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ADVANTECH Compact Industrial Computer Chassis rich front I O interface User Manual

User Manual
IPC-220/IPC-240
Compact Industrial Computer Chassis with rich front I/O interface

Contents [hide]

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Acknowledgments

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Online Technical Support

For technical support and service, please visit our support website at: **http://support.advantech.com**

Instructions

CLASS, I LASER PRODUCT

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 reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Do not leave this equipment in an environment where the storage temperature is under 0° C (32° F) or above 40° C (122° F), as it may damage the equipment.
8. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet with an earthed connection.
10. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
11. All cautions and warnings on the equipment should be noted.
12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
13. Never pour any liquid into an opening. This may cause fire or electrical shock.
14. Never open the equipment. For safety reasons, repair of the device may only be carried out by trained service personnel.
15. If one of the following situations arises, get the equipment checked by service personnel:
    1. The power cord or plug is damaged.
    2. Liquid has penetrated into the equipment.
    3. The equipment has been exposed to moisture.
    4. The equipment does not work well, or you cannot get it to work according to the user's manual.
    5. The equipment has been dropped and damaged.
    6. The equipment has obvious signs of breakage.
16. **CAUTION**: The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.

    (1) **CAUTION**: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.
17. The computer is provided with a CD drive (laser product), please comply with appropriate safety standards including IEC 60825-1 or EN 60825-1. (1) Avoid direct exposure to the laser beam. Do not open the laser device enclosure. There are no user-serviceable components inside. (2) Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein. (3) Allow only

authorized service technicians to repair the laser device.

18. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

    (1) This device may not cause harmful interference, and

    (2) This device must accept any interference received, including interference that may cause undesired operation.

19. **CAUTION**: Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges.

20. **CAUTION**: Always ground yourself to remove any static charge before touching the mainboard, backplane, or add-on cards. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.

21. **CAUTION**: Any unverified component could cause unexpected damage. To ensure the correct installation, please always use the components (ex. screws) provided with the accessory box.

22. **CAUTION**: This product is not intended for use by children (this product is not a toy).

    (1) This equipment is not suitable for use in locations where children are likely to be present.

23. Repair of the device may only be carried out by trained service personnel. Advantech recommends that a service contract be obtained with Advantech Service and that all repairs also be carried out by them. Otherwise, the correct functioning of the device may be compromised.

24. **CAUTION**: Do not modify this equipment without the authorization of the manufacturer.

25. **CAUTION**: To avoid risk of electric shock, this equipment must only be connected to supply mains with protective earth.

26. **CAUTION**: Remove the power cord to fully turn off the device.

27. **CAUTION**: If this device was not used in the manner which manufacturer suggested, the end system shall evaluate for further compliance.

28. **CAUTION**: Never immerse equipment or electrical connectors in water or other liquids.

29. **CAUTION**: Remove the power cord before changing the fuse and replace only with the same ratings and type of fuse.

30. Observe local occupational health and safety requirements and guidelines for manual materials handling.

31. Do not attempt to move equipment by yourself; at least two people are needed to move equipment.

32. Use only the power cords and power supply units provided with your equipment.

33. Operation of the device without regulatory approval is illegal.

34. **CAUTION**: Disposal of a battery (or battery pack) into fire or a hot oven, or mechanically crushing or cutting of a battery (or battery pack) can result in an explosion. Leaving a battery (or battery pack) in an extremely high-temperature environment can also result in an explosion. A battery (or battery pack) subjected to extremely low air pressure may also result in an explosion. Discard used batteries according to the manufacturer's instructions.

35. **CAUTION**: To disconnect power, remove all power cords.

36. **CAUTION**: Follow the user manual to operate the equipment.

37. **CAUTION**: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Contact information: Advantech Co., Ltd.
Website: **www.advantech.com.tw**

A Message to the Customer

Advantech Customer Services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known. Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical support

We want you to get the best performance possible from your products. If you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. Please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and can be easily solved over the phone. In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice about application requirements or specific information on the installation and operation of any of our products.

Product Warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase. This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events. Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Initial Inspection

When you open the carton, please make sure that the following materials have been shipped:

- Chassis
- User Manual

- Warranty Card
- Accessory box

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the product mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the product, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also, please notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

⚠ **Caution**! The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.

Chapter 1

General Information

Introduction

The IPC-220/IPC-240 series is a compact and rich front I/O Desktop/Wallmount chassis designed for machine automation, Industrial Equipment Manufacturing or general industrial applications. At 231mm depth, IPC-220/IPC-240 supports 126mm x 180mm size CPU board and up to 4 add-on cards. The series is equipped with a PWM fan. Through the motherboard's fan speed control, the system stays cool and provides a quiet and comfortable working environment. IPC-220/IPC-240 provides two 2.5″ HDD. Power supply options include 150W and 220W high-efficiency power supplies.

Specifications

- Construction: Heavy-duty steel
- Disk Drive Capacity: Two internal 2.5″ disk drive bays
- Switch and Buttons on Front Panel: Power switch
- Cooling System: One 12 cm x 12 cm cooling fans
- Air Filters: One reusable filters
- Weight:
  – IPC-220: 3.0 kg
  – IPC-240: 3.2 kg
- Dimensions (W x H x D):
  – IPC-240: 180 x 231 x 150 mm (7.08″ x 9.09″ x 5.9″)
  – IPC-220: 140 x 231 x 150 mm (5.51″ x 9.09″ x 5.9″)
- DC Power Input: 19-24V, 7.89A-6.5A
- Power Output: One DC Power Output (+5V or +12V, Max. 2A)
- Expansion Slot:
  – IPC-220: 2 Slot
  – IPC-240: 4 Slot

	PCIex16	PCIex4	PCIex1	PCI
IPC-220-00A1	1	1	0	0
IPC-240-00A1	1	2	1	0
IPC-240-01A1	1	1	0	2

Table 1.1: Power supply options

Model – 96PSA-A150W19P4-1 – 96PSA-A220W24P4-1
Watt – 150W – 220W
Input rating – AC Input: 100V-240V~,2A,50-60Hz AC Input: 100V-240V~,3A,50-60Hz
Output voltage – 0A-7.89A @ 19V – 0A-9.16A @ 24V
MTBF – 1,000,000 hours @ 25° C 1,000,000 hours @ 25° C
Safety – CE, FCC, UL, CB, TUV, CCC, KC,BSMI – CE, FCC, UL, CB, TUV, CCC, KC, BSMI

⚠️ **Caution**! Power supply options are subject to the product datasheet on the Advantech website.

Environmental Specifications

Table 1.2: Environment specifications
Environment- Operating – Non-operating
Temperature – 0 ~ 45° C (32 ~ 117° F) – -40~60°C (-40~140°F)
Humidity- 95%@40°C, non-condensing 95%@40°C, non-condensing
Vibration- – 5 ~ 500Hz) 0.5Grms(5~500Hz) (HDD) 2 G
Shock- 10 G with 11 ms duration, half sine wave
Safety- CE/FCC compliant

Dimension Diagram
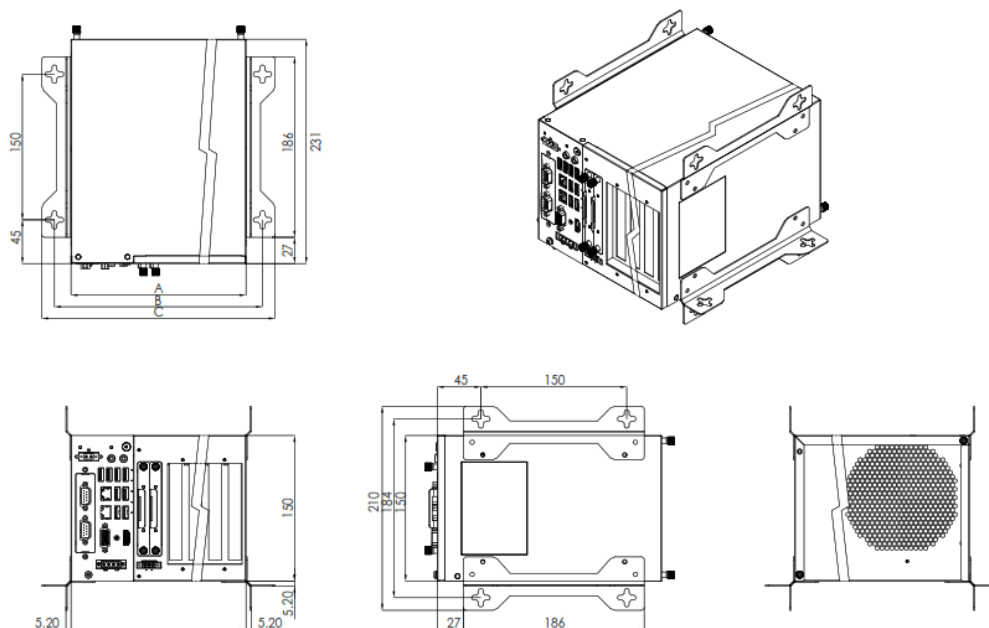
Figure 1.1 Dimension diagram

Dimension (mm)	IPC-220-00A1	IPC-240-00A1	IPC-240-01A1
A	140	180	180
B	174	214	214
C	200	240	240

Chapter 2

System Setup

Note! Use caution when installing or operating the components with the chassis open. Be sure to turn off the power, unplug the power cord and ground yourself by touching the metal chassis before you handle any components inside the machine.

Installing CPU Board
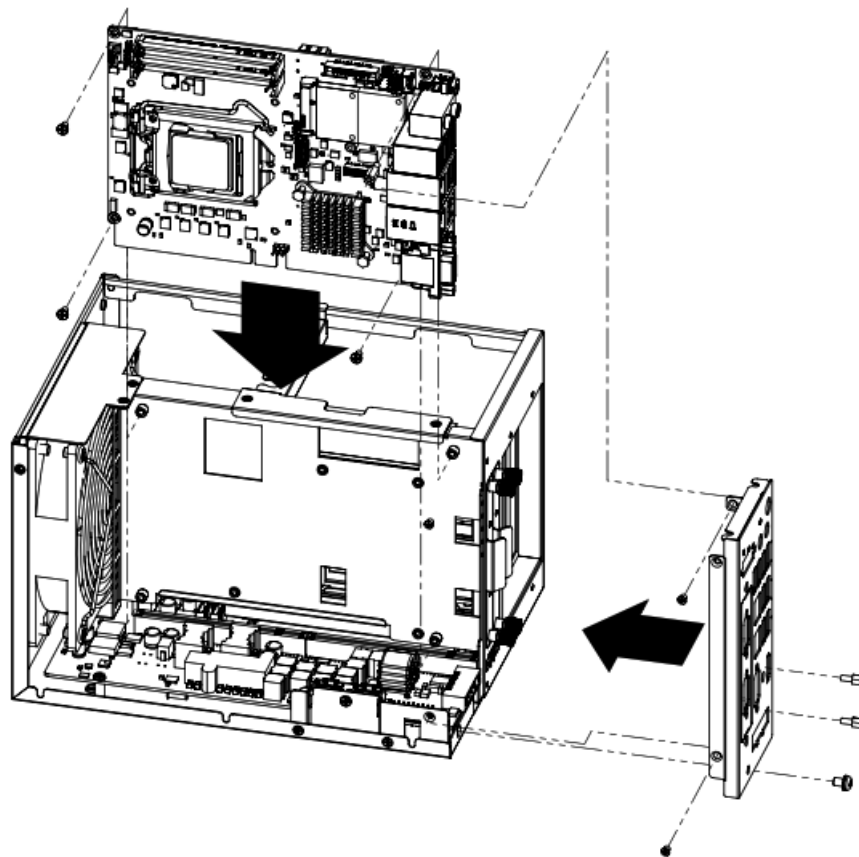
Installing internal 2.5″ HDD

Please make sure the HDD tray direction to prevent HDD damage
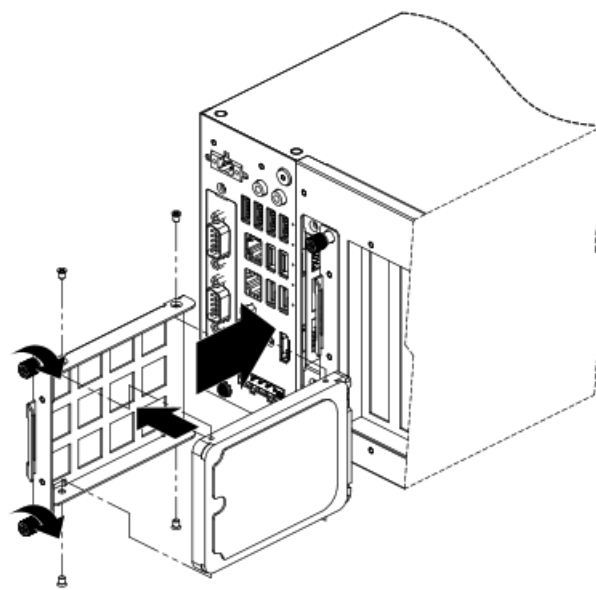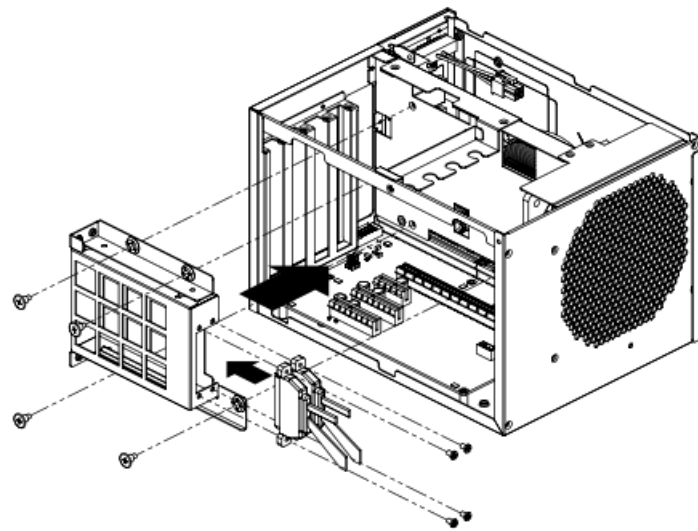
Figure 2.1 Installing internal 2.5″ HDD

Installing Add-On-Card
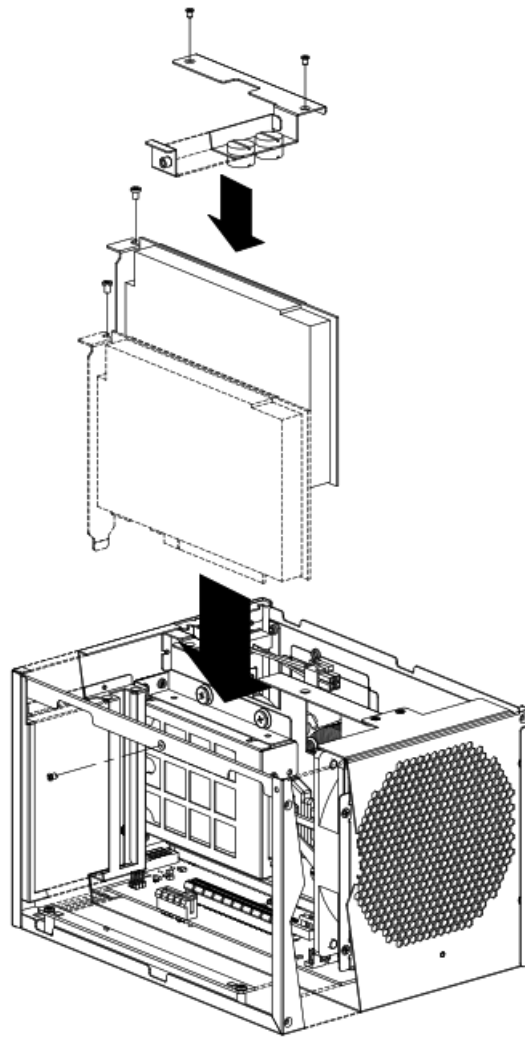
Figure 2.2 Installing Add-On-Card

Memory Installation
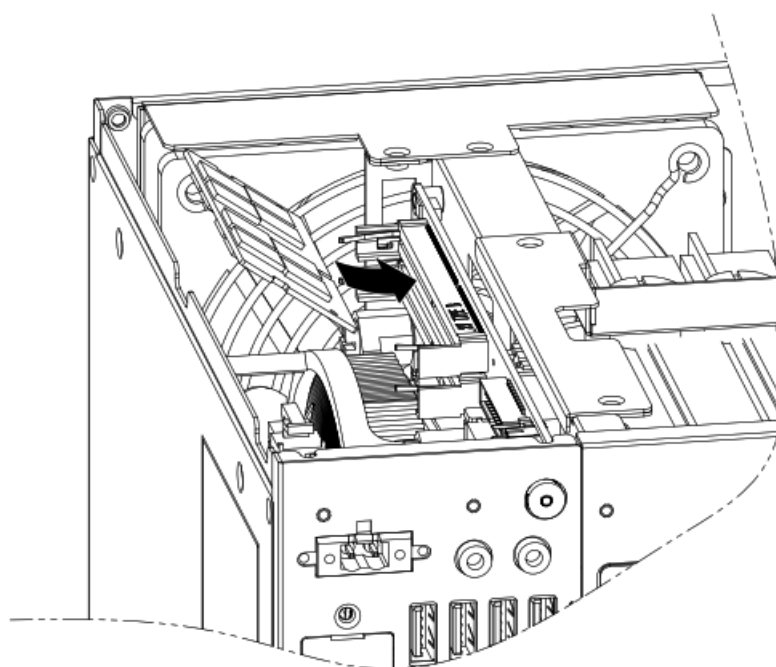
Figure 2.3 Memory Installation

Internal USB dongle installation
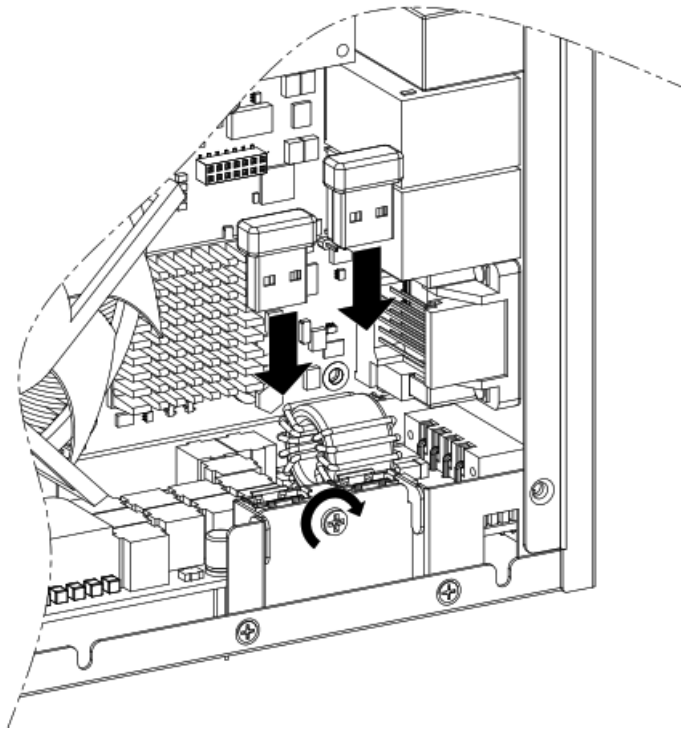
Figure 2.4 Internal USB dongle installation
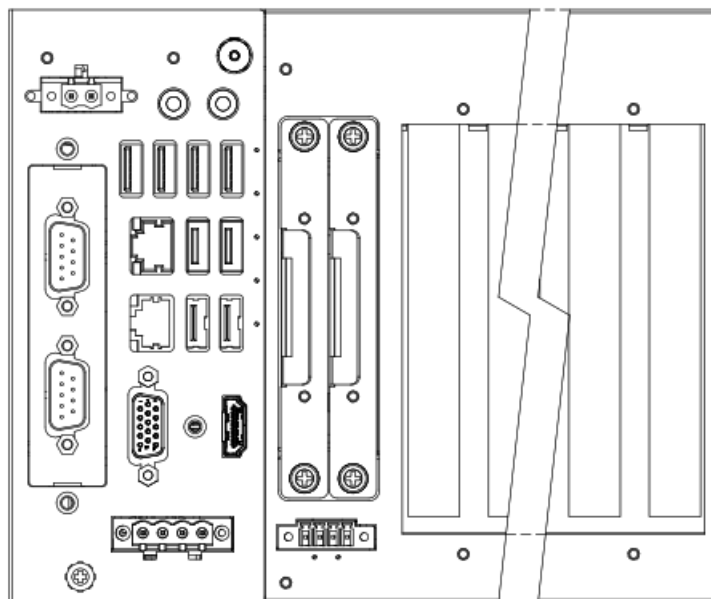
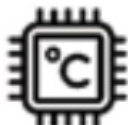# Chapter 3

Operation

The Front Panel

Figure 3.1 Front panel

Switch, Buttons and I/O Interfaces

Momentary Power switch: Press this switch to turn the system power on or off. Please use system shutdown or press this switch for few seconds to turn off the system power.

LED indicators for System Status

Table 3.1: LED Indicator functions

LED	Description	Normal	Abnormal
Power	System Power	Power ON/OFF – Green/Red	No light
CPU Temp	CPU Temperature	No light	CPU Temp. Error – Orange
CPU FAN	CPU FAN Speed	No light	CPU FAN Error. – Orange
HDD Disk	Hard Disk Drive	Orange	No light
System Temp.	System Temperature	No light	System Temp. Error – Orange
WatchDog	BIOS WatchDog	No light	BIOS WatchDog Trigger – Orange

CPU Temp. / CPU FAN / System Temp. : Please set it in Advantech SUSIAccess
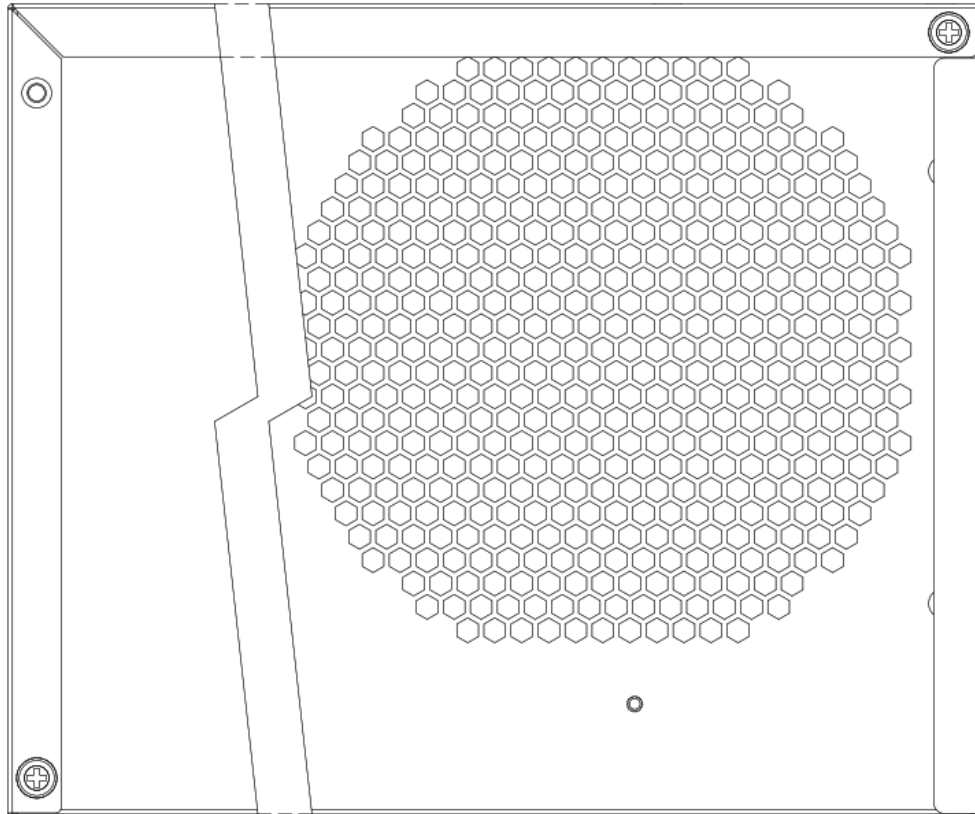
The Rear Panel

Figure 3.2 Rear panel for motherboard version
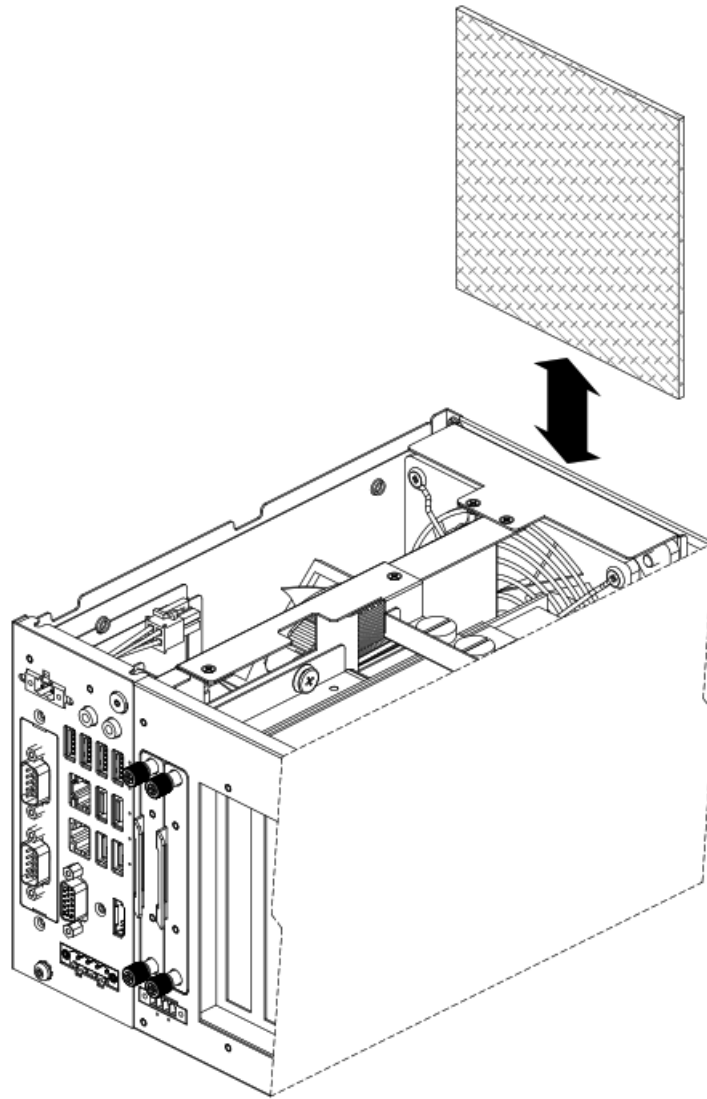
Cleaning the Filters

Figure 3.3: Removing the Filters

Jumpers and Connectors

Connectors on the IPC-220/240 link it to external devices such as hard disk drives/adaptor/system fan/internal USB dongle/external device. In addition, the board has 2 jumpers that are used to configure your system for your application.

Table 3.2: Jumpers and Connectors List

Label	Function
JFP1	Power Switch/Reset
USB2A1	USB Port
USB2A2	USB Port
SW1	Power Switch (For Remote Power Switch
DCIN1	DC Input (19V-24V)
PWROUT1	Power Output
SATAPWR1	SATA Power
SATAPWR2	SATA Power
POEPWR1	Power output +12V
POEPWR2 (IPC-240 Only)	Power output +12V
FAN1	System FAN Connector
FAN2	System FAN Connector
SMBUS1	SM Bus from PCH
JUSB1	5V of front-side power output ACPI power state switch
JUSB2	12V of front-side power output ACPI power state switch

Table 3.3: JUSB1 (* Default)

Pin	5V of front-side power output under ACPI Power State S3/S4/S5
1-2	Not Available
2-3*	Available

Table 3.4: JUSB2 (* Default)

Pin	12V of front side power output under ACPI Power State S3/S4/S5
1-2	Not Available
2-3*	Available

Table 3.5: JFP1

Pin	Result
1	Power LED
3	Power Button
5	System Reset
7	SANTA LED
9	CPU Temperature Alarm
11	System Temperature Alarm
13	CPU Fan Alarm
17	WatchDog Alarm
19	CPU Temperature detection
2-20	GND
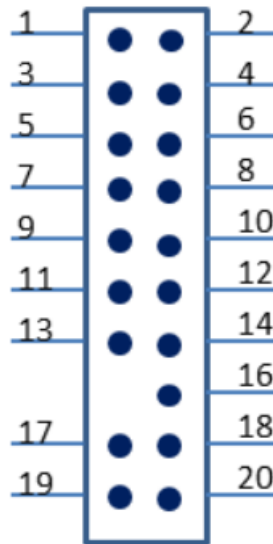
Table 3.6: SMBUS1

Pin	Result
1	+5V
2	SMB_CLK MAIN R
3	SMB_CLK MAIN R
4	GND
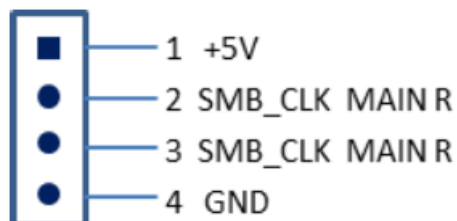
Appendix A

Exploded Diagram& Parts List

Exploded Diagram& Parts List
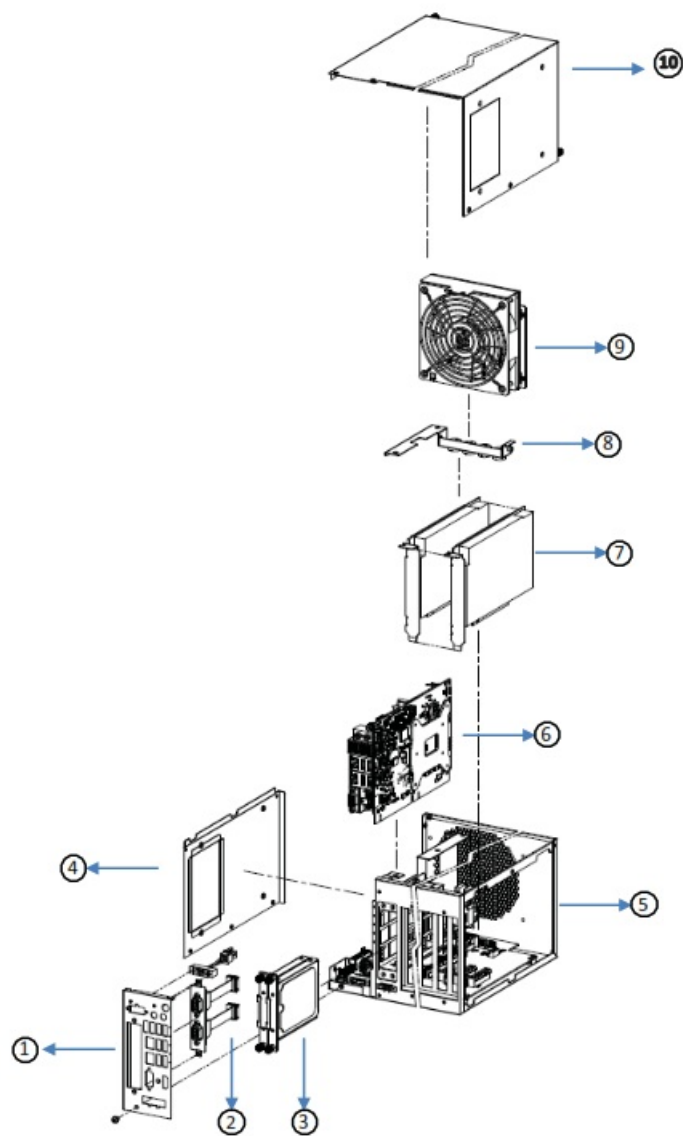
Figure A.1 Exploded Diagrams & Parts List

Table A.1: Parts list

1	FRONT PANEL	6	CPU BOARD
2	COM CABEL	7	ADD ON CARD
3	HDD TRAY	8	HOLD DOWN BRACKET
4	SIDE COVER	9	FAN
5	CHASSIS	10	TOP COVER

Documents / Resources

ADVANTECH Compact Industrial Computer Chassis rich front I O interface [pdf] User Manual
Compact Industrial Computer Chassis rich front I O interface, IPC-220, IPC-240

References

- A **Online Support - Advantech**
- A **- , &**
- A **Online Support - Advantech**
- A **Advantech Co-Creating the Future of the IoT World**
- A **- , &**
- A **_**
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