



NexAIoT Co., Ltd.

IoT Automation Solutions Business Group

Industrial Panel PC

IPPC 1050P/1650P/1850P/2150P

User Manual

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PREFACE

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Disclaimer

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Acknowledgements

IPPC 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P 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 its 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.
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.

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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 1050P/1650P/1850P/2150P

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 1050P (P/N: 10II1050P00X0)**
10.1" WXGA LED backlight touch panel PC, Intel® Celeron® J3455E, Quad Core Processor, 1.50GHz, touch screen, 4GB DDR3L, 1 x RS232/422/485
- **IPPC 1650P (P/N: 10II1650P00X0)**
15.6" HD LED backlight touch panel PC, Intel® Celeron® J3455E, Quad Core Processor, 1.50GHz, touch screen, 4GB DDR3L, 1 x RS232/422/485
- **IPPC 1850P (P/N: 10II1850P00X0)**
18.5" HD LED backlight touch panel PC, Intel® Celeron® J3455E, Quad Core Processor, 1.50GHz, touch screen, 4GB DDR3L, 1 x RS232/422/485
- **IPPC 2150P (P/N: 10II2150P00X0)**
21.5" WXGA LED backlight touch panel PC, Intel® Celeron® J3455E, Quad Core Processor, 1.50GHz, touch screen, 4GB DDR3L, 1 x RS232/422/485

Optional

- **24V, 60W AC/DC power adapter w/o power cord (P/N: 7400060032X00)**

CHAPTER 1: PRODUCT INTRODUCTION

IPPC 1050P

Overview

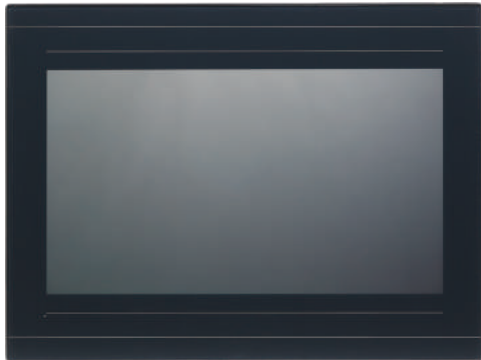


Key Features

- Intel® Celeron® J3455 processor, 1.50GHz
- 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 4GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

IPPC 1650P

Overview



Key Features

- Intel® Celeron® J3455 processor, 1.50GHz
- 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 4GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

IPPC 1850P

Overview



Key Features

- Intel® Celeron® J3455 processor, 1.50GHz
- 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 4GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

IPPC 2150P

Overview



Key Features

- Intel® Celeron® J3455 processor, 1.50GHz
- 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 4GB/2.5" HDD bracket
- IP66 compliant front panel
- Mounting support: panel/wall/stand/VESA 100mm x 100mm
- DC power input 24VDC

Specifications

Panel

IPPC 1050P

- LCD size: 10.1", 16:9
- Resolution: WXGA 1280 x 800
- Luminance: 300cd/m²
- Contrast ratio: 1300:1
- LCD color: 262K
- Viewing angle: 85 (U), 85 (D), 85 (L), 85 (R)
- Backlight: LED

IPPC 1650P

- LCD size: 15.6", 16:9
- Resolution: HD 1366 x 768
- Luminance: 400cd/m²
- Contrast ratio: 500
- LCD color: 16.7M
- Viewing angle: 80 (U), 80 (D), 85 (L), 85 (R)
- Backlight: LED

IPPC 1850P

- LCD size: 18.5", 16:9
- Resolution: HD 1366 x 768
- Luminance: 300cd/m²
- Contrast ratio: 1000
- LCD color: 16.7M
- Viewing angle: 80 (U), 80 (D), 85 (L), 85 (R)
- Backlight: LED

IPPC 2150P

- LCD size: 21.5", 16:9
- Resolution: FHD 1920 x 1080
- Luminance: 250cd/m²
- 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

- CPU: onboard Intel® Celeron® J3455 Quad Core processor, 1.50GHz
- BIOS: AMI BIOS
- System memory: 1 x 204-pin DDR3L SO-DIMM socket, 4GB DDR3L (default for IPPC 1050P), 8GB DDR3L (default for IPPC 1650P, IPPC 1850P and IPPC 2150P), support up to 8GB DDR3L-1866, non-ECC and unbuffered
- Storage device:
 - 1 x Internal M.2 2242
 - 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 (support optional Wi-Fi module)
- Front LED indicator to show operating status

Rear I/O

- Ethernet: 2 x RJ45
- Display: 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 #3: RS232/422/485
- COM #1 & 2: RS232
- Power input: 1 x 3-pin, support 24 VDC input
- Remote switch: 1 x 3-pin, support remote power on/off switch

Ethernet

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

Mechanical & Environment

- Color: Pantone 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 (CFast 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:
 - 308 x 223 x 60.7mm (IPPC 1050P)
 - 417.6 x 312.6 x 82.75mm (IPPC 1650P)
 - 490.8 x 320.6 x 81.65mm (IPPC 1850P)
 - 562.4 x 382.4 x 81.35mm (IPPC 2150P)
- Weight:
 - 3.6kg (IPPC 1050P)
 - 6.3kg (IPPC 1650P)
 - 8.1kg (IPPC 1850P)
 - 9.2kg (IPPC 2150P)

Certifications

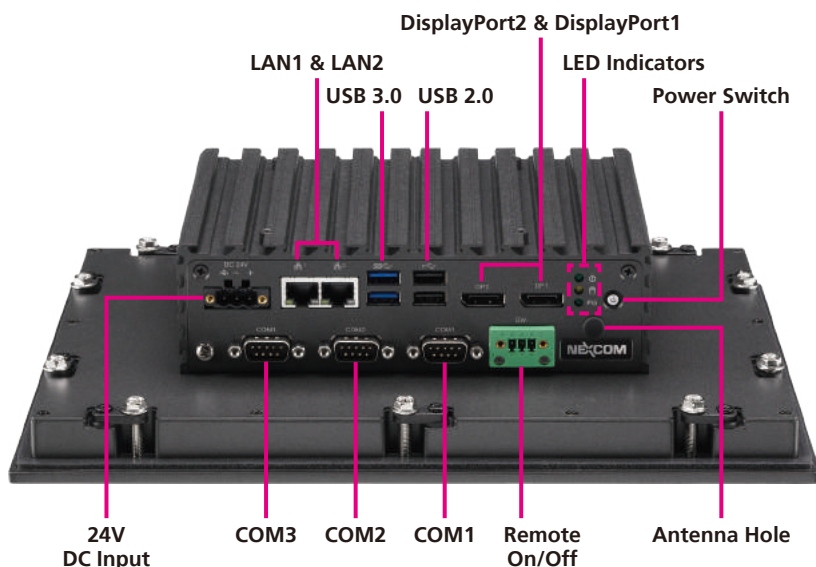
- CE (including EN61000-6-2/EN61000-6-4)
- FCC Class A

OS Support List

- Windows 10 64-bit

Knowing Your IPPC Series

Rear Bottom



24V DC Input

Used to plug a DC power cord.

LAN1 & LAN2

Used to connect the system to a local area network.

USB 3.0

Used to connect USB 3.0/2.0 devices.

USB 2.0

Used to connect USB 2.0/1.1 devices.

DisplayPort1 & DisplayPort2

Used to connect a DisplayPort interface monitor.

LED Indicators

Two LEDs used to indicate the power status and storage activity of the system. The third LED is user programmable.

Power Switch

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

COM1 to COM3

Three DB9 ports used to connect RS232 compatible devices. COM3 supports RS232/422/485 connection.

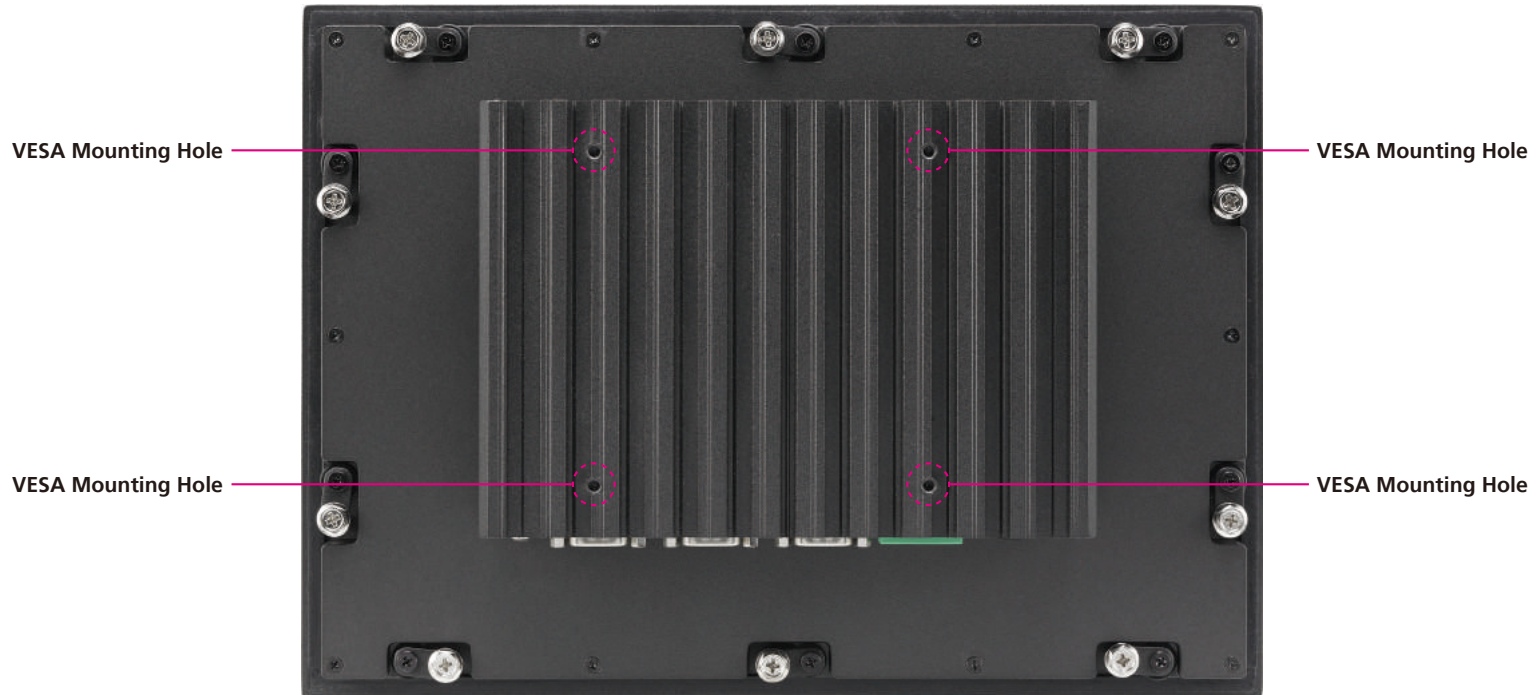
Remote On/Off Switch

Used to connect a remote to power on/off the system.

Antenna Hole

The external antenna mounting hole is used to mount and connect optional Wi-Fi antennas.

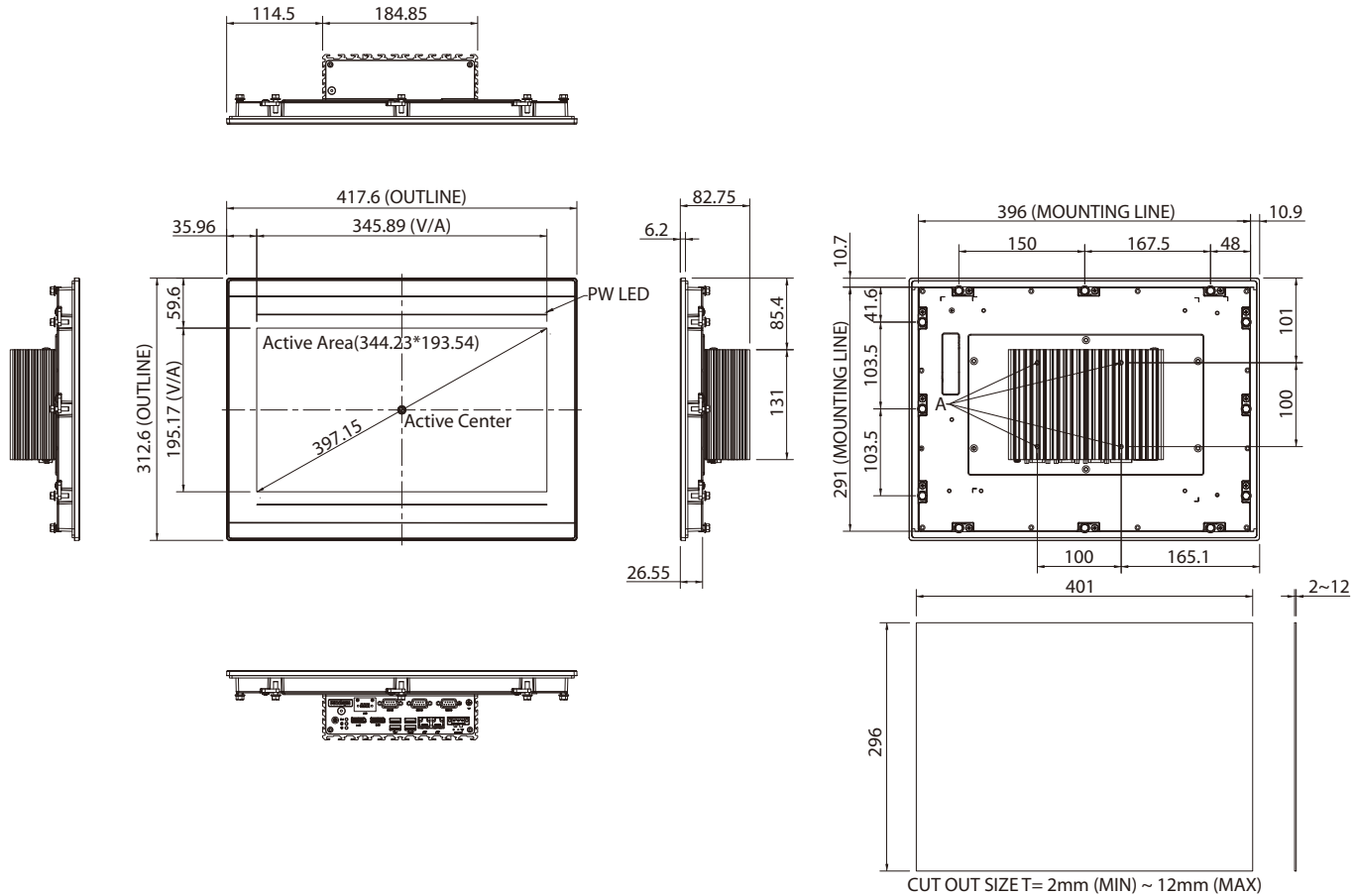
Rear



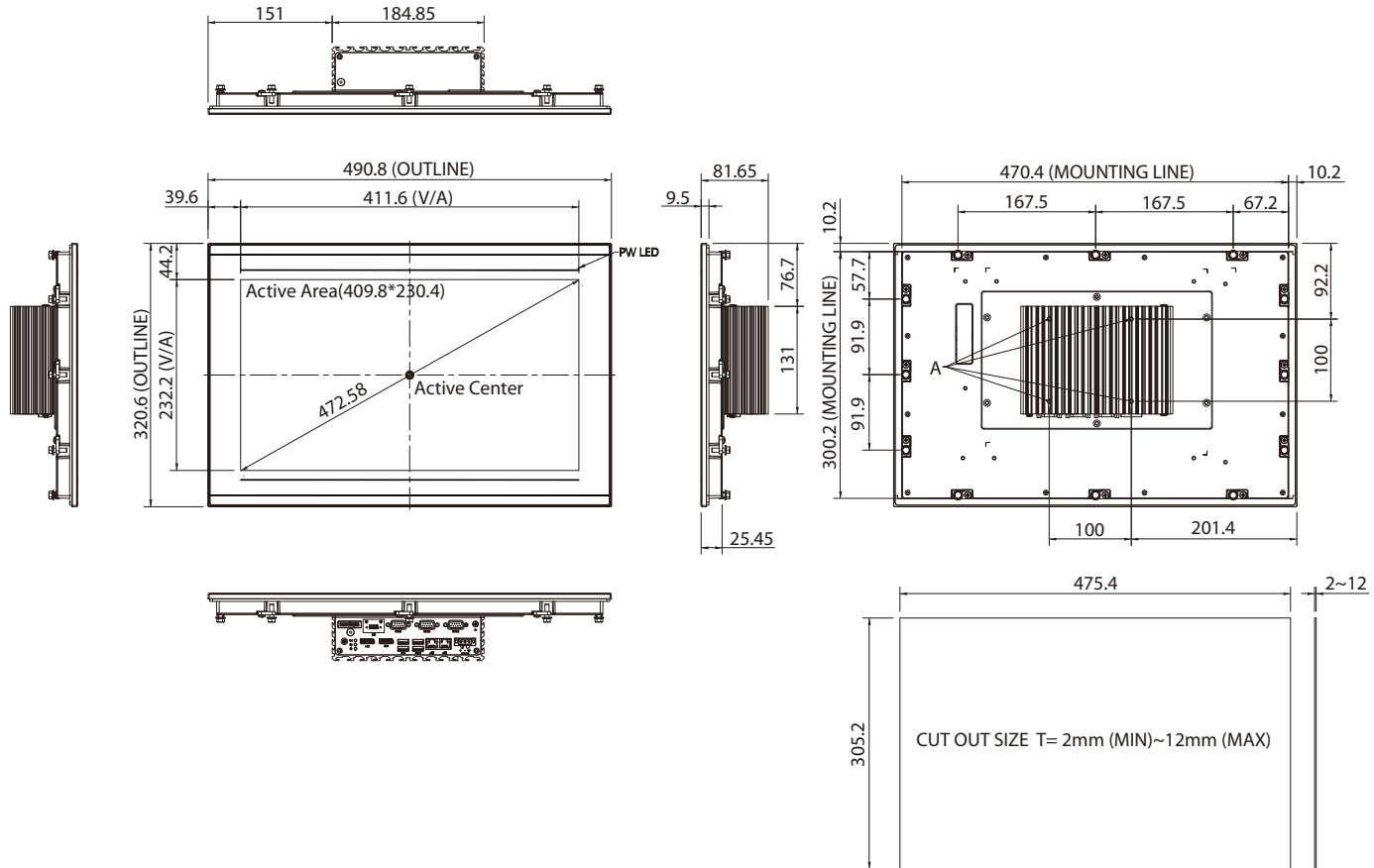
VESA Mounting Holes

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

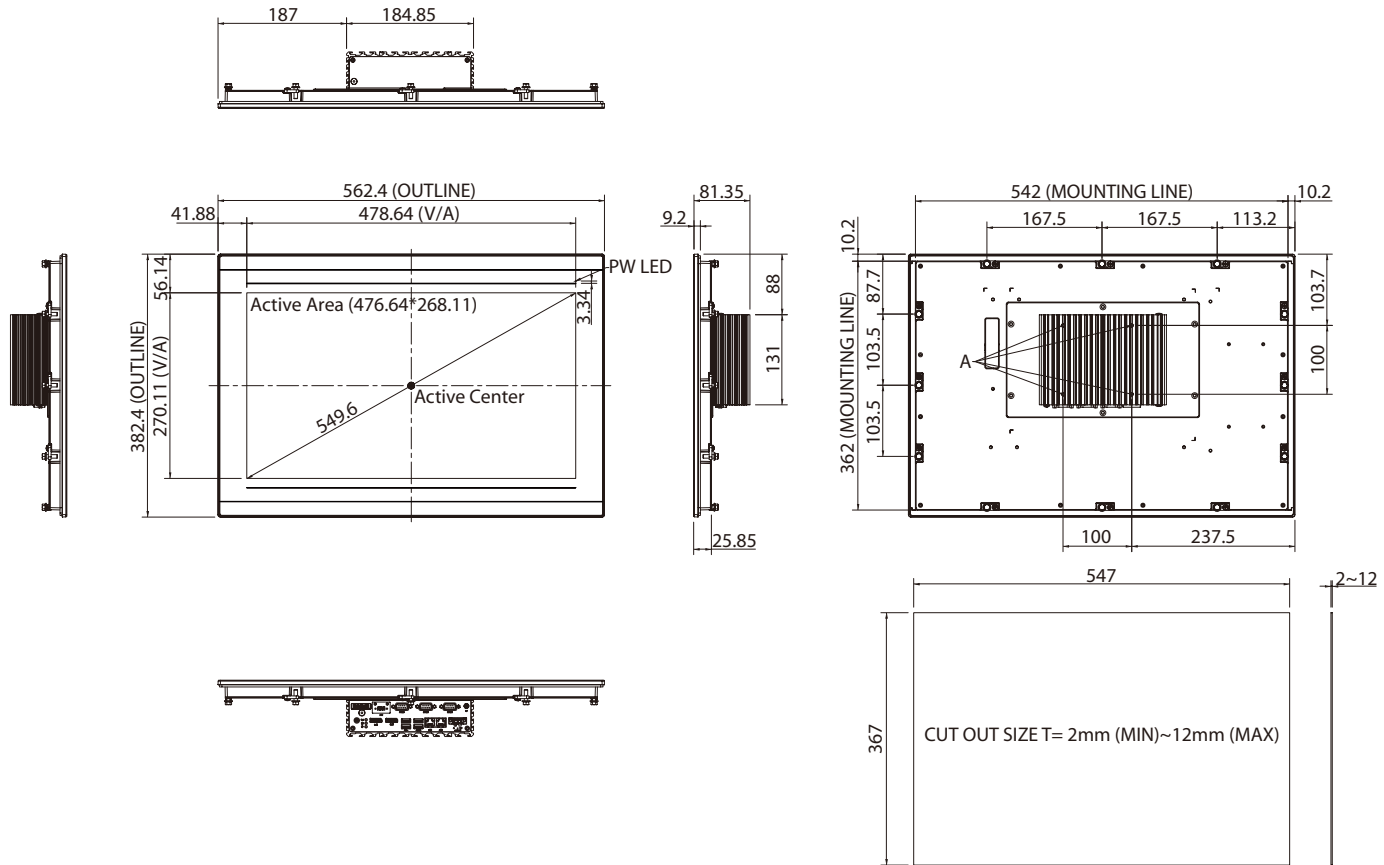
IPPC 1650P



IPPC 1850P



IPPC 2150P



CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the IPPC 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P 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:

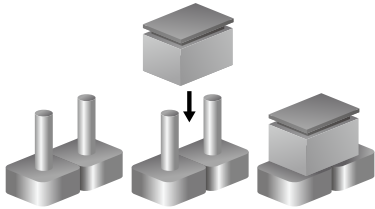
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal 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

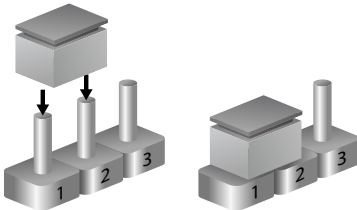
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just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

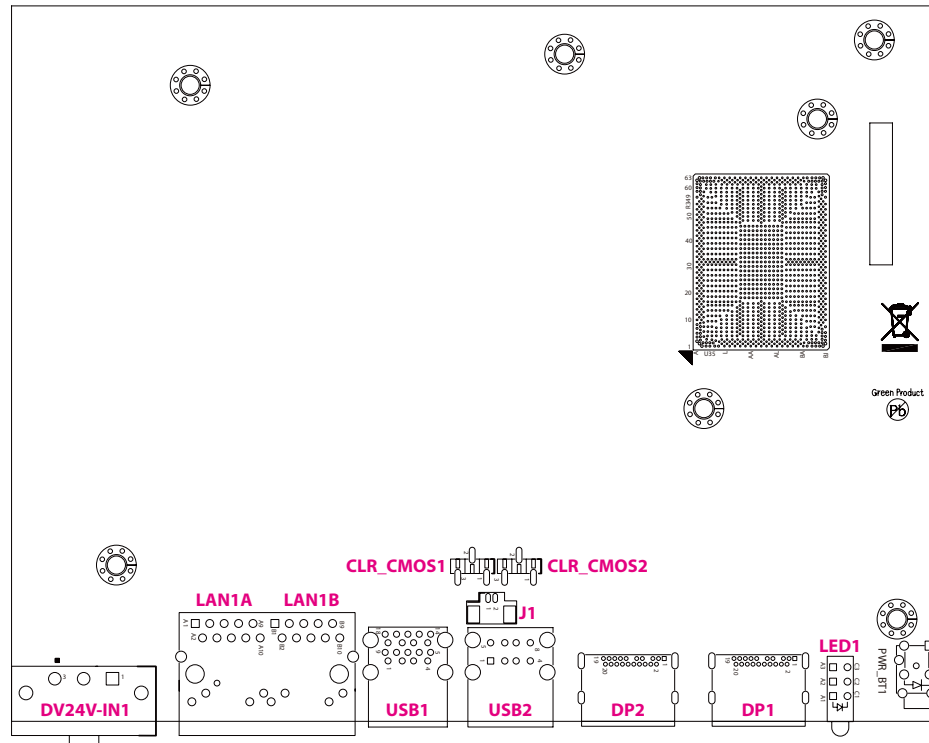


Three-Pin Jumpers: Pins 1 and 2 are Short

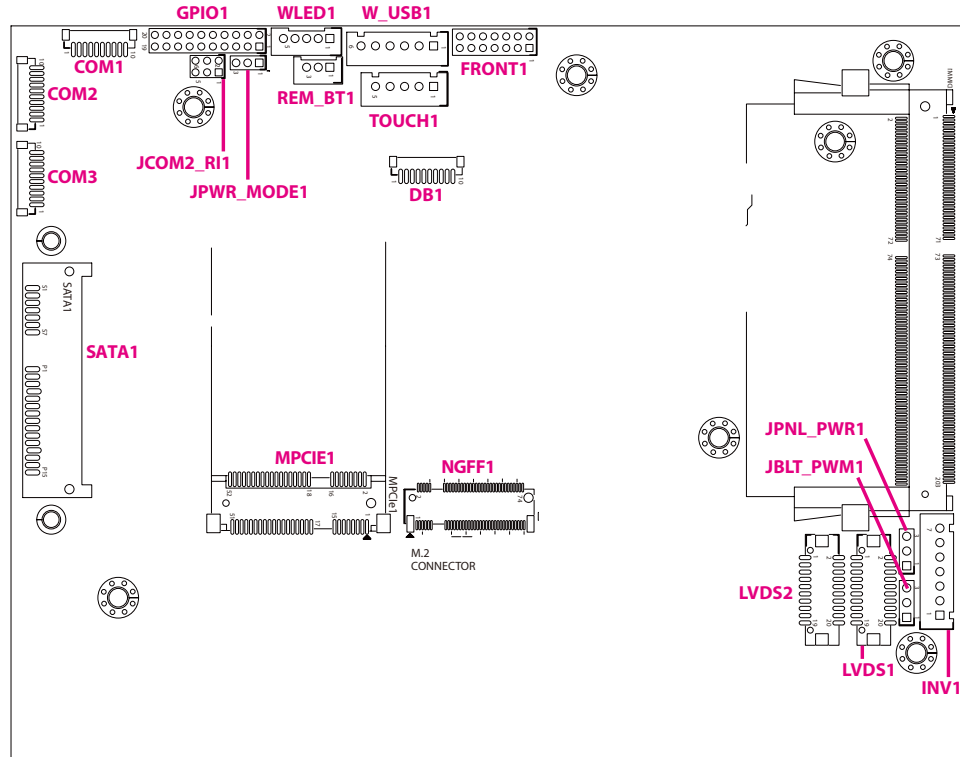


Locations of the Jumpers and Connectors

Top View



Bottom View



Jumpers

LVDS Panel Power Selection

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: JPNL_PWR1



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

Backlight Volume Selection

Connector type: 1x3 3-pin header, 2.54mm pitch

Connector location: JBLT_PWM1



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

Clear CMOS

Connector type: 1x3 3-pin header, 2.54mm pitch
 Connector location: CLR_CMOS1 and CLR_CMOS2



Pin	Settings
1-2 On	Normal
2-3 On	Clear

ATX/AT Mode Selection

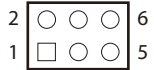
Connector type: 1x3 3-pin header, 2.54mm pitch
 Connector location: JPWR_MODE1



Pin	Settings
1-2 On	ATX
2-3 On	AT

COM2 Port Power Setting

Connector type: 2x3 6-pin header, 2.0mm pitch
Connector location: JCOM2_R11



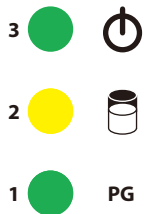
Pin	Settings
1-2 On	+12V
3-4 On	Ring
5-6 On	+5V

Connector Pin Definitions

External I/O Interfaces

LED Indicators

Connector location: LED1

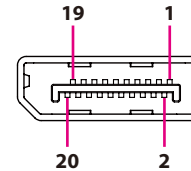


LED	Description
1	GPIO LED (Green, user defined)
2	SATA LED (Yellow)
3	Power LED (Green)

DisplayPorts

Connector type: DisplayPort

Connector location: DP1 and DP2

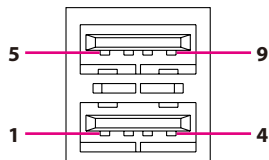


Pin	Definition	Pin	Definition
1	LANE0_P	2	GND
3	LANE0_N	4	LANE1_P
5	GND	6	LANE1_N
7	LANE2_P	8	GND
9	LANE2_N	10	LANE3_P
11	GND	12	LANE3_N
13	CONFIG1	14	CONFIG2
15	AUX_P	16	GND
17	AUX_N	18	HPD
19	DP_RETURN	20	DP_PWR

USB 2.0 Ports

Connector type: Dual USB 2.0 port

Connector location: USB2

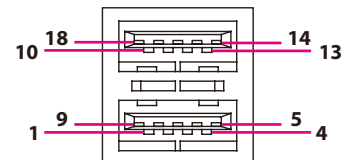


Pin	Definition	Pin	Definition
1	+5V	2	USB_2N_C
3	USB_2P_C	4	GND
5	+5V	6	USB_3N_C
7	USB_3P_C	8	GND

USB 3.0 Ports

Connector type: Dual USB 3.0 port

Connector location: USB1

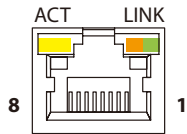


Pin	Definition	Pin	Definition
1	+5V	2	USB_ON_C
3	USB_OP_C	4	GND
5	USB3_RX0_N_C	6	USB3_RX0_P_C
7	GND	8	USB3_TX0_N_C
9	USB3_TX0_P_C	10	+5V
11	USB_1N_C	12	USB_1P_C
13	GND	14	USB3_RX1_N_C
15	USB3_RX1_P_C	16	GND
17	USB3_TX1_N_C	18	USB3_TX1_P_C

LAN1 Port

Connector type: RJ45 port with LEDs

Connector location: LAN1A



Act	Status
Flashing Yellow	Data activity
Off	No activity

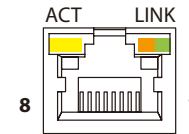
Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

Pin	Definition	Pin	Definition
1	MDI_PLUS0	2	MDI_MINUS0
3	MDI_PLUS1	4	MDI_MINUS1
5	MDI_PLUS2	6	MDI_MINUS2
7	MDI_PLUS3	8	MDI_MINUS3

LAN2 Port

Connector type: RJ45 port with LEDs

Connector location: LAN1B



Act	Status
Flashing Yellow	Data activity
Off	No activity

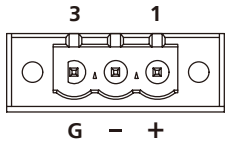
Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	10Mbps or no link

Pin	Definition	Pin	Definition
1	MDI_PLUS0	2	MDI_MINUS0
3	MDI_PLUS1	4	MDI_MINUS1
5	MDI_PLUS2	6	MDI_MINUS2
7	MDI_PLUS3	8	MDI_MINUS3

24V DC Power Input

Connector type: Phoenix Contact 1x3 3-pin terminal block

Connector location: DC24V_IN1



Pin	Definition
1	+24V
2	GND
3	CHASSIS GND

Internal Connectors

Debug Connector

Connector type: 1x10 10-pin header, 1.0mm pitch

Connector location: DB1

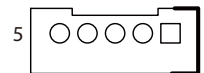


Pin	Definition	Pin	Definition
1	GND	2	LPC_PLTRST#
3	LPC_CLK	4	LPC_LFRAME#
5	LPC_LAD3	6	LPC_LAD2
7	LPC_LAD1	8	LPC_LAD0
9	LPC_SERIRQ	10	+3.3V

LED Connector

Connector type: 1x5 5-pin header, 2.0mm pitch

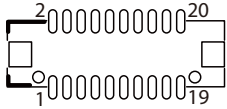
Connector location: WLED1



Pin	Definition	Pin	Definition
1	HDD_LED-	2	HDD_LED+
3	GND	4	STBY_LED+
5	POWER_LED+	6	

LVDS Connector

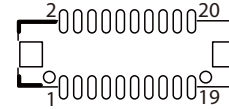
Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: LVDS1



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	GND

LVDS Connector

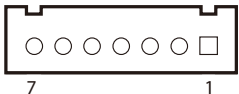
Connector type: 2x10 20-pin header, 1.25mm pitch
Connector location: LVDS2



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

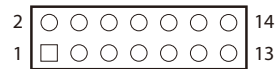
Connector type: 1x7 7-pin header, 2.5mm pitch
 Connector location: INV1



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

Front Panel Connector

Connector type: 2x7 14-pin header, 2.0mm pitch
 Connector location: FRONT1

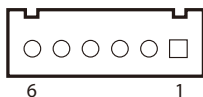


Pin	Definition	Pin	Definition
1	PWR_LED#	2	PWR_LED
3	HDD_LED#	4	HDD_LED
5	MAIN_SMBCLK	6	+3V3
7	MAIN_SMBDATA	8	GND
9	SLP_S3#	10	PS_ON
11	PWR_BTN#	12	GND
13	RST_BTN#	14	GND

Internal USB 2.0 Connector

Connector type: 1x6 6-pin header, 2.5mm pitch

Connector location: W_USB1

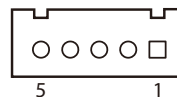


Pin	Definition	Pin	Definition
1	+5V	2	USB_4N_C
3	USB_4P_C	4	
5		6	GND

Touch Screen Connector

Connector type: 1x5 5-pin header, 2.5mm pitch

Connector location: TOUCH1



Pin	Definition	Pin	Definition
1	UR	2	LR
3	Sense	4	UL
5	LL		

Remote On/Off Connector

Connector type: 1x3 3-pin header, 2.0mm pitch

Connector location: REM_BT1

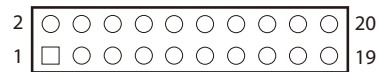


Pin	Definition
1	REMOTE_S3
2	GND
3	REMOTE_PWRBT#

GPIO Connector

Connector type: 2x10 20-pin header, 2.0mm pitch

Connector location: GPIO1



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



Pin	Definition	Pin	Definition
1	DCD# / TX-	2	RXD / TX+
3	TXD / RX+	4	DTR# / RX-
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	GND

COM1 and COM2 Connectors (RS232)

Connector type: 1x10 10-pin header

Connector location: COM1 and COM2

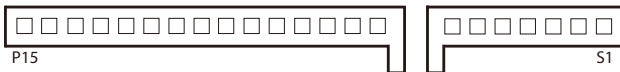


Pin	Definition	Pin	Definition
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#	10	GND

SATA Connector (7-pin and 15-pin)

Connector type: Standard Serial ATA 7P and 15P

Connector location: SATA1



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		

Battery Connector

Connector type: 1x2 2-pin header, 1.25mm pitch

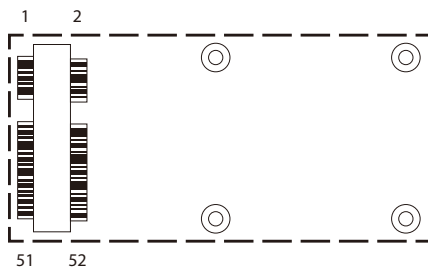
Connector location: J1



Pin	Definition
1	GND
2	+3V

Mini-PCIe Connector

Connector location: MPCIE1

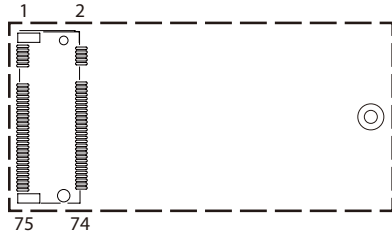


Pin	Definition	Pin	Definition
1	WAKE#	2	3.3VSB_3
3	COEX1	4	GND12
5	COEX2	6	1.5V_3
7	CLKREQ#	8	UIM_PWR
9	GND6	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND5	16	UIM_VPP
17	REV10/UIM_C8	18	GND11
19	REV9/UIM_C4	20	W_DISABLE#
21	GND4	22	PERST#
23	PERn0	24	3.3VSB_1
25	PERp0	26	GND10

Pin	Definition	Pin	Definition
27	GND3	28	1.5V_2
29	GND2	30	SMB_CLK
31	PETn0	32	SMB_DAT
33	PETp0	34	GND9
35	GND0	36	USB_D-
37	GND13	38	USB_D+
39	3.3VSB_4	40	GND8
41	3.3VSB_5	42	LED_WWAN#
43	GND14	44	LED_WLAN#
45	REV4	46	LED_WPAN#
47	REV3	48	1.5V_1
49	REV2	50	GND7
51	REV1	52	3.3VSB_2

M.2 Connector (B-Key)

Connector location: NGFF1



Pin	Definition	Pin	Definition
1	CONFIG_3	2	3.3V_1
3	GND1	4	3.3V_2
5	GND2	6	POWER_OFF#
7	USB_D+	8	W_DISABLE1#
9	USB_D-	10	GPIO_9/DAS/DSS#
11	REFCLK-	12	
17		18	
19		20	GPIO_5
21	CONFIG_0	22	GPIO_6
23	GPIO_11	24	GPIO_7
25	DPR	26	GPIO_10
27	GND3	28	GPIO_8
29	PERn1/USB3.0-Rx-/SSIC-RxN	30	UIM-RESET
31	PERp1/USB3.0-Rx+/SSIC-RxP	32	UIM-CLK
33	GND4	34	UIM-DATA
35	PETn1/USB3.0-Tx-/SSIC-TxN	36	UIM-PWR
37	PETn1/USB3.0-Tx+/SSIC-TxP	38	DEVS LP
39	GND5	40	GPIO_0

Pin	Definition	Pin	Definition
41	PERn0/SATA-B+	42	GPIO_1
43	PERp0/SATA-B-	44	GPIO_2
45	GND6	46	GPIO_3
47	PERn0/SATA-A-	48	GPIO_4
49	PERp0/SATA-A+	50	PERST#
51	GND7	52	CLKREQ#
53	REFCLKn	54	PEWAKE#
55	REFCLKp	56	NC_1
57	GND8	58	NC_2
59	ANTC TL0	60	COEX3
61	ANTC TL1	62	COEX2
63	ANTC TL2	64	COEX1
65	ANTC TL3	66	SIM_DETECT
67	RESET#	68	SUSCLK (32KHz)
69	CONFIG_1	70	3.3V_3
71	GND9	72	3.3V_4
73	GND10	74	3.3V_5
75	CONFIG_2		

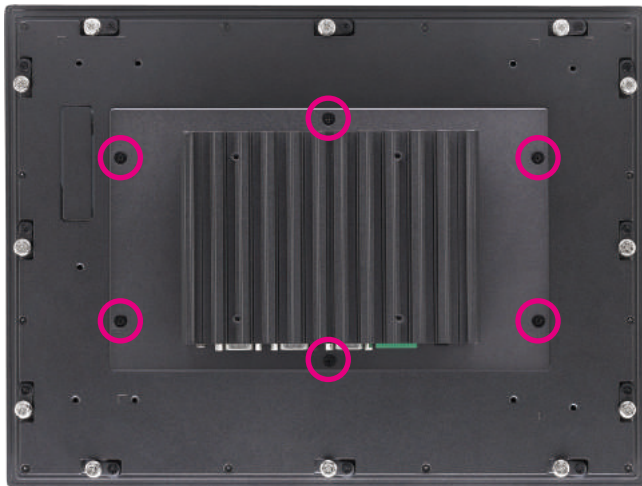
CHAPTER 3: SYSTEM SETUP

Removing the Bottom Cover



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.

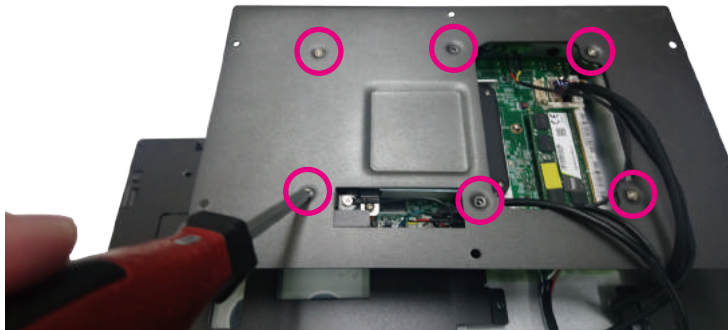


Installing a SO-DIMM Memory Module

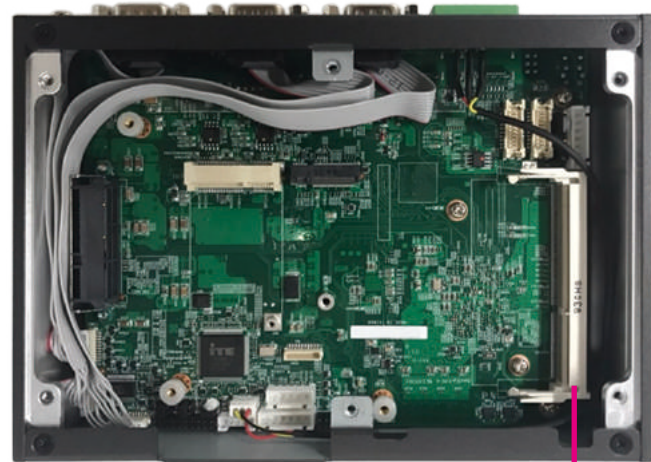


Remove the bottom cover before installing a SO-DIMM.

1. With the bottom cover removed, remove the six screws on the backplate of the bottom cover.



2. Locate the SO-DIMM socket.



SO-DIMM Socket

3. 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.



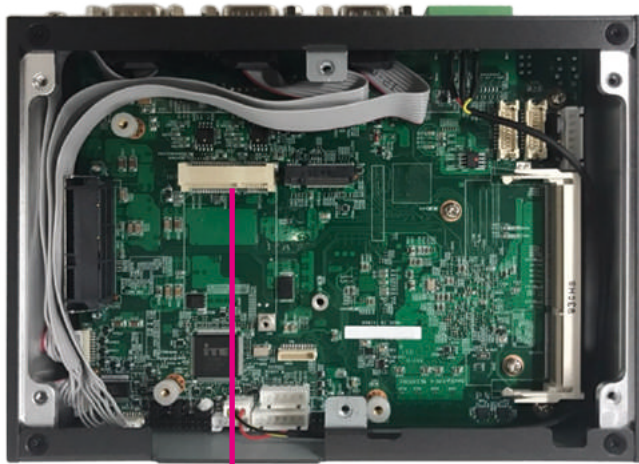
Memory Module

4. Push the module down until the clips on both sides of the socket lock into position.



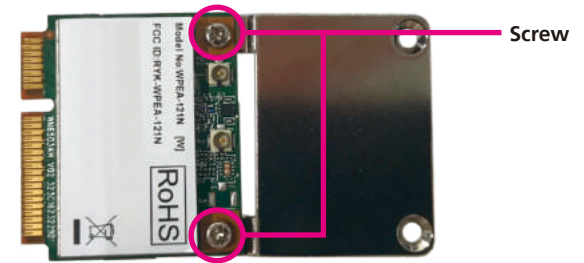
Installing a Wireless LAN Module (Half-size)

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



Mini-PCIe Slot

2. Install the mini-PCIe bracket to the mini-PCIe module.



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



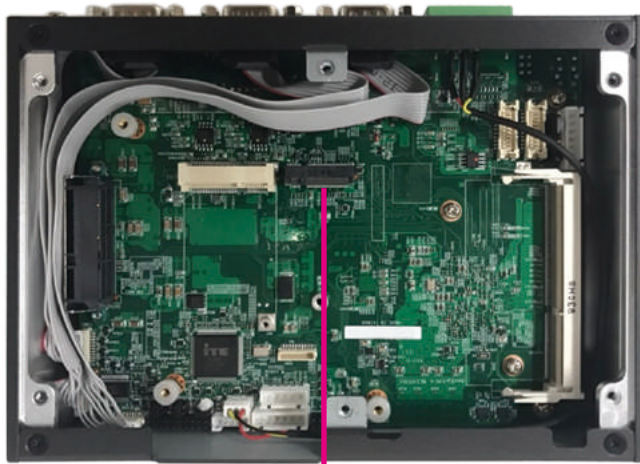
WLAN Module

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



Installing an M.2 Storage Module (2242)

1. Locate the M.2 B-key slot on the board.
2. Make sure the gold-plated six-pin connector on the edge of the module is on the left, while the five-pin connector is on the right.



M.2 B-Key Slot

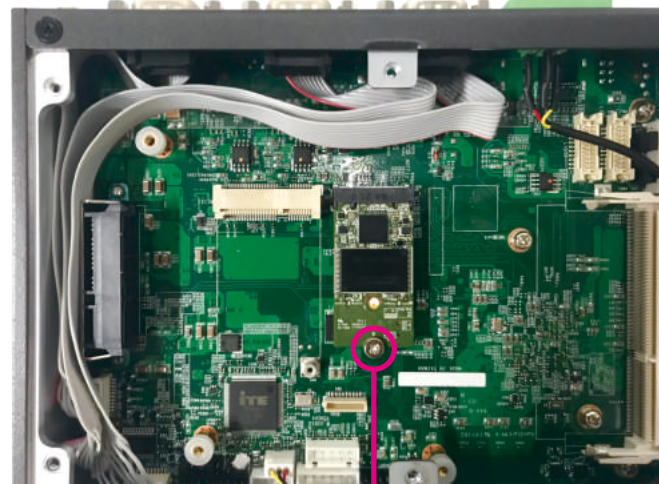


3. Insert the M.2 module into the M.2 slot at a 45-degree angle until the gold-plated connector on the edge of the module completely disappears into the slot.



M.2 Module

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



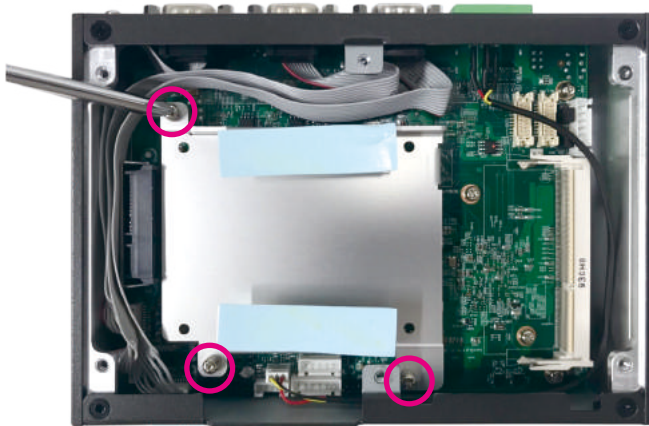
Screw

Installing a SATA Storage Drive

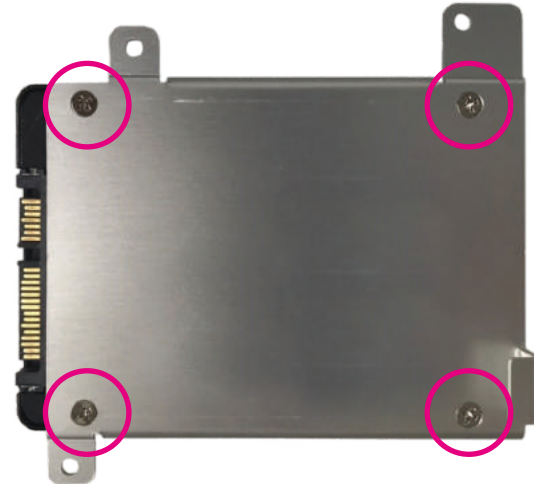


Remove the bottom cover before installing a SATA drive.

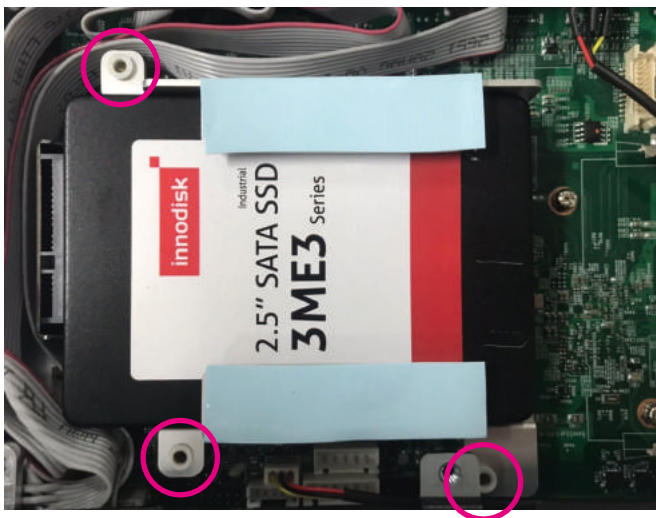
1. Locate the internal storage bracket and remove all the three screws on the storage bracket.



2. Place the 2.5" storage drive into the internal storage bracket then use the screws to secure the 2.5" storage drive in place.



3. Place the internal storage bracket back to its original position. Before securing the bracket with screws, make sure the washers are aligned on top of the mounting holes.



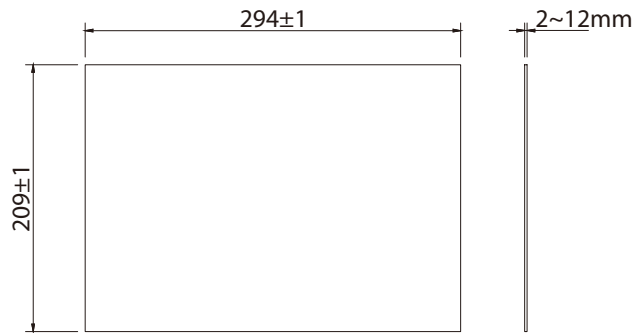
4. Secure the internal storage bracket with screws.



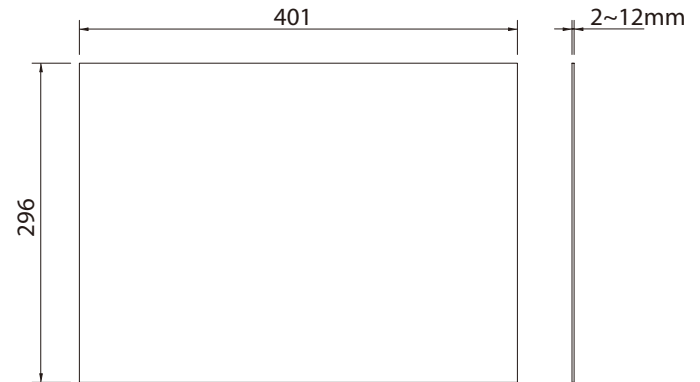
Panel Mounting

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.

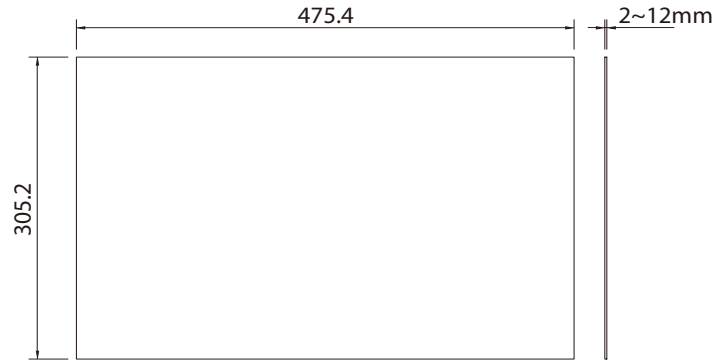
The thickness of the panel (e.g. steel board, plank, acrylic board, wall, etc.) where you will mount the industrial panel PCs must not be less than 2mm and must not exceed 12mm. If the distance between the front bezel and panel mount hole is too wide, it will not fit the panel mount kit.



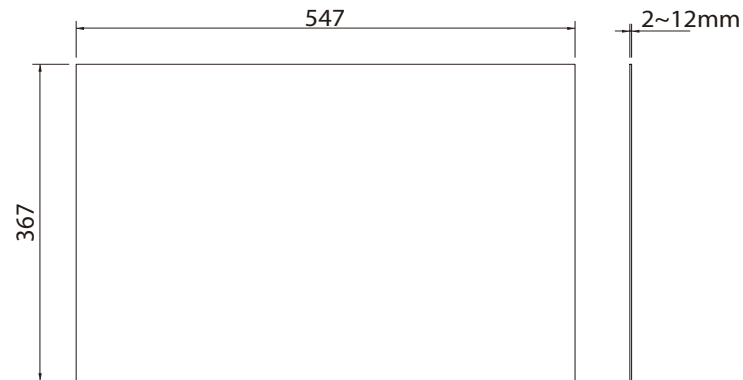
IPPC 1050P



IPPC 1650P

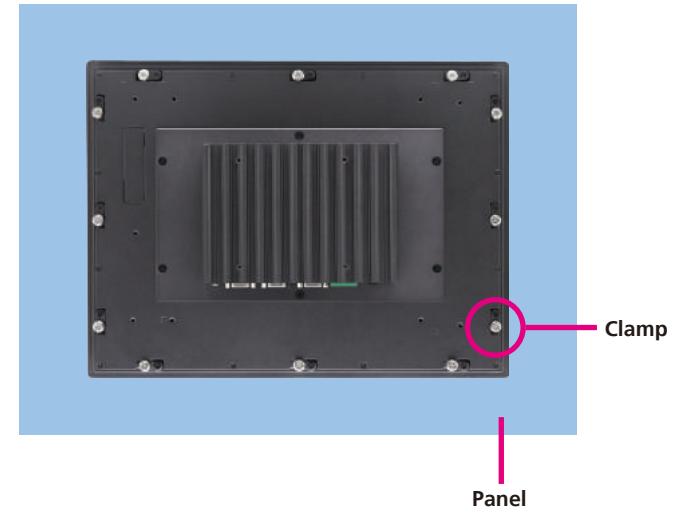


IPPIC 1850P



IPPIC 2150P

- Slide the panel PC through the hole until it is properly fitted against the panel.
- 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 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P. 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 NexAIoT website at www.nexaiot.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 such items 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 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 <Enter> 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 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 2005 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.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
BIOS Information		American Megatrends		Set the Date. Use Tab to switch between Date elements.	
BIOS Vendor	5.12		Default Ranges:		
Core Version	UEFI 2.5; PI 1.4		Year: 2005-2099		
Compliance	N108A008 x64		Months: 1-12		
Project Version	08/30/2019 13:34:03		Days: dependent on month		
Build Date and Time	Administrator				
Access Level					
Platform firmware Information		F1		←→: Select Screen	
BXT SOC	3.0.13.1144		↑↓: Select Item		
TXE FW	10.0.1036		Enter: Select		
GOP			+/-: Change Opt.		
Memory Information		8192 MB		F1: General Help	
Total Memory	1866 MHz		F2: Previous Values		
Memory Speed			F3: Optimized Defaults		
System Date	[Fri 11/29/2019]		F4: Save & Exit		
System Time	[16:14:43]		ESC: Exit		

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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.

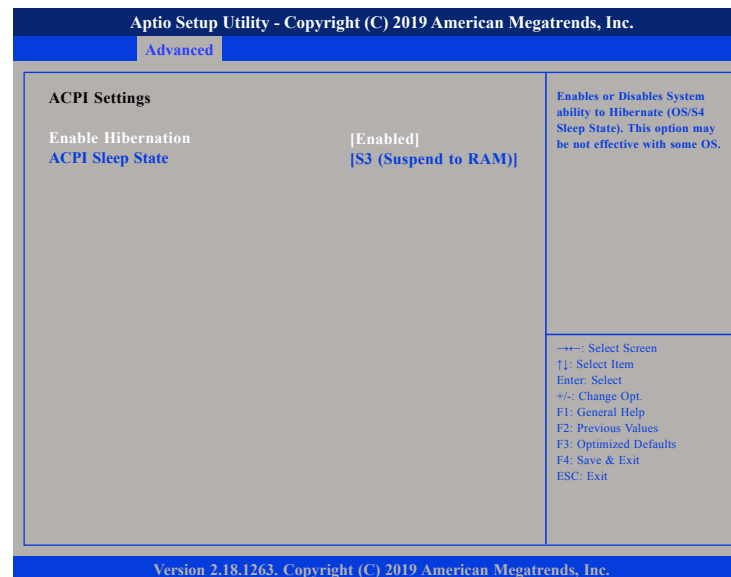


Setting incorrect field values may cause the system to malfunction.



ACPI Settings

This section is used to configure ACPI settings.



Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled and S3 (Suspend to RAM).

IT8786E Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

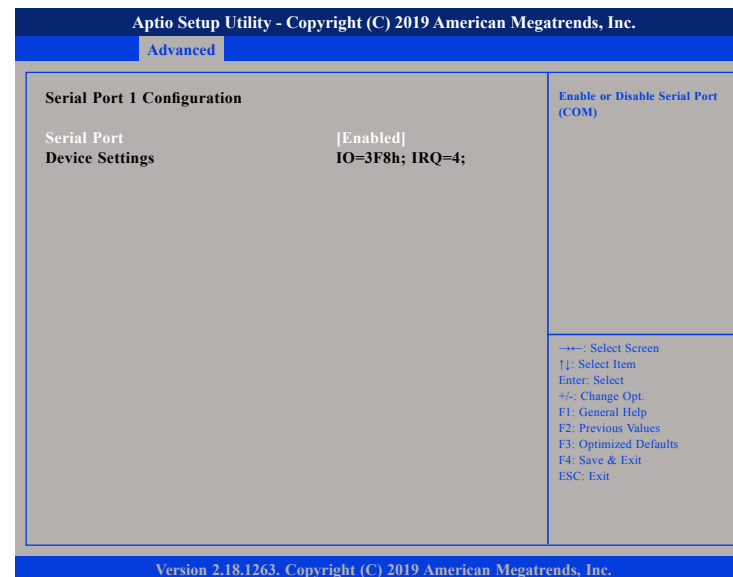


Super IO Chip

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

Serial Port 1 Configuration

This section is used to configure serial port 1.

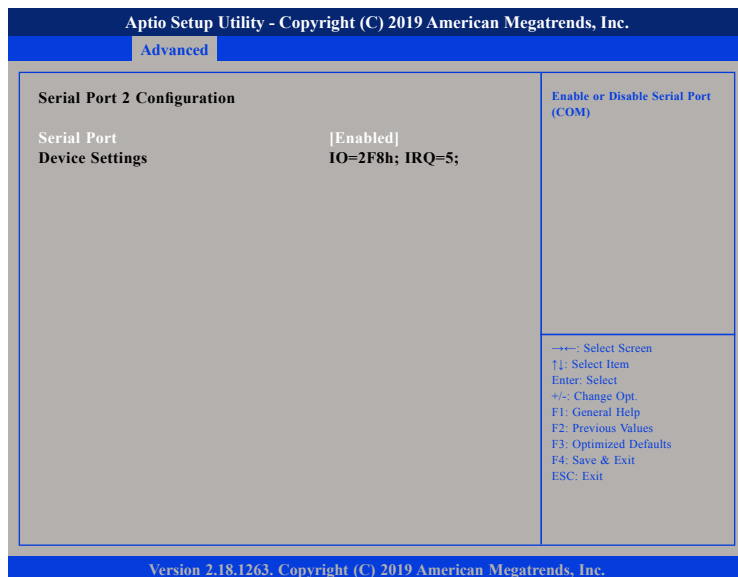


Serial Port

Enables or disables the serial port.

Serial Port 2 Configuration

This section is used to configure serial port 2.

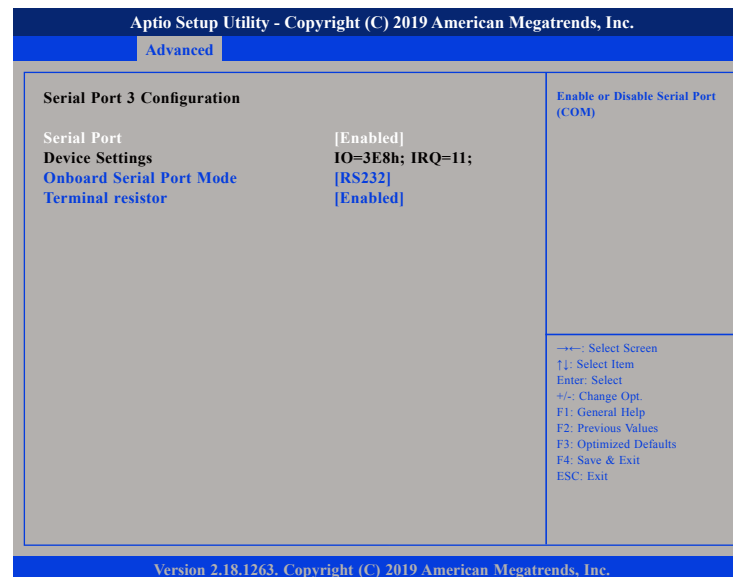


Serial Port

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

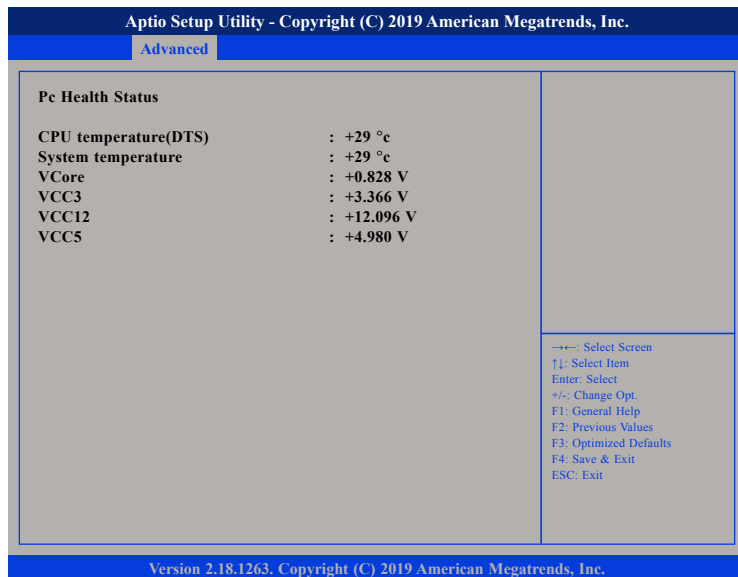
Select this to change the serial port mode to RS232, RS422, RS485 or RS485 AUTO.

Terminal Resistor

Enables or disables the terminal resistor.

Hardware Monitor

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



CPU temperature(DTS)

Detects and displays the current CPU temperature.

System temperature

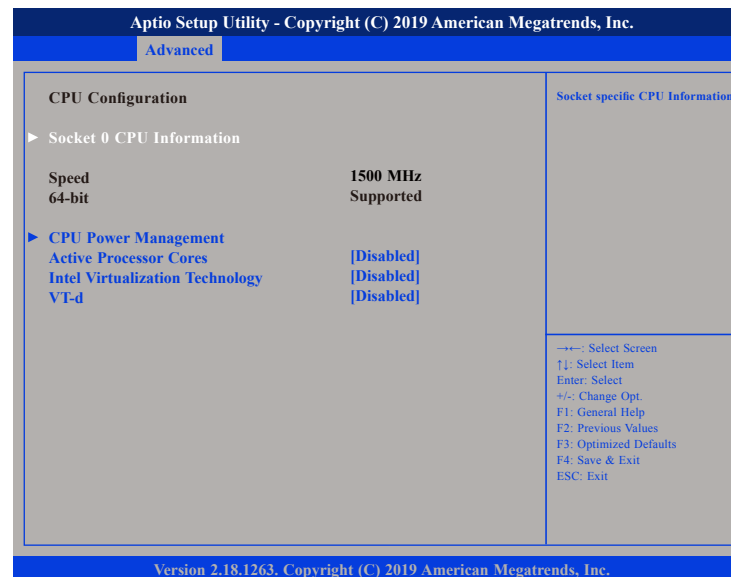
Detects and displays the current system temperature.

VCore to VCC5

Detects and displays the output voltages.

CPU Configuration

This section is used to configure the CPU.



Active Processor Cores

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

Intel® Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

VT-d

Enables or disables VT-d function on MCH.

Socket 0 CPU Information

Display information on the CPU installed on socket 0.

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

Socket 0 CPU Information	
Intel(R) Celeron(R) CPU J3455 @ 1.50GHz	
CPU Signature	506CA
Microcode Patch	1A
Max CPU Speed	1500 MHz
Min CPU Speed	800 MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
L1 Data Cache	24 kB x 4
L1 Code Cache	32 kB x 4
L2 Cache	1024 kB x 2
L3 Cache	Not Present

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

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CPU Power Management

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.

Advanced

CPU Power Management Configuration	Enable/Disable Intel SpeedStep
EIST	[Disabled]

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

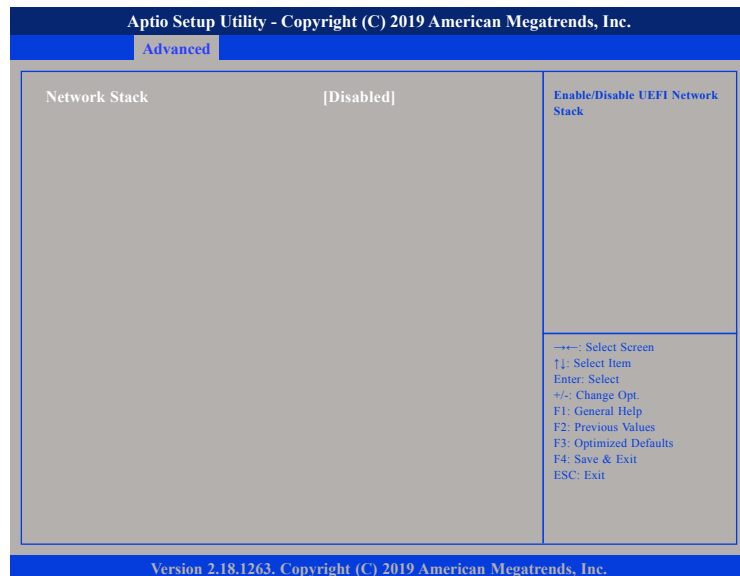
Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.

EIST

Enables or disables Intel® SpeedStep.

Network Stack Configuration

This section is used to configure the network stack.

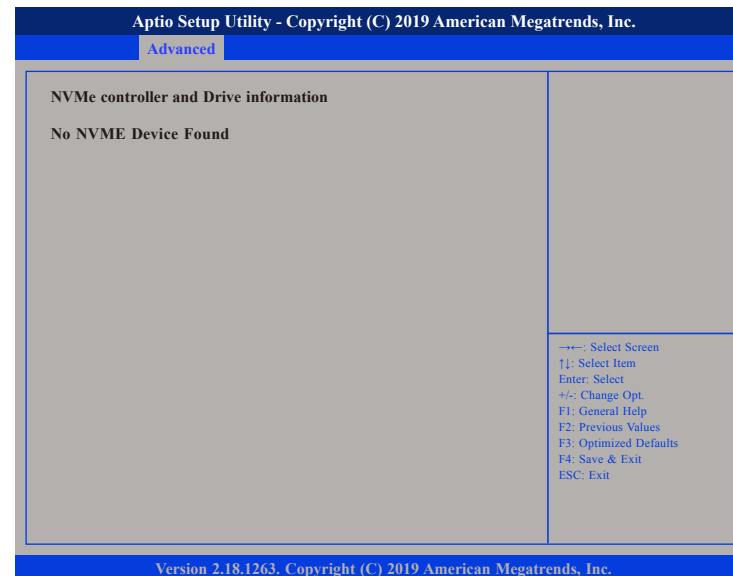


Network Stack

Enables or disables UEFI network stack.

NVMe Configuration

This section is used to display information on the NVMe devices installed.



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.

USB Configuration

This section is used to configure the USB.



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.

USB Mass Storage Driver Support

Enables or disables USB mass storage driver support.

USB transfer time-out

The time-out value for control, bulk, and Interrupt transfers.

Device reset time-out

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

Device power-up delay

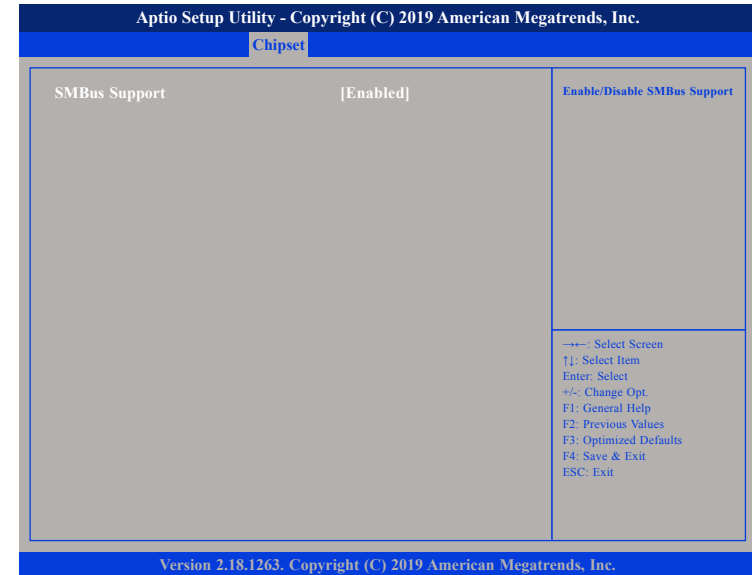
Maximum time the value will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Chipset

This section is used to configure the system based on the specific features of the chipset.



South Bridge



SMBus Support

Enables or disables SMBus support.



Setting incorrect field values may cause the system to malfunction.

South Cluster Configuration



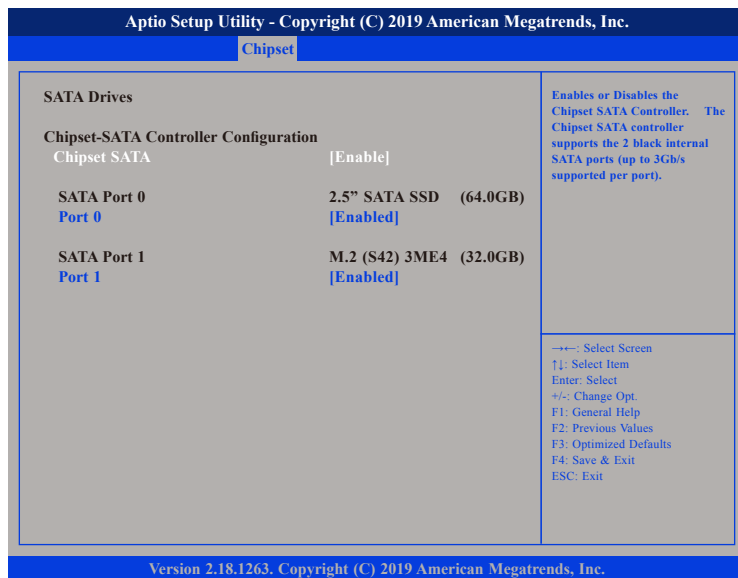
HD-Audio Configuration



HD-Audio Support

Enables or disables HD Audio support.

SATA Drives



Chipset SATA

Enables or disables the SATA controller chipset. The SATA controller chipset supports the 2 black internal SATA ports (up to 3Gb/s supported per port).

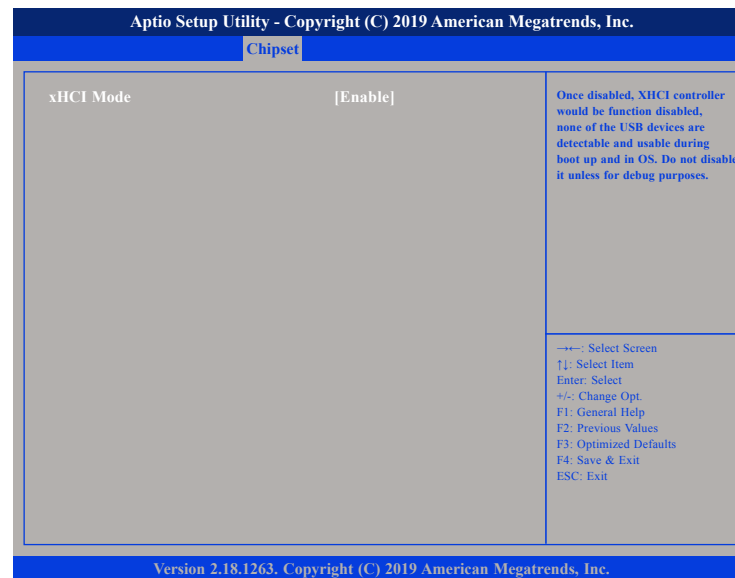
Port 0

Enables or disables SATA port 0.

Port 1

Enables or disables SATA port 1.

USB Configuration



xHCI Mode

Enables or disables XHCI mode. Once disabled, XHCI controller function will be disabled and all the USB devices will not be detectable and usable during boot up and in OS. Please do not disable it unless for debugging purposes.

Miscellaneous Configuration

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.	
Chipset	
Miscellaneous Configuration	
High Precision Timer	[Enable]
State After G3	[S0 State]
USB0/1 Power State in S5	[ON]
USB2/3 Power State in S5	[ON]
USB4 Power State in S5	[ON]
Enable or Disable the High Precision Event Timer --- Select Screen ↑↓ Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.	

High Precision Timer

Enables or disables high precision event timer.

State After G3

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

USB Power State in S5

Configures the USB power state in S5 for USB0/1, USB2/3 and USB4.

Security

Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Password Description		Set Setup Administrator Password			
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User Will have Administrator rights. The password length must be in the following range: Minimum length 3 Maximum length 20					
Setup Administrator Password		User Password			
--- Select Screen ↑↓ Select Item Enter: Select +/- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit					
Version 2.18.1263. Copyright (C) 2019 American Megatrends, Inc.					

Administrator Password

Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.

Boot



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.

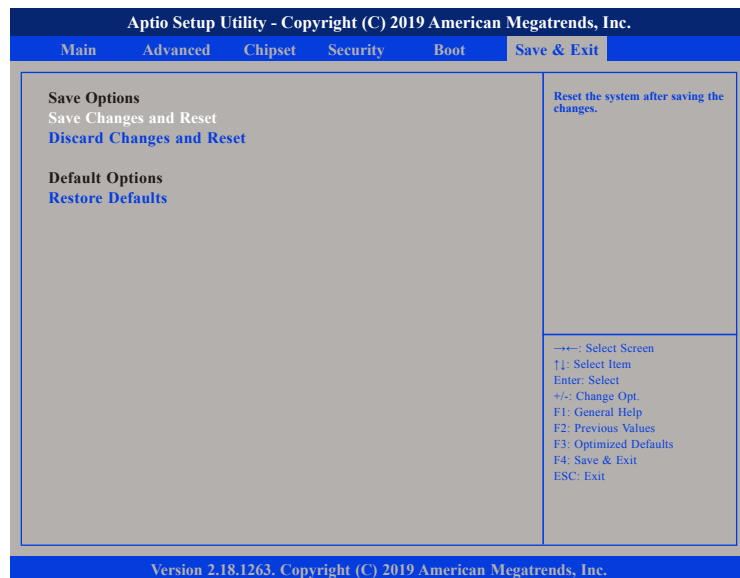
Boot Option Priorities

Adjust 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 boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Save & Exit



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 reboot the system without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Restore Defaults

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

APPENDIX A: POWER CONSUMPTION

Power Consumption Management

Purpose

The purpose of the power consumption test is to verify the power dissipation of the system, and the loading of the power supply.

Test Equipment / Software

1. DUT: NISE 108-J3455, IPPC 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P
2. CPU: Intel® Celeron® Processor J3455, quad core, 2.3 GHz
3. Memory: Innodisk 8GB DDR3L SO-DIMM
4. SSD: Innodisk 2.5" SATA SSD M3E4 1TB
5. M.2: Innodisk 128GB 3ME4 M.2
6. Wi-Fi: SPARKLAN WPEQ- 261ACNI
7. Power Supply: DC Power Supply FSP060-DAAN2 24V-2.5A
8. Operating System: Windows 10

Test Procedure

1. Power up the DUT, boot into Windows 10 x64.
2. Enter standby mode (SSD power down).
3. Measure the power consumption and record it.
4. Run burn-in test program and apply 100% full loading.
5. Measure the power consumption and record it.

Test Result

Power Consumption				
Model	Voltage	Max Load Current (A)	Standby Current (A)	Sleep Mode Current (A)
IPPC 1050P	24V	0.42	0.36	0.05
IPPC 1650P		0.48	0.38	0.09
IPPC 1850P		0.54	0.38	0.10
IPPC 2150P		0.61	0.40	0.13

APPENDIX B: GPIO PROGRAMMING GUIDE

GPIO (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPIO pins in IPPC 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P. The pin definition is shown in the following table:

Pin	GPIO Mode	PowerOn Default	Address	Pin	GPIO Mode	Address
1	VCC	-	-	2	GND	-
3	GPO0	Low	A04h (Bit6)	4	GPI0	A06h (Bit0)
5	GPO1	Low	A04h (Bit7)	6	GPI1	A06h (Bit1)
7	GPO2	Low	A05h (Bit0)	8	GPI2	A06h (Bit2)
9	GPO3	Low	A05h (Bit1)	10	GPI3	A06h (Bit3)
11	GPO4	Low	A07h (Bit4)	12	GPI4	A06h (Bit4)
13	GPO5	Low	A07h (Bit5)	14	GPI5	A06h (Bit5)
15	GPO6	Low	A07h (Bit6)	16	GPI6	A06h (Bit6)
17	GPO7	Low	A07h (Bit7)	18	GPI7	A06h (Bit7)
19	GND	-	-	20	GND	-

The bit is Set/Clear indicated output High/Low.

APPENDIX C: WATCHDOG TIMER SETTING

ITE8786 Watchdog Programming Guide

```
#define SUPERIO_PORT    0x2E
#define WDT_SET        0x72
#define WDT_VALUE      0x73

void main(void)
{
    #Enter SuperIO Configuration
    outputb(SUPERIO_PORT, 0x87);
    outputb(SUPERIO_PORT, 0x01);
    outputb(SUPERIO_PORT, 0x55);
    outputb(SUPERIO_PORT, 0x55);

    # Set LDN
    outputb(SUPERIO_PORT, 0x07);
    outputb(SUPERIO_PORT+1 ,0x07);

    # Set WDT setting
    outputb(SUPERIO_PORT, WDT_SET);
    outputb(SUPERIO_PORT+1, 0x90);           # Use the second
                                           # Use the minute, change value to 0x10

    # Set WDT sec/min
    outputb(SUPERIO_PORT, WDT_VALUE);
    outputb(SUPERIO_PORT+1, 0x05);         #Set 5 seconds
}
```

APPENDIX D: LED PROGRAMMING GUIDE

LEDs are provided for custom system design. This appendix provides definitions and its default setting for the LEDs in IPPC 1050P, IPPC 1650P, IPPC 1850P and IPPC 2150P.

The LED definition is shown in the following table:

Pin	PowerOn Default	Address
LED1-C3	High	A03h (Bit0)

The bit is Set/Clear indicated output High/Low.