



**MODEL:
PPC-FxxC-Q370**

Modular Panel PC with 8th Gen. LGA1151 Intel® Core™ i7/i5/i3 and Pentium® Processor, DDR4, HDMI, USB 3.1, Dual GbE, RS-232, M.2, Four SSD Bays, PCIe 3.0, RoHS Compliant,

User Manual



Revision



Date	Version	Changes
November 2, 2018	1.00	Initial release





Safety Instructions

- en** Warning! Read the user manual before connecting the system to the power source.
- de** Vorsicht! Bitte lesen Sie die Bedienungsanleitung, bevor Sie das System an eine Stromquelle anschließen.
- fr** Attention! Avant de brancher le système à la source d'alimentation, consultez le mode d'emploi.
- it** Avvertenza! Consultare il manuale utente prima di collegare il sistema all'alimentatore.
- es** Atención! Lea atentamente este manual del usuario antes de operar la fuente de alimentación.
- zh** 警告！在將系統連接到電源之前，請仔細閱讀使用手冊。
- cn** 警告！在將系統連接到電源之前，請仔細閱讀使用手冊。
-

- en** Warning! To prevent the system from overheating, do not operate it in an area that exceeds the maximum operating temperature described in the user manual.
- de** Vorsicht! Um eine Überhitzung des Systems zu vermeiden, betreiben Sie es ausschließlich im zulässigen Betriebstemperaturbereich. Dieser ist in der Bedienungsanleitung vermerkt.
- fr** Attention! Pour éviter la surchauffe du système, ne l'utilisez pas dans une zone dont la température dépasse les limites décrits dans le mode d'emploi.
- it** Avvertenza! Per evitare che il sistema si surriscaldi, non utilizzarlo in aree che superino la temperatura massima d'esercizio descritta nel manuale utente.
- es** Atención! Para evitar el excesivo calentamiento del sistema, no opere en las condiciones de temperatura superior a lo recomendado en este manual del usuario.
- zh** 警告！為防止系統過熱，不要在使用手冊上記載的產品工作溫度範圍之外操作此系統。
- cn** 警告！為防止系統過熱，不要在使用手冊上記載的產品工作溫度範圍之外操作此系統。
-

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- en** Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.
- de** Vorsicht! Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.
- fr** Attention! La mise au rebut ou le recyclage de ce produit sont généralement soumis aux lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.
- it** Avvertenza! Lo smaltimento di questo prodotto deve essere eseguito secondo le leggi e i regolamenti locali.
- es** Atención! La disposición final de residuos de este producto se debe cumplir con las normativas y leyes del país.
- zh** 警告！本產品的廢棄處理應根據該國家的法律和規章進行。
- cn** 警告！本产品的废弃处理应根据该国家的法律和规章进行。
-

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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

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Chapter

1

Introduction

1.1 Overview



Figure 1-1: PPC-FxxC-Q370 Series Panel PC

The PPC-FxxC-Q370 panel PC is powered by 8th Generation LGA1151 Intel® Core™ i7/i5/i3 and Pentium® Processor. It can be used as an inference computing system for AI applications.

The PPC-FxxC-Q370 panel PC has a unique modular design to achieve high flexibility by assembling the FLEX series system with the LCD touchscreen module. The excellent active cooling method is utilized to effectively transfer heat from the chassis and maintain system performance.

The PPC-FxxC-Q370 includes four low-profile PCIe slots for various expansions, two of them are PCIe 3.0 x8 slots for adding GPU cards or image processing cards for high-performance Artificial Intelligence computing. Four 2.5" SATA SSD bays with RAID function are protected in a lockable cover to ensure security of data and disks. The system is also equipped with two M.2 M-key (2280) slots to support PCIe SSD and NVMe, providing a variety of storage interfaces for users to choose.

PPC-FxxC-Q370

1.2 Model Variations

The model variations of the PPC-FxxC-Q370 panel PC series are listed below.

	Size	Resolutions	Processor
PPC-F15C-Q370-P/PC/25	15"	1024x768	Intel® Pentium® Gold G5400T
PPC-F15C-Q370-i3/PC/25	15"	1024x768	Intel® Core™ i3-8100T
PPC-F15C-Q370-i5/PC/25	15"	1024x768	Intel® Core™ i5-8500T
PPC-F15C-Q370-i7/PC/25	15"	1024x768	Intel® Core™ i7-8700T
PPC-FW15C-Q370-P/PC/25	15.6"	1366x768	Intel® Pentium® Gold G5400T
PPC-FW15C-Q370-i3/PC/25	15.6"	1366x768	Intel® Core™ i3-8100T
PPC-FW15C-Q370-i5/PC/25	15.6"	1366x768	Intel® Core™ i5-8500T
PPC-FW15C-Q370-i7/PC/25	15.6"	1366x768	Intel® Core™ i7-8700T
PPC-F17C-Q370-P/PC/25	17"	1280x1024	Intel® Pentium® Gold G5400T
PPC-F17C-Q370-i3/PC/25	17"	1280x1024	Intel® Core™ i3-8100T
PPC-F17C-Q370-i5/PC/25	17"	1280x1024	Intel® Core™ i5-8500T
PPC-F17C-Q370-i7/PC/25	17"	1280x1024	Intel® Core™ i7-8700T
PPC-FW19C-Q370-P/PC/25	18.5"	1366x768	Intel® Pentium® Gold G5400T
PPC-FW19C-Q370-i3/PC/25	18.5"	1366x768	Intel® Core™ i3-8100T
PPC-FW19C-Q370-i5/PC/25	18.5"	1366x768	Intel® Core™ i5-8500T
PPC-FW19C-Q370-i7/PC/25	18.5"	1366x768	Intel® Core™ i7-8700T
PPC-FW22C-Q370-P/PC/25	21.5"	1920x1080	Intel® Pentium® Gold G5400T
PPC-FW22C-Q370-i3/PC/25	21.5"	1920x1080	Intel® Core™ i3-8100T
PPC-FW22C-Q370-i5/PC/25	21.5"	1920x1080	Intel® Core™ i5-8500T
PPC-FW22C-Q370-i7/PC/25	21.5"	1920x1080	Intel® Core™ i7-8700T
PPC-FW24C-Q370-P/PC/25	23.8"	1920x1080	Intel® Pentium® Gold G5400T
PPC-FW24C-Q370-i3/PC/25	23.8"	1920x1080	Intel® Core™ i3-8100T
PPC-FW24C-Q370-i5/PC/25	23.8"	1920x1080	Intel® Core™ i5-8500T
PPC-FW24C-Q370-i7/PC/25	23.8"	1920x1080	Intel® Core™ i7-8700T

Table 1-1: Model Variations

1.3 Features

The PPC-FxxC-Q370 has the following features

- 8th generation Intel® Core™ i7/i5/i3 and Pentium® Processor
- Modularized design for flexible utilization
- Support up to 64 GB of 2666 MHz DDR4 memory
- Four PCIe 3.0 slots for expansion
- Four hot-swappable 2.5" SATA HDD/SSD bays
- Two M.2 M-key (2280) slots support NVMe SSD
- Two GbE LAN
- Various I/O interfaces, including six USB 3.0 ports, one RS-232 port, HDMI output, audio line-out and mic-in
- RoHS compliant design

1.4 Front Panel

The front side of the PPC-FxxC-Q370 is a flat panel LCD with P-CAP touchscreen surrounded by a metal frame.

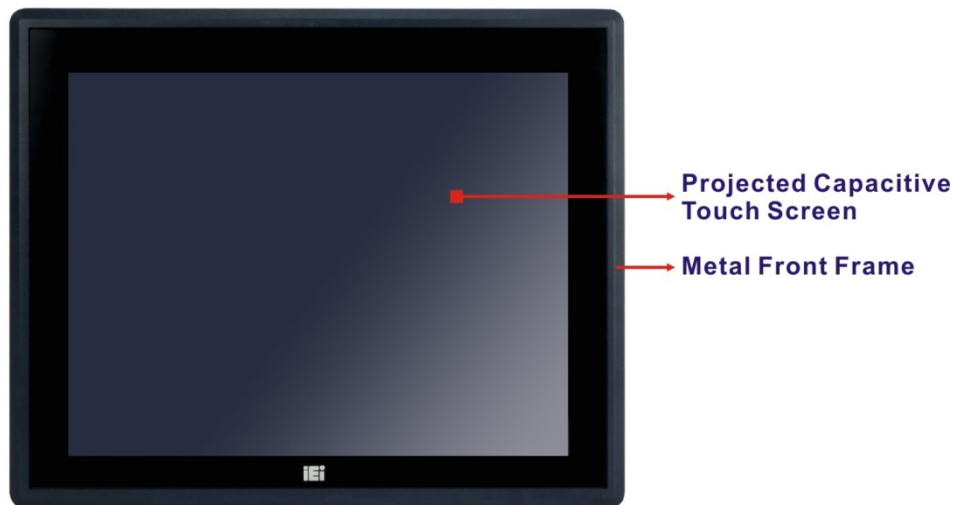


Figure 1-2: Front Panel

PPC-FxxC-Q370

1.5 Bottom Panel

An overview of the bottom panel is shown in **Figure 1-3**.

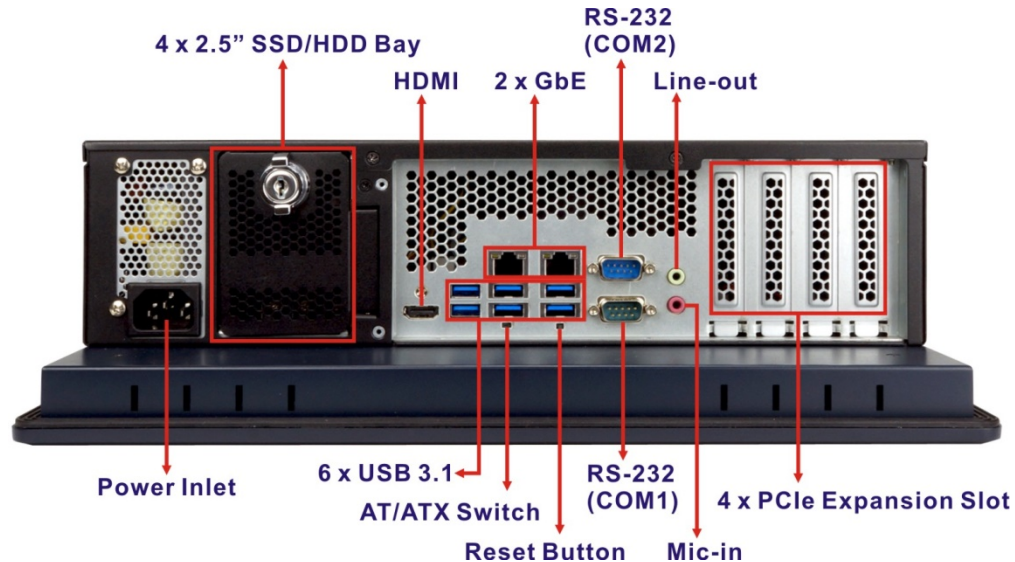


Figure 1-3: Bottom Panel

1.6 Top Panel

The top panel of the PPC-FxxC-Q370 has the following button and indicator:

- 1 x Power button with power LED indicator (power on: solid blue)
- 1 x HDD LED indicator (HDD activity: blinking red)



Figure 1-4: Top Panel



1.7 Technical Specifications

1.7.1 15" ~ 17" Specifications

	PPC-F15C-Q370	PPC-FW15C-Q370	PPC-F17C-Q370
LCD Size	15"	15.6"	17"
Max. Resolution	1024 x 768	1366 x 768	1280 x 1024
Brightness (cd / m ²)	450	400	350
Contrast Ratio	800:1	500:1	1000:1
LCD Color	16.2M	16.2M	16.7M
Pixel Pitch (mm)	0.29 x 0.29	0.252 x 0.252	0.26 x 0.26
Viewing Angle (H/V)	160°/150°	170°/160°	170°/160°
Backlight MTBF	70,000 hrs	50,000 hrs	50,000 hrs
Touchscreen Type	Projected capacitive type with 10-point multi-touch		
Touch Controller	EETI EXC3000		
Anti-glare Coating	Yes		No
CPU	8th Generation LGA1151 Intel® Core™ i7/i5/i3 and Pentium® CPU		
Chipset	Intel® Q370		
BIOS	AMI UEFI BIOS		
Memory	Two 288-pin 2666/2400 MHz dual-channel unbuffered DDR4 SDRAM DIMM slots (system max. 64 GB)		
Graphics Engine	Intel® HD Graphics Gen 9 Engines with low power 16 execution units, supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0		
Ethernet	Two Intel® I211AT Ethernet controllers (LAN1, LAN2)		
Super I/O	Fintek F81866		
Storage	4 x Hot-swappable SATA 6G/s HDD/SSD bay (support RAID 0/1/5/10) 2 x M.2 M-key (2280, PCIe 3.0 x4), support NVMe SSD		
Expansions	2 x PCIe 3.0 x16 (x8 mode) 2 x PCIe 3.0 x4 (Max. card size: 68 mm x 167 mm)		
COM	2 x RS-232 (DB-9, COM1 & COM2)		
USB	6 x USB 3.1 Gen 1 Type-A (external)		



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Audio	Realtek ALC662 HD codec 1 x Line out 1 x Mic in		
Display Output	1 x HDMI		
Buttons and Indicators	1 x HDD LED 1 x Power button with LED indicator 1 x Reset button 1 x AT/ATX mode switch		
Power supply	AC input ATX power supply 1. 250 W power supply - Input: 115VAC~230VAC, 50/60Hz - Output (max.): 3.3V@12A, 5V@14A, 12V@25A, -12V@0.3A, +5Vsb@3A 2. 350 W power supply (Build to Order) - Input: 115VAC~264VAC, 50/60Hz - Output (max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A, +5Vsb@3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%		
Dimensions (WxHxD)	378.5 x 303 x 118 (mm)	400 x 253 x 121 (mm)	409 x 342 x 119 (mm)
Cutout Dimensions	361.1 x 285.6 (mm)	379.1 x 232.3 (mm)	391 x 324 (mm)
Chassis Construction	Metal housing		
Color	Front frame: Cyan-blue (PSM 296C); Others: Black C		
Mounting	Panel/Rack mount		
Watchdog Timer	Software programmable support 1~255 sec. system reset		
Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
Shock	10G acceleration part to part (11ms)		
IP	IP 66 compliant front panel		
Operating Temp.	-20°C ~ 50°C (with SSD and TDP 65W processor) -20°C ~ 40°C (with HDD or add-on cards without fan)		
Storage Temp.	-30°C ~ 60°C		
Humidity	5% ~ 95% (non-condensing)		

Table 1-2: Technical Specifications (15" ~ 17")

**1.7.1 18.5" ~ 23.8" Specifications**

	PPC-FW19C-Q370	PPC-FW22C-Q370	PPC-FW24C-Q370
LCD Size	18.5"	21.5"	23.8"
Max. Resolution	1366 x 768	1920 x 1080	1920 x 1080
Brightness (cd / m ²)	400	250	250
Contrast Ratio	1000:1	1000:1	3000:1
LCD Color	16.7M	16.7M	16.7M
Pixel Pitch (mm)	0.3 x 0.3	0.25 x 0.25	0.274 x 0.274
Viewing Angle (H/V)	170°/160°	170°/160°	178°/178°
Backlight MTBF	50,000 hrs	30,000 hrs	30,000 hrs
Touchscreen Type	Projected capacitive type with 10-point multi-touch		
Touch Controller	EETI EXC3000		
Anti-glare Coating	No	Yes	
CPU	8th Generation LGA1151 Intel® Core™ i7/i5/i3 and Pentium® CPU		
Chipset	Intel® Q370		
BIOS	AMI UEFI BIOS		
Memory	Two 288-pin 2666/2400 MHz dual-channel unbuffered DDR4 SDRAM DIMM slots (system max. 64 GB)		
Graphics Engine	Intel® HD Graphics Gen 9 Engines with low power 16 execution units, supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0		
Ethernet	Two Intel® I211AT Ethernet controllers (LAN1, LAN2)		
Super I/O	Fintek F81866		
Storage	4 x Hot-swappable SATA 6G/s HDD/SSD bay (support RAID 0/1/5/10) 2 x M.2 M-key (2280, PCIe 3.0 x4), support NVMe SSD		
Expansions	2 x PCIe 3.0 x16 (x8 mode) 2 x PCIe 3.0 x4 (Max. card size: 68 mm x 167 mm)		
COM	2 x RS-232 (DB-9, COM1 & COM2)		
USB	6 x USB 3.1 Gen 1 Type-A (external)		
Audio	Realtek ALC662 HD codec		



PPC-FxxC-Q370

	1 x Line out 1 x Mic in		
Display Output	1 x HDMI		
Buttons and Indicators	1 x HDD LED 1 x Power button with LED indicator 1 x Reset button 1 x AT/ATX mode switch		
Power supply	AC input ATX power supply 1. 250 W power supply - Input: 115VAC~230VAC, 50/60Hz - Output (max.): 3.3V@12A, 5V@14A, 12V@25A, -12V@0.3A, +5Vsb@3A 2. 350 W power supply (Build to Order) - Input: 115VAC~264VAC, 50/60Hz - Output (max.): 3.3V@14A, 5V@16A, 12V@29A, -12V@0.3A, +5Vsb@3A -Efficiency: Full load (100%) 87%, Typical load (50%) 90%, Light load (20%) 87%		
Dimensions (WxHxD)	470 x 290 x 121 (mm)	551 x 359 x 118 (mm)	600 x 382 x 119 (mm)
Cutout Dimensions	447.8 x 267.2 (mm)	533 x 341 (mm)	577.6 x 359.6 (mm)
Chassis Construction	Metal housing		
Color	Front frame: Cyan-blue (PSM 296C); Others: Black C		
Mounting	Panel/Rack mount		
Watchdog Timer	Software programmable support 1~255 sec. system reset		
Vibration	5~17Hz, 0.1 double amplitude displacement 17~640Hz 1.5G acceleration peak to peak		
Shock	10G acceleration part to part (11ms)		
IP	IP 66 compliant front panel		
Operating Temp.	-20°C ~ 50°C (with SSD and TDP 65W processor) -20°C ~ 40°C (with HDD or add-on cards without fan)		
Storage Temp.	-30°C ~ 60°C		
Humidity	5% ~ 95% (non-condensing)		

Table 1-3: Technical Specifications (18.5" ~ 23.8")



1.8 Dimensions

1.8.1 PPC-F15C-Q370 Dimensions

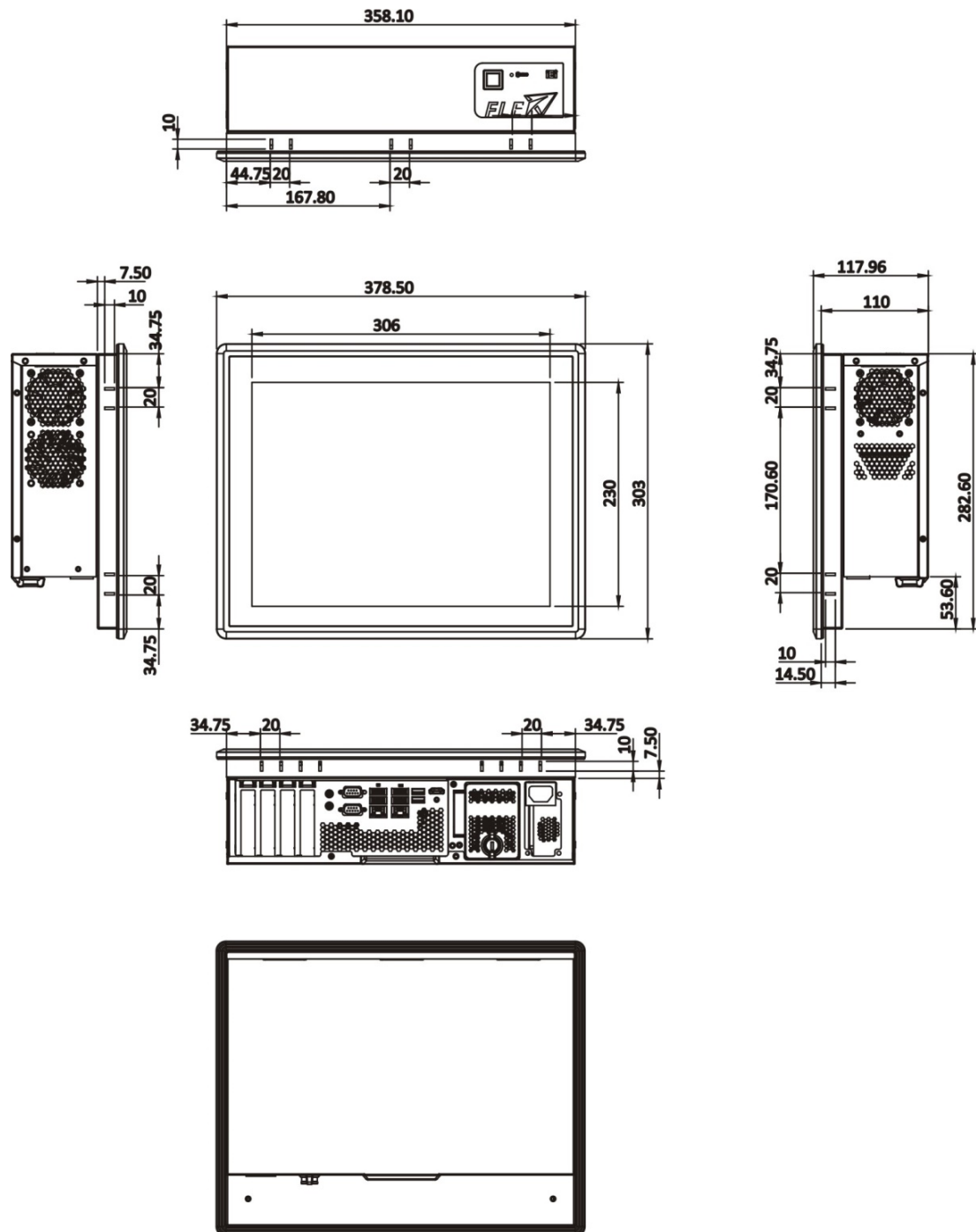


Figure 1-5: PPC-F15C-Q370 Dimensions (Unit: mm)

PPC-FxxC-Q370

1.8.1 PPC-FW15C-Q370 Dimensions

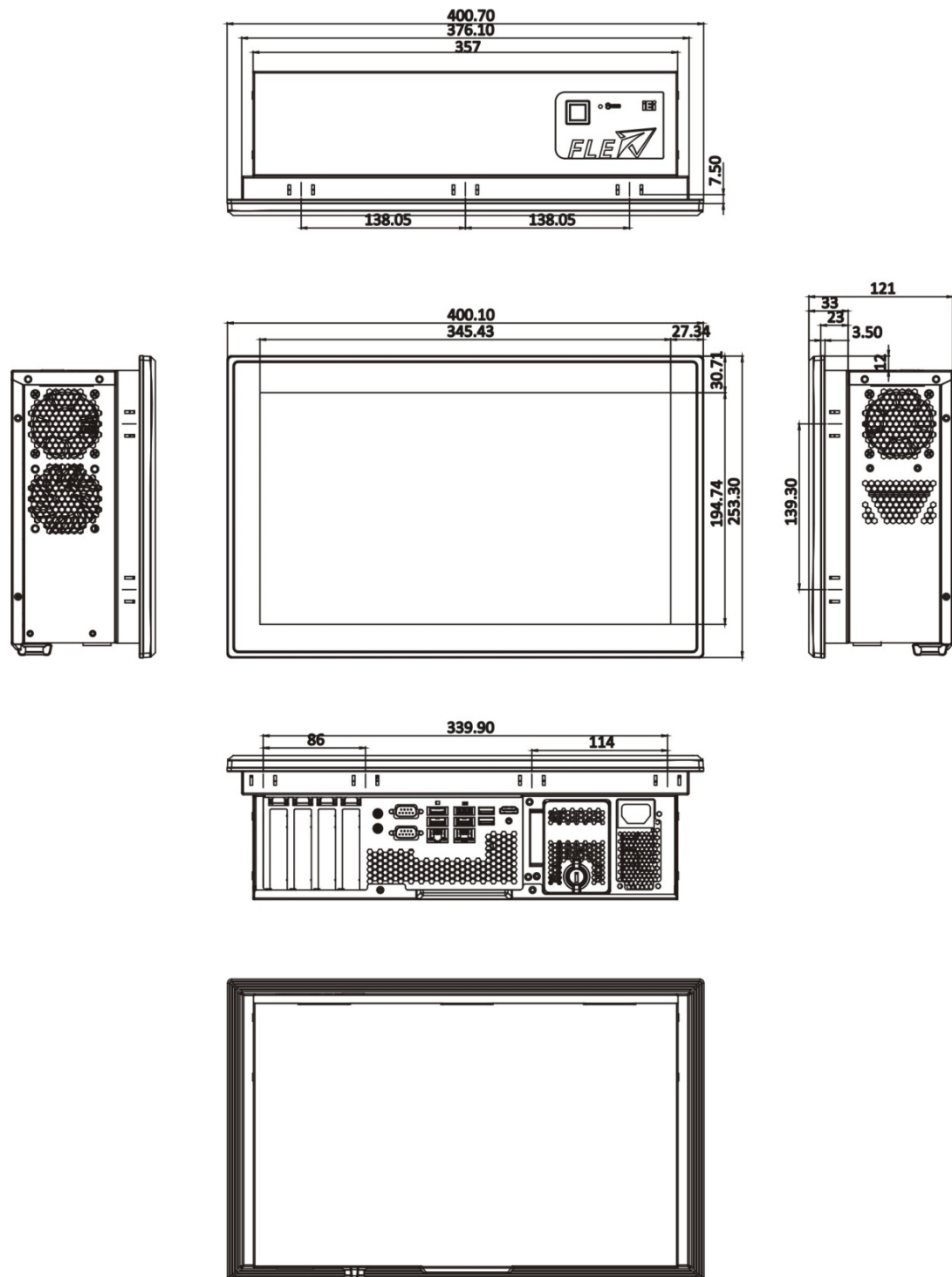


Figure 1-6: PPC-FW15C-Q370 Dimensions (Unit: mm)

1.8.1 PPC-F17C-Q370 Dimensions

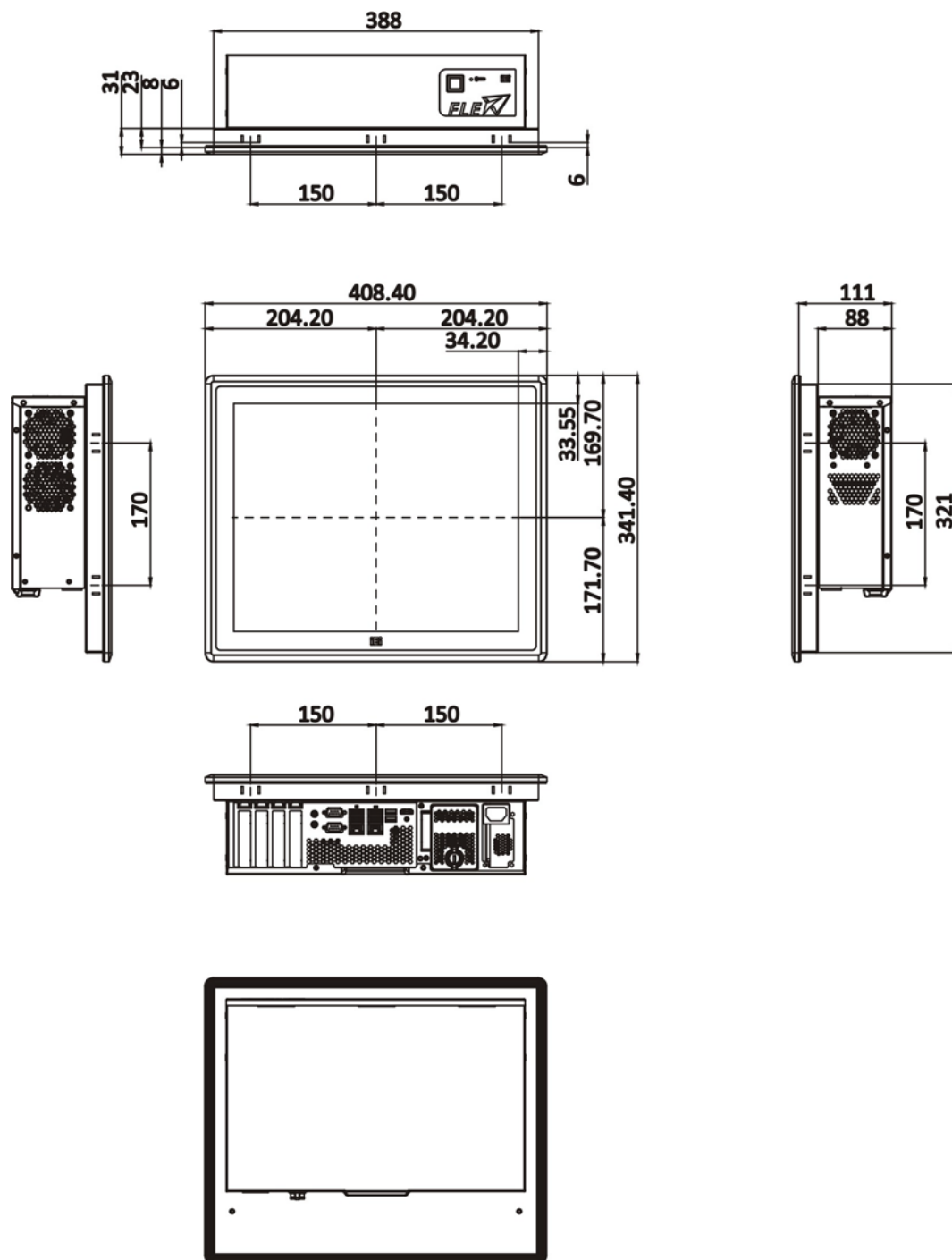


Figure 1-7: PPC-F17C-Q370 Dimensions (Unit: mm)

PPC-FxxC-Q370

1.8.1 PPC-FW19C-Q370 Dimensions

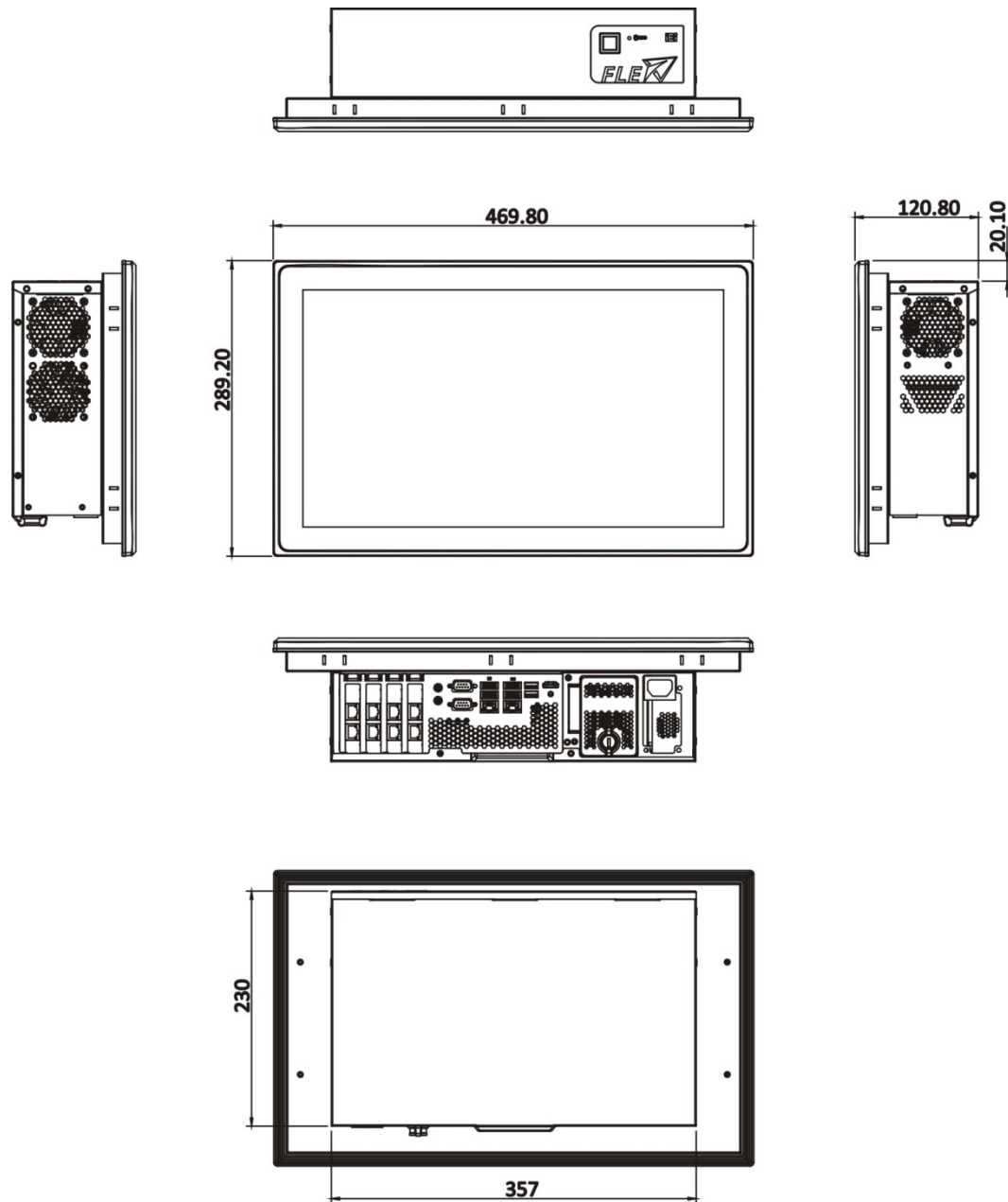


Figure 1-8: PPC-FW19C-Q370 Dimensions (Unit: mm)

1.8.1 PPC-FW22C-Q370 Dimensions

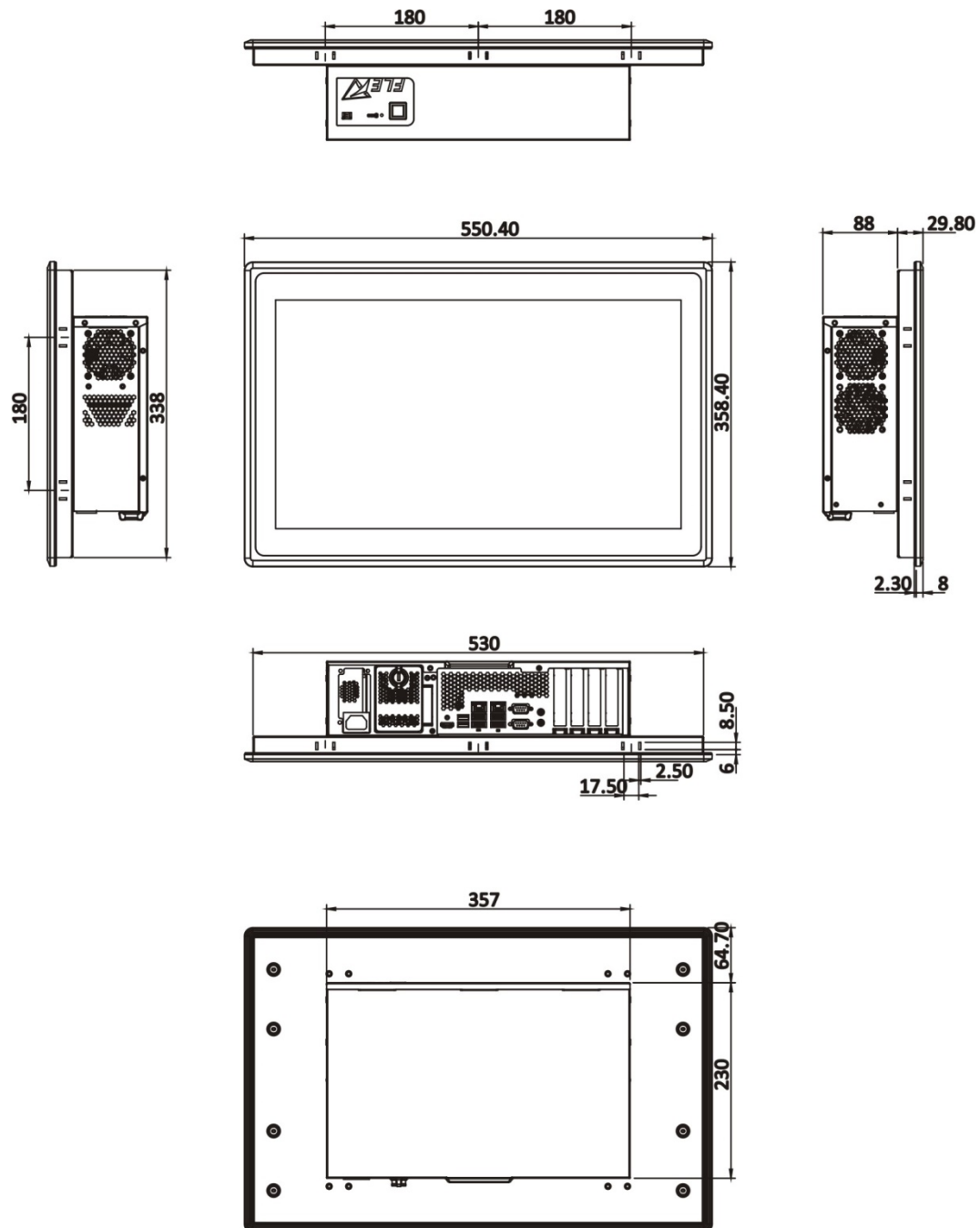


Figure 1-9: PPC-FW22C-Q370 Dimensions (Unit: mm)

PPC-FxxC-Q370

1.8.1 PPC-FW24C-Q370 Dimensions

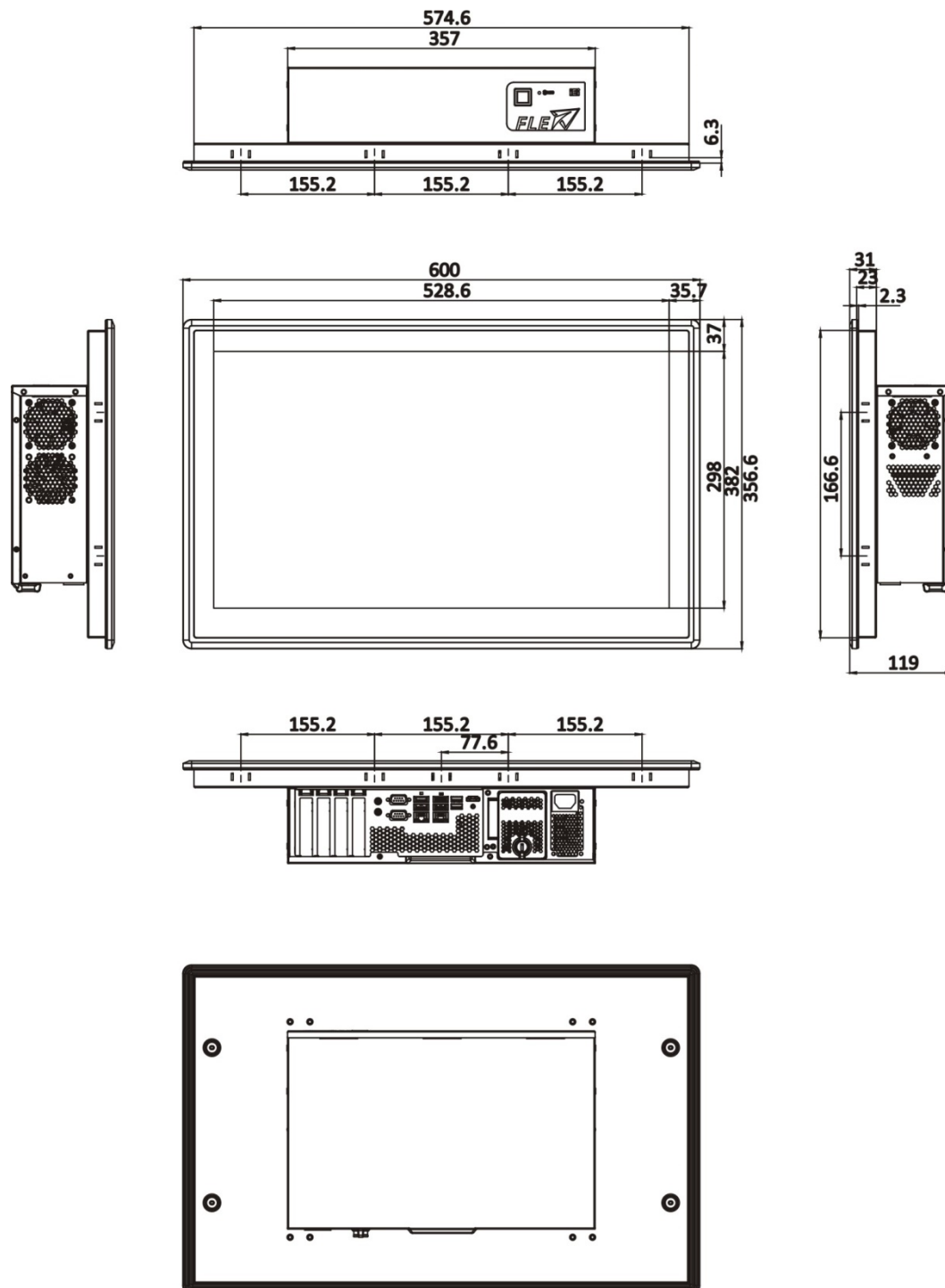


Figure 1-10: PPC-FW24C-Q370 Dimensions (Unit: mm)

Chapter

2

Unpacking

PPC-FxxC-Q370

2.1 Unpacking

To unpack the panel PC, follow the steps below:

- Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.
- Step 2:** Open the external (second) box.
- Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
- Step 4:** Lift the system out of the boxes.
- Step 5:** Remove both polystyrene ends, one from each side.
- Step 6:** Make sure all the components listed in the packing list are present.

2.2 Packing List



NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the PPC-FxxC-Q370 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The PPC-FxxC-Q370 panel PC is shipped with the following components:

Quantity	Item	Image
1	PPC-FxxC-Q370 panel PC	



1	Power cord	
2	Keys for locking HDD cover	
16	Screws (M3*4) for HDD installation	

Table 2-1: Package List

2.3 Optional Items

The following items are optional accessories for the PPC-FxxC-Q370:

Panel mount kit	PPC-F15C	PPC-FW15C	PPC-F17C
	FPK-12-R10	FPK-14-R10	FPK-13-R10
	PPC-FW19C	PPC-FW22C	PPC-FW24C
	FPK-13-R10	FPK-13-R10	FPK-14-R10
Rack mount kit	PPC-F15C	PPC-FW15C	PPC-F17C
	FRK15C-R10	FRKW15C-R10	FRK17C-R10
	PPC-FW19C	PPC-FW22C	PPC-FW24C
	FRKW19C-R10	N/A	N/A

Table 2-2: Optional Items



Chapter

3

Installation

3.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the maintenance of the PPC-FxxC-Q370 may result in permanent damage to the PPC-FxxC-Q370 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WAFER series motherboard and the power module. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the PPC-FxxC-Q370 is opened and any electrical component handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the PPC-FxxC-Q370, place it on an anti-static pad. This reduces the possibility of ESD damaging the PPC-FxxC-Q370.

3.2 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the PPC-FxxC-Q370, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the PPC-FxxC-Q370 must be disconnected during the installation process. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.
- **Qualified Personnel:** The PPC-FxxC-Q370 must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs

PPC-FxxC-Q370

may only be carried out by qualified personnel who are familiar with the associated dangers.

- **Air Circulation:** Make sure there is sufficient air circulation when installing the PPC-FxxC-Q370. The PPC-FxxC-Q370's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the PPC-FxxC-Q370. Leave at least 5 cm of clearance around the PPC-FxxC-Q370 to prevent overheating.
- **Grounding:** The PPC-FxxC-Q370 should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the PPC-FxxC-Q370.

3.3 Installation Procedure

To properly install the PPC-FxxC-Q370, the following steps must be followed. Detailed descriptions of these instructions are listed in the sections that follow.

Step 1: Unpacking the PPC-FxxC-Q370 panel PC

Step 2: Install DIMM memory module

Step 3: Install SATA SSD

Step 4: Install M.2 SSD (optional)

Step 5: Install expansion cards (optional)

Step 6: Mount the PPC-FxxC-Q370

Step 7: Connect the peripheral devices

Step 8: Power the system up

3.4 Solid-State Drive Installation

Four 2.5" SATA drives can be installed in the PPC-FxxC-Q370. The SATA drives are installed into the removable hard drive trays protected by a lockable cover on the bottom panel. To install the SSD into the system, please follow the steps below.

Step 1: Unlock the HDD cover on the bottom panel with the key came with the system.



Figure 3-1: Unlock HDD Cover

Step 2: Open the HDD cover, and you will see four drive trays (**Figure 3-2**). Pull out one of the drive trays.



Figure 3-2: Drive Tray Removal

PPC-FxxC-Q370

Step 3: Place an SSD onto the drive tray and secure the SSD with the bracket by inserting four retention screws (M3*4) into the bottom of the SSD (**Figure 3-3**).

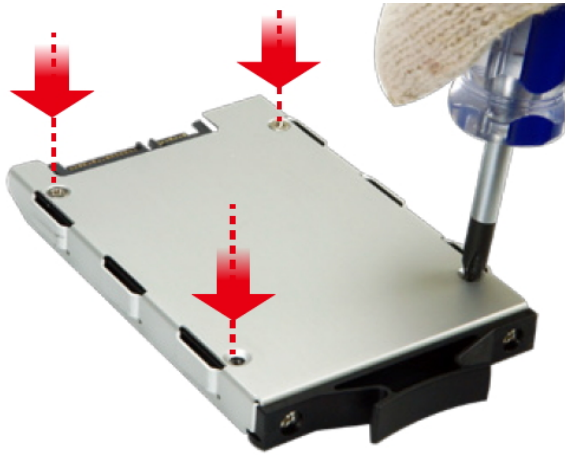


Figure 3-3: SSD Retention Screws

Step 4: Carefully insert the SSD into the slot. Make sure the SATA connector on the SSD is securely connected to the SATA connector inside the chassis.



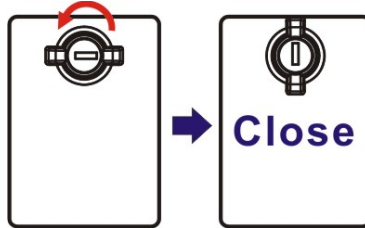
Figure 3-4: SSD Installation

Step 5: Repeat **Step 2 ~ Step 4** described above to install another SSD.

Step 6: Close the HDD cover and lock it with the key.

**NOTE:**

To temporarily close the HDD cover, turn the lock knob 90° counterclockwise by hand to secure the cover.



3.5 Removing the Rear Cover

**WARNING:**

Before any internal installation procedures are carried out on the system, make sure the system is turned off and cooled down for 5 minutes. Failing to turn off the system before opening it can cause permanent damage to the system and serious or fatal injury to the user.

To access the PPC-FxxC-Q370 internally the rear cover must be removed. To remove the rear cover, please follow the steps below.

Step 1: Remove the six retention screws, two on the bottom and two on each side.

PPC-FxxC-Q370



Figure 3-5: Rear Cover Retention Screw Removal

Step 2: Slide the rear cover towards the I/O panel until it is disengaged from the locking mechanism. Then, lift the rear cover off the chassis. See **Figure 3-6**.



Figure 3-6: Remove the Rear Cover

3.6 DIMM Installation

To install a DIMM, please follow the steps below and refer to **Figure 3-7**.

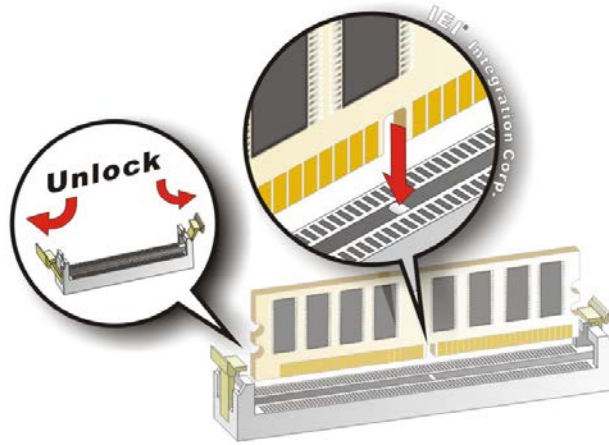


Figure 3-7: DIMM Installation

Step 1: Remove the rear cover. See **Section 3.5** above.

Step 2: Locate the DIMM slots as shown in **Figure 3-8**.

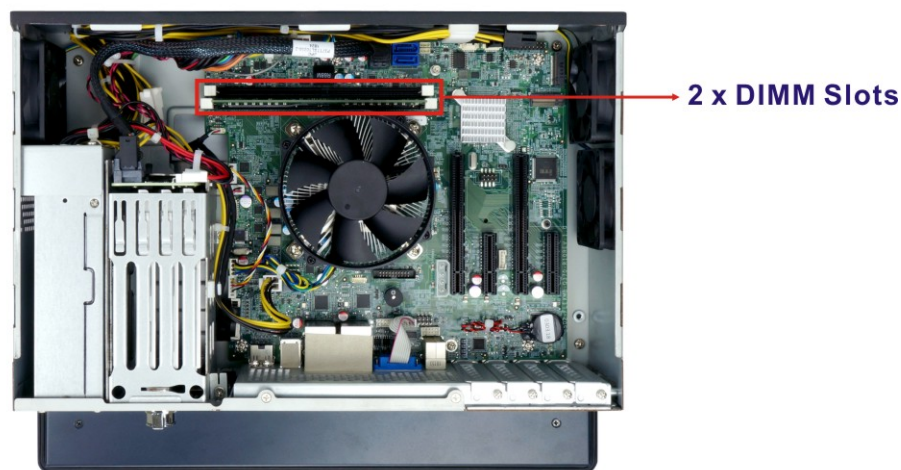


Figure 3-8: DIMM Slot Locations

Step 3: Open the two handles outwards as far as they can. See **Figure 3-7**.

Step 4: Align the DIMM so the notch on the memory lines up with the notch on the memory socket. See **Figure 3-7**.

PPC-FxxC-Q370

Step 5: Once aligned, press down until the DIMM is properly seated. Clip the two handles into place. See **Figure 3-7**.

Step 6: To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.



CAUTION:

For dual channel configuration, install two identical memory modules that feature the same capacity, timings, voltage, number of ranks and the same brand.

3.7 M.2 SSD Installation (Optional)

The two M.2 M-key slots allow installation of M.2 2280 cards. To install an M.2 card, please follow the steps below.

Step 1: Remove the rear cover. See **Section 3.5** above.

Step 2: Locate the M.2 slot as shown in **Figure 3-9**.

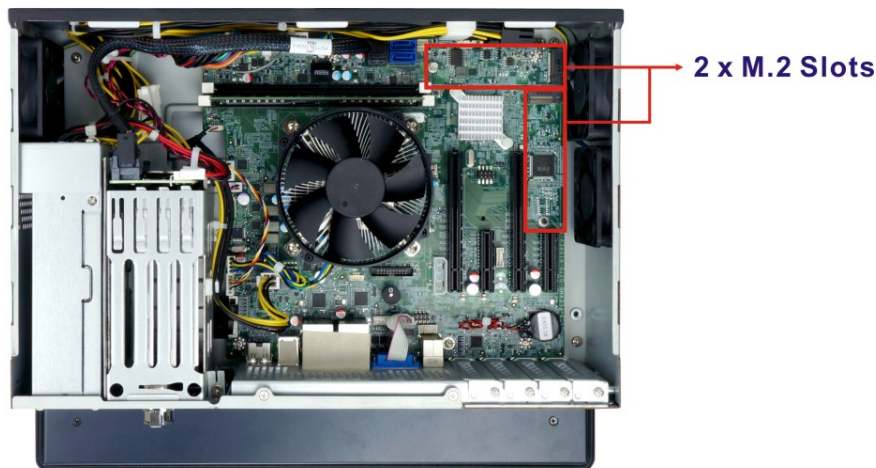


Figure 3-9: M.2 Slot Locations

Step 3: Remove the on-board retention screw as shown in **Figure 3-10**.

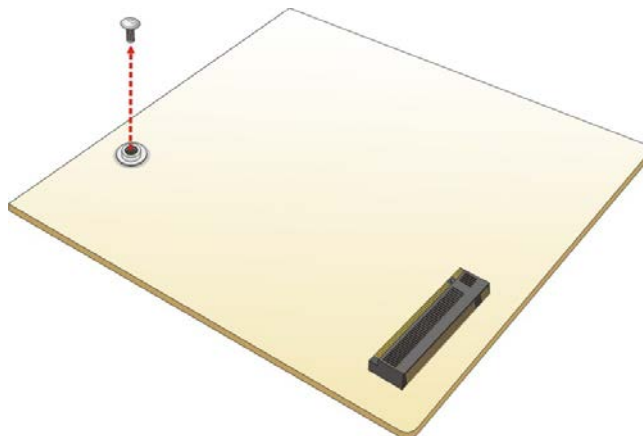


Figure 3-10: Removing the M.2 Module Retention Screw

Step 4: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20° (**Figure 3-11**).

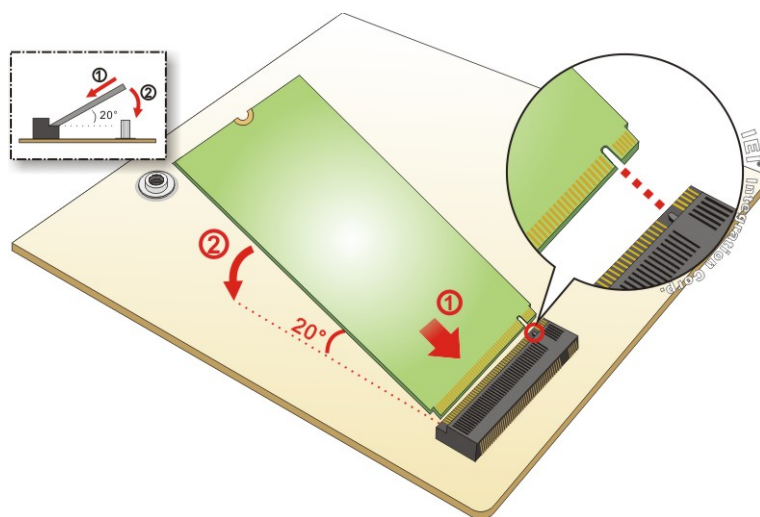


Figure 3-11: Inserting the M.2 Module into the Slot at an Angle

Step 5: Push the M.2 module down and secure it with the previously removed retention screw (**Figure 3-12**).

PPC-FxxC-Q370

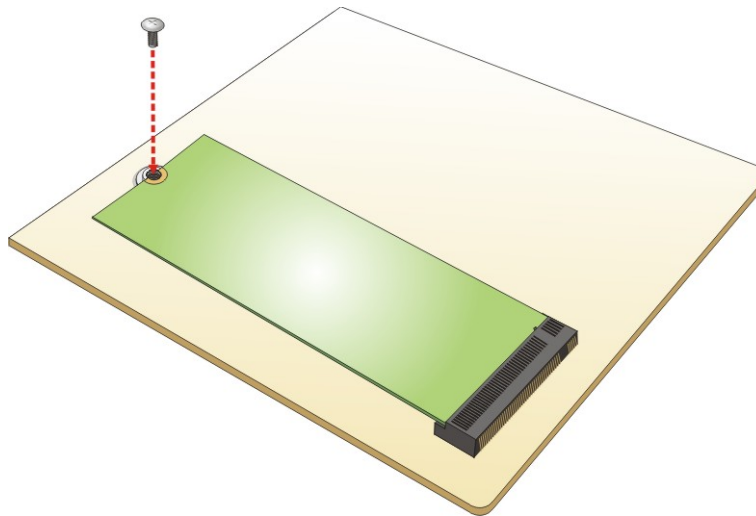


Figure 3-12: Securing the M.2 Module

Step 6: Re-install the rear cover and secure it with the six retention screws previously removed.

3.8 Expansion Card Installation (Optional)

The PPC-FxxC-Q370 supports multiple PCIe slots which are compatible with standard low-profile add-on cards, including two PCIe 3.0 x16 (x8 mode) and two PCIe 3.0 x4 slots. To install an expansion card, follow the steps below.

Step 1: Remove the rear cover. See **Section 3.5** above.

Step 2: Locate an empty PCIe slot.

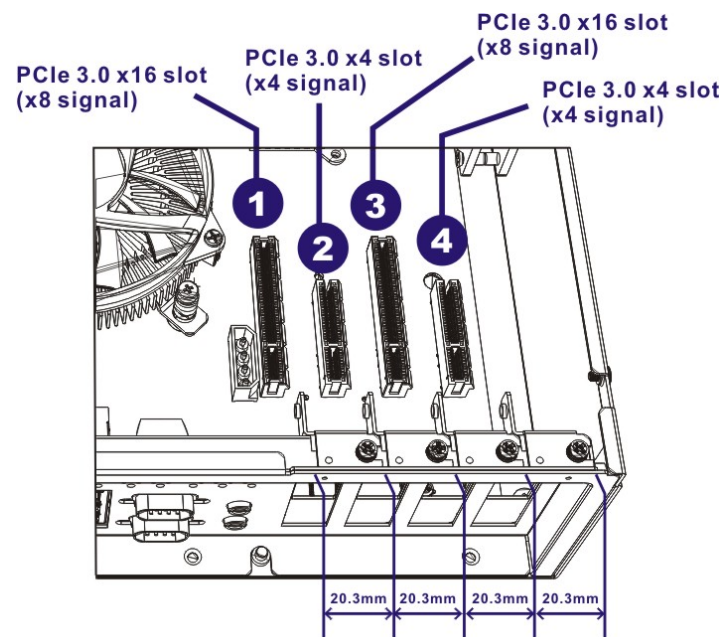


Figure 3-13: PCIe Slot Locations

Step 3: Remove the blank bracket panel on the bottom of the PPC-FxxC-Q370 that aligns with the empty PCIe slot. Save this bracket screw.

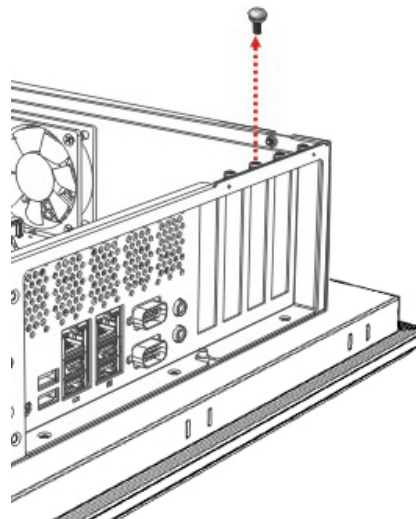


Figure 3-14: Blank Bracket Screw Removal

PPC-FxxC-Q370

Step 4: Align the expansion card to a PCIe slot. Press down gently, but firmly, to seat the expansion card correctly in the slot.

Step 5: Install the bracket screw to secure the expansion card to the system chassis.

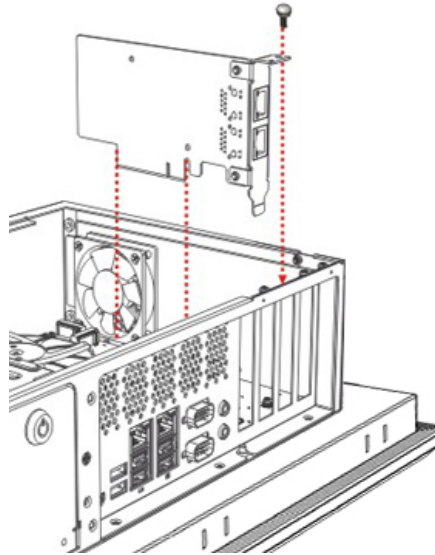


Figure 3-15: Install and Secure Expansion Card

Step 6: Re-install the rear cover and secure it with the six retention screws previously removed.

3.9 Mounting the System

The following sections describe the mounting methods supported by the PPC-FxxC-Q370.

3.9.1 Panel Mounting

To mount the PPC-FxxC-Q370 panel PC into a panel, please follow the steps below.

Step 1: Select the position on the panel to mount the PPC-FxxC-Q370.

Step 2: Cut out a section of the panel that corresponds to the rear panel dimensions of the PPC-FxxC-Q370. The recommended cutout sizes are shown below.

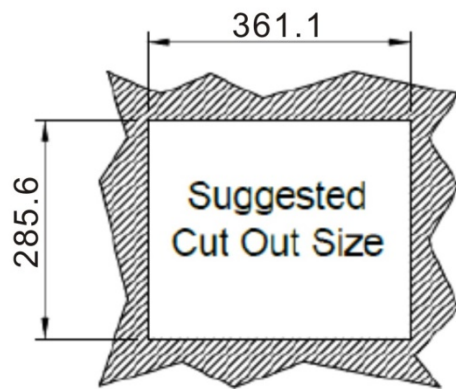


Figure 3-16: PPC-F15C-Q370 Panel Cutout Dimensions

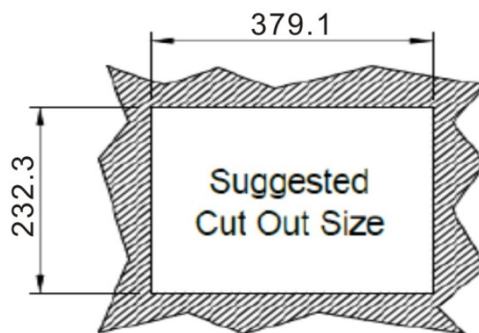


Figure 3-17: PPC-FW15C-Q370 Panel Cutout Dimensions

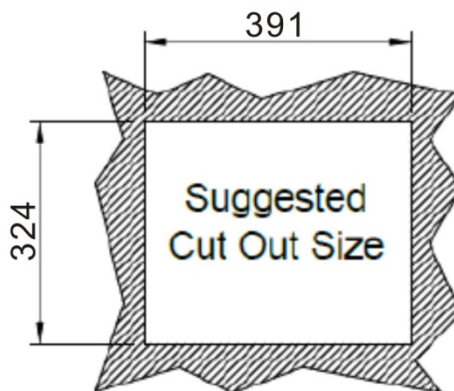


Figure 3-18: PPC-F17C-Q370 Panel Cutout Dimensions

PPC-FxxC-Q370

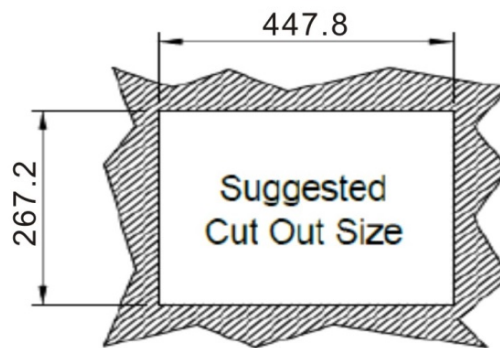


Figure 3-19: PPC-FW19C-Q370 Panel Cutout Dimensions

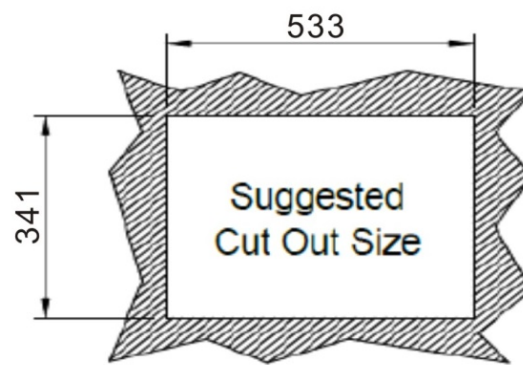


Figure 3-20: PPC-FW22C-Q370 Panel Cutout Dimensions

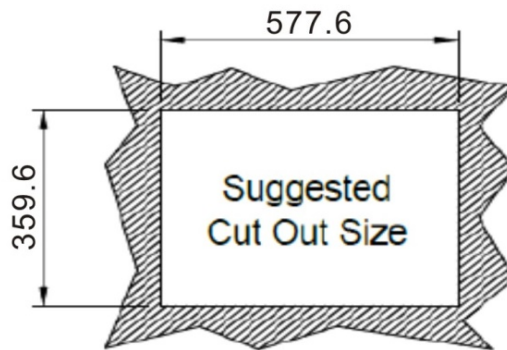


Figure 3-21: PPC-FW24C-Q370 Panel Cutout Dimensions

Step 3: Slide the PPC-FxxC-Q370 through the hole until the aluminum frame is flush against the panel.

Step 4: Insert the mounting clamps into the mounting brackets and pre-formed holes along the edges of the front panel, behind the frame (**Figure 3-22**). The required number of mounting clamps may vary by models.

Step 5: Tighten the screws that pass through the mounting clamps until the plastic caps at the front of all the screws are firmly secured to the panel (**Figure 3-22**).

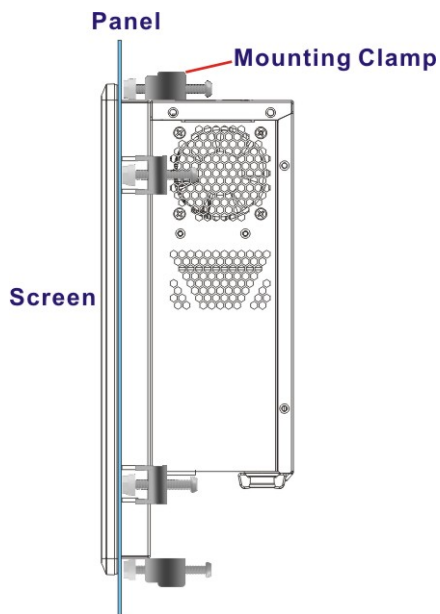


Figure 3-22: Tighten the Mounting Clamp Screws

3.9.2 Rack and Cabinet Installation

The PPC-FxxC-Q370 panel PC can be installed into a cabinet or rack. The installation procedures are similar to the panel mounting installation. To do this, please follow the steps described in the following sections.



NOTE:

When purchasing the cabinet/rack installation bracket, make sure it is compatible with both the PPC-FxxC-Q370 panel PC and the rack/cabinet into which the PPC-FxxC-Q370 is installed.

PPC-FxxC-Q370

- Step 1:** Slide the rear of the PPC-FxxC-Q370 panel PC through the rack/cabinet bracket until the aluminum frame is flush against the front of the bracket (**Figure 3-23**).

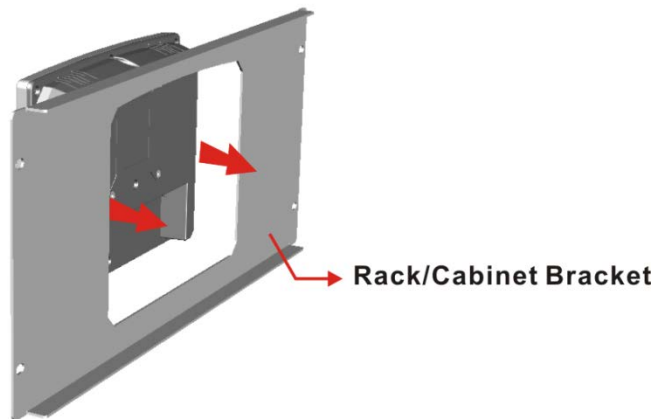


Figure 3-23: The Rack/Cabinet Bracket

- Step 2:** Insert the mounting clamps into the mounting brackets and pre-formed holes along the edges of the front panel, behind the frame (**Figure 3-24**). The required number of mounting clamps may vary by models.
- Step 3:** Tighten the screws that pass through the mounting clamps until the plastic caps at the front of all the screws are firmly secured to the bracket (**Figure 3-24**).

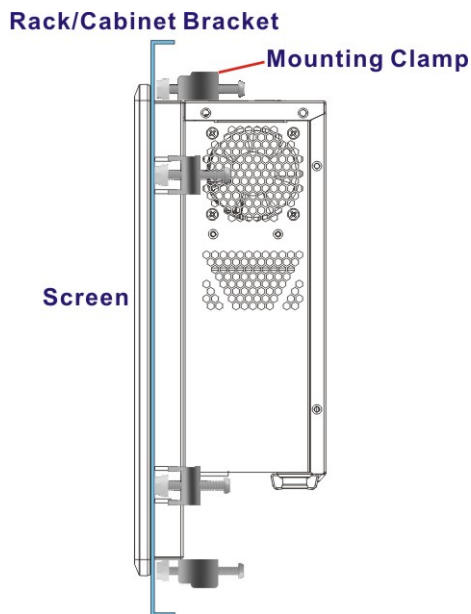


Figure 3-24: Secure the Rack/Cabinet Bracket

Step 4: Slide the PPC-FxxC-Q370 with the attached rack/cabinet bracket into a rack or cabinet (**Figure 3-25**).

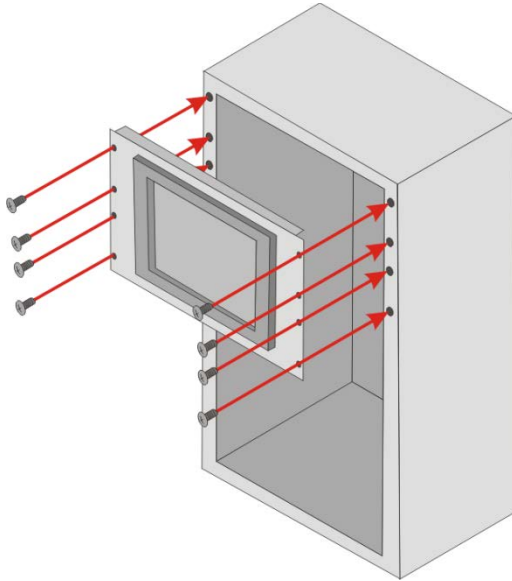


Figure 3-25: Install into a Rack/Cabinet

Step 5: Once the panel PC with the attached rack/cabinet bracket has been properly inserted into the rack or cabinet, secure the front of the rack/cabinet bracket to the front of the rack or cabinet (**Figure 3-25**).

PPC-FxxC-Q370**3.10 COM Port Connection**

The PPC-FxxC-Q370 has two DB-9 connectors for RS-232 serial port connection. The pinouts for the RS-232 connectors (COM1 and COM2) are listed in the figure and table below.

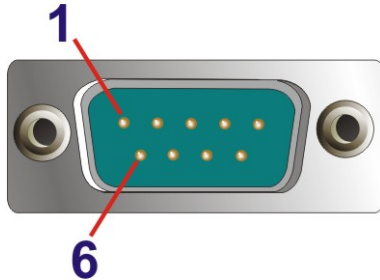


Figure 3-26: RS-232 Connector (COM1, COM2)

PIN NO.	DESCRIPTION
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Table 3-1: RS-232 Connector Pinouts

3.11 Power-On Procedure

3.11.1 Installation Checklist



WARNING:

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

To power on the panel PC please make sure of the following:

- Memory modules are installed
- The rear cover is installed
- All peripheral devices are connected
- The system is securely mounted

3.11.2 Power-on Procedure

To power-on the PPC-FxxC-Q370 please follow the steps below:

Step 1: Connect the power source to the power inlet on the bottom panel.

Step 2: Short-press the power button on the top panel to power up the system. The power LED lights on in blue (**Figure 3-27**).



Figure 3-27: Power Button

PPC-FxxC-Q370

3.12 Software Installation

All the drivers for the PPC-FxxC-Q370 are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type PPC-FxxC-Q370 and press Enter to find all the relevant software, utilities, and documentation.

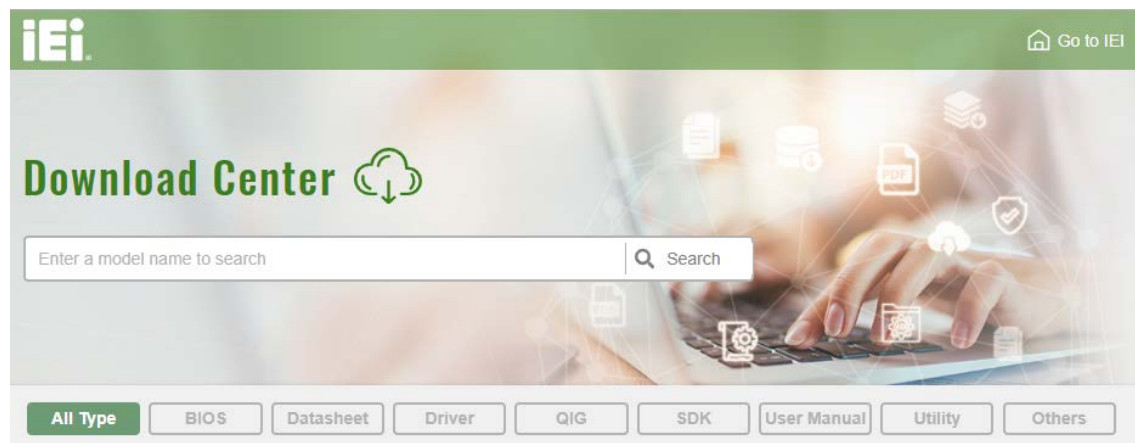
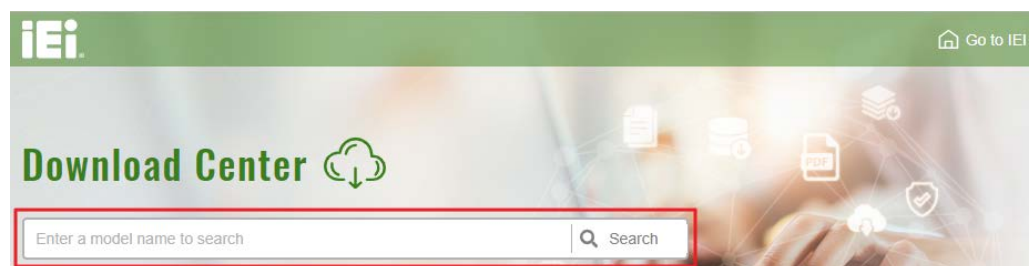


Figure 3-28: IEI Resource Download Center

3.12.1 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

Step 1: Go to <https://download.ieiworld.com>. Type PPC-FxxC-Q370 and press Enter.



Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.

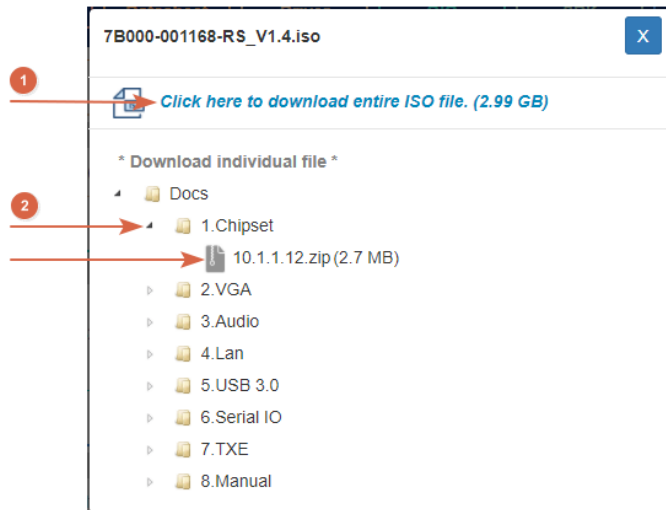
WAFER-BT-i1 Product Info ▶

Embedded Computer ▶ Single Board Computer ▶ Embedded Board

3.5" SBC with Intel® 22nm Atom™/Celeron® on-board SoC

File Name	Published	Version	File Checksum
7B000-001033-RS V2.3.iso (2.23 GB)	2017/10/03	2.30	3B2DB1F792779A93A8F50DDBC3943E30

Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or click the small arrow to find an individual driver and click the file name to download (❷).

**NOTE:**

To install software from the downloaded ISO image file in Windows 8, 8.1 or 10, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

3.13 RAID Configuration

The **PPC-FxxC-Q370** can provide data protection for serial ATA (SATA) disks via the Intel® Rapid Storage Technology. To access the Intel® Rapid Storage Technology, please follow the steps below.



WARNING!

Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.



CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

Step 1: Connect SATA drives to the system. Connect two or more SATA drives to the system. Make sure the drives have the same capacity, are the same type and have the same speed.



NOTE:

Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration. If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

Step 2: Enable SATA drives in BIOS. Start the computer and access the BIOS setup program. Go to **Chipset → PCH-IO Configuration → SATA Configuration → SATA Mode Selection**. Enable RAID support for all SATA devices.

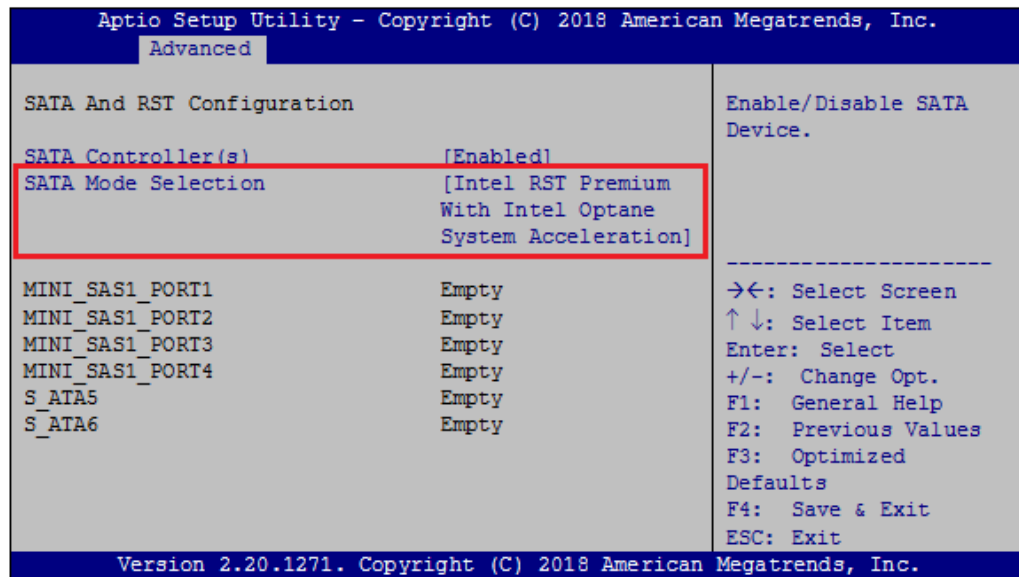


Figure 3-29: RAID Configuration–BIOS Setting

- Step 3: Save and Exit BIOS.** After the SATA support option is enabled, save and exit the BIOS.
- Step 4: Reboot the system.** Reboot the system after saving and exiting the BIOS.
- Step 5: Press Ctrl+I. during the system boot process,** press Ctrl+I when prompted to enter the RAID configuration software.

```
Intel(R) Rapid Storage Technology - Option ROM - 15.2.0.2740
Copyright (C) Intel Corporation. All rights reserved.

RAID Volumes:
None defined.

Physical Devices:
ID Device Model      Serial #              Size Type/Status(Vol ID)
1  256GB SATA Flash  076616F100208548     23.4GB Non-RAID Disk
2  256GB SATA Flash  077302EF00503528     23.4GB Non-RAID Disk
Press <CTRL+I> to enter Configuration Utility...
```

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Step 6: Configure the RAID settings. Use the Intel® Rapid Storage Technology to configure the RAID array.

A) Select the option to **Create RAID Volume** from the Main Menu and press Enter.

```

Intel(R) Rapid Storage Technology - Option ROM - 15.2.0.2748
Copyright (C) Intel Corporation. All rights reserved.
===== [MAIN MENU] =====
1. Create RAID Volume          4. Recovery Volume Options
2. Delete RAID Volume          5. Acceleration Options
3. Reset Disks to Non-RAID     6. Exit
===== [DISK/VOLUME INFORMATION] =====
RAID Volumes:
None defined.

```

B) Press the up/down arrows on the keyboard to choose the **RAID Level** and press Enter. Select the hard drives for the RAID configuration and press Enter when done.

```

Intel(R) Rapid Storage Technology - Option ROM - 15.2.0.2748
Copyright (C) Intel Corporation. All rights reserved.
===== [CREATE VOLUME MENU] =====
Name: Volume1
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 16KB
Capacity: 238.5 GB
Sync: N/A
Create Volume

```

Step 7: Create RAID Volume. Highlight **Create Volume** and press Enter, then choose Y when the warning prompt appears to create volume.

```

Intel(R) Rapid Storage Technology - Option ROM - 15.2.0.2748
Copyright (C) Intel Corporation. All rights reserved.
===== [CREATE VOLUME MENU] =====
Name: Volume1
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 16KB
Capacity: 238.5 GB
Sync: N/A
Create Volume

```

Chapter

4

BIOS

4.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

4.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Delete to enter SETUP**” message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **Esc** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes



Key	Function
-	Decrease the numeric value or make changes
Page up	Move to the next page
Page down	Move to the previous page
Esc	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values
F3 key	Load optimized defaults
F4 key	Save changes and Exit BIOS

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.



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4.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Main	Advanced	Chipset Security Boot Save & Exit
BIOS Information BIOS Vendor American Megatrends Core Version 5.13 Compliance UEFI 2.6; PI 1.4 Project Version Z524AR11.ROM Build Date and Time 08/29/2018 18:27:13 iWDD Vender iEi iWDD Version Z524ER10.bin Processor Information Name CoffeeLake DT Brand String Intel(R) Core(TM) CPU i3-8100T CPU @ 3.10GHz Speed 3100 MHz ID 0X906EB Stepping B0 Number of Processors 4Core(s) / 4Thread(s) Microcode Revision 8E GT Info GT2 (0X3E91) IGFX VBIOS Version 1012 Memory RC Version 0.7.1.58 Total Memory 8192 MB Memory Frequency 2133 MHz PCH Information Name CNL PCH-H PCH SKU Q370 Stepping B0 ME FW Version 12.0.0.1068 ME Firmware SKU Corporate SKU Access Level Administrator System Date [Mon 08/17/2018] System Time [11:10:27]		Set the Date. Use Tab to switch between Data elements. ----- →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.		

BIOS Menu 1: Main

The **Main** menu has two user configurable fields:

➔ **System Date** [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ **System Time** [xx:xx:xx]

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

4.3 Advanced

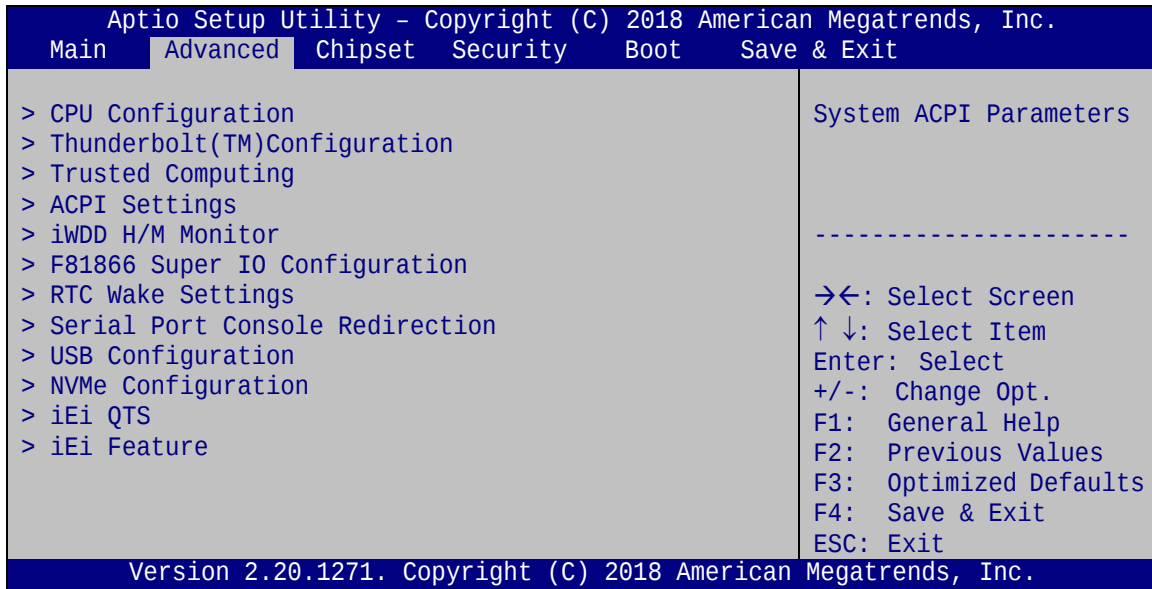
Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

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BIOS Menu 2: Advanced



4.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications or enable the Intel Virtualization Technology.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Advanced		
CPU Configuration		When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Type	Intel(R) Core(TM) CPU i3-8100T CPU @ 3.10GHz	
ID	0x906E8	
Speed	3100 MHz	
L1 Data Cache	32 kB x 4	
L1 Instruction Cache	32 kB x 4	
L2 Cache	256 kB x 4	
L3 Cache	6 MB	-----
L4 Cache	N/A	→←: Select Screen
VMX	Supported	↑ ↓: Select Item
SMX/TXT	Not Supported	Enter: Select
Intel (VMX) Virtualization Technology	[Disabled]	+/-: Change Opt.
Active Processor Cores	[All]	F1: General Help
Intel(R) SpeedStep(tm)	[Enabled]	F2: Previous Values
C states	[Disabled]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.		

BIOS Menu 3: CPU Configuration

→ Intel (VMX) Virtualization Technology [Disabled]

Use the **Intel (VMX) Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

- **Disabled** **DEFAULT** Disables Intel Virtualization Technology.
- **Enabled** Enables Intel Virtualization Technology.



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→ **Active Processor Cores [All]**

Use the **Active Processor Cores** BIOS option to enable numbers of cores in the processor package.

- **All** **DEFAULT** Enable all cores in the processor package.
- **1** Enable one core in the processor package.
- **2** Enable two cores in the processor package.
- **3** Enable three cores in the processor package.

→ **Intel(R) SpeedStep(tm) [Enabled]**

Use the **Intel(R) SpeedStep(tm)** option to enable or disable the Intel® SpeedStep Technology which allows more than two frequency ranges to be supported.

- **Disabled** Disables Intel® SpeedStep Technology
- **Enabled** **DEFAULT** Enables Intel® SpeedStep Technology

→ **C states [Disabled]**

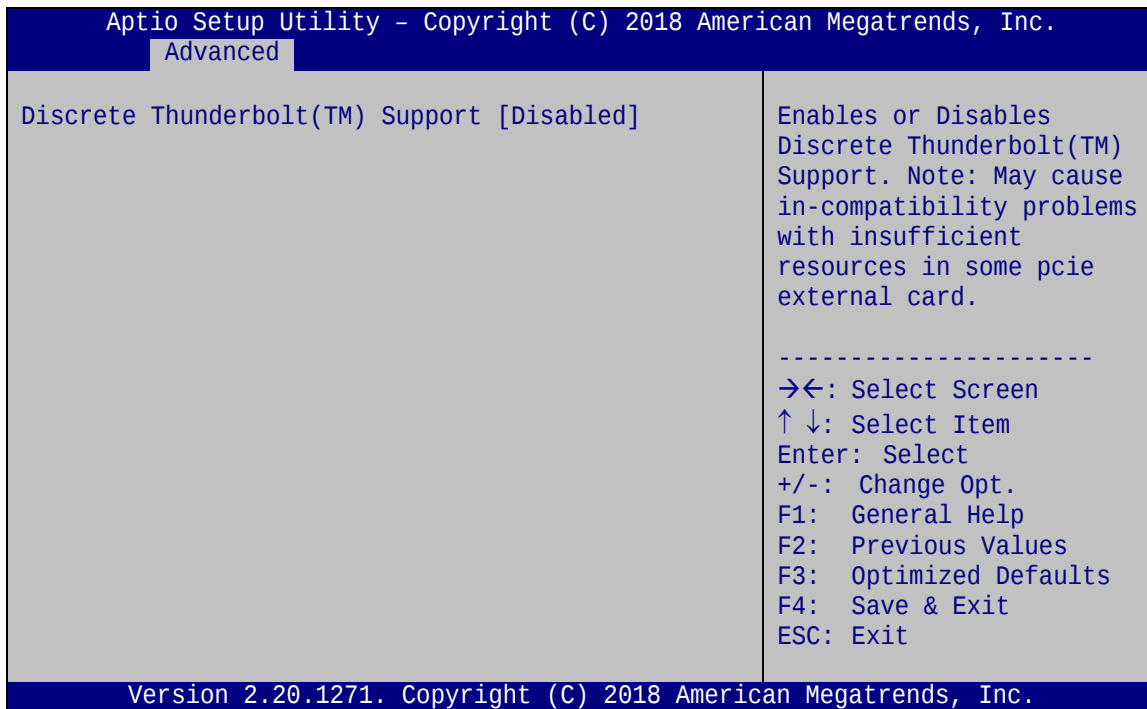
Use the **C states** option to enable or disable CPU power management which allows CPU to go to C states when it is not 100% utilized.

- **Disabled** **DEFAULT** Disables CPU power management
- **Enabled** Enables CPU power management



4.3.2 Thunderbolt Configuration

Use the **Thunderbolt Configuration** menu (**BIOS Menu 4**) to enable or disable the support of Thunderbolt™.



BIOS Menu 4: Thunderbolt Configuration

➔ Discrete Thunderbolt(TM) Support [Disabled]

Use the **Discrete Thunderbolt(TM) Support** option to configure support for the Thunderbolt.

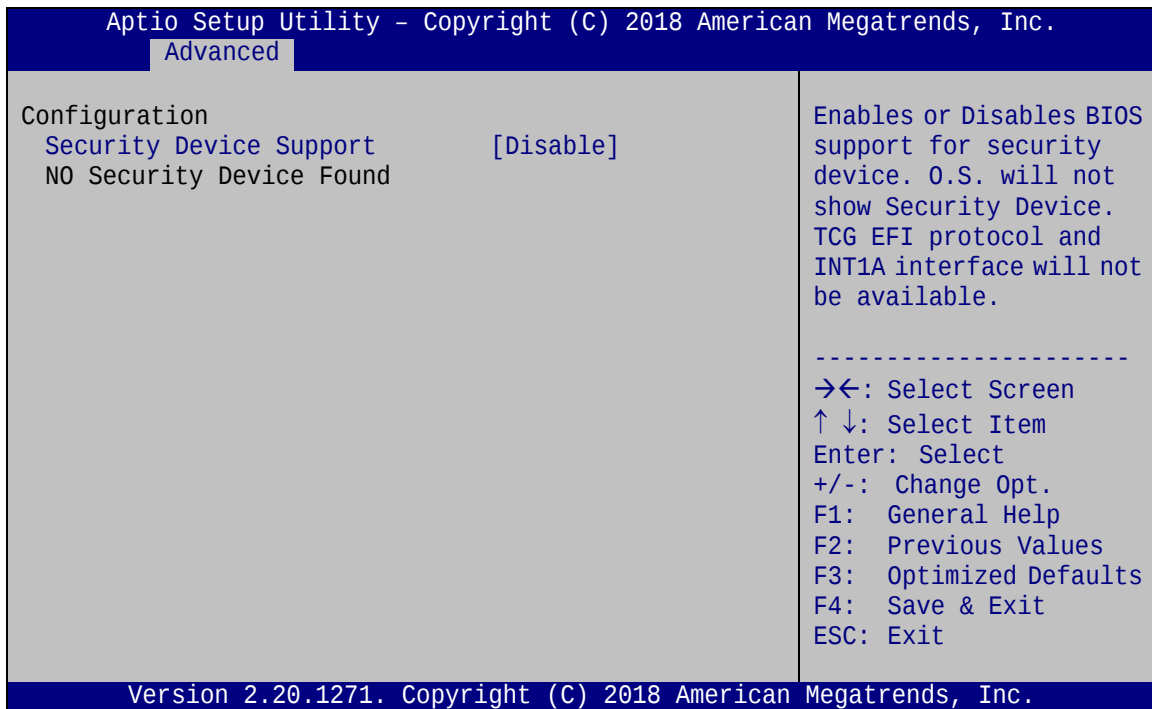
- ➔ **Disabled** **DEFAULT** Thunderbolt support is disabled.
- ➔ **Enabled** Thunderbolt support is enabled.



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4.3.3 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 5**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).

**BIOS Menu 5: Trusted Computing**➔ **Security Device Support [Disable]**

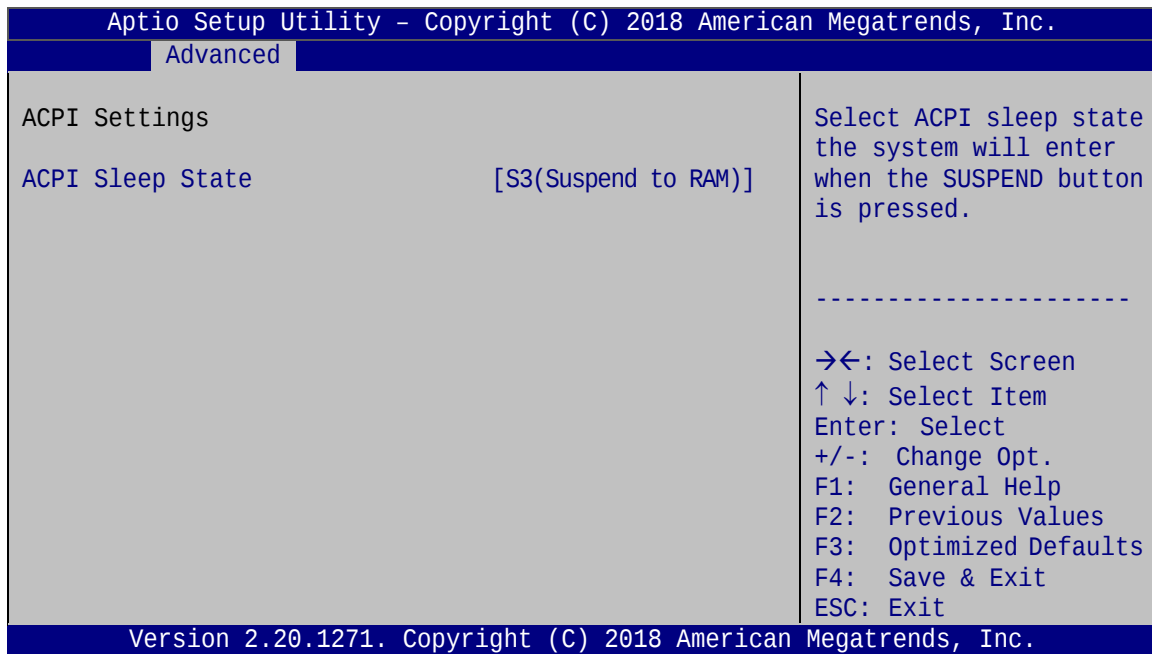
Use the **Security Device Support** option to configure support for the TPM.

- ➔ **Disable** **DEFAULT** TPM support is disabled.
- ➔ **Enable** TPM support is enabled.



4.3.4 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 6**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 6: ACPI Configuration

→ ACPI Sleep State [S3 (Suspend to RAM)]

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

- | | | |
|------------------------------|----------------|---|
| → S3 (Suspend to RAM) | DEFAULT | The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved. |
|------------------------------|----------------|---|



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4.3.5 iWDD H/W Monitor

The **iWDD H/W Monitor** menu (**BIOS Menu 7**) contains the fan configuration submenu, and displays the system temperature and CPU fan speed.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.		
Advanced		
PC Health Status		Smart Fan Mode Select
CPU temperature	:+35 °C	
System temperature	:+27 °C	
CPU_FAN1 Speed	:1601 RPM	-----
SYS_FAN1 Speed	:1131 RPM	→←: Select Screen
SYS_FAN2 Speed	:1163 RPM	↑ ↓: Select Item
SYS_FAN3 Speed	:1238 RPM	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
CPU_CORE	:+0.956 V	
+5V	:+4.991 V	
+12V	:+12.000 V	
+DDR	:+1.196 V	
+5VSB	:+4.991 V	
+3.3V	:+3.357 V	
+3.3VSB	:+3.306 V	
> Smart Fan Mode Configuration		
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.		

BIOS Menu 7: iWDD H/W Monitor

➔ PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - CPU Fan Speed
 - System Fan Speed
- Voltages:



- O CPU_CORE
- O +5V
- O +12V
- O DDR
- O +5VSB
- O +3.3V
- O +3.3VSB

4.3.5.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 8**) to configure the CPU/system fan temperature and speed settings.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.

Advanced

Smart Fan Mode Configuration

CPU_FAN1 Smart Fan Control [Auto Mode]
Auto mode fan start temperature 50
Auto mode fan off temperature 40
Auto mode fan start PWM 30
Auto mode fan slope PWM 2

SYS_FAN1 Smart Fan Control [Auto Mode]
Auto mode fan start temperature 30
Auto mode fan off temperature 20
Auto mode fan start PWM 40
Auto mode fan slope PWM 3

SYS_FAN2 Smart Fan Control [Auto Mode]
Auto mode fan start temperature 30
Auto mode fan off temperature 20
Auto mode fan start PWM 40
Auto mode fan slope PWM 3

SYS_FAN3 Smart Fan Control [Auto Mode]
Auto mode fan start temperature 30
Auto mode fan off temperature 20
Auto mode fan start PWM 40
Auto mode fan slope PWM 3

Smart Fan Mode Select

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

Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

BIOS Menu 8: Smart Fan Mode Configuration



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→ CPU_FAN1 Smart Fan Control/SYS_FAN Smart Fan Control [Auto Mode]

Use the **CPU_FAN1 Smart Fan Control/SYS_FAN Smart Fan Control** option to configure the CPU/System Smart Fan.

- **Manual Mode** The fan spins at the speed set in Manual Mode settings.
- **Auto Mode** **DEFAULT** The fan adjusts its speed using Auto Mode settings.

The following options can only be set if the CPU/SYS Smart Fan Control option is set to Auto Mode.

→ **Auto mode fan start temperature**

If the CPU temperature is between **fan off** and **fan start**, the fan speed change to **fan start PWM**. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **Auto mode fan off temperature**

If the CPU temperature is lower than the value set this option, the fan speed change to be lowest. To set a value, Use the + or – key to change the value or enter a decimal number between 1 and 100.

→ **Auto mode fan start PWM**

Use the **Auto mode fan start PWM** option to set the PWM start value. Use the + or – key to change the value or enter a decimal number between 1 and 100.

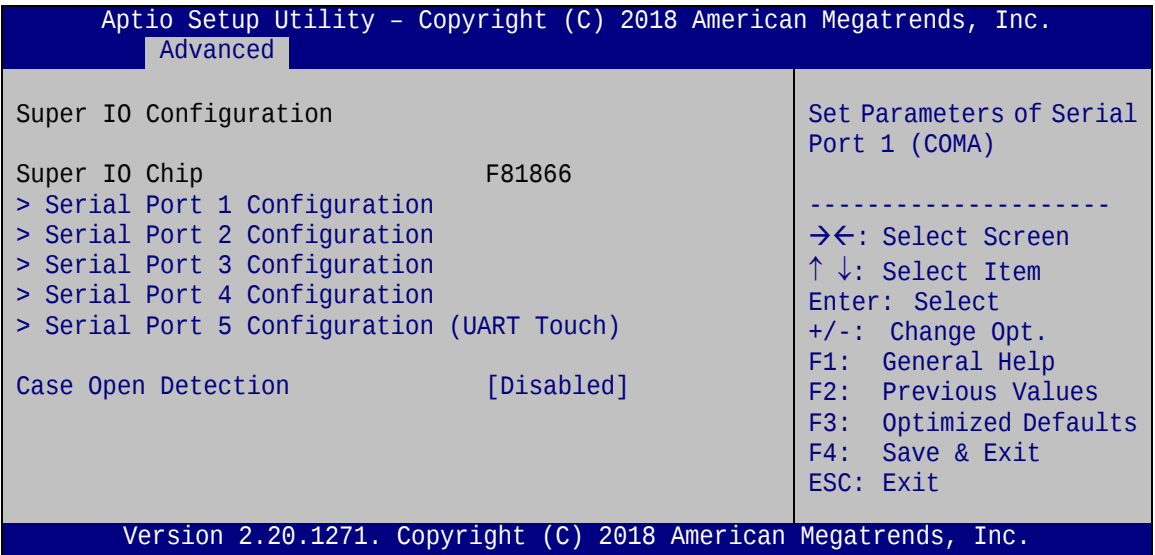
→ **Auto mode fan slope PWM**

Use the **Auto mode fan slope PWM** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. Use the + or – key to change the value or enter a decimal number between 1 and 8.



4.3.6 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 9**) to set or change the configurations for the parallel ports and serial ports.



BIOS Menu 9: F81866 Super IO Configuration

➔ **Case Open Beep [Disabled]**

Use the **Case Open Beep** option to enable or disable the case open beep function.

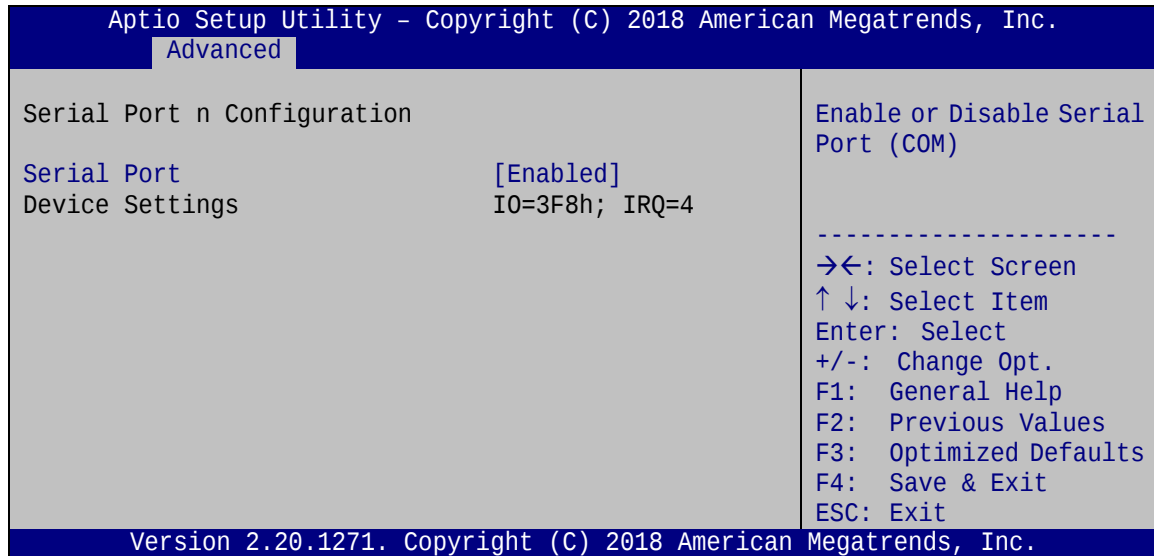
- ➔ **Disabled** **DEFAULT** Disable the case open beep function
- ➔ **Enabled** Enable the case open beep function



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4.3.6.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 10**) to configure the serial port n.



BIOS Menu 10: Serial Port n Configuration Menu

➔ Serial Port [Enabled]

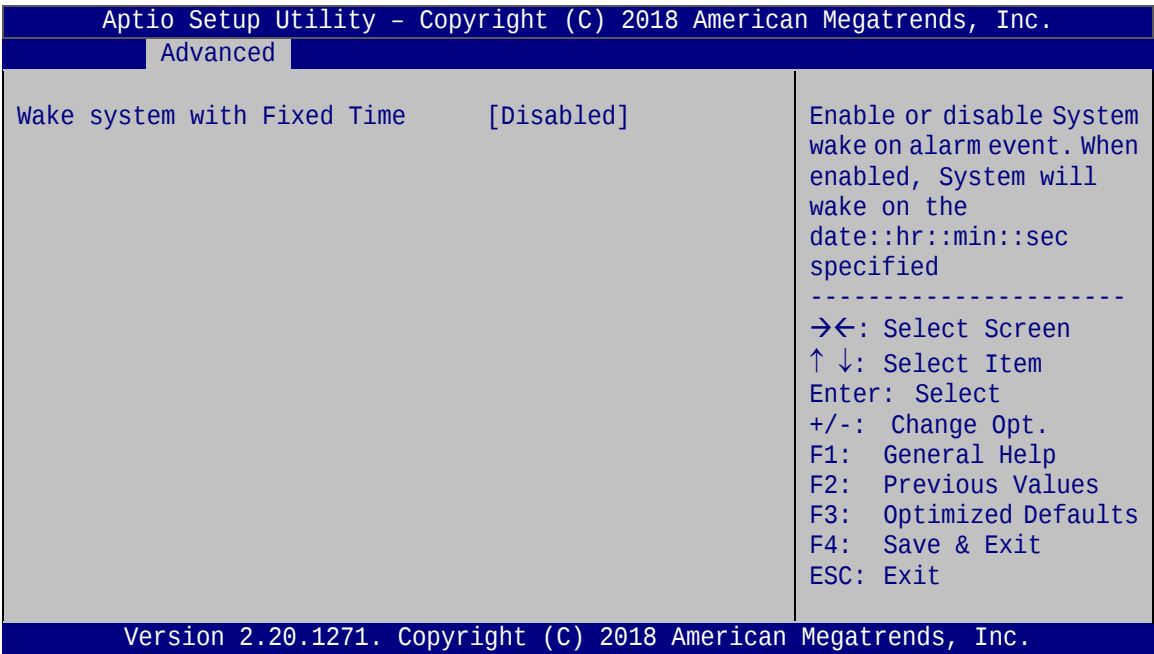
Use the **Serial Port** option to enable or disable the serial port.

- ➔ **Disabled** Disable the serial port
- ➔ **Enabled** **DEFAULT** Enable the serial port



4.3.7 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 11**) enables the system to wake at the specified time.



BIOS Menu 11: RTC Wake Settings

➔ **Wake system with Fixed Time [Disabled]**

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

- ➔ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event
- ➔ **Enabled** If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:
 - Wake up date
 - Wake up hour



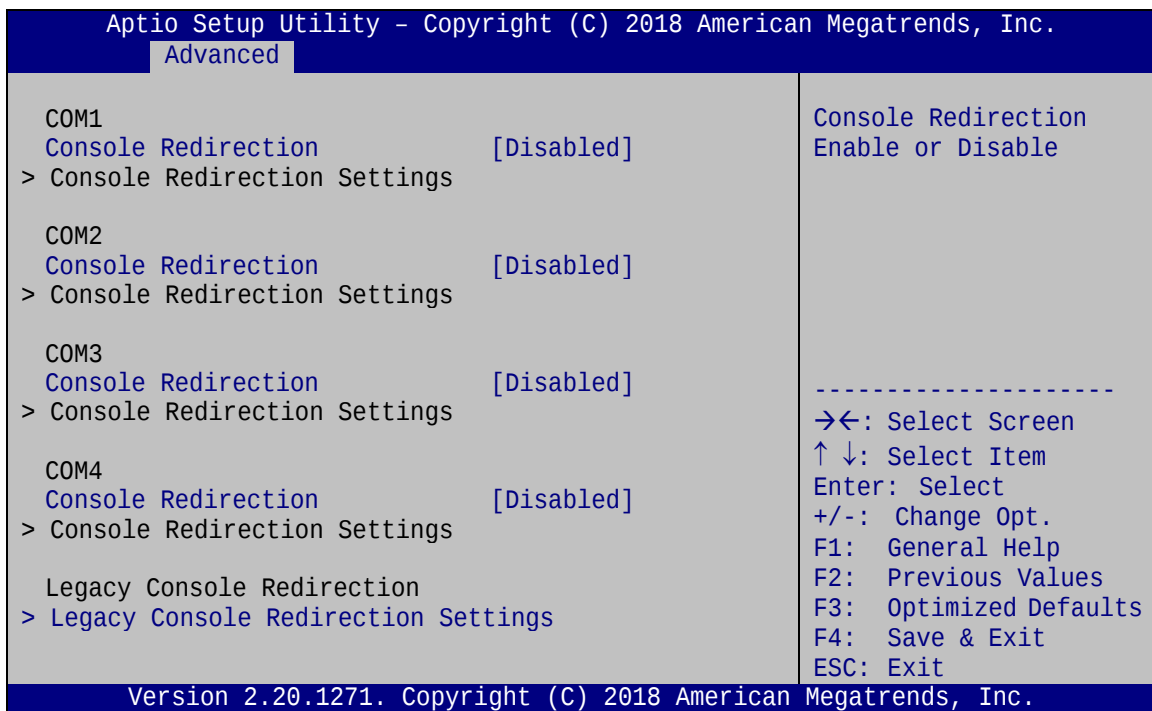
Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

4.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 12: Serial Port Console Redirection

→ Console Redirection [Disabled]

Use **Console Redirection** option to enable or disable the console redirection function.

- Disabled** **DEFAULT** Disabled the console redirection function
- Enabled** Enabled the console redirection function

The following options are available in the **Console Redirection Settings** submenu when the **Console Redirection** option is enabled.

→ Terminal Type [ANSI]

Use the **Terminal Type** option to specify the remote terminal type.

- VT100** The target terminal type is VT100
- VT100+** The target terminal type is VT100+
- VT-UTF8** The target terminal type is VT-UTF8
- ANSI** **DEFAULT** The target terminal type is ANSI

→ Bits per second [115200]

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

- 9600** Sets the serial port transmission speed at 9600.
- 19200** Sets the serial port transmission speed at 19200.
- 57600** Sets the serial port transmission speed at 57600.
- 115200** **DEFAULT** Sets the serial port transmission speed at 115200.

→ Data Bits [8]

Use the **Data Bits** option to specify the number of data bits.

- 7** Sets the data bits at 7.
- 8** **DEFAULT** Sets the data bits at 8.

PPC-FxxC-Q370**→ Parity [None]**

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

- | | | | |
|---|--------------|----------------|---|
| → | None | DEFAULT | No parity bit is sent with the data bits. |
| → | Even | | The parity bit is 0 if the number of ones in the data bits is even. |
| → | Odd | | The parity bit is 0 if the number of ones in the data bits is odd. |
| → | Mark | | The parity bit is always 1. This option does not provide error detection. |
| → | Space | | The parity bit is always 0. This option does not provide error detection. |

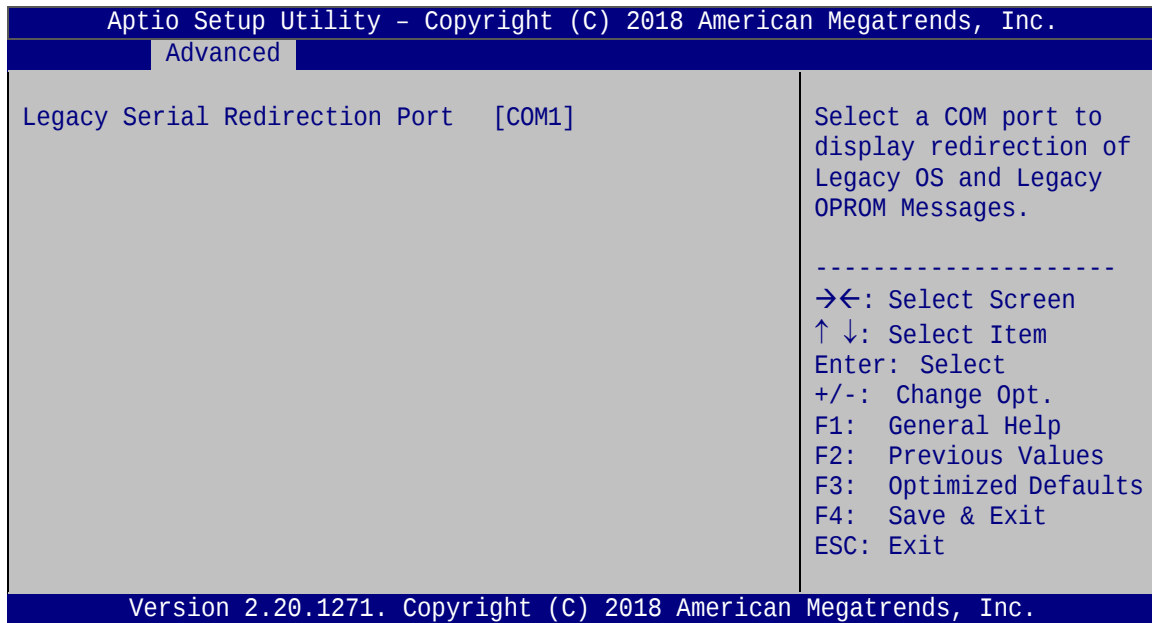
→ Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

- | | | | |
|---|----------|----------------|------------------------------------|
| → | 1 | DEFAULT | Sets the number of stop bits at 1. |
| → | 2 | | Sets the number of stop bits at 2. |



4.3.8.1 Legacy Console Redirection Settings



BIOS Menu 13: Legacy Console Redirection Settings

→ Legacy Serial Redirection Port [COM1]

Use the **Legacy Serial Redirection Port** option to select a COM port to display redirection of legacy OS and legacy OPRM messages. Configuration options are listed below.

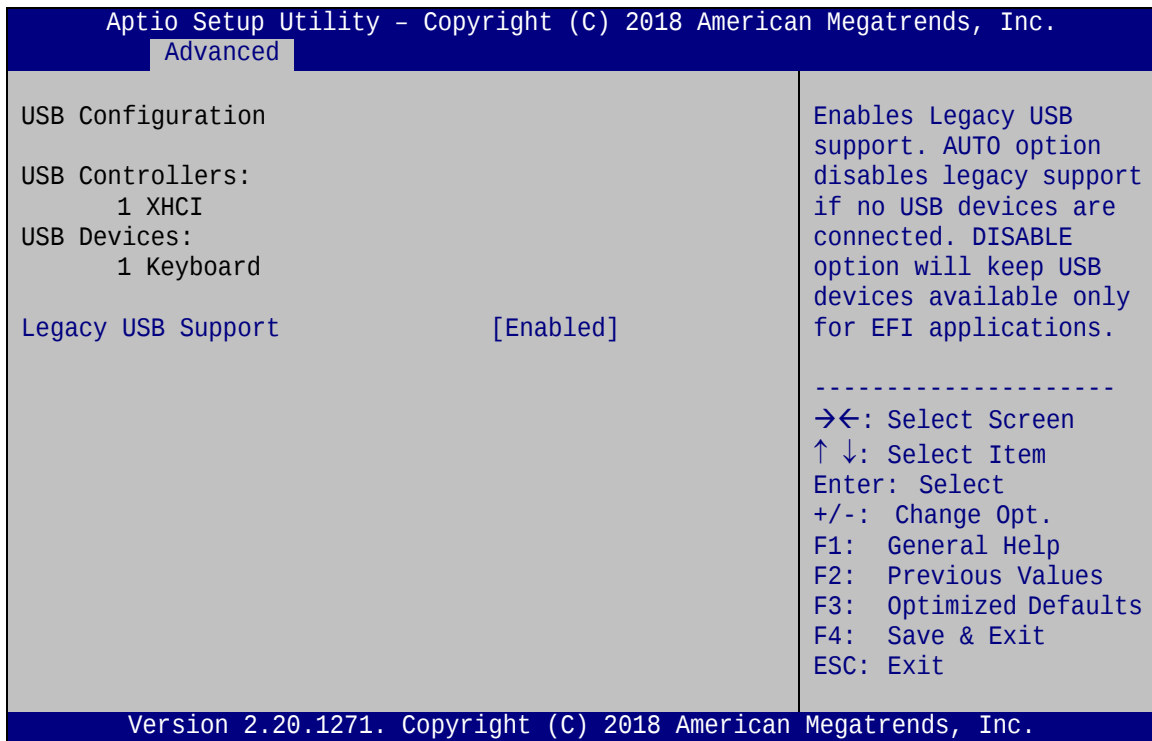
- COM1 **Default**
- COM2
- COM3
- COM4



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4.3.9 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 14**) to read USB configuration information and configure the USB settings.

**BIOS Menu 14: USB Configuration**➔ **Legacy USB Support [Enabled]**

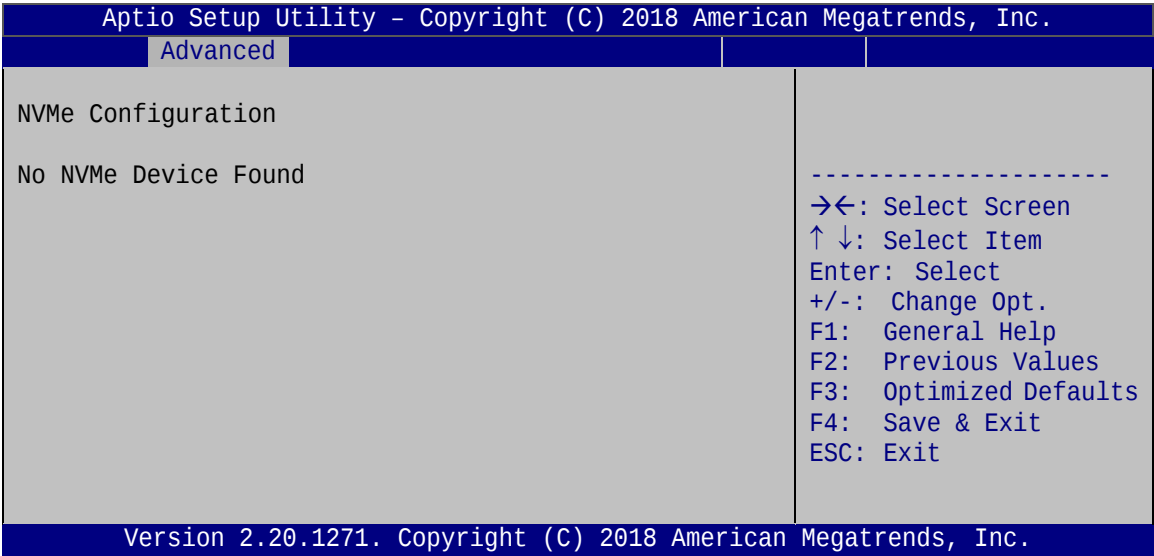
Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

- ➔ **Enabled** **DEFAULT** Legacy USB support enabled
- ➔ **Disabled** Legacy USB support disabled
- ➔ **Auto** Legacy USB support disabled if no USB devices are connected



4.3.10 NVMe Configuration

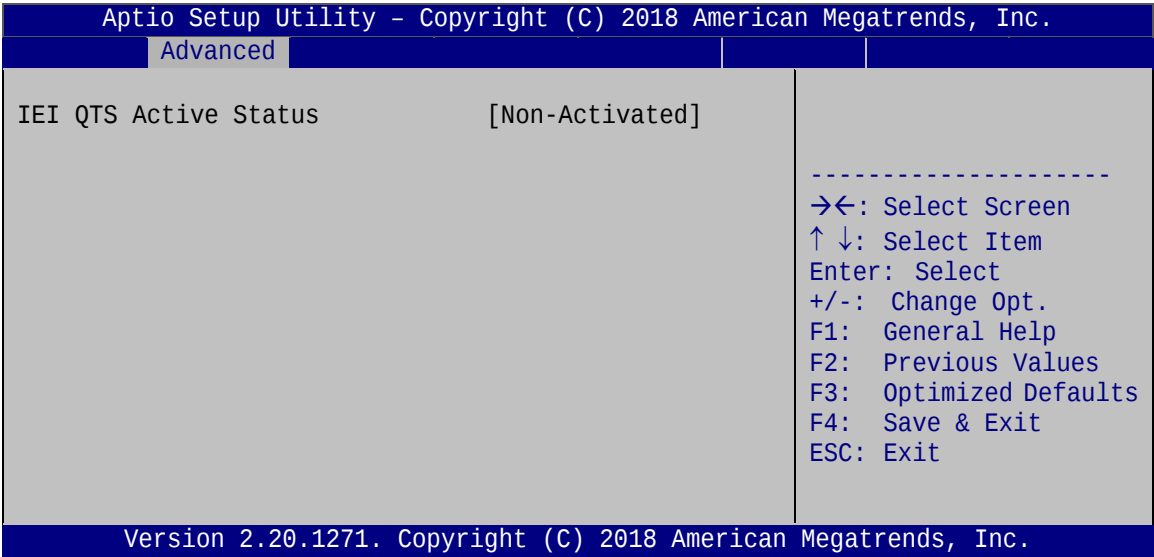
Use the **NVMe Configuration (BIOS Menu 15)** menu to display the NVMe controller and device information.



BIOS Menu 15: NVMe Configuration

4.3.1 IEI QTS

Use the **IEI QTS (BIOS Menu 16)** menu to display IEI QTS status.



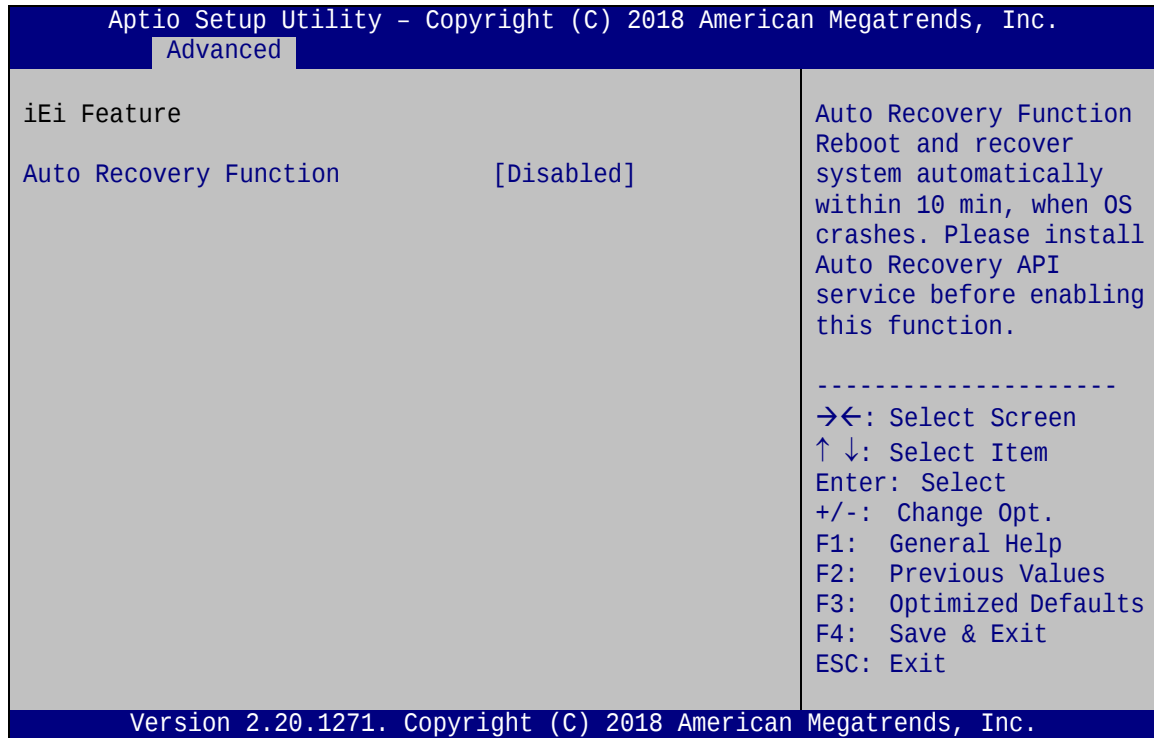
BIOS Menu 16: IEI QTS



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4.3.2 IEI Feature

Use the **IEI Feature** menu (**BIOS Menu 17**) to configure One Key Recovery function.



BIOS Menu 17: IEI Feature

➔ Auto Recovery Function [Disabled]

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

- ➔ **Disabled** **DEFAULT** Auto recovery function disabled
- ➔ **Enabled** Auto recovery function enabled



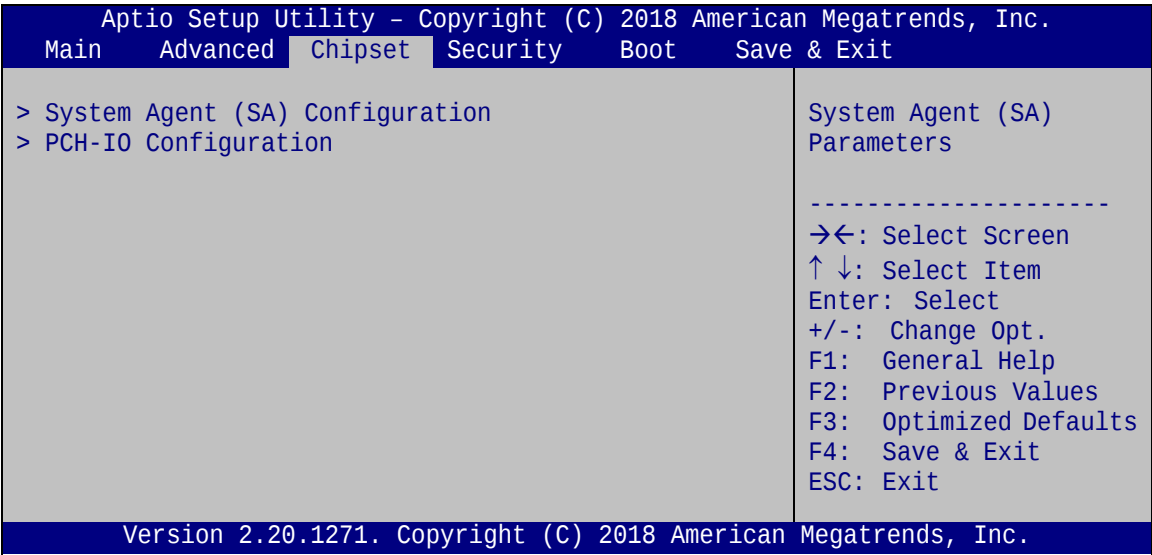
4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 18**) to access the PCH IO and System Agent (SA) configuration menus.



WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



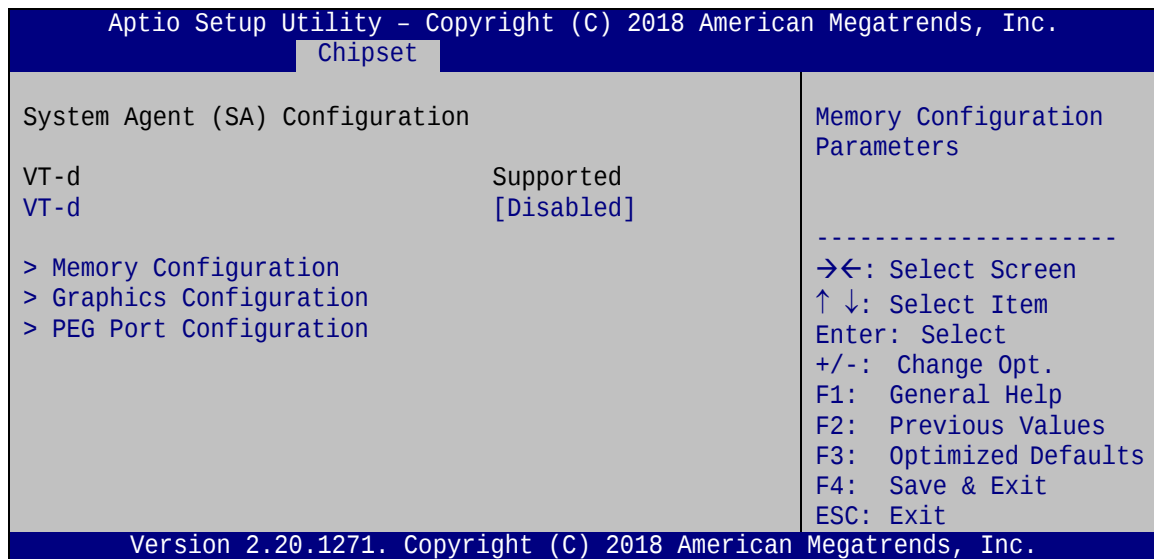
BIOS Menu 18: Chipset



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4.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 19**) to configure the System Agent (SA) parameters.

**BIOS Menu 19: System Agent (SA) Configuration**➔ **VT-d [Disabled]**

Use the **VT-d** option to enable or disable VT-d support.

- ➔ **Disabled** **DEFAULT** Disables VT-d support.
- ➔ **Enabled** Enables VT-d support.



4.4.1.1 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 20**) to view memory information.

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.

Chipset

Memory Configuration

CHA_DIMM0

Size

Number of Ranks

Manufacturer

CHB_DIMM0

Populated & Enabled

8192 MB (DDR4)

2

Transcend

Not Populated/Disabled

→←: Select Screen

↑ ↓: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

ESC: Exit

Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

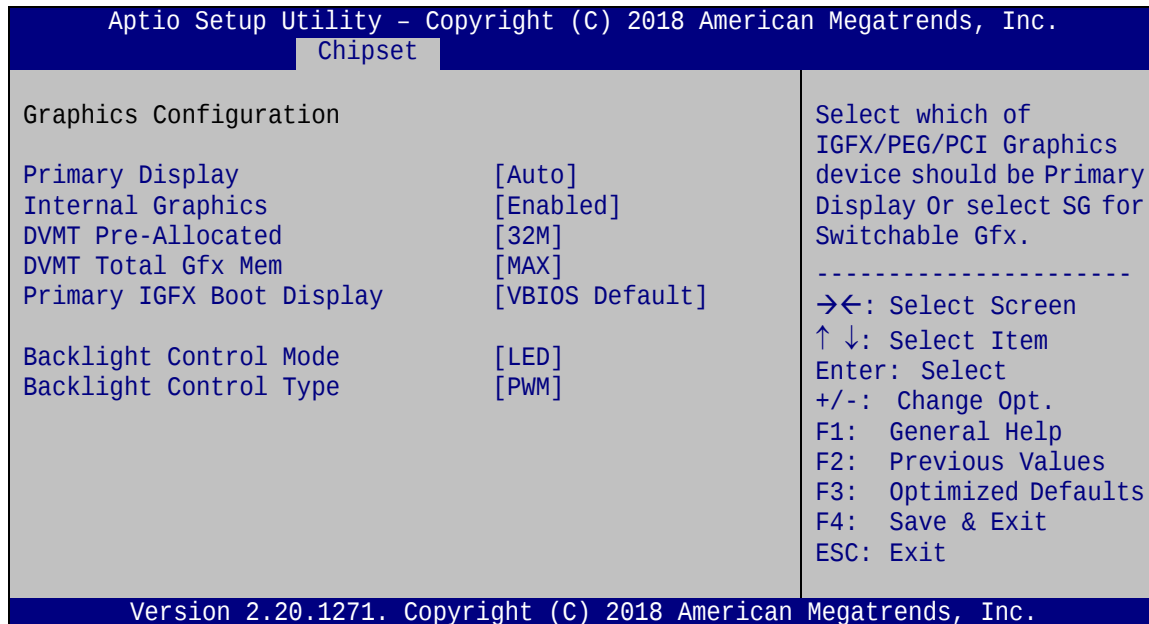
BIOS Menu 20: Memory Configuration



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4.4.1.2 Graphics Configuration

Use the **Graphics Configuration (BIOS Menu 21)** menu to configure the video device connected to the system.



BIOS Menu 21: Graphics Configuration

→ Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses.

The following options are available:

- Auto **Default**
- IGFX
- PEG
- PCIe

→ Internal Graphics [Enabled]

Use the **Internal Graphics** option to configure whether to keep IGFX enabled. If user wants to support dual display by internal graphics and external graphics, this Internal Graphics option should be set to Enabled and the above Primary Display option should be set to IGFX.

- | | | | |
|---|-----------------|----------------|----------------|
| → | Auto | | Auto mode |
| → | Disabled | | Disables IGFX. |
| → | Enabled | DEFAULT | Enables IGFX. |

→ DVMT Pre-Allocated [32M]

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

- | | | |
|---|-----|----------------|
| ▪ | 32M | Default |
| ▪ | 64M | |

→ DVMT Total Gfx Mem [MAX]

Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available:

- | | | |
|---|------|----------------|
| ▪ | 128M | |
| ▪ | 256M | |
| ▪ | MAX | Default |

→ Primary IGFX Boot Display [VBIOS Default]

Use the **Primary IGFX Boot Display** option to select the display device used by the system when it boots. **Configuration options are listed below.**

- | | | |
|---|---------------|----------------|
| ▪ | VBIOS Default | Default |
| ▪ | LVDS | |
| ▪ | HDMI | |
| ▪ | IDP1 | |

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➔ **Backlight Control Mode [LED]**

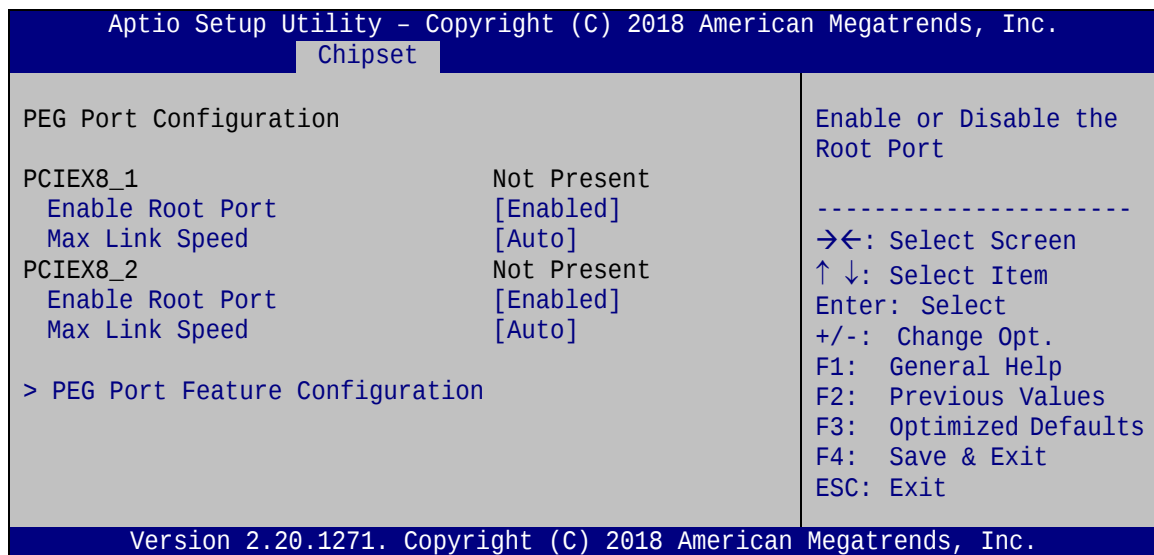
Use the **Backlight Control Mode** option to specify the backlight control mode. Configuration options are listed below.

- LED **Default**
- CCFL

➔ **Backlight Control Type [PWM]**

Use the **Backlight Control Type** option to specify the backlight control type. Configuration options are listed below.

- PWM **Default**
- DC

4.4.1.3 PEG Port Configuration**BIOS Menu 22: PEG Port Configuration**



➔ **Enable Root Port [Enabled]**

Use the **Enable Root Port** option to enable or disable the PCI Express (PEG) controller.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | | Disables the PCI Express (PEG) controller. |
| ➔ | Enabled | DEFAULT | Enables the PCI Express (PEG) controller. |

➔ **Max Link Speed [Auto]**

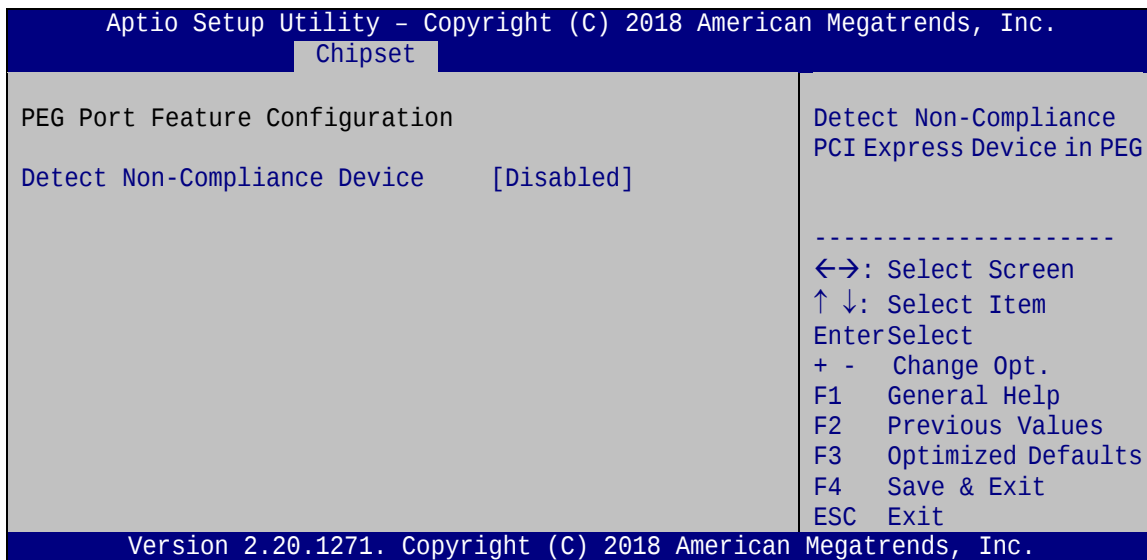
Use the **Max Link Speed** option to select the maximum link speed of the PCI Express slot.

The following options are available:

- | | | |
|---|------|----------------|
| ▪ | Auto | Default |
| ▪ | Gen1 | |
| ▪ | Gen2 | |
| ▪ | Gen3 | |

4.4.1.3.1 PEG Port Feature Configuration

Use the **PEG Port Feature Configuration** submenu (**BIOS Menu 23**) to configure the SA PCIe settings.



BIOS Menu 23: PEG Port Feature Configuration



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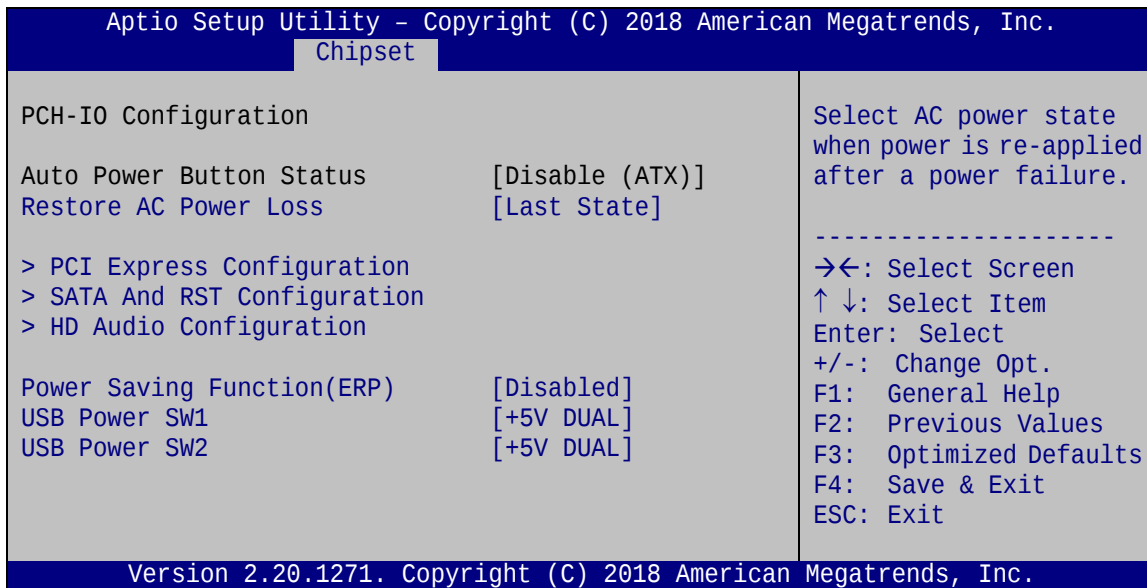
➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** option to detect non-compliance PCIe device in PEG.

- | | | | |
|---|-----------------|----------------|---|
| ➔ | Disabled | DEFAULT | Do not detect non-compliance PCIe device in PEG |
| ➔ | Enabled | | Detect non-compliance PCIe device in PEG |

4.4.2 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 24**) to configure the PCH parameters.

**BIOS Menu 24: PCH-IO Configuration**➔ **Restore AC Power Loss [Last State]**

Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- | | | | |
|---|-------------------|----------------|--|
| ➔ | Power Off | | The system remains turned off |
| ➔ | Power On | | The system turns on |
| ➔ | Last State | DEFAULT | The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off. |



➔ **Power Saving Function(ERP) [Disabled]**

Use the **Power Saving Function(ERP)** BIOS option to enable or disable the power saving function.

- | | | | |
|---|-----------------|----------------|--|
| ➔ | Disabled | DEFAULT | Power saving function is disabled. |
| ➔ | Enabled | | Power saving function is enabled. It will reduce power consumption when the system is off. |

➔ **USB Power SW1 [+5V DUAL]**

Use the **USB Power SW1** BIOS option to configure whether to provide power to the four external USB 3.1 connectors (LAN1_USB1 & LAN2_USB2) when the system is in S3/S4 sleep state. This option is valid only when the above **Power Saving Function (ERP)** BIOS option is disabled.

- | | | | |
|---|-------------|----------------|--|
| ➔ | +5V | DEFAULT | Power is provided to the external USB 3.0 connectors when the system is in S3/S4 sleep state |
| | DUAL | | |
| ➔ | +5V | | Power is not provided to the external USB 3.0 connectors when the system is in S3/S4 sleep state |

➔ **USB Power SW2 [+5V DUAL]**

Use the **USB Power SW2** BIOS option to configure whether to provide power to the two external USB 3.1 connectors (USB1) and the four internal USB 2.0 connectors when the system is in S3/S4 sleep state. This option is valid only when the above **Power Saving Function (ERP)** BIOS option is disabled.

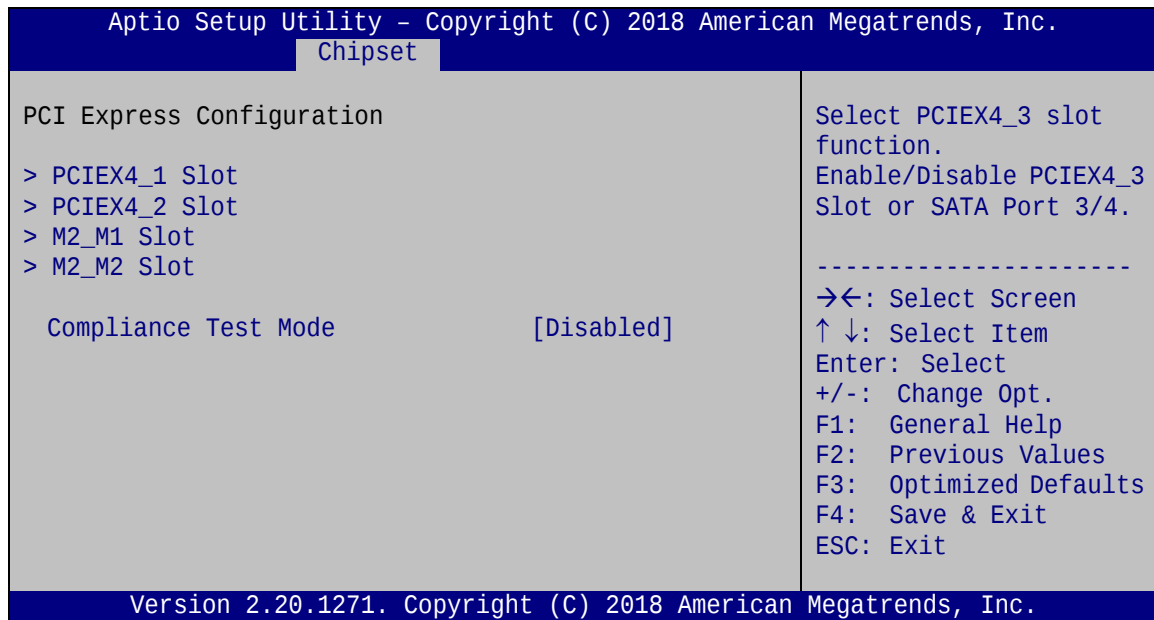
- | | | | |
|---|-------------|----------------|--|
| ➔ | +5V | DEFAULT | Power is provided to the external USB 2.0 connectors when the system is in S3/S4 sleep state |
| | DUAL | | |
| ➔ | +5V | | Power is not provided to the external USB 2.0 connectors when the system is in S3/S4 sleep state |



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4.4.2.1 PCI Express Configuration

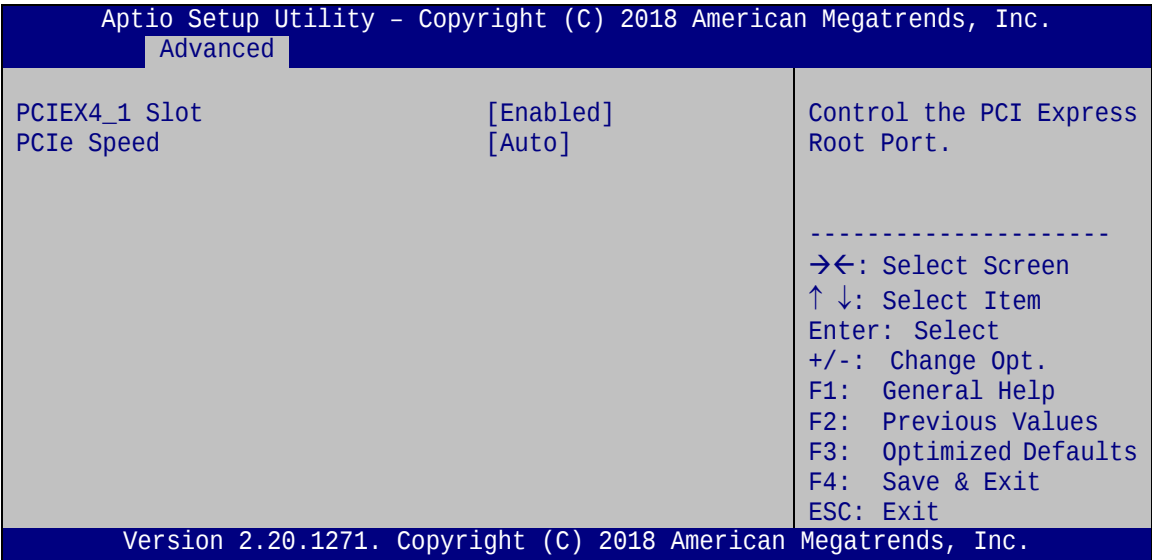
Use the **PCI Express Configuration** menu (**BIOS Menu 25**) to configure the PCI Express and M.2 slots.



BIOS Menu 25: PCI Express Configuration



4.4.2.1.1 PCIEX4_1 Slot, PCIEX4_2 Slot and M.2 Slots



BIOS Menu 26: PCIe Slot Configuration Submenu

→ PCIEX4_1 Slot [Enabled]

Use the **PCIEX4_1 Slot** option to enable or disable the PCIEX4_1 PCI Express slot.

- Disabled Disables the PCIEX4_1 PCI Express slot.
- Enabled **DEFAULT** Enables the PCIEX4_1 PCI Express slot.

→ PCIEX4_2 Slot [Enabled]

Use the **PCIEX4_2 Slot** option to enable or disable the PCIEX4_2 PCI Express slot.

- Disabled Disables the PCIEX4_2 PCI Express slot.
- Enabled **DEFAULT** Enables the PCIEX4_2 PCI Express slot.



PPC-FxxC-Q370**→ M2_M1 Slot [Enabled]**

Use the **M2_M1 Slot** option to enable or disable the M.2 2280 M-key slot.

- | | | | |
|---|-----------------|----------------|-----------------------------------|
| → | Disabled | | Disables the M.2 2280 M-key slot. |
| → | Enabled | DEFAULT | Enables the M.2 2280 M-key slot. |

→ M2_M2 Slot [Enabled]

Use the **M2_M2 Slot** option to enable or disable the M.2 2280 M-key slot.

- | | | | |
|---|-----------------|----------------|-----------------------------------|
| → | Disabled | | Disables the M.2 2280 M-key slot. |
| → | Enabled | DEFAULT | Enables the M.2 2280 M-key slot. |

→ PCIe Speed [Auto]

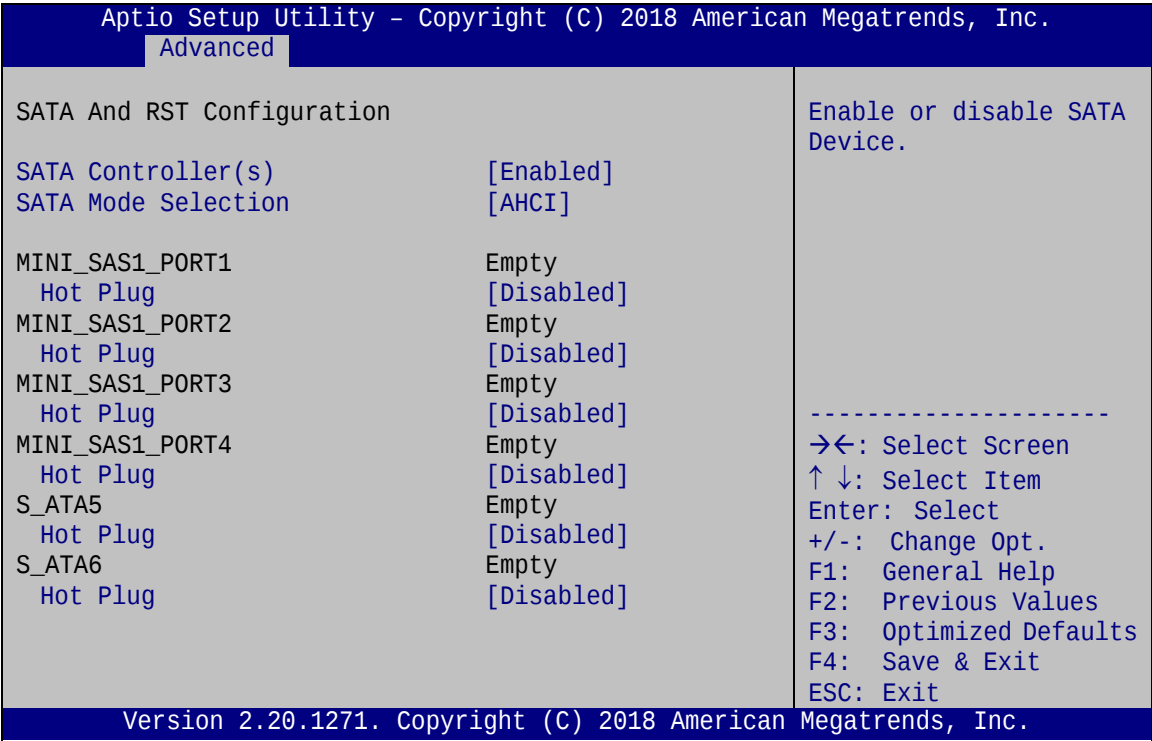
Use this option to select the support type of the PCI Express slots. The following options are available:

- | | | |
|---|------|----------------|
| ▪ | Auto | Default |
| ▪ | Gen1 | |
| ▪ | Gen2 | |
| ▪ | Gen3 | |



4.4.2.2 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 27**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 27: SATA Configuration

➔ **SATA Controller(s) [Enabled]**

Use the **SATA Controller(s)** option to configure the SATA controller(s).

- ➔ **Enabled** **DEFAULT** Enables the on-board SATA controller(s).
- ➔ **Disabled** Disables the on-board SATA controller(s).



PPC-FxxC-Q370**→ SATA Mode Selection [AHCI]**

Use the **SATA Mode Selection** option to determine how the SATA devices operate.

- | | | | |
|----------|--|----------------|--|
| → | AHCI | DEFAULT | Configures SATA devices as AHCI device. |
| → | Intel RST Premium With Intel Optane System Acceleration | | Configures SATA devices to the Intel RST Premium With Intel Optane System Acceleration mode. |

→ Hot Plug

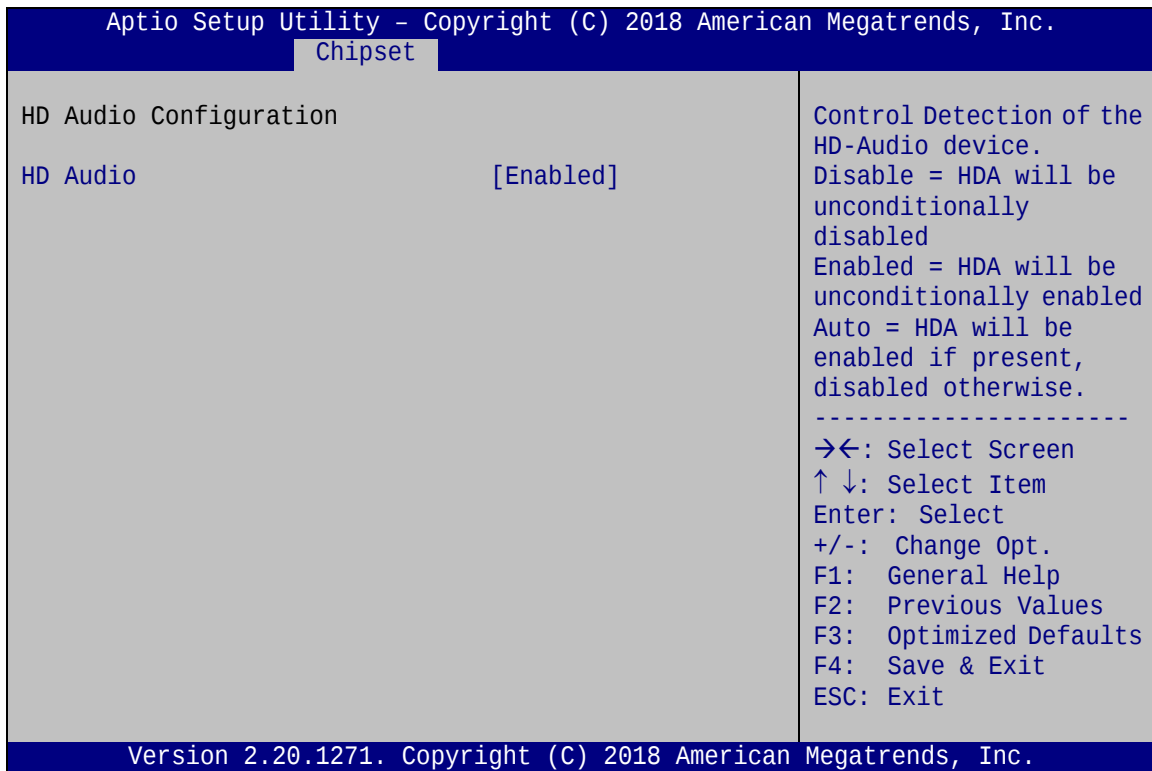
Use the **Hot Plug** option to enable or disable the hot plug function.

- | | | | |
|----------|-----------------|----------------|---------------------------------|
| → | Disabled | DEFAULT | Disables the hot plug function. |
| → | Enabled | | Enables the hot plug function. |



4.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 28**) to configure the PCH Azalia settings.



BIOS Menu 28: HD Audio Configuration

➔ HD Audio [Enabled]

Use the **HD Audio** option to enable or disable the High Definition Audio controller.

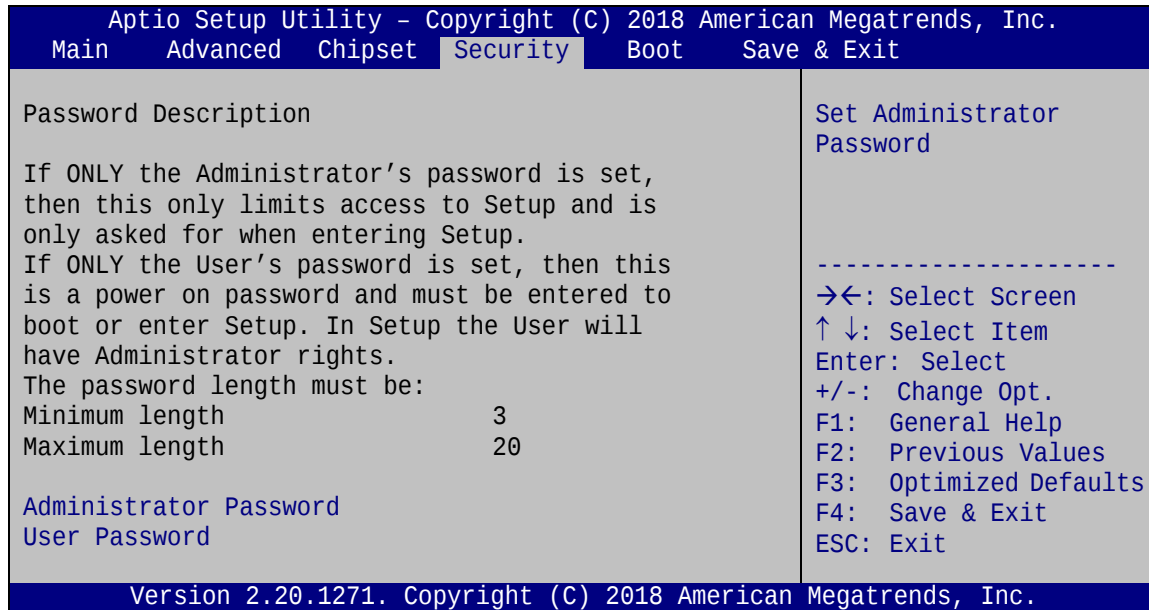
- ➔ **Disabled** The onboard High Definition Audio controller is disabled.
- ➔ **Enabled DEFAULT** The onboard High Definition Audio controller is enabled.



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4.5 Security

Use the **Security** menu (**BIOS Menu 29**) to set system and user passwords.



BIOS Menu 29: Security

➔ Administrator Password

Use the **Administrator Password** to set or change a administrator password.

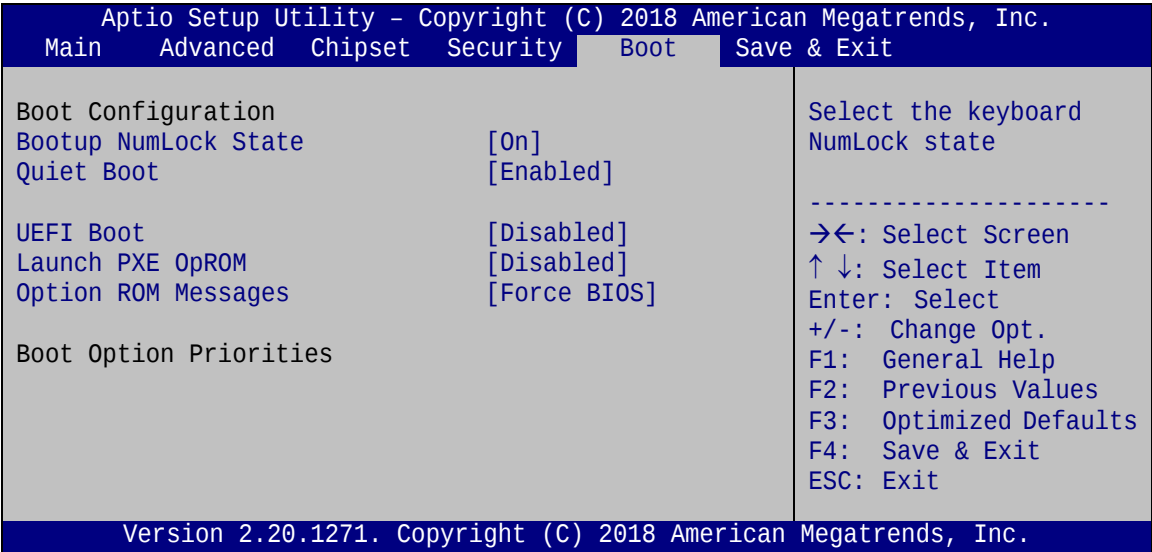
➔ User Password

Use the **User Password** to set or change a user password.



4.6 Boot

Use the **Boot** menu (**BIOS Menu 30**) to configure system boot options.



BIOS Menu 30: Boot

➔ **Bootup NumLock State [On]**

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

- ➔ **On** **DEFAULT**

Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.
- ➔ **Off**

Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.



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→ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** Normal POST messages displayed
- **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

→ **UEFI Boot [Disabled]**

Use the **UEFI Boot** option to enable or disable to boot from the UEFI devices.

- **Disabled** **DEFAULT** Boot from UEFI devices is disabled.
- **Enabled** Boot from UEFI devices is enabled.

→ **Launch PXE OpROM [Disabled]**

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

- **Disabled** **DEFAULT** Ignore all PXE Option ROMs
- **Enabled** Load PXE Option ROMs.

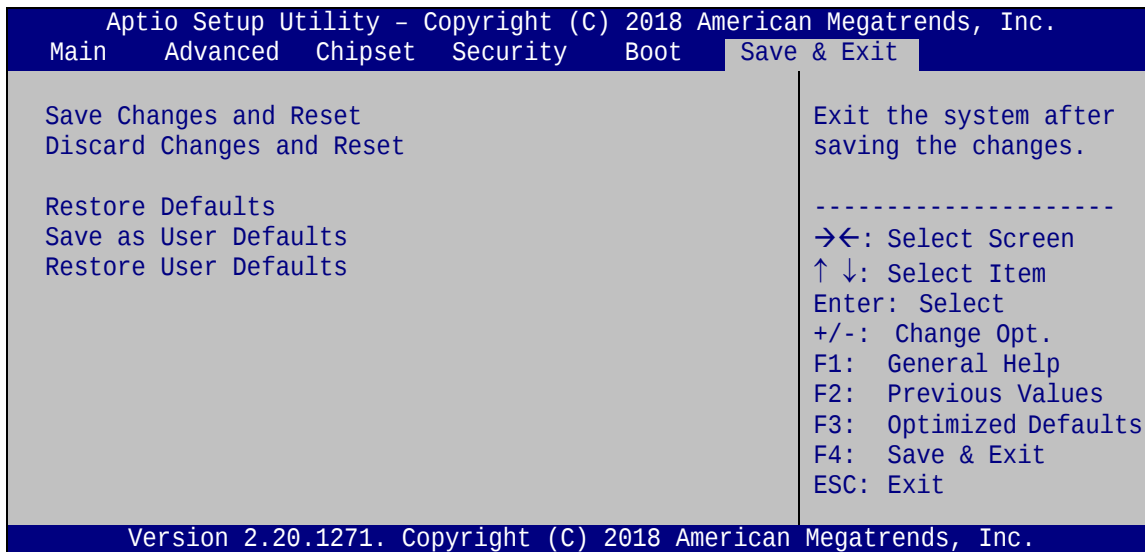
→ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

- **Force BIOS** **DEFAULT** Sets display mode to force BIOS.
- **Keep Current** Sets display mode to current.

4.7 Save & Exit

Use the **Safe & Exit** menu (**BIOS Menu 31**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 31: Save & Exit

➔ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

➔ Save as User Defaults

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ Restore User Defaults

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

5

Troubleshooting and Maintenance

**WARNING:**

Take Anti-Static precautions whenever maintenance is being carried out on the system components. Failure to take anti-static precautions can cause permanent system damage. For more details on anti-static precautions, please refer to **Section 3.1**.

5.1 PPC-FxxC-Q370 System Maintenance Overview

**NOTE:**

When doing maintenance operations on the system, please follow the instructions in this chapter. Failure to follow these instructions may lead to personal injury and system damage.

To preserve the working integrity of the PPC-FxxC-Q370 panel PC, the system must be properly maintained. If panel PC components need replacement, the proper maintenance procedures must be followed to ensure the system can continue to operate normally.

5.2 System Troubleshooting

This section provides some simple troubleshooting suggestions.

5.2.1 The System Doesn't Turn On

If after turning the system on, there is no power (indicated by the power LED on the front panel not turning on) please do the following:

- Step 1:** Check that the power cable connector is properly connected to the system rear panel.
- Step 2:** Check that the power cable connector is properly plugged into the power source.
- Step 3:** Make sure the power button is turned on.

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Step 4: Plug the system into a monitor and check to see if anything appears on the screen. If the boot-up screen appears it means the power LED has failed. To fix this problem, contact an IEI sales representative directly.

5.2.2 The System Doesn't Boot Up

If the system doesn't boot up please do the following:

Step 1: Check the power is turned on. See Section 5.2.1 above.

Step 2: Make sure the SO-DIMM modules are properly installed.

5.2.3 More Troubleshooting

Nothing appears on the monitor after booting up the system: Make sure the monitor is properly connected to the system and the monitor is connected to a power supply and turned on.



WARNING!

If all troubleshooting measures have been taken and the system still fails to start, contact the IEI reseller or vendor you purchased the PPC-FxxC-Q370 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

5.3 Component Replacement



WARNING!

Users are not advised to attempt to repair or replace any internal or external components of the PPC-FxxC-Q370 panel PC. If any other components fail or need replacement, contact the IEI reseller or vendor you purchased the PPC-FxxC-Q370 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

Chapter

6

Interface Connectors

6.1 Peripheral Interface Connectors

The PPC-FxxC-Q370 panel PC motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 6-1** and **Figure 6-2**. The Pin 1 locations of the on-board connectors are also indicated in the diagrams. The connector pinouts for these connectors are listed in the following sections.

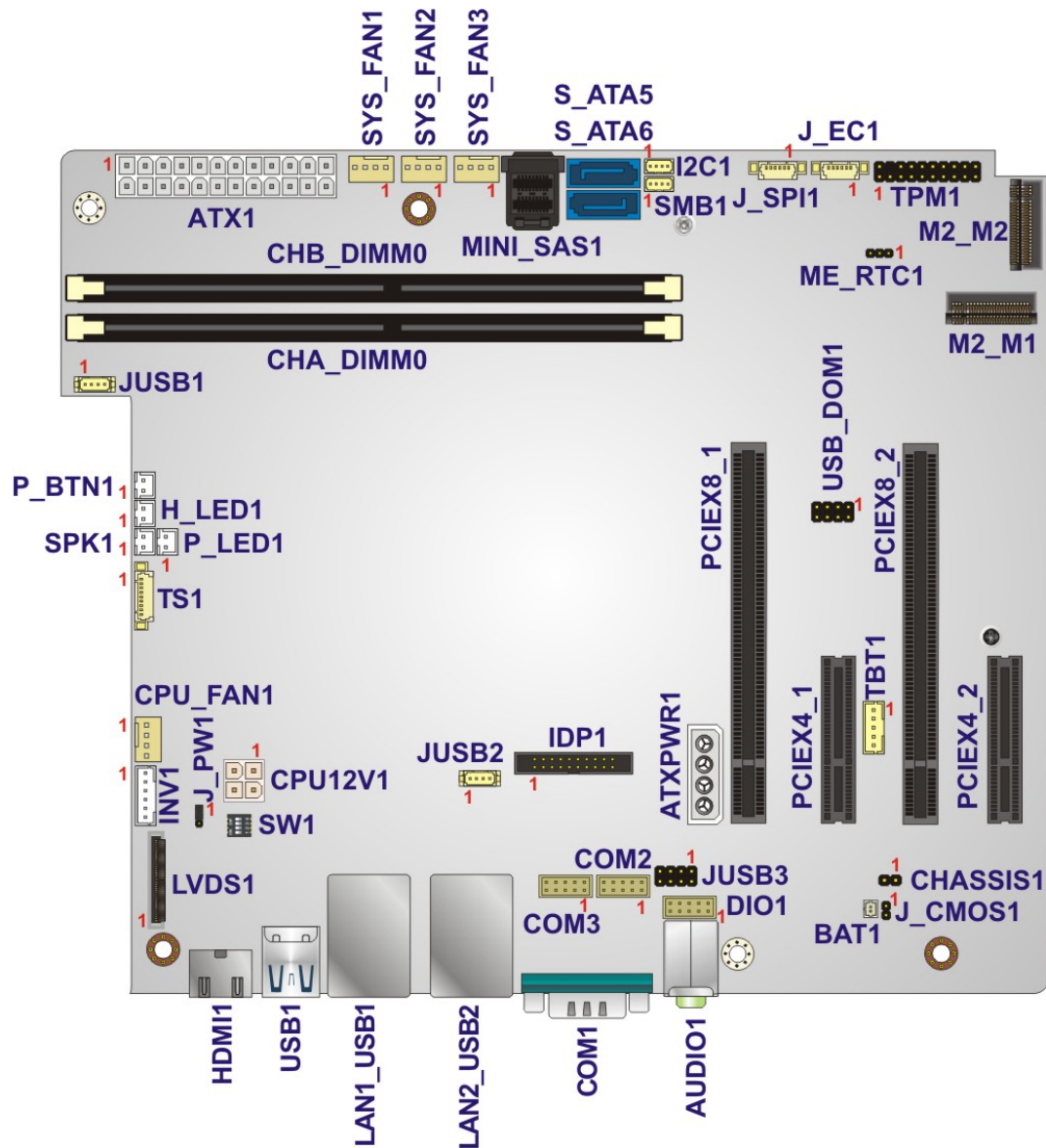


Figure 6-1: Main Board Layout Diagram (Front Side)

6.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the PPC-FxxC-Q370 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
ATX power input connector	24-pin Molex	ATX1
Additional power connector	4-pin connector	ATXPWR1
Battery connector	2-pin wafer	BAT1
Chassis intrusion connector	2-pin header	CHASSIS1
CPU power connector	4-pin Molex	CPU12V1
DIMM sockets	DDR4 DIMM socket	CHA_DIMM0, CHB_DIMM0
DIO connector	10-pin box header	DIO1
EC debug port (solder side)	20-pin FPC	EC_DBG1
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connector (system)	4-pin wafer	SYS_FAN1, SYS_FAN2, SYS_FAN3
I ² C connector	4-pin wafer	I2C1
Internal DisplayPort connector	20-pin box header	IDP1
LED connector, HDD	2-pin wafer	H_LED1
LED connector, power	2-pin wafer	P_LED1
LVDS connector	40-pin wire-to-board	LVDS1
LVDS backlight connector	6-pin wafer	INV1
Mini SAS connector	Mini SAS	MINI_SAS1
M.2 M-key slots	M.2 2280 M-key	M2_M1, M2_M2
PCIe x4 slots	PCIe x4 slot	PCIEX4_1, PCIEX4_2
PCIe x8 slots	PCIe x16 slot	PCIEX8_1, PCIEX8_2
Power button connector	2-pin wafer	P_BTN1
Touch panel connector	9-pin wafer	TS1
RS-232 connector	10-pin box header	COM2
RS-422/485 connector (dual)	10-pin box header	COM3



Connector	Type	Label
SATA 6Gb/s connectors	SATA connector	S_ATA5, S_ATA6
SMBus connector	4-pin wafer	SMB1
SPI flash connector	6-pin wafer	J_SPI1
SPI flash (EC) connector	6-pin wafer	J_EC1
Speaker connector	2-pin wafer	SPK1
TPM connector	20-pin header	TPM1
USB 2.0 connectors (single)	4-pin wafer	JUSB1, JUSB2
USB 2.0 connector (dual)	8-pin header	JUSB3
USB DOM connector	8-pin header	USB_DOM1

Table 6-1: Peripheral Interface Connectors

6.2.1 ATX Power Input Connector (ATX1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC3V	13	VCC3V
2	VCC3V	14	-VCC12V
3	GND	15	GND
4	VCC5V	16	PS_ON
5	GND	17	GND
6	VCC5V	18	GND
7	GND	19	GND
8	PWR_OK	20	NC
9	SB5V	21	VCC5V
10	VCC12V	22	VCC5V
11	VCC12V	23	VCC5V
12	VCC3V	24	GND

Table 6-2: ATX Power Input Connector (ATX1) Pinouts



6.2.2 Additional Power Connector (ATXPWR1)

PIN NO.	DESCRIPTION
1	VCC12V
2	GND
3	GND
4	VCC5V

Table 6-3: Additional Power Connector (ATXPWR1) Pinouts

6.2.3 Battery Connector (BAT1)

PIN NO.	DESCRIPTION
1	VBATT
2	GND

Table 6-4: Battery Connector (BAT1) Pinouts

6.2.4 Chassis Intrusion Connector (CHASSIS1)

PIN NO.	DESCRIPTION
1	VCC3V
2	CHASSIE

Table 6-5: Chassis Intrusion Connector (CHASSIS1) Pinouts

6.2.5 CPU Power Connector (CPU12V1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	VCC12V	4	VCC12V

Table 6-6: CPU Power Connector (CPU12V1)

6.2.6 DIO Connector (DIO1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

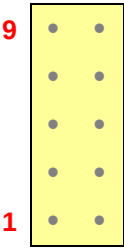


Table 6-7: DIO Connector (DIO1) Pinouts

6.2.7 EC Debug Port (EC_DBG1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KSI0	2	KSO0
3	KSO1	4	KSO2
5	KSO3	6	KSO4
7	KSO5	8	KSO6
9	KSO7	10	KSO8
11	KSO9	12	KSO10
13	KSO12	14	KSI1
15	KSO11	16	KSI2
17	KSI3	18	GND
19	GND	20	GND

Table 6-8: EC Debug Port (EC_DBG1) Pinouts

6.2.8 Fan Connector, CPU (CPU_FAN1)

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	FANIO
4	PWM

Table 6-9: CPU Fan Connector (CPU_FAN1) Pinouts

6.2.9 Fan Connectors, System (SYS_FAN1, SYS_FAN2, SYS_FAN3)

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	FANIO
4	PWM

Table 6-10: System Fan Connectors (SYS_FAN1, SYS_FAN2, SYS_FAN3) Pinouts

6.2.10 I²C Connector (I2C1)

PIN NO.	DESCRIPTION
1	GND
2	I2C_DATA
3	I2C_CLK
4	+5V

Table 6-11: I²C Connector (I2C1) Pinouts

6.2.11 Internal DisplayPort Connector (IDP1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HPD#	2	AUXP
3	GND	4	AUXN
5	DET_D	6	GND
7	GND	8	LANE2P
9	LANE3P	10	LANE2N
11	LANE3N	12	GND
13	GND	14	LANE0P
15	LANE1P	16	LANE0N
17	LANE1N	18	VCC3V
19	VCC5V	20	NC

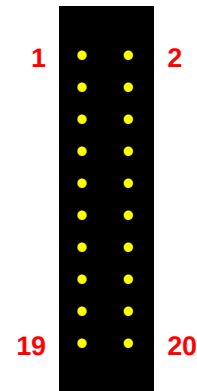


Table 6-12: Internal DisplayPort Connector (IDP1) Pinouts



6.2.12 LED Connector, HDD (H_LED1)

PIN NO.	DESCRIPTION
1	VCC5V
2	SATA_LED#

Table 6-13: HDD LED Connector (H_LED1) Pinouts

6.2.13 LED Connector, Power (P_LED1)

PIN NO.	DESCRIPTION
1	VCC5V
2	GND

Table 6-14: Power LED Connector (P_LED1) Pinouts

6.2.14 LVDS Connector (LVDS1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LCD_VCC	2	LCD_VCC
3	LCD_VCC	4	LCD_VCC
5	LCD_VCC	6	NC
7	NC	8	GND
9	GND	10	GND
11	GND	12	CLK2P
13	CLK2M	14	GND
15	A7P	16	A7M
17	GND	18	A6P
19	A6M	20	GND
21	A5P	22	A5M
23	GND	24	A4P
25	A4M	26	GND
27	A3P	28	A3M
29	GND	30	CLK1P



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PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
31	CLK1M	32	GND
33	A2P	34	A2M
35	GND	36	A1P
37	A1M	38	GND
39	A0P	40	A0M

Table 6-15: LVDS Connector (LVDS1) Pinouts

6.2.15 LVDS Backlight Connector (INV1)

PIN NO.	DESCRIPTION
1	VCC12V
2	VCC12V
3	Backlight ON/OFF
4	Backlight Brightness Control
5	GND
6	GND

Table 6-16: LVDS Backlight Connector (INV1) Pinouts

6.2.16 Mini SAS Connector (MINI_SAS1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
A1	NC	B1	NC
A2	NC	B2	NC
A3	GND	B3	GND
A4	SATA_RX1+	B4	SATA_RX0+
A5	SATA_RX1-	B5	SATA_RX0-
A6	GND	B6	GND
A7	SATA_RX3+	B7	SATA_RX2+
A8	SATA_RX3-	B8	SATA_RX2-
A9	GND	B9	GND
C1	NC	D1	NC
C2	NC	D2	NC



PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C3	GND	D3	GND
C4	SATA_TX1+	D4	SATA_TX0+
C5	SATA_TX1-	D5	SATA_TX0-
C6	GND	D6	GND
C7	SATA_TX3+	D7	SATA_TX2+
C8	SATA_TX3-	D8	SATA_TX2-
C9	GND	D9	GND

Table 6-17: Mini SAS Connector (MINI_SAS1) Pinouts

6.2.17 Power Button Connector (P_BTN1)

PIN NO.	DESCRIPTION
1	PWRBTN_SW#
2	GND

Table 6-18: Power Button Connector (P_BTN1) Pinouts

6.2.18 Touch Panel Connector (TS1)

PIN NO.	DESCRIPTION
1	X+
2	X-
3	Y+
4	SENSE
5	X+
6	X-
7	Y+
8	Y-
9	GND

Table 6-19: Touch Panel Connector (TS1) Pinouts



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6.2.19 RS-232 Connector (COM2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	GND

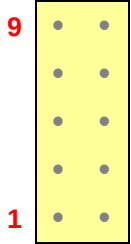


Table 6-20: RS-232 Connector (COM2) Pinouts

6.2.20 RS-422/485 Connector (COM3)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	COM3_TX-	2	COM4_TX-
3	COM3_TX+	4	COM4_TX+
5	COM3_RT-	6	COM4_RT-
7	COM3_RX+	8	COM4_RX+
9	GND	10	GND

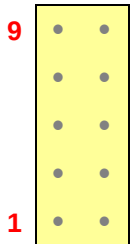


Table 6-21: RS-422/485 Connector (COM3) Pinouts

6.2.21 SMBus Connector (SMB1)

PIN NO.	DESCRIPTION
1	GND
2	SMB_DATA
3	SMB_CLK
4	VCC5V

Table 6-22: SMBus Connector (SMB1) Pinouts



6.2.22 SPI Flash Connector (J_SPI1)

PIN NO.	DESCRIPTION
1	VCC3V
2	SPI_CS
3	SPI_SO
4	SPI_CLK
5	SPI_SI
6	GND

Table 6-23: SPI Flash Connector (J_SPI1) Pinouts

6.2.23 SPI Flash (EC) Connector (J_EC1)

PIN NO.	DESCRIPTION
1	VCC3V
2	SPI_CS#0_CN_EC
3	SPI_SO_SW_EC
4	SPI_CLK_SW_EC
5	SPI_SI_SW_EC
6	GND

Table 6-24: SPI Flash (EC) Connector (J_EC1) Pinouts

6.2.24 Speaker Connector (SPK1)

PIN NO.	DESCRIPTION
1	VCC5V
2	PC_BEEP

Table 6-25: Speaker Connector (SPK1) Pinouts



6.2.25 TPM Connector (TPM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CLOCK	2	GND
3	FRAME	4	NC
5	RESET	6	VCC5V
7	LAD3	8	LAD2
9	VCC3V	10	LAD1
11	LAD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN
19	LPCPD	20	DRQ

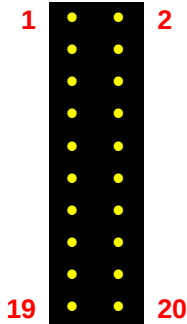


Table 6-26: TPM Connector (TPM1) Pinouts

6.2.26 USB 2.0 Connectors, Single (JUSB1, JUSB2)

PIN NO.	DESCRIPTION
1	SB5V
2	DATA-
3	DATA+
4	GND

Table 6-27: Single USB 2.0 Connectors (JUSB1, JUSB2) Pinouts

6.2.27 USB 2.0 Connectors, Dual (JUSB3)

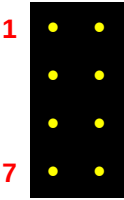
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	
1	SB5V	2	GND	
3	DATA-	4	DATA+	
5	DATA+	6	DATA-	
7	GND	8	SB5V	

Table 6-28: Dual USB 2.0 Connector (JUSB3) Pinouts

6.2.1 USB DOM Connector (USB_DOM1)

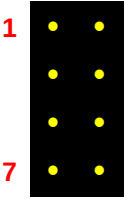
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	
1	VCC5V	2	NC	
3	DATA-	4	NC	
5	DATA+	6	NC	
7	GND	8	NC	

Table 6-29: USB DOM Connector (USB_DOM1) Pinouts

6.3 Jumpers

The following table shows a list of jumpers on the PPC-FxxC-Q370 motherboard.

Jumper Name	Type	Label
Clear CMOS	2-pin header	J_CMOS1
ME RTC register setting	3-pin header	ME_RTC1
LVDS panel resolution selection	DIP switch	SW1
Panel voltage selection	3-pin header	J_PW1

Table 6-30: Jumpers

6.3.1 Clear CMOS Jumper (J_CMOS1)

Pin	Description
Open	Keep current BIOS setup (Default)
Short	Clear BIOS

Table 6-31: Clear CMOS Jumper (J_CMOS1) Settings

6.3.2 ME RTC Register Setting Jumper (ME_RTC1)

Pin	Description
Short 1-2	Save ME RTC registers (Default)
Short 2-3	Clear ME RTC registers

Table 6-32: ME RTC Register Jumper (ME_RTC1) Settings

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment is in conformity with the following EU directives:

- EMC Directive (2014/30/EU)
- Low-Voltage Directive (2014/35/EU)
- RoHS II Directive (2011/65/EU, 2015/863/EU)

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the Radio Equipment Directive 2014/53/EU.

English

IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

Български [Bulgarian]

IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 2014/53/EU

Česky [Czech]

IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 2014/53/EU.

Dansk [Danish]

IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU.

Deutsch [German]

IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 2014/53/EU.

Eesti [Estonian]

IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 2014/53/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.



Español [Spanish]

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/EU.

Ελληνική [Greek]

IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/EU.

Français [French]

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU.

Italiano [Italian]

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.

Latviski [Latvian]

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 2014/53/EU.

Lietuvių [Lithuanian]

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 2014/53/EU Direktyvos nuostatas.

Nederlands [Dutch]

IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 2014/53/EU.

Malti [Maltese]

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/EU.

Magyar [Hungarian]

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 2014/53/EU irányelv egyéb előírásainak.

Polski [Polish]

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 2014/53/EU.

Português [Portuguese]

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 2014/53/EU.



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Româna [Romanian]

IEI Integration Corp declară că acest echipament este în conformitate cu cerințele esențiale și cu celelalte prevederi relevante ale Directivei 2014/53/EU.

Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.

Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EU.

Suomi [Finnish]

IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 2014/53/EU.

FCC WARNING

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

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

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

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Appendix

B

Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the PPC-FxxC-Q370.

B.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the device is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the PPC-FxxC-Q370 is being installed, moved or modified.
- ***To prevent the risk of electric shock, make sure power cord is unplugged from wall socket.*** To fully disengage the power to the unit, please disconnect the power cord from the power outlet. Refer servicing to qualified service personnel. The power outlet shall be readily available and accessible.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
- ***Electric shocks can occur*** if the PPC-FxxC-Q370 chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.
- ***Do not drop or insert any objects*** into the ventilation openings of the PPC-FxxC-Q370.

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- ***If considerable amounts of dust, water, or fluids enter the device***, turn off the power supply immediately, unplug the power cord, and contact the PPC-FxxC-Q370 vendor.
- **DO NOT:**
 - Drop the device against a hard surface.
 - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions**WARNING:**

Failure to take ESD precautions during the installation of the PPC-FxxC-Q370 may result in permanent damage to the PPC-FxxC-Q370 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PPC-FxxC-Q370. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PPC-FxxC-Q370 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

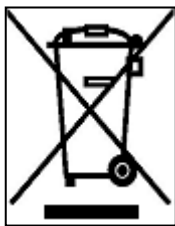
B.1.3 Product Disposal

**CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union—If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union—The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the PPC-FxxC-Q370, please follow the guidelines below.



WARNING:

- For safety reasons, turn-off the power and unplug the panel PC before cleaning.
 - If you dropped any material or liquid such as water onto the panel PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.
-

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the PPC-FxxC-Q370, please read the details below.

- Never spray or squirt liquids directly onto any other components. To clean the panel PC, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the device does not require cleaning. Keep fluids away from the device interior.
- Be cautious of all small removable components when vacuuming the device.
- Never drop any objects or liquids through the openings of the device.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
- Avoid eating, drinking and smoking within vicinity of the device.

B.2.2 Cleaning Tools

Some components in the PPC-FxxC-Q370 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the PPC-FxxC-Q370.

- **Cloth**— Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the device.

- **Water or rubbing alcohol**—A cloth moistened with water or rubbing alcohol can be used to clean the device.
- **Using solvents**—The use of solvents is not recommended when cleaning the device as they may damage the plastic parts.
- **Vacuum cleaner**—Using a vacuum specifically designed for computers is one of the best methods of cleaning the device. Dust and dirt can restrict the airflow in the device and cause its circuitry to corrode.
- **Cotton swabs**—Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs**—Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

BIOS Menu Options



C.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 4**.

☐ System Date [xx/xx/xx]	48
☐ System Time [xx:xx:xx]	48
☐ Intel (VMX) Virtualization Technology [Disabled]	50
☐ Active Processor Cores [All]	51
☐ Intel(R) SpeedStep(tm) [Enabled]	51
☐ C states [Disabled]	51
☐ Discrete Thunderbolt(TM) Support [Disabled]	52
☐ Security Device Support [Disable]	53
☐ ACPI Sleep State [S3 (Suspend to RAM)]	54
☐ PC Health Status	55
☐ CPU_FAN1 Smart Fan Control/SYS_FAN Smart Fan Control [Auto Mode]	57
☐ Auto mode fan start temperature	57
☐ Auto mode fan off temperature	57
☐ Auto mode fan start PWM	57
☐ Auto mode fan slope PWM	57
☐ Case Open Beep [Disabled]	58
☐ Serial Port [Enabled]	59
☐ Wake system with Fixed Time [Disabled]	60
☐ Console Redirection [Disabled]	62
☐ Terminal Type [ANSI]	62
☐ Bits per second [115200]	62
☐ Data Bits [8]	62
☐ Parity [None]	63
☐ Stop Bits [1]	63
☐ Legacy Serial Redirection Port [COM1]	64
☐ Legacy USB Support [Enabled]	65
☐ Auto Recovery Function [Disabled]	67
☐ VT-d [Disabled]	69
☐ Primary Display [Auto]	71
☐ Internal Graphics [Enabled]	72
☐ DVMT Pre-Allocated [32M]	72



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☐ DVMT Total Gfx Mem [MAX].....	72
☐ Primary IGFX Boot Display [VBIOS Default]	72
☐ Backlight Control Mode [LED]	73
☐ Backlight Control Type [PWM]	73
☐ Enable Root Port [Enabled]	74
☐ Max Link Speed [Auto]	74
☐ Detect Non-Compliance Device [Disabled]	75
☐ Restore AC Power Loss [Last State]	75
☐ Power Saving Function(ERP) [Disabled].....	76
☐ USB Power SW1 [+5V DUAL].....	76
☐ USB Power SW2 [+5V DUAL].....	76
☐ PCIEX4_1 Slot [Enabled].....	78
☐ PCIEX4_2 Slot [Enabled].....	78
☐ M2_M1 Slot [Enabled].....	79
☐ M2_M2 Slot [Enabled].....	79
☐ PCIe Speed [Auto].....	79
☐ SATA Controller(s) [Enabled]	80
☐ SATA Mode Selection [AHCI].....	81
☐ Hot Plug	81
☐ HD Audio [Enabled]	82
☐ Administrator Password	83
☐ User Password	83
☐ Bootup NumLock State [On].....	84
☐ Quiet Boot [Enabled]	85
☐ UEFI Boot [Disabled]	85
☐ Launch PXE OpROM [Disabled]	85
☐ Option ROM Messages [Force BIOS].....	85
☐ Save Changes and Reset	86
☐ Discard Changes and Reset	86
☐ Restore Defaults	86
☐ Save as User Defaults	86
☐ Restore User Defaults	86

Appendix

D

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

```
MOV    AX, 6F02H    ;setting the time-out value
MOV    BL, 30        ;time-out value is 48 seconds
INT     15H
```

;

; ADD THE APPLICATION PROGRAM HERE

;

```
CMP     EXIT_AP, 1    ;is the application over?
JNE     W_LOOP        ;No, restart the application
```

```
MOV     AX, 6F02H    ;disable Watchdog Timer
MOV     BL, 0        ;
INT     15H
```

;

; EXIT ;

Appendix

E

Hazardous Materials Disclosure



The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O
O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006 (now replaced by GB/T 26572-2011).						
X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006 (now replaced by GB/T 26572-2011).						



PPC-FxxC-Q370

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T 11363-2006 (现由 GB/T 26572-2011 取代) 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 (现由 GB/T 26572-2011 取代) 标准规定的限量要求。						