

NexAIoT Co., Ltd.

**IoT Automation Solutions Business Group**  
**Industrial Panel PC**  
**IPPC 1680P/1880P/2180P**  
**User Manual**

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# PREFACE

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## Disclaimer

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## Acknowledgements

IPPC 1680P, IPPC 1880P and IPPC 2180P are trademarks of NexAloT Co., Ltd. All other product names mentioned herein are registered trademarks of their respective owners.

## Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

## Declaration of Conformity

### FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

### CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

## RoHS Compliance



### NexAloT RoHS Environmental Policy and Status Update

NexAloT is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NexAloT has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard NexAloT development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NexAloT are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

### How to recognize NexAloT RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2013 will be RoHS compliant. They will use the usual NexAloT naming convention.

# Warranty and RMA

## NexAloT Warranty Period

1. NexAloT makes products in accordance with the Industry standard and, NexAloT warrants that all her Industry-grade IPC and System products will be free from defect in neither material nor workmanship for twenty-four (24) months from the day of invoice issued.
2. For NexAloT Panel PC product lines (the APPC, MPPC series), they are also guaranteed against defect in materials and workmanship for the period of twenty-four (24) months in their motherboard design. For 3rd party parts, it follows with original suppliers' standard: 12 months for battery pack and LCD, 24 months for adaptor / add on modules (including GSM module, RFID module, and antenna).
3. If NexAloT determines customer's warranty claim is valid, NexAloT will repair or replace product(s) without additional charge for parts and labor. An extended Warranty Program will extend the warranty period of the product accordingly.

## Warranty Coverage

The warranty applies only to products manufactured or distributed by NexAloT and her subsidiaries. This warranty covers all the products/ shipments except for:

1. Any claimed defect, products that have been repaired or modified by persons who have not been authorized by NexAloT or, products which have been subjected to misuse, abuse, accident, improper installation, or usage not in accordance with the product instruction. NexAloT assumes no liability as a consequence of such events under the term of this warranty.

One example is the replacement of Tablet's or Hand-held's LCD display due to scratching stains or other degradation; these will not be covered under this warranty.

2. Damages caused by customers' delivery/shipping of the product or, product failure resulted from electrical power/voltage shock, or, installation of parts/components which are not supplied/approved by NexAloT in advance.
3. Third-party products:
  - a. Software, such as the device drivers,
  - b. External devices such as HDD, printer, scanner, mouse, LCD panel, battery, and so on,
  - c. Accessory/parts that were not approved by NexAloT and,
  - d. Accessory/parts were added to products after they were shipped from NexAloT.

Product will be treated as "Out of Warranty " if:

- a. It expires the warranted 24 months period from the day it was purchased.
- b. It had been altered by persons other than an authorized NexAloT service person or, which have been subjected to misuse, abuse, accident, or improper installation.
- c. It doesn't have the original NexAloT Serial Number labeling for NexAloT's warranty period identification or, tracking.

RMA that NexAloT has determined not to be covered by the warranty will be charged the NexAloT Standard Repair Fee for the repairing. If a RMA is determined to be not repairable, customer will be notified and product(s) may be returned to customer at their request; a minimum service fee may be charged however.

### **NexAloT Return Merchandise Authorization (RMA) Procedure**

For the RMA (Return Merchandise Authorization) shipment, customer is responsible for packaging and shipping the product to the designated NexAloT service sites, with shipping charges prepaid by the customer. The original NexAloT shipping box should be used whenever possible. NexAloT shall pay for the return of the product to the customer's location. In case of expedited shipping request, an extra service charge shall be assessed and the customer is responsible for this extra return shipping charge.

1. Customers should enclose the "NexAloT RMA Service Form" with the returned products.
2. Customers need to write down all the information related to the problem on the "NexAloT RMA Service Form" when applying for the RMA service; information will help to understand the problem, including the fault description, on-screen messages, and pictures if possible.
3. Customers could send back the faulty product with or without the accessories and key parts such as the CPU and DIMM. If the key parts are included, please be noted clearly within the return form. NexAloT takes no responsibility for the parts which are not listed in the return form.
4. Customers hold the responsibility to ensure that the packing of defective products is durable enough to be resistant against further damage due to the transportation; damage caused by transportation is treated as "Out of Warranty" under our Warranty specification.
5. RMA product(s) returned by NexAloT to any location other than the

customer registered delivery address will incur an extra shipping charge, the customer is responsible for paying the extra shipping charges, duties, and taxes of this shipment.

### **Product Repairing**

1. NexAloT will repair defective products covered under this limited warranty that are returned to NexAloT; if products do prove to be defective, they will be repaired during their warranty period unless other warranty terms have been specified.
2. NexAloT owns all parts removed from repaired products.
3. NexAloT will use parts made by various manufacturers in performing the repair.
4. The repaired products will be warranted subjected to the original warranty coverage and period only.
5. For products returned as defective but, proved to be no defect/fault after the RMA process, NexAloT reserves the right to claim for a NDF (No Defect Found) Service Charge.
6. NexAloT will issue RMA Report which included Repair Detailed Information to the customer when the defective products were repaired and returned.
7. In addition to the above, NexAloT may authorize Independent/Third-party suppliers to repair the defective products for NexAloT.

## Out Of Warranty Service

There will be a service charge from NexAlot for the "Out Of Warranty" product service; they are the Basic Diagnostic Service Fee and the Advanced Component Replacement Fee respectively. And, if the product can not be repaired, NexAlot will either return the product to the customer or, just scrap it, followed by customer's instruction.

### 1. Testing and Parts Replacement

NexAlot will have the following Handling Charges for those OoW products that returned:

- a. Basic Labor Cost and Testing Fee: as Table listed.
- b. Parts Fee: NexAlot will charge for main IC chipsets such as the N.B., S.B., Super-IO, LAN, Sound, Memory, and so on.
- c. 3rd-party Device Fee: products replacement for CPU, DIMM, HDD, Chassis, and UPS.

2. Out of Warranty product will have a three months warranty for the fixed issues. If the product failed with different problem within 3 months, they will still incur the service charge of "Out of Warranty".
3. Out of Warranty "products will not be repaired without a signed PI from the customer, the agreement of the repair process.

Add-on card, 3rd Party Device and board level repair cost higher than new product prices, customer can abandon to sign PI to repair and, please contact with sales to buy new products.

## Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

## Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

## Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped and damaged.
  - f. The equipment has obvious signs of breakage.
15. Do not place heavy objects on the equipment.
16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.



## Technical Support and Assistance

1. For the most updated information of NexAloT products, visit NexAloT's website at [www.nexaiot.com](http://www.nexaiot.com).
2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
  - Product name and serial number
  - Detailed information of the peripheral devices
  - Detailed information of the installed software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wordings of the error messages

### Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.
3. CFast: Turn off the unit's power before inserting or removing a CFast storage card.

## Conventions Used in this Manual



### Warning:

Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.



### Caution:

Information to avoid damaging components or losing data.



### Note:

Provides additional information to complete a task easily.

# Global Service Contact Information

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## Package Contents

Before continuing, verify that the package you received is complete. Your package should have all the items listed in the table.

### IPPC 1680P/1880P/2180P

Item	Part Number	Description	Qty
1	50311F0294X00	Mini-PCIe card screw	1
2	50311F0326X00	2.5" SSD/HDD screws	4
3	50311F0530X00	M.2 card screw	1
4	4NCPF00312X00	Terminal block 3-pin Phoenix Contact plug	1



Note: Package contents may vary depending on your country region, some items may be optional. Please contact your local distributor for more information.

## Ordering Information

The following information below provides ordering information for the Industrial Panel PC series.

### Barebone

- **IPPC 1680P-6100U (P/N: 10II1680P00X0)**

15.6" 16:9 Industrial Panel PC with Intel® Core™ i3-6100U BGA Dual Core 2.3GHz processor, 8GB DDR3L RAM

- **IPPC 1680P-6300U (P/N: 10II1680P01X0)**

15.6" 16:9 Industrial Panel PC with Intel® Core™ i5-6300U BGA Dual Core 2.4GHz processor, 8GB DDR3L RAM

- **IPPC 1880P-6100U (P/N: 10II1880P00X0)**

18.5" 16:9 Industrial Panel PC with Intel® Core™ i3-6100U BGA Dual Core 2.3GHz processor, 8GB DDR3L RAM

- **IPPC 1880P-6300U (P/N: 10II1880P01X0)**

18.5" 16:9 Industrial Panel PC with Intel® Core™ i5-6300U BGA Dual Core 2.3GHz processor, 8GB DDR3L RAM

- **IPPC 2180P-6100U (P/N: 10II2180P00X0)**

21.5" Full HD LED backlight touch panel PC, 6th generation Intel® Core™ i3-6100U processor, 2.40 GHz, P-Cap touch screen, 8GB DDR3L, 1 x RS232/422/485

- **IPPC 2180P-6300U (P/N: 10II2180P01X0)**

21.5" Full HD LED backlight touch panel PC, 6th generation Intel® Core™ i5-6300U processor, 3.0 GHz, P-Cap touch screen, 8GB DDR3L, 1 x RS232/422/485

### Optional

- **24V, 120W AC/DC power adapter w/o power cord (P/N: 7400120023X00)**

# CHAPTER 1: PRODUCT INTRODUCTION

## IPPC 1680P

### Overview

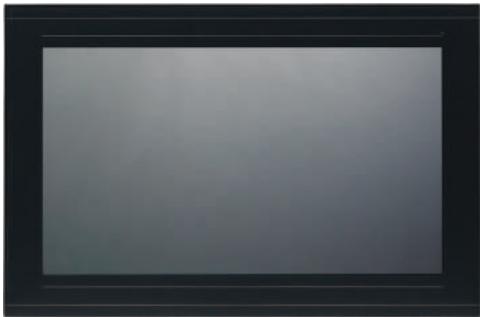


### Key Features

- Metal housing with robust aluminum front zero bezel for harsh environment
- 10 points P-Cap multi-touch with zero bezel flush front design
- Dual GbE/Dual DisplayPort/Dual USB 3.0 & USB 2.0
- 1 x mini PCIe socket, 1 x M.2, 2 x RS232, 1 x RS232/422/485
- DDR3L 8GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

## IPPC 1880P

### Overview



### Key Features

- Metal housing with robust aluminum front zero bezel for harsh environment
- 10 points P-Cap multi-touch with zero bezel flush front design
- Dual GbE/Dual DisplayPort/Dual USB 3.0 & USB 2.0
- 1 x mini-PCIe socket, 1 x M.2, 2 x RS232, 1 x RS232/422/485
- DDR3L 8GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

# IPPC 2180P

## Overview



### Key Features

- Metal housing with robust aluminum front zero bezel for harsh environment
- 10 points P-Cap multi-touch with zero bezel flush front design
- Dual GbE/Dual DisplayPort/Dual USB 3.0 & USB 2.0
- 1 x mini-PCIe socket, 1 x M.2, 2 x RS232, 1 x RS232/422/485
- DDR3L 8GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

# Specifications

## Panel

### IPPC 1680P

- LCD size: 15.6", 16:9
- Resolution: HD 1366 x 768
- Luminance: 400cd/m<sup>2</sup>
- Contrast ratio: 500
- LCD color: 16.7M
- Viewing angle: 80 (U), 80 (D), 85 (L), 85 (R)
- Backlight: LED

### IPPC 1880P

- LCD size: 18.5", 16:9
- Resolution: HD 1366 x 768
- Luminance: 300cd/m<sup>2</sup>
- Contrast ratio: 1000
- LCD color: 16.7M
- Viewing angle: 85 (U), 85 (D), 80 (L), 80 (R)
- Backlight: LED

### IPPC 2180P

- LCD size: 21.5", 16:9
- Resolution: FHD 1920 x 1080
- Luminance: 250cd/m<sup>2</sup>
- Contrast ratio: 5000
- LCD color: 16.7M
- Viewing angle: 89 (U), 89 (D), 89 (L), 89 (R)
- Backlight: LED

## Touch Screen

- Ten points P-Cap (projected capacitive touch)

- Touch light transmission: 87%
- Anti-scratch surface: 7H hardness
- Touch interface: USB

## System

- Support 6th generation Intel® Core™ i5/i3 BGA type processor
  - Intel® Core™ i5-6300U, 3M Cache, up to 3.0 GHz
  - Intel® Core™ i3-6100U, 3M Cache, up to 2.3 GHz
- CPU: onboard 6th generation Intel® Core™ i5-6300U processor (IPPC 2180P)
- BIOS: AMI BIOS
- System memory: 2 x 204-pin DDR3L SO-DIMM sockets, 8GB DDR3L (default), support up to 16GB DDR3L-1866, non-ECC and un-buffered
- Storage device:
  - 1 x M.2 2242 B key socket: optional M.2 2242 storage
  - 1 x Hard drive bay: optional 1 x 2.5" SATA HDD
- Watchdog timer: Watchdog timeout can be programmed by software from 1 second to 255 seconds and from 1 minute to 255 minutes (Tolerance 15% under room temperature 25°C)
- Expansion: 1 x mini PCIe socket (supports optional Wi-Fi module)
- Front LED indicator to show operating status

## Rear I/O

- Ethernet: 2 x RJ45
- DisplayPort: 2 x DP1.2
- USB: 2 x USB 2.0, 2 x USB 3.0
- LED indicator: power/HDD/GPIO programmable LED
- Power button
- COM #1 & 2: RS232
- COM #3: RS232/422/485
- GPIO

## Ethernet

- LAN chip: dual Intel® I210AT Gigabit LAN
- Ethernet interface: 10/100/1000 Base-TX Ethernet compatible

## Mechanical & Environment

- Color: black silver front bezel
- IP protection: IP66 front
- Mounting: panel/wall/stand/VESA 100mm x 100mm
- System with panel mounting kit w/o panel mounting hole
- Power:
  - Power input: 24 VDC
  - Power adapter: optional AC to DC power adapter (+24V, 60W)
- Vibration:
  - IEC 68 2-64 (w/ HDD)
  - 1Grms @ sine, 5~500Hz, 1hr/axis (HDD operating)
  - 2Grms @ sine, 5~500Hz, 1hr/axis (SSD operating)
  - 2.2Grms @ random condition, 5~500Hz, 0.5hr/axis (non-operating)
- Shock:
  - IEC 68 2-27
  - HDD: 20G@wall mount, half sine, 11ms
- Temperature:
  - Operating temperature: 0°C to 50°C
  - Storage temperature: -20°C to 75°C
- Operating humidity: 10%~90% relative humidity, non-condensing
- Dimension:
  - 417.6 x 312.6 x 81.95mm (IPPC 1680P)
  - 490.8 x 320.6 x 80.85mm (IPPC 1880P)
  - 562.4 x 382.4 x 80.55mm (IPPC 2180P)

## ▪ Weight:

- 5.98kg (IPPC 1680P)
- 6.64kg (IPPC 1880P)
- 8.26kg (IPPC 2180P)

## Certifications

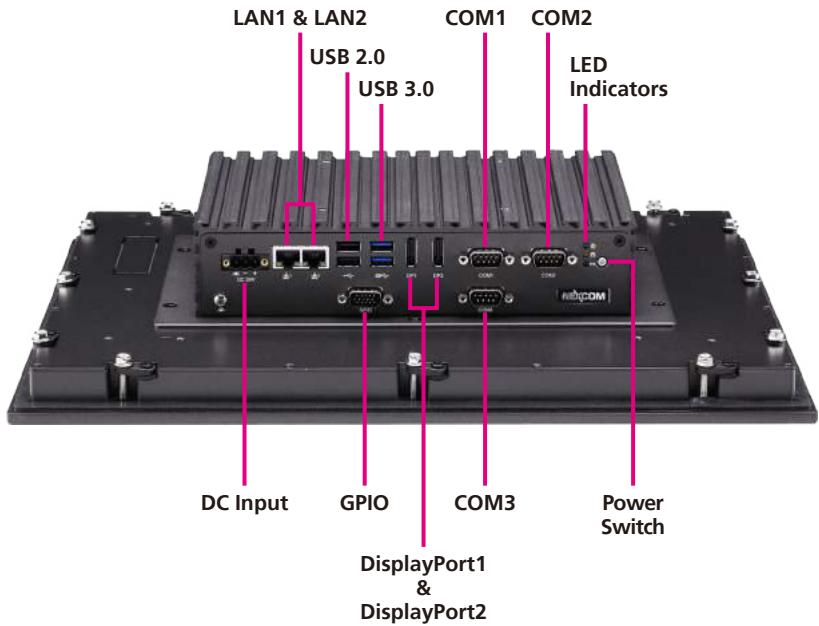
- CE (including EN61000-6-2/EN61000-6-4)
- FCC Class A

## OS Support Lists

- Windows 10 IoT 64-bit
- Windows 7 Pro 64-bit
- WES7P 64-bit

# Knowing Your IPPC Series

## Rear Bottom



### DC Input

Used to plug a DC power cord.

### LAN1 and LAN2

Used to connect the system to a local area network.

### USB 2.0

USB 2.0 ports to connect the system with USB 2.0/1.1 devices.

### USB 3.0

USB 3.0 ports to connect the system with USB 3.0/2.0 devices.

### COM1 and COM2

DB9 port used to connect RS232 compatible devices.

### COM3

DB9 port used to connect RS232/422/485 compatible devices.

### LED Indicators

Two LED indicators for displaying the power status and storage activity of the system, and one LED for programming GPIO.

### Power Switch

Press to power-on or power-off the system.

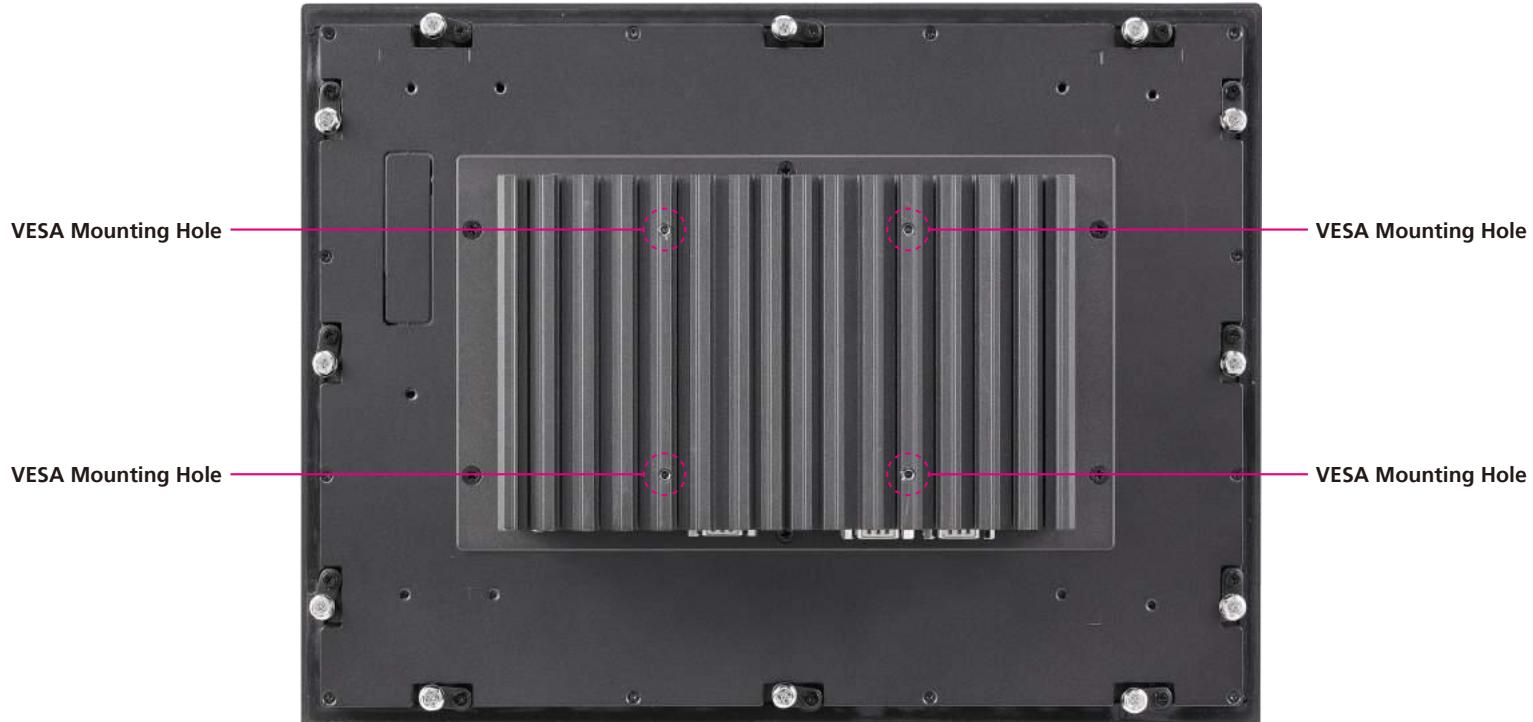
### GPIO

The GPIO connector supports 4-channel GPO and 4-channel GPI.

### DisplayPort1 and DisplayPort2

Used to connect DisplayPort interface displays.

## Rear



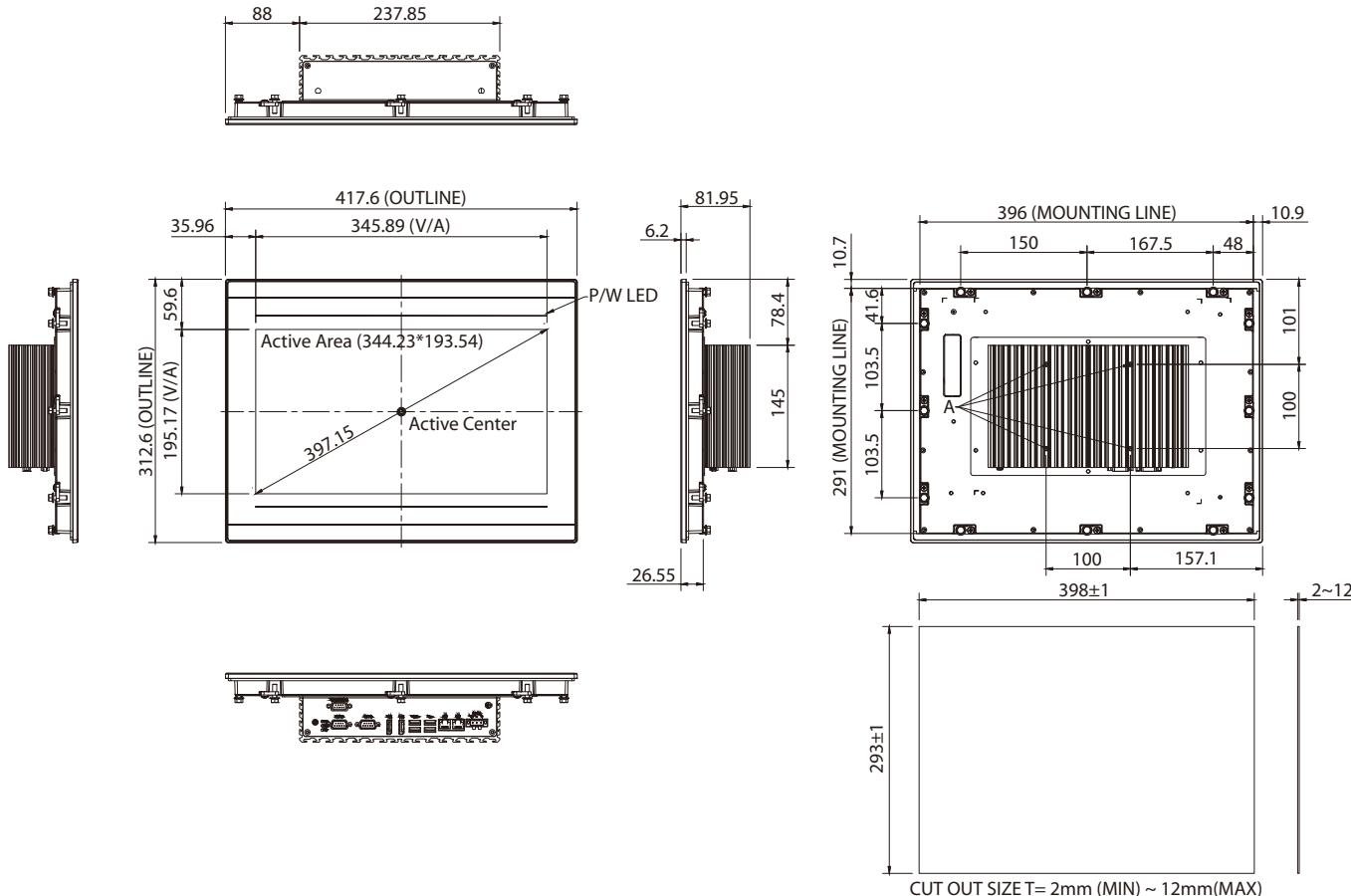
### **VESA Mounting Holes**

These are the mounting holes for VESA mount (100x100mm)



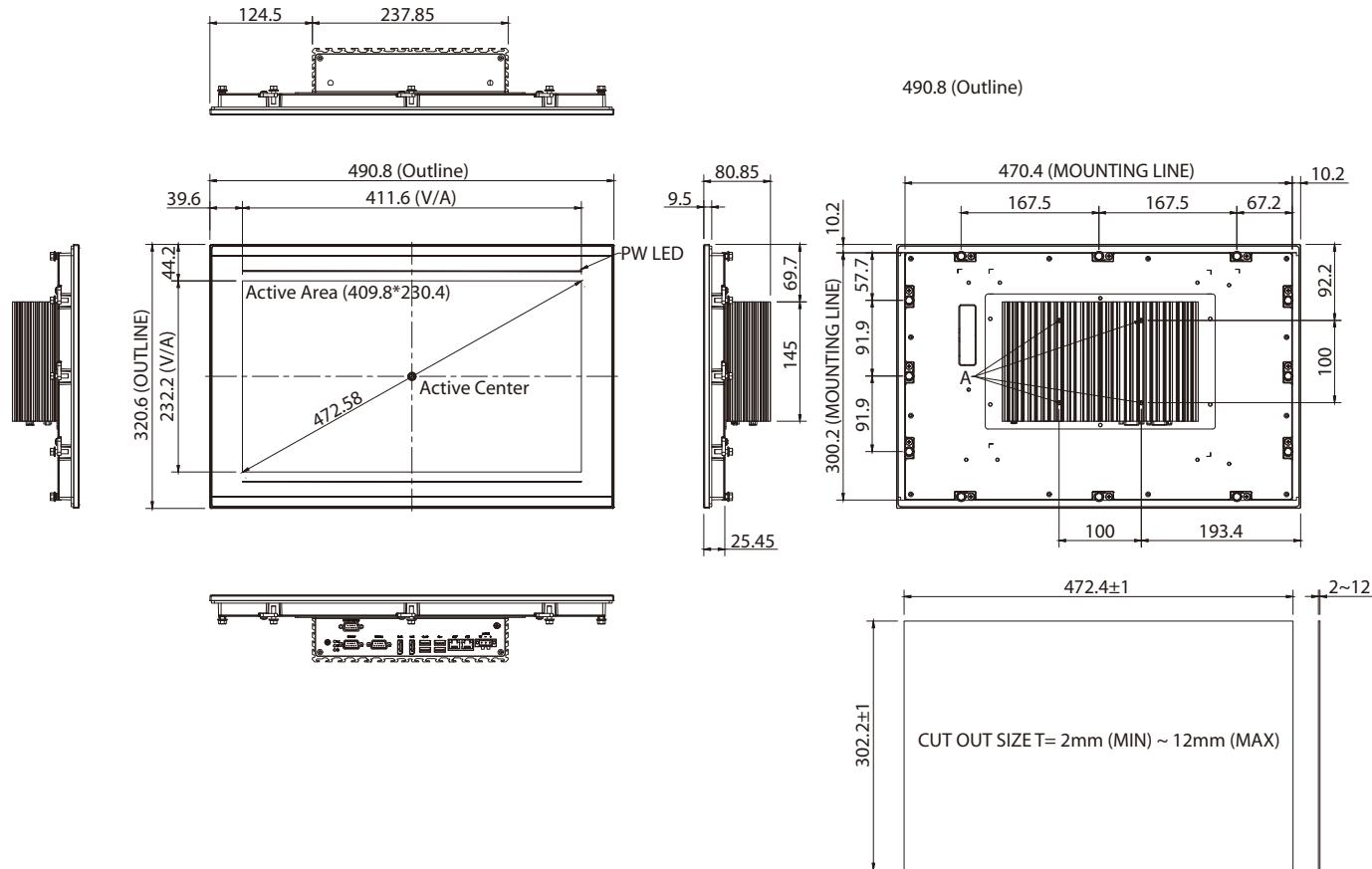
## Mechanical Dimensions

### IPPC 1680P

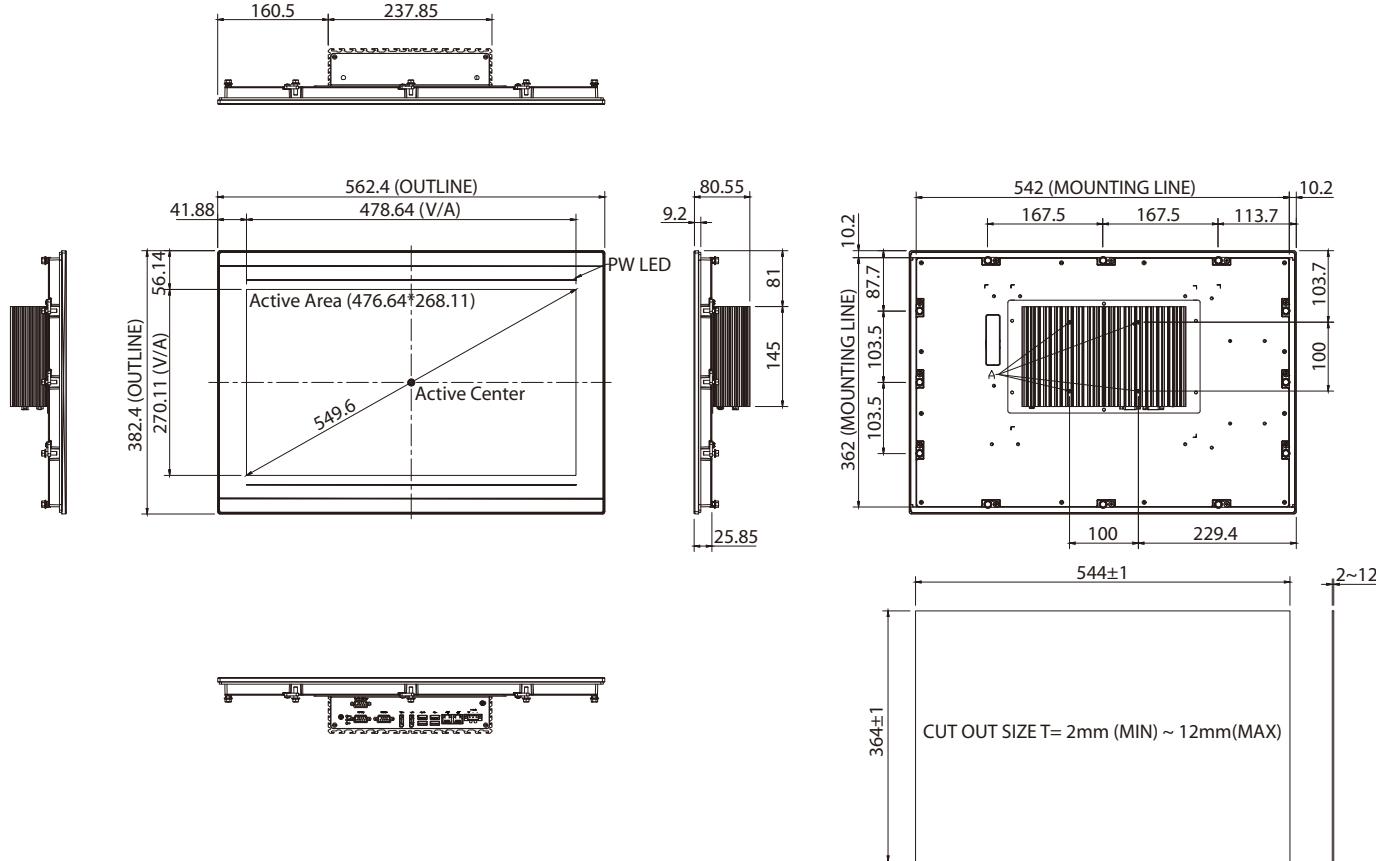




## IPPC 1880P



## IPPC 2180P



# CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the IPPC 1680P, IPPC 1880P and IPPC 2180P motherboard.

## Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers screwdrivers
  - A grounding strap
  - An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than

dry environments. A grounding strap is warranted whenever danger of static electricity exists.

## Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

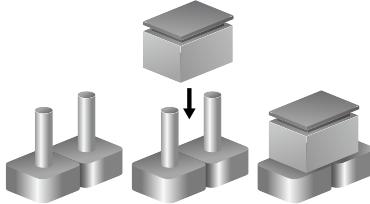


## Jumper Settings

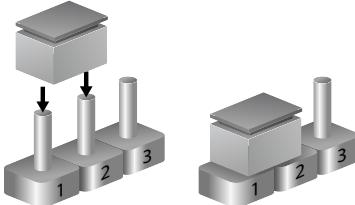
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)



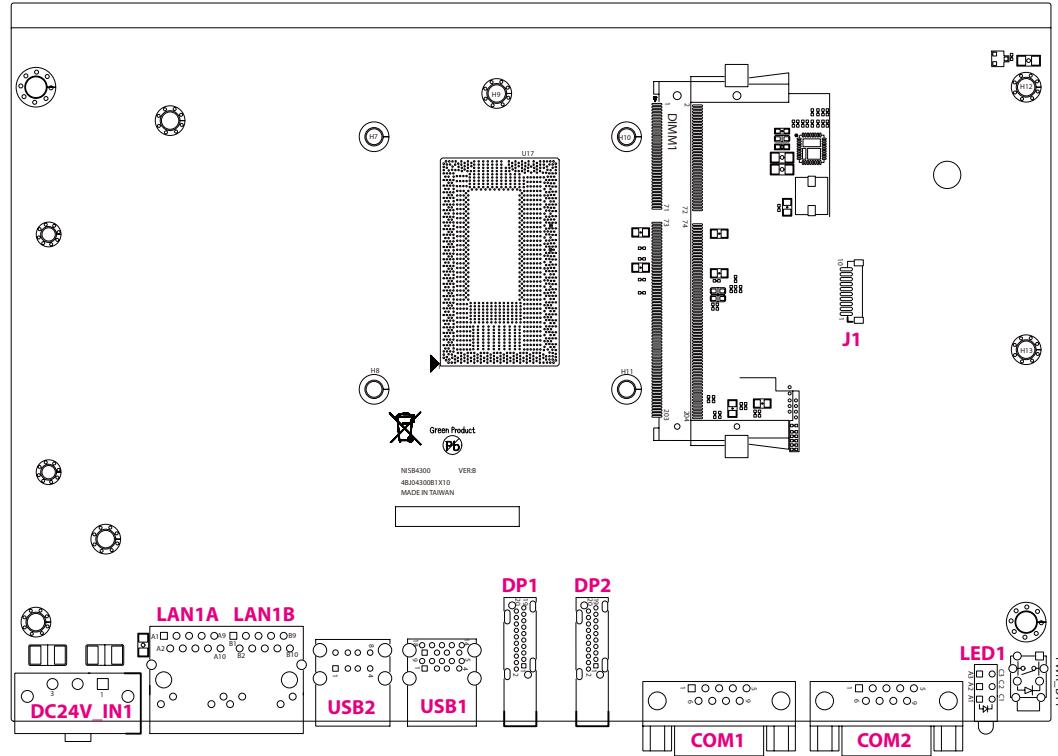
Three-Pin Jumpers: Pins 1 and 2 are Short



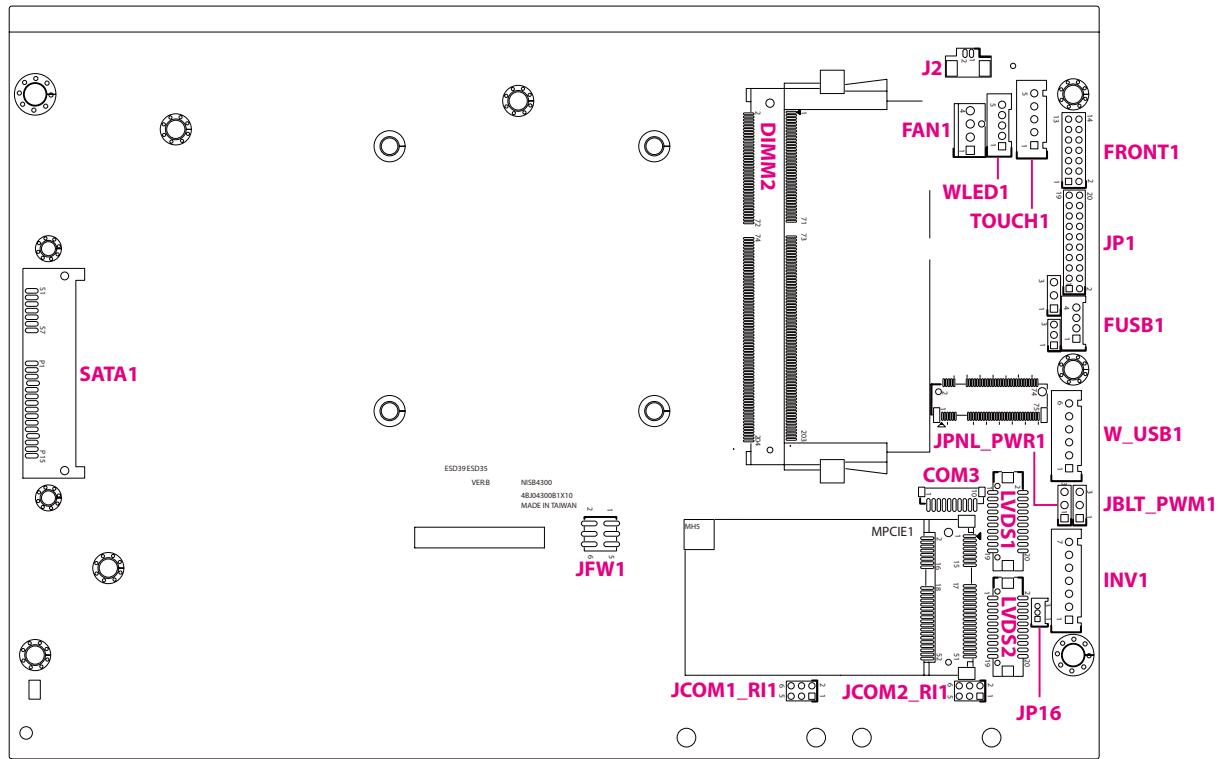


## Locations of the Jumpers and Connectors

**Top View**



## Bottom View





## Jumpers

### LVDS Panel Power Selection

Connector type: 1x3 3-pin header

Connector location: JPNL\_PWR1



Pin	Settings
1-2 On	+3V3
2-3 On	+5V

### Backlight Volume Selection

Connector type: 1x3 3-pin header

Connector location: JBLT\_PWM1



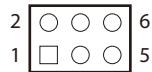
Pin	Settings
1-2 On	+3V3
2-3 On	+5V



## COM1 Port Power Setting

Connector type: 2x3 6-pin header

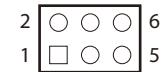
Connector location: JCOM1\_RI1



## COM2 Port Power Setting

Connector type: 2x3 6-pin header

Connector location: JCOM2\_RI1



Pin	Settings
1-2 On	+12V
3-4 On	RING
5-6 On	+5V

Pin	Settings
1-2 On	+12V
3-4 On	RING
5-6 On	+5V



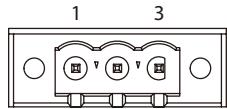
## Connector Pin Definitions

### External I/O Interfaces - Front Panel

#### DC Power Input

Connector type: 3-pin terminal block

Connector location: DC24V\_IN1

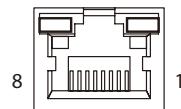


Pin	Definition
1	+24V
2	GND
3	CHASSIS GND

#### LAN1 and LAN2 Ports

Connector type: RJ45 port

Connector location: LAN1A and LAN1B



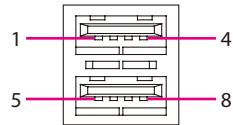
Pin	Definition	Pin	Definition
1	LAN_MDIOP	2	LAN_MDION
3	LAN_MDI1P	4	LAN_MDI1N
5	LAN_MDI2P	6	LAN_MDI2N
7	LAN_MDI3P	8	LAN_MDI3N
9	LAN_VCC	10	GND
11	LAN_LINK1G#	12	LAN_LINK100#
13	LAN_ACT#_	14	LAN_ACTPW



## USB 2.0 Ports

Connector type: Dual USB 2.0 ports

Connector location: USB2

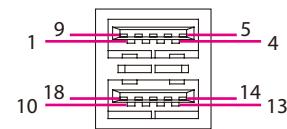


Pin	Definition	Pin	Definition
1	+5V	2	USB2_3N
3	USB2_3P	4	GND
5	+5V	6	USB2_4N
7	USB2_4P	8	GND

## USB 3.0 Ports

Connector type: Dual USB 3.0 ports

Connector location: USB1



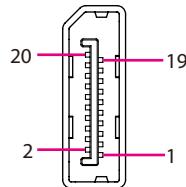
Pin	Definition	Pin	Definition
1	+5V	2	USB2_1N
3	USB2_1P	4	GND
5	USB3_RX1_N	6	USB3_RX1_P
7	GND	8	USB3_TX1_N
9	USB3_TX1_P	10	+5V
11	USB2_2N	12	USB2_2P
13	GND	14	USB3_RX2_N
15	USB3_RX2_P	16	GND
17	USB3_TX2_N	18	USB3_TX2_P



## DisplayPort

Connector type: DisplayPort

Connector location: DP1 and DP2

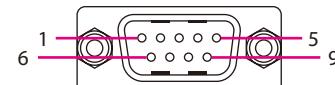


Pin	Definition	Pin	Definition
1	LANE0_P	2	GND
3	LANE0_N	4	LANE1_P
5	GND	6	LANE1_N
7	LANE2_P	8	GND
9	LANE2_N	10	LANE3_P
11	GND	12	LANE3_N
13	CONFIG1	14	CONFIG2
15	AUX_P	16	GND
17	AUX_N	18	HPD
19	DP_RETURN	20	DP_PWR

## COM1 and COM2 Ports

Connector type: DB-9 port, 9-pin D-Sub

Connector location: COM1 and COM2

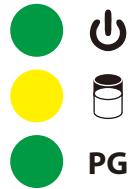


Pin	Definition	Pin	Definition
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#		



## LED Indicators

Connector location: LED1



Pin	Definition
C1	GPIO LED (Green) (Customer Defined)
C2	SATA LED (Yellow)
C3	POWER LED (Green)



## Internal Connectors

### Debug Connector

Connector type: 1x10 10-pin header

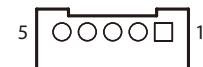
Connector location: J1



### LED Connector

Connector type: 1x5 5-pin header

Connector location: WLED1



Pin	Definition	Pin	Definition
1	GND	2	LPC_PLTRST#
3	LPC_CLK	4	LPC_LFRAME#
5	LPC_LAD3	6	LPC_LAD2
7	LPC_LAD1	8	LPC_LAD0
9	LPC_SERIRQ	10	VCC3

Pin	Definition	Pin	Definition
1	HDD_LED-	2	HDD_LED+
3	GND	4	STBY_LED+
5	POWER_LED+		



## LVDS Connector

Connector type: 2x10 20-pin header

Connector location: LVDS1



## LVDS Connector

Connector type: 2x10 20-pin header

Connector location: LVDS2



Pin	Definition	Pin	Definition
1	CH7511_GPIO0	2	CH7511_GPIO1
3	+VCC_LCD	4	LVDSA_LDC0P
5	LVDSA_LDC3P	6	LVDSA_LDC0N
7	LVDSA_LDC3N	8	+VCC_LCD
9	GND	10	LVDSA_LDC1P
11	LVDSA_LL1CP	12	LVDSA_LDC1N
13	LVDSA_LL1CN	14	GND
15	GND	16	+V_INV
17	LVDSA_LDC2P	18	+V_INV
19	LVDSA_LDC2N	20	LVDS_DISABLE#

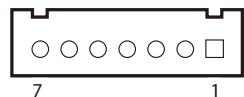
Pin	Definition	Pin	Definition
1	CH7511_GPIO2	2	CH7511_GPIO3
3	+VCC_LCD	4	LVDSB_LDC4P
5	LVDSB_LDC7P	6	LVDSB_LDC4N
7	LVDSB_LDC7N	8	+VCC_LCD
9	GND	10	LVDSB_LDC5P
11	LVDSB_LL2CP	12	LVDSB_LDC5N
13	LVDSB_LL2CN	14	GND
15	GND	16	+V_INV
17	LVDSB_LDC6P	18	+V_INV
19	LVDSB_LDC6P	20	GND



## LVDS Inverter Connector

Connector type: 1x7 7-pin header

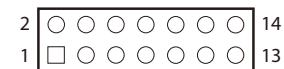
Connector location: INV1



## Front Panel Connector

Connector type: 2x7 14-pin header

Connector location: FRONT1



Pin	Definition	Pin	Definition
1	+5V	2	+12V
3	+12V	4	BKCTRL
5	GND	6	GND
7	BKLEN		

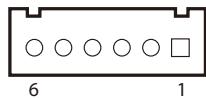
Pin	Definition	Pin	Definition
1	PWR_LED#	2	PWR_LED
3	HDD_LED#	4	HDD_LED
5	MAIN_SMBCLK	6	MAIN_SMBDATA
7	3VSB	8	GND
9	SLP_S3#	10	PS_ON
11	PWR_BTN#	12	GND
13	RST_BTN#	14	GND



## Internal USB 2.0 Connector

Connector type: 1x6 6-pin header

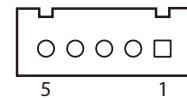
Connector location: W\_USB1



## Touch Screen Connector

Connector type: 1x5 5-pin header

Connector location: TOUCH1



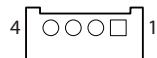
Pin	Definition	Pin	Definition
1	+5V	2	USB_8N_C
3	USB_8P_C	4	
5		6	GND

Pin	Definition	Pin	Definition
1	TOUCH_YD	2	TOUCH_XR
3	SENSE	4	TOUCH_YU
5	TOUCH_XL		



## Front USB

Connector type: 1x4 4-pin header  
Connector location: FUSB1

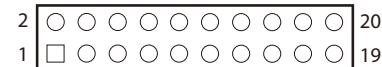


Pin	Definition	Pin	Definition
1	+5V	2	USB2N7_L
3	USB2P7_L	4	GND

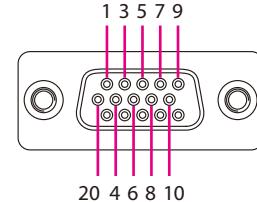
## GPIO Connector

Connector type: 2x10 20-pin header  
Connector location: JP1

### Internal Connector



### External Connector

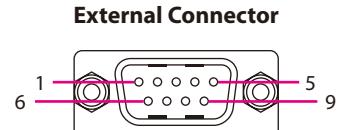
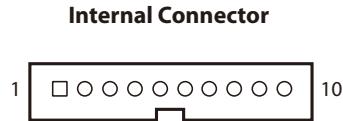


Pin	Definition	Pin	Definition
1	+5V	2	+5V
3	GPO_0	4	GPI_0
5	GPO_1	6	GPI_1
7	GPO_2	8	GPI_2
9	GPO_3	10	GPI_3
11	GPO_4	12	GPI_4
13	GPO_5	14	GPI_5
15	GPO_6	16	GPI_6
17	GPO_7	18	GPI_7
19	GND	20	GND

## COM3 Connector (RS232/422/485)

Connector type: 1x10 10-pin header

Connector location: COM3



### Internal Connector

RS232		RS422		RS485	
Pin	Definition	Pin	Definition	Pin	Definition
1	DCD#	1	TX-	1	RTX-
2	RXD	2	TX+	2	RTX+
3	TXD	3	RX+	3	
4	DTR#	4	RX-	4	
5	GND	5	GND	5	GND
6	DSR#	6		6	
7	RTS#	7		7	
8	CTS#	8		8	
9	RI#	9		9	

### External Connector

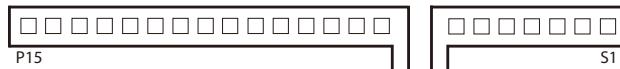
Pin	Definition	Pin	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	GND



## SATA Connector (7-pin and 15-pin)

Connector type: Standard Serial ATA 7P and 15P

Connector location: SATA1



## Battery Connector

Connector type: 1x2 2-pin header

Connector location: J2



Pin	Definition	Pin	Definition
S1	GND	S2	SATA1_TXP
S3	SATA1_TXN	S4	GND
S5	SATA1_RXN	S6	SATA1_RXP
S7	GND		
P1	VCC3	P2	VCC3
P3	VCC3	P4	GND
P5	GND	P6	GND
P7	VCC5	P8	VCC5
P9	VCC5	P10	GND
P11	VCC5	P12	GND
P13	VCC12	P14	VCC12
P15	VCC12		

Pin	Definition
1	GND
2	+3V



## EC Debug

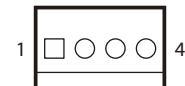
Connector type: 1x3 3-pin header  
Connector location: JP16



Pin	Definition
1	GPIO LED (Green) (Customer Defined)
2	SATA LED (Yellow)
3	POWER LED (Green)

## Fan Connector

Connector type: 1x4 4-pin header  
Connector location: FAN1



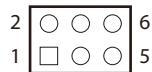
Pin	Definition
1	GND
2	VCC12
3	FAN1TACH
4	FAN1PWM



## BIOS FW

Connector type: 2x3 6-pin header

Connector location: JFW1



Pin	Definition	Pin	Definition
1	3VSB	2	GND
3	BIOS_CS#	4	BIOS_CLK
5	BIOS_SO	6	BIOS_SI

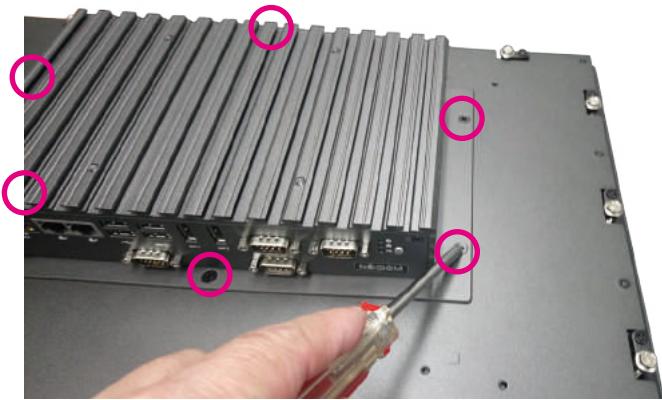
# CHAPTER 3: SYSTEM SETUP

## Removing the Bottom Cover of the IPPC 1680P/1880P/2180P Panel PCs



Prior to removing the bottom cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

1. Remove the six mounting screws from the bottom cover.



2. With the screws removed, lift up the system chassis box then unplug and remove all the cables located on the system chassis box.



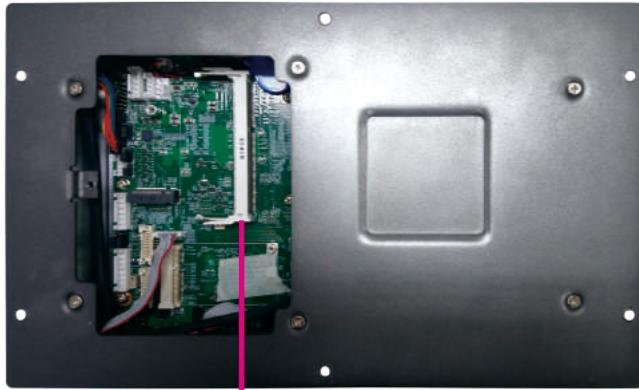


## Installing a SO-DIMM Memory Module



Remove the bottom cover before installing a SO-DIMM. The panel PCs come with 8GB of DDR3L DRAM. Follow the instructions in this section if additional memory is needed.

1. Locate the SO-DIMM socket.



SO-DIMM Socket

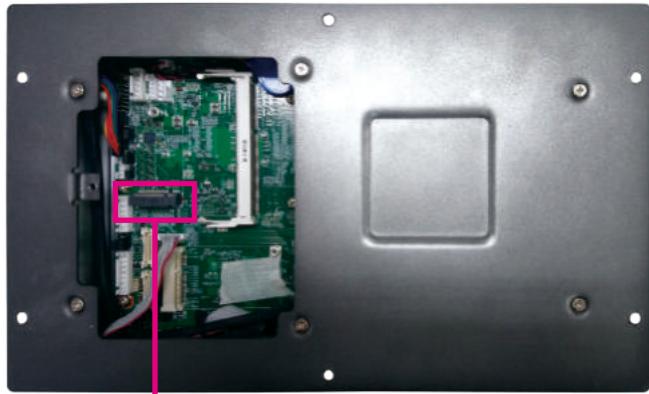
2. Insert the module into the socket at an approximately 30-degree angle. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



Memory Module

## Installing an M.2 Storage Module

1. Locate the M.2 B key slot on the board.



M.2 Key Slot

2. Insert the M.2 module into the M.2 slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.



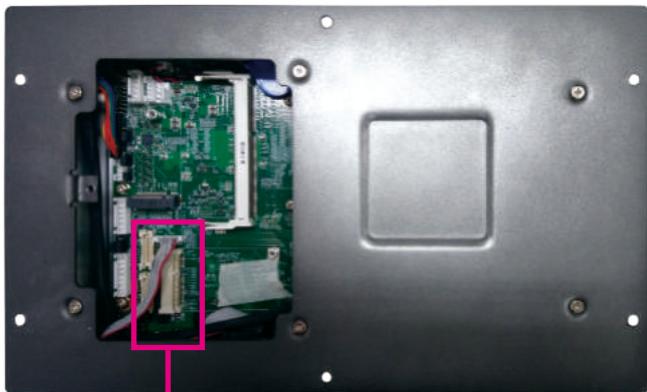
M.2 Module

3. Push the module down and secure it with a screw.



## Installing a Mini-PCIe Storage/Wi-Fi/LTE Module

1. Locate the mini-PCIe slot on the board.



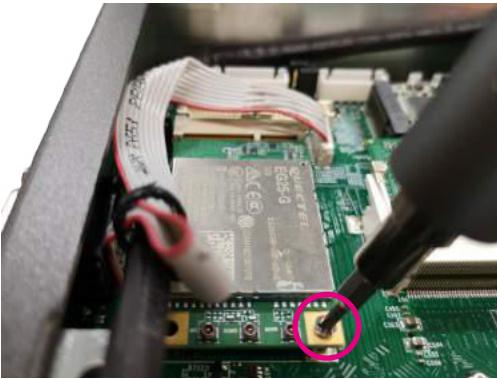
Mini-PCIe Slot

2. Insert the mini-PCIe module into the mini-PCIe slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears inside the slot.



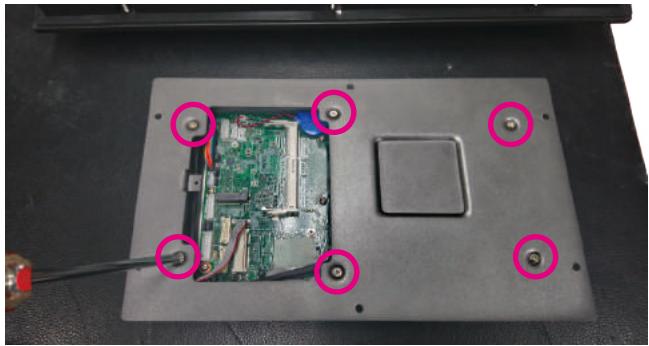
Mini-PCIe Module

3. Push the module down and then secure it with a mounting screw.



## Installing a Storage Drive (HDD or SSD)

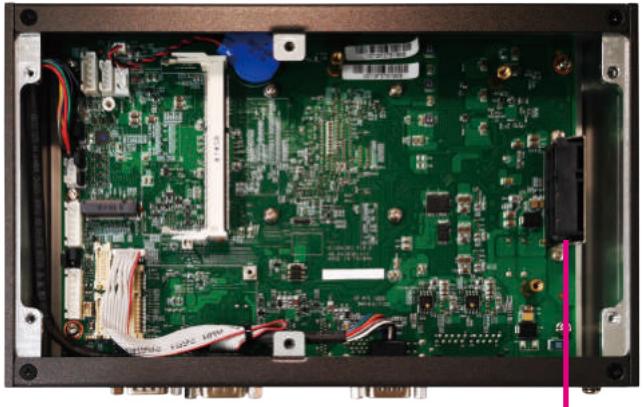
1. With the bottom cover removed, unscrew the six mounting screws from the rear chassis.



2. Unscrew the three screws securing the storage bracket, then remove the bracket.



3. Before installing the storage drive and storage bracket, please take note of the orientation of the SATA connector.



SATA Connector

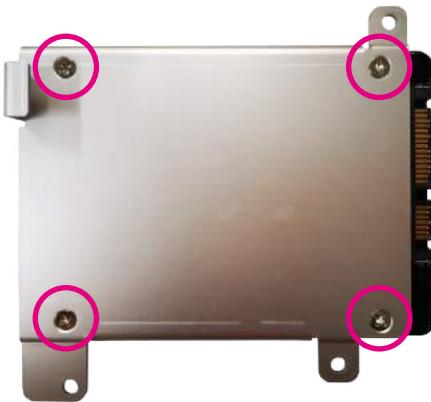


SSD Gold-Plated Connector

4. Place the storage drive onto the bracket, and align the mounting holes on the storage drive with the mounting holes on the storage bracket.



5. While supporting the storage drive, turn the bracket to the other side. From the outside of the storage bracket, secure the drive in place with screws.

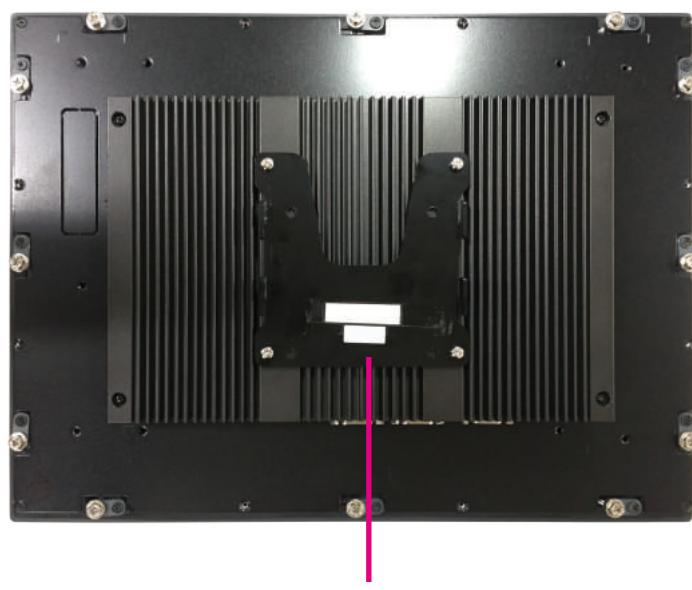
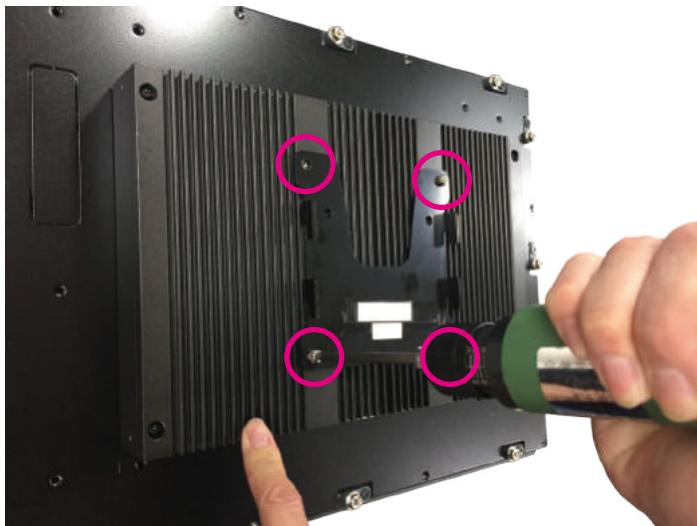


6. Plug the SSD gold-plated connector to the SATA connector, and secure the bracket with the three screws removed earlier.



## VESA Mounting

1. Align the mounting holes on the VESA mount bracket to the VESA mounting holes on the back of the panel PC, then secure the VESA mount bracket with screws.





2. Secure the VESA bracket base to the wall/surface with screws.



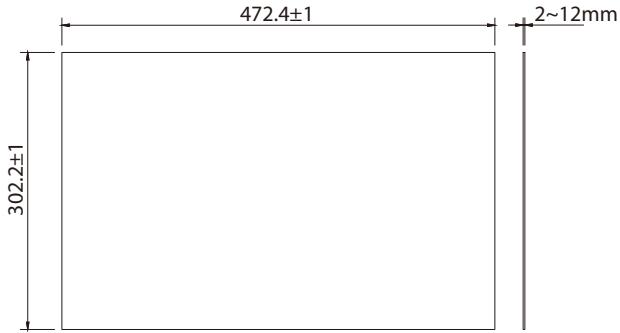
3. Slide the VESA mount bracket to the bracket base until the panel PC is fixed firmly to the wall/surface. Then fasten screws into the mounting holes between the brackets to secure the panel PC in place.



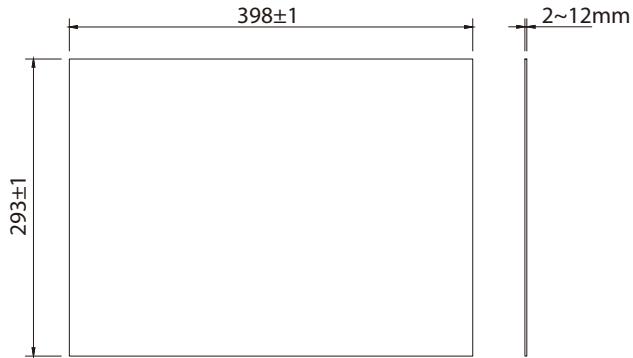
## Panel Mounting

1. Select a place on the panel where you will mount the Panel PC.
2. Cut out a shape on the panel that corresponds to the Panel PC's rear dimensions.

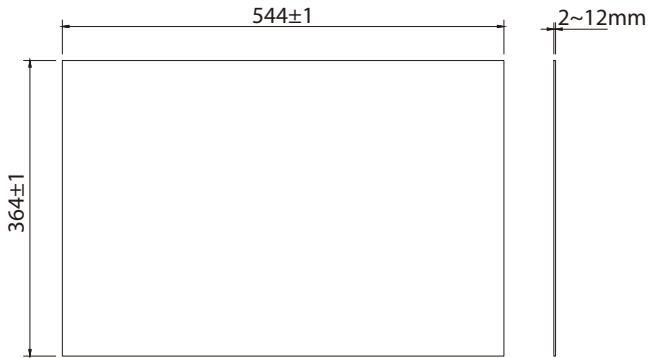
The thickness of the panel (e.g. steel board, plank, acrylic board, wall, etc.) where you will mount the industrial panel PCs must not be less than 2mm and must not exceed 12mm. If the distance between the front bezel and panel mount hole is too wide, it will not fit the panel mount kit.



**IPPC 1880P**

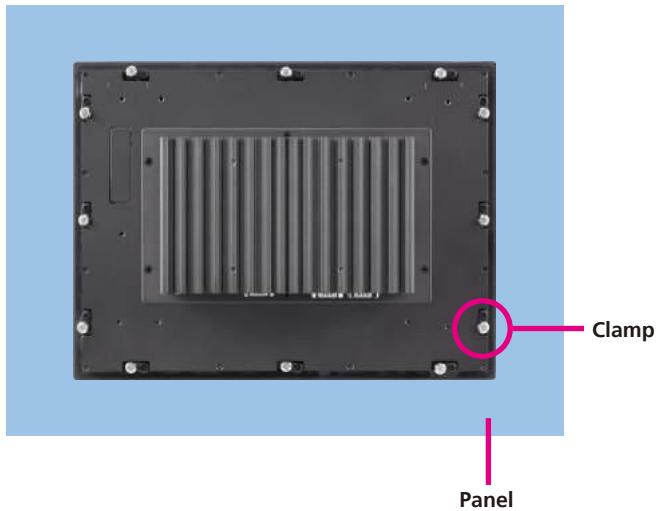


**IPPC 1680P**



**IPPC 2180P**

3. Slide the panel PC through the hole until it is properly fitted against the panel.
4. Position the mounting clamps along the rear edges of the panel PC. The first and second clamps must be positioned and secured diagonally prior to mounting the rest of the clamps. Tighten the clamp's screw until it touches the panel.



Do not overtighten the screws to prevent damaging the Panel PC.

# CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for IPPC 1680P, IPPC 1880P and IPPC 2180P. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NexAloT website at [www.nexaio.com](http://www.nexaio.com).

## About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure items such as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

## When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

## Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

## Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing **<Del>** allows you to enter Setup.

Press the  key to enter Setup:

## Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub-menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <b>&lt;Enter&gt;</b> to enter the highlighted sub-menu.



## Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

## Submenu

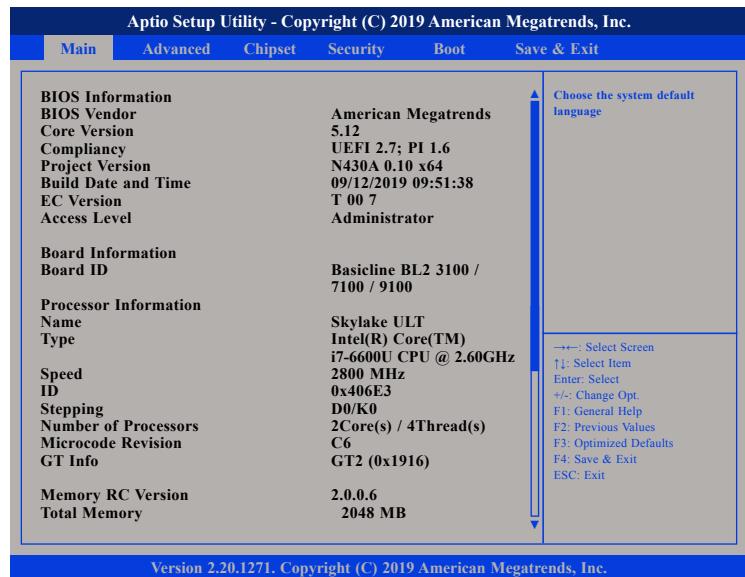
When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press  .

# BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press  to accept or enter the submenu.

## Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



### System Language

Selects the language of the system.

### System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

### System Time

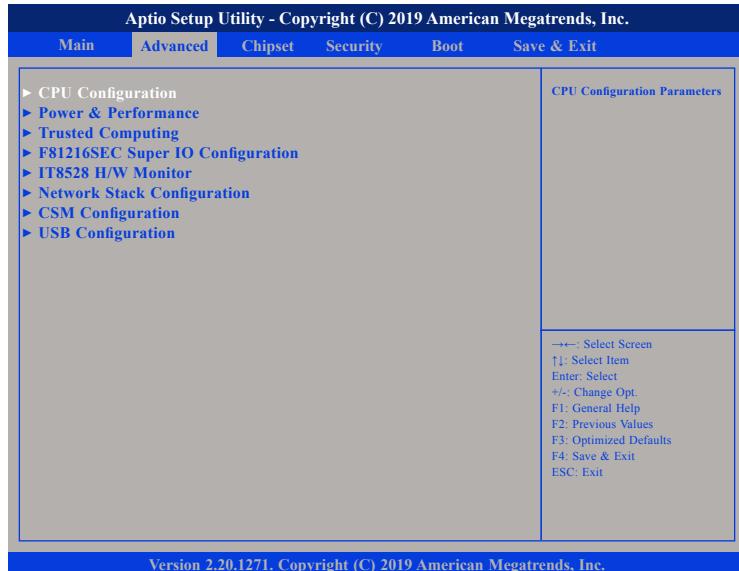
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

## Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

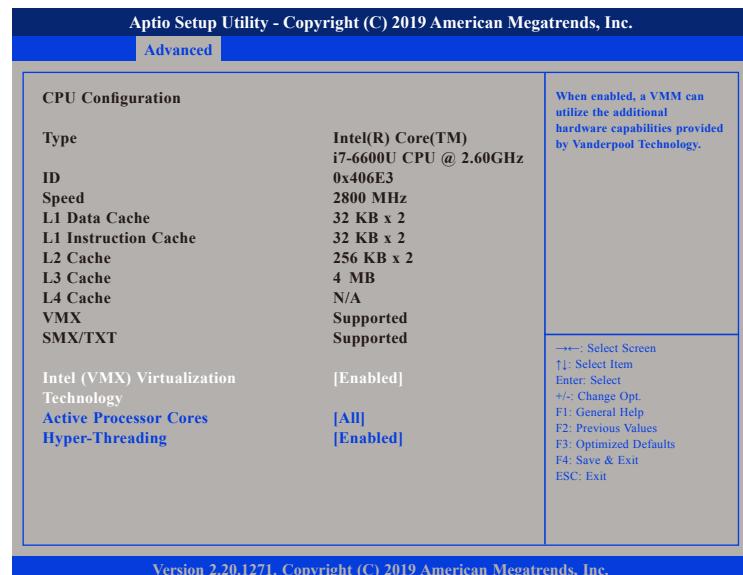


Setting incorrect field values may cause the system to malfunction.



## CPU Configuration

This section is used to configure the CPU.



### Intel® (VMX) Virtualization Technology

Enables or disables Intel Virtualization technology.

### Active Processors Cores

Select the number of cores to enable in each processor package.

### Hyper-Threading

Enables or disables hyper-threading technology.



## Power & Performance

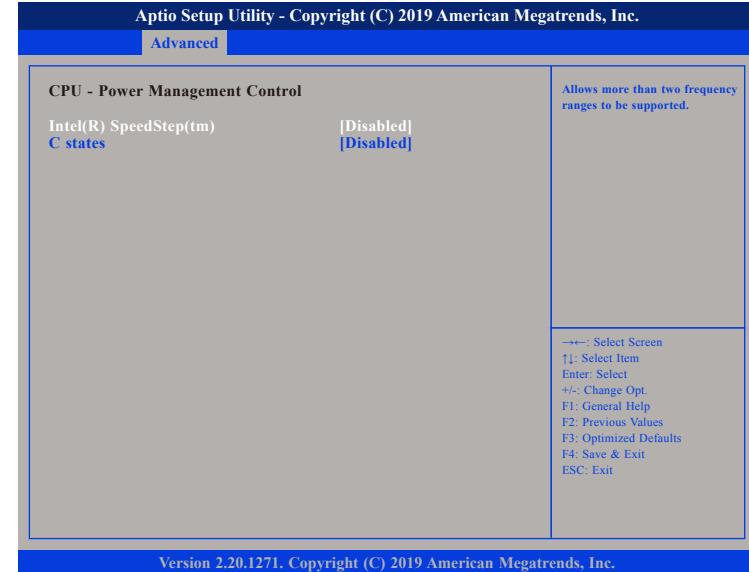
This section is used to configure the CPU power management features.



### CPU - Power Management Control

Enters the CPU - Power Management Control submenu.

## CPU - Power Management Control



### Intel® SpeedStep™

Enables or disables Intel SpeedStep technology.

### C states

Enables or disables CPU C states support for power saving.

## Trusted Computing

This section is used to configure Trusted Platform Module (TPM) settings.



### Security Device Support

Enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

## F81216SEC Super IO Configuration

This section is used to configure the serial ports.



### Super IO Chip

Displays the Super I/O chip used on the board.

## Serial Port 1 Configuration

This section is used to configure serial port 1.

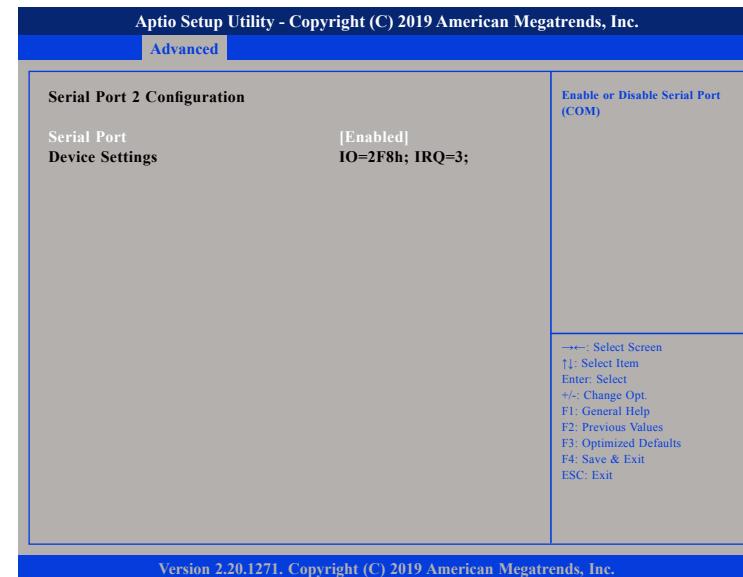


### Serial Port

Enables or disables the serial port.

## Serial Port 2 Configuration

This section is used to configure serial port 2.



### Serial Port

Enables or disables the serial port.



## Serial Port 3 Configuration

This section is used to configure serial port 3.



### Serial Port

Enables or disables the serial port.

### Onboard Serial Port Mode

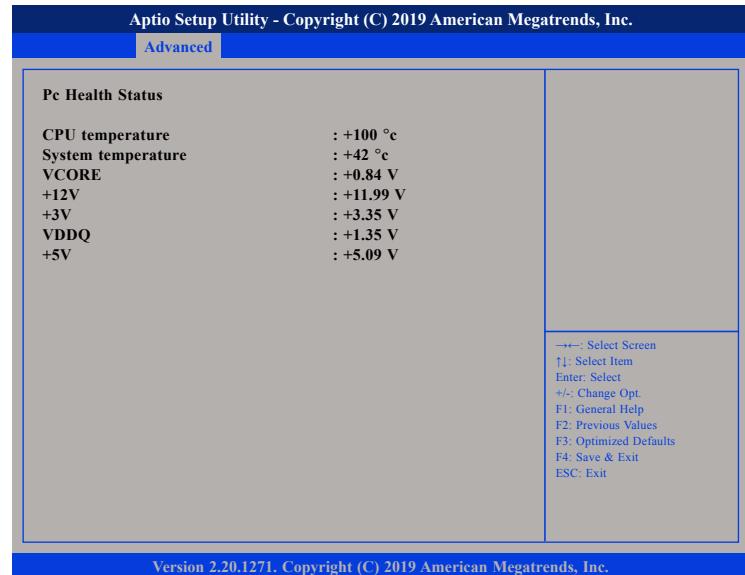
Configures the serial port mode to RS232, RS422, RS485 or RS485 Auto.

### Terminal resistor

Enables or disables the terminal resistor

## IT8528 H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



### CPU temperature

Detects and displays the current CPU temperature.

### System temperature

Detects and displays the current system temperature.

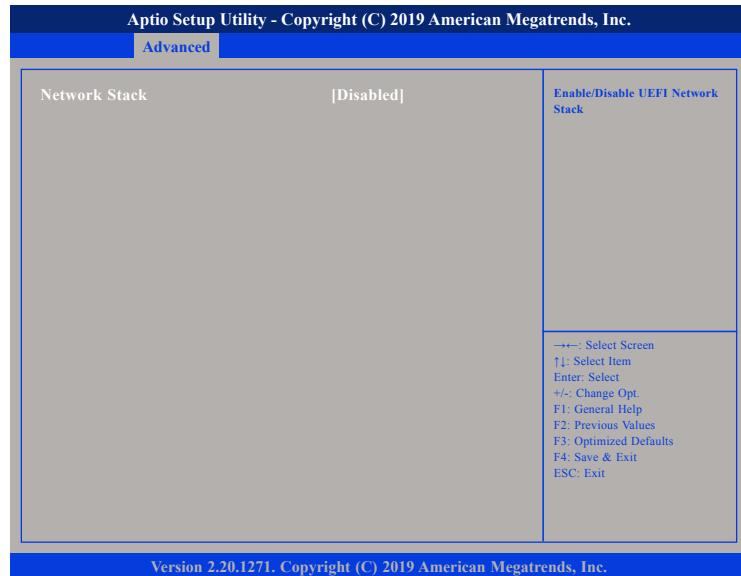
### VCORE to +5V

Detects and displays the output voltages.



## Network Stack Configuration

This section is used to configure the network stack settings.



### Network Stack

Enables or disables UEFI network stack.

## CSM Configuration

This section is used to configure the compatibility support module features.

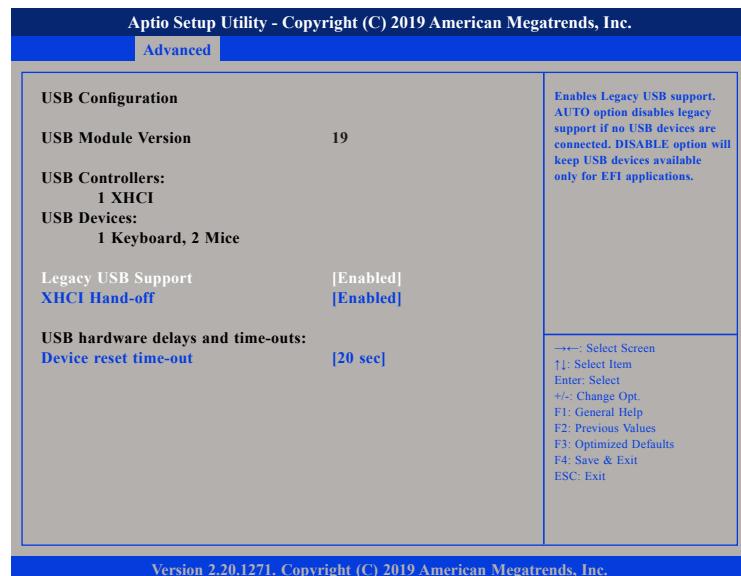


### CSM Support

This field is used to enable or disable CSM support, if Auto option is selected, based on OS, CSM will be enabled or disabled automatically.

## USB Configuration

This section is used to configure the USB.



### Legacy USB Support

Enabled Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

Disabled Keeps USB devices available only for EFI applications.

### XHCI Hand-off

This is a workaround for OSs that does not support XHCI hand-off. The XHCI ownership change should be claimed by the XHCI driver.

### Device reset time-out

Selects the USB mass storage device's start unit command timeout.

## Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



### System Agent (SA) Configuration

System Agent (SA) parameters.

### PCH-IO Configuration

PCH-IO parameters.

## System Agent (SA) Configuration

This section is used to configure the System Agent (SA) configuration.



### VT-d

Enables or disables VT-d function on MCH.

## Graphics Configuration



### DVMT Total Gfx Mem

Selects the DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

## PCH-IO Configuration

This section is used to configure PCH-IO configuration.



### State After G3

Configures the power state when power is re-applied after a power failure (G3 state).

### USB2.0 Power State in Standby

Configures the USB 2.0 power state in standby mode.

### USB3.0 Power State in Standby

Configures the USB 3.0 power state in standby mode.

### Front USB Power State in Standby

Configures the front USB power state in standby mode.

**LAN1(UP)**

Enables or disables the top LAN1 controller.

**LAN1(DOWN)**

Enables or disables the bottom LAN1 controller.

**M.2 and MINIPCIE**

Enables or disables the M.2 or mini-PCIe slots.

**SATA And RST Configuration****SATA Controller(s)**

Enables or disables SATA device.

**SATA Mode Selection**

Configures the SATA controller as AHCI mode or Intel RST Premium mode.

**Port 1 (SATA1)**

Enables or disables SATA port 1.

**Port 0 (M.2)**

Enables or disables the M.2 slot.



## Security Configuration

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Chipset

<b>Security Configuration</b>	
RTC Lock	[Enabled]
<b>Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM</b>	
<small>→←: Select Screen ↑↓: Select Item Enter: Select +/-.: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</small>	

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### RTC Lock

Enables or disables bytes 38h-3Fh in the upper and lower 128-byte bank of RTC RAM.

## Security

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Main Advanced Chipset Security Boot Save & Exit

<b>Password Description</b>	<b>Set Administrator Password</b>
<b>If ONLY the Administrator's password is set,</b> <b>then this only limits access to Setup and is</b> <b>only asked for when entering Setup.</b> <b>If ONLY the User's password is set, then this</b> <b>is a power on password and must be entered to</b> <b>boot or enter Setup. In Setup the User will</b> <b>have Administrator rights.</b> <b>The password length must be</b> <b>in the following range:</b> <b>Minimum length</b> 3 <b>Maximum length</b> 20	<small>→←: Select Screen ↑↓: Select Item Enter: Select +/-.: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</small>
<b>Administrator Password</b>	<b>User Password</b>

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### Administrator Password

Select this to reconfigure the administrator's password.

### User Password

Select this to reconfigure the user's password.

## Boot



### Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key.  
65535(0xFFFF) denotes indefinite waiting.

### Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

### Boot Option Priorities

Adjusts the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

### Fast Boot

Enables or disables fast boot technology to speed up the system boot time. This is achieved by skipping specific tests during BIOS POST routine.

## Save & Exit



### Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes. You can also press <F4> to save and exit Setup.

### Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting. You can also press <ESC> to exit without saving the changes.

### Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Discard Changes and Reset

To exit the Setup utility and reset without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

### Save Changes

To save changes and continue configuring the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Discard Changes

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

### Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Save as User Defaults

To use the current configurations as user default settings for the BIOS, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Restore User Defaults

To restore the BIOS to user default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

### Boot Override

To bypass the boot sequence from the Boot Option List and boot from a particular device, select the desired device and press <Enter>.

### Launch EFI Shell from filesystem device

To launch EFI shell from a filesystem device, select this field and press <Enter>.