



MODEL:

PPC2-Cxxx-EHL Series

Panel PC equips Intel® Celeron® J6412 processor, on-board 8GB memory, HDMI display output, dual 2.5G Ethernet port, one M.2 M key & one M.2 B key expansion slots, 12~24V DC input, anti-glare and anti-UV 10-point touchscreen

User Manual

Revision

Date	Version	Changes
November 10, 2022	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, 不要在超過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, 不要在超過使用手冊上記載的產品工作溫度範圍之外操作此系統。
-

- en** Warning! Use only the adapter and power cord approved for this system. Use of another type of adapter may risk fire or explosion. Please refer to the user manual for the power adapter specifications.
- de** Vorsicht! Nur zugelassene Netzteile und Netzkabel dürfen verwendet werden. Die Benutzung von anderen Netzteilen kann einen Brand oder eine Explosion zur Folge haben. Prüfen Sie die jeweiligen Spezifikationen in der Bedienungsanleitung.
- fr** Attention! Utilisez exclusivement le câble d'alimentation et l'adaptateur homologués pour ce système. L'utilisation d'un autre type d'adaptateur risquerait de provoquer un incendie ou une explosion. Veuillez référer au mode d'emploi pour les spécifications de l'adaptateur d'alimentation.
- it** Avvertenza! Utilizzare solo l'adattatore e il cavo di alimentazione approvati per questo sistema. L'uso di un altro tipo di adattatore può causare rischio d'incendio o esplosione. Si prega di fare riferimento al manuale utente per le specifiche sull'alimentazione.
- es** Atención! Utilice solamente el adaptador de corriente alterna (CA) con Marcas Conformidad otorgadas. Cualquier otro adaptador no otorgado aumenta el riesgo de explosión o incendio. Por favor consulte el manual del usuario para las especificaciones del adaptador de alimentación.
- zh** 警告! 只能使用經過認證、適用於本系統的電源變壓器與電源線。使用不適用的電源變壓器將可能導致火災或爆炸。電源變壓器規格請參考使用手冊。
- cn** 警告! 只能使用经过认证, 适用于本系统的电源适配器与电源线。使用不适用的电源适配器将可能导致火灾或爆炸。电源适配器规格请参考使用手册。

-
- 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.



HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction

1.1 Overview



Figure 1-1: PPC2-Cxxx-EHL Series Panel PC

The PPC2-Cxxx-EHL series is a quad-core Intel® Celeron® processor J6412 powered flat bezel panel PC with a rich variety of functions and peripherals. The rugged and trendy design can be applied in harsh industrial environments and enriches aesthetic experience at the same time.

The Intel® Celeron® processor J6412 is a SoC (System-on-Chip) that ensures optimal memory, graphics, and peripheral I/O support.

The major external device connections include USB 3.2 Gen 1, USB 2.0, serial port, Lan port and HDMI connectors. Furthermore, the PPC2-Cxxx-EHL Series has two M.2 (1 x M.2 M key, 1 x M.2 B key) slots, Allows installation of M.2 interface memory cards and AI accelerator cards.

PPC2-Cxxx-EHL Series Panel PC

1.2 Model Variation

The PPC2-Cxxx-EHL Series is preinstalled with Intel® Celeron® processor J6412, which has a 10 W TDP. The model numbers and model variations are listed below.

Model	Size	I/O Port
PPC2-C08-EHL-J1/8G-R10	8"	4 x USB, 2 x COM
PPC2-C10-EHL-J1/8G-R10	10.4"	4 x USB, 3 x COM
PPC2-C12-EHL-J1/8G-R10	12.1"	6 x USB, 4 x COM
PPC2-C15-EHL-J1/8G-R10	15"	6 x USB, 5 x COM
PPC2-CW15-EHL-J1/8G-R10	15.6"	
PPC2-C17-EHL-J1/8G-R10	17"	
PPC2-C19-EHL-J1/8G-R10	19"	
PPC2-CW19-EHL-J1/8G-R10	18.5"	
PPC2-CW22-EHL-J1/8G-R10	21.5"	

Table 1-1: Model Variation

1.3 Features

Some of the features of the PPC2-Cxxx-EHL Series panel PC include:

- Equipped Intel® Celeron® processor J6412
- Robust aluminum IP 65 compliant front panel
- IP2EHL_XC Expansion Interface
- M.2 B Key & M.2 M Key
- Anti-glare and anti-UV touchscreen
- Support gloved and wet hand operation
- Newly designed panel mount kit
- New graphical BIOS Interface
- Supports dual 2.5G Ethernet port
- Pre-installed with 8 GB of LPDDR4x memory
- HDMI output
- RoHS compliant

1.4 Front Panel

The front side of the PPC2-Cxxx-EHL Series (**Figure 1-2**) is a flat panel LCD touchscreen surrounded by an aluminum frame.

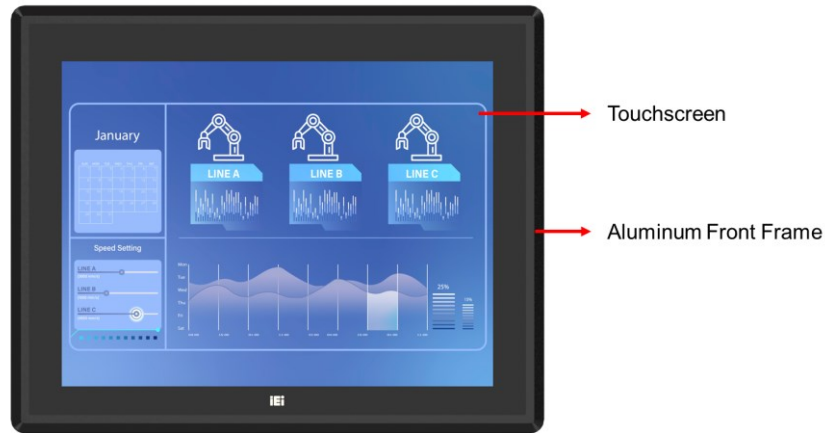


Figure 1-2: Front View

1.5 Rear Panel

The rear panel has a fan vent, four VESA 75/100 mounting holes and several retention screws. The VESA 75/100 mounting holes are circled in **Figure 1-3**.

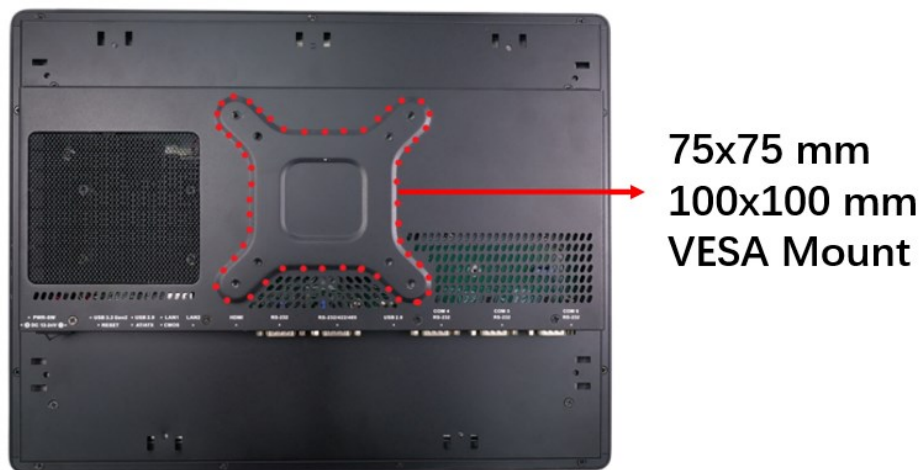


Figure 1-3: PPC2-Cxxx-EHL Series Rear View

PPC2-Cxxx-EHL Series Panel PC

1.6 Bottom Panel

The bottom panel has the following interfaces:

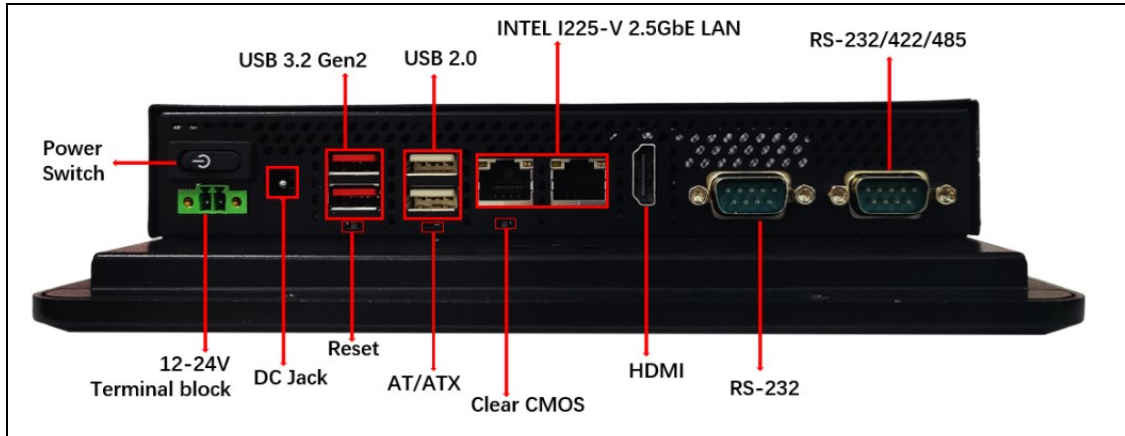


Figure 1-4: PPC2-C08-EHL Bottom View

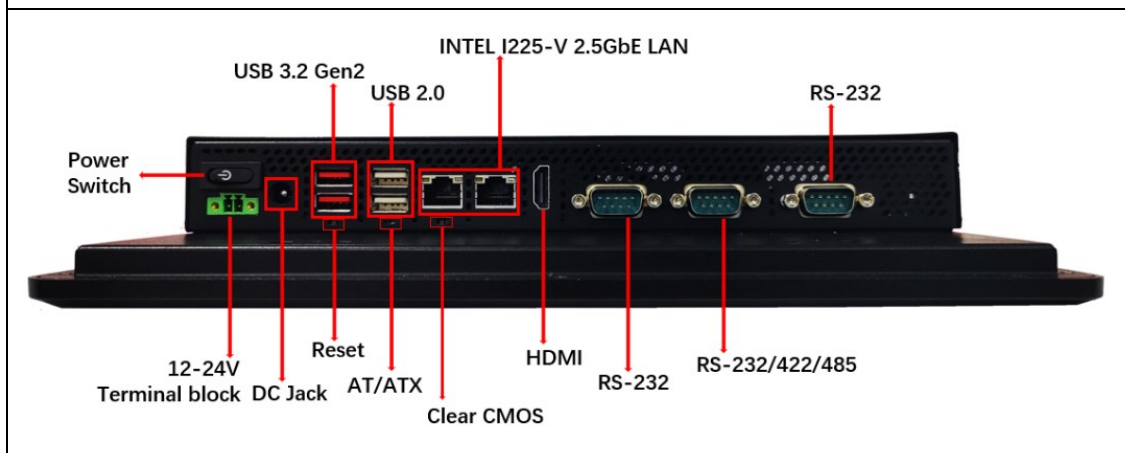


Figure 1-5: PPC2-C10-EHL Bottom View

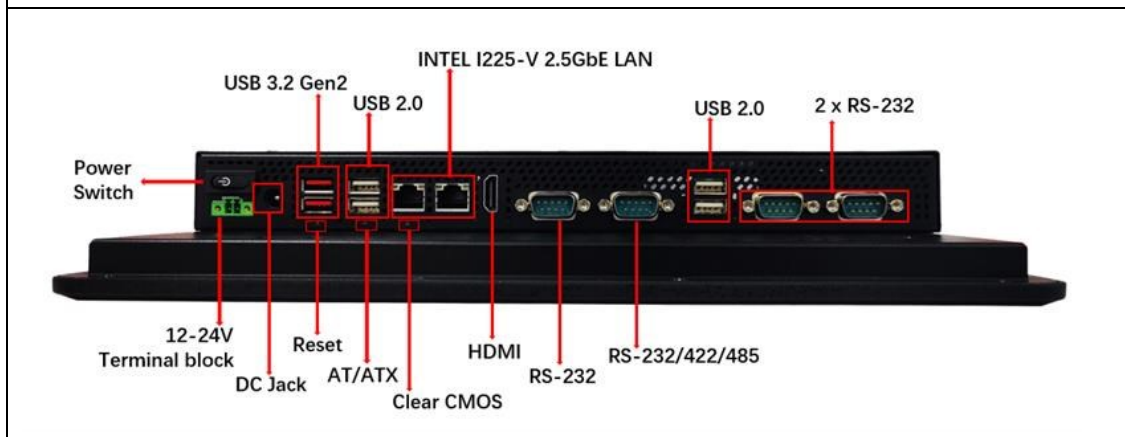
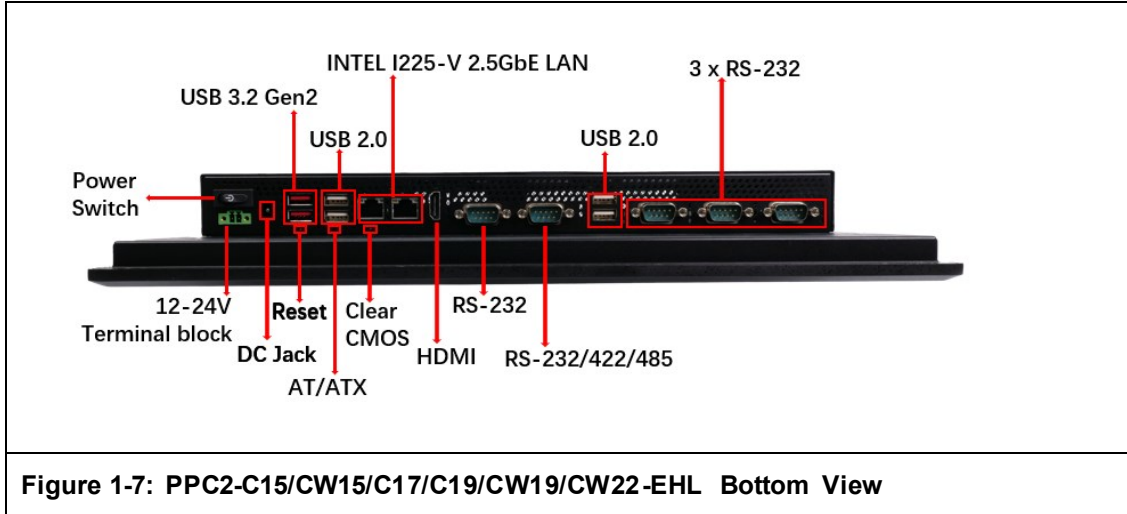


Figure 1-6: PPC2-C12-EHL Bottom View



WARNING:

Before installing the operating system, the user must enter the **Boot** BIOS menu first and choose which operating system will be installed. Otherwise, the USB 2.0 and USB 3.2 Gen 1 ports may not be detected.

PPC2-Cxxx-EHL Series Panel PC

1.7 Dimensions

1.7.1 PPC2-C08-EHL Dimensions

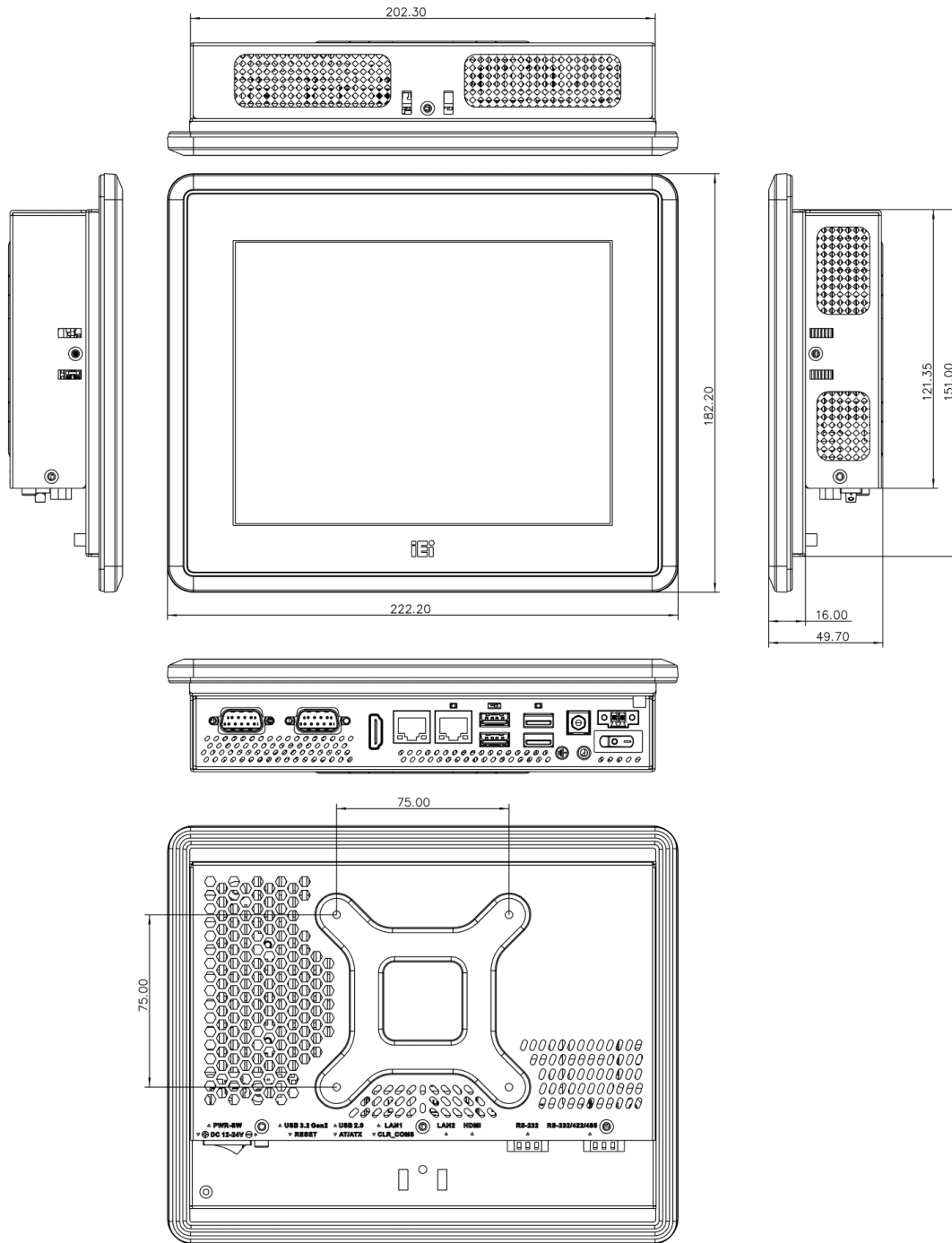


Figure 1-8: PPC2-C08-EHL Dimensions (Unit: mm)

1.7.2 PPC2-C10-EHL Dimensions

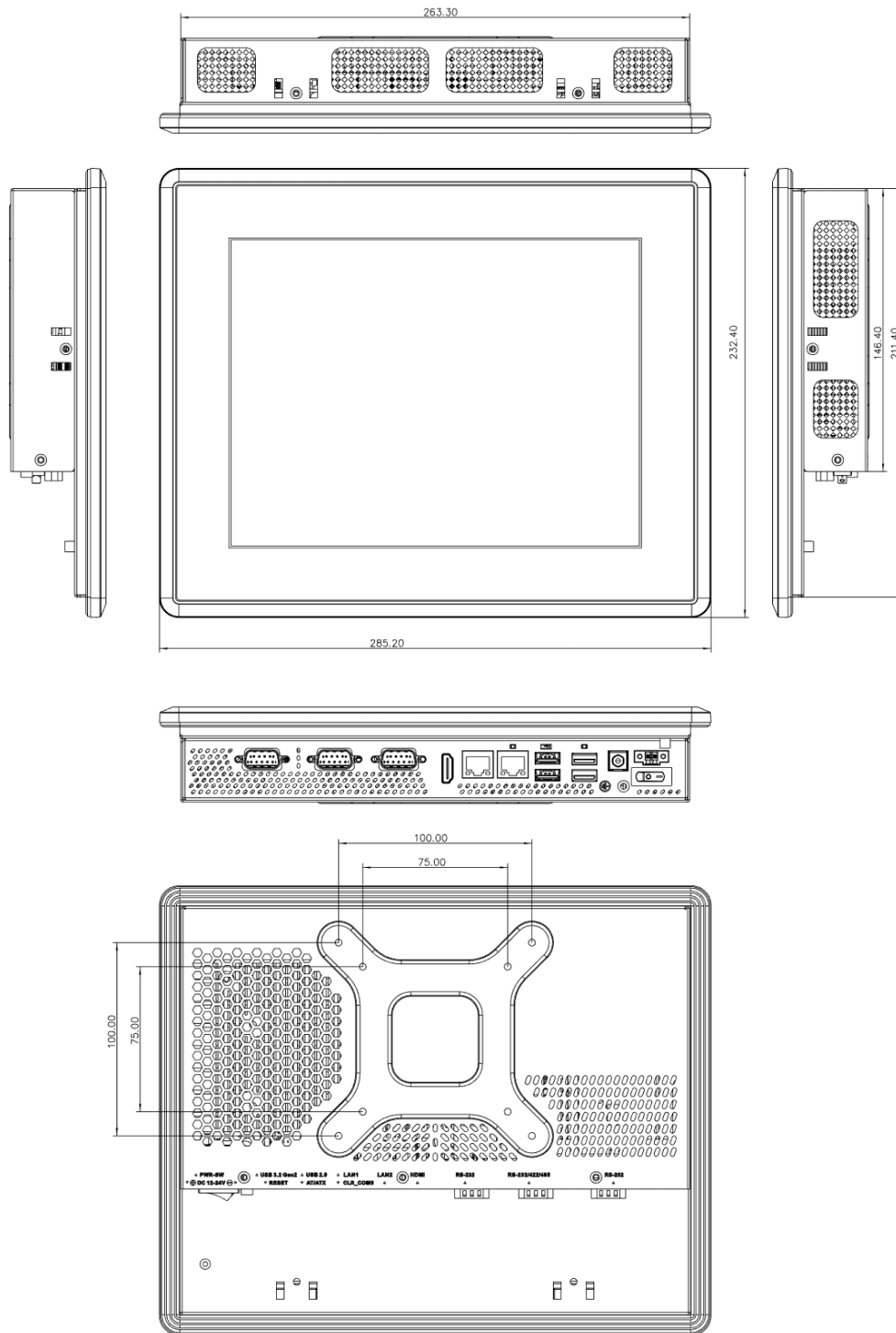


Figure 1-9: PPC2-C10-EHL Dimensions (mm)

PPC2-Cxxx-EHL Series Panel PC

1.7.3 PPC2-C12-EHL Dimensions

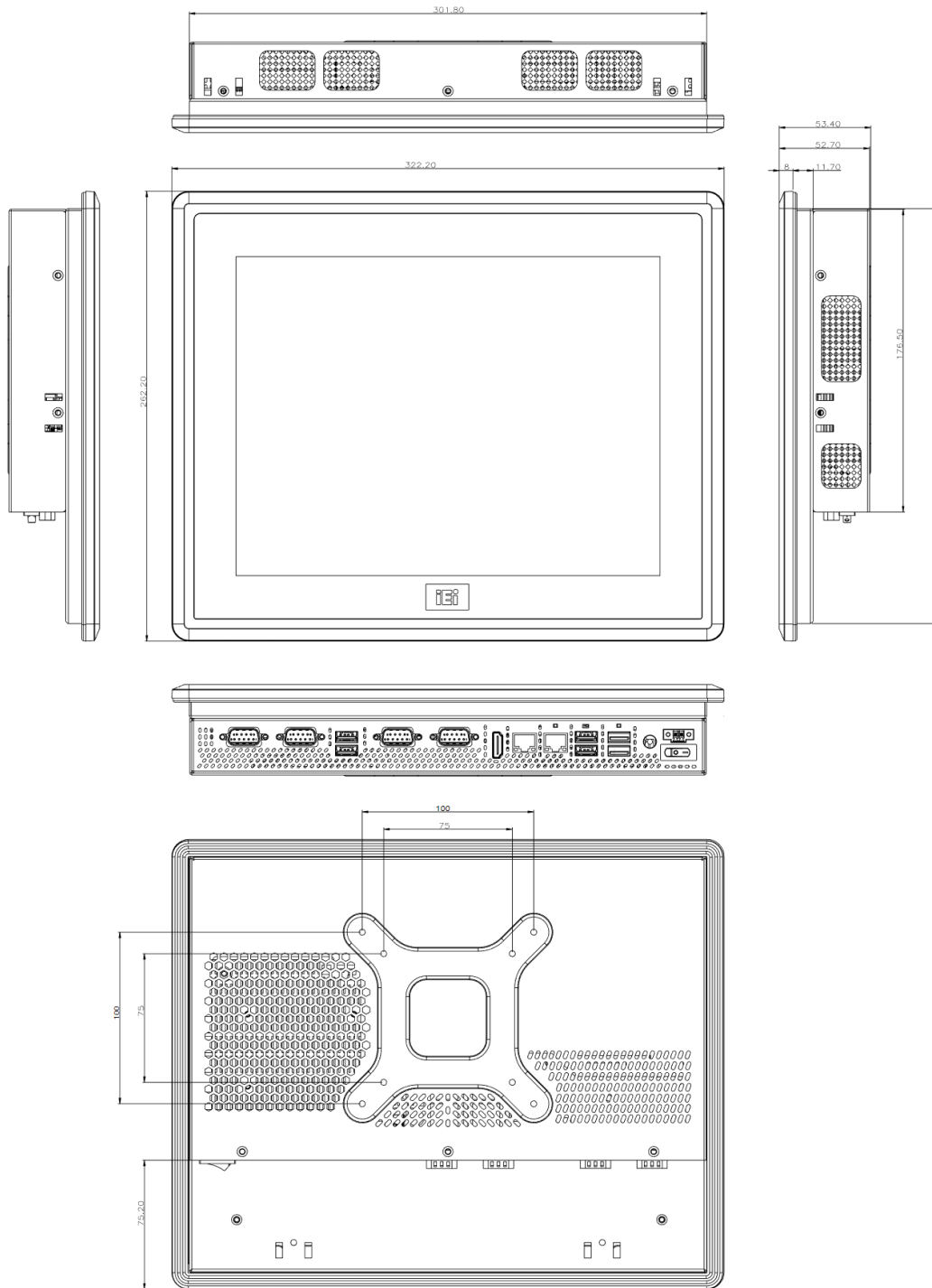


Figure 1-10: PPC2-C12-EHL Dimensions (mm)

1.7.4 PPC2-C15-EHL Dimensions

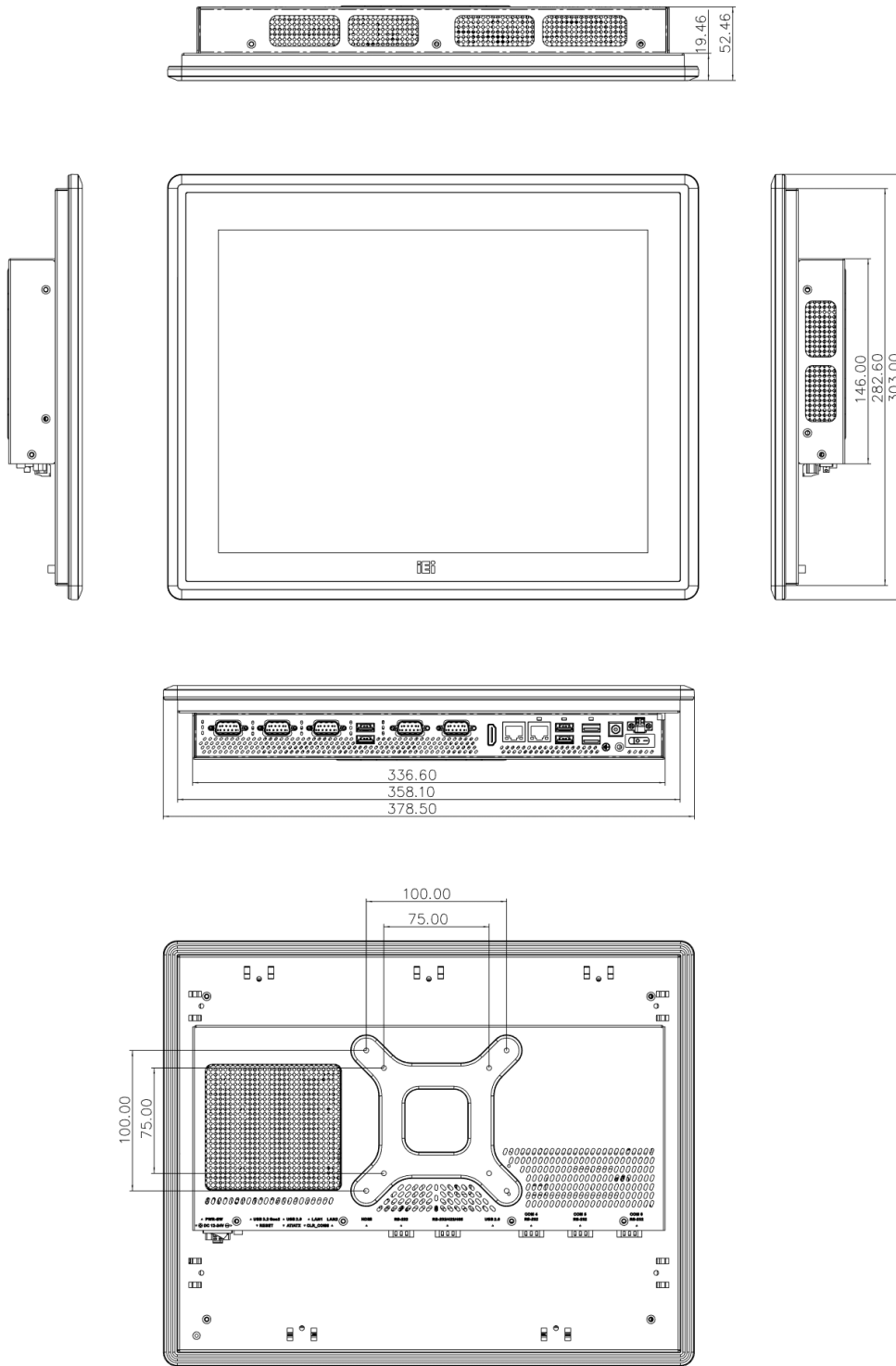


Figure 1-11: PPC2-C15-EHL Dimensions (mm)

PPC2-Cxxx-EHL Series Panel PC

1.7.5 PPC2-CW15-EHL Dimensions

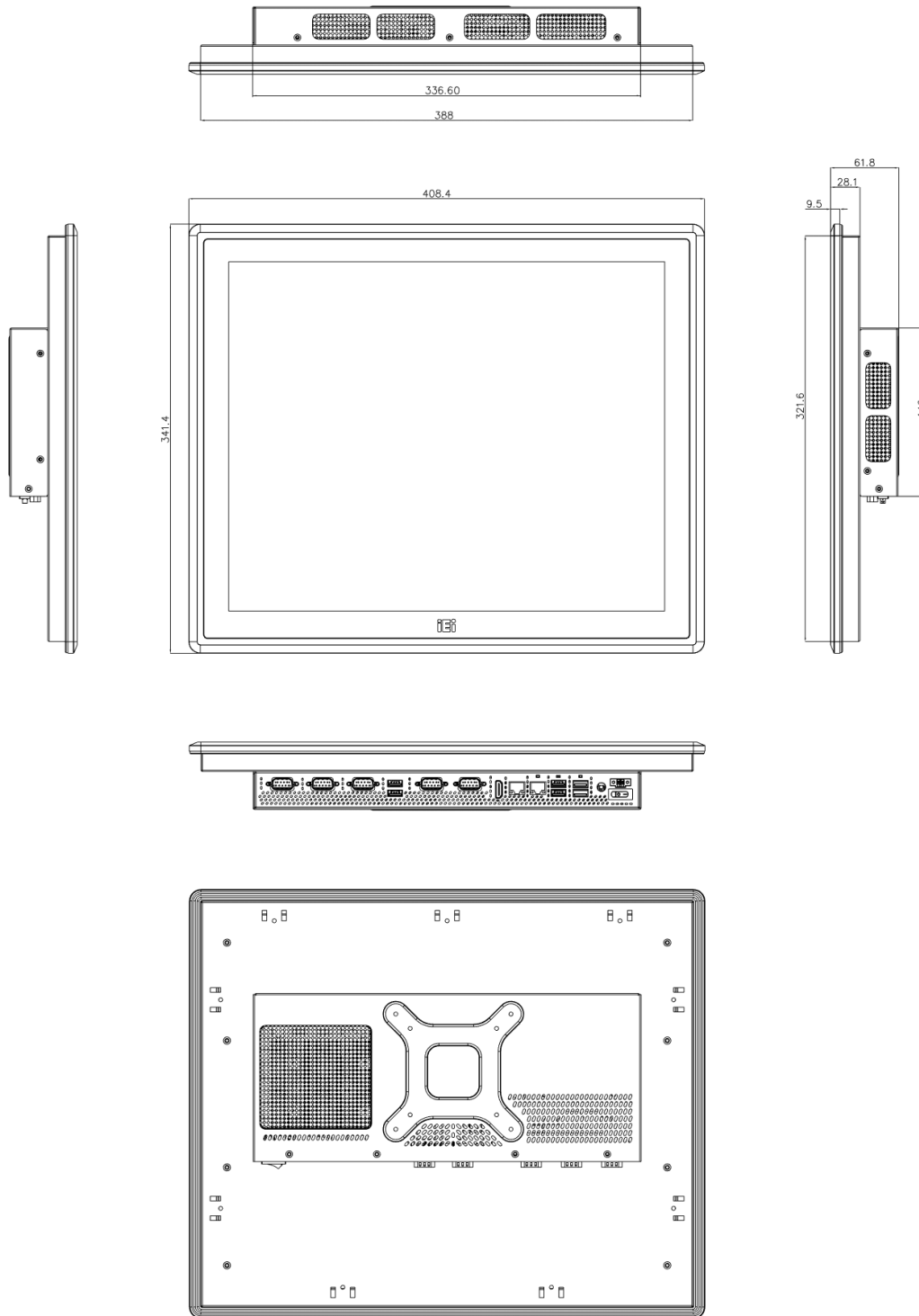


Figure 1-12: PPC2-CW15-EHL Dimensions (mm)

1.7.6 PPC2-C17-EHL Dimensions

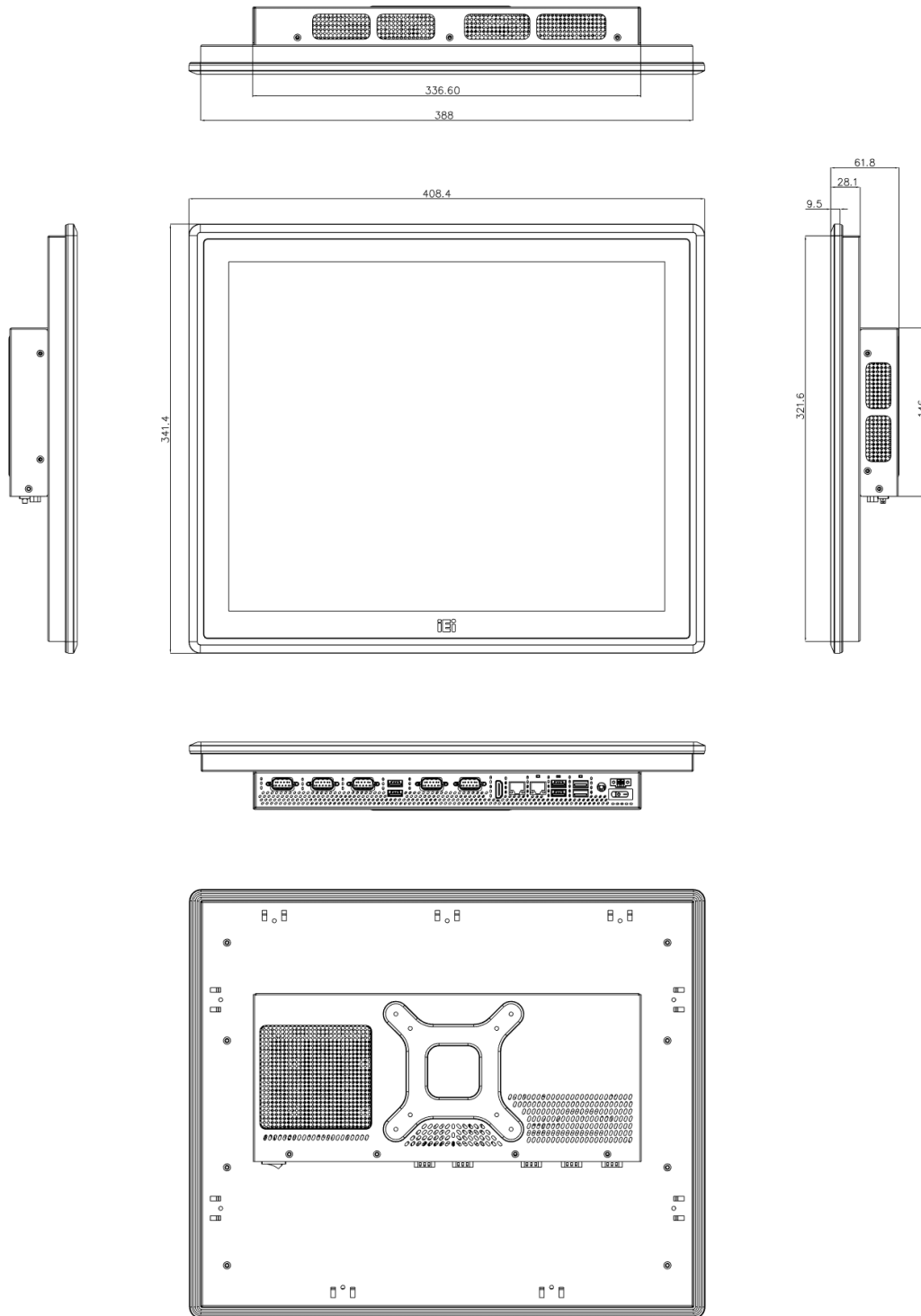


Figure 1-13: PPC2-C17-EHL Dimensions (mm)

PPC2-Cxxx-EHL Series Panel PC

1.7.7 PPC2-C19-EHL Dimensions

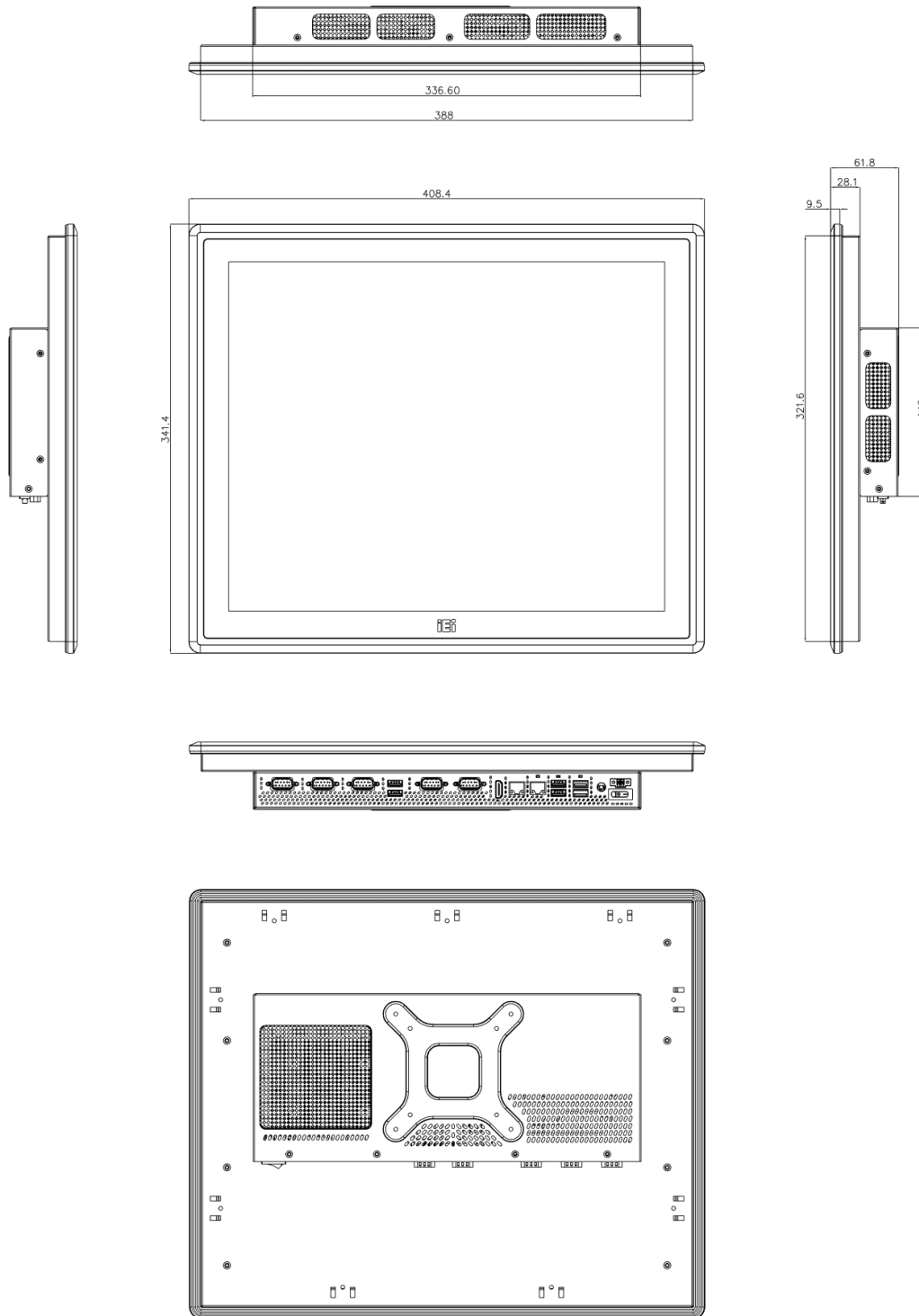


Figure 1-14: PPC2-C19-EHL Dimensions (mm)

1.7.8 PPC2-CW19-EHL Dimensions

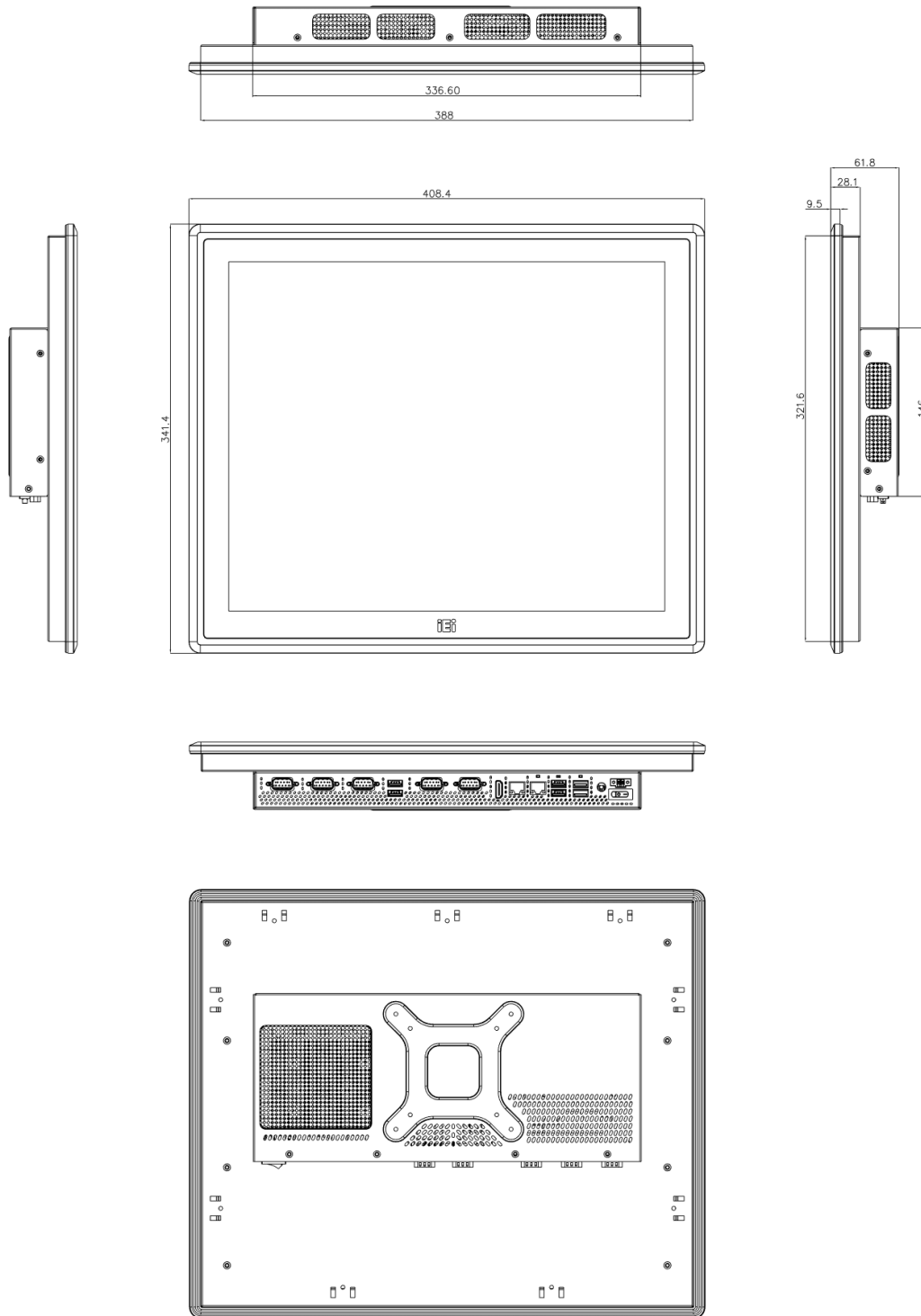


Figure 1-15: PPC2-CW19-EHL Dimensions (mm)

PPC2-Cxxx-EHL Series Panel PC

1.7.9 PPC2-CW22-EHL Dimensions

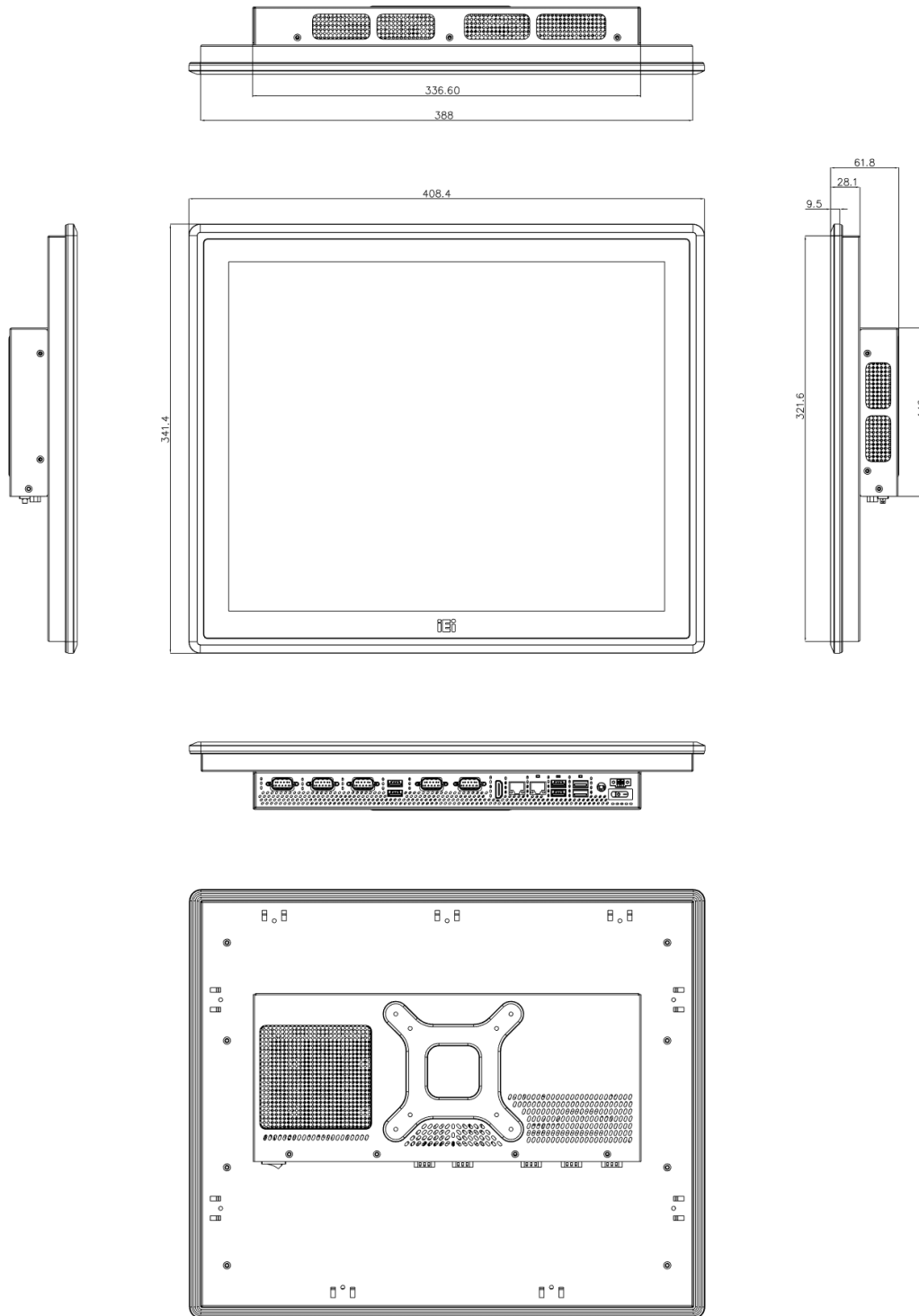


Figure 1-16: PPC2-CW22-EHL Dimensions (mm)

1.8 Specifications

The technical specifications are listed in **Table 1-2 & Table 1-3 & Table 1-4** .

	PPC2-C08	PPC2-C10	PPC2-C12
LCD Display	8" (4:3)	10.4" (4:3)	12" (4:3)
Max. Resolution	800 (W) x 600 (H)	800 (W) x 600 (H)	1024 (W) x 768 (H)
Brightness	500 cd/m ²	400 cd/m ²	500 cd/m ²
Contrast Ratio	500:1	700:1	700:1
LCD Color	262K	16.2M	16.2M
Pixel Pitch (Unit: mm)	0.2025 x 0.0675	0.264 x 0.264	0.24 x 0.24
Viewing Angle (H-V)	140°/120°	160°/140°	160°/140°
Backlight MTBF	50,000 hours	30,000 hours	50,000 hours
SBC Model	PPC2-EHL-MB	PPC2-EHL-MB+PPC2-XIO-03	PPC2-EHL-MB+PPC2-XIO-01
CPU (SoC)	Intel® Celeron® Processor J6412 1.5M Cache, up to 2.60 GHz / TDP 10W		
Memory	8GB dual-channel on-board LPDDR4x		
Touchscreen	Multi-point projected capacitive type (anti-UV / anti-glare coating, support gloves)		
	Surface hardness: ≥7H		
Touch Controller	Projected capacitive type: EETI 80		
Drive Bay	N/A	1 x 2.5" HDD/SSD drive bay	
Ethernet	2 x 2.5GbE LAN via Intel I225-V		
Expansion	1 x M.2 2242/2280 B key (PCIe Gen3 x1 + USB 3.0)		
	1 x M.2 2242 M key (PCIe Gen3 x2)		
Mounting	Panel, Wall, Stand and Arm, VESA 75	Panel, Wall, Rack, Stand and Arm, VESA 75/100	
Construction Material	Aluminum front cover and sheet metal rear cover		
Enclosure Color	Black		
Power Input	12 V ~ 24 V DC		
Power Adapter	36W power adapter	60W power adapter	
Thermal Solution	Fanless		
TPM	Intel® Platform Trust Technology		
Watchdog Timer	Software Programmable support 1~255 sec. system reset		
Operating Temperature (With air flow)	-10°C ~ 60°C		
Storage Temperature	-20°C ~ 60°C		

PPC2-Cxxx-EHL Series Panel PC

	PPC2-C08	PPC2-C10	PPC2-C12
Humidity	10% ~ 95%, non-condensing		
Safety and EMC	CE, FCC Class A		
ErP	ErP 2009/125/EC		
Dimensions (H x W x D) (Unit: mm)	222.2 x 182.2 x 49.7	285.2 x 232.4 x 49.9	322.2 x 262.2x 53
Net Weight	1.610kg	2.355kg	3.095kg
I/O Ports, Switches and Buttons	1 x HDMI output 2 x 2.5GbE RJ-45 2 x USB 3.2 Gen 2x1 (10Gb/s) 2 x USB 2.0 1 x RS-232/422/485 1 x RS-232 1 x 12V-24V power jack 1 x RS-232 1 x 12V-24V power jack 1 x Power terminal block (2-pin) 1 x AT/ATX switch 1 x Power button 1 x Reset button 1 x Clear CMOS button	1 x HDMI output 2 x 2.5GbE RJ-45 2 x USB 3.2 Gen 2x1 (10Gb/s) 2 x USB 2.0 1 x RS-232/422/485 1 x RS-232 1 x 12V-24V power jack 1 x Power terminal block (2-pin) 1 x AT/ATX switch 1 x Power button 1 x Reset button 1 x Clear CMOS button PPC2-XIO-03-R10: 1 x RS-232 DB9 1 x M.2 B key 2242/2280 (PCIe Gen3 x 2 + USB 2.0)	1 x HDMI output 2 x 2.5GbE RJ-45 2 x USB 3.2 Gen 2x1 (10Gb/s) 2 x USB 2.0 1 x RS-232/422/485 1 x RS-232 1 x 12V-24V power jack 1 x Power terminal block (2-pin) 1 x AT/ATX switch 1 x Power button 1 x Reset button 1 x Clear CMOS button PPC2-XIO-01-R10: 2 x USB 2.0 2 x RS-232 DB9 1 x M.2 B key 2242/2280 (PCIe Gen3 x 2 + USB 2.0)
Table 1-2: PPC2-C08/C10/C12 Specifications			

	PPC2-C15	PPC2-CW15	PPC2-C17
LCD Display	15" (4:3)	15.6" (16:9)	17" (5:4)
Max. Resolution	1024 (W) x 768 (H)	1920(W)x 1080 (H)	1280 (W) x 1024 (H)
Brightness	450 cd/m2	400 cd/m2	350cd/m2

	PPC2-C15	PPC2-CW15	PPC2-C17
Contrast Ratio	800:1	500:1	800:1
LCD Color	16.2M	16.2M	16.7M
Pixel Pitch (Unit: mm)	0.297 x 0.297	0.252x0.252	0.26x0.26
Viewing Angle (H-V)	170°/150°	170°/160°	170°/160°
Backlight MTBF	70,000 hours	50000 hours	50,000 hours
SBC Model	PPC2MB2-EHL-RC-R10+PPC2-XIO-02-R10		
CPU (SoC)	Intel® Celeron® Processor J6412 1.5M Cache, up to 2.60 GHz / TDP 10W		
Memory	8GB dual-channel on-board LPDDR4x		
Touchscreen	Multi-point projected capacitive type (anti-UV / anti-glare coating, support gloves)		
	Surface hardness: ≥7H		
Touch Controller	Projected capacitive type: EETI 80		
Drive Bay	1 x 2.5" HDD/SSD drive bay		
Ethernet	2 x 2.5GbE LAN via Intel I225-V		
Expansion	1 x M.2 2242/2280 B key (PCIe Gen3 x1 + USB 3.0)		
	1 x M.2 2242 M key (PCIe Gen3 x2)		
Mounting	Panel, Wall, Rack, Stand and Arm, VESA 75/100		
Construction Material	Aluminum front cover and sheet metal rear cover		
Enclosure Color	Black		
Power Input	12 V ~ 24 V DC		
Power Adapter	60W power adapter		
Thermal Solution	Fanless		
TPM	Intel® Platform Trust Technology		
Watchdog Timer	Software Programmable support 1~255 sec. system reset		
Operating Temperature (With air flow)	-10°C ~ 60°C		
Storage Temperature	-20°C ~ 60°C		
Humidity	10% ~ 95%, non-condensing		
Safety and EMC	CE, FCC Class A		
ErP	ErP 2009/125/EC		
Dimensions (H x W x D) (Unit: mm)	378.5 x 303 x 53.2	408.4x 341.4 x 61.8	408.4x 341.4 x 61.8
Net Weight	3.940kg	3.875kg	4.830kg

PPC2-Cxxx-EHL Series Panel PC

	PPC2-C15	PPC2-CW15	PPC2-C17
I/O Ports, Switches and Buttons	1 x HDMI output 2 x 2.5GbE RJ-45 2 x USB 3.2 Gen 2x1 (10Gb/s) 2 x USB 2.0 1 x RS-232/422/485 1 x RS-232 1 x 12V-24V power jack 1 x Power terminal block (2-pin) 1 x AT/ATX switch 1 x Power button 1 x Reset button 1 x Clear CMOS button PPC2-XIO-01-R10: 2 x USB 2.0 2 x RS-232 DB9 1 x M.2 B key 2242/2280 (PCIe Gen3 x 2 + USB 2.0)		
Table 1-3: PPC2-C15/CW15/C17 Specifications			

	PPC2-C19	PPC2-CW19	PPC2-CW22
LCD Display	19" (5:4)	18.5" (16:9)	21.5" (16:9)
Max. Resolution	1280 (W) x 1024 (H)	1920 (W) x 1080 (H)	1920 (W) x 1080 (H)
Brightness	350cd/m ²	400cd/m ²	400cd/m ²
Contrast Ratio	1000:1	1000:1	1000:1
LCD Color	16.7M	16.7M	16.7M
Pixel Pitch (Unit: mm)	0.294 x 0.294	0.3 x 0.3	0.3 x 0.3
Viewing Angle (H-V)	170°/160°	170°/160°	170°/160°
Backlight MTBF	50,000 hours	50,000 hours	50000 hours
SBC Model	PPC2MB2-EHL-RC-R10+PPC2-XIO-02-R10		
CPU (SoC)	Intel® Celeron® Processor J6412 1.5M Cache, up to 2.60 GHz / TDP 10W		
Memory	8GB dual-channel on-board LPDDR4x		
Touchscreen	Multi-point projected capacitive type (anti-UV / anti-glare coating, support gloves)		

	PPC2-C19	PPC2-CW19	PPC2-CW22
	Surface hardness: $\geq 7H$		
Touch Controller	Projected capacitive type: EETI 80		
Drive Bay	1 x 2.5" HDD/SSD drive bay		
Ethernet	2 x 2.5GbE LAN via Intel I225-V		
Expansion	1 x M.2 2242/2280 B key (PCIe Gen3 x1 + USB 3.0)		
	1 x M.2 2242 M key (PCIe Gen3 x2)		
Mounting	Panel, Wall, Rack, Stand and Arm, VESA 75/100		
Construction Material	Aluminum front cover and sheet metal rear cover		
Enclosure Color	Black		
Power Input	12 V ~ 24 V DC		
Power Adapter	60W power adapter		
Thermal Solution	Fanless		
TPM	Intel® Platform Trust Technology		
Watchdog Timer	Software Programmable support 1~255 sec. system reset		
Operating Temperature (With air flow)	-10°C ~ 60°C		
Storage Temperature	-20°C ~ 60°C		
Humidity	10% ~ 95%, non-condensing		
Safety and EMC	CE, FCC Class A		
ErP	ErP 2009/125/EC		
Dimensions (H x W x D) (Unit: mm)	222.2 x 182.2 x 49.7	285.2 x 232.4 x 49.9	322.2 x 262.2x 53
Net Weight	5.745kg	5.096kg	6.330kg
I/O Ports, Switches and Buttons	1 x HDMI output 2 x 2.5GbE RJ-45 2 x USB 3.2 Gen 2x1 (10Gb/s) 2 x USB 2.0 1 x RS-232/422/485 1 x RS-232 1 x 12V-24V power jack 1 x Power terminal block (2-pin) 1 x AT/ATX switch 1 x Power button		

PPC2-Cxxx-EHL Series Panel PC

	PPC2-C19	PPC2-CW19	PPC2-CW22
	1 x Reset button 1 x Clear CMOS button PPC2-XIO-01-R10: 2 x USB 2.0 2 x RS-232 DB9 1 x M.2 B key 2242/2280 (PCIe Gen3 x 2 + USB 2.0)		

Table 1-4: PPC2-C19/CW19/CW22 Specifications

Chapter

2

Unpacking

PPC2-Cxxx-EHL Series Panel PC

2.1 Unpacking

To unpack the panel PC, follow the steps below:



WARNING!

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the panel PC has been properly installed. This ensures the screen is protected during the installation process.

- 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 monitor out of the boxes.
- Step 5:** Remove both polystyrene ends, one from each side.
- Step 6:** Pull the plastic cover off the panel PC.
- Step 7:** Make sure all the components listed in the packing list are present.

2.2 Packing List

The PPC2-Cxxx-EHL Series panel PC is shipped with the following components:






Quantity	Item	Image
1	PPC2-Cxxx-EHL Series panel PC	
1	Power cord (part number varies by regions)	
1	Power adapter	
1	Screw pack	
1	Panel mount kit pack	

Table 2-1: Packing List

If any of the above items are missing or damaged, contact the distributor or sales representative immediately.

2.3 Optional Items

The following items are optional accessories for the PPC2-Cxxx-EHL Series:

Item	PPC2-C08	PPC2-C10	PPC2-C12	PPC2-C15~CW22
Arm	ARM-11-RS	ARM-11-RS	ARM-31-RS	ARM-31-RS
Stand	STAND-C12-R10	STAND-C12-R10	STAND-C12-R10	STAND-C19-R10
Wall	AFLWK-12	AFLWK-12	AFLWK-19B	AFLWK-19B

Table 2-2: Optional Items

Chapter

3

Installation

3.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the maintenance of the panel PC may result in permanent damage to the panel PC and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PPC2-Cxxx-EHL Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PPC2-Cxxx-EHL Series is accessed internally, or any other electrical component is 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 PPC2-Cxxx-EHL Series, place it on an anti-static pad. This reduces the possibility of ESD damaging the PPC2-Cxxx-EHL Series.
- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

3.2 Installation Precautions

**CAUTION:**

The PPC2-Cxxx-EHL Series has more than one power supply connection point.

To reduce the risk of electric shock, disconnect all power sources before installing or servicing the PPC2-Cxxx-EHL Series.

PPC2-Cxxx-EHL Series Panel PC

When installing the panel PC, please follow the precautions listed below:

- **Power turned off:** When installing the panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers:** Only certified engineers should install and modify onboard functionalities.
- **Mounting:** The PPC2-Cxxx-EHL Series is a heavy device. When mounting the system onto a rack, panel, wall or arm, please make sure that at least two people are assisting with the procedure.
- **Anti-static Discharge:** If a user open the rear panel of the panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear an anti-static wristband.

3.3 Preinstalled Components

The following components are all preinstalled.

- Motherboard
- TFT LCD
- Touchscreen

Preinstalled OEM customizations may include the following.

- CPU
- Memory module
- HDD

3.4 Installation and Configuration Steps

The following installation steps must be followed.

Step 1: Unpack the panel PC.

Step 2: Install an additional storage card (if necessary).

Step 3: Mount the panel PC.

Step 4: Connect peripheral devices to the bottom panel of the panel PC.

Step 5: Configure the system.

3.5 Removing the Back Cover

Remove the back cover retention screws on the back cover. Lift the cover up to remove.



NOTE:

The number of retention screws on the chassis varies by models.



Figure 3-1: PPC2-Cxxx-EHL Back Cover Retention Screws

PPC2-Cxxx-EHL Series Panel PC

3.6 HDD Installation (Optional)

To install a 2.5" HDD into the PPC2-Cxxx-EHL Series (model of 12" or above), please follow the steps below:

Step 1: Remove the back cover. See Section 3.5.

Step 2: Remove the HDD bracket from the PPC2-Cxxx-EHL Series. The HDD bracket is secured on the panel PC with four retention screws (**Figure 3-2**). Remove the four retention screws and disconnect the SATA and SATA power cables. Lift the bracket off the panel PC.

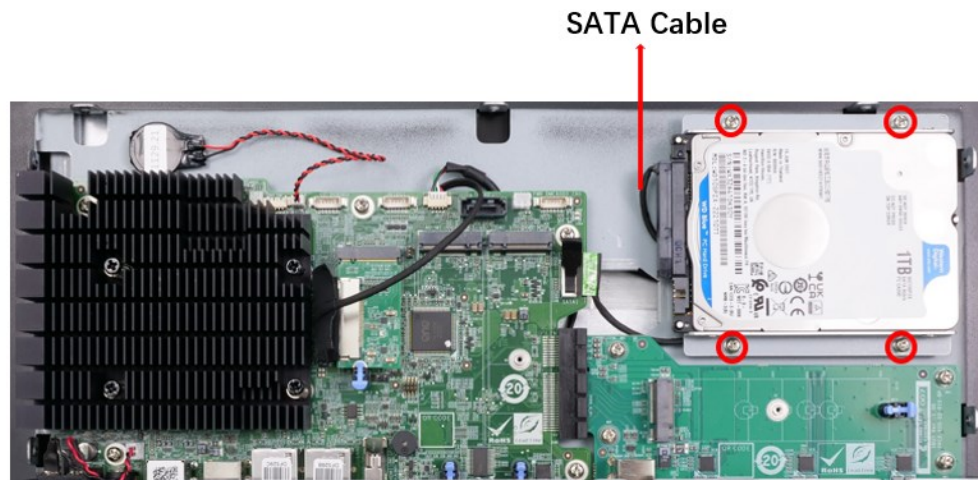


Figure 3-2: PPC2-Cxxx-EHL HDD Bracket Retention Screws

Step 3: Secure the hard drive to the bracket. Secure the hard drive to the bracket with four retention screws (**Figure 3-3: HDD Retention Screws**).

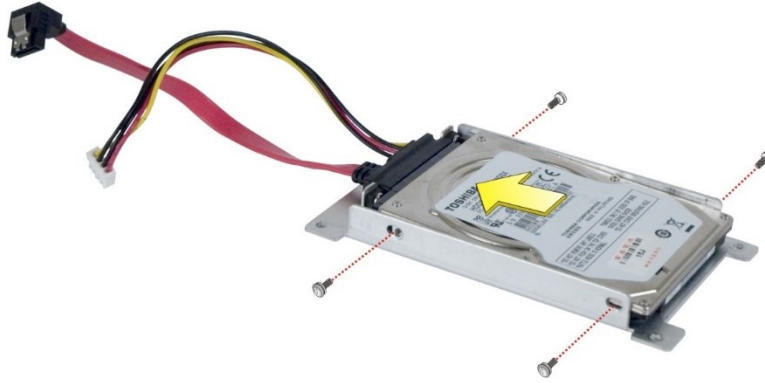


Figure 3-3: HDD Retention Screws

Step 4: Reinstall the HDD bracket into the PPC2-Cxxx-EHL Series and fasten the four hard drive bracket screws (**Figure 3-4**). Connect the SATA and SATA power cables.

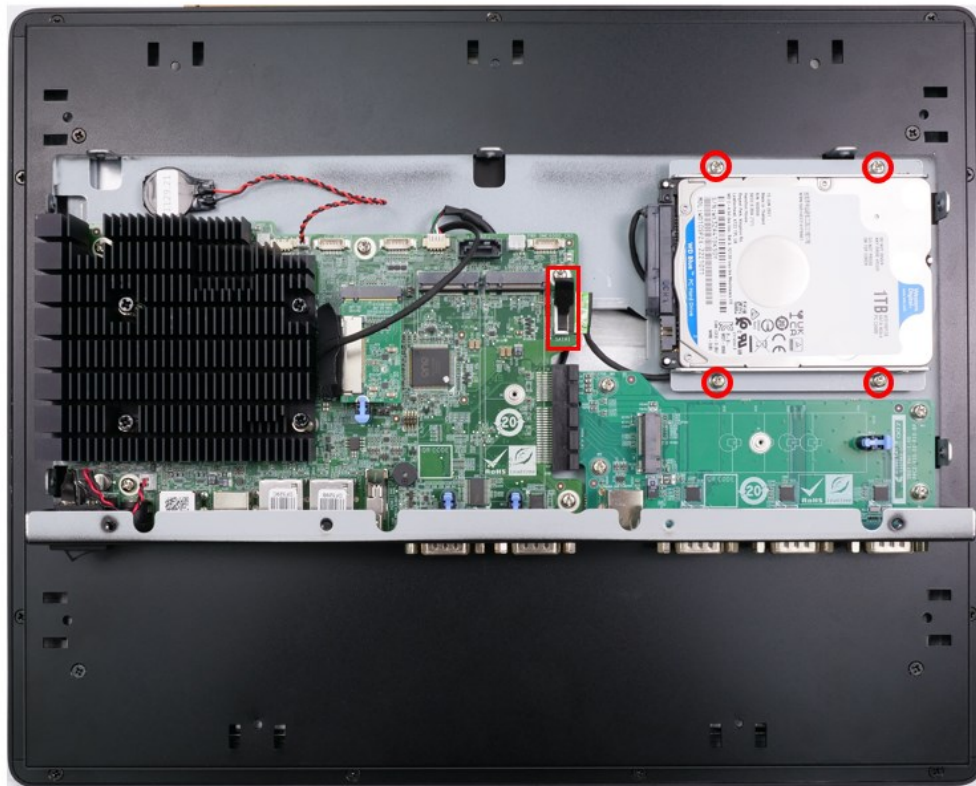


Figure 3-4: PPC2-Cxxx-EHL HDD Installation

PPC2-Cxxx-EHL Series Panel PC

3.7 M.2 Module Installation (Optional)

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

Step 1: Remove the back cover. See **Section 3.5**.

Step 2: Locate the M.2 slot as shown in **Figure 3-5**.

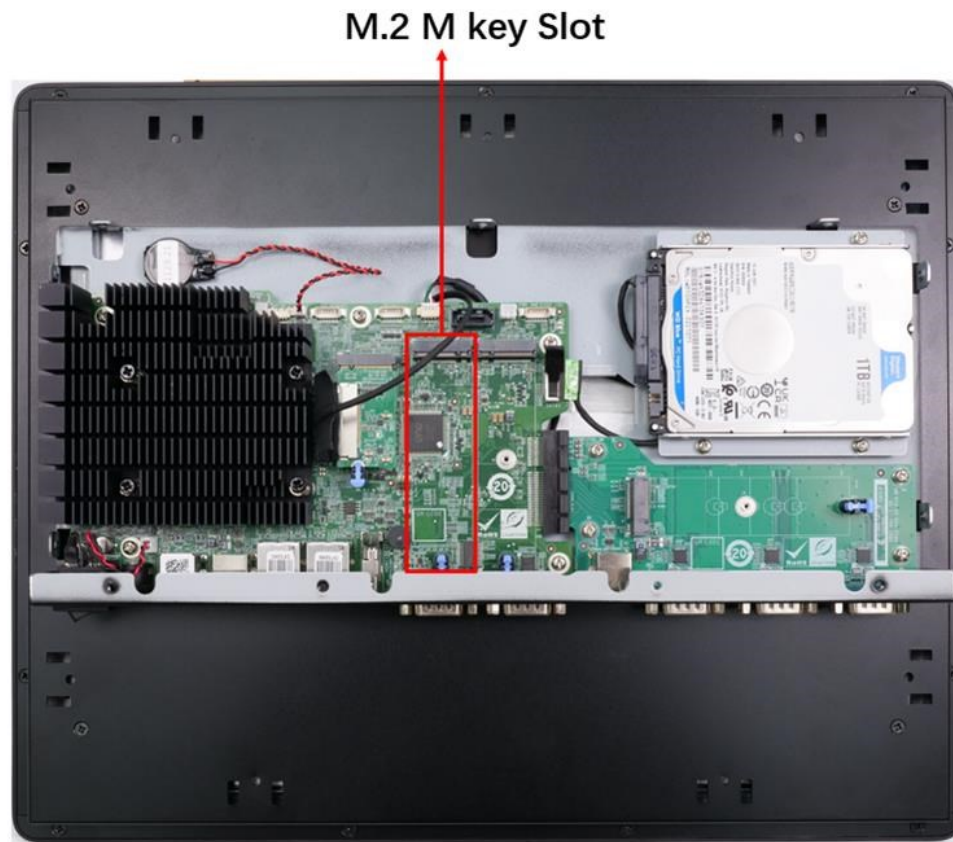


Figure 3-5: M.2 Slot Location

Step 3: Press the end of the M.2 retaining clip. As shown in **Figure 3-6**.

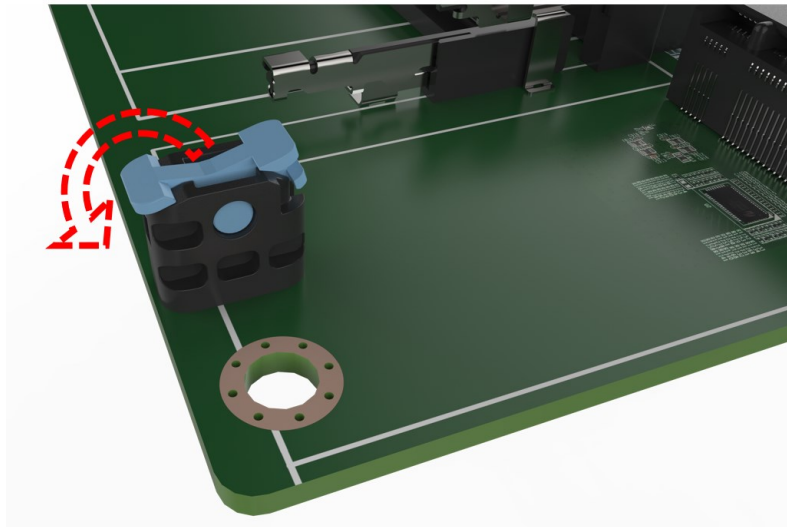


Figure 3-6: Press the end of the M.2 retaining clip

Step 4: Insert M.2 card. The notch at the end of the M.2 card needs to be aligned with the notch of the fixed buckle (**Figure 3-7**).

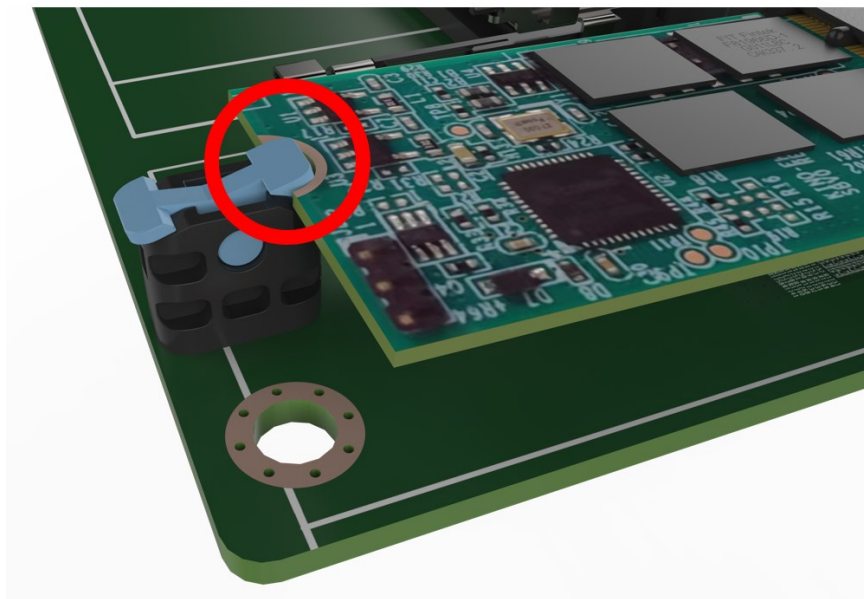


Figure 3-7: Insert M.2 Card

Step 5: Secure the M.2 card. Press down the M.2 card to fix it (**Figure 3-8**).

PPC2-Cxxx-EHL Series Panel PC

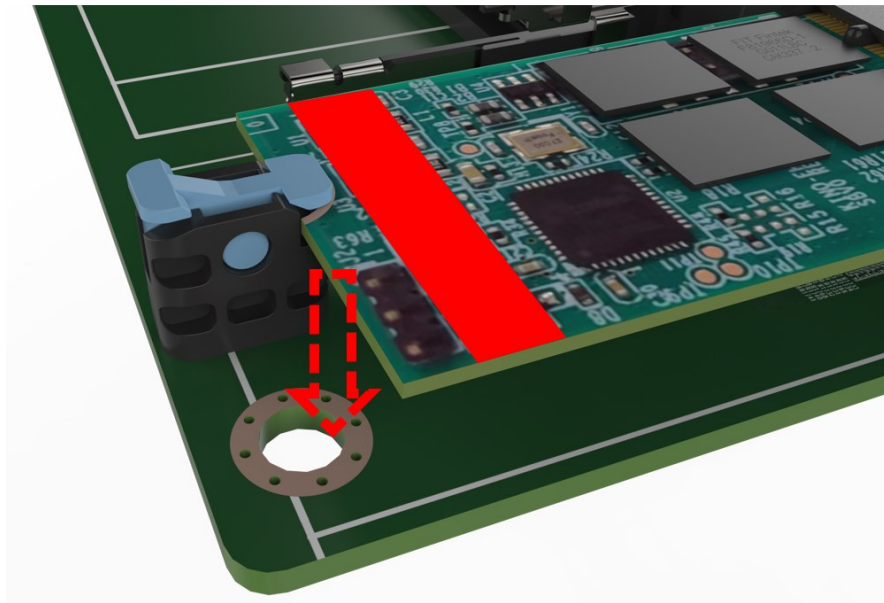


Figure 3-8: Securing the M.2 card

3.8 AT/ATX Mode Selection

AT and ATX power modes can both be used on the PPC2-Cxxx-EHL Series panel PC. The selection is made through an AT/ATX switch on the I/O interface panel. The system is set to ATX mode by default. The switch is shown below.



Figure 3-9: AT/ATX Mode Selection

		AT/ATX Switch	
		AT	ATX (Default)
Power Switch Position	Off (O)	The system remains off.	The system remains off.
	On (I)	The system turns on once power is connected.	Depends on the state selected in the Restore AC Power Loss BIOS option.

Table 3-1: AT/ATX Mode Selection

3.9 Mounting the System



WARNING!

When mounting the PPC2-Cxxx-EHL Series panel PC, it is advisable to have more than one person help with the installation to prevent accidental damage to the panel and avoid personal injury.

The methods of mounting the PPC2-Cxxx-EHL Series are:

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

The mounting methods are described in the following sections.

3.9.1 Wall Mounting

To mount the PPC2-Cxxx-EHL Series panel PC onto a wall, please follow the steps below.

Step 1: Select the location on the wall for the wall-mounting bracket.

Step 2: Carefully mark the locations of the four bracket screw holes on the wall.

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting bracket screw holes with the pilot holes.

Step 5: Secure the mounting bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 3-10**).

PPC2-Cxxx-EHL Series Panel PC

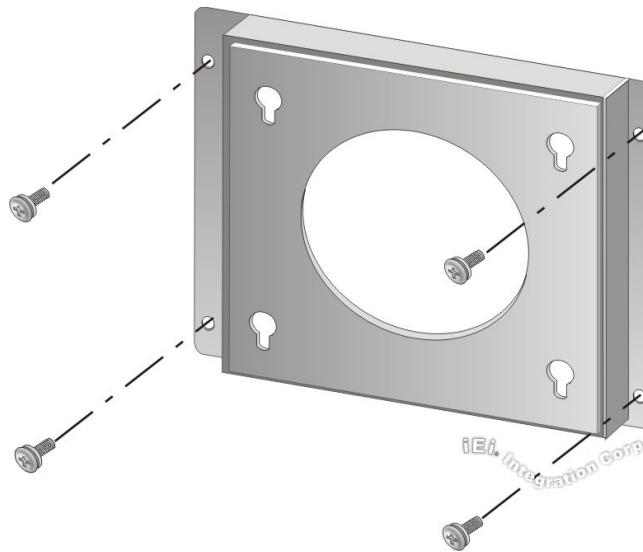


Figure 3-10: Wall-mounting Bracket

- Step 6:** Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the rear panel of the monitor and tighten until the screw shank is secured against the rear panel (**Figure 3-11**).
- Step 7:** Align the mounting screws on the monitor rear panel with the mounting holes on the bracket.
- Step 8:** Carefully insert the screws through the holes and gently pull the monitor downwards until the monitor rests securely in the slotted holes (**Figure 3-11**). Ensure that all four of the mounting screws fit snugly into their respective slotted holes.



NOTE:

In the diagram below the bracket is already installed on the wall.

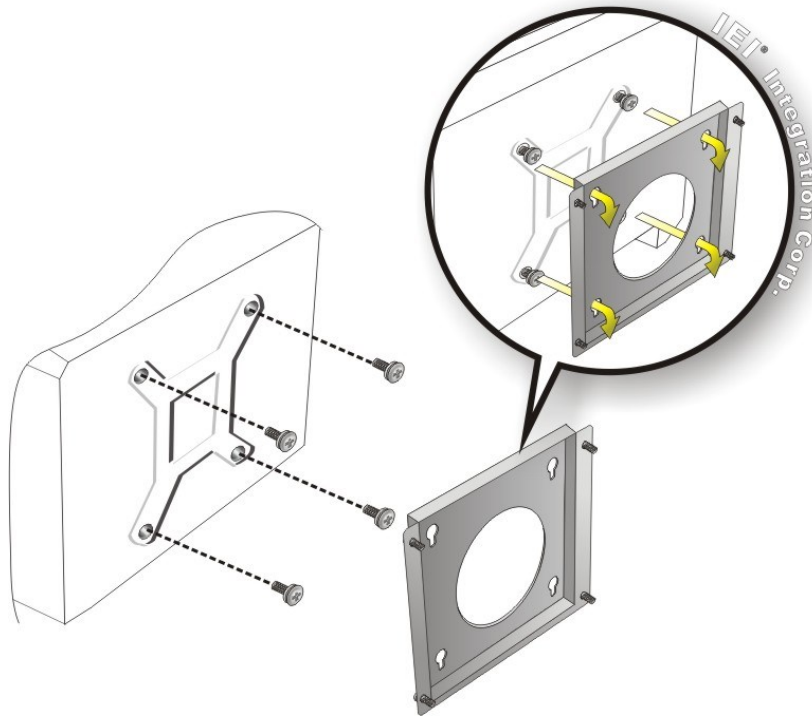


Figure 3-11: Mount the Chassis

Step 9: Secure the panel PC with the wall-mounting kit. To do this, stick the protective cushion to the wall-mounting kit first. Then, put the wall-mounting kit on the top panel of the panel PC. Carefully mark the location of the wall-mounting kit screw holes on the wall. Drill a pilot hole at the marked location on the wall. Secure the wall-mounting kit to the wall by inserting a retention screw into the pilot hole on the wall (**Figure 3-12**). This step is to avoid the panel PC being pushed apart from the wall-mounting bracket accidentally.

PPC2-Cxxx-EHL Series Panel PC

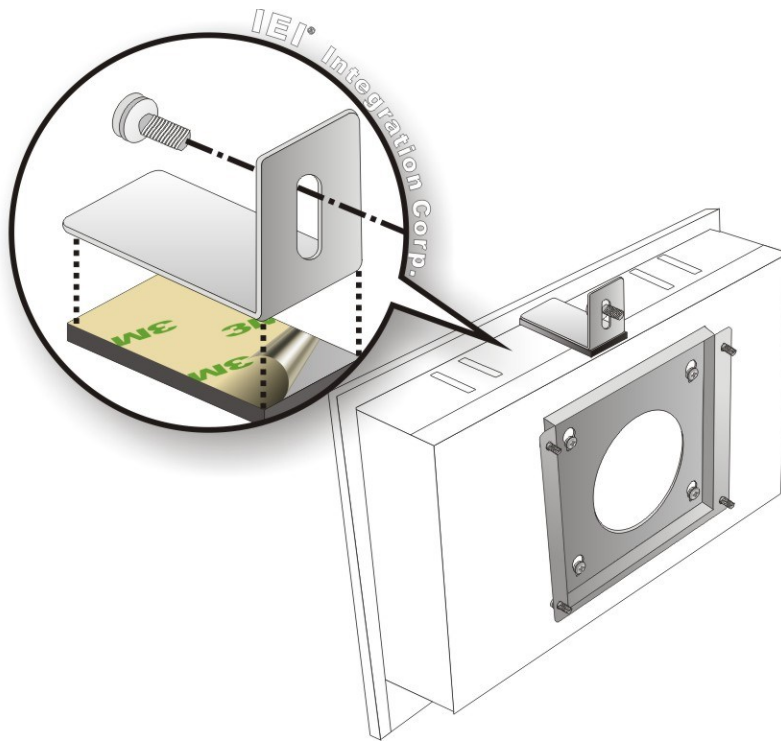


Figure 3-12: Secure the Chassis

3.9.2 Panel, Rack and Cabinet Installation

To mount the PPC2-Cxxx-EHL Series panel PC into a panel, please follow steps 1-5.

For rack and cabinet installation, please follow Steps 1-7.



NOTE:

For the PPC-XXX-EHL Series panel PC, all mounting kit must be installed (**Figure 3-13**).



Figure 3-13: PPC2-Cxxx-EHL Series Panel Mount Kit Installation

- Step 1:** Select the position on the panel to mount the PPC2-Cxxx-EHL Series.
- Step 2:** Cut out a section of the panel that corresponds to the rear panel dimensions of the PPC2-Cxxx-EHL Series. The recommended cutout sizes are shown below (**Figure 3-14**, **Figure 3-15**, **Figure 3-16**, **Figure 3-17**, **Figure 3-18**, **Figure 3-19**, **Figure 3-20**, **Figure 3-21**, **Figure 3-22**).

PPC2-Cxxx-EHL Series Panel PC

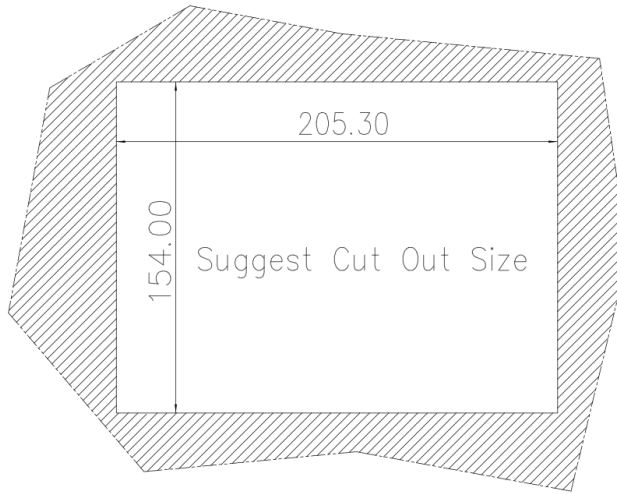


Figure 3-14: PPC2-C08-EHL Panel Cutout Dimensions

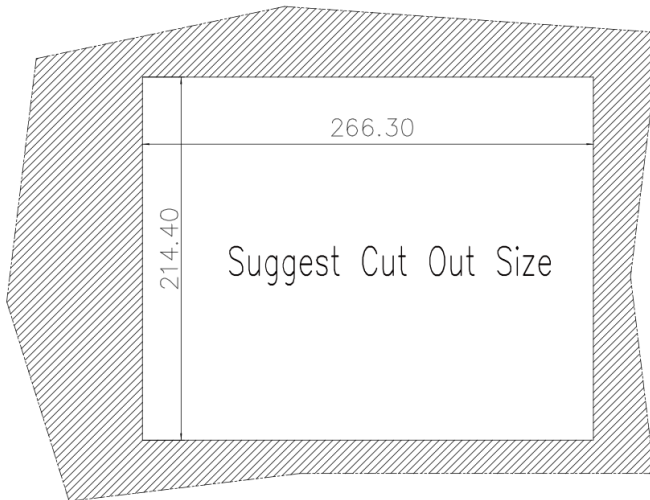


Figure 3-15: PPC2-C10-EHL Panel Cutout Dimensions

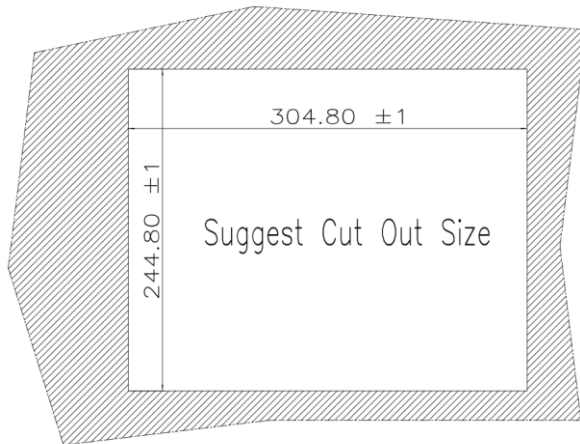


Figure 3-16: PPC2-C12-EHL Panel Cutout Dimensions

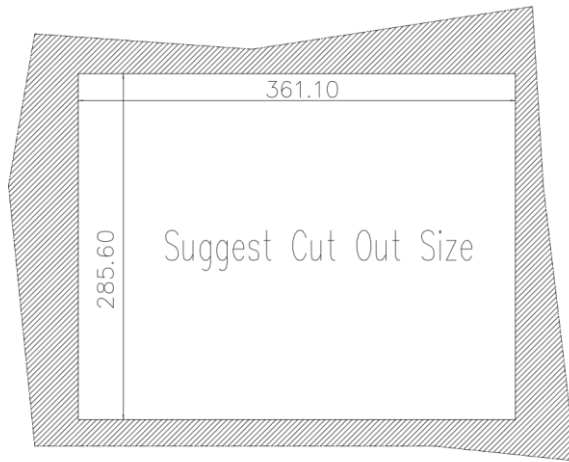


Figure 3-17: PPC2-C15-EHL Panel Cutout Dimensions

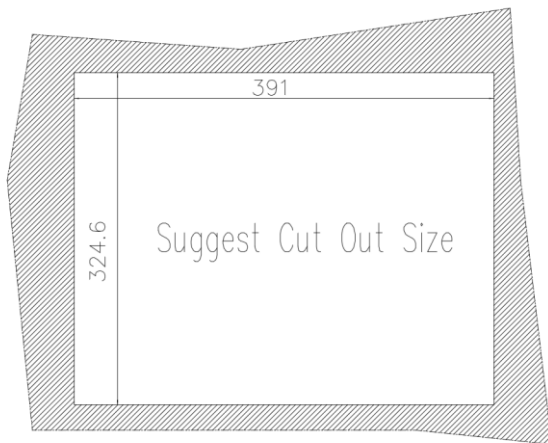


Figure 3-18: PPC2-C17-EHL Panel Cutout Dimensions

PPC2-Cxxx-EHL Series Panel PC

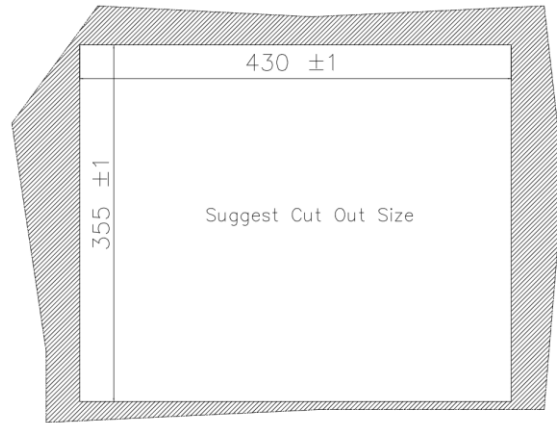


Figure 3-19: PPC2-C19-EHL Panel Cutout Dimensions

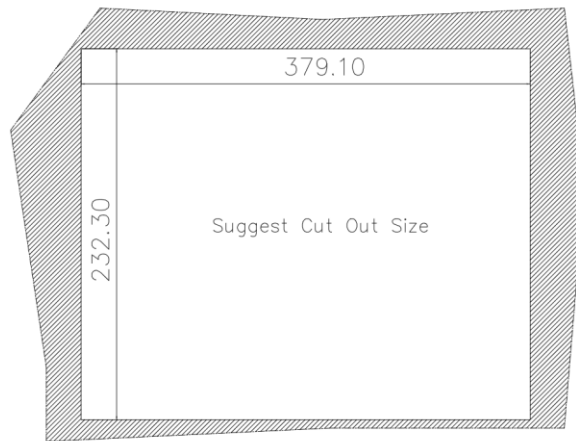


Figure 3-20: PPC2-CW15-EHL Panel Cutout Dimensions

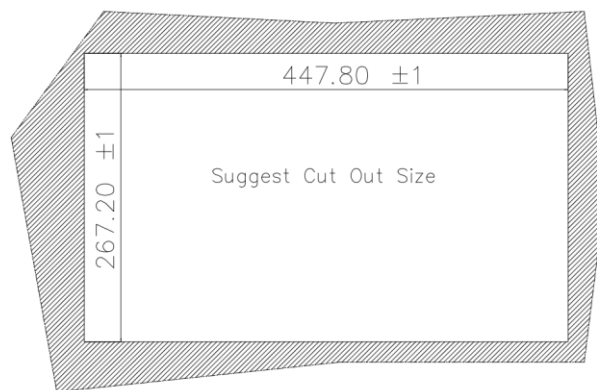


Figure 3-21: PPC2-CW19-EHL Panel Cutout Dimensions

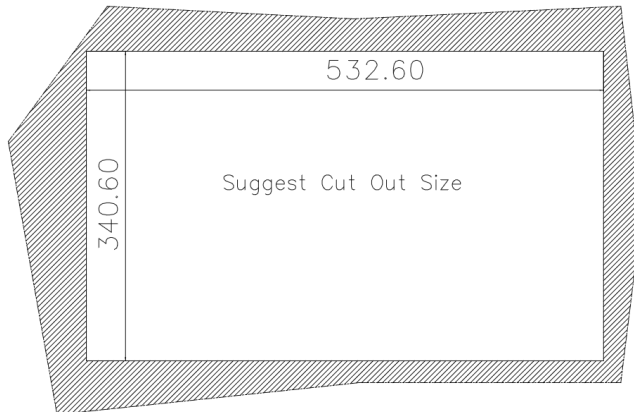


Figure 3-22: PPC2-CW22-EHL Panel Cutout Dimensions

Step 3: Slide the PPC2-Cxxx-EHL Series through the hole until the aluminum frame is flush against the panel (**Figure 3-23**).

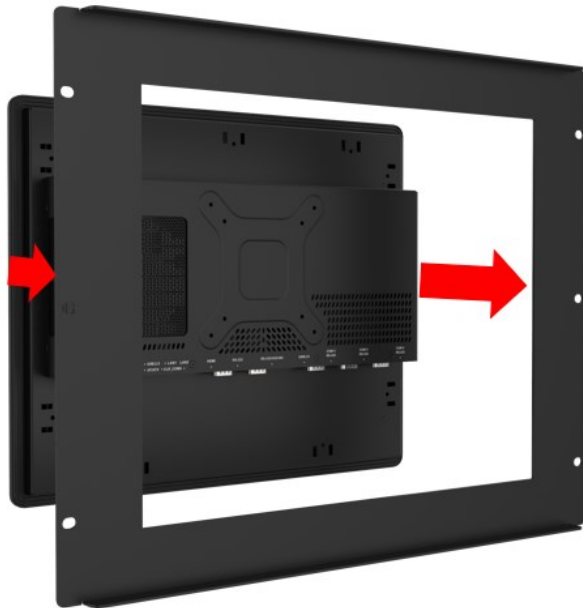


Figure 3-23: Machine mounted to panel

Step 4: Insert the panel mount kit into the prefabricated holes along the rear edge of the PPC2-Cxxx-EHL series (**Figure 3-24**). The required number of mounting clamps may vary by models.

PPC2-Cxxx-EHL Series Panel PC

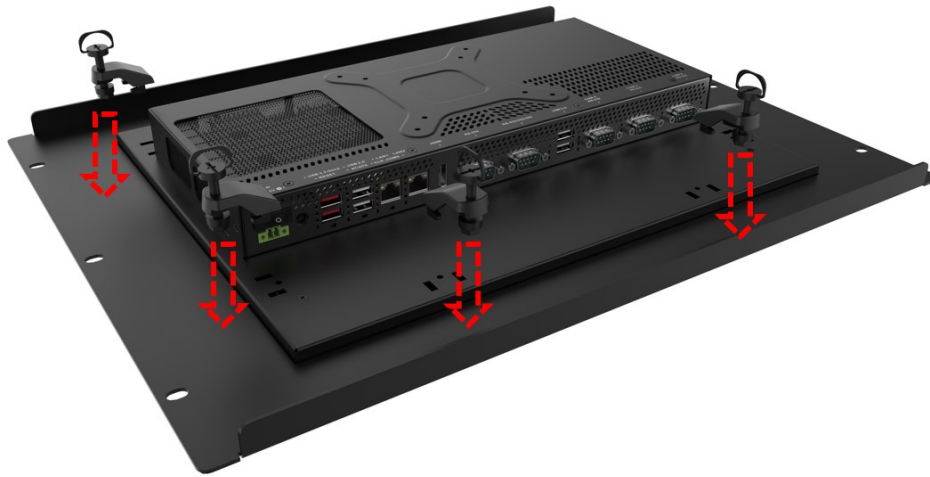


Figure 3-24: Installation Panel Mount Kit

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 3-25**).



Figure 3-25: Tighten the Mounting Screws

Step 6: Slide the PPC2-Cxxx-EHL series with the attached rack/cabinet bracket into a rack or cabinet (**Figure 3-26**).

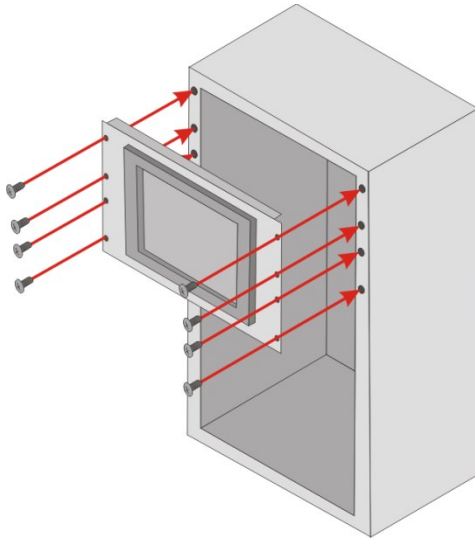


Figure 3-26: Install into a Rack/Cabinet

Step 7: Once the flat 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 3-26**).

3.9.3 Arm Mounting

The PPC2-Cxxx-EHL Series is VESA (Video Electronics Standards Association) compliant and can be mounted on an arm with a 75/100 mm interface pad. To mount the PPC2-Cxxx-EHL Series on an arm, please follow the steps below.

Step 1: The arm is a separately purchased item. Please correctly mount the arm onto the surface it uses as a base. To do this, refer to the installation documentation that came with the mounting arm.



NOTE:

When purchasing the arm please ensure that it is VESA compliant and that the arm has a 75/100 mm interface pad. If the mounting arm is not VESA compliant, it cannot be used to support the PPC2-Cxxx-EHL Series panel PC.

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- Step 2:** Once the mounting arm has been firmly attached to its surface, lift the PPC2-Cxxx-EHL Series panel PC onto the interface pad of the mounting arm.
- Step 3:** Align the retention screw holes on the mounting arm interface with those in the PPC2-Cxxx-EHL Series panel PC. The arm mounting retention screw holes of the PPC2-Cxxx-EHL Series panel PC are shown in **Figure 3-27**.

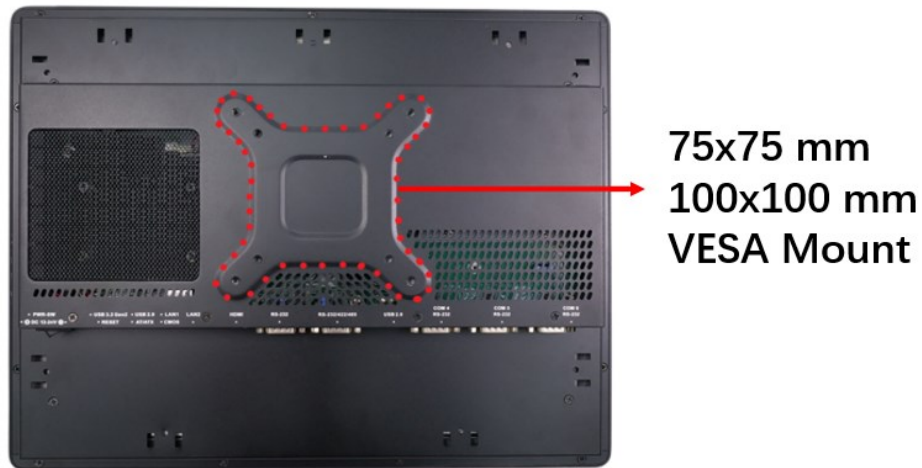


Figure 3-27: Arm Mounting Retention Screw Holes

- Step 4:** Secure the PPC2-Cxxx-EHL Series to the interface pad by inserting four retention screws through the mounting arm interface pad and into the PPC2-Cxxx-EHL Series panel PC.

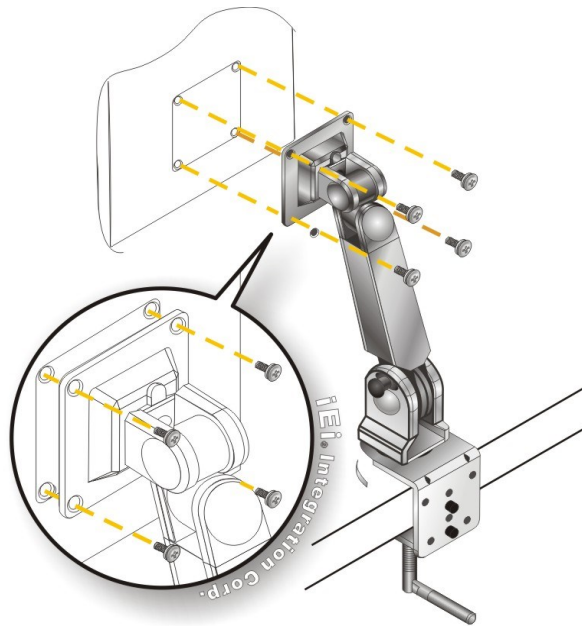


Figure 3-28: Arm Mounting (ARM-XX-RS)

3.9.4 Stand Mounting

To mount the PPC2-Cxxx-EHL Series using the stand mounting kit, please follow the steps below.

- Step 1:** Locate the screw holes on the rear of the PPC2-Cxxx-EHL Series. This is where the bracket will be attached.

PPC2-Cxxx-EHL Series Panel PC

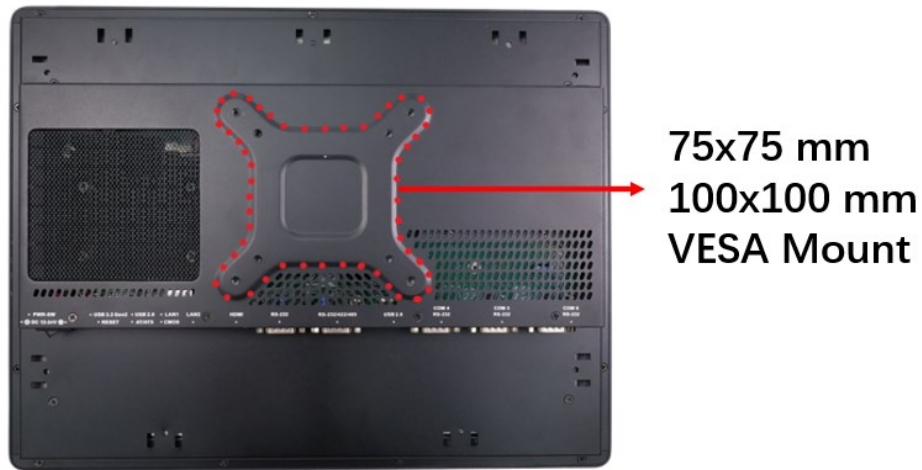


Figure 3-29: Stand Mounting Retention Screw Holes

Step 2: Align the bracket with the screw holes.

Step 3: To secure the bracket to the PPC2-Cxxx-EHL Series, insert the retention screws into the screw holes and tighten them.

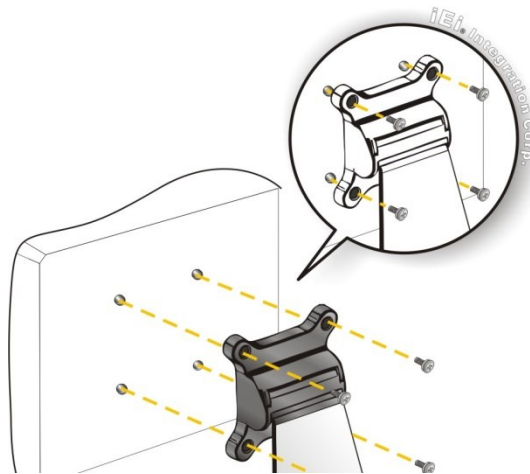


Figure 3-30: Stand Mounting (Stand-Cxx)

3.10 Serial Device Connection

The PPC2-Cxxx-EHL Series has RS-232/422/484 and RS-232 ports. See **Section 1.6** for the port locations of each model. The pinouts of the serial ports are listed in the following sections.

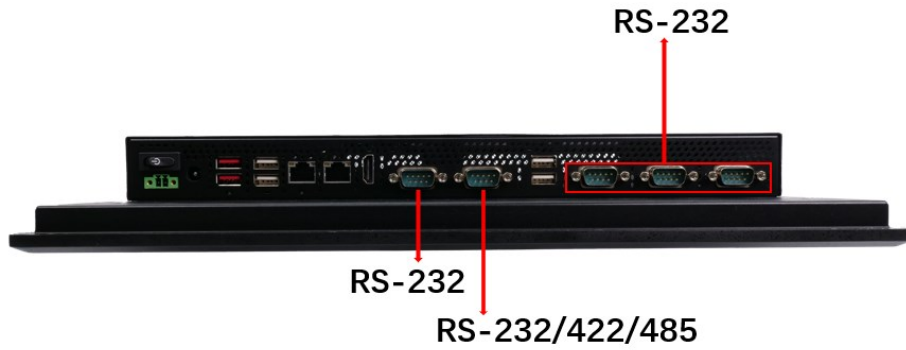


Figure 3-31: Serial Port Locations of PPC2-C15/CW15/C17/C19/CW19/CW22-EHL

3.10.1 RS-232 Serial Ports

The pinouts of the RS-232 serial ports are listed in the following table.

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

Table 3-2: RS-232 Serial Port Pinouts

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3.10.2 RS-232/422/485 Serial Port

The pinouts of the RS-232/422/485 serial ports are listed in the following table.

PIN NO.	RS-232	RS-422	RS-485
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

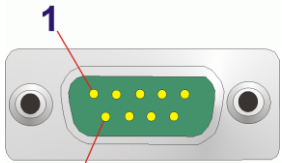


Table 3-3: RS-232/422/485 Serial Port (COM3) Pinouts

3.11 Powering On the System

To power on the system, follow the steps below:

Step 1: Either connect the power adapter to the power jack or connect the power cable to the 2-pin power input terminal block. **DO NOT** connect both power connectors to a power source at the same time. The pinouts of the power input connectors are shown below.

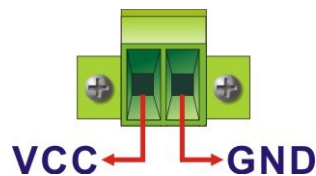


Figure 3-32: Power Input Connector Pinouts

Step 2: Toggle the power switch on the I/O panel to the constant on position (I) to power on the system.

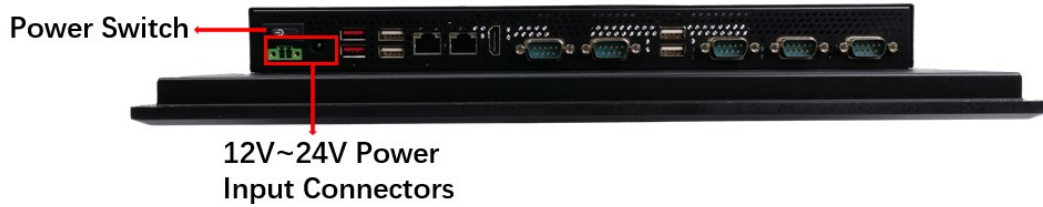


Figure 3-33: Power Connectors and Power Switch

3.12 Reset the System

The reset button enables users to reboot the system when the system is turned on. The reset button location is shown in **Figure 3-34**. Press the reset button to reboot the system.



Figure 3-34: Reset Button Location

3.13 Clear CMOS

If the PPC2-Cxxx-EHL Series fails to boot due to improper BIOS settings, the clear CMOS button clears the CMOS data and resets the system BIOS information. To do this, push the clear CMOS button for three seconds, and then restart the system. The clear CMOS button location is shown in **Figure 3-35**.



Figure 3-35: Clear CMOS Button Location

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3.14 Available Drivers

All the drivers for the PPC2-Cxxx-EHL Series are available on IEI Resource Download Center (<https://download.ieiworld.com>). Type PPC2-Cxxx-EHL Series and press Enter to find all the relevant software, utilities, and documentation.

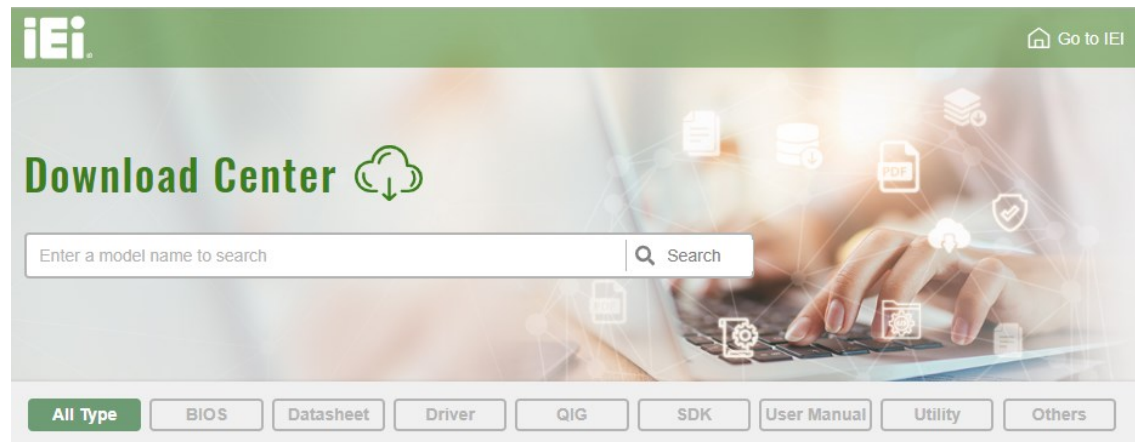


Figure 3-36: IEI Resource Download Center

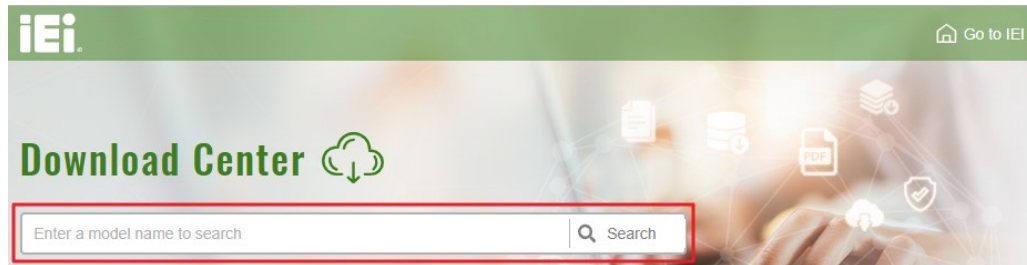
The following drivers can be installed on the **Windows 10/11** operating system:

- Chipset
- Serial I/O driver
- Graphics (Intel® EMGD)
- TXE
- HID
- LAN
- Audio

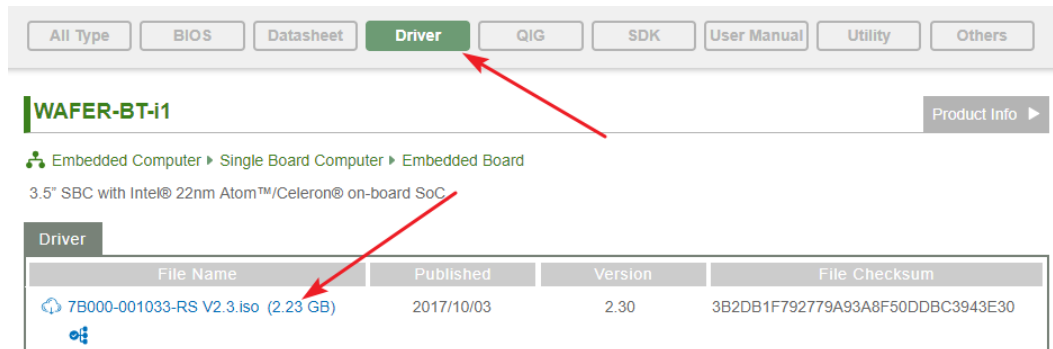
3.14.1 Driver Download

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

Step 1: Go to <https://download.ieiworld.com>. Type PPC2-Cxxx-EHL Series and press Enter.

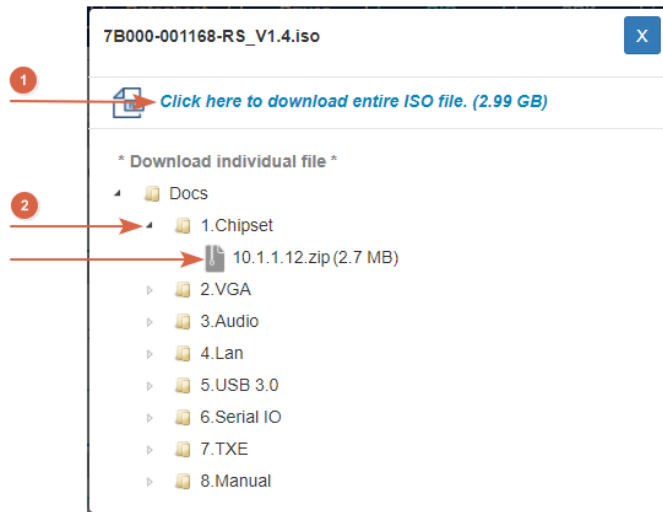


Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.



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).

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NOTE:

To install software from the downloaded ISO image file in Windows 10 or 11, double-click the ISO file to mount it as a virtual drive to view its content.

Chapter

4

System Maintenance

4.1 System Maintenance Introduction

The following system components may require maintenance.

- Motherboard
- Storage module

If these components fail, they must be replaced. Please contact the system reseller or vendor to purchase replacement parts. Replacement instructions for the above listed components are described below.

4.2 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

Chapter

5

Interface Connectors

PPC2-Cxxx-EHL Series Panel PC

5.1 Peripheral Interface Connectors

The PPC2-Cxxx-EHL Series panel PC motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 5-1** and **Figure 5-2**. 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.

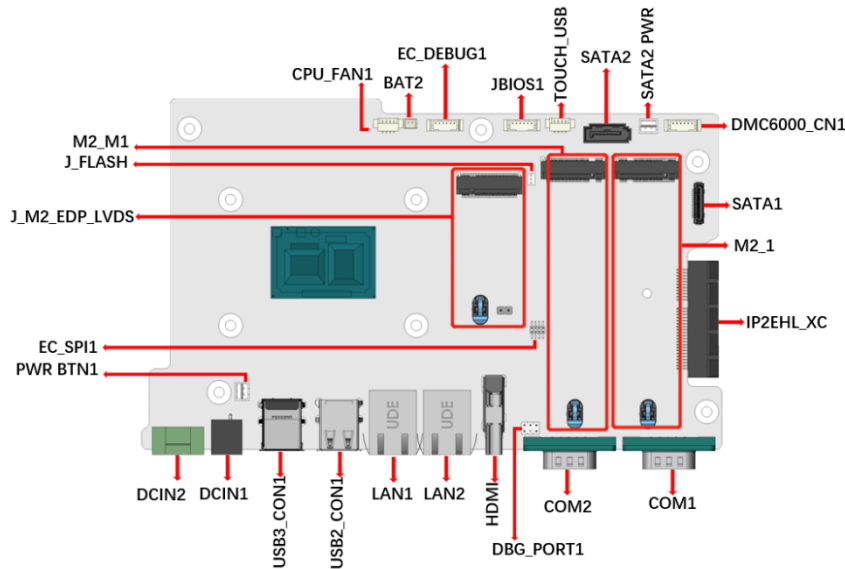


Figure 5-1: Main Board Layout Diagram (Front Side)

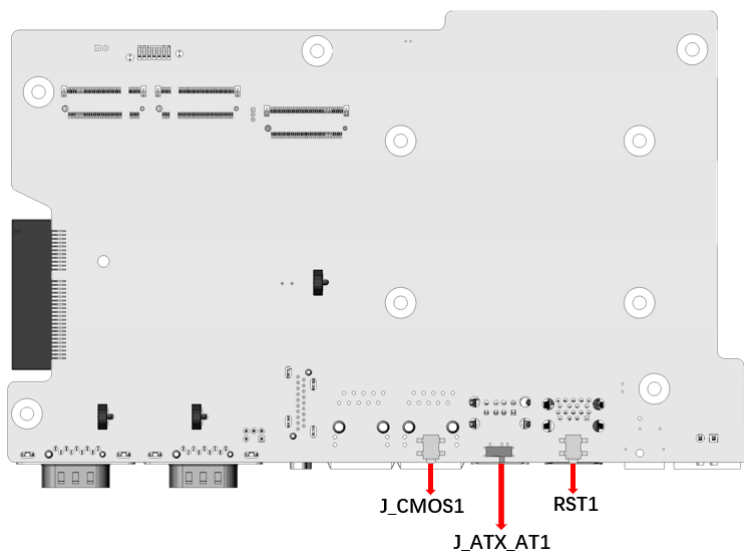


Figure 5-2: Main Board Layout Diagram (Solder Side)

5.2 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 PPC2-Cxxx-EHL Series motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Battery connector	2-pin wafer	BAT2
EC debug port	6-pin wafer	EC_DEBUG1
SPI flash connector	6-pin wafer	JBIOS1
Capacitive touch port	4-pin wafer	TOUCH_USB
SATA III connectors	7-pin connector	SATA2
SATA power connectors	2-pin wafer	SATA2_PWR
Resistive touch port	6-pin wafer	DMC6000_CN1
ISATA connector	20-pin connector	SATA1
M.2 B-Key slot	B-key slot	M2_1
M.2 M-Key slot	M-key slot	M2_M1
IDPM slot	B-key slot	J_M2_EDP_LVDS
Flash mode header	3-pin header	J_FLASH1
SPI flash (EC) header	8-pin header	EC_SPI1
Chassis intrusion header	2-pin header	CHASSIS1
Debug port	5-pin header	DBG_PORT1
Power button connector	2-pin wafer	PWR_BTN1

Table 5-1: Peripheral Interface Connectors

5.2.1 Fan connector (CPU_FAN1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+12V

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3	Rotation Signal	4	PWM Control Signal
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Table 5-2: Fan connector (CPU_FAN1) Pinouts

5.2.2 Battery connector (BAT2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V3.3A_DSW	2	GND

Table 5-3: Battery connector (BAT2) Pinouts

5.2.3 EC debug port (EC_DEBUG1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	2	EDICS
3	EDIDO	4	EDICLK
5	EDIDI	6	GND

Table 5-4: EC debug port (EC_DEBUG1)

5.2.4 SPI flash connector (JBIOS1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	SPI_CS#0_N
3	SPI_SO_N	4	SPI_CLK_N
5	SPI_SI_N	6	GND

Table 5-5: SPI flash connector (JBIOS1) Pinouts

5.2.5 Capacitive touch port (TOUCH_USB)

PIN NO.	DESCRIPTION
1	USB_VCC
2	DATA5-
3	DATA5+

4	GND
---	-----

Table 5-6: Capacitive touch port (TOUCH_USB) Pinouts

5.2.6 SATA 6Gb/s connectors (SATA2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SATA_TX+
3	SATA_TX-	4	GND
5	SATA_RX-	6	SATA_RX+
7	GND		

Table 5-7: SATA 6Gb/s connectors (SATA2) Pinouts

5.2.7 SATA power connectors (SATA2_PWR)

PIN NO.	DESCRIPTION
1	+5V
2	GND

Table 5-8: SATA power connectors (SATA2_PWR) Pinouts

5.2.8 Resistive touch port (DMC6000_CN1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V5S	2	SOU3
3	SIN3	4	RTS-3
5	+V3.3S	6	GND

Table 5-9: Resistive touch port (DMC6000_CN1) Pinouts

5.2.9 ISATA connector (SATA1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	GND	4	GND
5	GND	6	GND
7	+5V	8	+5V
9	+5V	10	+5V

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11	+5V	12	NC
13	NC	14	GND
15	SATA_RX+	16	SATA_RX-
17	GND	18	SATA_TX+
19	SATA_TX-	20	GND

Table 5-10: ISATA connector (SATA1) Pinouts

5.2.10 M.2 B-Key slot (M2_1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NC	2	+3.3V
3	GND	4	+3.3V
5	GND	6	NC
7	USB_D+	8	NC
9	USB_D-	10	NC
11	GND	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	NC
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	USB3_RX_N	30	NC
31	USB3_RX_P	32	NC
33	GND	34	NC
35	USB3_TX_N	36	NC
37	USB3_TX_P	38	DEVSLP
39	GND	40	NC

41	PCIE_RXN	42	NC
43	PCIE_RXP	44	NC
45	GND	46	NC
47	PCIE_TXN	48	NC
49	PCIE_TXP	50	PERST#
51	GND	52	CLKREQ_N
53	CLKN	54	PCIE_WAKE#
55	CLKP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	SUSCLK
67	GND	68	TP5
69	GND	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 5-11: M.2 B-Key slot (M2_1) Pinouts

5.2.11 M.2 M-Key slot (M2_M1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+3.3V
3	GND	4	+3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	DAS/DSS#
11	NC	12	+3.3V
13	NC	14	+3.3V
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	NC

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21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE_RXN5	30	NC
31	PCIE_RXP5	32	NC
33	GND	34	NC
35	PCIE_TXN5	36	NC
37	PCIE_TXP5	38	DEVSLP
39	GND	40	I2C_CLK
41	PCIE_RXN4	42	I2C_DAT
43	PCIE_RXP4	44	NC
45	GND	46	NC
47	PCIE_TXN4	48	NC
49	PCIE_TXP4	50	PERST#
51	GND	52	TP6
53	CLKN	54	PCIE_WAKE#
55	CLKP	56	TP4
57	GND	58	TP3
59	Module Key	60	Module Key
61	Module Key	62	Module Key
63	Module Key	64	Module Key
65	Module Key	66	Module Key
67	NC	68	NC
69	+3.3V	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 5-12: M.2 M-Key slot (M2_M1) Pinouts

5.2.12 IDPM connector (J_M2_EDP_LVDS)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
---------	-------------	---------	-------------

1	GND	2	+V3.3A
3	GND	4	+V3.3A
5	GND	6	+V3.3A
7	GND	8	+V3.3A
9	GND	10	+V3.3A
11	+5V	12	Module Key
13	Module Key	14	Module Key
15	Module Key	16	Module Key
17	Module Key	18	Module Key
19	Module Key	20	+V3.3S
21	Display Detect PIN	22	+V3.3S
23	Display Detect PIN	24	+V3.3S
25	GND	26	+V3.3S
27	GND	28	GND
29	EDP_TX3_DN	30	+V12S
31	EDP_TX3_DP	32	+V12S
33	GND	34	+V12S
35	EDP_TX2_DN	36	+V12S
37	EDP_TX2_DP	38	GND
39	GND	40	CLK
41	EDP_TX1_DN	42	DATA
43	EDP_TX1_DP	44	GND
45	GND	46	EC_BKLT_CTRL
47	EDP_TX0_DN	48	EDP1_BKLT_CTRL
49	EDP_TX0_DP	50	EDP1_BKLT_EN
51	GND	52	EDP1_VDD_EN
53	EDP_AUX_DN	54	EDP_HPD
55	EDP_AUX_DP	56	RST#
57	GND	58	LVDS_EN
59	GND	60	+V5S
61	GND	62	+V5S
63	GND	64	+V5S
65	GND	66	+V5S

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67	GND	68	+V12A
69	GND	70	+V12A
71	GND	72	+V12A
73	GND	74	+V12A
75	GND		

Table 5-13: IDPM connector (J_M2_EDP_LVDS) Pinouts

5.2.13 Flash mode connector (J_FLASH1)

PIN NO.	DESCRIPTION
1-2	LOW = Disabled (No override) Default
2-3	High = Enabled (OVERRIDE)

Table 5-14: Flash mode connector (J_FLASH1) Pinouts

5.2.14 SPI flash (EC) connector (EC_SPI1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	CS_EC	2	+3.3V
3	SO_EC	4	HOLD_EC
5	EC_DET_FLASH	6	SCK_EC
7	GND	8	SIO_EC

Table 5-15: SPI flash (EC) connector (EC_SPI1) Pinouts

5.2.15 Chassis intrusion (CHASSIS1)

PIN NO.	DESCRIPTION
open	Chassis close
short	Chassis open

Table 5-16: Chassis intrusion (CHASSIS1) Pinouts

5.2.16 Debug port (DBG_PORT1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+V5A	2	SMCLK1_EC
3	NC	4	SMDAT1_EC
5	GND	6	PLT_RST_N

Table 5-17: Debug port (DBG_PORT1) Pinouts

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5.2.17 Power button connector (PWR_BTN1)

PIN NO.	DESCRIPTION
1	+3V
2	GND

Table 5-18: Reset Button Connector (RST_BTN2) Pinouts

5.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the PPC2-Cxxx-EHL Series motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
ATX/AT mode switch	Switch	J_ATX_AT1
Clear CMOS button	Push button	J_CMOS1
Reset button	Push button	RST_BTN1
RS-232/422/485 serial ports	DB-9	COM1
RS-232 serial port	DB-9	COM2
HDMI connector	HDMI	HDMI1
2.5GbE connector	RJ-45	LAN1, LAN2
USB 2.0 connectors	USB 2.0 port	USB_CON1
USB 3.2 Gen 1 connectors	USB 3.1 Gen 1 port	USB3_CON1

Table 5-19: Rear Panel Connectors

5.3.1 HDMI Connector (HDMI1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2	2	GND
3	HDMI_DATA2#	4	HDMI_DATA1
5	GND	6	HDMI_DATA1#
7	HDMI_DATA0	8	GND
9	HDMI_DATA0#	10	HDMI_CLK
11	GND	12	HDMI_CLK#

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5V
19	HDMI_HPD		

Table 5-20: HDMI Connector (HDMI1) Pinouts

5.3.2 2.5GbE Connector (LAN1, LAN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MDIA0-	5	MDIA2+
2	MDIA0+	6	MDIA1+
3	MDIA1-	7	MDIA3-
4	MDIA2-	8	MDIA3+

Table 5-21: 2.5GbE Connector (LAN1, LAN2) Pinouts

5.3.3 USB 2.0 Connectors (USB2_CON1)

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

Table 5-22: USB 2.0 Connectors (USB2_CON1) Pinouts

5.3.4 USB 3.2 Gen 1 Connector (USB3_CON1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+

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7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

**Table 5-23: USB 3.2 Gen 1 Connector (USB3_CON1)
Pinouts**

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)
- Ecodesign Directive 2009/125/EC

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 zařzení 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 PPC2-Cxxx-EHL Series.

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 PPC2-Cxxx-EHL Series 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 AC outlet. Refer servicing to qualified service personnel. The AC 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 PPC2-Cxxx-EHL Series 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 PPC2-Cxxx-EHL Series.

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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 PPC2-Cxxx-EHL Series vendor.
- **DO NOT:**
 - Drop the device against a hard surface.
 - Strike or exert excessive force onto the LCD panel.
 - Touch any of the LCD panels with a sharp object
 - 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 PPC2-Cxxx-EHL Series may result in permanent damage to the PPC2-Cxxx-EHL Series and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PPC2-Cxxx-EHL Series. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PPC2-Cxxx-EHL Series 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.

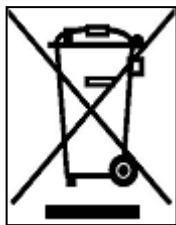
B.1.3 Product Disposal

**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.

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B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the PPC2-Cxxx-EHL Series, 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 PPC2-Cxxx-EHL Series, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, 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 PPC2-Cxxx-EHL Series 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 PPC2-Cxxx-EHL Series.

- **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

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 C-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.

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**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     BX, 05        ;time-out value is 5 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     BX, 0        ;
        INT     15H

;
; EXIT ;

```

Appendix

D

Hazardous Materials Disclosure

PPC2-Cxxx-EHL Series Panel PC

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
<p>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).</p> <p>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).</p>						

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	○	○	○	○	○	○
显示	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○

○: 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。