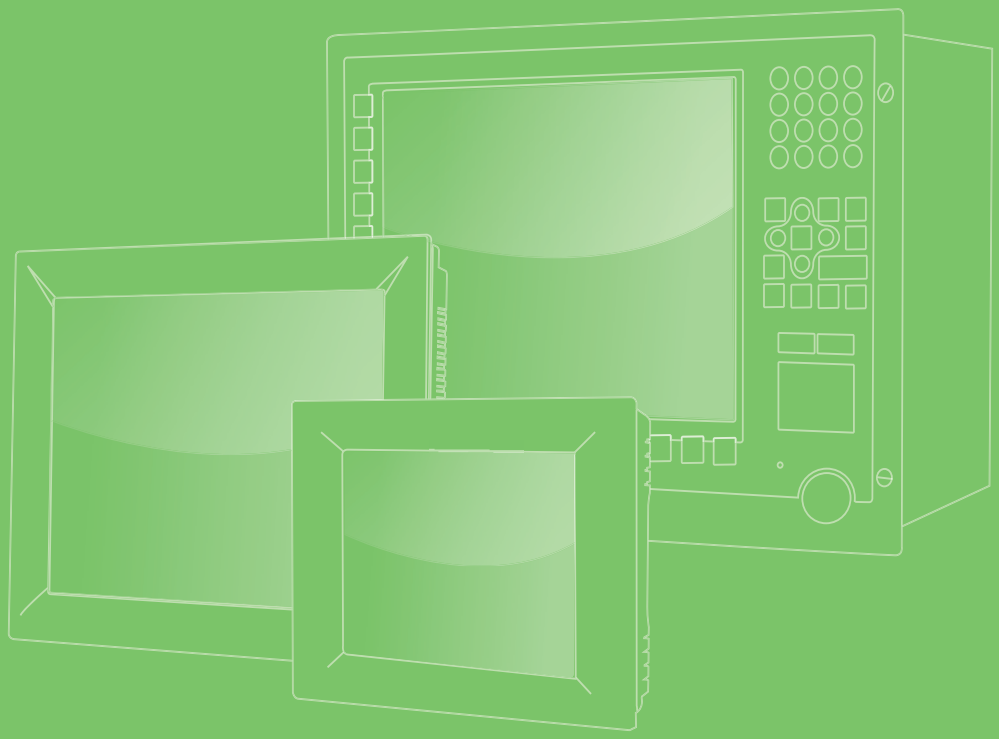

User Manual

PPC-3151SW/3181SW/ 3211SW/324W-P7

Intel® Core™ i processor based Panel PC with 15.6"/18.5"/21.5"/23.8" Color TFT LCD Display

ADVANTECH

Enabling an Intelligent Planet

Copyright

Acknowledgements

Intel and Celeron are trademarks of Intel Corporation.

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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 an return merchandize 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.

Part No. 2003321141 Edition 2

Printed in China July 2020

Declaration of Conformity

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 -20 °C (-4°F) or above 60 °C (140 °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.

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.

Par exemple, "Si la batterie est remplacée par un modèle inapproprié, il y a un risque d'explosion. Remplacer les produits identiques ou équivalents recommandés par le fabricant. Traitement des piles usagées selon les instructions du fabricant."

Note! *Notes provide additional optional information.*

Revision

Date	Version	Description/Change
July 2018	1.0	Initial
Jun 2019	2.0	add PPC-3151SW
July 2020	2.0	add PPC-324W-P7

Contents

Chapter 1

General Information

This chapter provides general information regarding 3151SW/ 3181SW/3211SW/324W-P7.

- Introduction
- Specifications
- Dimensions

1.1 Introduction

Advantech's 3151SW/3181SW/3211SW/324W-P7 is an all-in-one light panel PC with a wide format 15.6"/18.5"/21.5"/23.8" full HD LCD. Powered by an Intel® 6th/7th Gen Core™ i processor, 3151SW/3181SW/3211SW/324W-P7 provides good performance and optimal memory, graphics and peripheral I/O support in a compact, fanless, embedded system. With a high durability design, 3151SW/3181SW/3211SW/324W-P7 adopts a flat touch screen with IP65 front panel protection, die-cast Al alloy in an aesthetic enclosure. It's ideal for easy and simple integration into various applications.

1.2 Key Features

- Robust IP65-rated true-flat color TFT LCD
- Ultra-thin fanless design with solid aluminum alloy enclosure
- Intel 6th/7th Gen Core i CPU with fanless design
- 1 x SO-DIMM, DDR4 1866/2133, Max 16GB (1.2V)
- 1 x Full-size mini PCIe card slot
- 2 x USB 3.0 port
- Supports SATA 6Gb/s interface for 2.5" SATA storage
- Optional mini PCIe 802.11b/g/n wireless module

1.3 Front Panel

The 3151SW/3181SW/3211SW/324W-P7 front panel is a true-flat color TFT LCD touchscreen with Projected Capacitive Multi-Touch. The front panel is IP65 rated for dust and water tolerance (Figure 1.1).

Figure 1.1 front panel

1.4 Rear Panel

The PPC-3151SW/3181SW/324W-P7 rear panel features four VESA mount (100 x 100 mm) holes located below figure 1.2.

VESA screw: M4*12L

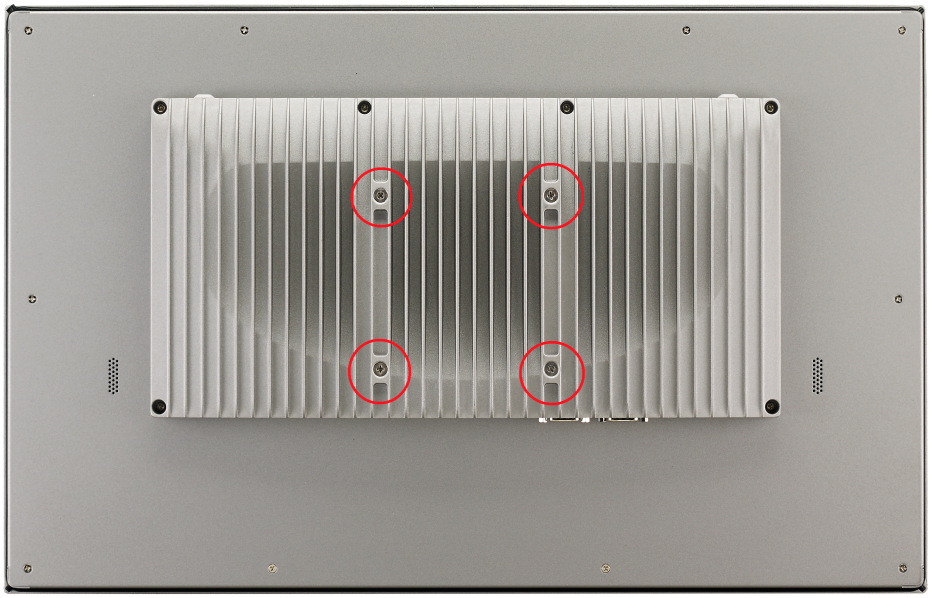


Figure 1.2 rear panel

1.5 Panel Underside

The system I/O located at the panel underside (Figures 1.3) 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
- 2 x USB 3.0
- 2 x USB 2.0
- 1 x HDMI

Figure 1.3 Panel PC underside

1.6 Dimensions

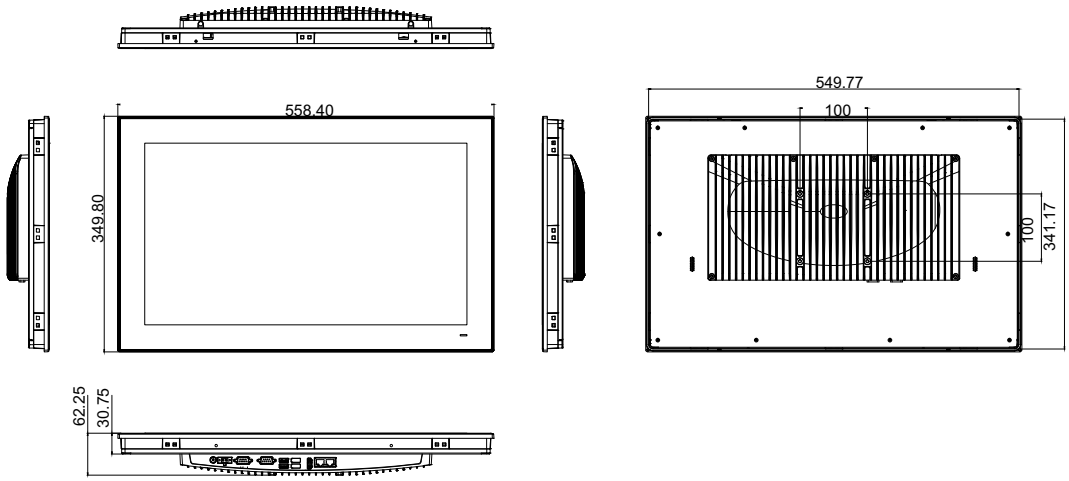


Figure 1.4 PPC-3211SW dimensions

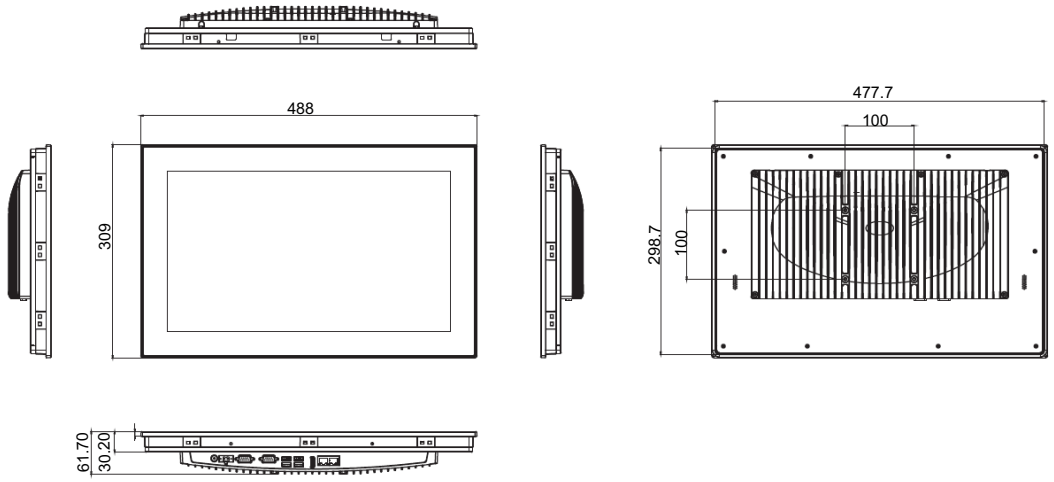
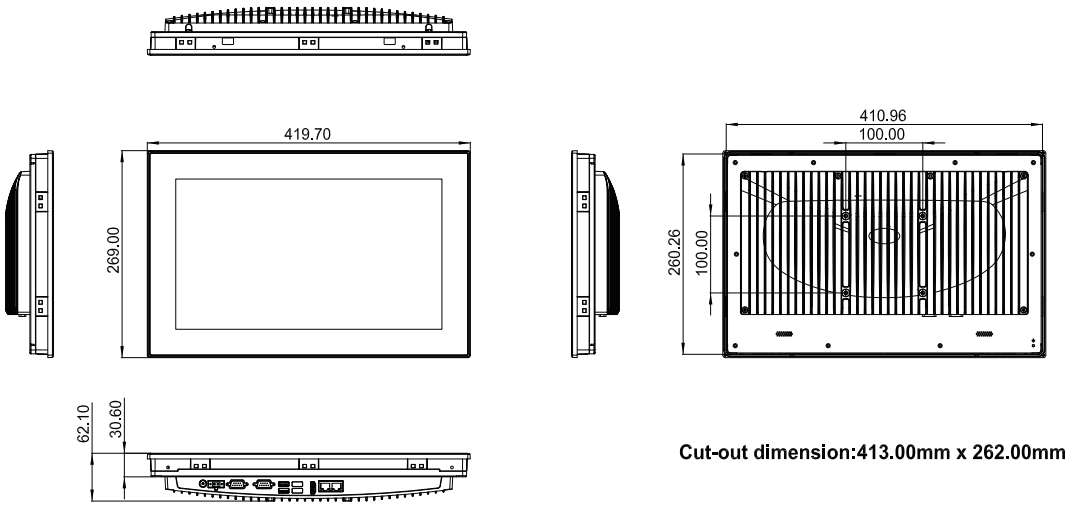


Figure 1.5 PPC-3181SW dimensions



Cut-out dimension:413.00mm x 262.00mm

Figure 1.6 PPC-3151SW dimensions

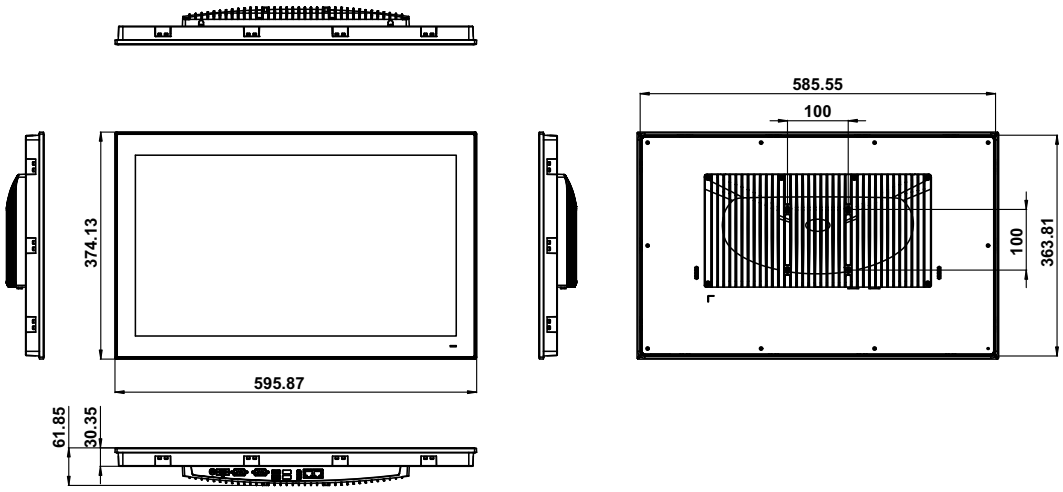


Figure 1.7 PPC-324W-P7 dimensions

1.7 Specifications

	PPC-3211SW	PPC-3181SW	PPC-3151SW	PPC-324W-P7
LCD Display	21.5"	18.5"	15.6"	23.8"
Display Type	TFT LCD(LED backlight)	TFT LCD(LED backlight)	TFT LCD(LED backlight)	TFT LCD(LED backlight)
Resolution Max.	1920 x 1080	1366 x 768	1920 x 1080	1920 x 1080
Brightness	300	450	450 cd/m2	350 cd/m2
Pixel Pitch	476.64(H) x 268.11(V)	300(H) x 300(V)	344.2(H) x 193.5(V)	
Viewing Angle	89(Left),89(Right), 89(Up), 89(Bottom)	85(Left),85(Right), 80(Up), 80(Bottom)	85(Left),85(Right), 85(Up), 85(Bottom)	89(Left),89(Right), 89(Up), 89(Bottom)
Contrast	5000	1000	800	1000
Backlight Lifetime	50,000 hr (Min.)	50,000 hr (Min.)	50,000 hr (Min.)	30,000 hr (Min.)
Touchscreen type	Projected Capacitive			
Light Transmission	90% ±3%		90% ±2%	≥85%
Controller	USB interface			
Durability(Touches)	Greater than 35 million touches in one location without failure			
Enclosure	Aluminum			
CPU	Intel® 6th Gen Core i processor			Intel® 7th Gen Core i processor
Memory	SO-DIMM x 1, DDR4 1866/2133, Max 16GB (1.2V)			
Storage	1 x 2.5" SATA Bay; 1 x M.2 bay			
Network (LAN)	2 x 10/100/1000 Mbps Ethernet (Intel® I211-AT; Intel® I219LM)			
I/O Ports	1 x RS-232, 1 x RS-232/422/485 (Adjustable through BIOS) 2 x USB 3.0, 2 x USB 2.0 HDMI x 1			
Expansion	1 x Full size Mini PCIe slot			
Watchdog Timer	255 timer levels, set up by software			
Speaker	2 x 1W			
OS Support	Microsoft® Windows 7 / Windows 8.1 / Windows 10 / WES 7/ Linux			Microsoft® Windows 10(64-bit), Windows 10 IOT LTSC, Linux
Power Supply	12 - 24 Vdc			

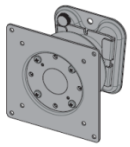
Power Consumption	75 W	65 W	60 W	80W
Operating Temperature	0 ~ 50°C (32 ~ 113°F) with SSD, 0 ~ 45°C (32 ~ 104°F) with HDD (HDD test condition:the SPEC of HDD temperature need more than or equal to 65°C)			
Storage Temperature	-20~ 60℃ (-4 ~ 140°F)			
Relative Humidity	10 ~ 95% @ 40°C (non-condensing)			
Shock	Operating 10G peak acceleration (11ms duration), following IEC 60068-2-27			
Vibration	Operating random vibration test, 5 ~ 500Hz, 1Grms with HDD; 2Grms with SSD, following IEC 60068-2-64			
Safety and EMC	Safety: CE, UL, CCC, BSMI EMC: CE, FCC Class B, BSMI			
Dimensions	558.4 x 349.8 x 62.2 mm (21.9 x 13.7 x 2.4 in)	488 x 309 x 61.7 mm (19.2 x 12.1 x 2.4 in)	419.70 x 269.00 x 61.10mm (16.52 x 10.59 x 2.44 in)	595.9 x 374.1 x 61.5 mm (23.5 x 14.7 x 2.4 in)
Weight	6.8 kg (14.9 lb)	5.7 kg (12.56)	4.84 kg (10.67 lb)	8.6 kg (18.95 lb)

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

Memory: 16G DDR4 2400
HDD: 64G SSD
OS: PPC-3151SW/3181SW/3211SW Windows 7(64bit);
PPC-324W-P7 Windows 10(64bit)
Software: Burn In Test 8.1

1.8 Ordering Information

Part Number	Description	Image
PPC-3211SW-P65A PPC-3211SW-P63A PPC-3181SW-P65A PPC-3181SW-P63A PPC-3151SW-P65A PPC-3151SW-P63A PPC-324W-P750A PPC-324W-P730A	Panel PC with Intel® 6/7th Core i processor	
96PSA-A90W19OT-3	Power adapter 100 ~ 240 VDC, 90 W, 19V	
96PSA-A150W19P2-3	Power adapter 100-240V, 150W, 19V	
PPC-WLAN-C1E	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
- HDD Installation
- mSATA Installation
- Wireless LAN Card Installation
- TPM 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-3211SW/3181SW/3151SW/324W-P7 front panel should appear as shown in Figure 2.1. Since PPC-3211SW/3181SW/3151SW/324W-P7 are series models, the following photos in the manual are PPC-3211SW examples.

Figure 2.1 Panel PC front view

1. Power status indicator, power-up:blue, stand by: orange

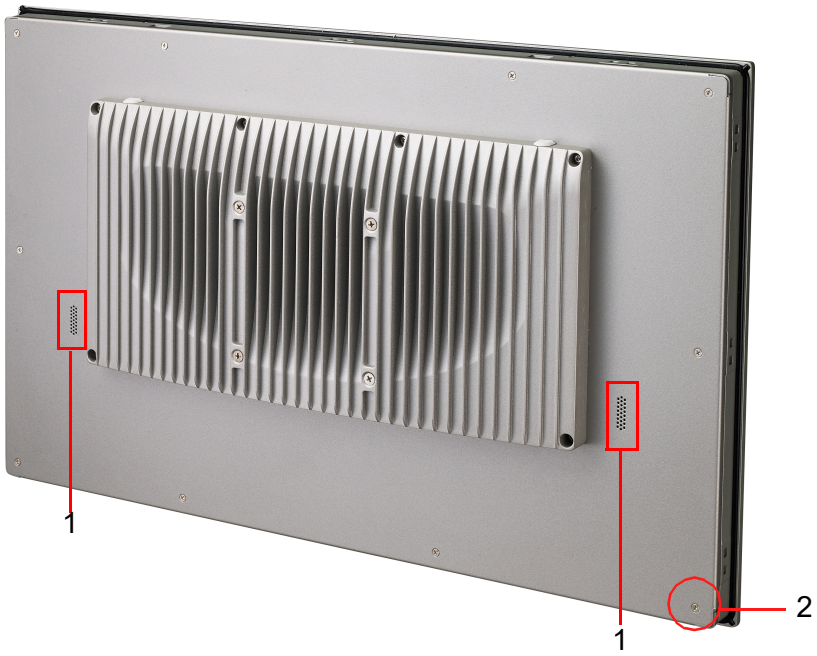


Figure 2.2 Panel PC rear view

1. Speaker
2. GND screw

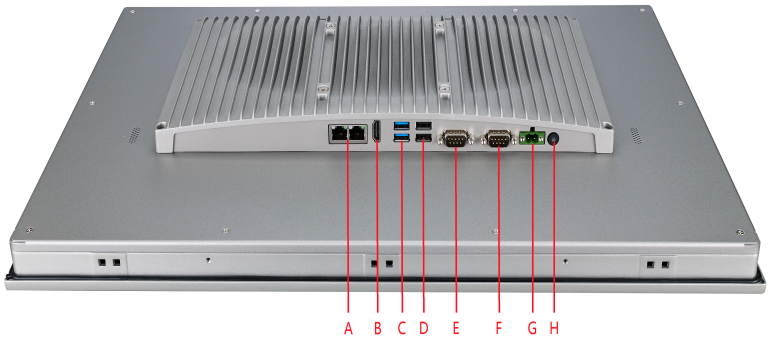


Figure 2.3 Panel PC underside with I/O

A. 2 x LAN
B. 1 x HDMI
C. 2 x USB 3.0
D. 2 x USB 2.0
E. COM2: RS-232/422/485
F. COM1: RS-232
G. DC-In
H. Power Button

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 four screws shown in red circle, then remove the six screws shown in the green circle and finally remove the rear cover.

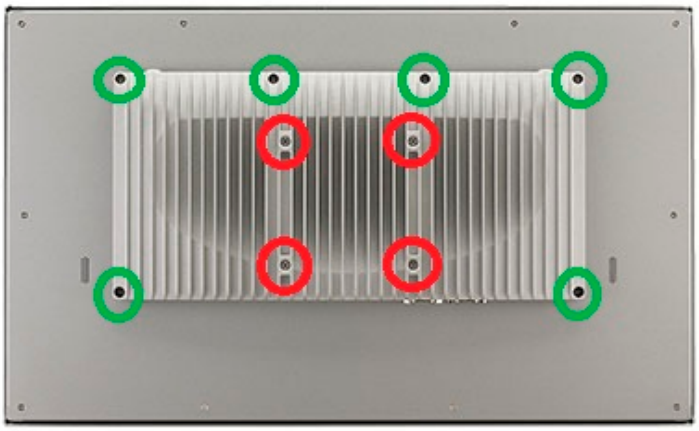


Figure 2.4 Retention screws on rear cover

2. Insert the memory card into the corresponding slot on the main board (see the area marked in red in Figure 2.5). Then place the memory thermal pad provided in the accessory box on top of the memory card (Figure 2.6).

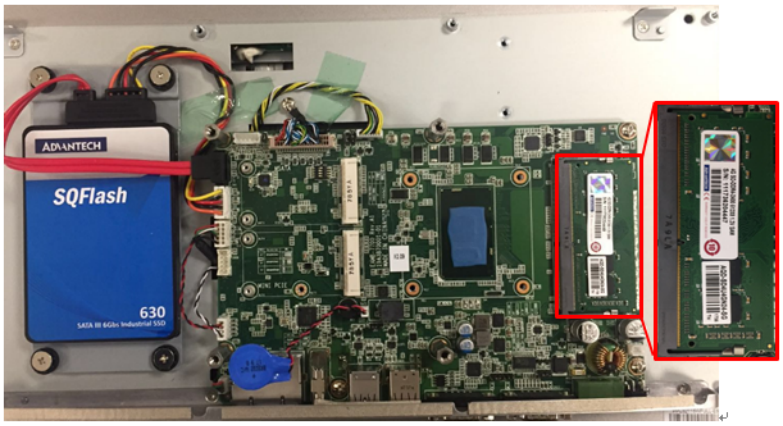


Figure 2.5 Memory card installation

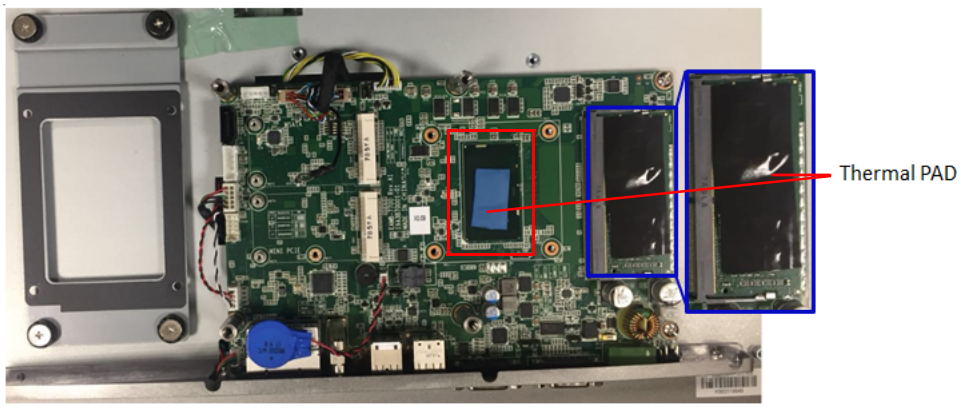


Figure 2.6 Thermal pad placed on the memory card

Warning! *Ensure that the thermal pad (provided in the accessory box) is placed on top of the CPU & memory card, as shown in Figure 2.6.*

Assurez-vous que le tampon thermique (fourni dans la boîte d'accessoires) est placé sur la carte mémoire, comme illustré à la Figure 2.6.

Note! *The second disassembly and assembly needs to replace the CPU thermal pad.*

2.2.2 HDD Installation

1. Remove the four retention screws on the HDD bracket (Figures 2.7 and 2.8).

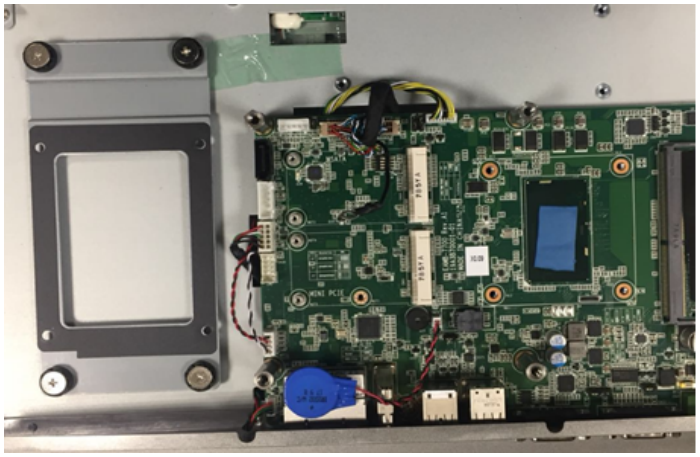


Figure 2.7 Retention screws on HDD bracket

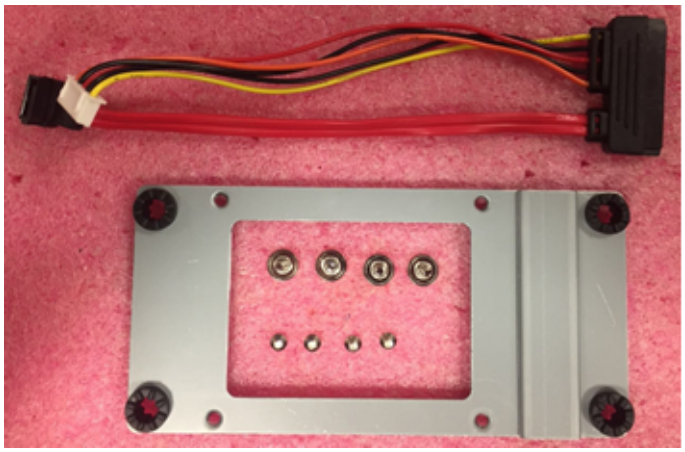


Figure 2.8 HDD module bracket

2. Connect the SATA cable provided in the accessory box to the SATA HDD module (Figure 2.9).

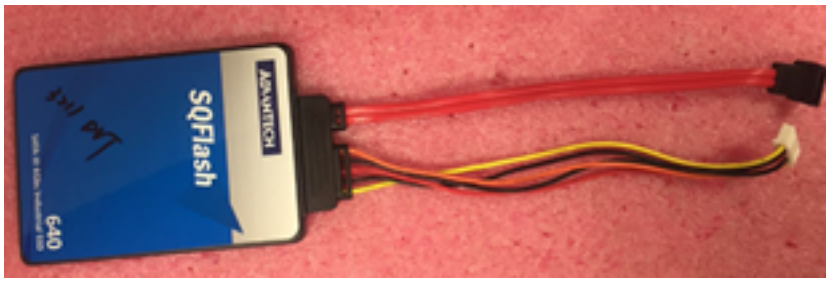


Figure 2.9 SATA cable connected to SATA HDD

3. Using the four screws provided in the accessory box, affix the SATA HDD module to the HDD bracket (Figure 2.10).

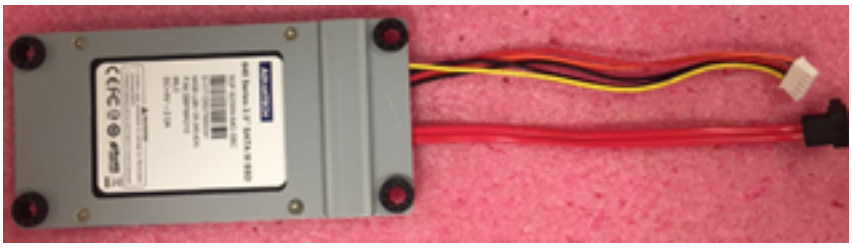


Figure 2.10 Secure SATA HDD with screws

4. 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 2.11).

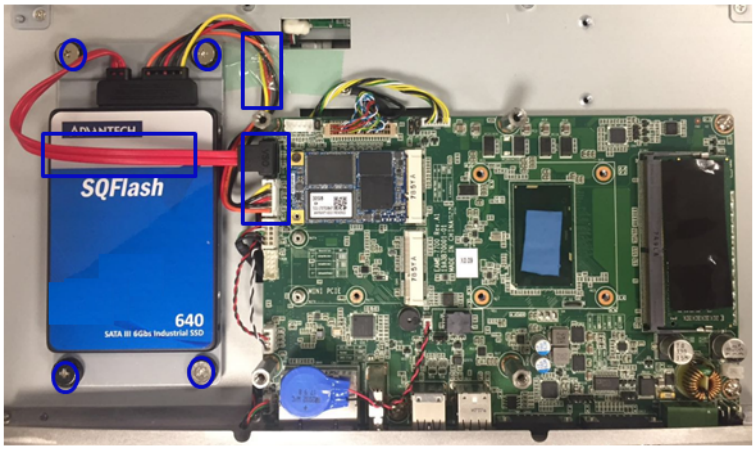


Figure 2.11 SATA HDD connected to the mainboard

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 2.12).

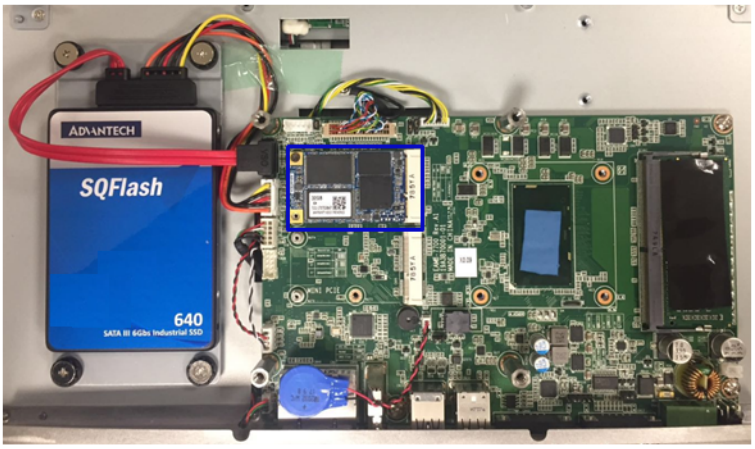


Figure 2.12 mSATA module installation

2.2.4 Wireless LAN Card 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 2.13).

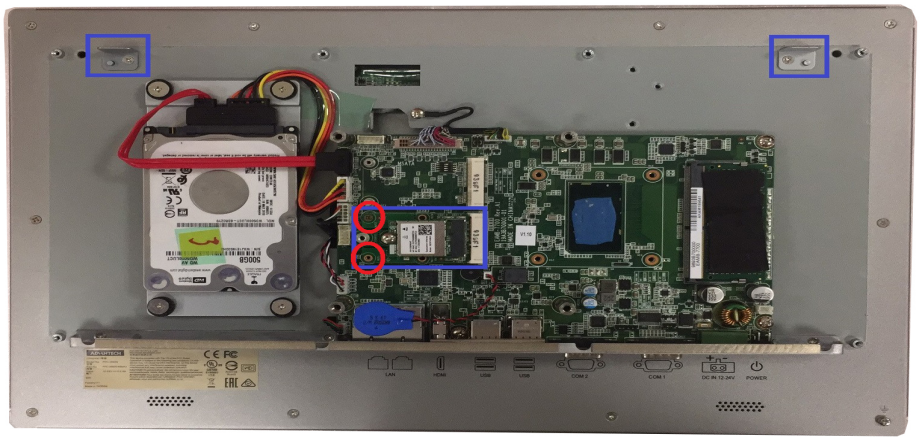


Figure 2.13 Installing the wireless LAN card

Note! *If a half-size PCIe is used, then use the hexagonal screws provided in the accessory box. Screws in red circles should be tightened, See Fig 2.13*

2. Retrieve the hexagonal screw provided in the accessory box.

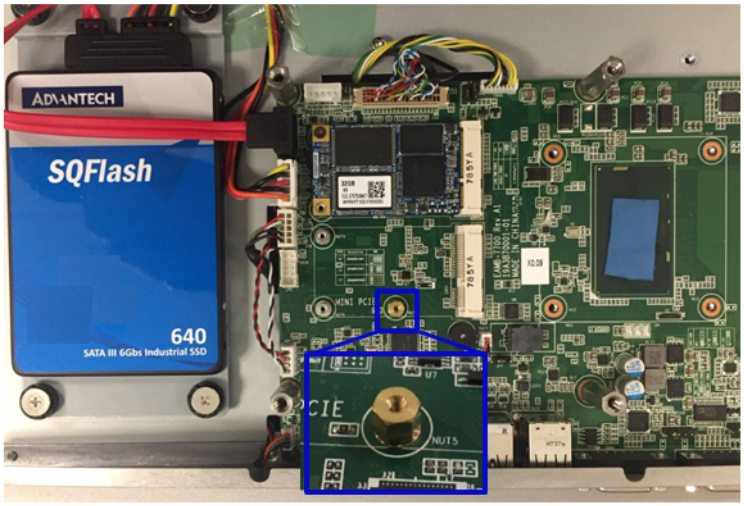


Figure 2.14 Hexagonal screw location

3. Connect the antenna cables. Fix the cables on the brackets while noting the cable routing.

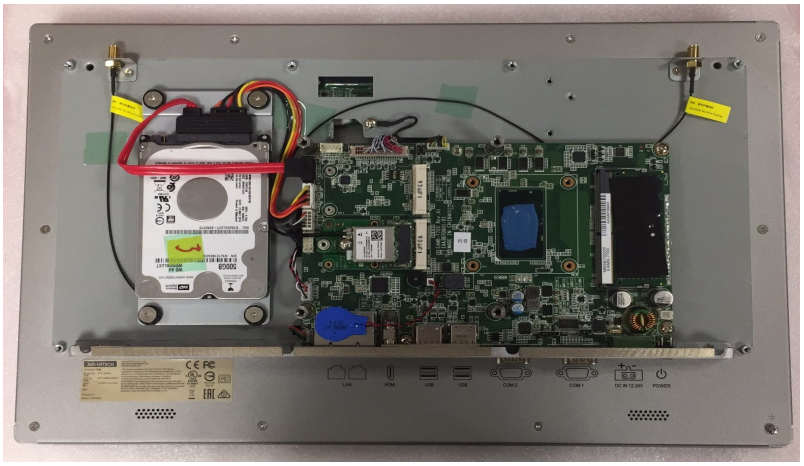


Figure 2.15 Full-size mini PCIe LAN antenna cables

4. Remove the two plugs located at the top of the rear cover.

Figure 2.16 Removing plugs for the antennae

5. Install the external antennas.

Figure 2.17 Location of external antennae

2.3 Installing TPM

Note! *The current mechanism only supports 98R3P315100.*

1. Refer to Section 2.2.1. to remove the rear cover. Fetch the TPM card (96923260J0E) from the TPM module and attach it.

Note! Use the grounding screw for the LVDS cable.

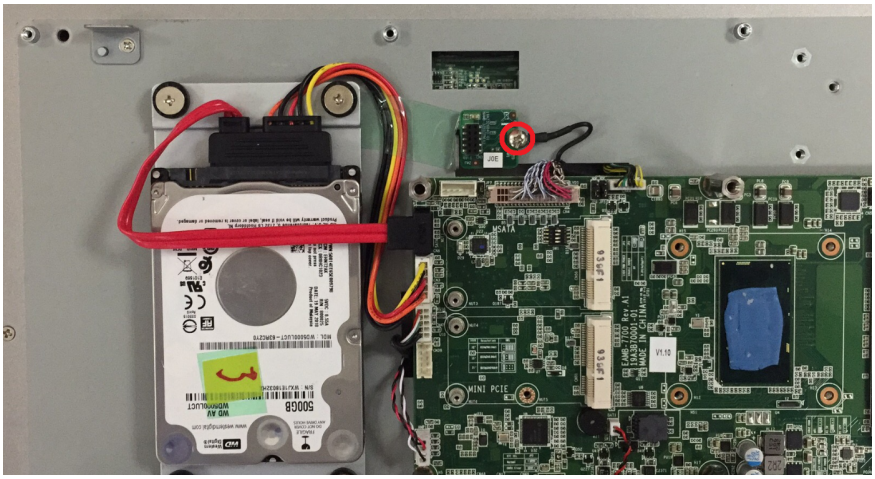


Figure 2.18 Fix TPM card with LVDS cable

2. Insert the cable into the TPM interface. Note that the white point corresponds to the first pin of the TPM board. Add the TPM cable which needs cross under the SATA cable.

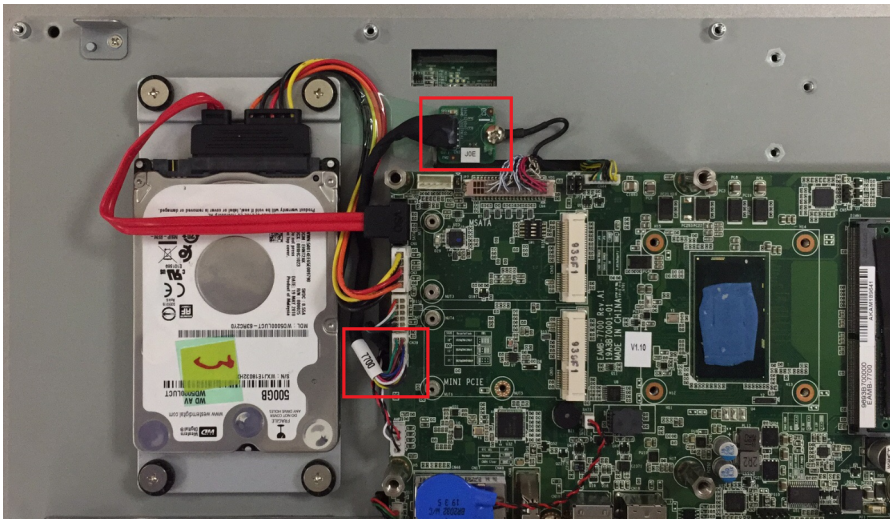


Figure 2.19 Assemble TPM Cable

2.4 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.*

Le comité constate qu'el-nasr " mounting, Plus d'une personne installation to prevent the cadre accidental damage to the personal injury.

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

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

2.4.1 Wall Mounting

To mount the panel PC onto a wall, follow the instructions below (see Figure 2.20 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.

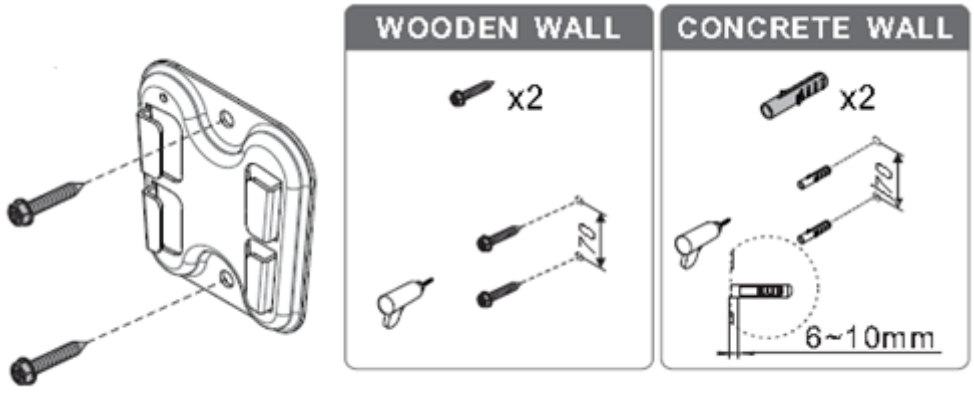


Figure 2.20 Wall mount plate

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

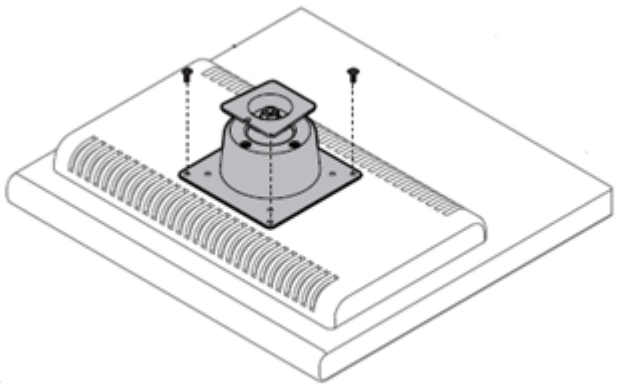
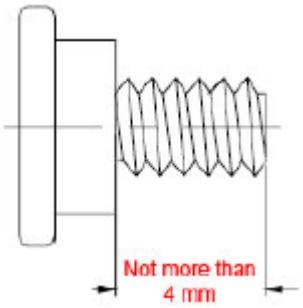


Figure 2.21 Screw locations on the rear panel

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

Assurez-vous que la profondeur du filetage des vis sur le panneau arrière ne dépasse pas 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.

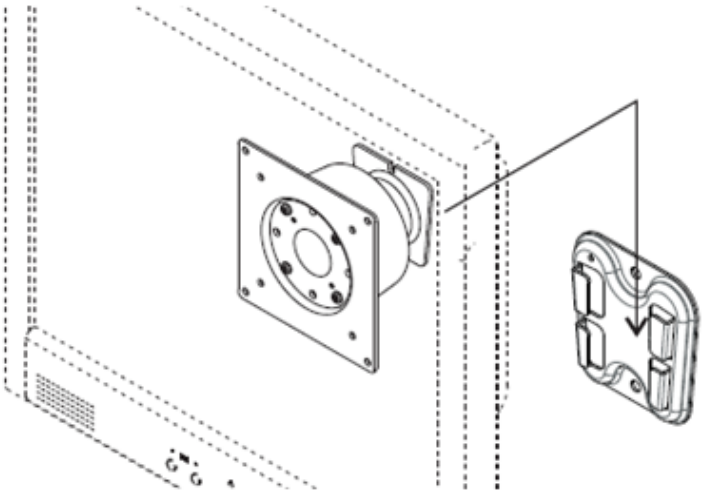


Figure 2.22 Mounting the panel PC on a wall

8. Secure the panel PC in place by tightening screws in the wall mount bracket.

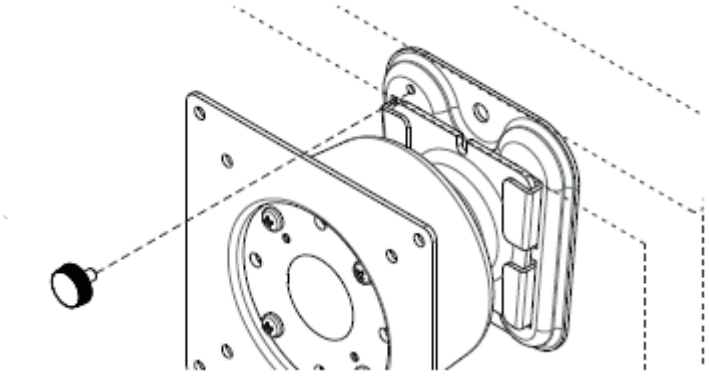


Figure 2.23 Securing the panel PC

2.4.2 Panel Mounting

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

1. Prepare a panel cutout according to the Panel PC dimensions. Panel cutout dimensions:
   PPC-3211SW: 550.3 x 341.8 mm (21.66 x 13.45 in)
   PPC-3181SW: 479.3 x 300.3 mm (18.87 x 11.82 in)
   PPC-3151SW: 413 x 262 mm (16.25 x 10.31 in)
   PPC-324W-P7: 586.5 x 364.8 mm (23.09 x 14.36 in)

2. Install the panel PC in the cabinet and retrieve hook brackets from the accessory box.
   PPC-3211SW/PPC-3181SW/324W-P7 12pcs hook brackets
3. PPC-3151SW 10pcs hook brackets

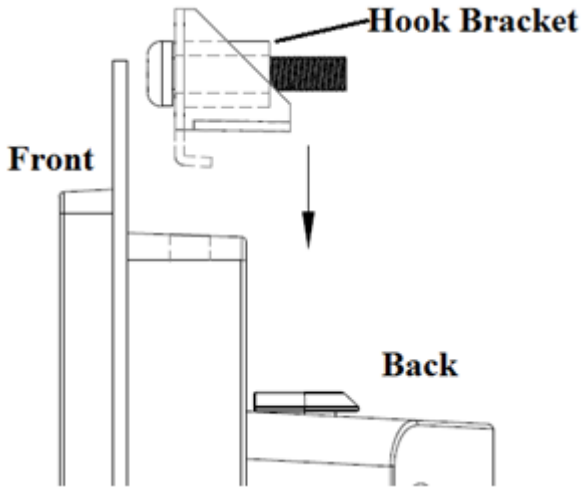


Figure 2.24 Hook brackets for panel mounting

4. Insert the hook brackets into the holes following the direction of the arrows shown in Figure 2.25 and hang the panel PC.

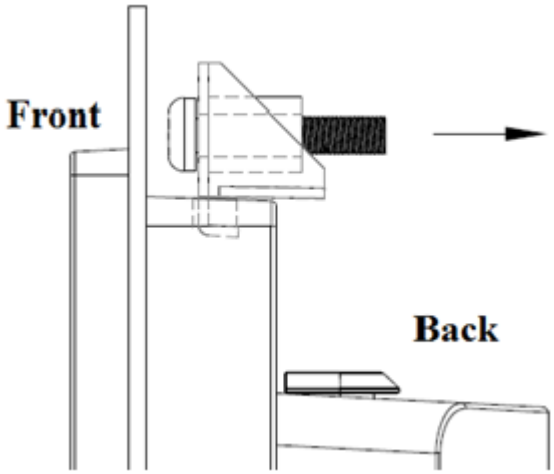


Figure 2.25 Hook brackets location

5. Tighten the screws to affix the panel PC in place (Figure 2.26).

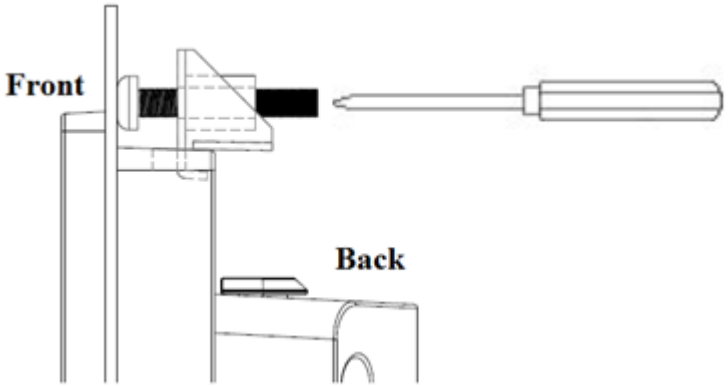


Figure 2.26 Fasten the hook bracket

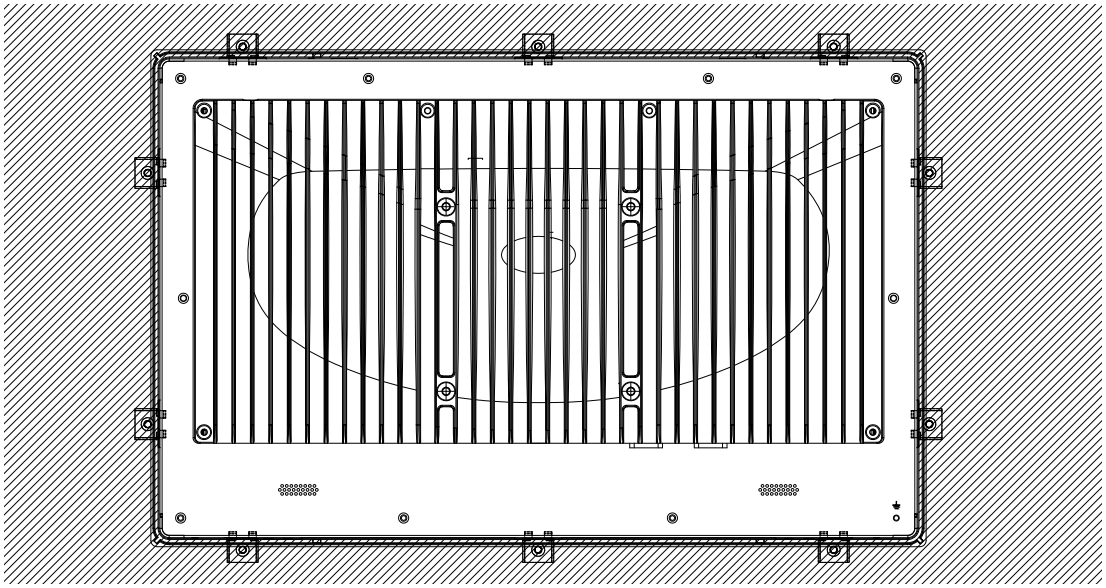


Figure 2.27 Panel mount rear view

(Take PPC-3151SW drawing as example)

2.4.3 Arm Mounting

PPC-3211SW/3181SW/3151SW/324W-P7 can be mounted on a VESA-compliant arm mount with a 100 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 with the four M4 retention screws.

Figure 2.28 Arm mount for panel PC

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

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

2.4.4 Stand Mounting

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

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 100 x 100 mm VESA mount according to their requirements.

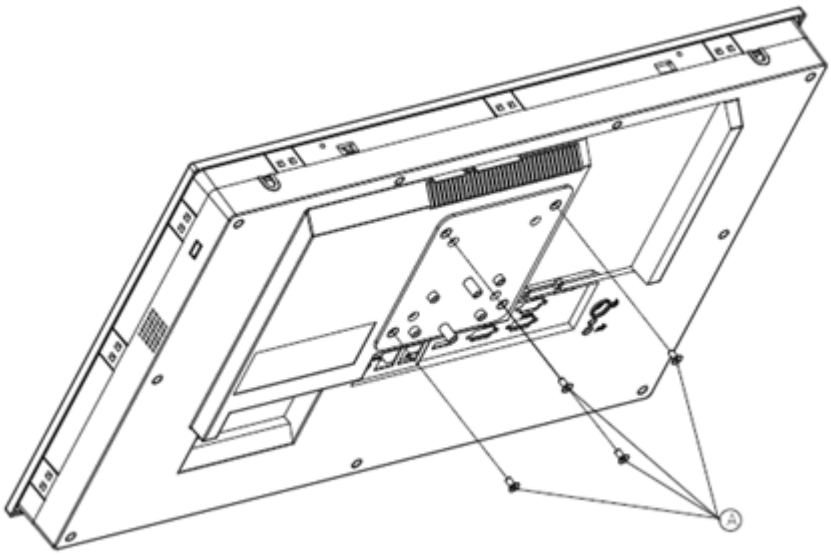


Figure 2.29 VESA mount screw holes

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

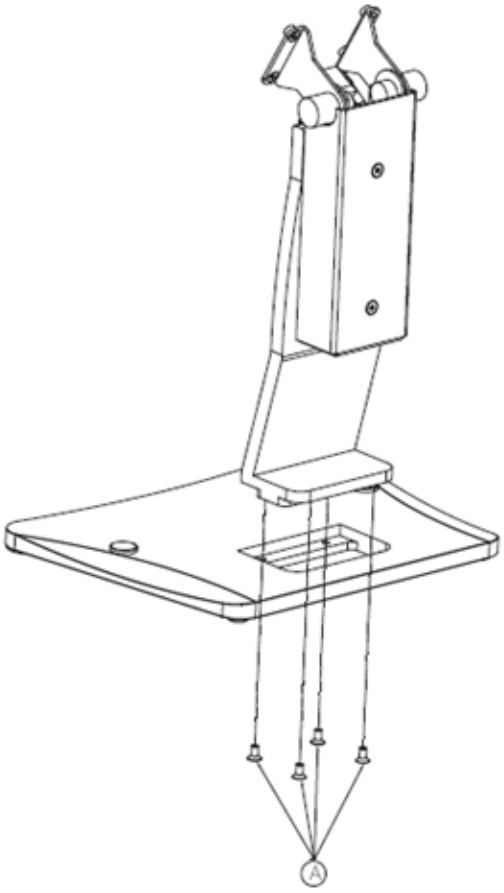


Figure 2.30 Securing the VESA mount base

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

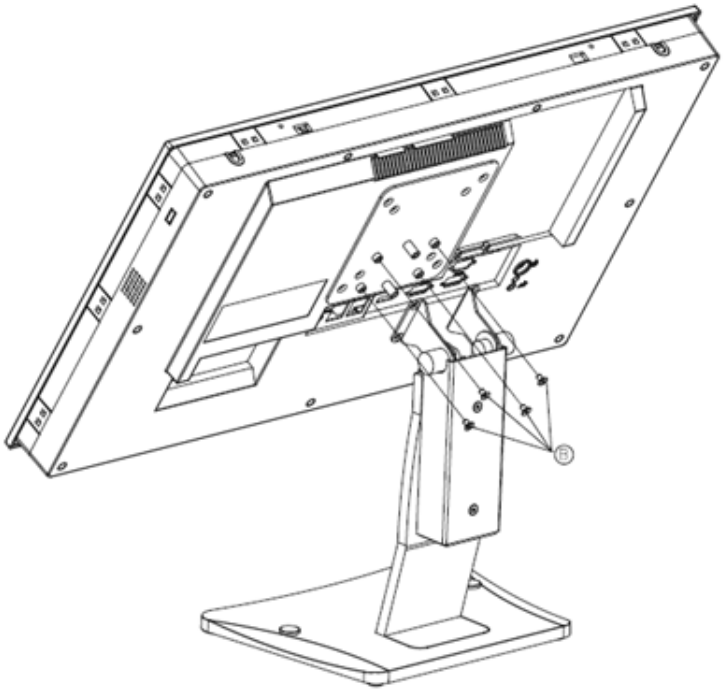


Figure 2.31 Securing the VESA mount bracket

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

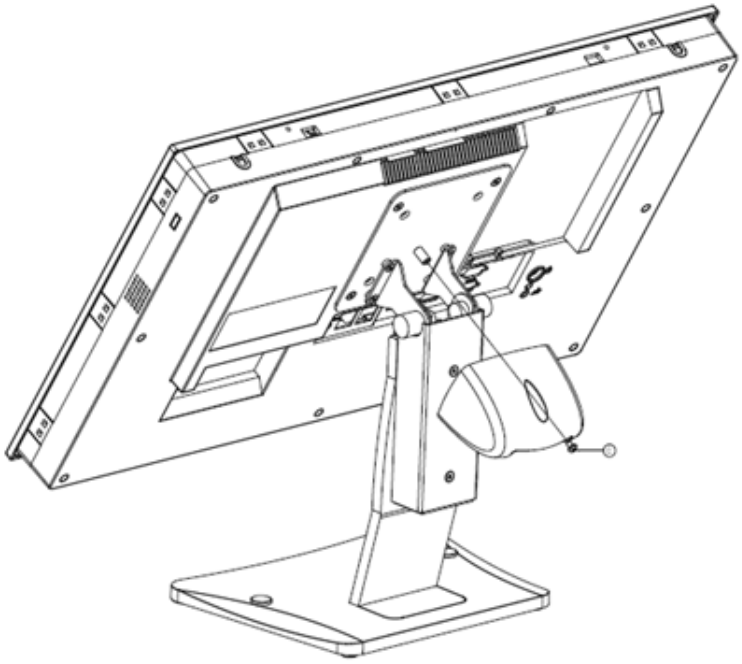


Figure 2.32 Securing the stand mount hinge cover

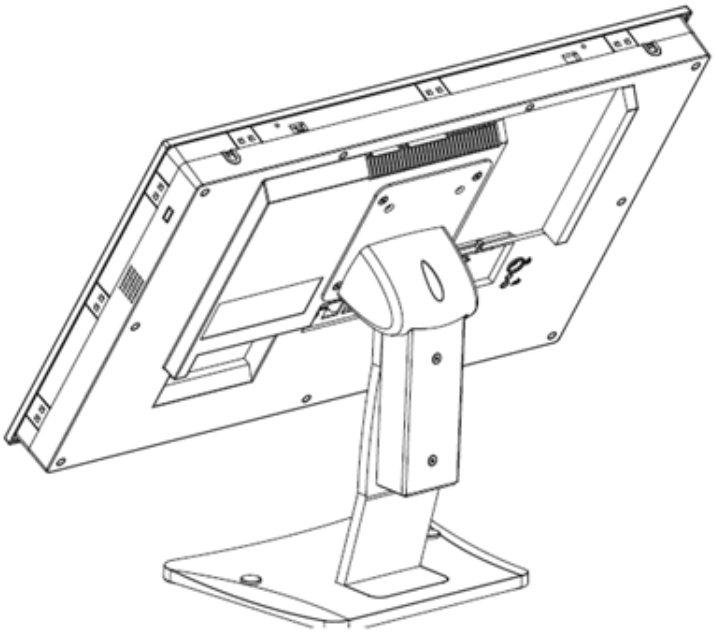


Figure 2.33 Completed stand mount

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.

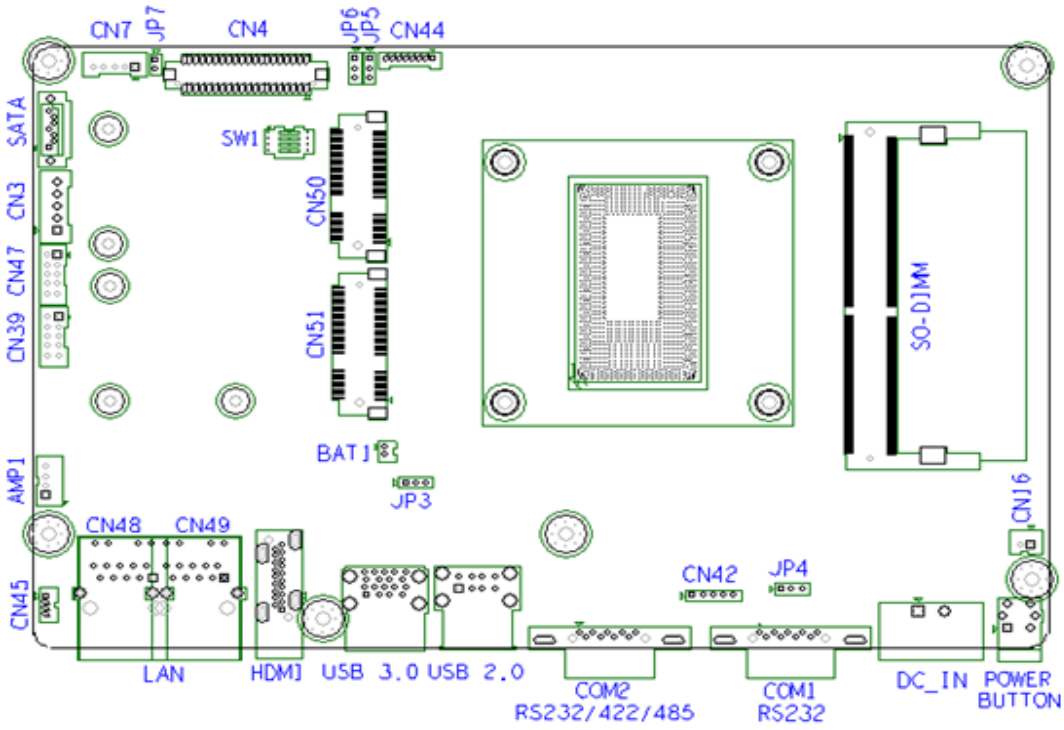


Figure 3.1 Motherboard layout diagram

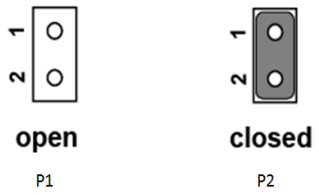
3.2 Internal Jumpers and Connectors

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

Connectors	Function	Type
CN44	LVDS backlight connector	Wafer 8P 1.25 mm
CN4	LVDS connector	Wafer 20 x 2P 1.25 mm
CN3	SATA power connector	Wafer 5P 2.5 mm
SATA	SATA connector	SATA 7P connector
CN7	Resistance Touchscreen connector	Wafer 5P 2.0 mm
CN42	COM1 Pin 9 power select connector	Pin header 5P 2.0 mm
CN16	Power button	Wafer 2P 2.0 mm
CN39	LPC connector	Wafer 5 x 2P 2.0 mm
JP7	Touch Power Select	Pin header 2P 2.0 mm
JP3	CMOS Clear	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
CN47	Internal USB 2.0	Wafer 2x5P 2.0mm
CN45	Front LED Conn	Wafer 4P 1.25mm
AMP1	Amplifier Speak	Wafer 4P 2.0mm
SW1	Panel ID Select	Switch 2x4P

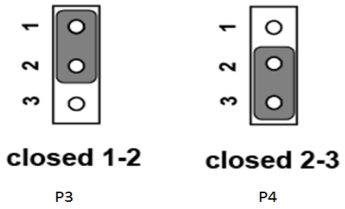
3.2.1 Touch Power Select

JP7	Icon	Resistance Touch Power Select	
open	P1	Touch Disable	
closed	P2	Touch Enable	Default*



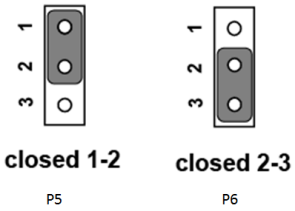
3.2.2 LVDS PWM Power Select Jumper

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



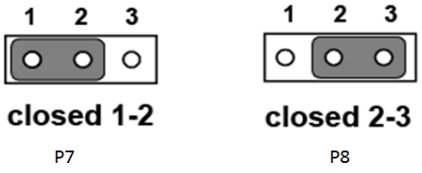
3.2.3 LVDS Enable Power Select Jumper

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



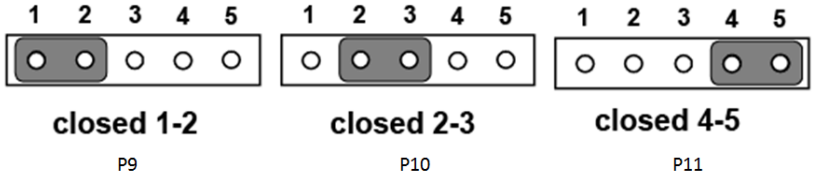
3.2.4 RTC Select

JP3	Icon	RTC Select	
(1-2)	P7	Normal	Default*
(2-3)	P8	Clear CMOS	



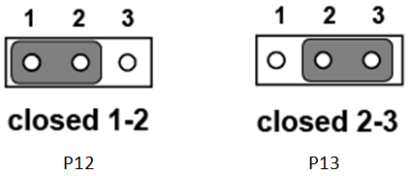
3.2.5 COM1 Pin 9 Power Select

CN42	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

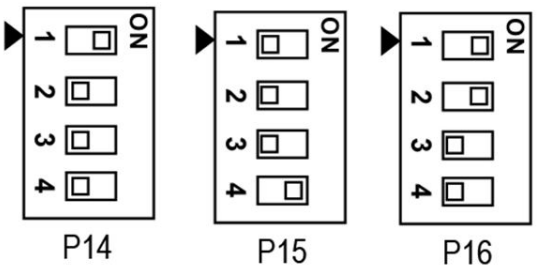
JP4	Icon	ATX/AT Select	
(1-2)	P12	AT	
(2-3)	P13	ATX	Default*



3.2.7 SW1 Panel ID Select

Table 3.1: SW1 Panel ID Select

SW1	Icon	Panel ID Selection	Model Number
1110	P14	1920 x 1080 (48-bit)	PPC-3211SW
0111	P15	1366 x 768 (24-bit)	PPC-3181SW
1100	P16	1920 x 1080 (48-bit)	PPC-3151SW



3.3 External COM Ports and Pin Definitions

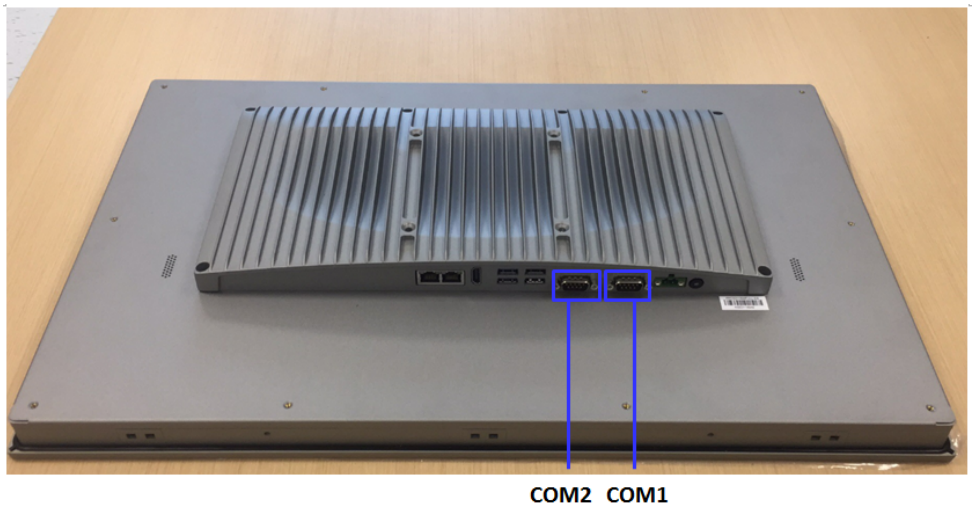


Figure 3.2 Location of COM1 and COM2 ports

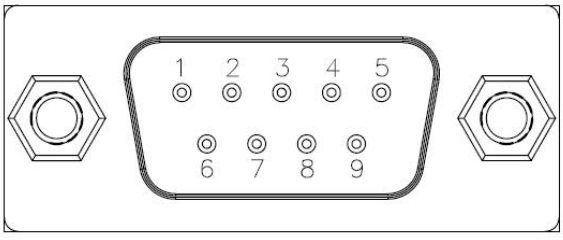
COM1: RS-232

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

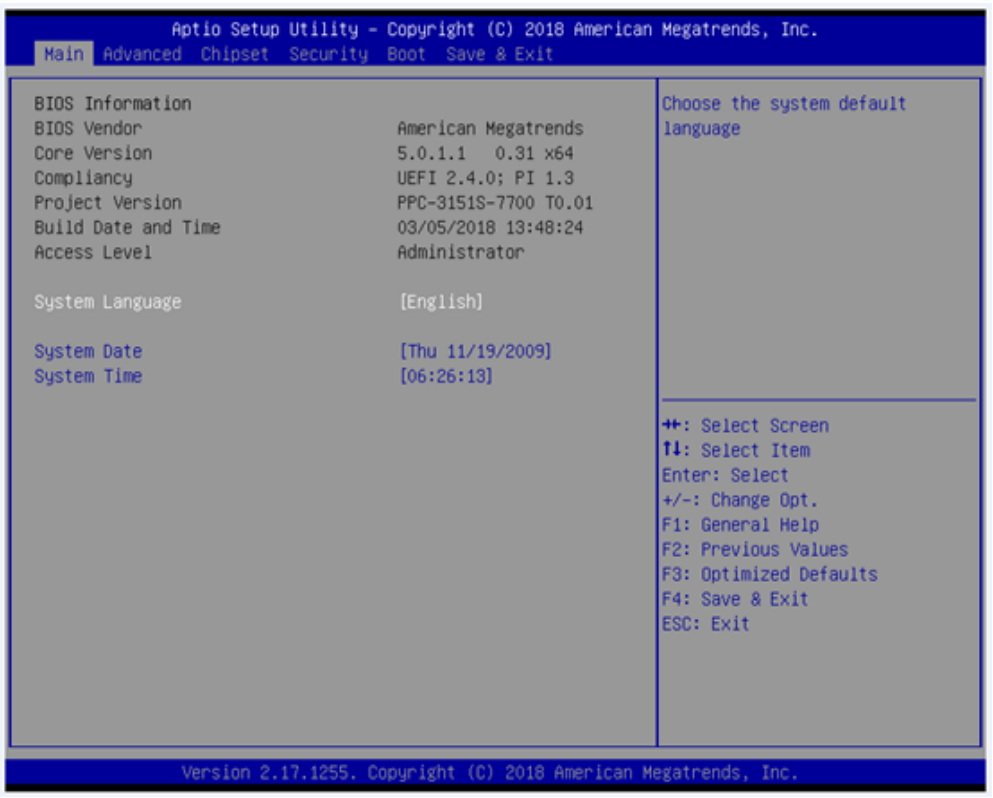
http://www.advantech.com

4.2 BIOS Setup Program

4.2.1 Entering BIOS Setup

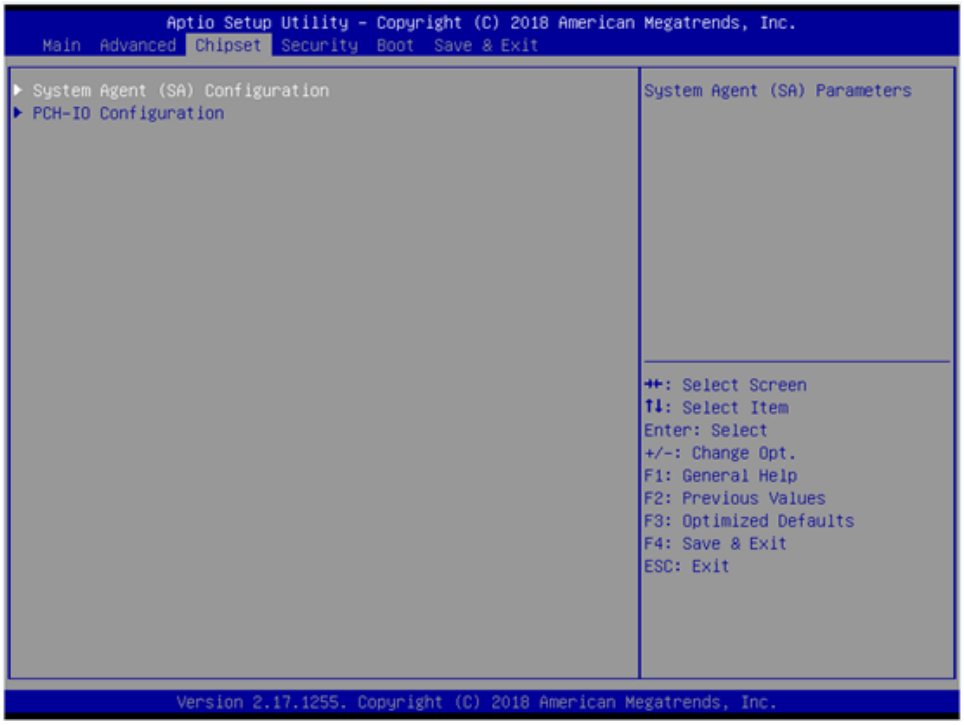
After powering on the system, press the <**Del**> button to access the BIOS Setup screen.

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



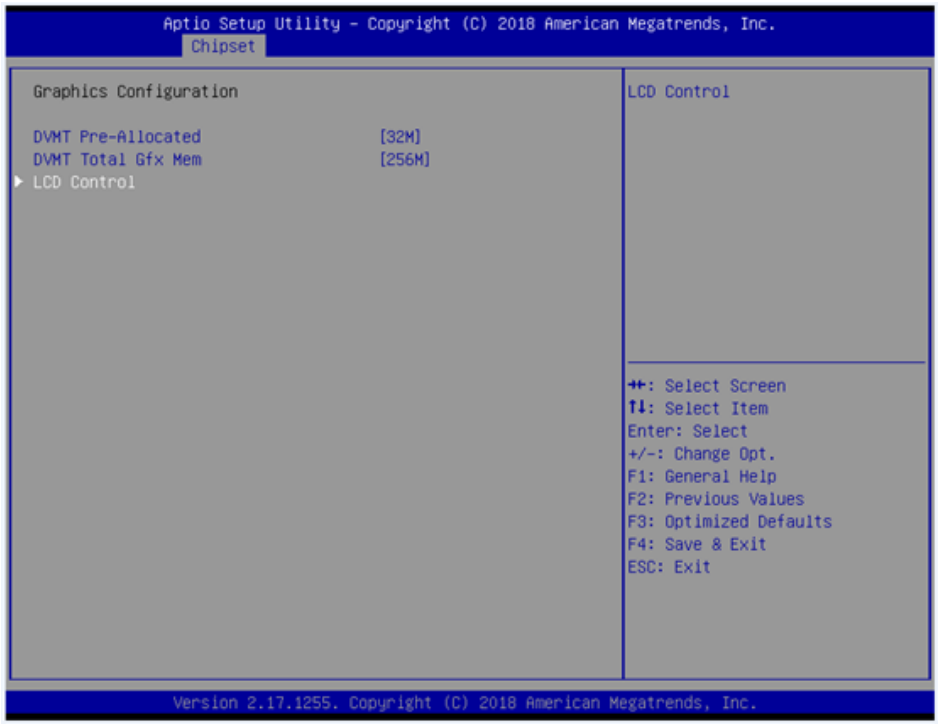
4.2.2 Adjustment of LCD Brightness

1. Select **System Agent (SA) Configuration** option in the **Chipset** tab.

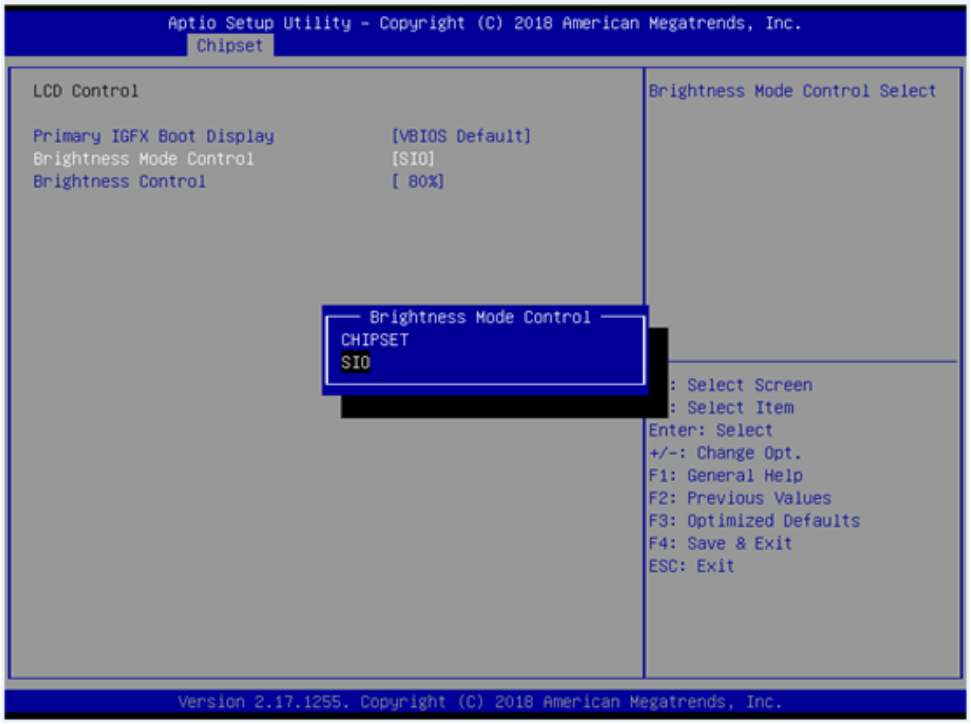


2. Select **Graphics Configuration** option in the **Chipset** tab.

3. Select **LCD Control** option to choose between six brightness levels.

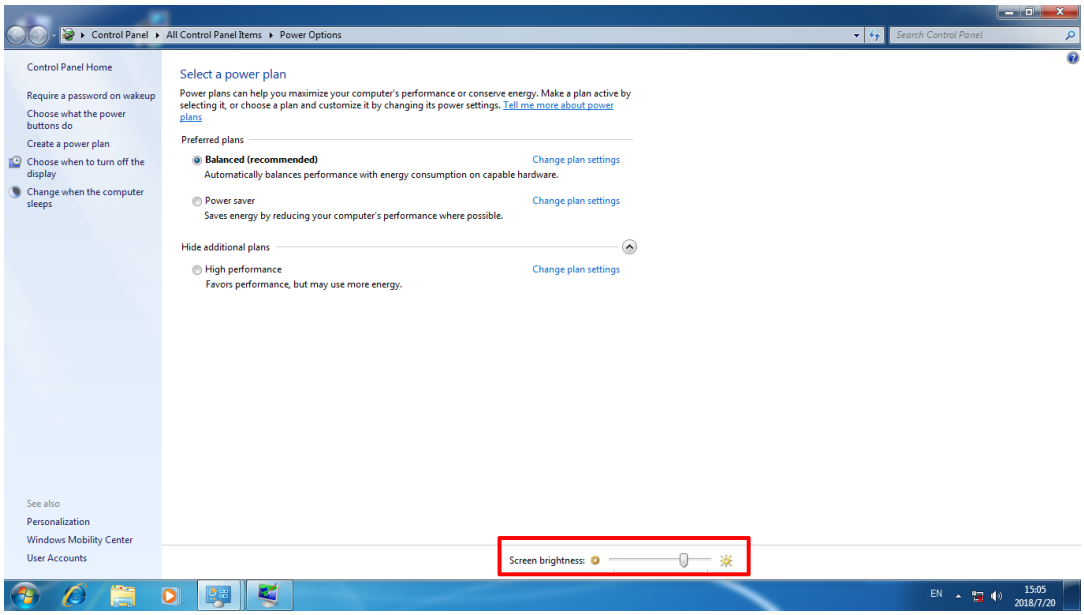


4. Select **Brightness Mode Control** and select **SIO**.



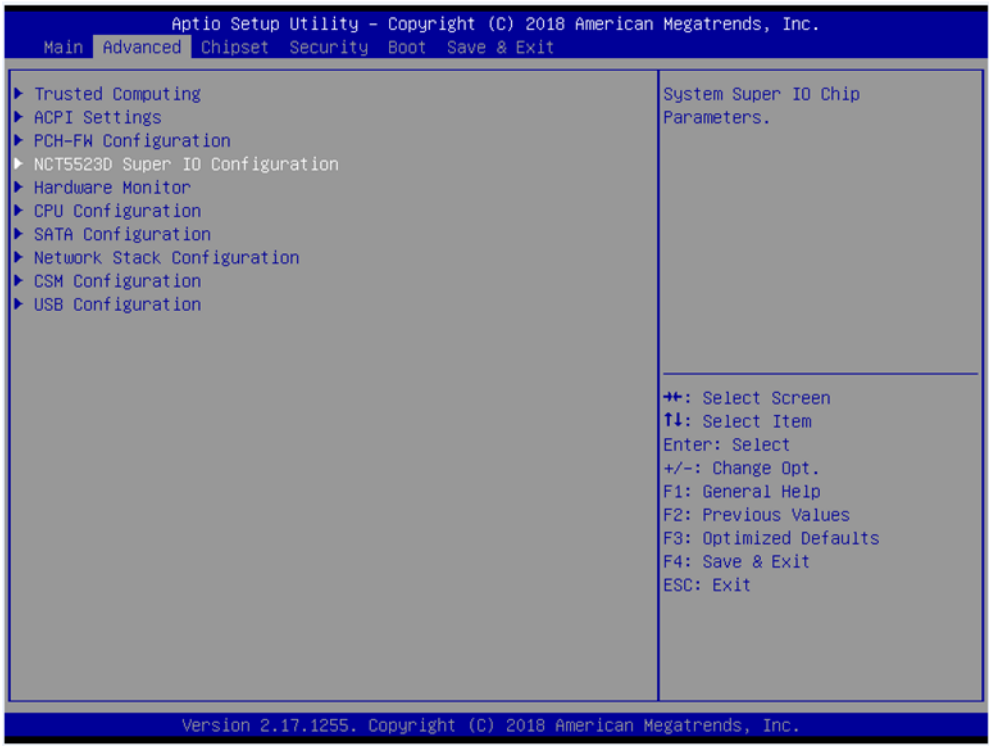
5. Select **Brightness Control** to choose between five brightness levels.

6. Brightness is controlled through **Power Options** in Windows OS.

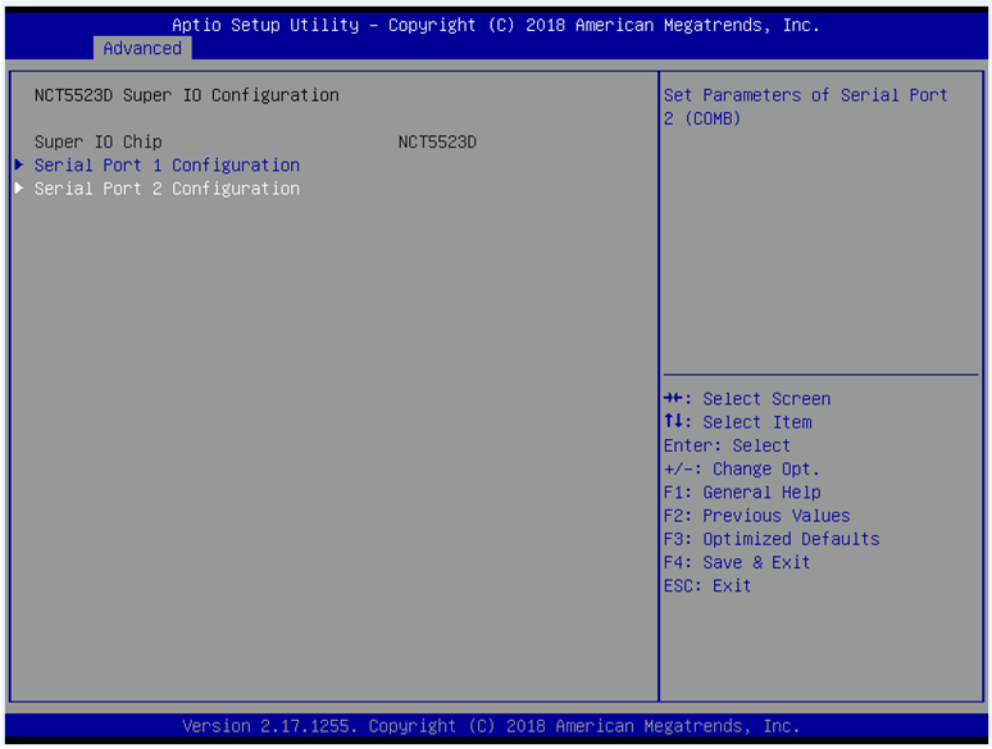


4.2.3 COM2 Mode Selection (RS232/RS422/RS485)

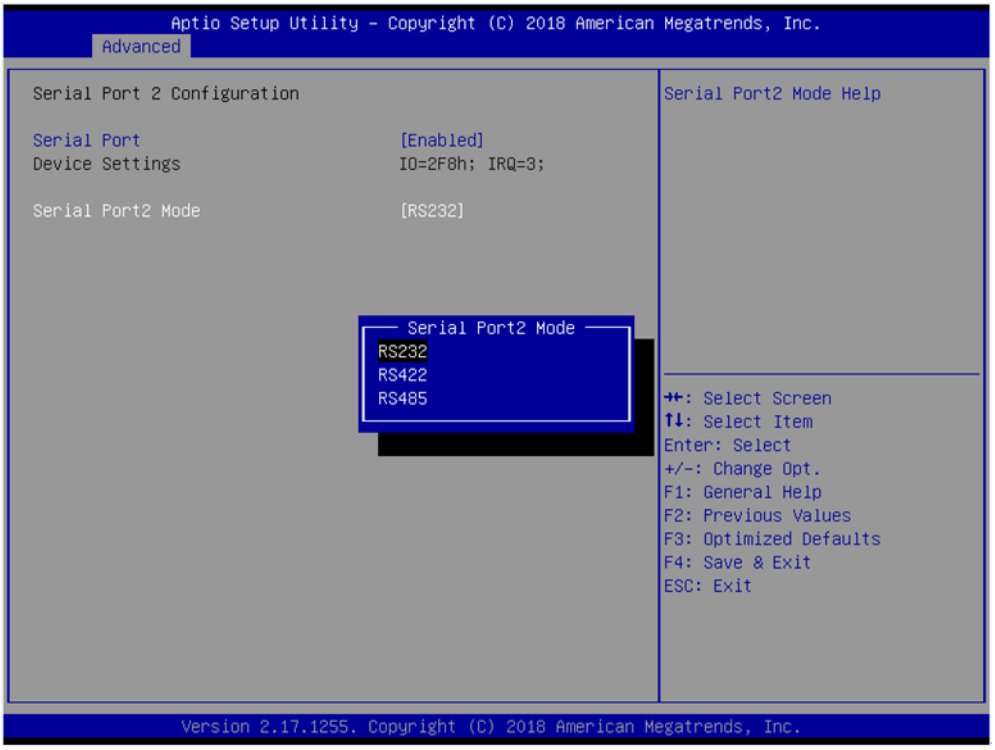
1. Select **NCT5523D Super IO Configuration** in the **Advanced** tab.



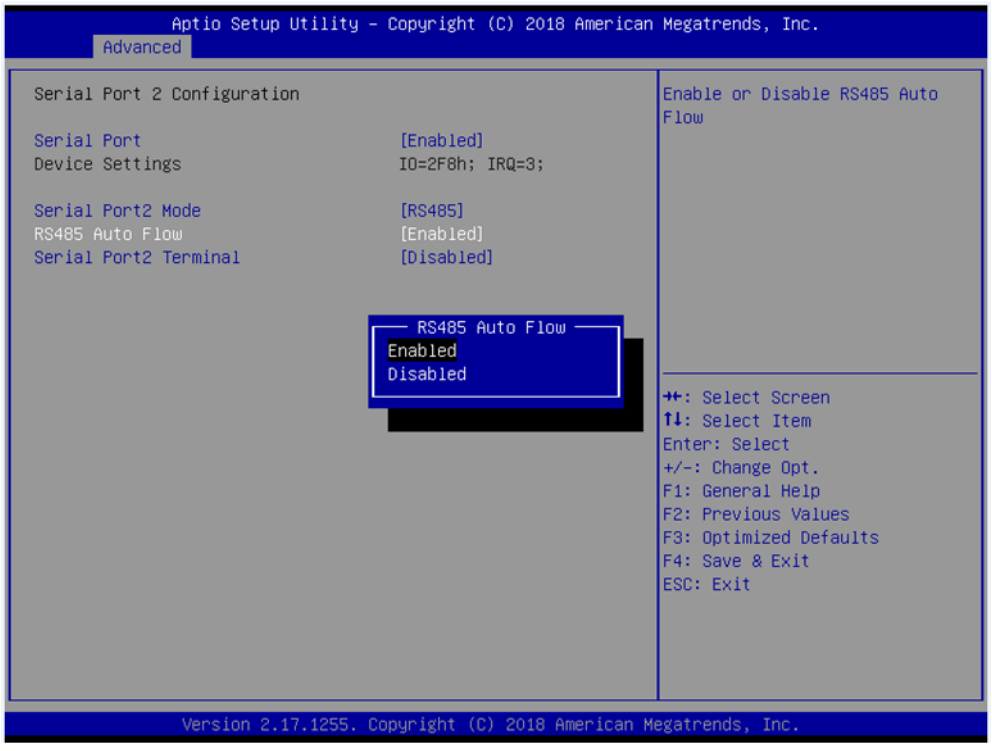
2. Select **Serial Port 2 Configuration** option.



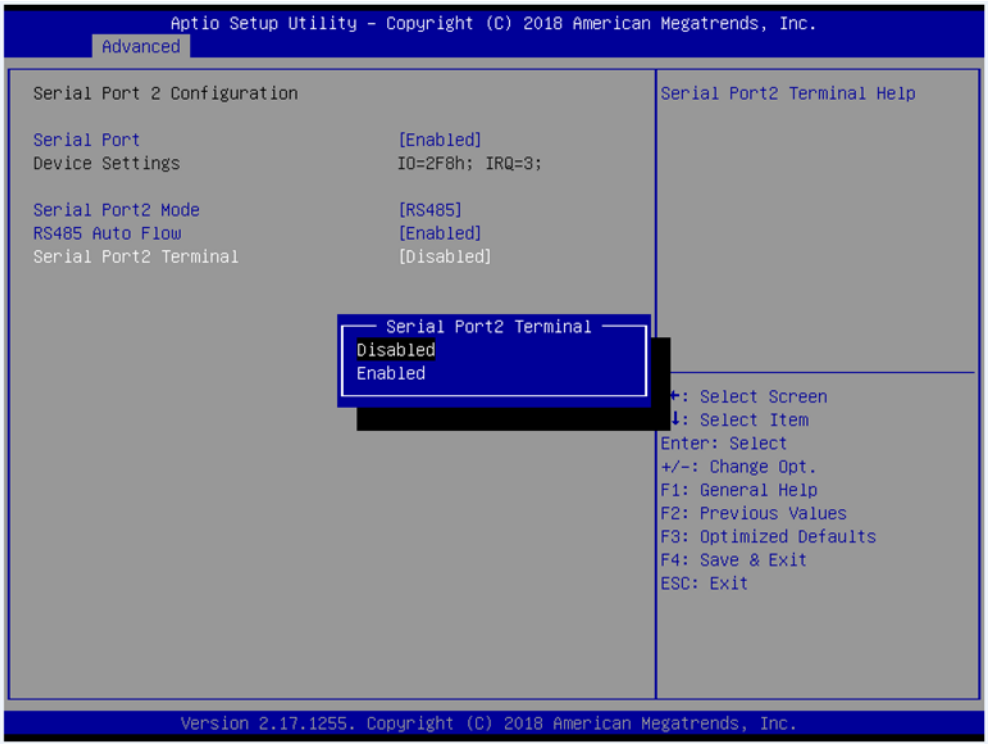
3. Select **Serial Port 2 Mode** option to set the COM2 operation mode as RS232, RS422, or RS485.



4. If COM2 mode is set as RS485, the **RS485 Auto Flow** control option can be Enabled or Disabled.

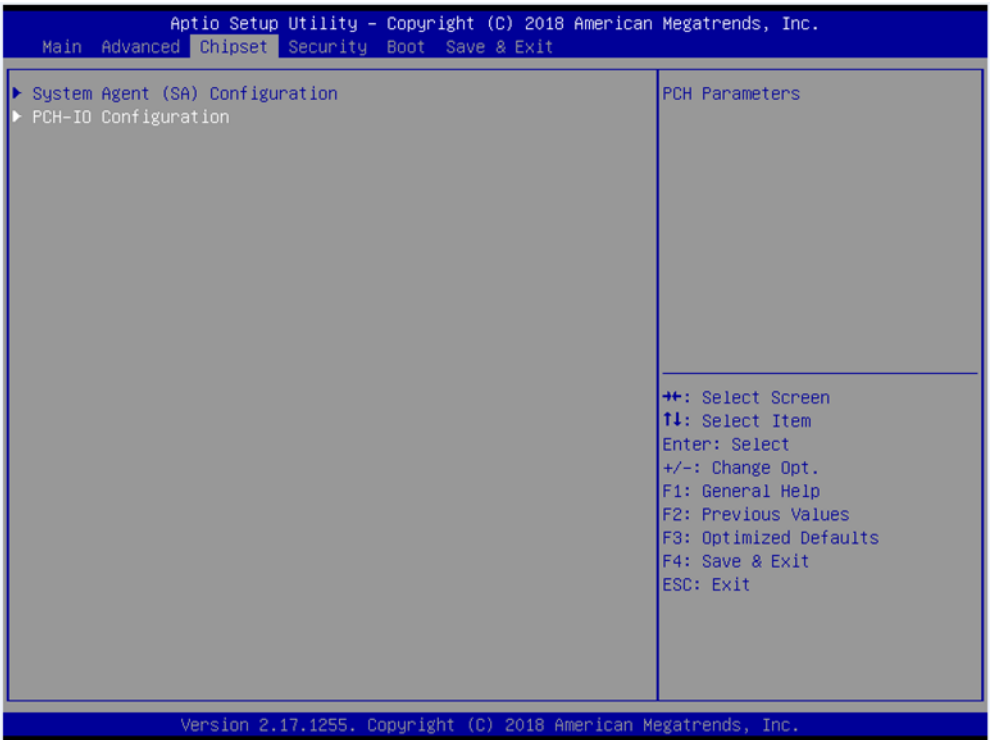


5. If COM2 mode is set as RS485, the **Serial Port2 Terminal** option can be Enabled or Disabled.

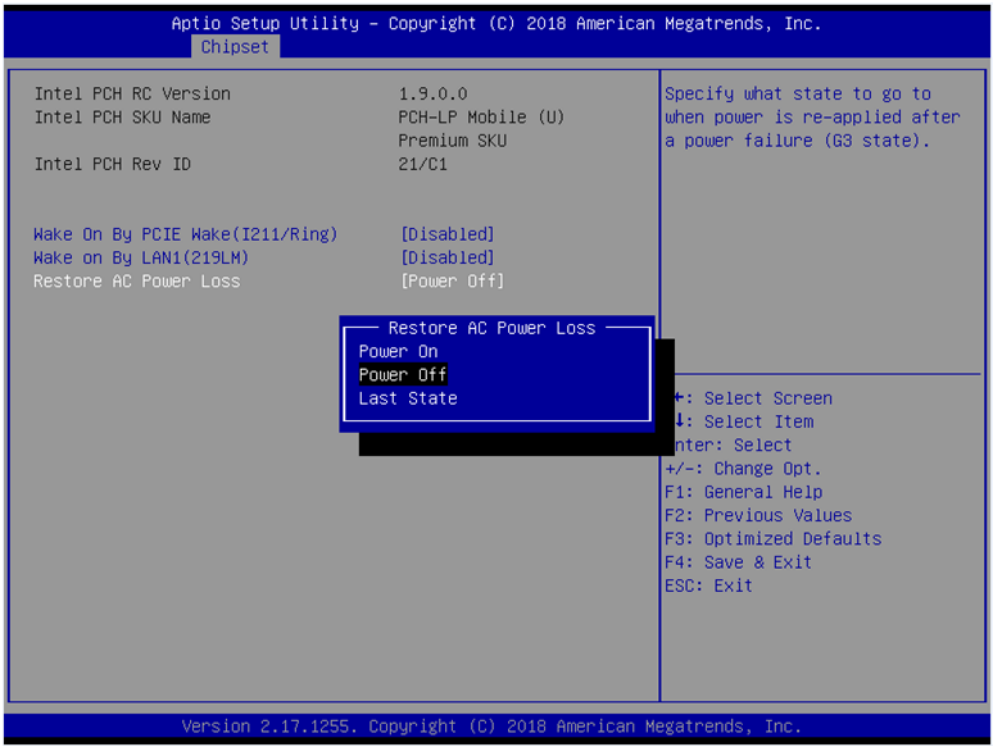


4.2.4 BIOS AT and ATX Setup

1. Select **PCH-IO Configuration** option in the **Chipset** tab.

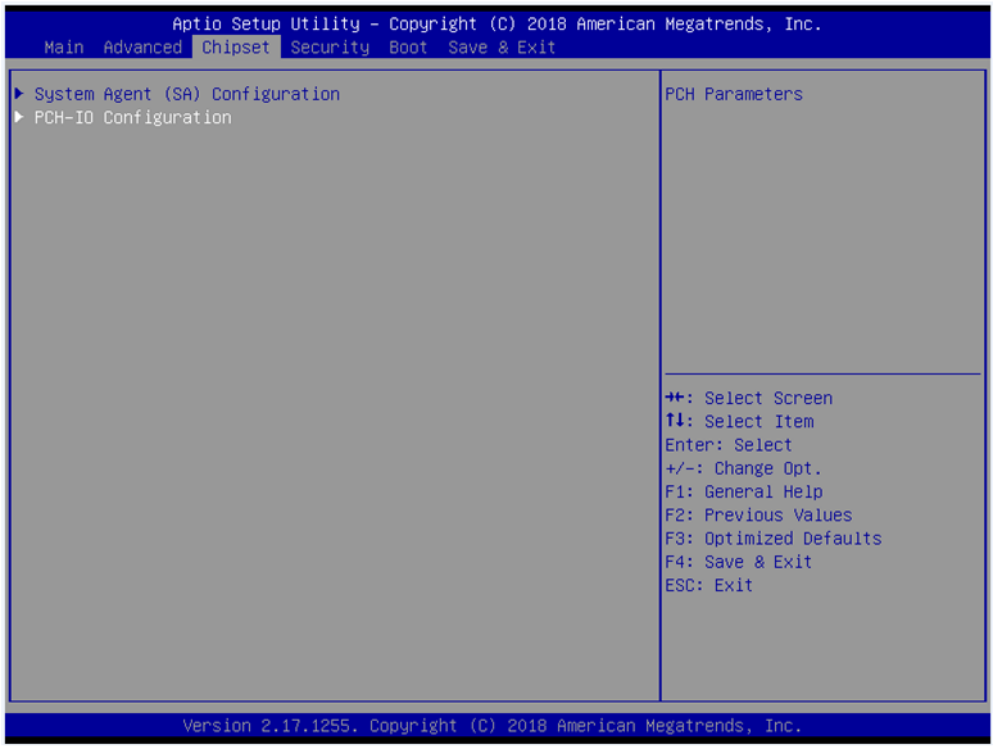


2. Select **Restore AC Power Loss** and set the **Power On** option to AT and the **Power Off** option to ATX.

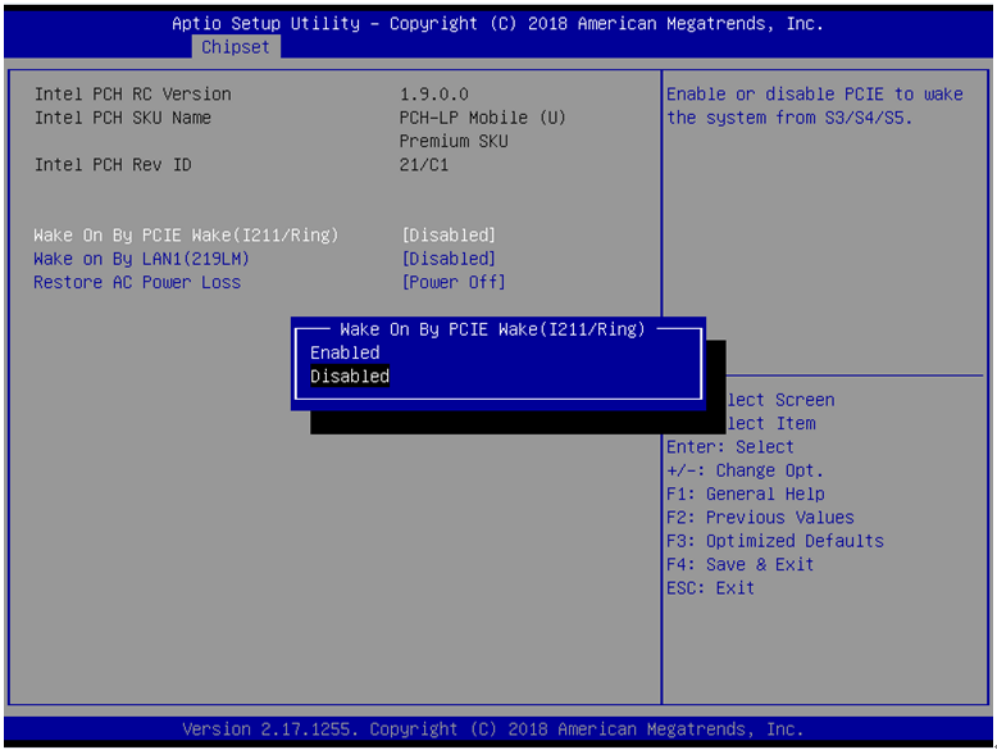


4.2.5 Wake-on-LAN

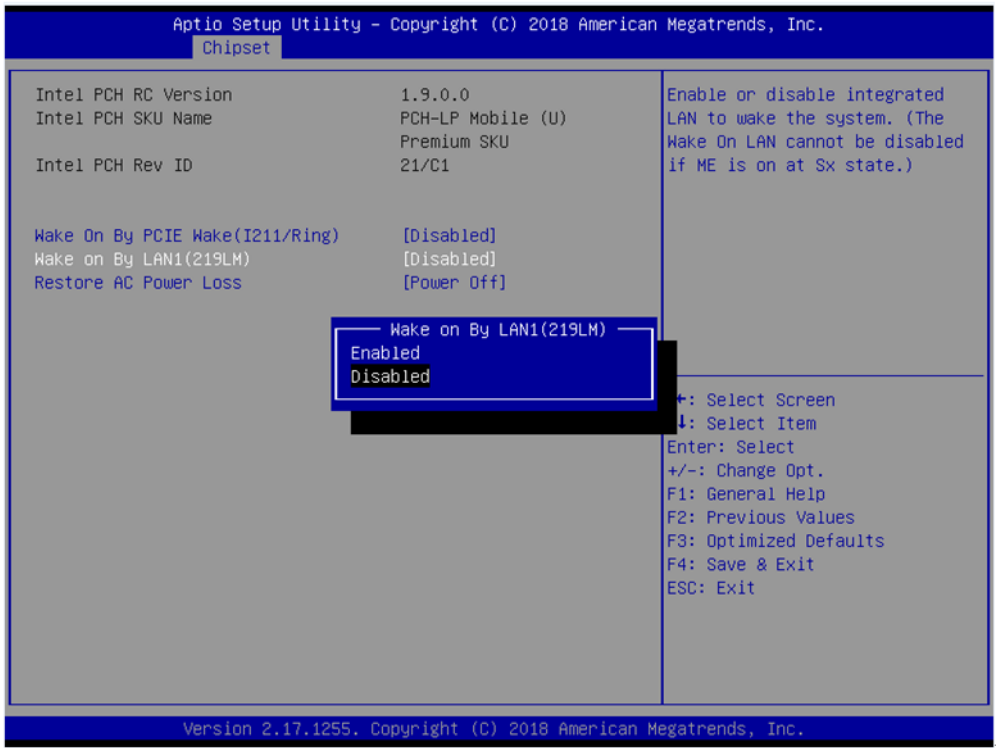
1. Select **PCH-IO Configuration** option in the **Chipset** tab.



2. Set the **Wake On By PCIE Wake(I211/Ring)** option to **Enabled** for LAN2 & COM Ring.

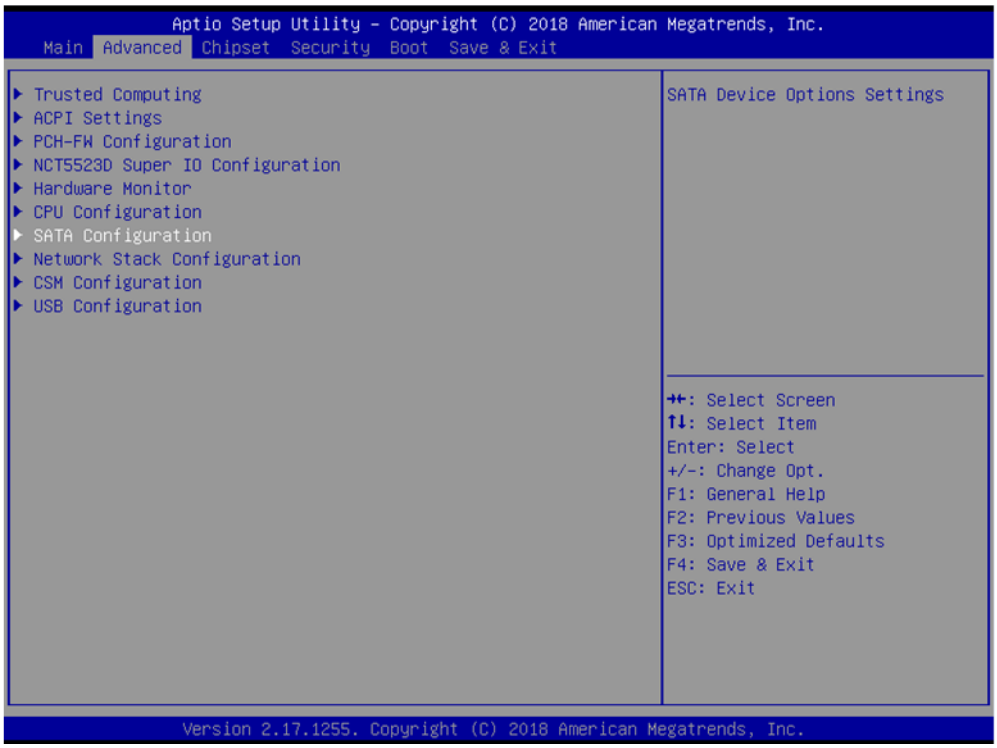


3. Set the **Wake on By LAN1(219LM)** option to **Enabled**.

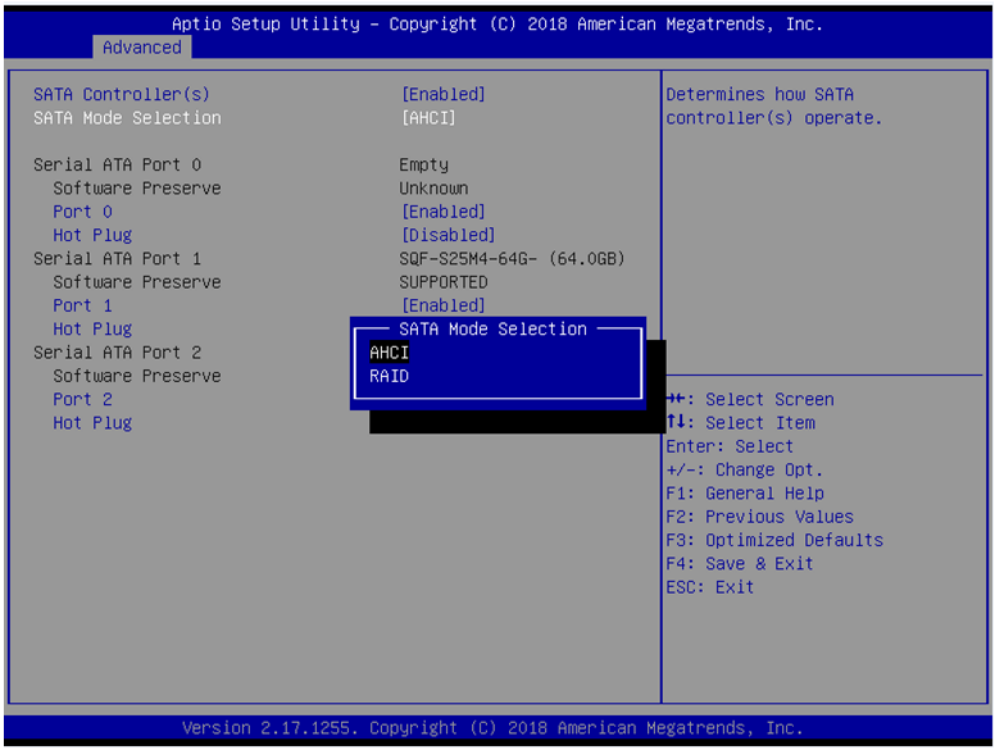


4.2.6 SATA Mode Selection

1. Select **SATA Configuration** option in the **Advanced** tab.

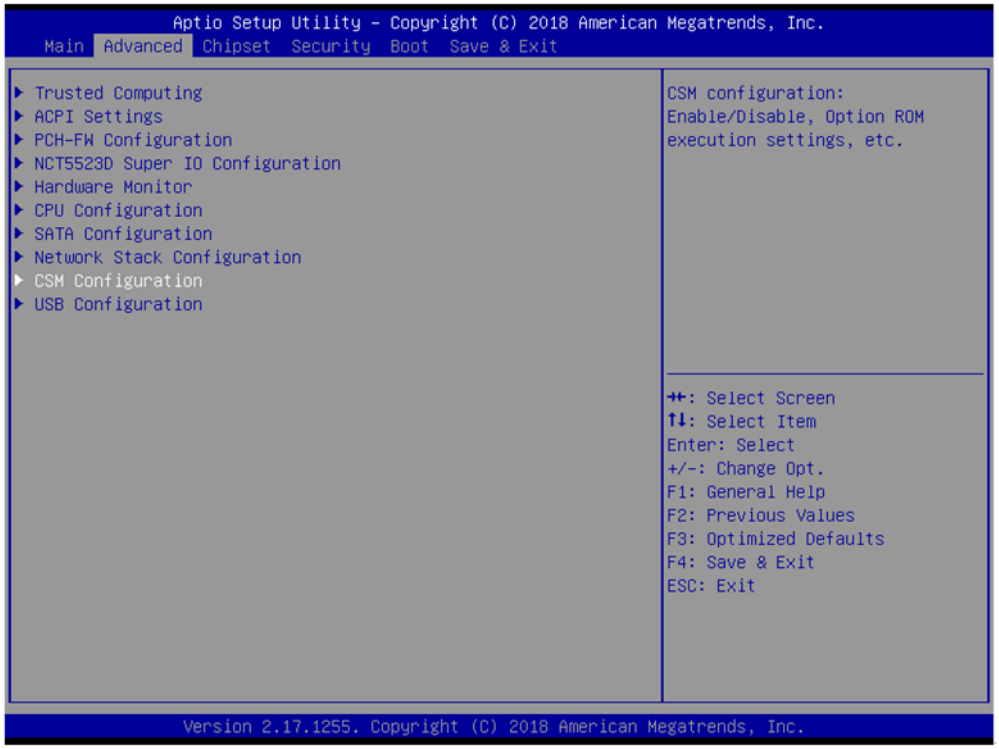


2. Select **SATA Mode Selection** to adjust the settings.

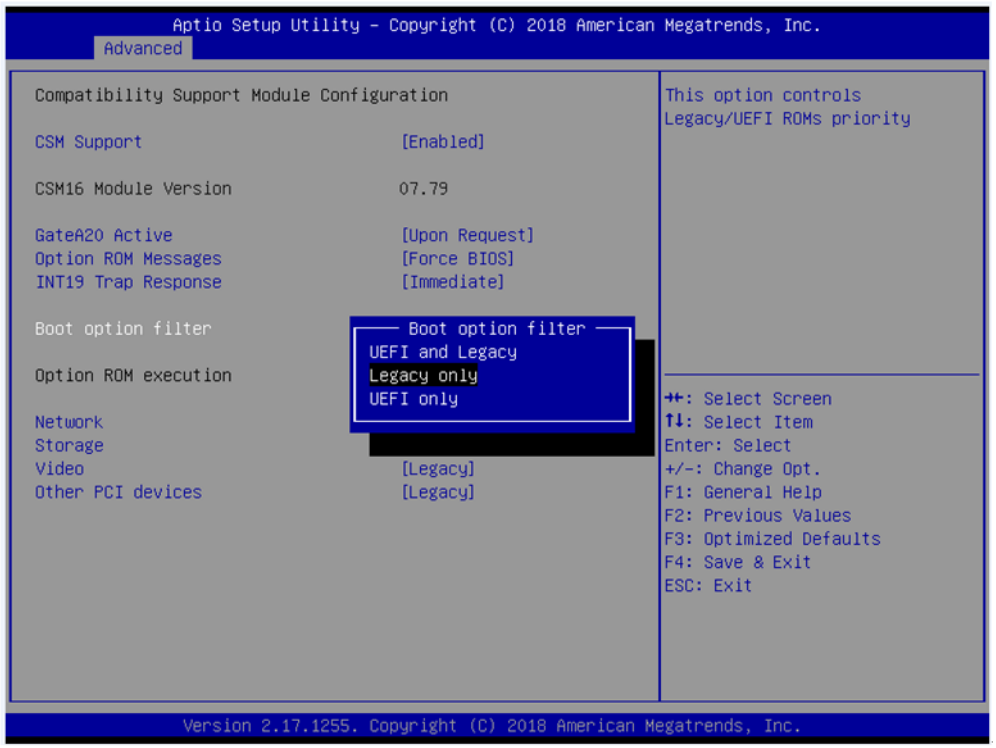


4.2.7 Boot Options

1. Select **CSM Configuration** option in the **Advanced** tab.

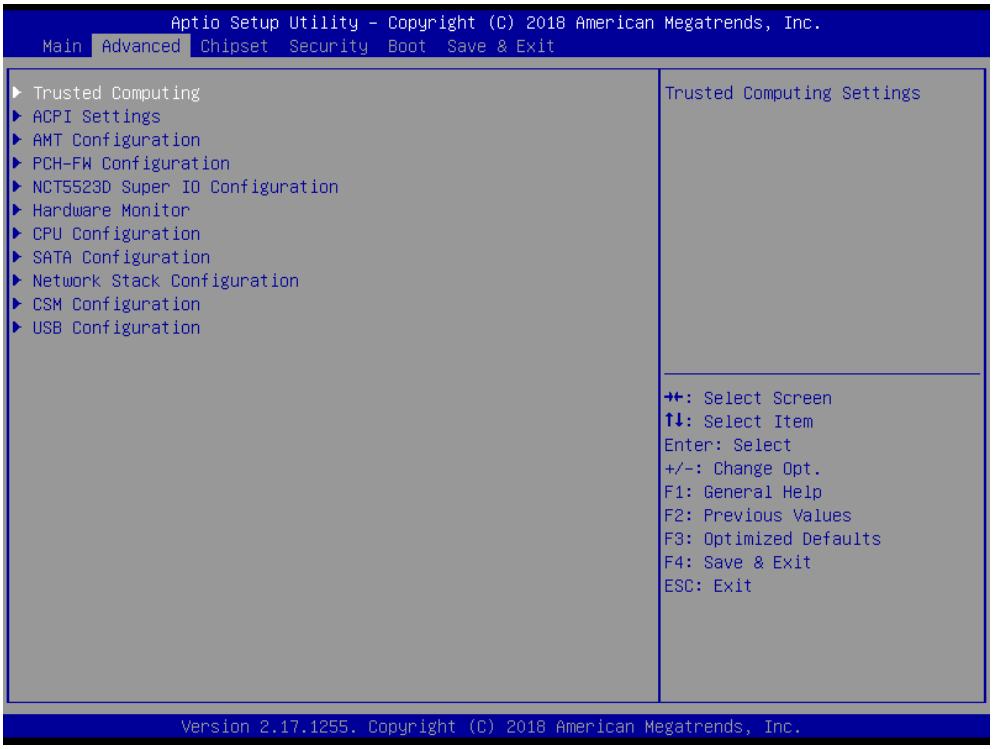


2. Select **Boot Option Filter** to adjust the settings.

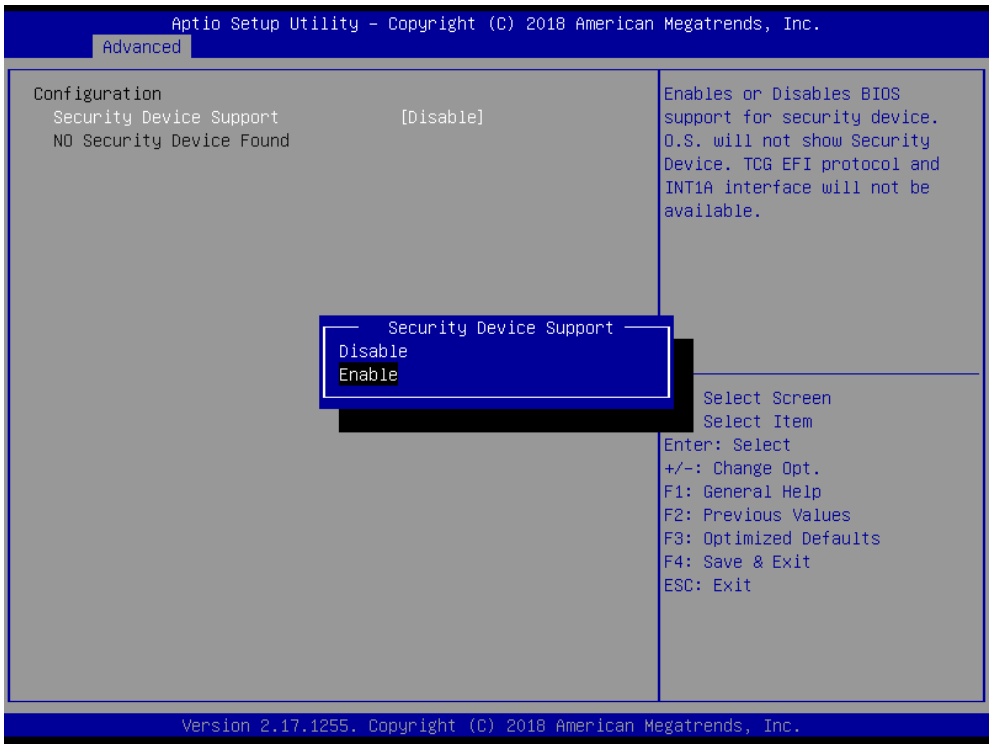


4.2.8 TPM Setup

1. Select Trusted Computing option in the Advanced tab.



2. Set the Security Device Support option to Enabled.



3. Restart after saving.

Appendix A

BSMI RoHS

A.1 BSMI RoHS

設備名稱：電腦 Equipment name	型號（型式）：PPC-PPC-3211SW/3181SW/3151SW/324W-P7 Type designation (Type)					
單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbolσ					
	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）	—	○	○	○	○	○

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.

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.

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.

Appendix B

China RoHS

B.1 China RoHS

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-3211SW/3181SW/3151SW/324W-P7**					
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

Watchdog Program Example

C.1 Watchdog Program 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
```

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