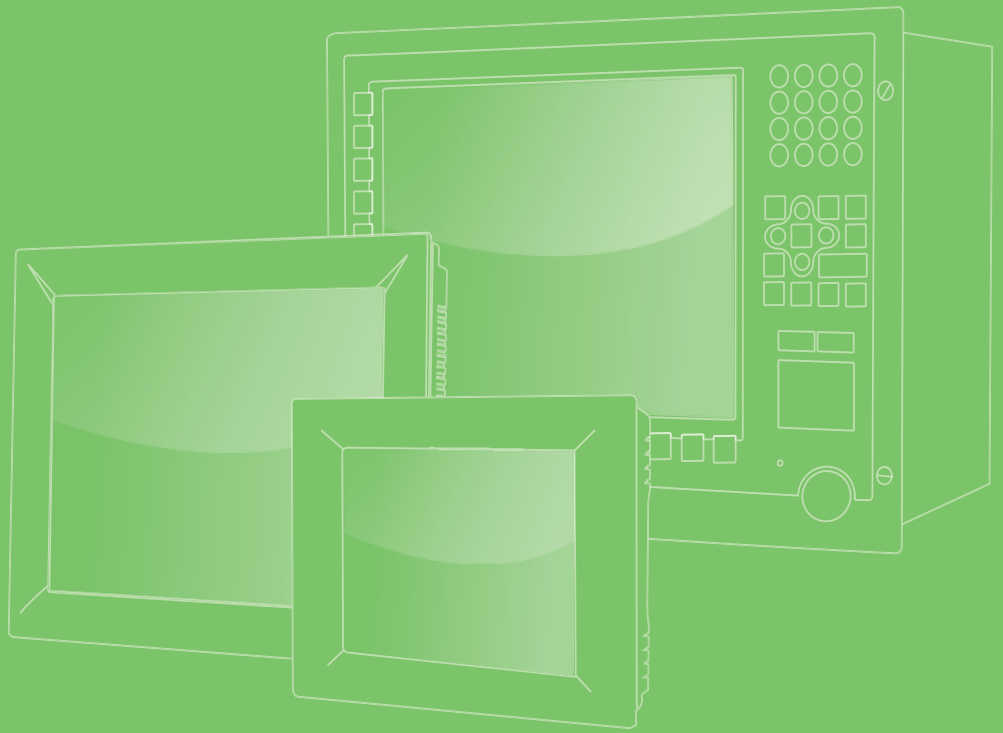


User Manual



PPC-3150SW
PPC-3180SW
PPC-324W-PN4

**15.6"/18.5"/23.8" Panel PC with
TFT LCD and Intel® Pentium®
N4200 Processor**

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (2 years)

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

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.

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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 helpful 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 a 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 clearly on the outside of the package. Then ship the package prepaid to your dealer.

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 ready 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.
Veuillez lire attentivement ce manuel d'instructions de sécurité.
2. Retain this user manual for future reference.
Veuillez conserver ce manuel d'instructions pour référence ultérieure.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
Débranchez l'appareil de toutes les prises de courant avant le nettoyage. Nettoyez-le uniquement à l'aide d'un chiffon humide. Ne pas utiliser de détergents liquides ou pulvérisateurs.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
Pour les appareils enfichables, la prise de courant doit être placée près de l'appareil et facilement accessible.
5. Protect the equipment from humidity.
Protégez l'appareil contre l'humidité.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
Placez l'appareil sur une surface fiable pendant l'installation. L'abandon ou la chute de l'appareil pourrait causer des dommages.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
Les ouvertures du boîtier sont pour la convection d'air. Protégez l'appareil contre la surchauffe. Ne couvrez pas les ouvertures.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet. The power outlet socket should have grounded connection.
Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'appareil à une prise de courant. La prise de courant doit avoir une bonne connexion mise à la terre.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
Placez le cordon d'alimentation à l'écart des zones à fort trafic. Ne placez rien sur le cordon d'alimentation.
10. All cautions and warnings on the equipment should be noted.
Attention à toutes les précautions et avertissements indiqués sur l'appareil.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
Si l'appareil n'est pas utilisé pendant une longue période, déconnectez-le de la source d'alimentation pour éviter les dommages causés par une surtension transitoire.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
Ne versez jamais de liquide dans une ouverture. Sinon, cela pourrait provoquer un incendie ou un choc électrique.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
N'ouvrez jamais l'appareil. Pour des raisons de sécurité, l'appareil ne doit être ouvert que par un technicien qualifié.
14. If one of the following occurs, have the equipment checked by service personnel:
Si l'un des cas suivants se produit, demandez aide à un technicien qualifié:

- The power cord or plug is damaged.
Le cordon d'alimentation ou la fiche est endommagé.
 - Liquid has penetrated the equipment.
Le liquide a pénétré dans l'appareil.
 - The equipment has been exposed to moisture.
L'appareil a été exposé à l'humidité.
 - The equipment is malfunctioning, or does not operate according to the user manual.
L'appareil est défectueux ou ne fonctionne pas conformément aux instructions.
 - The equipment has been dropped and damaged.
L'appareil a été abandonné et endommagé.
 - The equipment shows obvious signs of breakage.
L'appareil montre des signes évidents de rupture.
15. Do not leave the equipment in an environment with a storage temperature of below -20°C(-4 °F) or above 60 °C (140 °F) as this may cause damage. The equipment should be kept in a controlled environment.
Ne laissez pas cet appareil dans un environnement dont la température de stockage est inférieure à -20°C(-4 °F) ou supérieure à 60 °C (140 °F), car cela pourrait causer des dommages. L'appareil doit être surveillé dans l'environnement.
 16. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la pile. Remplacer uniquement avec une pile du même type ou d'un type équivalent recommandé par le constructeur.
 17. In accordance with the IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
Conformément aux spécifications de l'IEC 704-1:1982, le niveau de pression acoustique à la position de l'opérateur ne dépasse pas 70 dB (A).
 18. The products are intended to be supplied by an UL certified power supply (Adapter: FSP090-DIEBN2 or FSP090-DBBN3) suitable for use at Tma 40 degree C min. and output is rated 19Vdc, 4.74A min., ES1 (or SELV) or the product are intended to be supplied by an UL certified power supply or dc source suitable for use at Tma 50 degree C min. and output is rated 12-24Vdc,5-2.5A(PPC-3150SW/3180SW)/6-3A(PPC-324W-PN4), ES1 (or SELV), if need further assistance, please contact Advantech for further information.
Le produit doit être alimenté par une alimentation certifiée UL (Adaptateur: FSP090-DIEBN2 or FSP090-DBBN3) approprié pour l'utilisation à une température de 40°C au minimum, et la sortie nominale est 19Vdc, 4.74 A min., ES1 (ou SELV). Ou le produit doit être alimenté par une alimentation certifiée UL ou CC pour l'utilisation à une température de 50°C au minimum, et la sortie nominale est 12-24Vdc,5-2.5A(PPC-3150SW/3180SW)/6-3A(PPC-324W-PN4), ES1 (ou SELV). Si vous avez besoin d'aide supplémentaire, veuillez contacter Advantech pour plus d'informations.
 19. DISCLAIMER: These instructions are provided in accordance with IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.
AVERTISSEMENT: Ces instructions sont fournies conformément aux normes IEC 704-1. Advantech décline toute responsabilité quant à la précision de toute déclaration contenue dans le présent document.
 20. CAUTION: This product is not intended for use by children and is not suitable for use in locations where children are likely to be present (this product is not a toy).

ATTENTION: Ce produit n'est pas un jouet et devrait être gardé hors de la portée des enfants.

Safety Precaution - Static Electricity

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

- To avoid electrical shock, always disconnect the power from 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 power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Power Warning

The power is fit for areas with an altitude of below 5,000 M.

Battery Information

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

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Contents

Chapter 1 General Information1

1.1	Introduction	2
1.2	Key Features.....	2
1.3	Front Panel.....	2
	Figure 1.1 Front Panel.....	2
1.4	Rear Panel	3
	Figure 1.2 Rear Panel.....	3
1.5	Dimensions	4
	Figure 1.3 PPC-3150SW-PN4A Dimensions.....	4
	Figure 1.4 PPC-3180SW-PN4A Dimensions.....	4
	Figure 1.5 PPC-324W-PN40A Dimensions	4
1.6	Specifications.....	5
1.7	Ordering Information	6

Chapter 2 System Installation and Setup7

2.1	Quick System Tour.....	8
	Figure 2.1 Front View	8
	Figure 2.2 Rear View	8
	Figure 2.3 I/O Ports	9
2.2	Installation Procedures.....	9
	2.2.1 HDD Installation	9
	2.2.2 mSATA Installation	11
	2.2.3 Memory Card Installation.....	12
	2.2.4 Wireless LAN Module Installation	13
2.3	System Mounting	15
	2.3.1 Wall Mounting	15
	Figure 2.4 Wall Mount Plate	15
	Figure 2.5 Rear Panel Screw Locations	16
	Figure 2.6 Wall Mounting.....	16
	Figure 2.7 Securing the Panel PC	17
	2.3.2 Panel Mounting.....	17
	Figure 2.8 Hook Brackets for Panel Mounting	17
	Figure 2.9 Hook Bracket Location	17
	Figure 2.10 Fastening Hook Bracket Screws	18
	Figure 2.11 Panel Mount Rear View.....	18
	2.3.3 Arm Mounting.....	19
	Figure 2.12 Arm Mount for Panel PCs.....	19
	2.3.4 Stand Mounting.....	20
	Figure 2.13 VESA Mount Screw Holes	20
	Figure 2.14 Securing the VESA Mount Base.....	21
	Figure 2.15 Securing the VESA Mount Bracket.....	21
	Figure 2.16 Stand Mount Hinge Cover	22
	Figure 2.17 Completed Stand Mount.....	22

Chapter 3 Jumper Setting23

3.1	Motherboard Layout.....	24
	Figure 3.1 Motherboard Layout Diagram.....	24
3.2	Jumpers and Connectors	25
3.3	External COM Port Pin Definition.....	27
	3.3.1 COM1: RS-232; COM2: RS-232/422/485.....	27

Chapter 4	Software Setup.....	29
4.1	Driver Installation	30
4.2	BIOS Setup Program	30
4.2.1	Entering the BIOS Utility.....	30
4.2.2	LCD Brightness Settings.....	31
4.2.3	COM2 Mode Selection (RS-232/422/485).....	33
4.2.4	OS Selection.....	35
4.2.5	BIOS AT/ATX Setup.....	36
4.2.6	Wake-on-LAN	38
4.2.7	Wake-on-Ring.....	39
Appendix A	Watchdog Timer Programming	41
A.1	Watchdog Timer Programming Example	42

Chapter 1

General Information

- Introduction
- Specifications
- Dimensions

1.1 Introduction

PPC-3150SW/3180SW/324W-PN4 is a high-value, ultra-slim panel PC equipped with a 15.6"/18.5"/23.8" WXGA TFT LCD and low-power Intel® Pentium® N4200 quad-core (1.1 GHz) processor to provide high-performance computing in a compact fanless system. For high durability and functionality, PPC-3150SW/3180SW/324W-PN4 features an IP65-rated front panel, true-flat multi-touch projected capacitive touchscreen, die cast aluminum alloy enclosure, two serial ports, four USB ports, and two GbE LAN ports, making it suitable for diverse industrial applications.

1.2 Key Features

- 15.6"/18.5"/23.8" true-flat WXGA TFT LCD with projected capacitive touch control
- Fanless design with low power consumption
- 1 x internal 2.5" SATA HDD and 1 x mSATA
- Configurable RS-232/422/485 ports via BIOS
- Automatic data flow control over RS-485
- Wide range DC support (12 ~ 24 VDC)
- Supports dual displays
- IP65-rated front panel

1.3 Front Panel

The PPC-3150SW/3180SW/324W-PN4 front panel is a true-flat color TFT LCD with multi-touch projected capacitive touch control. Additionally, the front panel is IP65 rated for protection from dust and water ingress.

Note! *Figure 1.1 shows the PPC-3150SW-PN4A model. The PPC-3150SW/3180SW/324W-PN4 models all follow the same design.*



Figure 1.1 Front Panel

1.4 Rear Panel

The PPC-3150SW/3180SW/324W-PN4 rear panel features four VESA mount holes (75 x 75 mm) as shown in Figure 1.2.

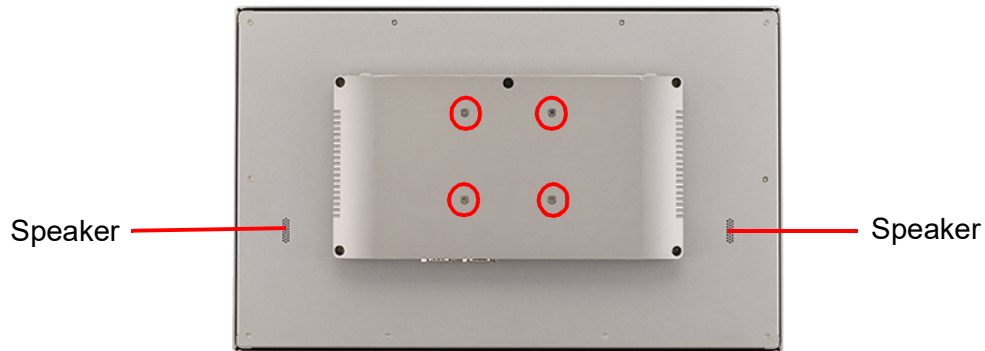


Figure 1.2 Rear Panel

VESA Screw Specifications

- Screw Type: M4
- Screw Depth: 12 mm max.
- Screw Quantity: 4

1.5 Dimensions

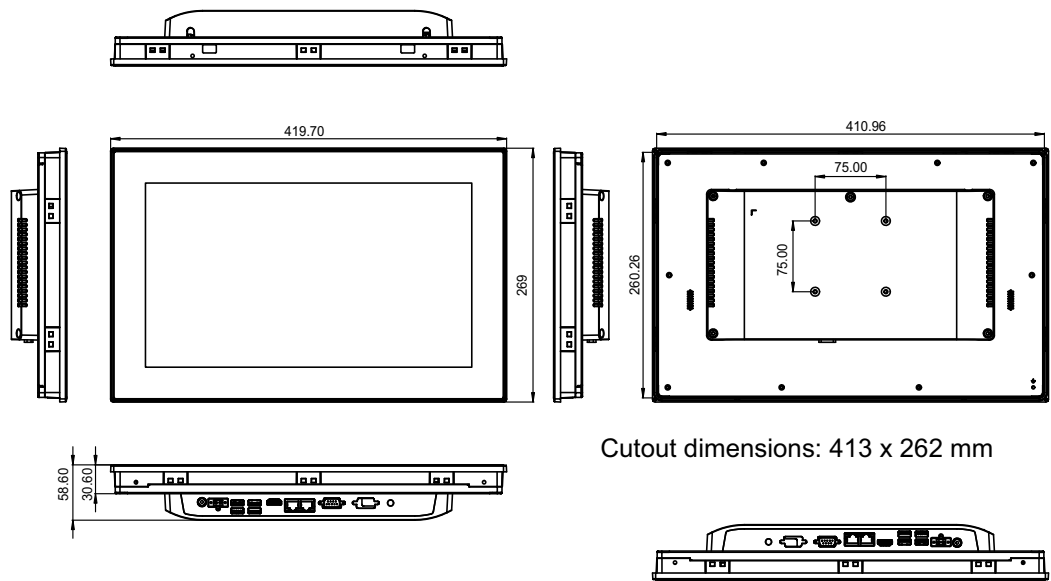


Figure 1.3 PPC-3150SW-PN4A Dimensions

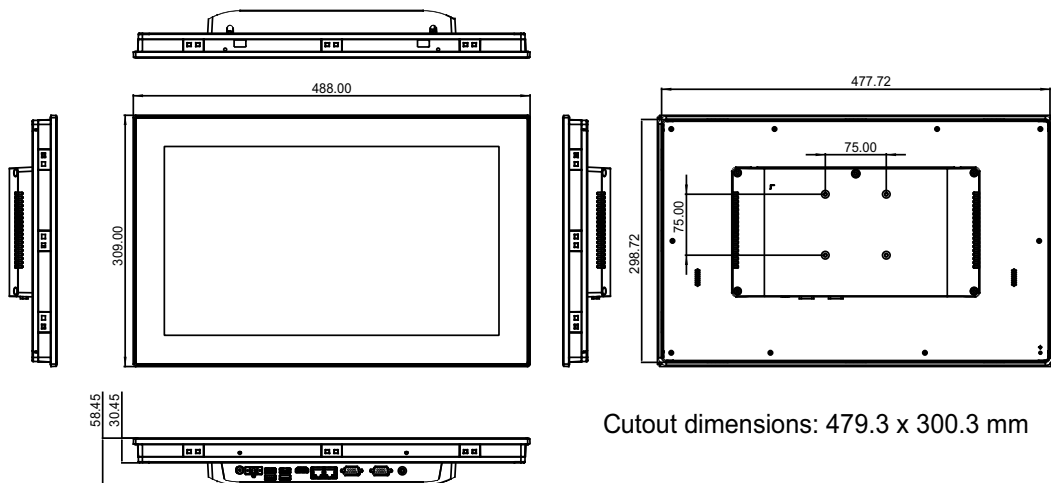


Figure 1.4 PPC-3180SW-PN4A Dimensions

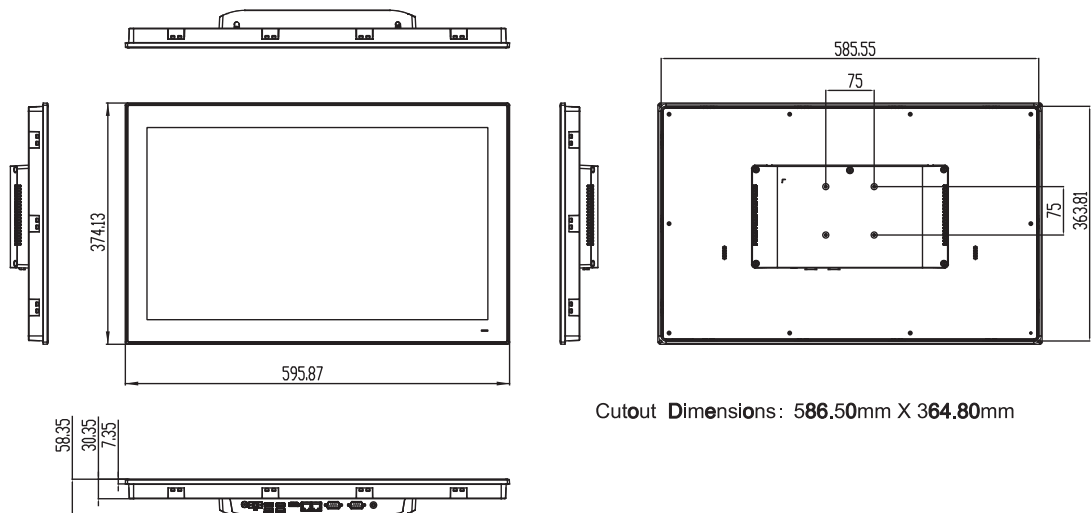


Figure 1.5 PPC-324W-PN40A Dimensions

1.6 Specifications

	PPC-3150SW	PPC-3180SW	PPC-324W-PN4
Panel Size	15.6"	18.5"	23.8"
Display Type	TFT LCD	TFT LCD	TFT LCD
Max. Resolution	1366 x 768	1366 x 768	1920 x 1080
Brightness	400	450	350
Color	16.7M	16.7M	16.7M
Pixel Pitch	252 x 252	300(H) x 300(V)	274.5(H) x 274.5(V)
Viewing Angle	170, 165	170, 160	178, 178
Contrast	500	1000	1000
Backlight Lifetime	50,000 (min.)	50,000 (min.)	30,000 (min.)
Touchscreen Type	Multi-touch projected capacitive (P-CAP)		
Light Transmission	90±2%	90±2%	≥85%
Controller	USB interface		
CPU	Intel® Pentium® N4200 quad core		
Memory	1 x SODIMM DDR3L 1866 MHz (max. 8 GB)		
Storage	1 x 2.5" SATA bay 1 x mSATA bay		
Network (LAN)	2 x 10/100/1000 Mbps Ethernet (Intel® I211-AT)		
I/O	2 x Serial ports (1 x RS-232 and 1 x RS-232/422/485) 2 x USB 2.0, 2 x USB 3.0 1 x Line Out 1 x HDMI		
Expansion	1 x Mini PCIe		
Speaker	2 x 1 W		
Operating System	Microsoft® Windows 10 (64 bit), Linux, Android		
Power Supply	12 ~ 24 VDC		
Power Consumption	33 W	35 W	70W
Operating Temperature	0 ~ 50 °C (32 ~ 122 °F) with 2.5" SATA SSD 0 ~ 40 °C (32 ~ 104 °F) with 2.5" SATA HDD		
Storage Temperature	-20 ~ 60 °C (-4 ~ 140 °F)		
Relative Humidity	10 ~ 95% @ 40 °C (non-condensing)		
Shock	Operating 10G peak acceleration (11 ms duration), following IEC 60068-2-27		
Vibration	Operating random vibration test, 5 ~ 500 Hz, 1 Grms with HDD; 2 Grms with SSD, following IEC 60068-2-64		
Certification	Safety: CE, UL, CCC, BSMI EMC: CE, FCC Class B, BSMI		
Dimensions	419.7 x 269 x 58.6 mm (16.52 x 10.59 x 2.3 in)	488 x 309 x 58.45 mm (19.21 x 12.16 x 2.3 in)	595.9 x 374.1 x 58.4 mm (23.5" x 14.7" x 2.3")
Weight	4.7 kg (10.36 lb)	5.4 kg (11.90 lb)	8.2kg (18.08lb)

1.7 Ordering Information

Part Number	Description	Image
PPC-3150SW-PN4A PPC-3180SW-PN4A PPC-324W-PN40A	Intel® Pentium® APL N4200 Fanless 15.6"/18.5"/23.8" panel PC	
96PSA-A90W19OT-3	Power adapter 100 ~ 240 V _{DC} , 90 W, 19V with PFC	
PPC-WLAN-C1E	Wi-Fi module with antenna	
PPC-ARM-A03	VESA arm mount (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
- System Mounting

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-3150SW/3180SW/324W-PN4 front panel should appear as shown in Figure 2.1.



Figure 2.1 Front View

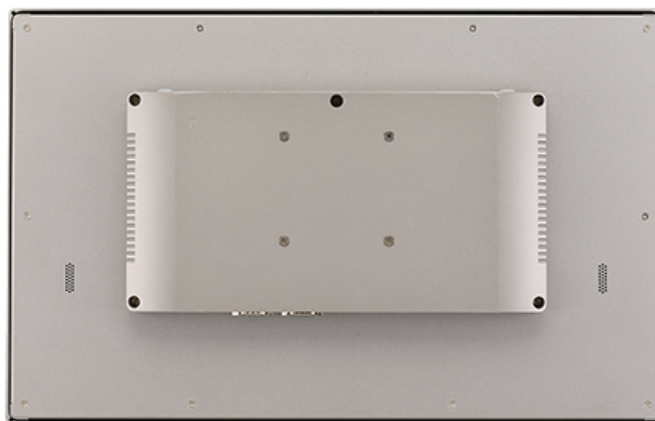
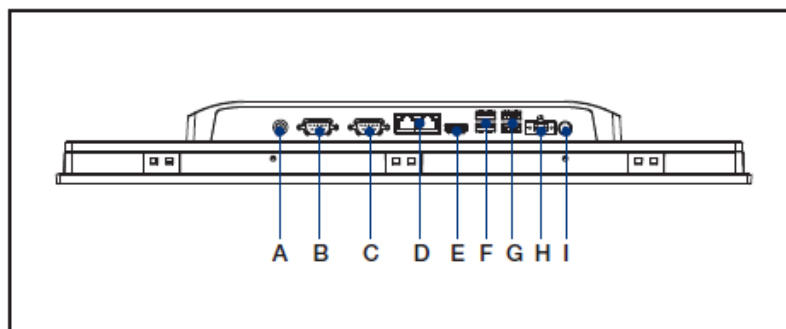


Figure 2.2 Rear View



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

Figure 2.3 I/O Ports

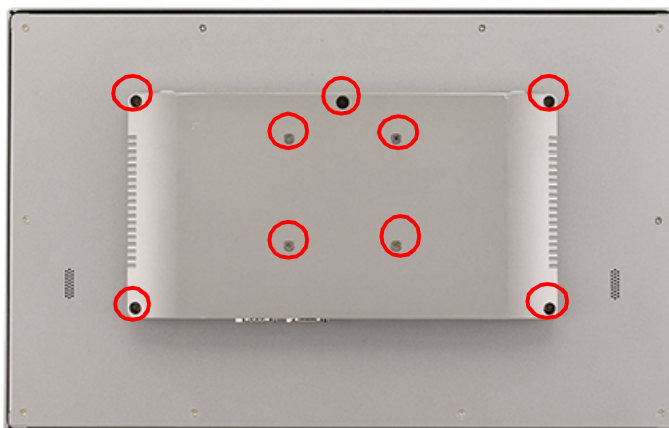
2.2 Installation Procedures

The system installation procedures should be conducted in the following order:

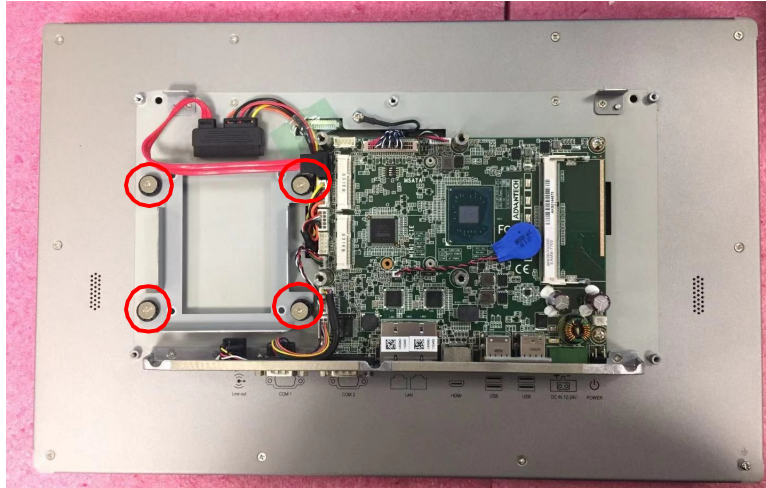
1. Install a SATA HDD or mSATA storage
2. Install a memory card
3. Install a wireless LAN module
4. Mount the panel PC

2.2.1 HDD Installation

1. Loosen and remove the 9 retention screws on the rear cover. Remove the rear cover.



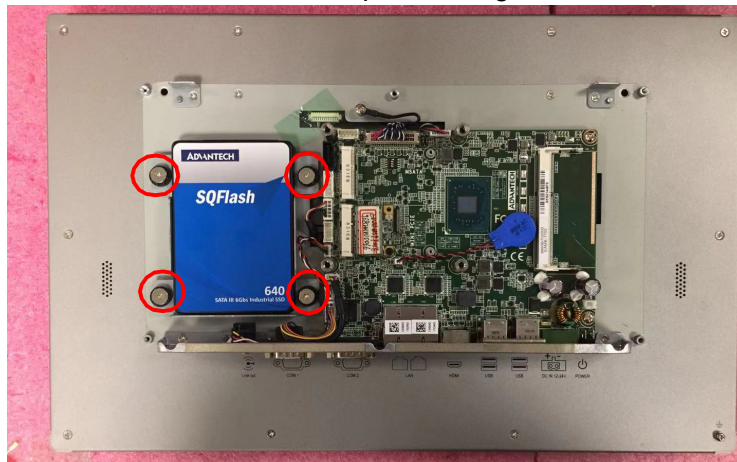
- Loosen and remove the 4 retention screws on the HDD bracket. Remove the HDD bracket.



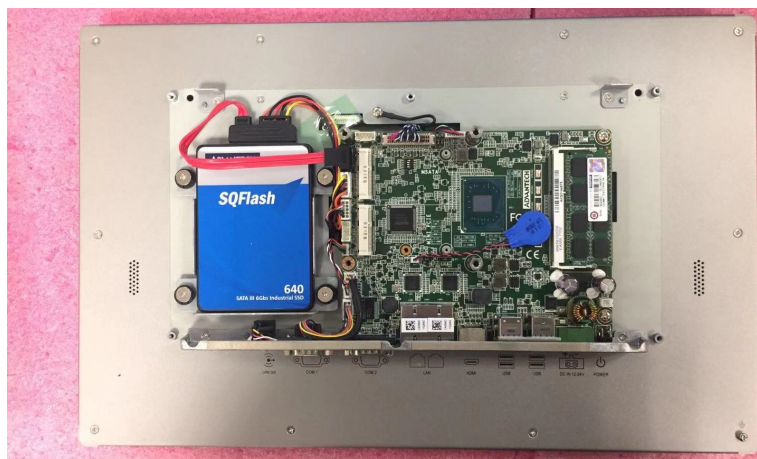
- Install a SATA HDD and affix in place using 4 retention screws



- Close the HDD cover and affix in place using 4 retention screws

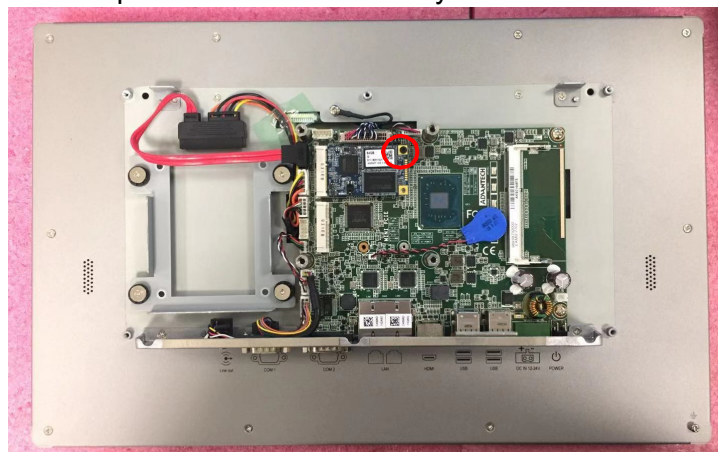


5. Connect the SATA cable to the motherboard.



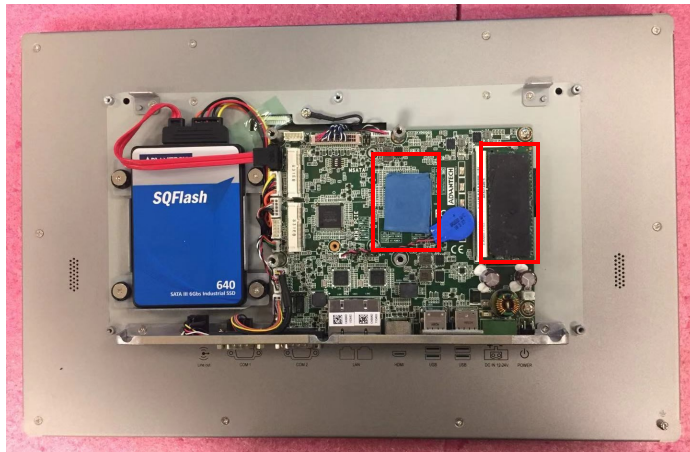
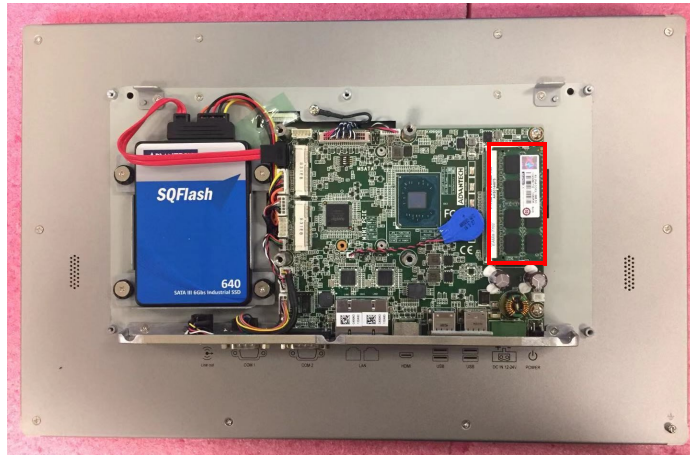
2.2.2 mSATA Installation

1. Insert an mSATA card into the mSATA socket. Secure the mSATA module using 2 retention screws provided in the accessory box.



2.2.3 Memory Card Installation

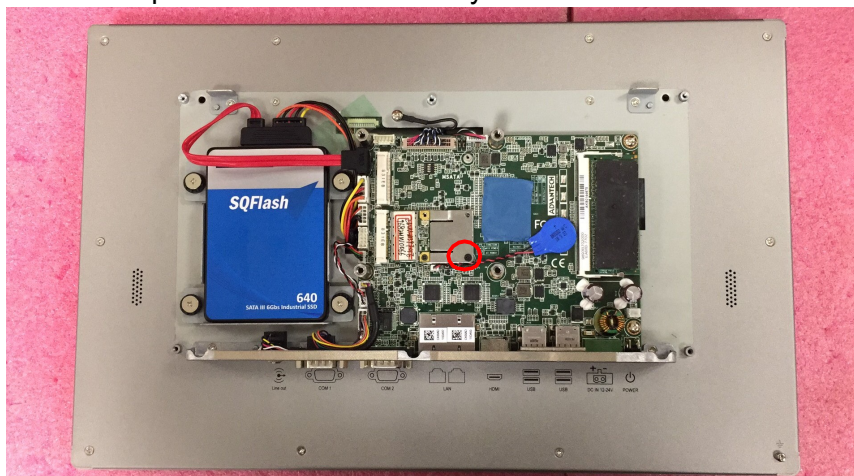
1. Insert the memory card into the slot highlighted by the red box in the image below. Then install the memory and CPU thermal pads provided in the accessory box.



2.2.4 Wireless LAN Module Installation

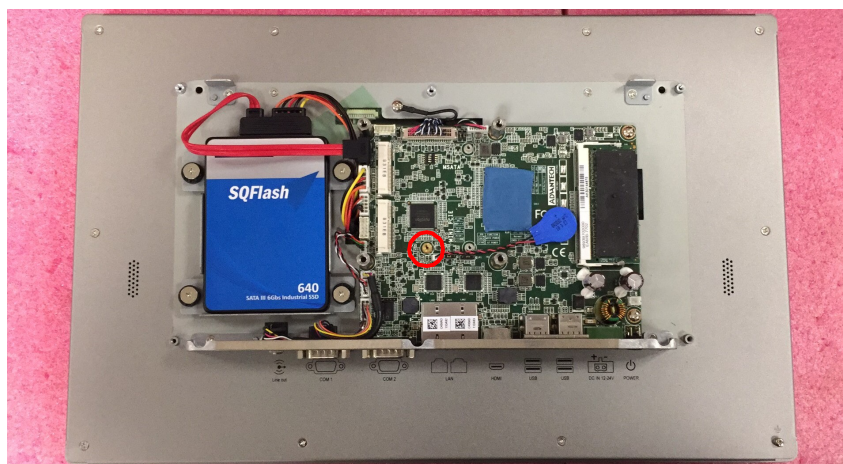
2.2.4.1 Full-Size Mini PCIe Card Installation

Insert the full-size mini PCIe card into the socket. Secure the card in place using one of the retention screws provided in the accessory box.

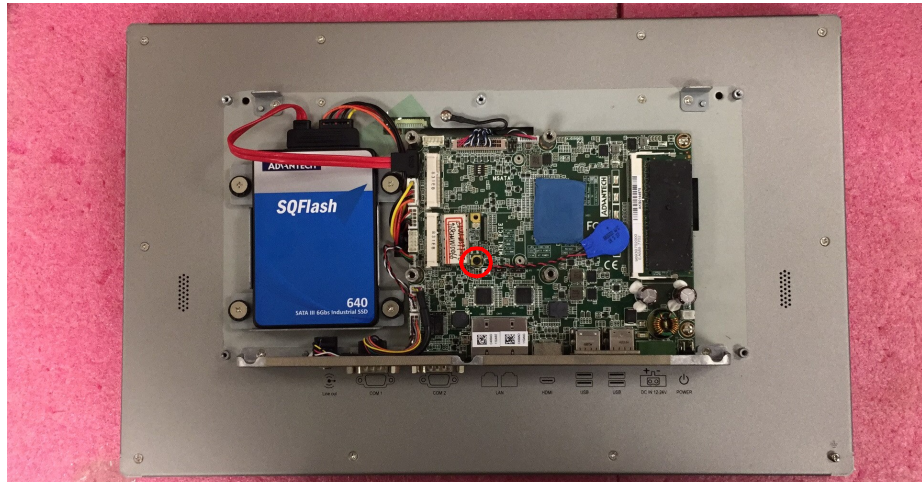


2.2.4.2 Half-Size Mini PCIe Card Installation

1. Retrieve the hexagonal screw provided in the accessory box. Align the screw with the notch on the printed circuit board and secure in place.



2. Insert the half-size mini PCIe card into the socket at an angle. Secure the card in place using a screw from the accessory box.



3. Connect the antenna cables and affix them to the brackets. Take note of the cable routing.



4. Remove the two rubber plugs on the rear cover.



5. Install the external antenna.



2.3 System Mounting

Warning! More than one person should participate in mounting the panel PC 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 personal injury.

The PPC-3150SW/3180SW/324W-PN4 panel PC supports various mounting options.

- 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.

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.

Wall mount

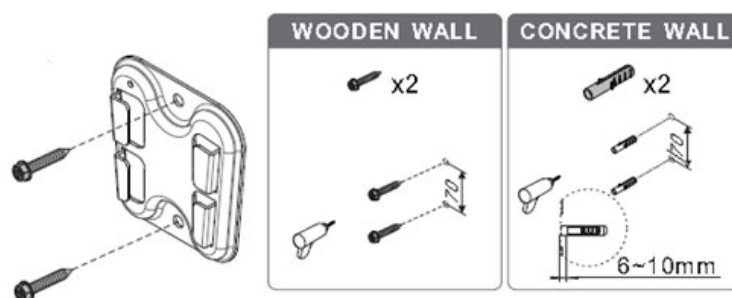


Figure 2.4 Wall Mount Plate

6. Remove the original screws at the rear of the panel PC. Secure the bracket to the rear panel using four M4 screws.

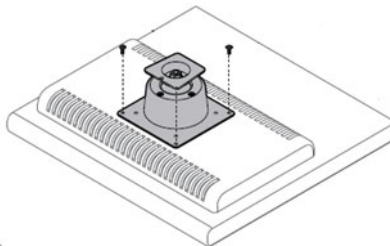
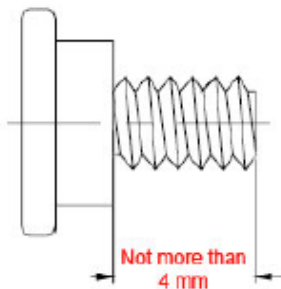


Figure 2.5 Rear Panel Screw Locations

Warning! Ensure that the screw thread depth does not exceed 4 mm.



Assurez-vous que la profondeur du filetage des vis sur le panneau arrière ne dépasse pas 4 mm.



7. 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 2.6).

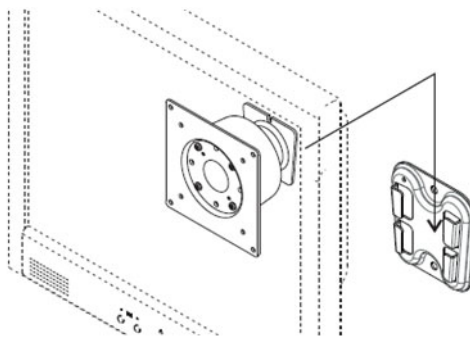


Figure 2.6 Wall Mounting

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

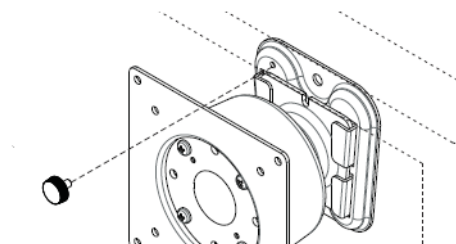


Figure 2.7 Securing the Panel PC

2.3.2 Panel Mounting

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

- Prepare a panel cutout that corresponds to the device size.
 PPC-3150SW: 413 x 262 mm / 16.25 x 10.31 in
 PPC-3180SW: 479.30 x 300.30mm / 18.87 x 11.82 in
 PPC-324W-PN4: 586.5 x 364.8 mm / 23.09 x 14.36 in
- Insert the panel PC into the cutout. Retrieve the hook brackets and M6 x 21L screws from the accessory box.
 (10pcs for PPC-3150SW; 12pcs for PPC-3180SW; 14pcs for PPC-324W-PN4)

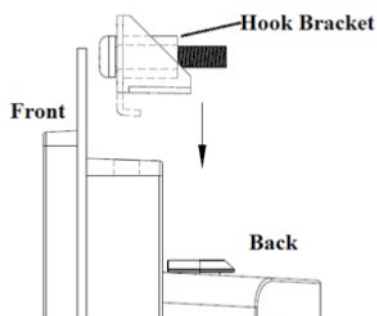


Figure 2.8 Hook Brackets for Panel Mounting

- Insert the hook brackets into the mount holes in a downwards direction (as shown in Figure 2.9). Then hang the panel PC.

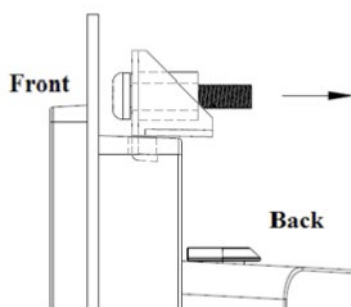


Figure 2.9 Hook Bracket Location

4. Tighten the screws in the hook brackets to secure the panel PC in place.

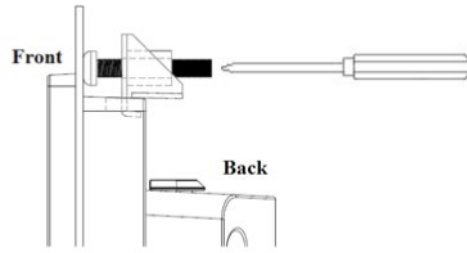


Figure 2.10 Fastening Hook Bracket Screws

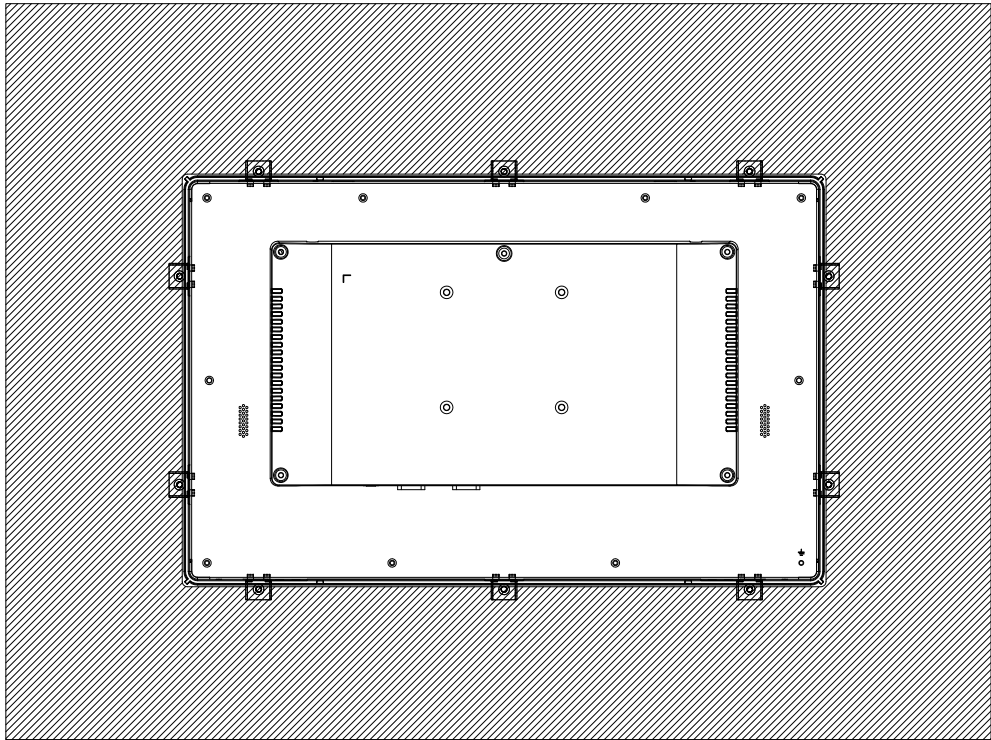


Figure 2.11 Panel Mount Rear View

2.3.3 Arm Mounting

PPC-3150SW/3180SW/324W-PN4 can be mounted on a VESA-compliant arm mount with a 100-mm pad. To affix the panel PC to an arm mount, follow the steps outlined below.

1. Refer to the mounting arm's installation instructions to correctly mount the arm onto the surface as a base.
2. Remove the four screws at the rear of the machine to gain access to the VESA mount holes.
3. Align the retention screw holes on the mounting arm interface with the VESA holes on the panel PC and secure in place using the four M4 retention screws.



Figure 2.12 Arm Mount for Panel PCs

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 items listed below were included with your shipment.

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 a stand, follow the steps outlined below

1. Remove the four original screws at the rear of the machine. Use four M4 x 8L screws to affix the VESA bracket to the panel PC. Users can choose between a 75 x 75 mm VESA mount according to their requirements.

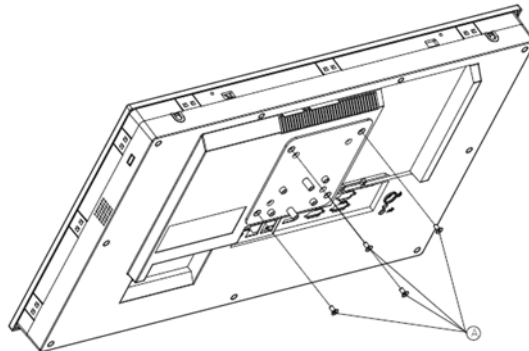


Figure 2.13 VESA Mount Screw Holes

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

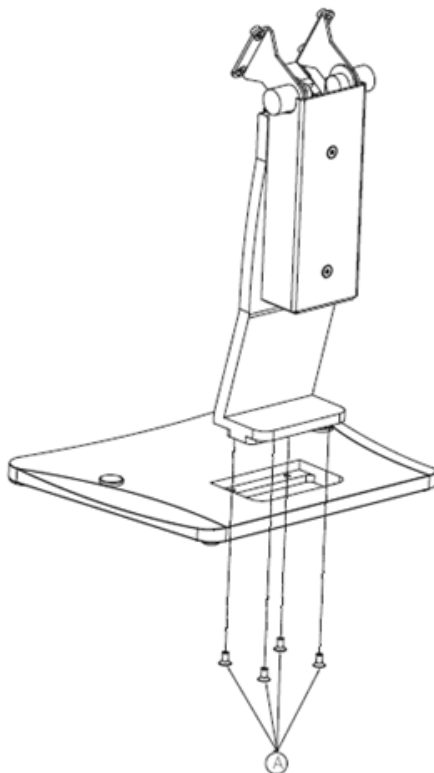


Figure 2.14 Securing the VESA Mount Base

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

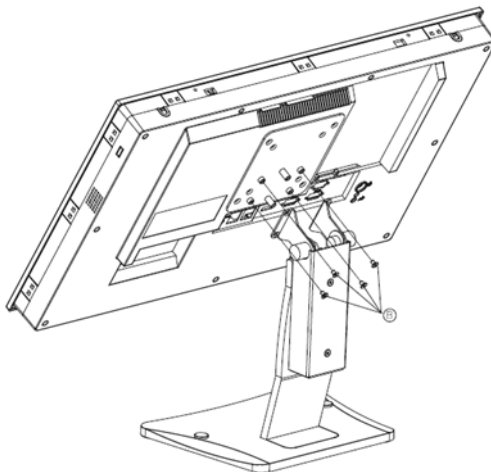


Figure 2.15 Securing the VESA Mount Bracket

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

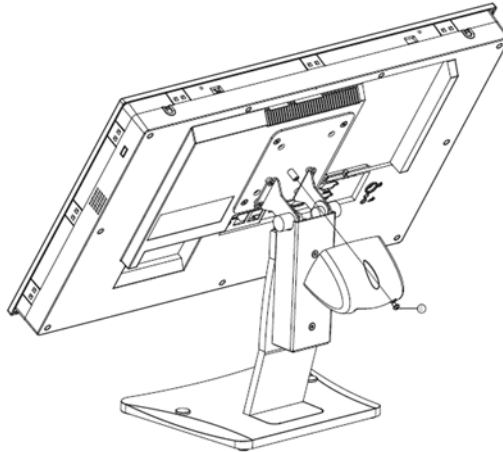


Figure 2.16 Stand Mount Hinge Cover

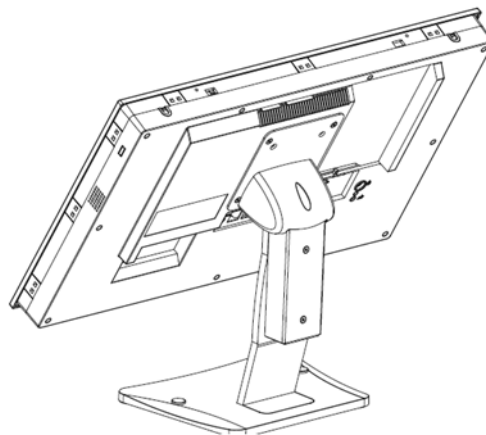


Figure 2.17 Completed Stand Mount

Chapter 3

Jumper Setting

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

3.1 Motherboard Layout

The PPC-3150SW/3180SW/324W-PN4 motherboard features internal peripheral connectors that can be accessed when the motherboard is outside of the chassis. Figure 3.1 shows the locations of the internal peripheral connectors on the motherboard.

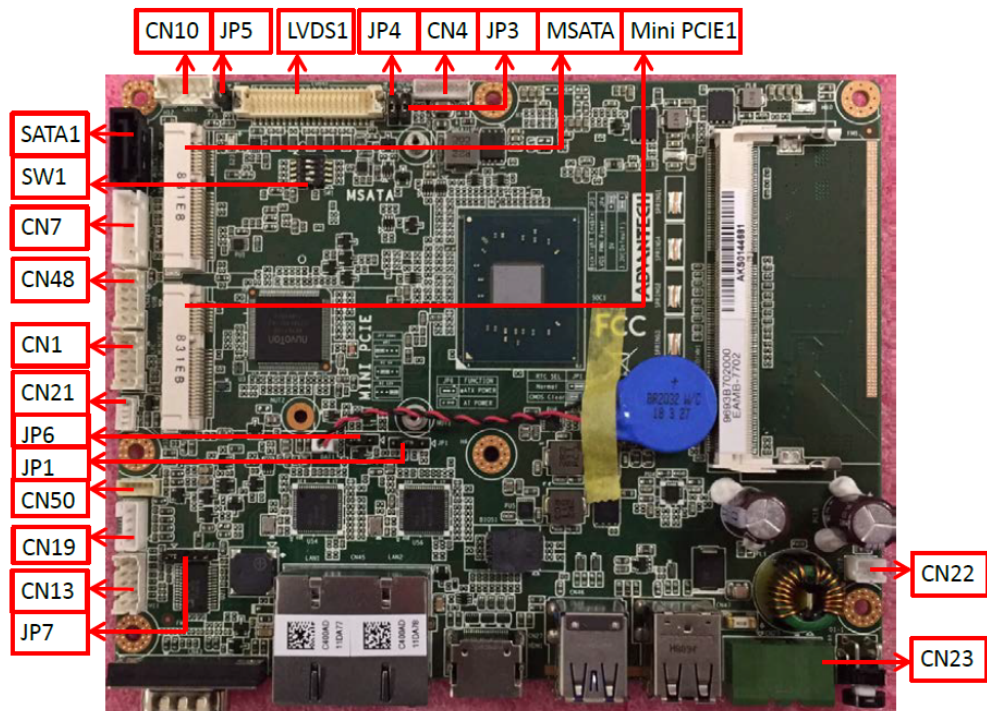
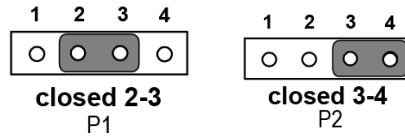


Figure 3.1 Motherboard Layout Diagram

Connectors	Functions
CN1	LPC conn
CN4	LCD backlight
CN7	SATA power
CN10	Resistive touch
CN13	COM1
CN19	Speaker
CN21	Front LED
CN22	Power button
CN23	Power input
CN48	Internal USB
CN50	Line out
SW1	Panel resolution
JP1	RTC reset
JP3	Backlight power selection
JP4	Backlight PWM power selection
JP5	Touch power selection
JP6	ATX/AT selection
JP7	COM1 ring and power selection
MSATA	Mini SATA conn
Mini PCIE1	Mini PCIE conn

3.2 Jumpers and Connectors



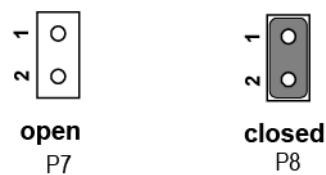
JP1	Icon	RTC Reset
(2~3)	P1	Normal (default)
(3~4)	P2	CMOS clear



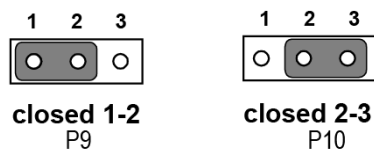
JP3	Icon	Backlight Power Selection
(1~2)	P3	5V
(2~3)	P4	3.3V (default)



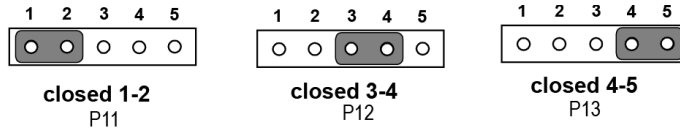
JP4	Icon	Backlight PWM Power Selection
(1~2)	P5	5V
(2~3)	P6	3.3V (default)



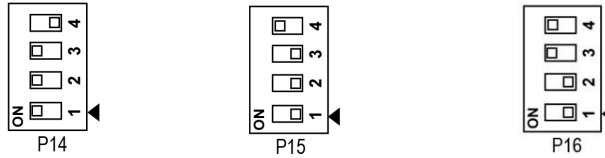
JP5	Icon	Touch Power Selection
(1~2) Closed	P8	3.3VSB
(1~2) Open	P7	Resistive touch disabled (default)



JP6	Icon	ATX/AT Selection
(1~2)	P9	AT power
(2~3)	P10	ATX power (default)



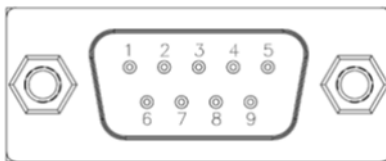
JP7	Icon	COM1 Ring and Power Selection
(1~2)	P11	COM1 RI (default)
(3~4)	P12	COM1 5V
(4~5)	P13	COM1 12V



SW1	Icon	Panel Resolution
1,2,3 ON; 4 OFF	P14	1366 x 768 (24 bit) for PPC-3180SW
1,2,3 OFF; 4 ON	P15	1366 x 768 (24 bit) for PPC-3150SW
1, 2 OFF; 3,4 ON	P16	1920x1080(48bit) for PPC-324W-PN4

3.3 External COM Port Pin Definition

3.3.1 COM1: RS-232; COM2: RS-232/422/485



Pin	COM1	COM2
1	DCD	COM2_422_485_TX-
2	RXD	COM2_422_485_TX+
3	TXD	COM2_422_RX+
4	DTR	COM2_422_RX-
5	GND	GND
6	DSR	DSR
7	RTS	RTS
8	CTS	CTS
9	Ring or 5V/12V output	Ring

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.

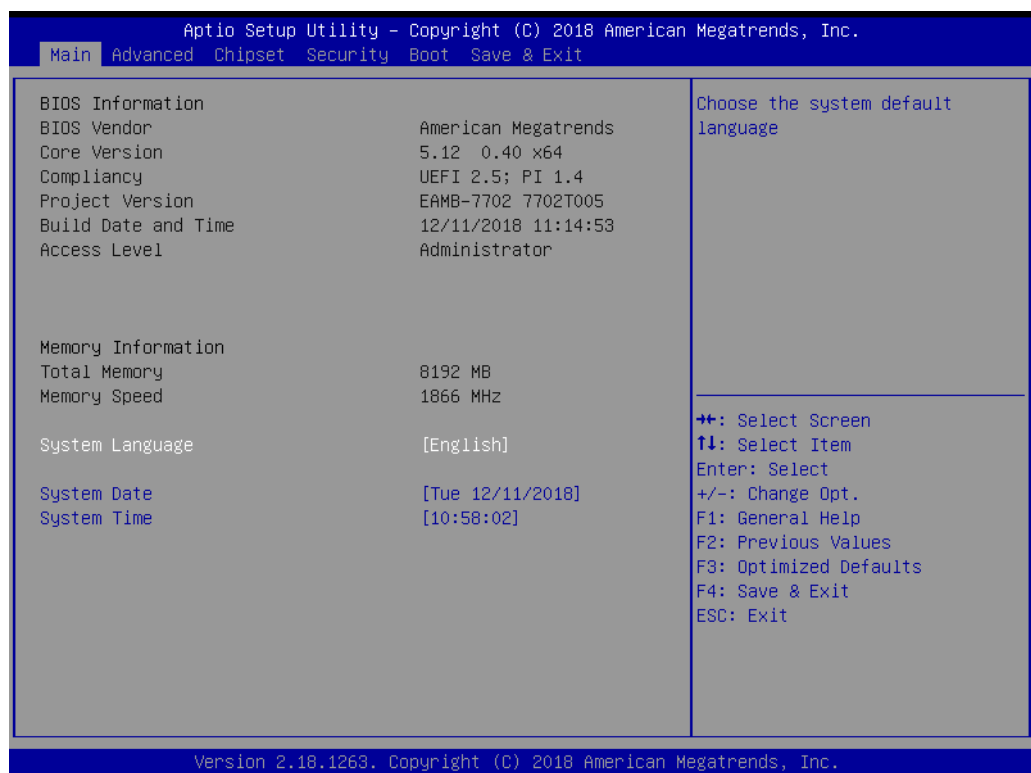
All drivers can be downloaded from the Advantech website at <http://www.advantech.com>.

4.2 BIOS Setup Program

4.2.1 Entering the BIOS Utility

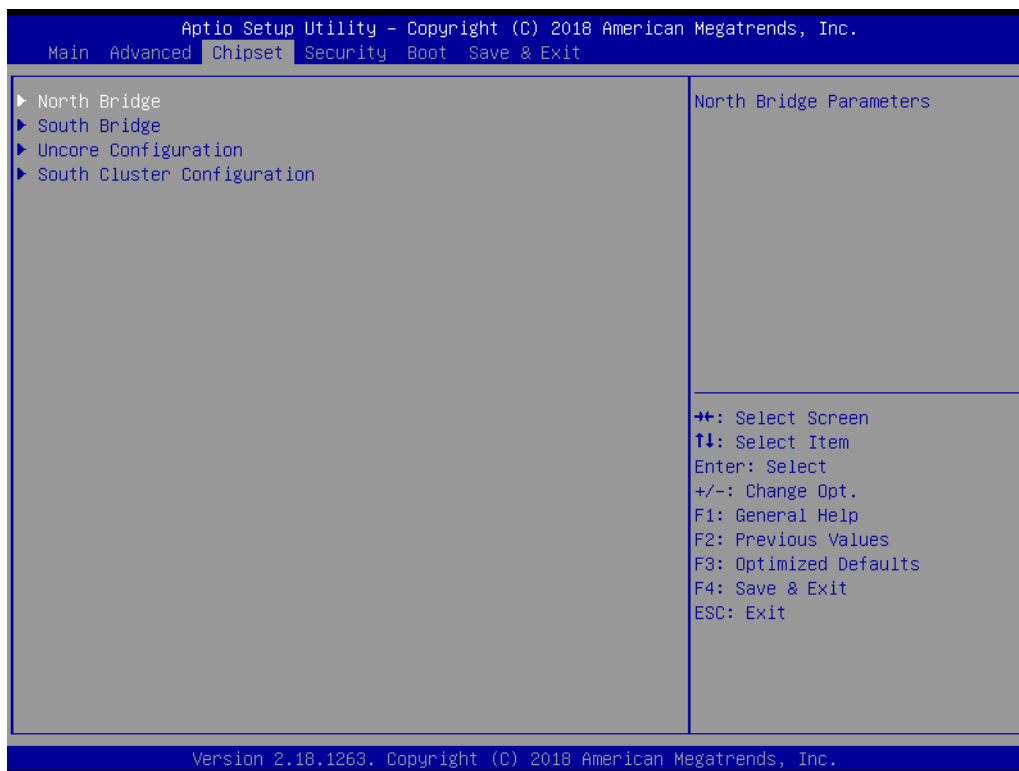
During system bootup, press the button to enter the BIOS setup utility.

After making changes, press <F4> to save and exit the BIOS setup program; otherwise the settings will not be saved.

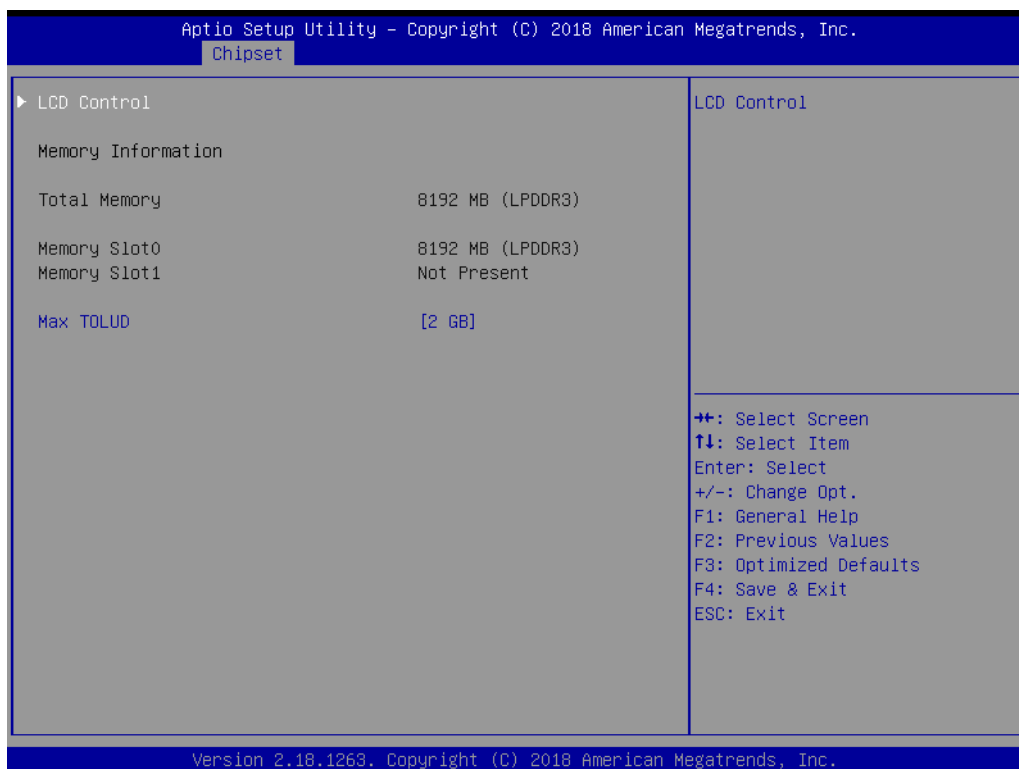


4.2.2 LCD Brightness Settings

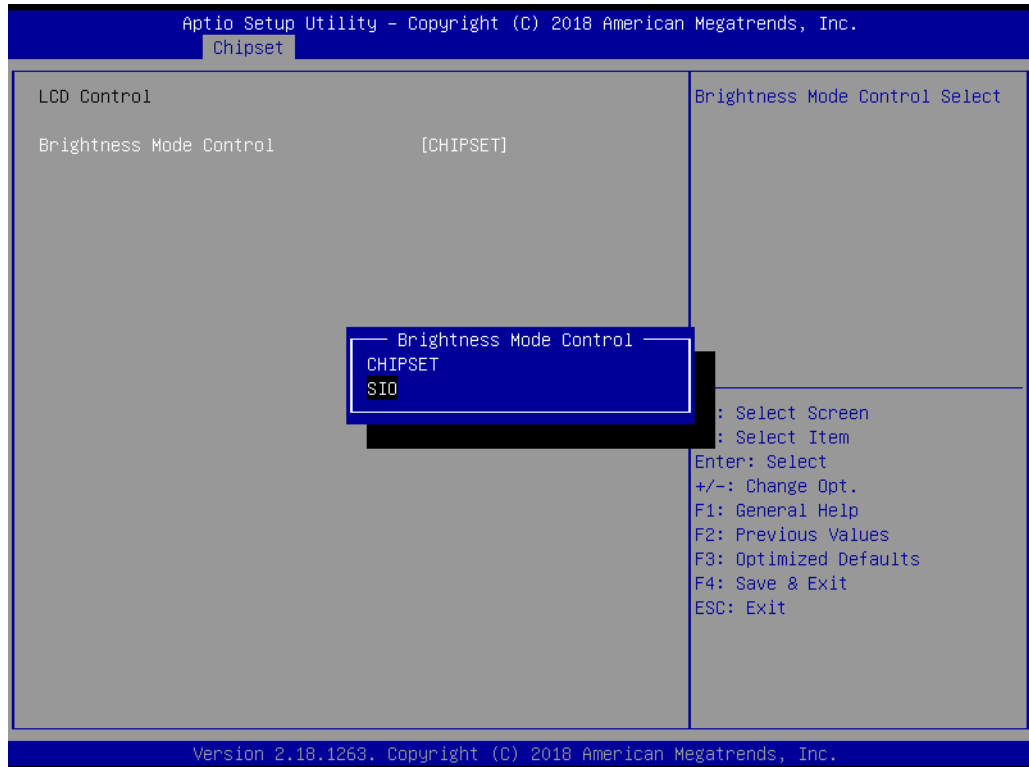
1. Select the “North Bridge” item in the “Chipset” tab.



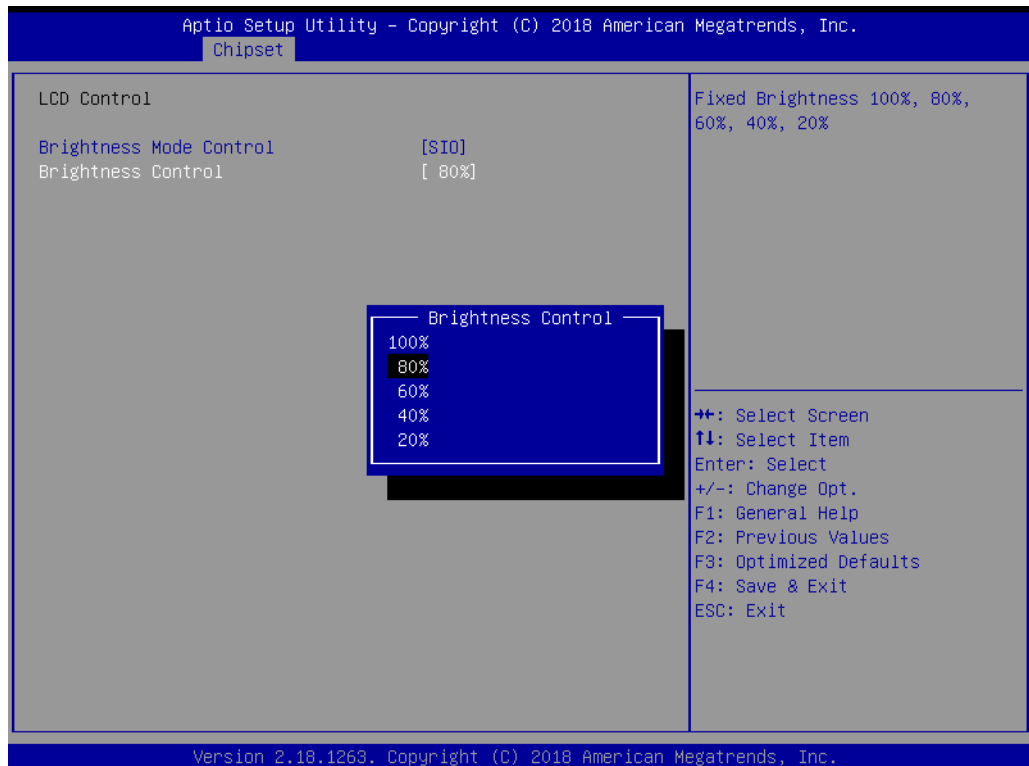
2. Then select “LCD Control”.



3. Select "Brightness Mode Control".

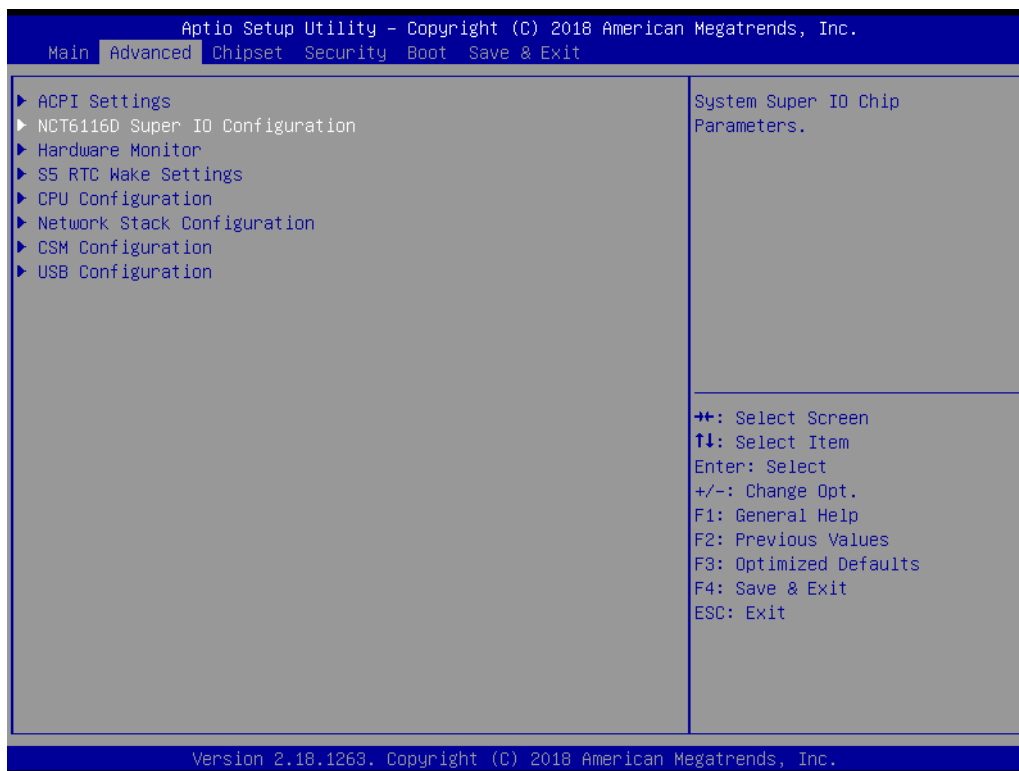


4. There are six brightness levels available. Select the level most suitable for your application needs.



4.2.3 COM2 Mode Selection (RS-232/422/485)

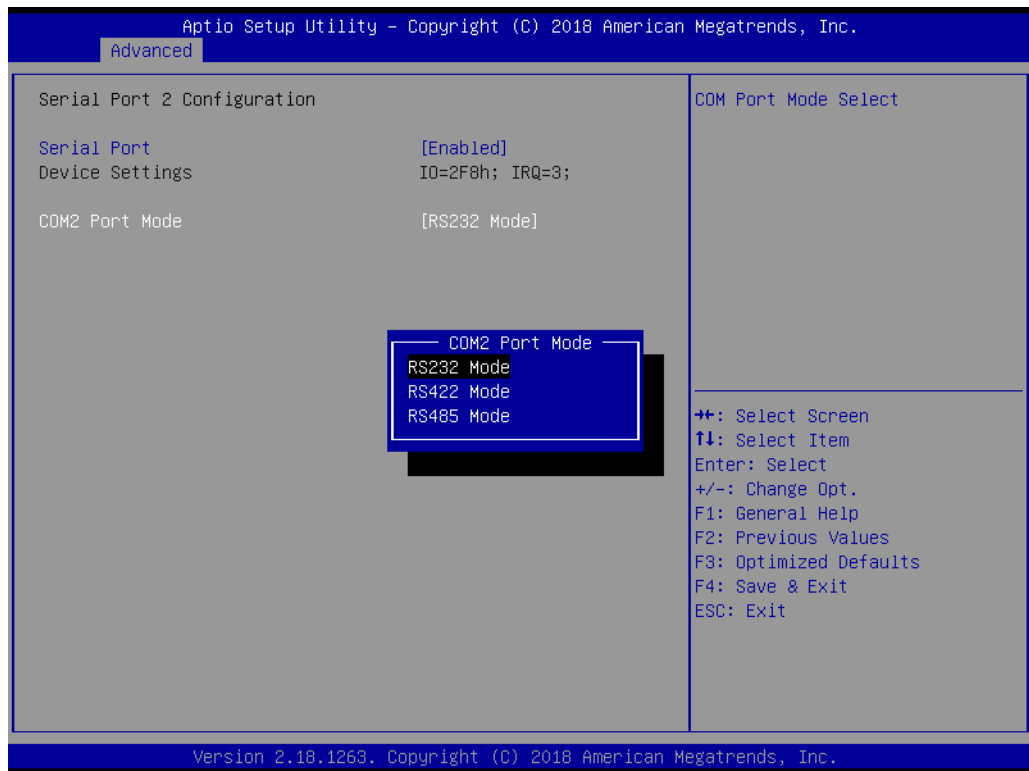
1. Select the “NCT6116D Super IO Configuration” option in the “Advanced” tab.



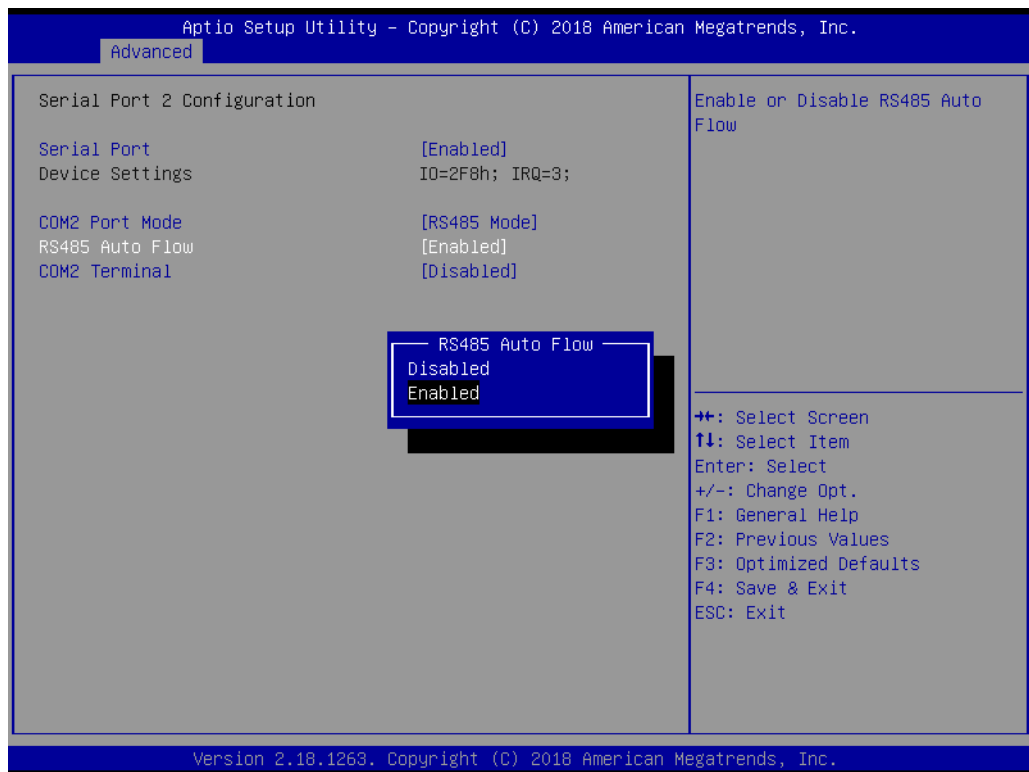
2. Select “Serial Port 2 Configuration”.



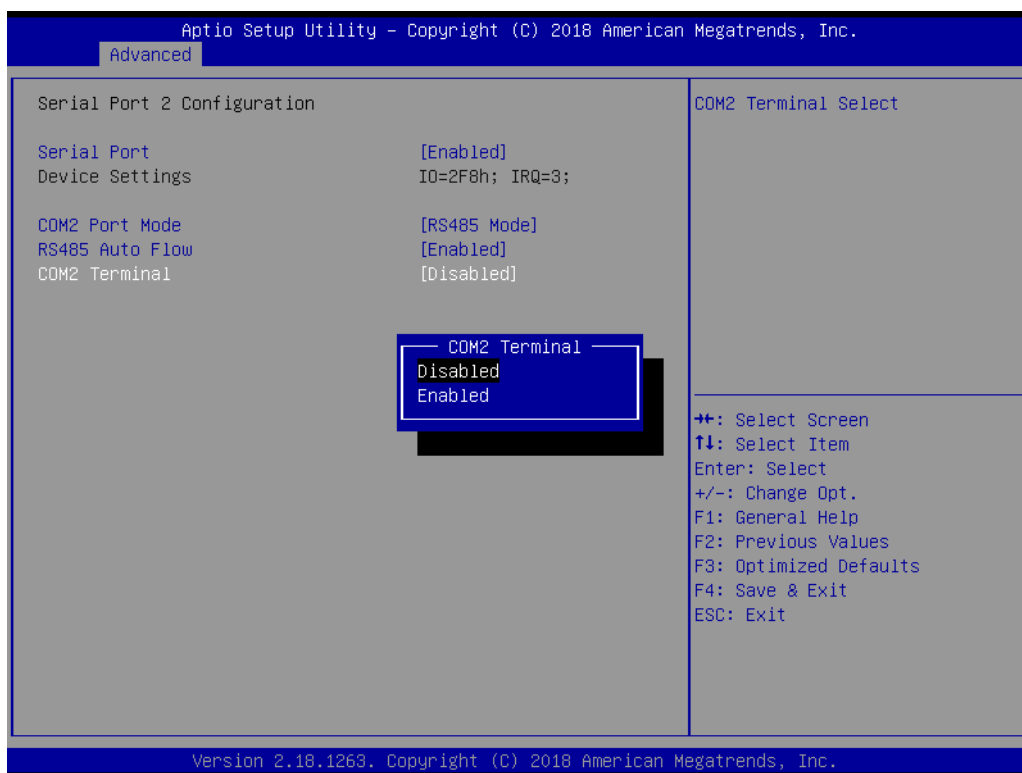
3. Navigate to the “Serial Port 2 Mode” item and double click to set the COM2 operation mode as [RS-422] or [RS-485].



4. When COM2 Mode is set as RS-485, the “RS-485 Auto Flow” item can be configured as [enabled] or [disabled]

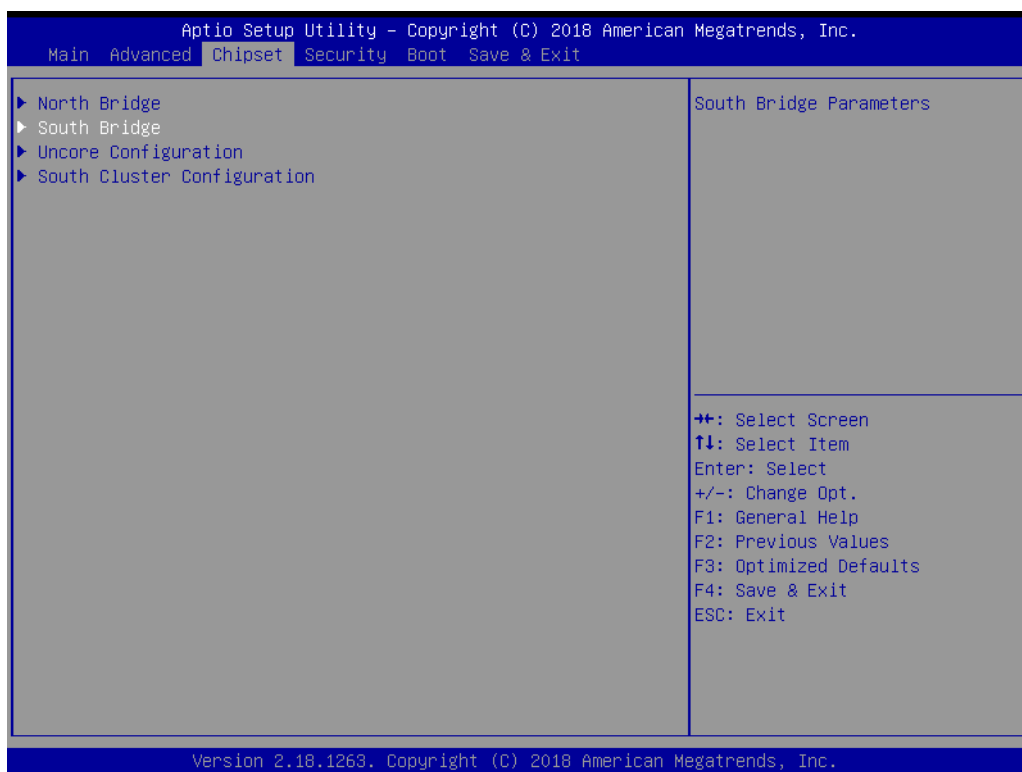


- When COM3 Mode is set as RS-485, the “Serial Port3 Terminal” can be configured as [enabled] or [disabled]

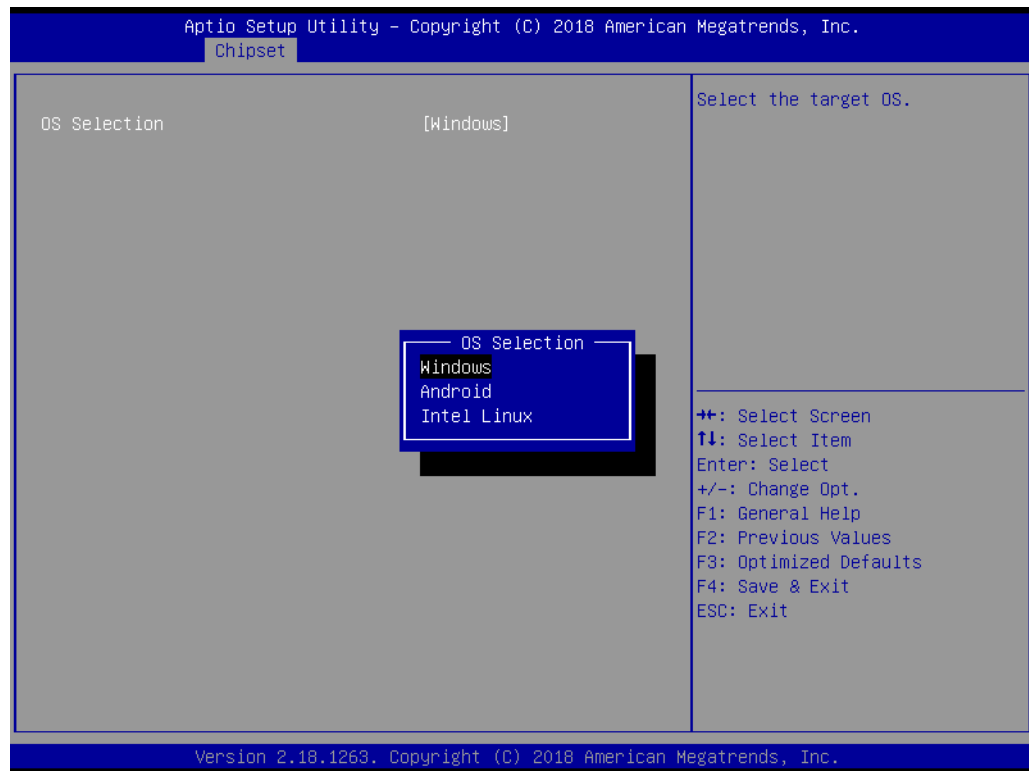


4.2.4 OS Selection

- Select the “South Bridge” item in the “Chipset” tab.

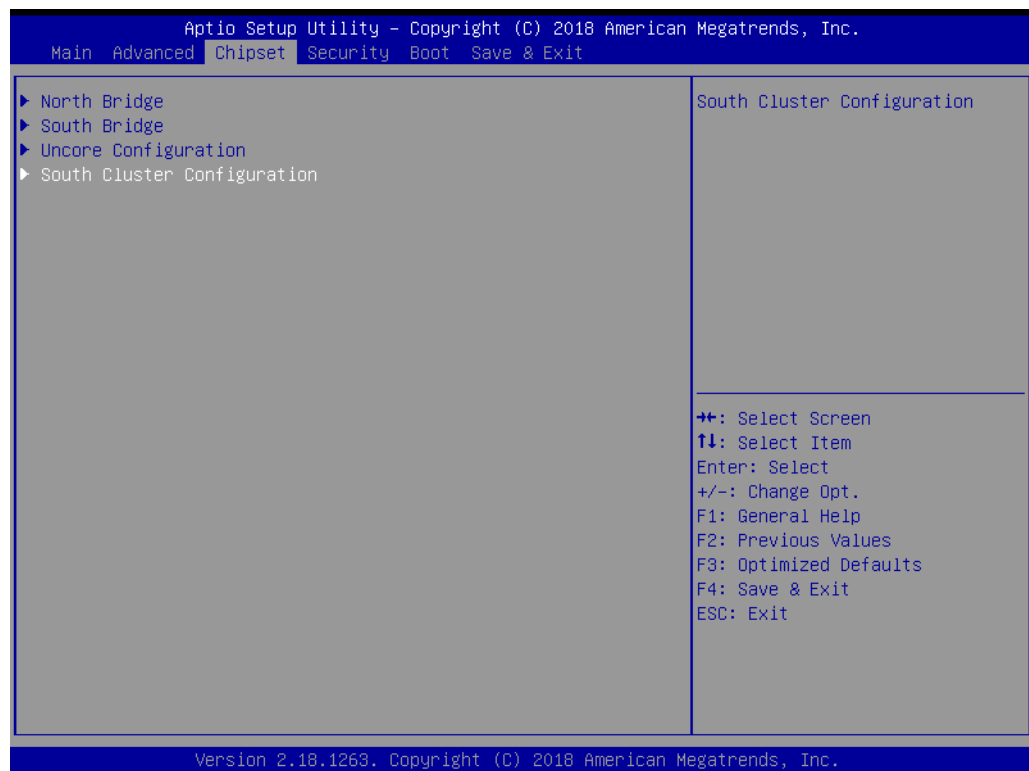


2. The system supports different OS [Windows/Android/Intel Linux]. Navigate to the “OS Selection” item to set the system OS.

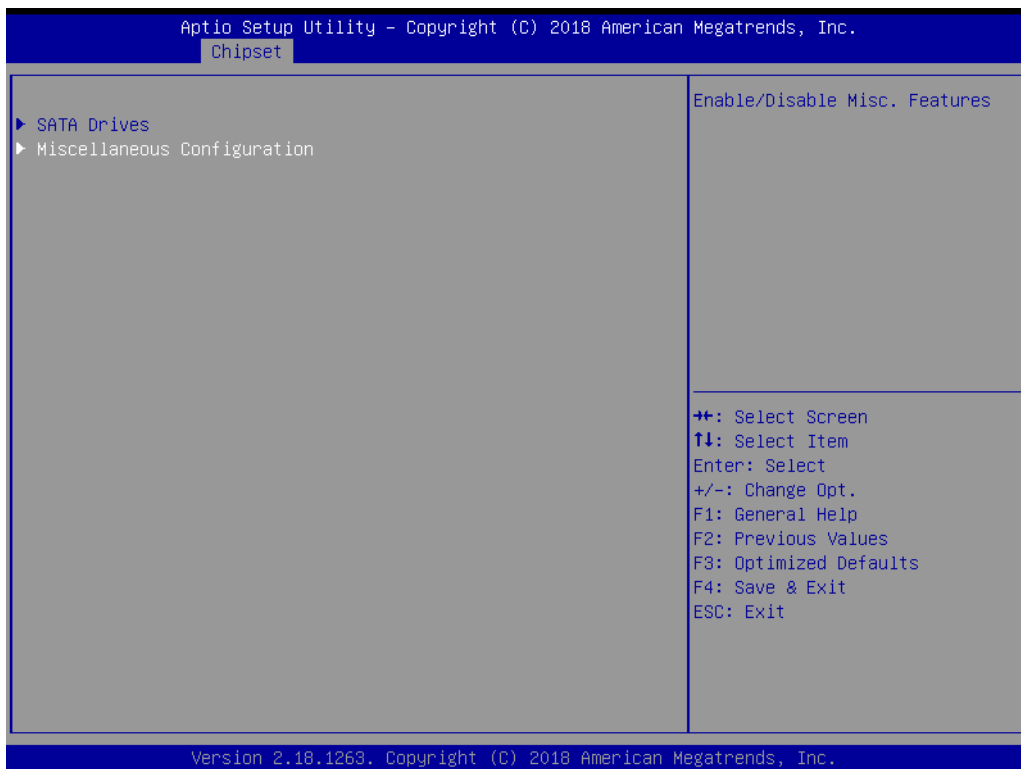


4.2.5 BIOS AT/ATX Setup

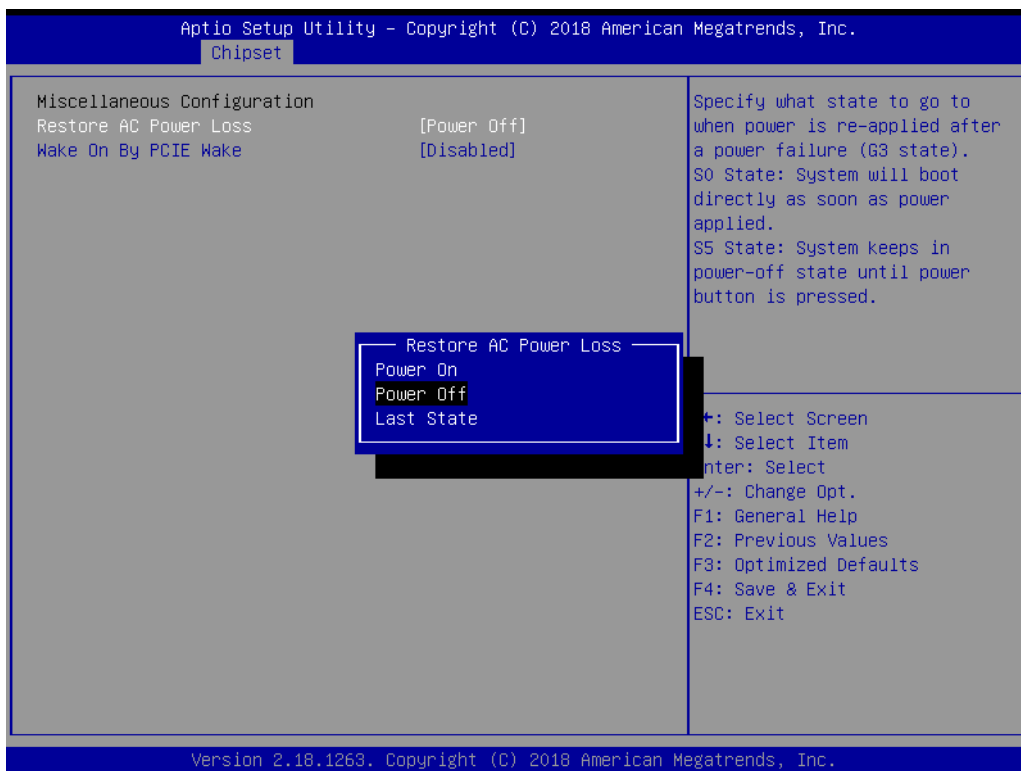
1. Select the “South Cluster Configuration” item in the “Chipset” tab.



- Select the “Miscellaneous Configuration” item.



- Configure the “Restore AC Power Loss” item as “Power On” when in “AT Mode” and as “Power Off” for “ATX Mode”.

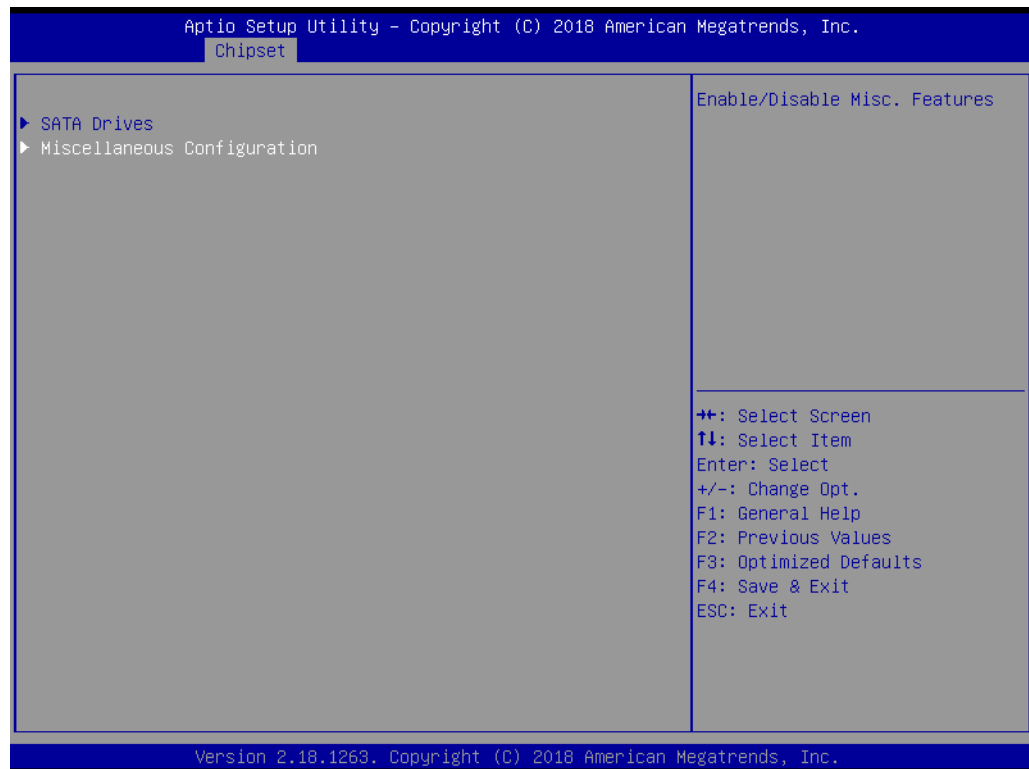


4.2.6 Wake-on-LAN

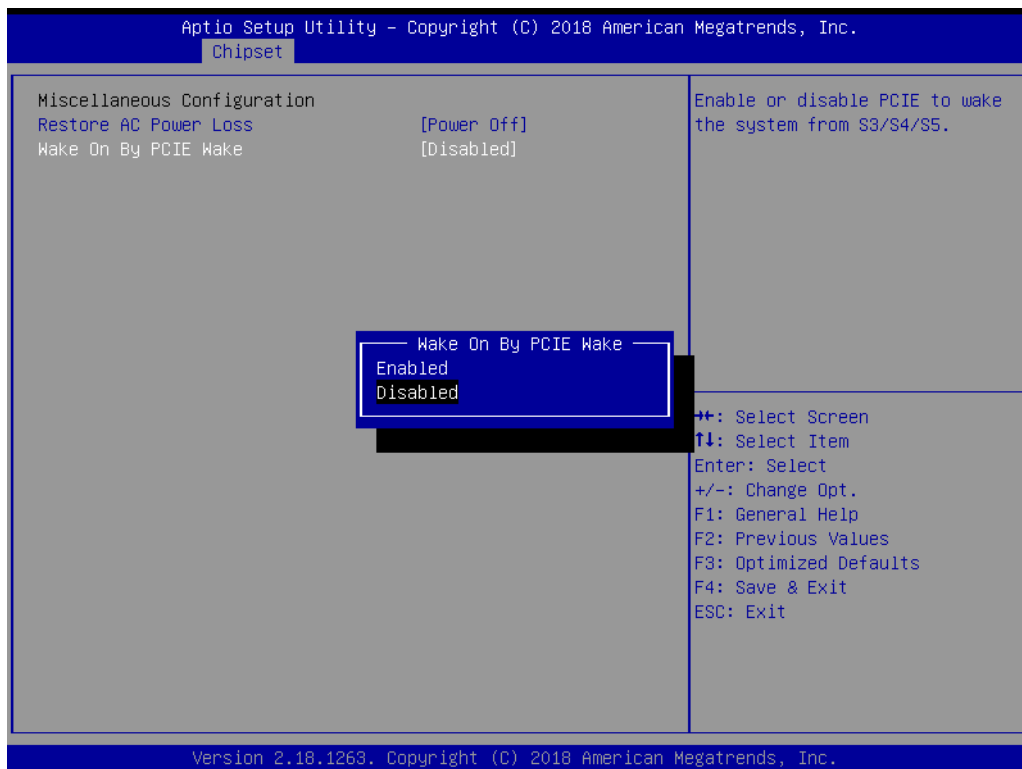
1. Select the “South Cluster Configuration” item in the “Chipset” tab.



2. Select the “Miscellaneous Configuration” item.

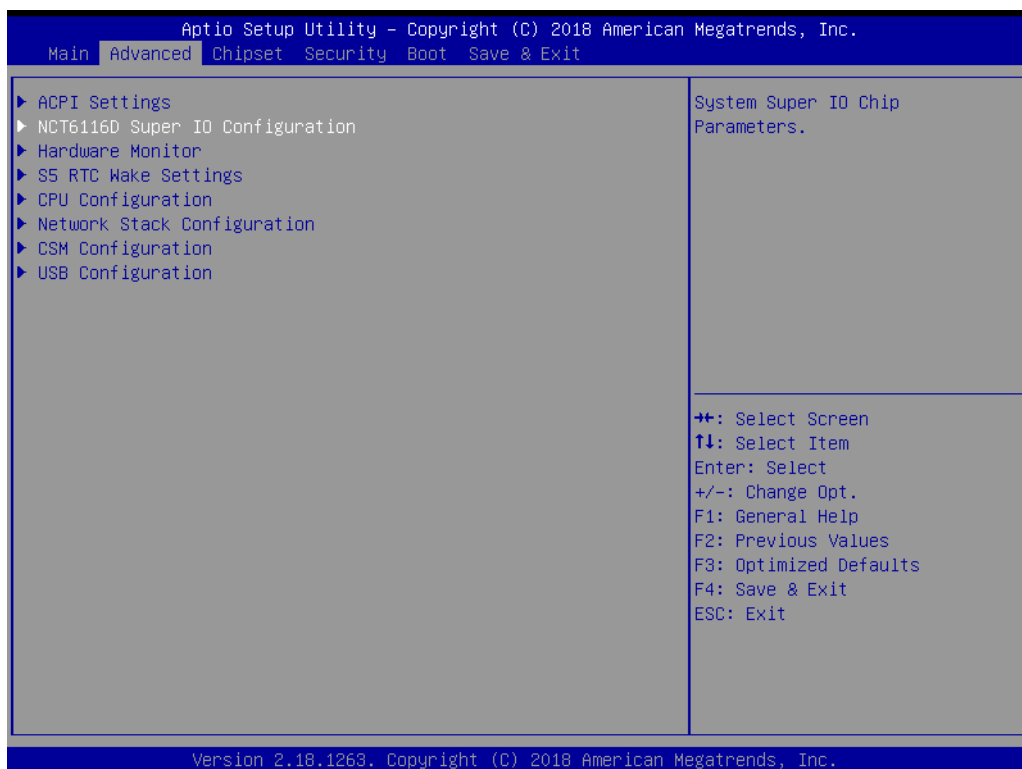


3. Set “Wake-on-PCIE” as “enabled”.

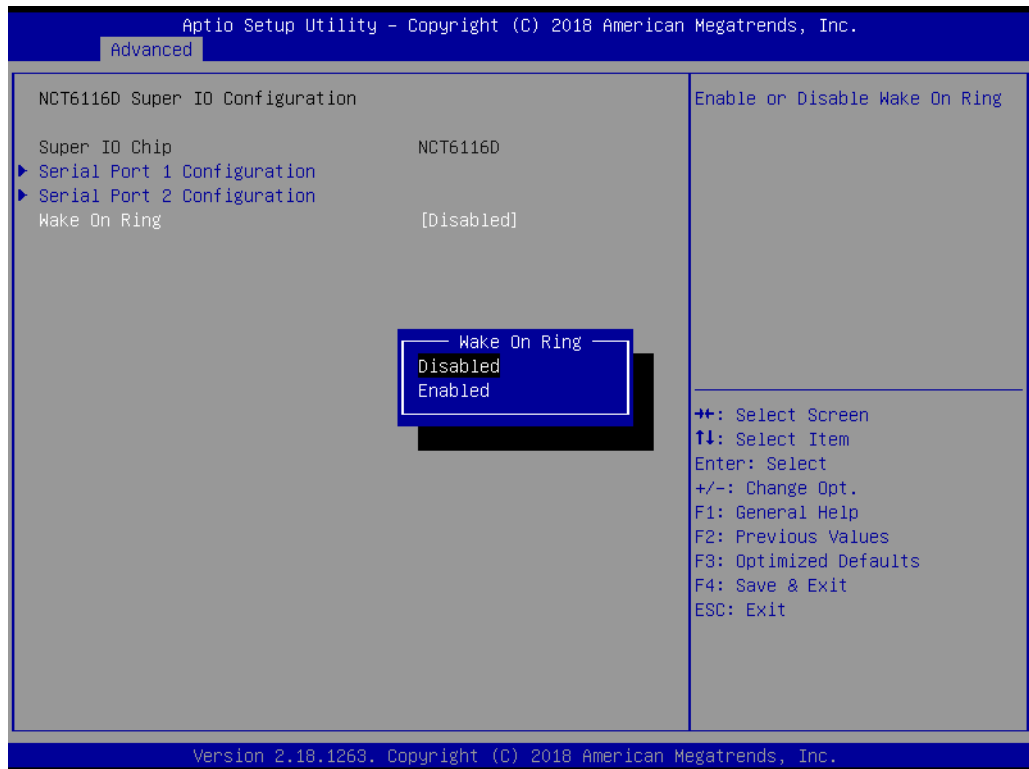


4.2.7 Wake-on-Ring

1. Select the “NCT6106D Super IO Configuration” item in the “Advanced” tab.



2. Set "Wake-on-Ring" to "enabled".



Appendix **A**

Watchdog Timer Programming

A.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

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