39
4.2.4	COM2 Mode Selection (RS232/RS422/RS485)	41
4.2.5	OS Selection	43
4.2.6	BIOS AT and ATX Setup	44
4.2.7	Wake-on-LAN	45
4.2.8	SATA Mode Selection.....	46
4.2.9	Boot Options	47

Appendix A BSMI RoHS 49

A.1	BSMI RoHS.....	50
-----	----------------	----

Appendix B China RoHS 51

B.1	China RoHS	52
-----	------------------	----

Appendix C E-Eye Function..... 53

C.1	E-Eye Function.....	54
	Table C.1: E-Eye Monitoring Function List.....	54

Appendix D **Watchdog Timer Programming Example.....55**

D.1	Watchdog Timer Programming Example	56
-----	--	----

Chapter 1

General Information

This chapter provides general information regarding PPC-3100S/3120S/3150S.

- Introduction
- Specifications
- Dimensions

1.1 Introduction

Advantech's PPC-3100S/3120S/3150S is a fanless ultra-slim panel PC equipped with an industrial-grade TFT LCD and low-power Intel® Celeron® N2930, 1.86 GHz, processor. PPC-3100S/3120S/3150S provides high-performance computing in a compact embedded system.

Designed for high durability, PPC-3100S/3120S/3150S features a true-flat 5-wire resistive touchscreen, IP65-rated front panel, and die cast aluminum alloy enclosure. The system I/O includes two serial ports, up to three USB ports, and dual GbE LAN to support diverse industrial applications. Moreover, to enhance system monitoring and protection, an E-Eye LED display is included in the rear cover for indicating the system status.

1.2 Key Features

- Robust IP65-rated true-flat color TFT LCD
- Ultra-thin fanless design with solid aluminum alloy enclosure
- Intel® Celeron® N2930 quad-core, 1.83 GHz, processor
- 1 x 204-pin DDR3L SODIMM slot (supports up to 8 GB)
- 2 x Full-size mini PCIe card slots (one supports mSATA SSD)
- 1 x USB 3.0 port
- Supports SATA 6Gb/s interface for 2.5" SATA storage
- Supports E-Eye technology for enhanced system monitoring
- Optional mini PCIe 802.11b/g/n wireless module

1.3 Front Panel

The PPC-3100S/3120S/3150S front panel is a true-flat color TFT LCD touchscreen with 5-wire resistive touch control. The front panel is IP65 rated for dust and water tolerance (Figure 1.1).



Figure 1.1 PPC-31x0S front panel

1.4 Rear Panel

The PPC-3100S/3120S/3150S rear panel features four VESA mounting (75 x 75 mm) holes and an E-Eye LED display located below the side of product label (Figure 1.2).

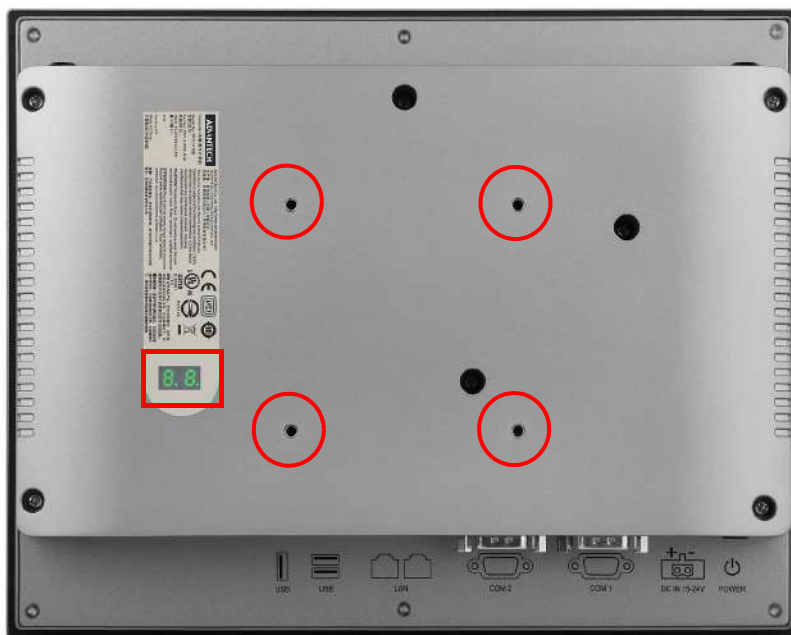


Figure 1.2 PPC-31x0S rear panel

1.5 Panel Underside

The system I/O located at the panel underside (Figures 1.3 and 1.4) are listed below.

- 1 x Power input connector
- 1 x Power switch
- 1 x RS-232 connector (COM1)
- 1 x RS-232/422/485 connector (COM2)
- 2 x RJ45 GbE
- 1 x USB 3.0
- 2 x USB 2.0 (only 1 x USB 2.0 for PPC-3100S-PBE)



Figure 1.3 PPC-31x0S underside (excluding PPC-3100S-PBE)



Figure 1.4 PPC-3100S-PBE panel underside

1.6 Dimensions

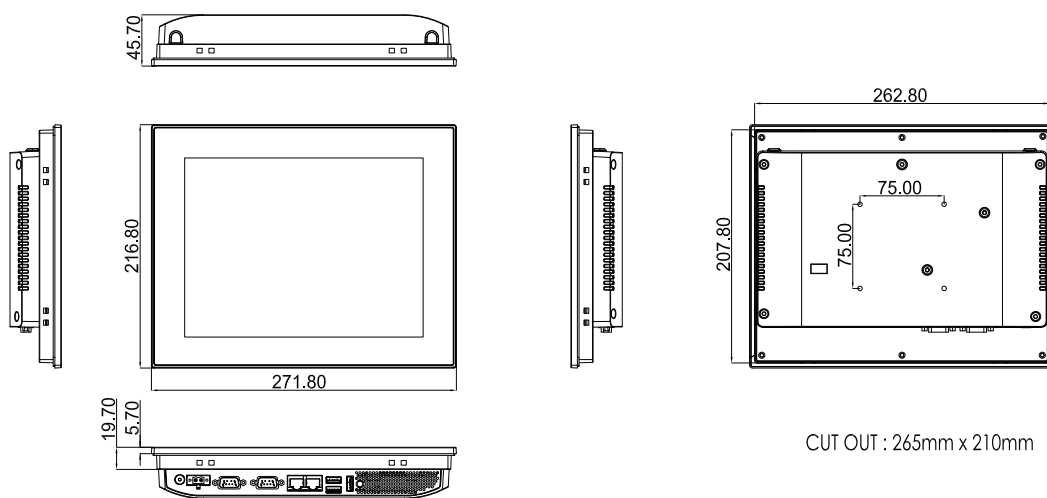


Figure 1.5 PPC-3100S dimensions

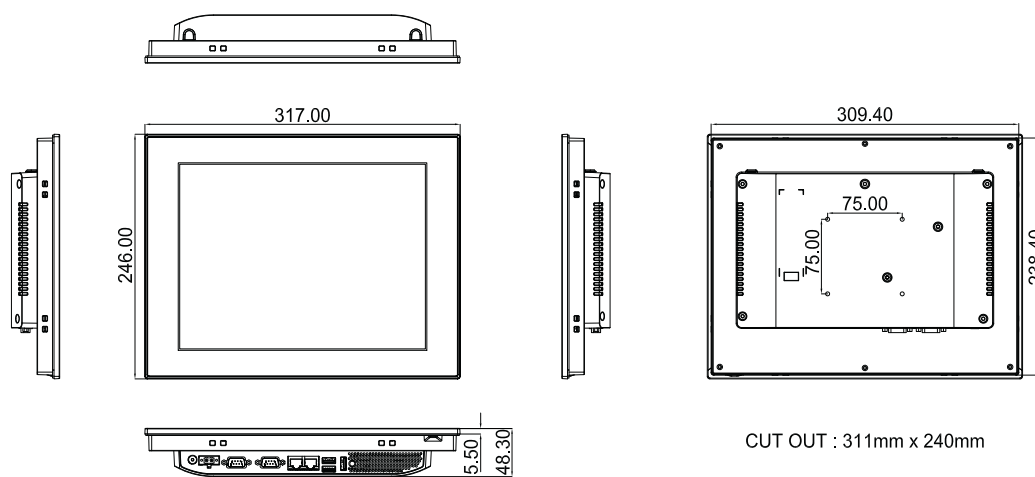


Figure 1.6 PPC-3120S dimensions

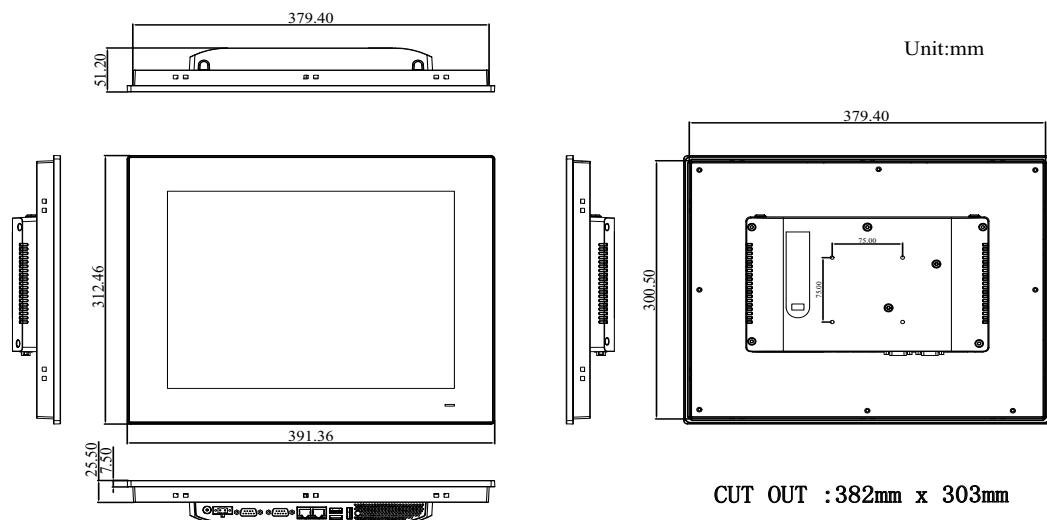


Figure 1.7 PPC-3150S dimensions

1.7 Specifications

1.7.1 Specifications Comparison

	PPC-3100S-RAE	PPC-3100S-PBE	PPC-3120S	PPC-3150S
LCD Size	10.4"	10.4"	12.1"	15"
Display Type	TFT LCD	TFT LCD	TFT LCD	TFT LCD
Resolution	800 x 600	1024 x 768	1024 x 768	1024 x 768
Brightness	400	350	500	400
Color	16.2M/262k	16.2M/262k	16.2M/262k	16.2M/262k
Pixel Pitch (H x V)	0.264 x 0.264	0.0685 x 0.2055	0.24 x 0.24	0.29 x 0.297
Viewing Angle	160, 140	176, 176	160, 140	160, 140
Contrast	700	1200	700	700
Backlight Lifetime	30,000 hrs	30,000 hrs	30,000 hrs	50,000 hrs
Touchscreen Type	5-wire resistive	Projected capacitive with 5-point multi-touch	5-wire resistive	5-wire resistive
Resolution	4096 x 4096	2048 x 2048	4096 x 4096	2048 x 2048
Light Transmission	80±5% at 550nm wavelength	88±2%	80±5% at 550nm wavelength	81±3%
Controller	RS-232 interface	USB interface	RS-232 interface	RS-232 interface
Durability	At least 35,000,000 touches	Glass surface hardness 7H	At least 35,000,000 touches	At least 36,000,000 touches
Enclosure	Aluminum alloy			
CPU	Intel® Celeron® N2930 quad-core, 1.83 GHz, 7.5 W			
Memory	1 x SODIMM DDR3L 1333, up to 8 GB			
Storage 1	1 x 2.5' SATA slot (optional, for the PPC-3100S-HDDE model with HDD bracket)			
Optional Storage	1 x mSATA			
Network (LAN)	2 x RJ45 LAN			

I/O Ports	1 x RS-232 1 x RS-232/422/485 2 x USB 2.0 (only 1 x USB 2.0 for PPC-3100S-PBE) 1 x USB 3.0 1 x Full-size mini PCIe			
OS Support	Windows 7/8.1/10, WES7, WEC7, Android, Linux			
Power Supply	12 ~ 24 V _{DC}			
Power Consumption	16W	16W	18W	20W
Operating Temperature	0 ~ 50 °C (32 ~ 122 °F) with SSD 0 ~ 40 °C (32 ~ 104 °F) with HDD			
Storage Temperature	-40 ~ 60 °C (-40 ~ 140 °F)			
Relative Humidity	10 ~ 95% @ 40 °C (non-condensing)			
Shock	Operating 10G peak acceleration (11ms duration), compliant with IEC 60068-2-27			
Vibration	Operating random vibration test, 5 ~ 500Hz, 1Grms with HDD, 2Grms with SSD, compliant with IEC 60068-2-64			
IP Rating	IP65			
Certifications	Safety: CE, UL, CCC, BSMI EMC: CE, FCC Class B, BSMI			
Dimensions	272 x 217 x 46 mm	272 x 217 x 46 mm	317 x 246 x 49 mm	391.36 x 312.46 x 51.5 mm
Weight	1.9 kg	1.9 kg	2.1 kg	4 kg

Note! The test conditions for the power consumption values provided above were as follows:



Memory: 4G DDR3L 1333
HDD: 500G 2.5" SATA III
OS: Windows 7 (32 bit)
Software: Burn-In Test 7.0

1.8 Ordering Information

Part Number	Description	Image
PPC-3100S-RAE PPC-3100S-PBE PPC-3120S-RAE PPC-3150S-RAE	Panel PC with Intel® Celeron® N2930 processor	
PPC-3100S-HDDE	Bracket for 2.5" SSD/HDD installation	
96PSA-A90W190T-1	Power adapter 100 ~ 240 V _{DC} , 90 W, 19V with PFC	
PPC-WLAN-B1E	Wi-Fi module with antenna	
PPC-ARM-A03	Arm mount VESA standard	
PPC-174T-WL-MTE	Wall mount kit	
PPC-Stand-A1E	Stand kit	

Chapter 2

System Installation and Setup

- Quick System Tour
- Memory Card Installation
- ODD Installation
- HDD Installation
- mSATA Installation
- Wireless LAN Card Installation
- Mounting the System

2.1 Quick System Tour

Before setting up the panel PC, take a moment to identify the locations of the device controls, drives, connectors, and ports (as shown in Figure 2.3).

When placed upright, the PPC-3100S/3120S/3150S front panel should appear as shown in Figure 2.1.



Figure 2.1 Panel PC front view



Figure 2.2 Panel PC rear view

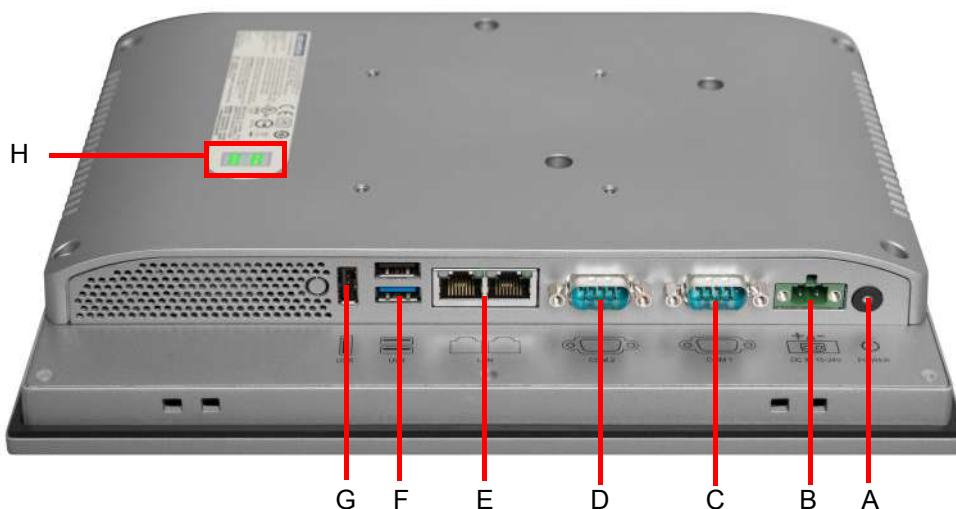


Figure 2.3 Panel PC underside with I/O

- | | |
|-------------------------|--|
| A: Power button | E: 2 x Gigabit Ethernet ports |
| B: DC In | F: 1 x USB 3.0 and 1 x USB 2.0 |
| C: COM1(RS-232) | G: 1 x USB 2.0 (excluding PPC-3100S-PBE) |
| D: COM2(RS-232/422/485) | H: E-Eye display |

2.2 Installation Procedures

When installing system hardware, adhere to the following order:

1. Install the memory card
2. Install SATA HDD or mSATA storage devices
3. Install peripheral devices
4. Mount the panel PC
5. Configure the system

2.2.1 Memory Card Installation

1. Remove the seven retention screws and disconnect the E-Eye display cable from the main board to remove the rear cover (see Figures 2.4 and 2.5).



Figure 2.4 Retention screws on rear cover



Figure 2.5 Disconnect E-Eye display cable from the main board

2. Insert the memory card into the corresponding slot on the main board (see the area marked in red in Figure 2.6). Then place the memory thermal pad provided in the accessory box on top of the memory card (Figure 2.7).

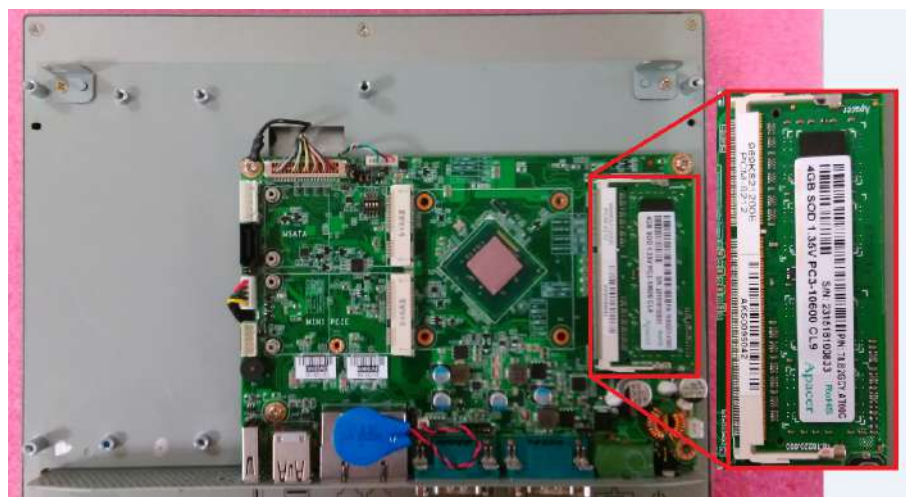


Figure 2.6 Memory card installation



Figure 2.7 Thermal pad placed on the memory card

Warning! Ensure that the thermal pad (provided in the accessory box) is placed on top of the memory card, as shown in Figure 2.7.



2.2.2 HDD Installation

1. Remove the four retention screws on the HDD bracket (Figures 2.8 and 2.9).



Figure 2.8 Retention screws on HDD bracket

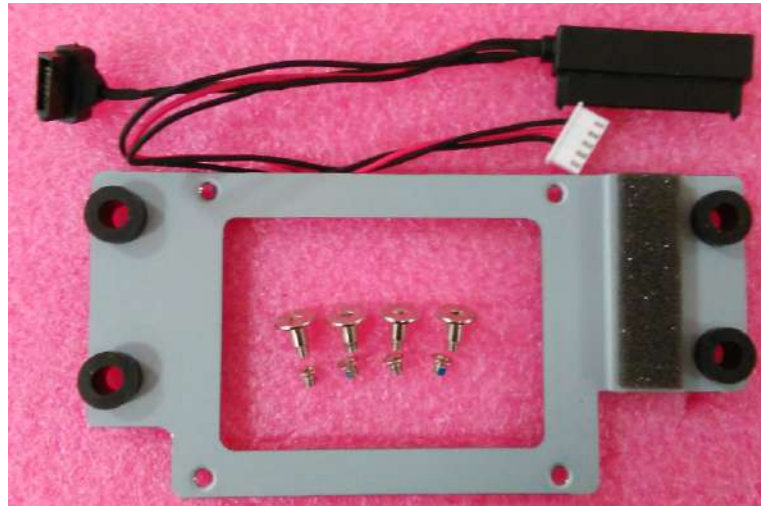


Figure 2.9 HDD module bracket

2. Connect the SATA cable provided in the accessory box to the SATA HDD module (Figure 2.10).



Figure 2.10 SATA cable connected to SATA HDD

- Using the four screws provided in the accessory box, affix the SATA HDD module to the HDD bracket (Figure 2.11).



Figure 2.11 Secure SATA HDD with screws

- Affix the SATA HDD bracket to the main board. Tie the SATA power cable in place and then plug the cable into the corresponding connector on the motherboard (Figure 2.12).

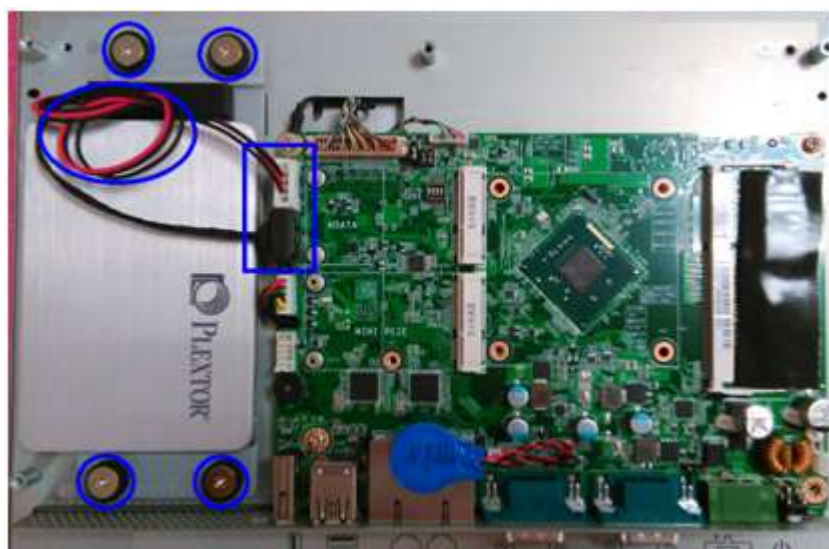


Figure 2.12 SATA HDD connected to the main board

2.2.3 mSATA Installation

1. Insert the mSATA card into the socket. Secure the card in place using two screws provided in the accessory box (Figure 2.13).

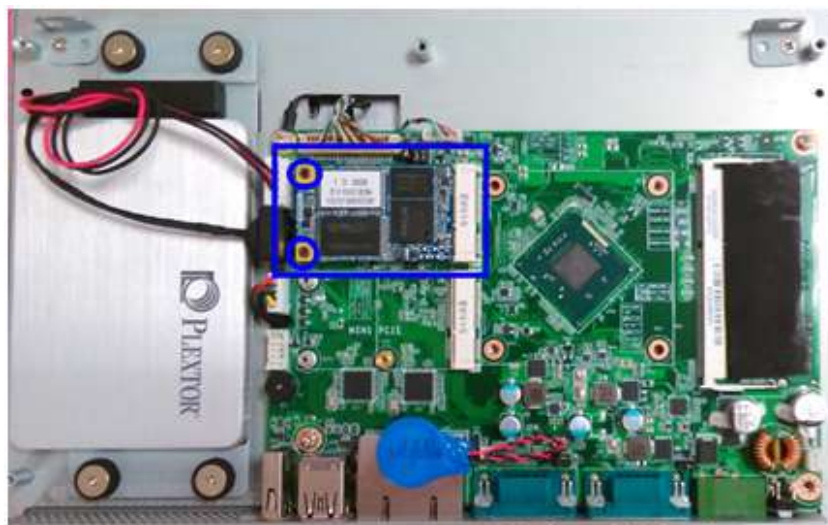


Figure 2.13 mSATA module installation

2.2.4 Wireless LAN Card Installation

2.2.4.1 Full-Size Mini PCIe Installation

1. Insert the full-size mini PCIe card into the socket. Secure the card in place using two screws provided in the accessory box. Next, replace the original bracket with the holed antenna bracket provided in the accessory box (Figure 2.14).

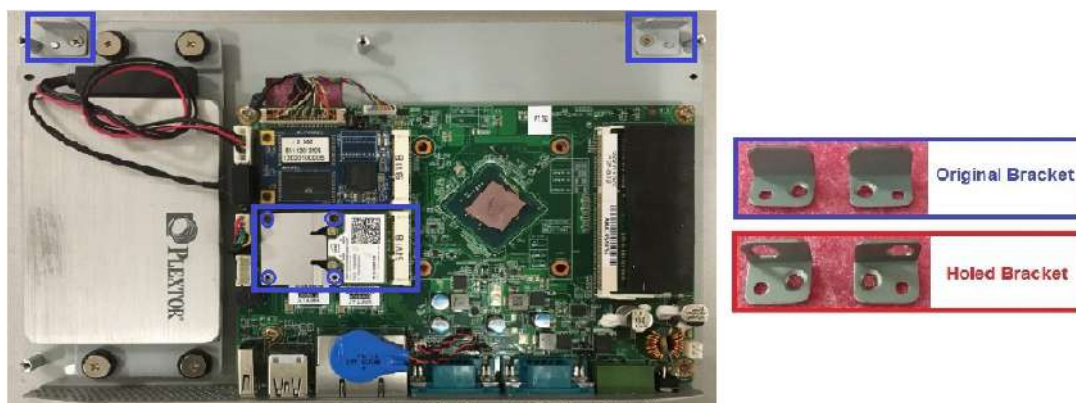


Figure 2.14 Installing the wireless LAN card

2.2.4.2 Half-Size Mini PCIe Installation

1. Retrieve the hexagonal screw provided in the accessory box. Align the screw with the notch on the PCB and secure in place (Figure 2.15).

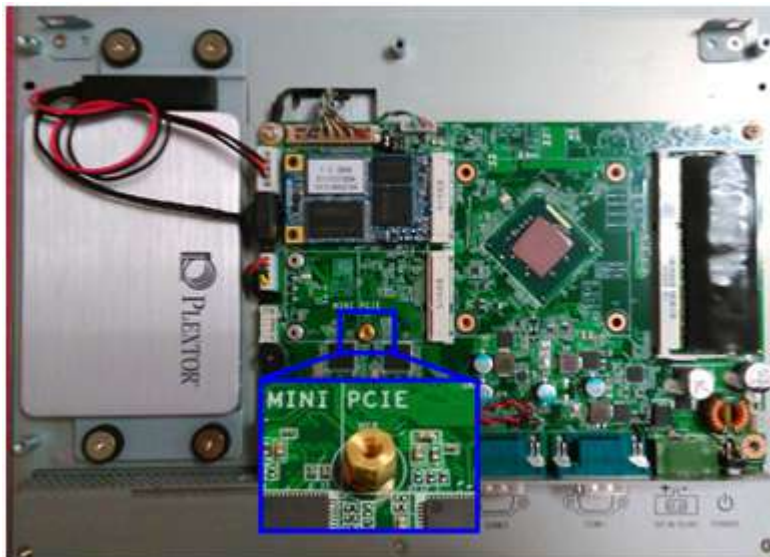


Figure 2.15 Hexagonal screw location

2. Insert the half-size mini PCIe card into the socket at a 45-degree angle. Secure the card in place using a screw provided in the accessory box. Next, replace the original bracket with the holed antenna bracket provided in the accessory box (Figure 2.16).

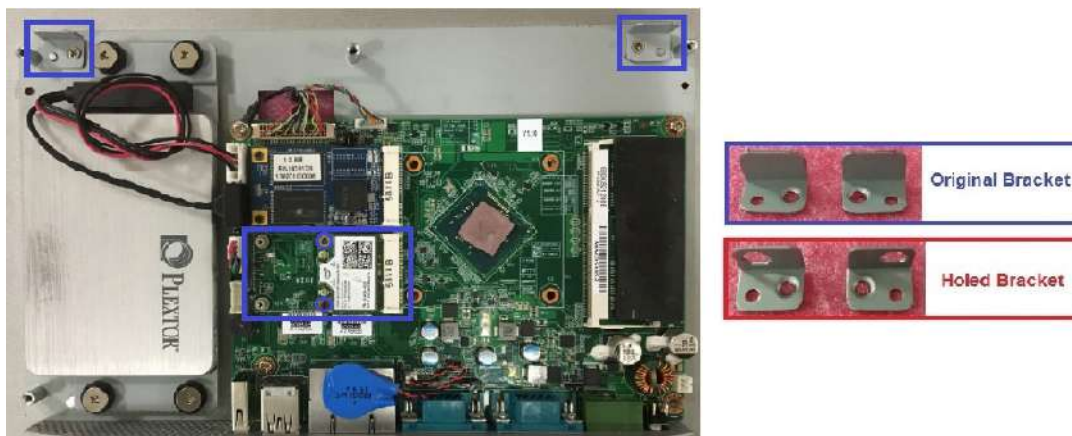


Figure 2.16 Installing the half-size mini PCIe card

3. Connect the antenna cables. Fix the cables on the brackets while noting the cable routing (Figures 2.17 and 2.18).



Figure 2.17 Full-size mini PCIe LAN antenna cables



Figure 2.18 Half-size mini PCIe LAN antenna cables

4. Remove the two plugs located at the top of the rear cover (Figure 2.19).



Figure 2.19 Removing plugs for the antennae

5. Connect the cable to the main board and secure the rear cover (Figure 2.20)



Figure 2.20 Replacing the rear cover

6. Install the external antennae (Figure 2.21).



Figure 2.21 Location of external antennae

2.3 Mounting the System

Warning! When mounting the panel PC, more than one person should perform the installation to prevent accidental damage to the panel or personal injury.



The panel PC supports various mounting options, as listed below.

- Wall mounting
- Panel mounting
- Arm mounting
- Stand mounting

2.3.1 Wall Mounting

To mount the panel PC onto a wall, follow the instructions below (see Figure 2.22 for additional reference).

1. Select the location on the wall for the wall mount plate.
2. Mark the locations of the two plate screws holes on the wall.
3. Drill two pilot holes at the marked locations on the wall.
4. Align the wall mount plate screw holes with the pilot holes.
5. Secure the mount plate to the wall by inserting screws into the two pilot holes and tightening them.

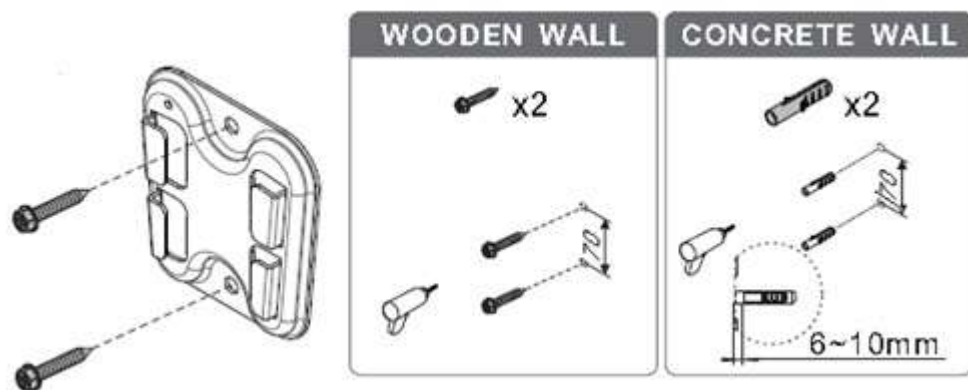


Figure 2.22 Wall mount plate

6. Insert four M4 screws into the holes on the panel PC and tighten them to secure the bracket to the rear panel.

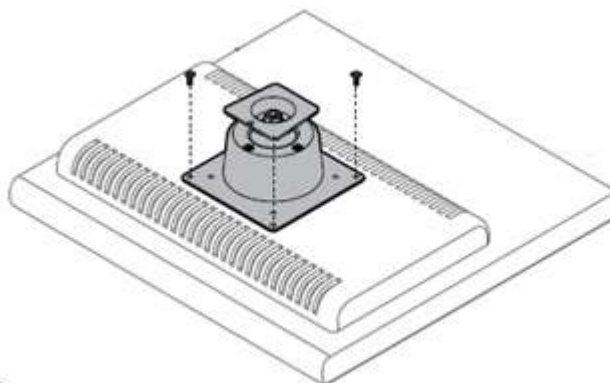
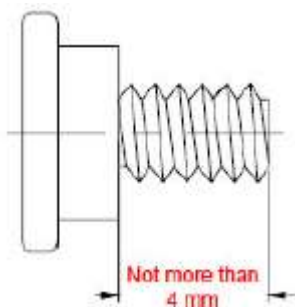


Figure 2.23 Screw locations on the rear panel

Warning! Ensure that the thread depth of the screws on the rear panel does not exceed 4 mm.



7. To mount the panel PC on the wall, align the wall mount bracket attached to the panel PC with the wall mount plate on the wall and slide the panel PC downwards to hang the bracket on the mount plate (Figure 2.24).

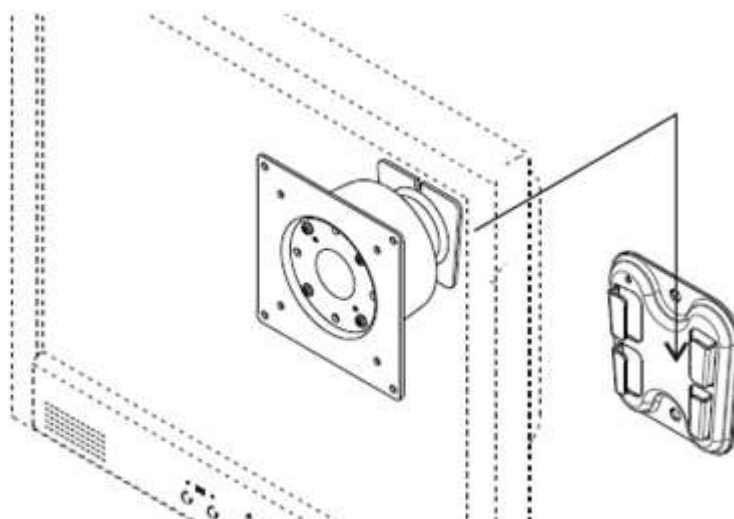


Figure 2.24 Mounting the panel PC on a wall

8. Secure the panel PC in place by tightening screws in the wall mount bracket (Figure 2.25).

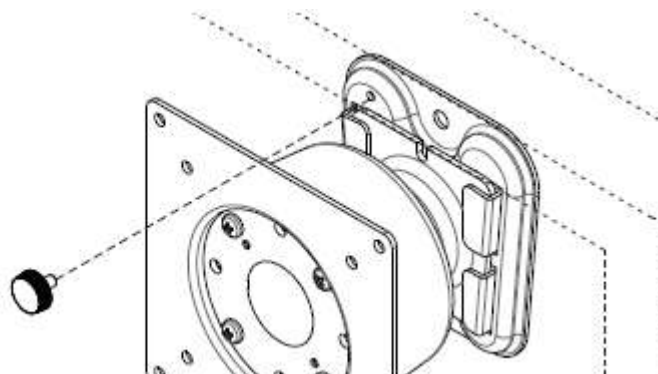


Figure 2.25 Securing the panel PC

2.3.2 Panel Mounting

To mount the flat bezel panel PC into a panel, follow the steps below.

1. Cut out a panel corresponding to the size shown in Figures 2.26, 2.27, and 2.28. (unit: mm).

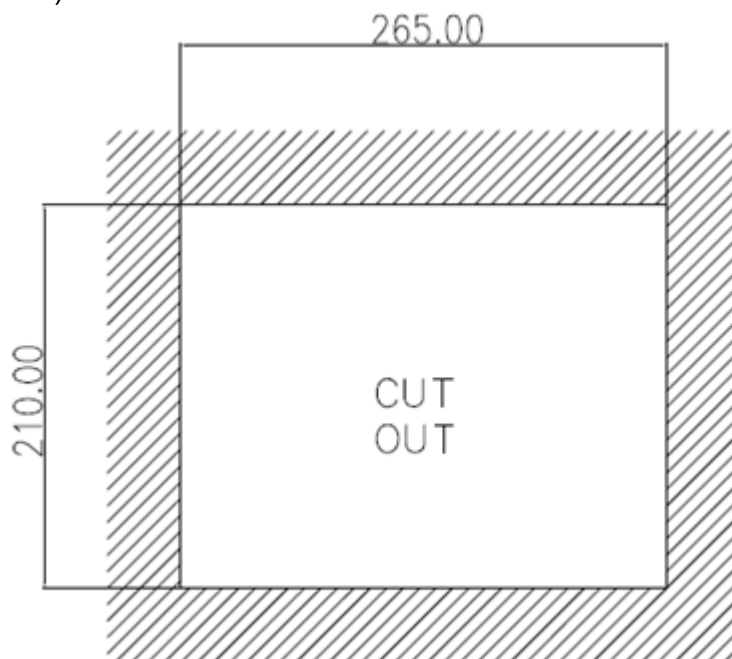


Figure 2.26 PPC-3100S cut out dimensions

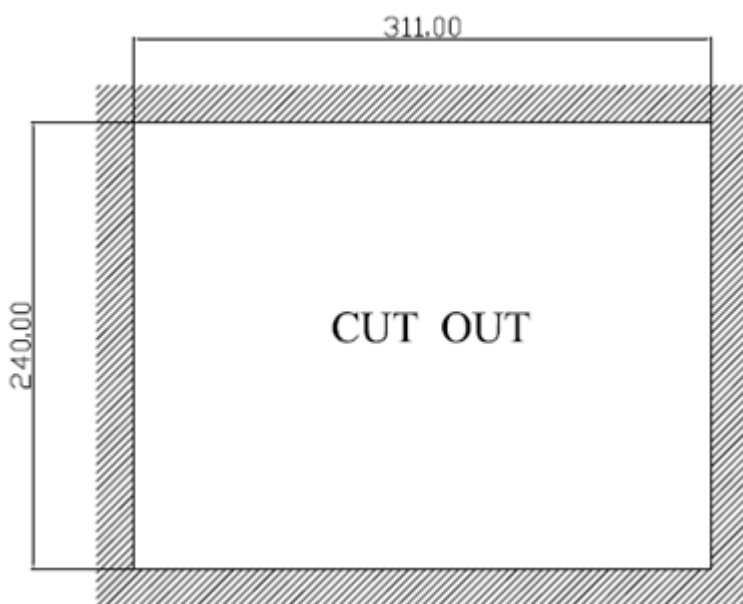


Figure 2.27 PPC-3120S cut out dimensions

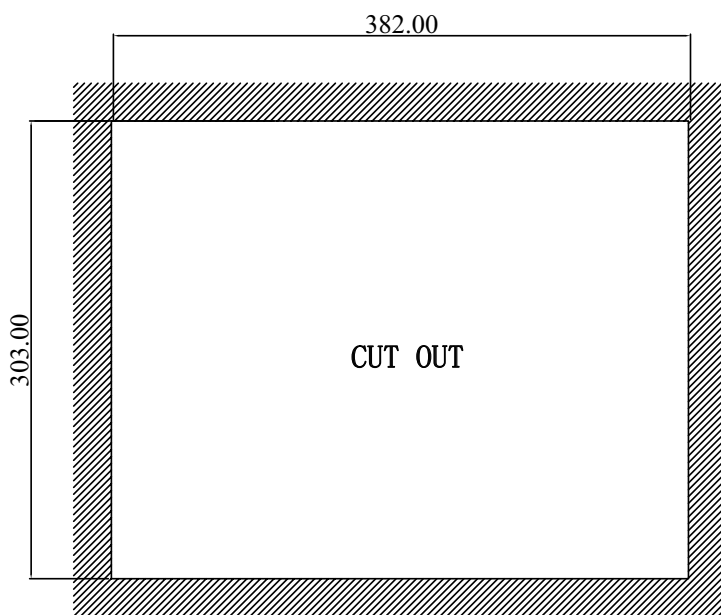


Figure 2.28 PPC-3150S cut out dimensions

2. Install the panel PC in the cabinet and retrieve eight hook brackets from the accessory box (Figure 2.29).

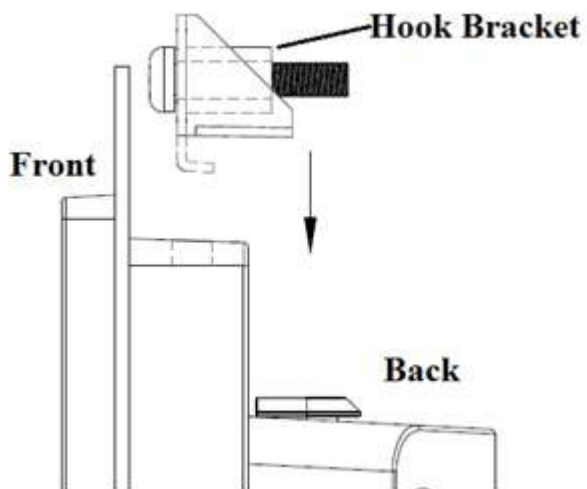


Figure 2.29 Hook brackets for panel mounting

3. Insert the hook brackets into the holes following the direction of the arrows shown in Figure 2.30 and hang the panel PC.

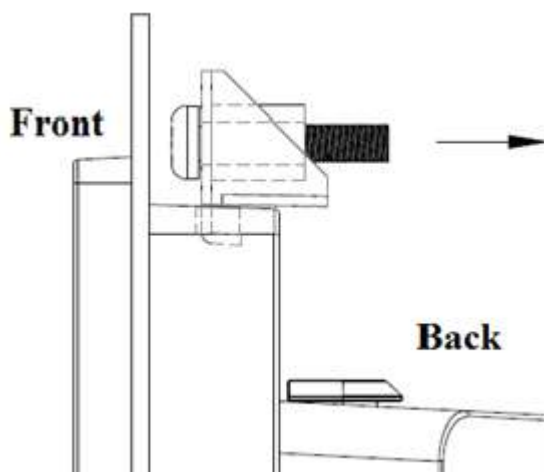


Figure 2.30 Hook brackets location

4. Tighten the screws to affix the panel PC in place (Figure 2.31).

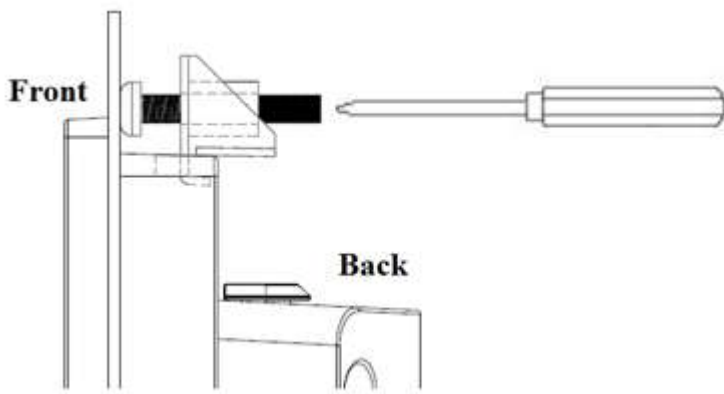


Figure 2.31 Fasten the hook bracket

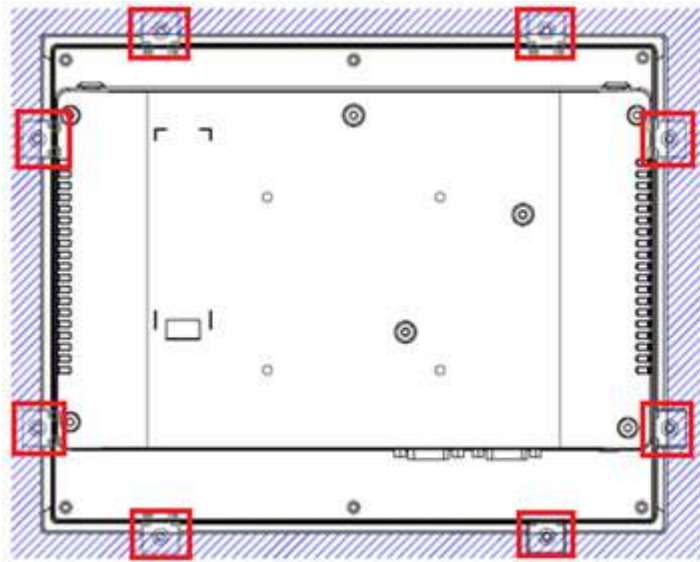


Figure 2.32 Panel mount rear view

2.3.3 Arm Mounting

PPC-3100S/3120S/3150S can be mounted on a VESA-compliant arm mount with a 75 mm interface pad. To affix the panel PC to an arm mount, follow the steps below.

1. Refer to the installation instruction of the mounting arm to correctly mount the arm onto the surface as a base.
2. Align the retention screw holes on the mounting arm interface with VESA holes in the panel PC, and secure the panel PC by four M4 retention screws. (see Figure 2.33)



Figure 2.33 Arm mount for panel PC

Warning! Ensure that the thread depth of the screws on the rear panel does not exceed 4 mm.



2.3.4 Stand Mounting

Before stand mounting, check that the product was shipped with the following items:

Packing List							
No.	Name	Qty.	Pic.	No.	Name	Qty.	Pic.
A	Screw (M4x8L)	12 (4 x spare)		B	Screw (M4x6L)	6 (2 x spare)	
C	Screw (M4x5L)	2 (1 x spare)		1	Hinge	1	
2	VESA Bracket	1		3	Hinge Cover	1	
4	Base Plate	1					

To mount the panel PC onto the stand, follow the steps below

1. Use four M4 x 8L screws to affix the VESA bracket to the panel PC. Users can choose between a 75 x 75 mm or 100 x 100 mm VESA mount according to their requirements.

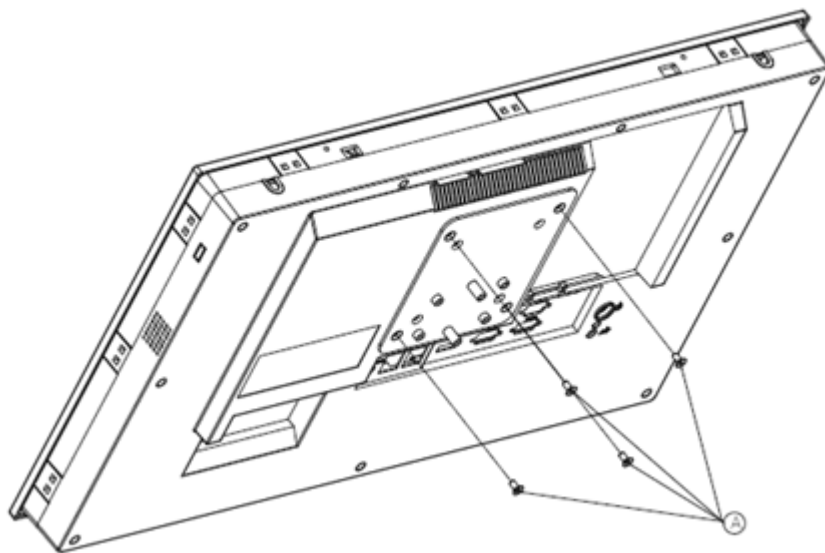


Figure 2.34 VESA mount screw holes

2. Use four M4 x 8L screws to secure the base plate to the mount stand (Figure 2.35).

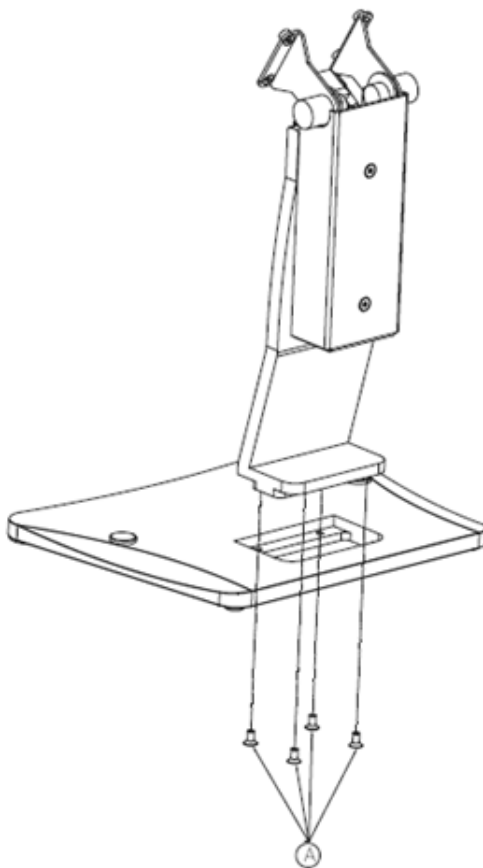


Figure 2.35 Securing the VESA mount base

3. Use four M4 x 6L screws to secure the mount stand to the VESA mount bracket (Figure 2.36).

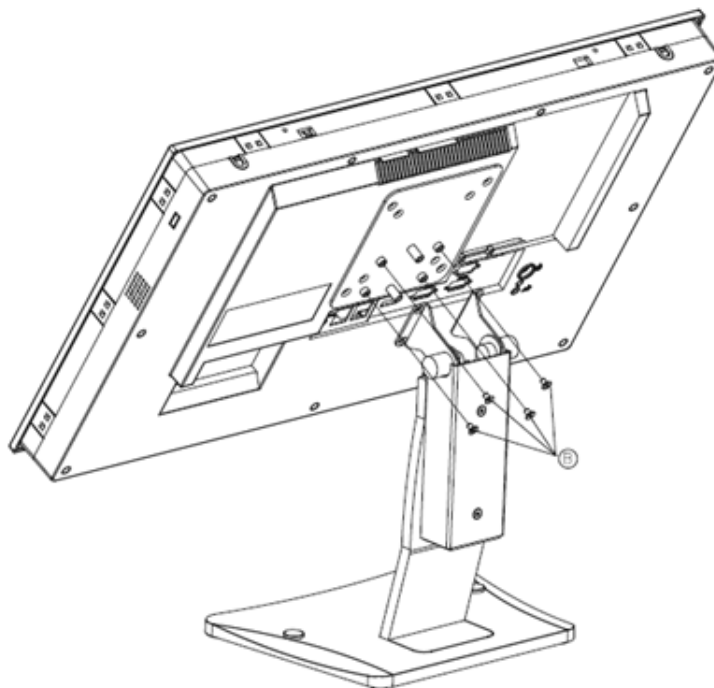


Figure 2.36 Securing the VESA mount bracket

4. Use one M4 x 5L screw to secure the stand mount hinge cover (Figure 2.37).

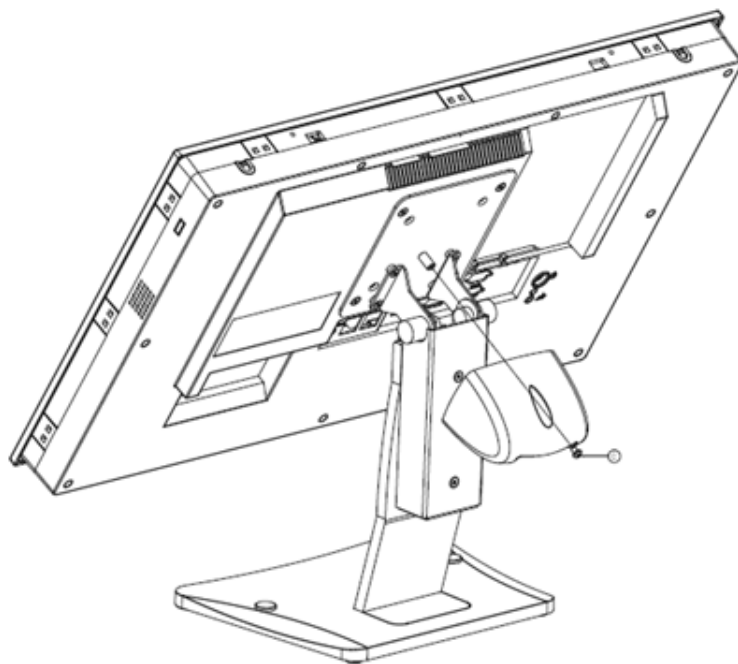


Figure 2.37 Securing the stand mount hinge cover

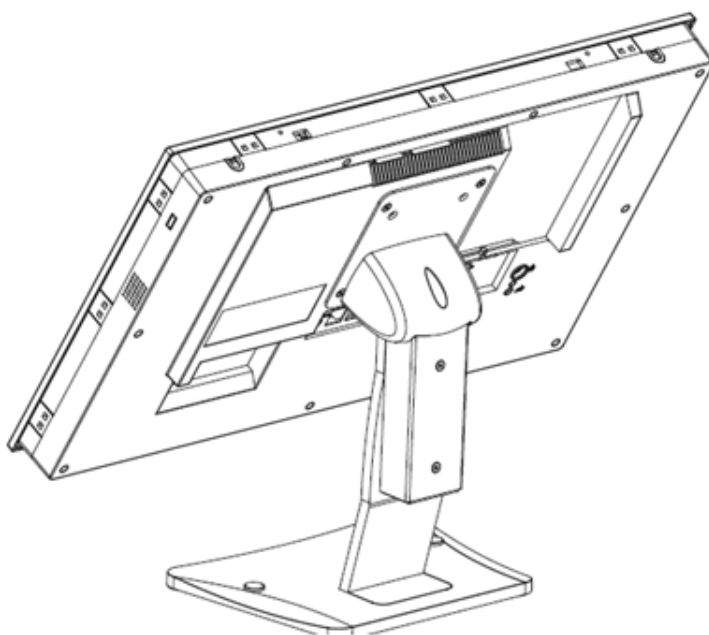


Figure 2.38 Completed stand mount

Chapter 3

Jumper Settings

- Motherboard Layout
- Jumpers and Connectors
- External COM Ports and Pin Definitions

3.1 Motherboard Layout

A diagram of the motherboard layout showing the locations of the internal peripheral connectors is provided below (Figure 3.1). The internal peripheral connectors are accessible when the motherboard is outside of the chassis.

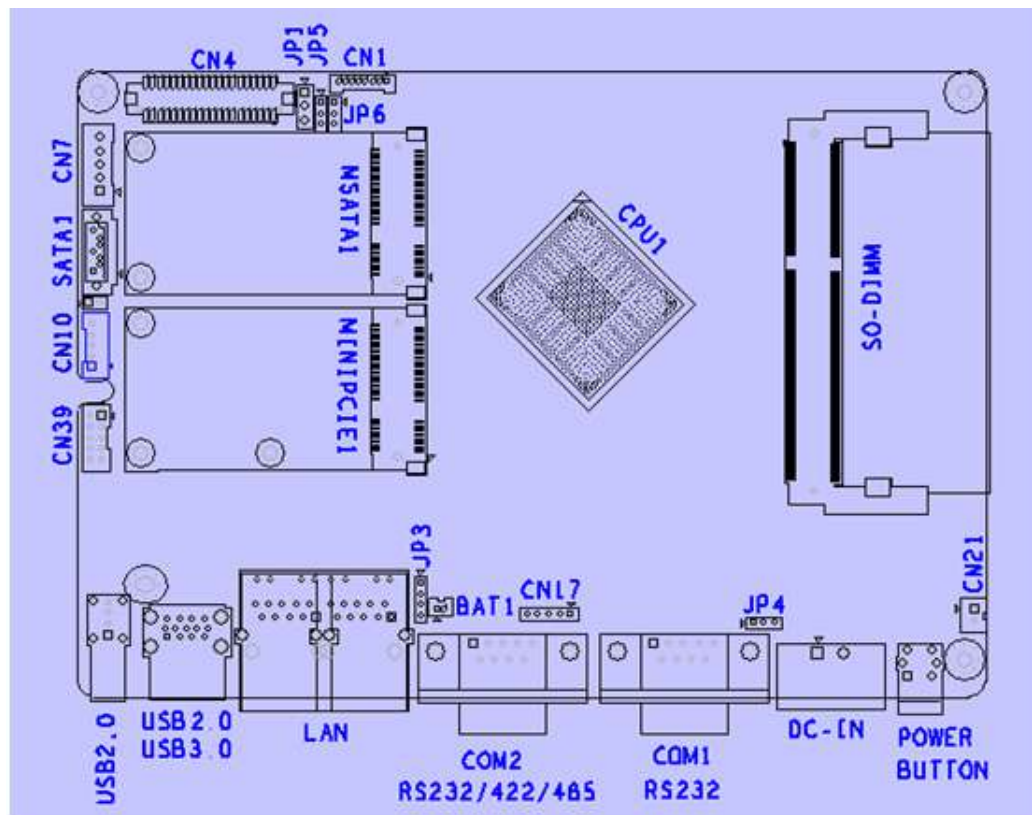


Figure 3.1 Motherboard layout diagram

3.2 Internal Jumpers and Connectors

The internal jumpers and connectors on the motherboard, and their pinouts, are listed in the table below.

Table 3.1: Internal Jumpers and Connectors

Connectors	Function	Type
CN1	LVDS backlight connector	Wafer 8P 1.25 mm
CN4	LVDS connector	Wafer 20 x 2P 1.25 mm
CN7	SATA power connector	Wafer 5P 2.5 mm
SATA1	SATA connector	SATA 7P connector
CN10	Touchscreen connector	Wafer 5P 2.0 mm
CN17	COM1 Pin 9 power select connector	Pin header 5P 2.0 mm
CN21	Power button	Wafer 2P 2.0 mm
CN39	LPC connector	Wafer 5 x 2P 2.0 mm
JP1	LVDS power select jumper	Pin header 3P 2.54 mm
JP3	RTC select jumper	Pin header 4P 2.0 mm
JP4	ATX/AT select jumper	Pin header 3P 2.0 mm
JP5	LVDS PWM power select jumper	Pin header 3P 2.0 mm
JP6	LVDS enable power select jumper	Pin header 3P 2.0 mm

3.2.1 LVDS Power Select Jumper

JP1	Icon	LVDS Power Select Jumper
(1-2)	P1	5V
(2-3)	P2	3.3V Default*



P1



P2

3.2.2 LVDS PWM Power Select Jumper

JP5	Icon	LVDS PWM Power Select Jumper
(1-2)	P3	5V
(2-3)	P4	3.3V Default*



P3



P4

3.2.3 LVDS Enable Power Select Jumper

JP6	Icon	LVDS Enable Power Select Jumper
(1-2)	P5	5V
(2-3)	P6	3.3V Default*



P5



P6

3.2.4 RTC Select

JP3	Icon	RTC Select
(2-3)	P7	Normal Default*
(3-4)	P8	Clear CMOS



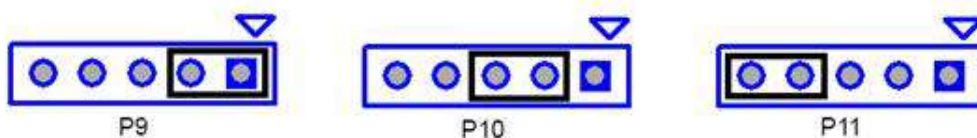
P7



P8

3.2.5 COM1 Pin 9 Power Select

CN17	Icon	COM1 Pin 9 Power Select
(1-2)	P9	COM1 RI Default*
(2-3)	P10	COM1 Pin 9 5V
(4-5)	P11	COM1 Pin 9 12V



3.2.6 ATX/AT Select

JP4	Icon	ATX/AT Select
(1-2)	P12	AT
(2-3)	P13	ATX Default*



3.3 External COM Ports and Pin Definitions

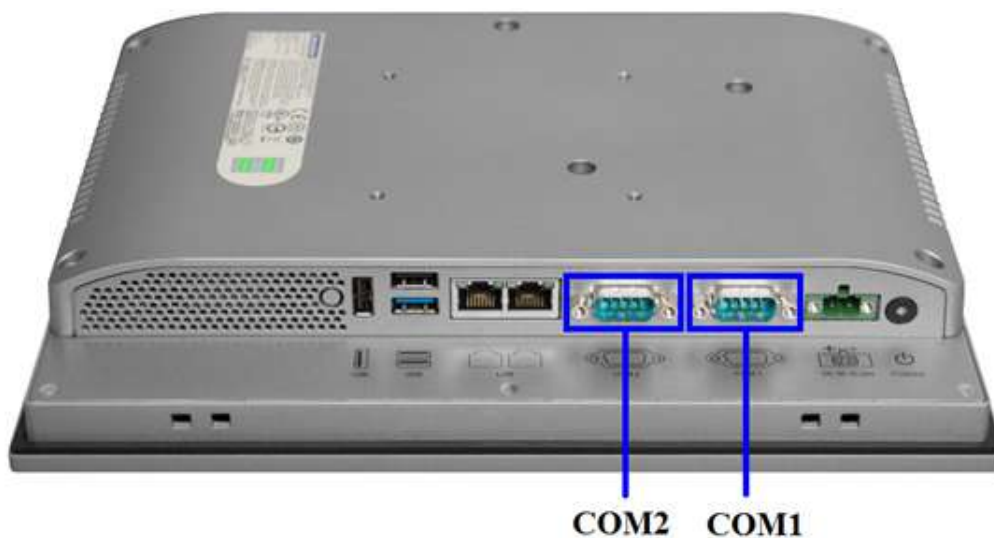


Figure 3.2 Location of COM1 and COM2 ports

COM1: RS-232

COM1 Pin 9 is set as “RI” by default. This setting can be changed to 5 V or 12 V output using a jumper.

COM2: RS-232/422/485

Note! COM2 does not support Ring function.



Pin	COM1	COM2		
	RS-232	RS-232	RS-422	RS-485
1	DCD	DCD	TX-	DATA-
2	RXD	RXD	TX+	DATA+
3	TXD	TXD	RX+	NC
4	DTR	DTR	RX-	NC
5	GND	GND	NC	NC
6	DSR	DSR	NC	NC
7	RTS	RTS	NC	NC
8	CTS	CTS	NC	NC
9	Ring or 5V/12V output	RING	NC	NC

Chapter 4

Software Setup

- Driver Installation
- BIOS Setup Program

4.1 Driver Installation

Before installing software on the panel PC, install the corresponding drivers to ensure full functionality.

All drivers can be downloaded from the Advantech website

<http://www.advantech.com>

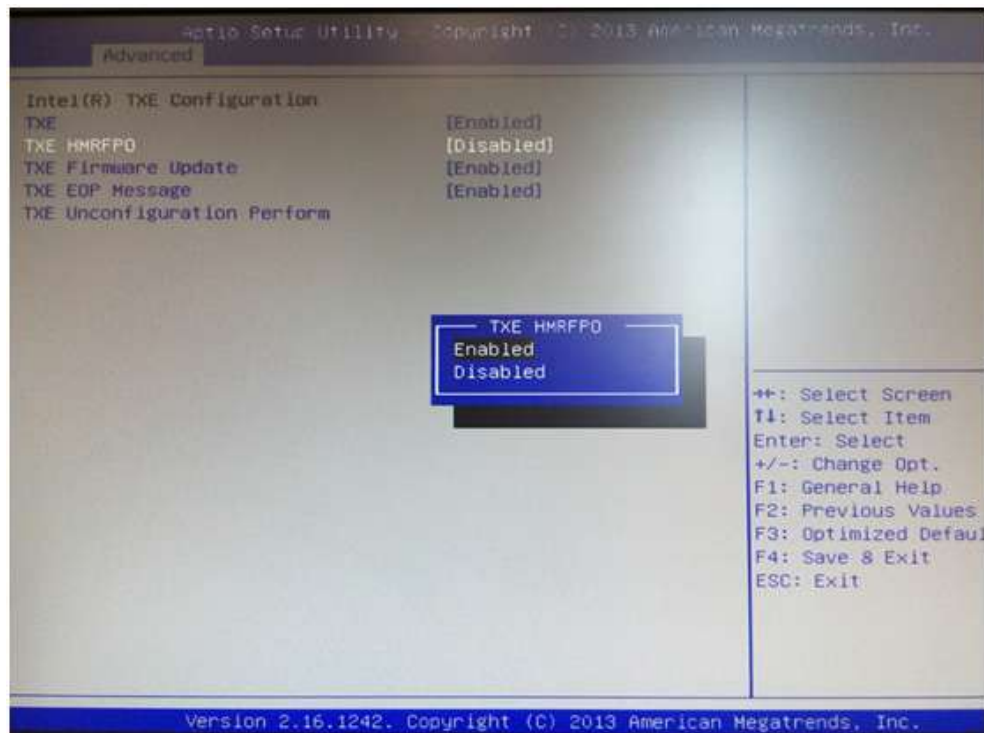
Note! *Before installing Windows 8.x or Android OS, adjust the BIOS settings as explained in Section 4.2.5 “OS Selection”. Otherwise, OS installation failure will occur. However, if Windows 7 OS is already installed, the BIOS settings do not need to be adjusted.*



4.2 BIOS Setup Program

4.2.1 Update BIOS

1. Upon entering the BIOS menu, click Advanced → Security Configuration → TXE HMRFPD → Enable

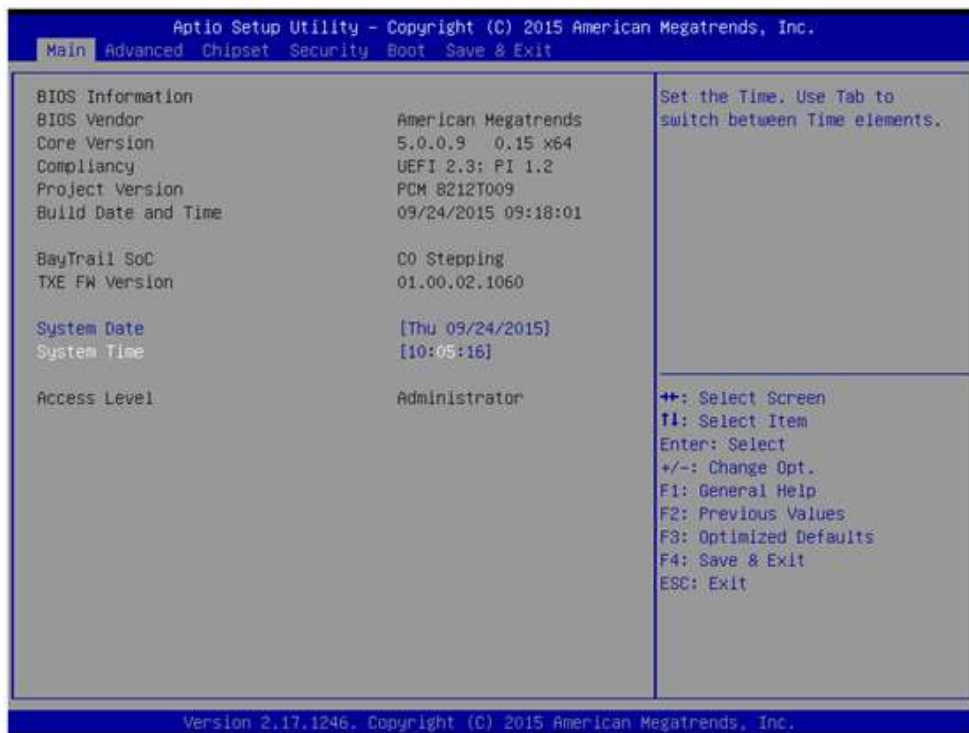


2. Restart the computer
3. Execute AFUDOS 8211BIOS.bin /P /B /N /X /ME
4. Power on the system again after it shuts down
5. The BIOS update is complete

4.2.2 Entering BIOS Setup

After powering on the system, press the button to access the BIOS Setup screen.

After adjusting the settings, press <F4> to save and exit; otherwise, the settings will not be saved in the BIOS.

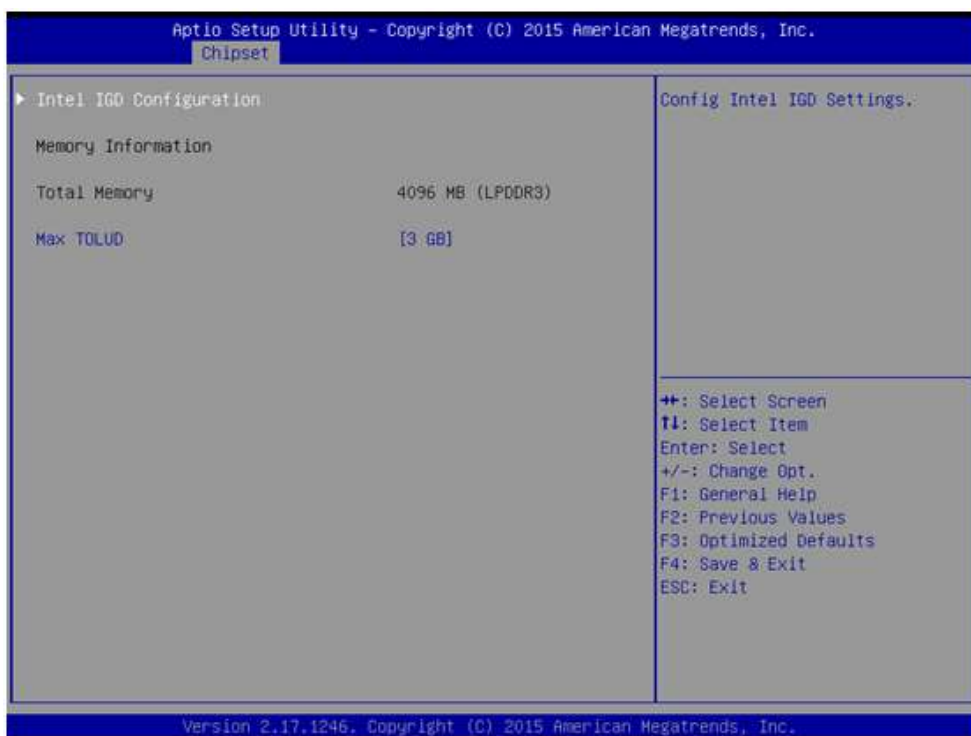


4.2.3 Adjustment of LCD Brightness

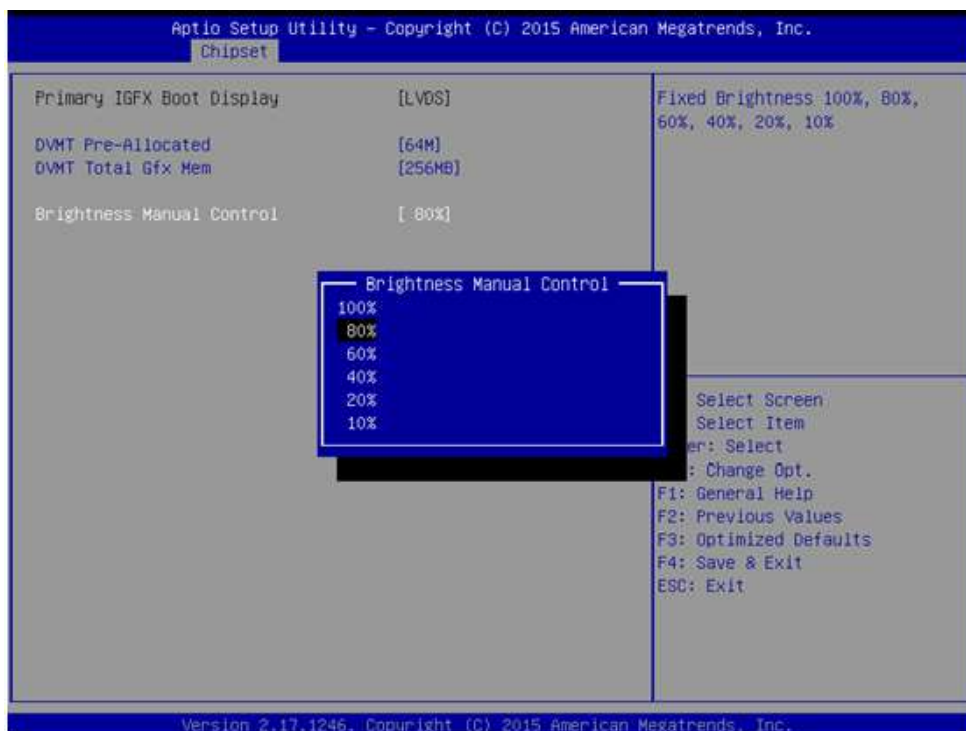
1. Click on the "North Bridge" option in the "Chipset" tab.



- Click on the “Intel IGD Configuration” option.

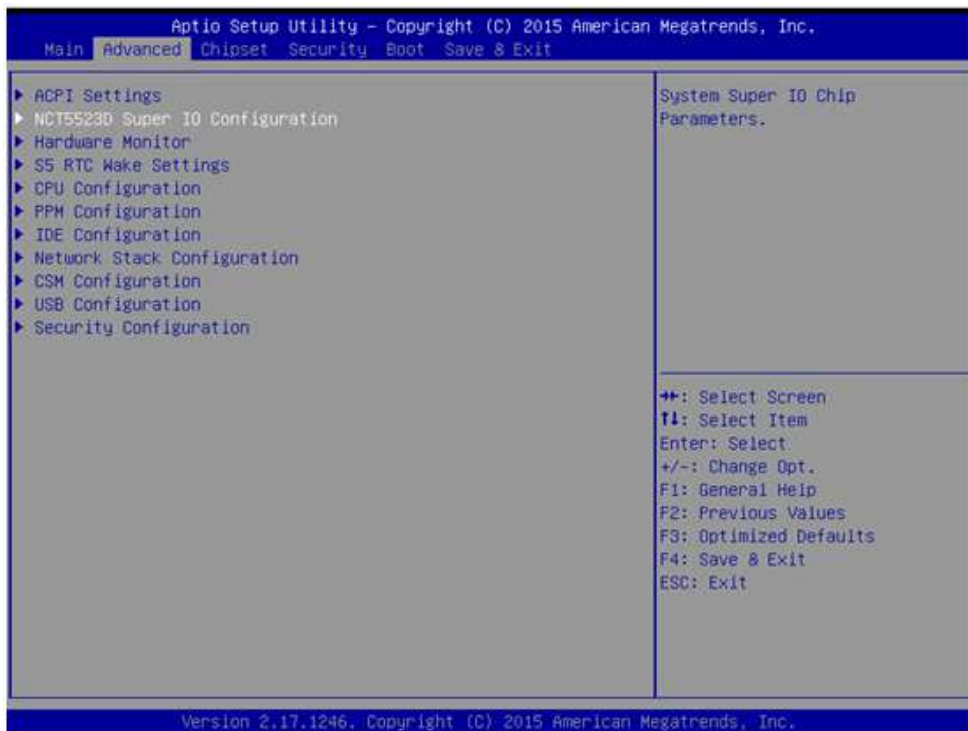


- Click on the “Brightness Manual Control” option to choose between six brightness levels.



4.2.4 COM2 Mode Selection (RS232/RS422/RS485)

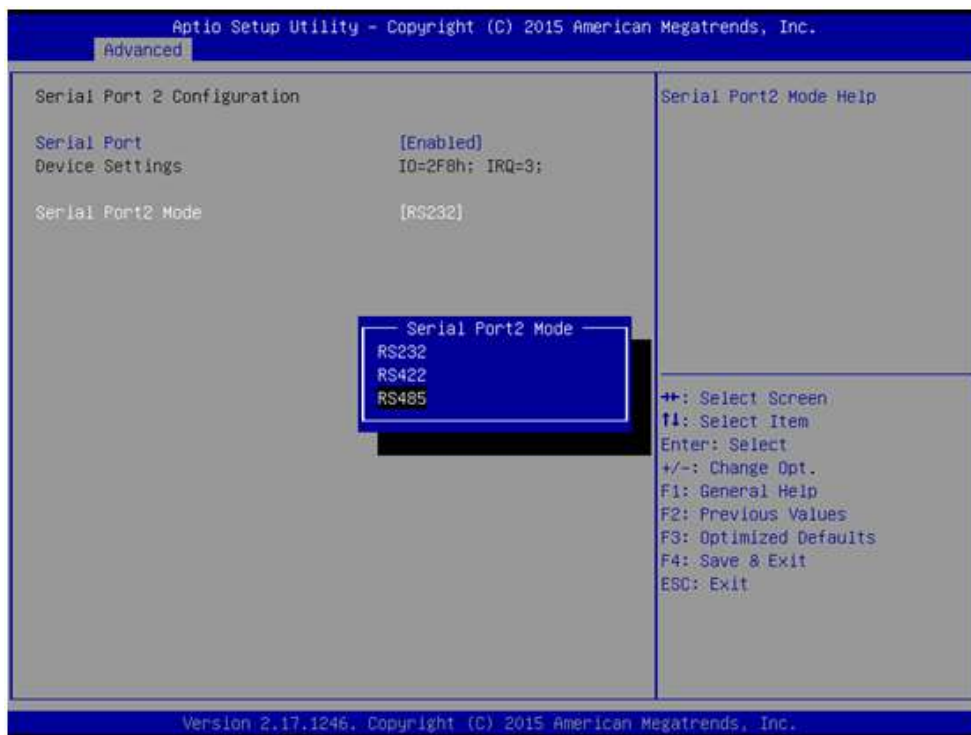
1. Click on the “NCT5523D Super IO Configuration” option in the “Advanced” tab.



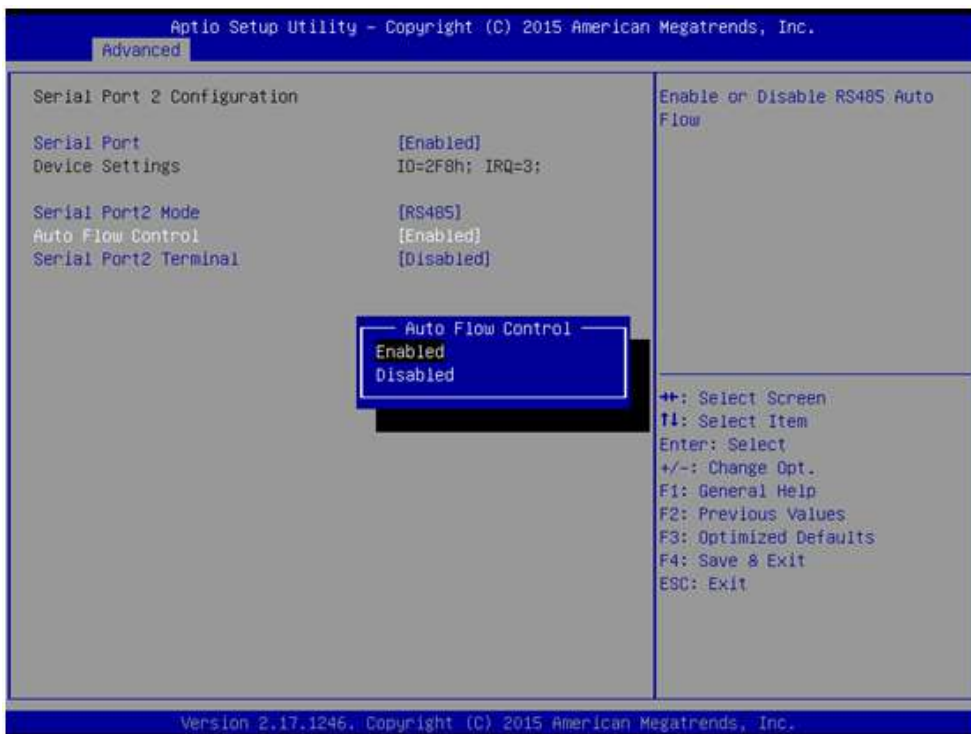
2. Click on the “Serial Port 2 Configuration” option.



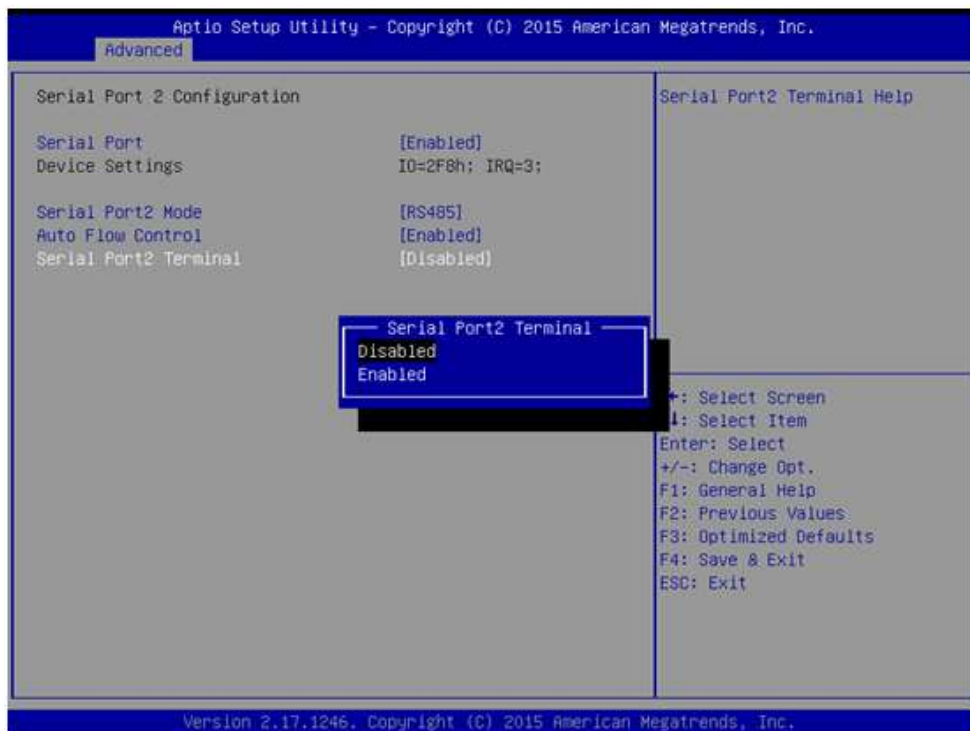
- Click on the “Serial Port 2 Mode” option to set the COM2 operation mode as RS232, RS422, or RS485.



- If the COM2 mode is set as “RS485”, the “Auto Flow Control” option can be enabled or disabled.



- If the COM2 mode is set as "RS485", the "Serial Port2 Terminal" option can be enabled or disabled.



4.2.5 OS Selection

- Click on the "South Bridge" option in the "Chipset" tab.
- Click on the "OS Selection" option to configure the system OS settings



Note! The default "OS Selection" setting is Windows 7. If installing Windows 8.X or Android OS, adjust this setting.



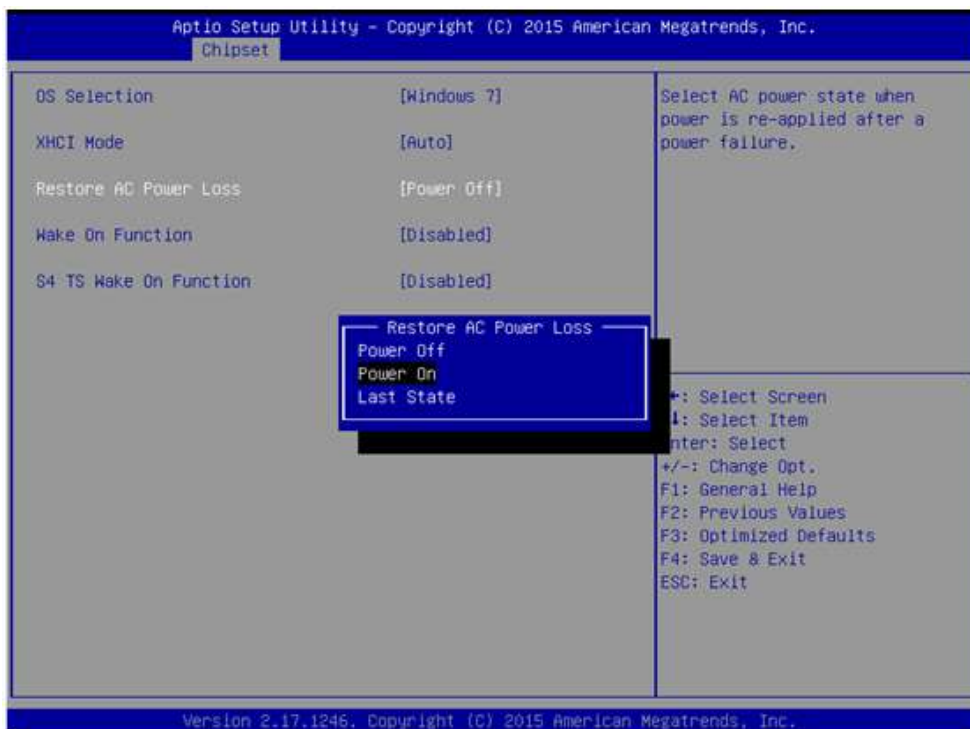


4.2.6 BIOS AT and ATX Setup

1. Click on the “South Bridge” option in the “Chipset” tab.



2. Click on “Restore AC Power Loss” and set the “Power On” option to AT and the “Power Off” option to ATX.

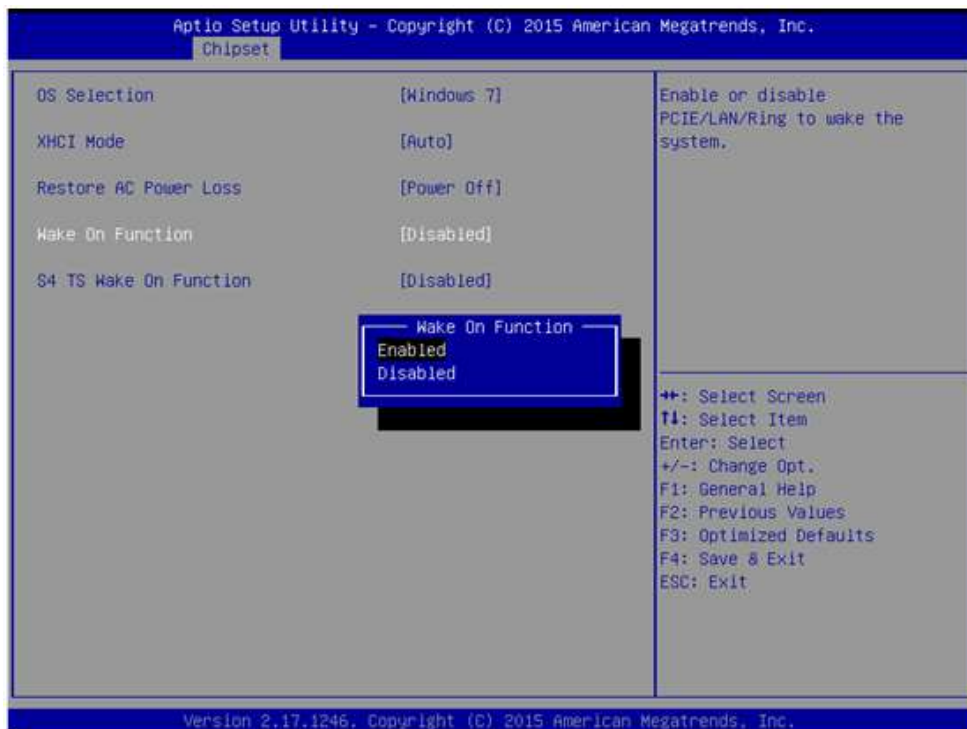


4.2.7 Wake-on-LAN

1. Click on the "South Bridge" option in the "Chipset" tab.



2. Set the “Wake on Function” option to Enabled.

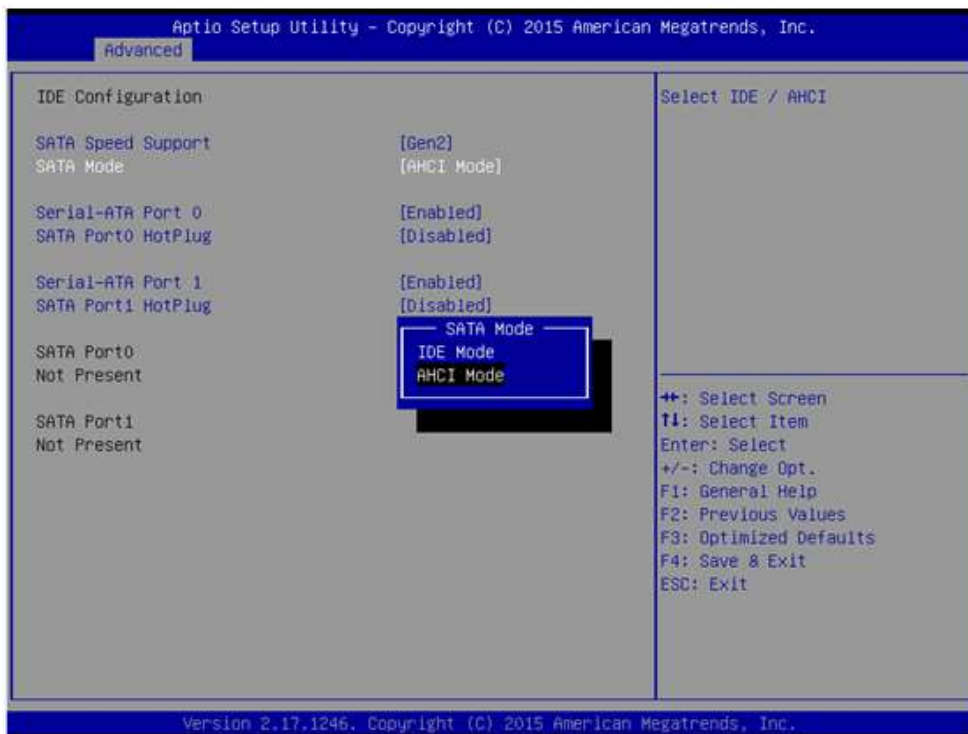


4.2.8 SATA Mode Selection

1. Click on the “IDE Configuration” option in the “Advanced” tab.



2. Click "SATA Mode" to adjust the settings.



4.2.9 Boot Options

1. Click on the "CSM Configuration" option in the "Advanced" tab.



- Click on “Boot Option Filter” to adjust the settings.

Note! *The default Boot Option Filter setting is “Legacy only”. If this is changed to “UEFI only”, the system can only support Windows 7 (64 bit) or 8.x(64 bit) OS. If UEFI 32-bit OS is required, update the BIOS.*



Appendix **A**

BSMI RoHS

A.1 BSMI RoHS

設備名稱：電腦 Equipment name		型號（型式）：PPC-3100S/3120S/3150S Type designation (Type)				
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁺⁶)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
液晶面板	—	○	○	○	○	○
電路板	—	○	○	○	○	○
配件（電源供應器）	—	○	○	○	○	○
其它固定組件（螺絲）	—	○	○	○	○	○
內外殼（外殼、按鍵、支架…等）	—	○	○	○	○	○
<p>備考 1. “超出 0.1 wt %” 及 “超出 0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note 1. “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考 2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note 2. “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考 3. “—” 係指該項限用物質為排除項目。 Note 3. “-” indicates that the restricted substance corresponds to the exemption.</p>						

Appendix **B**

China RoHS

B.1 China RoHS

Dear Customer,

Thank you for choosing an Advantech product. In compliance with the China RoHS standard SJ/T11364, "Marking for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products", all hazardous substances present in the product are disclosed below.

Please disregard this notice if the product is not to be sold or installed in China.

Model Name	PPC-3100S/3120S/3150S					
Substance	Name and concentration of hazardous substances contained in product					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chrome (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Battery	X	O	O	O	O	O
Touchscreen	X	O	O	O	O	O
Copper stub	X	O	O	O	O	O
Electronic parts and components	X	O	O	O	O	O

O: Indicates that the concentration of this hazardous substance in all homogeneous materials of the product comply with the limit specified in the GB/T 26572 standard.

X: Indicates that the concentration of this hazardous substance in at least one homogeneous material of the product exceeds the limit specified in the GB/T 26572 standard.

Enterprise Statement: (For substances exceeding the maximum allowable limit)

The Environmentally-Friendly Use Period (EFUP) for all enclosed products and their parts is per the symbol shown, unless otherwise marked. The EFUP is valid only when the product is operated under the conditions defined in the user manual.

Products labeled with a pollution control symbol do not contain hazardous substances, can be recycled, and should not be casually discarded.

Appendix **C**

E-Eye Function

C.1 E-Eye Function

Table C.1: E-Eye Monitoring Function List				
Item	Function	Failure Code	Error Description	Checking/Repair Suggestion
1	Main board	E0	Main board start-up error	<ol style="list-style-type: none"> 1. Check the power input 2. Check that no cable or system short circuits have occurred 3. Send the main board for repair
2	Memory	E1	Memory error	<ol style="list-style-type: none"> 1. Check the memory type is correct and verify installation 2. Check the memory slot function 3. Send the main board for repair
3	Touchscreen	E2	Touchscreen controller error	<ol style="list-style-type: none"> 1. Check that touch function is enabled for the operating system 2. Check that the touch controller type is correct via the Device Manager 3. Send the main board for repair
4	LVDS	E3	LVDS transfer controller error	<ol style="list-style-type: none"> 1. Check the display settings of the operating system 2. Send the main board for repair
5	USB	E4	USB internal detecting error	<ol style="list-style-type: none"> 1. Check USB function by testing the USB device in another system 2. Send the main board for repair
6	Serial port	E5	Serial port internal loopback error	<ol style="list-style-type: none"> 1. Check serial port function using an external device 2. Send the main board for repair
7	LAN port	E6	LAN port controller error	<ol style="list-style-type: none"> 1. Check LAN port function to verify LAN connection 2. Send the main board for repair
9	SATA storage device	E8	SATA storage connection error	<ol style="list-style-type: none"> 1. Check that the SATA/mSATA device is connected 2. Check SATA that the cable or mSATA device is secure 3. Check SATA/mSATA device function 4. Send the main board for repair

Note! E-Eye should show “FF” after a successful startup and self-diagnosis test.



If E-Eye shows E0 ~ E8 codes, there are one or more errors.

Failure codes outside of E0 ~ E8 suggest the error may be caused by other drivers or software.

If certain functions are showing problems but E-Eye shows “FF”, this may be due to limitations in the self-diagnosis function.

Appendix **D**

Watchdog Timer Programming Example

D.1 Watchdog Timer Programming Example

The watchdog timer is provided to ensure that standalone systems can always recover from catastrophic CPU failures and crashes. Such events may have been caused by external EMI or a software bug. If the CPU is malfunctioning, the watchdog timer performs a hardware reset to return the system to a previous state.

The following watchdog timer example code is written in Intel 8086 assembly language for a DOS environment. The number of watchdog timer intervals can be set as 0 ~ 255 via software.

```
-----  
; Enter the Extended Function Mode  
;-----  
MOV DX, 2EH; dependency by HW strap to 2Eh  
MOV AL, 87H  
OUT DX, AL  
OUT DX, AL  
  
;-----  
; Configure logical device 8, configuration register CR30  
;-----  
MOV DX, 2EH  
MOV AL, 07H  
OUT DX, AL; point to logical device number reg.  
MOV DX, 2FH  
MOV AL, 08H  
OUT DX, AL; select logical device 8  
  
;-----  
;Set WDT logic device to active  
;-----  
MOV DX, 2EH  
MOV AL, 30H  
OUT DX, AL; select CR30  
MOV DX, 2FH  
MOV AL, 01H  
OUT DX, AL; set WDT active  
  
;-----  
;Initial WDT mode  
;-----  
MOV DX, 2EH  
MOV AL, F0H  
OUT DX, AL  
MOV DX, 2FH  
MOV AL, 00H; bit 0: 0 = pulse mode, 1 = level mode; bit 3: 0 = second mode, 1 =  
minute mode  
OUT DX, AL; set second mode, default value
```

```

;-----
;Set WDT timeout value
;-----
MOV DX, 2EH
MOV AL, F1H
OUT DX, AL
MOV DX, 2FH
MOV AL, 05H
OUT DX, AL; set timeout value as 5s; 00 = timeout disabled

;-----
; Exit the Extended Function Mode
;-----
MOV DX, 2EH
MOV AL, AAH
OUT DX, AL

```

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, such as electronically, by photocopying, recording, or otherwise, without prior written permission from the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2017