IPC-7143/IPC-7141

Wallmount/Desktop Industrial Chassis with Bottom Access I/O Interfaces

User's Manual

Acknowledgements

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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 maximum performance from your products. So 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.

So 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 on 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.

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:

Step 1. Collect all the information about the problem encountered. (For example, type of PC, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

Step 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

Step 3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.

Step 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.

Step 5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Initial Inspection

Before you begin installing your motherboard, please make sure that the following materials have been shipped:

- IPC-7143 (or IPC-7141) Chassis
- User's Manual
- Warranty Card
- Accessory box with a package of screws (for fastening the slim type CD-ROM and the disk drives), a 40-pin IDE cable, a pair of keys, a small interface converter for the slim-type CD-ROM drive, seven rubber cushions, four rubber pads, a plastic ring, two 4-pin power wires, and a spare filter.

If any of these items are missing or damaged, contact your distributor or sales representative immediately. We have carefully inspected the IPC-7143 (IPC-7141) mechanically and electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt. As you unpack the IPC-7143 (IPC-7141), 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 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.

FCC

This device complies with the requirements in 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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and, therefore, the user's authority to operate the equipment.

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CHAPTER 1

General Information

Chapter 1 General Information

1.1 Introduction

Specifically designed for factory floors and other harsh industrial environments, the IPC-7143 (IPC-7141) is a wall-mountable/desktop industrial computer chassis that is ideal for system integrators or users who require a compact and rugged computing platform for industrial automation or computer telephony applications. Supporting not only backplanes but also ATX motherboards and up to five PCI and two ISA cards, the IPC-7143 (IPC-7141) allows a wide range computing peripherals to be integrated with the chassis.

Unique alarm detection and notification to reduce system down time

The IPC-7143 (IPC-7141) comes with the unique alarm module. This module automatically detects the system operating conditions, such as power, HDD, fan, and system temperature, and it shows the system status on the front visible LED indicators. In the event of abnormal operation, the alarm module will make an audible beep to warn users to take necessary actions.

Dual easy-maintained SATA HDD trays and other flexible storage options

Both IPC-7143 and IPC-7141 provide abundant data storage solutions. IPC-7143 comes with two easily-maintained SATA HDD trays, which provide the most economic solution for data mirroring. Users can easily replace a SATA HDD without opening the chassis cover. Other data storage options include one slim-type CD-ROM (or CD-R/W or DVD-ROM) drive and two 3.5” disk drive bays with shockproof design (IPC-7141 supports four 3.5” disk drive bays). Besides these, there are dual front accessible USB and one PS/2 keyboard I/O interfaces which can be connected with various peripheral devices for data input, backup, and transfer.

Outstanding mechanical design

IPC-7143 (IPC-7141) can be placed on the desk or mounted bidirectionally by the supplied brackets. It can be easily back- or right-mounted onto most surfaces, such as walls or workbenches. The shockproof drive

bay and the hold-down clamp with rubber cushions design protect the system against harsh industrial environments or unexpected shock. The lockable front door prevents unauthorized access to the data storage. The bottom access I/O interfaces keep the cables much organized and easier to maintain. All these outstanding features make IPC-7143 (IPC-7141) the best solution for price, performance and total cost of ownership.

1.2 Specifications

- Construction: Heavy-duty steel
- Disk drive capacity: one slim-type CD-ROM drive (or CD-R/W drive or DVD-ROM drive), two front accessible SATA HDD trays and two 3.5” IDE disk drive bays (or four 3.5" IDE disk drives for IPC-7141)
- I/O interfaces on front panel: dual USB and one PS/2 ports
- Security Protection: The storage devices, power switch and system reset button are all behind the lockable door.
- LED Indicators on Front Panel: Bicolor LEDs (green/red) for Power, Temperature, and Fan status; single-color LEDs (green) for HDD activity
- Switches and Buttons on front panel: Power switch, System Reset and Alarm Reset button
- Cooling fan: One 84 CFM (12 cm x 12 cm, up to 3.8 cm depth) cooling fan with air filter behind the front panel; one 3.88 CFM (5 cm x 5 cm x 1.5 cm) blower to provide better airflow for the storage devices
- Air Filters: One filter behind the front panel (155 mm x 100 mm)
- Weight: 14 Kg (30.8 lb) with PS-300ATX-ZB power supply
- Dimensions (WxHxD): 320 mm x 450 mm x 200 mm (12.6" x 17.7" x 7.9")
- Chassis Color: Black

1.3 Power Supply Options

Table 1.1: Power supply options

Model Name	**PS-300ATX-ZB**	**RPS-300ATX-Z**
Watt	300 W max. (ATX, PFC)	300 W max. (ATX, PFC) (1+1 redundant)
Input rating	100 ~ 240 Vac (Full range)	100 ~ 240 Vac (Full range)
Output voltage	+5 V @ 30 A, +3.3 V @ 28 A, +12 V @ 15 A, -5 V @ 0.3 A, -12 V @ 0.8 A, +5 Vsb @ 2 A	+5 V @ 25 A, +3.3 V @ 18 A, +12 V @ 16 A, -5 V @ 0.5 A, -12 V @ 0.5 A, +5 Vsb @ 2 A
Minimum load	+5 V @ 3 A, +3.3 V @ 1 A, +12 V @ 1 A, +5 Vsb @ 0.1 A	+5 V @ 3 A, +3.3 V @ 1 A, +12 V @ 2 A, +5 Vsb @ 0.1 A
MTBF	100,000 hours @ 25° C	100,000 hours @ 25° C
Safety	UL/TUV/CB/CCC	UL/TUV/CB/CCC
Model Name	**PS-400ATX-ZB**	**RPS-400ATX-Z**
Watt	400 W max. (ATX, PFC)	400 W max. (ATX, PFC) (1+1 redundant)
Input rating	100 ~ 240 Vac (Full range)	100 ~ 240 Vac (Full range)
Output voltage	+5 V @ 35 A, +3.3 V @ 25 A, +12 V @ 30 A, -5 V @ 0.8 A, -12 V @ 1 A, +5 Vsb @ 2 A	+5 V @ 35 A, +3.3 V @ 25 A, +12 V @ 28 A, -5 V @ 0.5 A, -12 V @ 1.2 A, +5 Vsb @ 2 A
Minimum load	+5 V @ 3 A, +3.3 V @ 1 A, +12 V @ 1 A, +5 Vsb @ 0.1 A	+5 V @ 3 A, +3.3 V @ 1 A, +12 V @ 2 A, +5 Vsb @ 0.1 A
MTBF	100,000 hours @ 25° C	150,000 hours @ 25° C
Safety	UL/TUV/CB/CCC	UL/TUV/CB/CCC
Model Name	**PS-300ATX-DC48**	
Watt	300 W max. (ATX, PFC)	
Input rating	DC -48 V	

Output voltage	+5 V @ 30 A, +3.3 V @ 28 A, +12 V @ 15 A, -5 V @ 0.3 A, -12 V @ 0.8 A, +5 Vsb @ 2 A	+5 V @ 0.3 A, +3.3 V @ 0.3 A, +12 V @ 0.2 A
Minimum load	+5 V @ 0.3 A, +3.3 V @ 0.3 A, +12 V @ 0.2 A	
MTBF	100,000 hours @ 25° × C	
Safety	UL/TUV/CB/CCC	

1.4 Environmental Specifications

Table 1.2: Environment specifications

Environment	Operating	Non-operating
Temperature	0 to 40°C (32 to 104° F)	-20° to 60°C (-4 to 140°F)
Humidity	10 to 85% @ 40°C, non-condensing	10 to 95% @ 40°C, non-condensing
Vibration	1 Grms	2 G
Safety	CE compliant, UL/cUL approved	

1.5 Dimensional Diagram

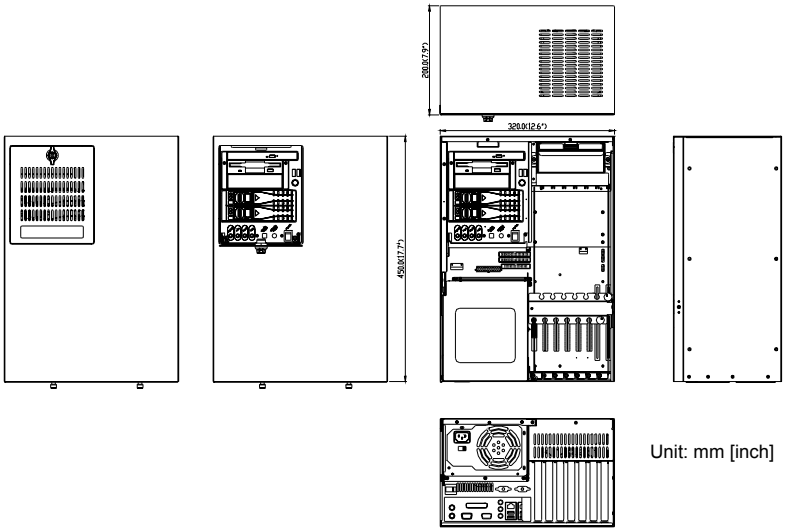


Figure 1.1: Dimensions of IPC-7143

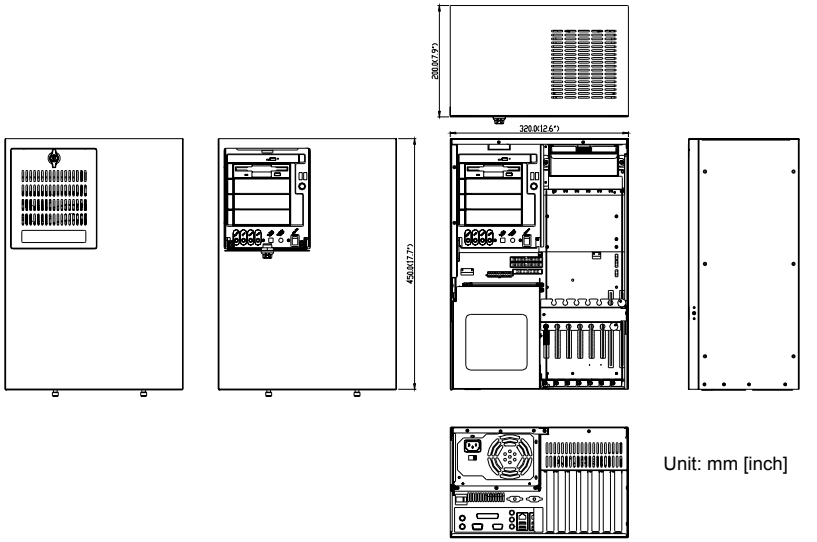


Figure 1.2: Dimensions of IPC-7141

1.6 Safety Precautions

Warning! *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. Only experienced electronics personnel should open the PC chassis*

Caution! *Always ground yourself to remove any static charge before touching the motherboard, back-plane, 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.*

CHAPTER 2

System Setup

Chapter 2 System Setup

The following procedures are provided to assist you in installing motherboard, disk drives, and add-on cards into the IPC-7143/7141. Please also refer to Appendix A, Exploded Diagram, for all the parts names of IPC-7143/7141.

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.*

2.1 Removing the Chassis Cover

To remove the front cover of IPC-7143 (IPC-7141), please refer to Figure 2.1 and proceed as stated below:

1. Before you remove the cover, please be sure to open the front door. If users don't have the key, then they can't open the chassis cover. This design is meant to protect unauthorized access.
2. Loosen the two thumbscrews on the front bottom of the chassis.
3. Remove the chassis cover gently.

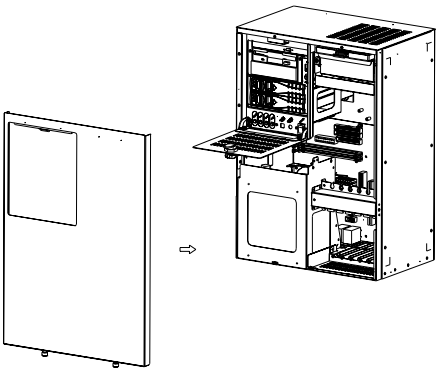


Figure 2.1: Removing the chassis cover

2.2 Installing a Motherboard

The IPC-7143 (IPC-7141) support standard ATX and microATX motherboards. Please refer to Figure 2.3 to install a motherboard.

Note:	Use caution when installing a motherboard. We highly recommend integrating one of Advantech's motherboards with the IPC-7143 (IPC-7141) chassis to ensure quality, safety, and the best airflow. If you must use another brand of motherboard, please be aware that the CPU cooler should be under 70 mm height, or it may interfere with the motherboard or chassis components and affect the airflow inside the chassis.

1. Loosen the three screws located on both sides of the power supply bracket and hold-down clamp, then lift up the bracket.
2. From inside the chassis, attach the motherboard I/O shield to the rear plate of the chassis.
3. You will see a yellow warning label (refer to Figure 2.2) inside of the chassis. This shows you the screw locations for fastening the various motherboards or backplanes onto the chassis. Please follow the instructions and fix the motherboard to the chassis using the correct screw locations.
4. Connect the 20-pin ATX power connector and the 4-pin +12V power connector from the power supply to the motherboard.
5. Connect the 9-pin USB cable and the 5-pin (or 6-pin) PS/2 cable from the chassis front panel to the motherboard.
6. For IPC-7143, users need to connect the SATA cable from the SATA backplane to the motherboard. (The SATA cable is attached to the motherboard.)
7. Return the power supply bracket and hold-down clamp to the chassis, and then screw them in place.

NUT Location / Backplane Motherboard	A	B
PCA-6108P6X	✕	○
AIMB-744 AIMB-750 AIMB-760	○	✕
PCA-6108E PCA-6108P4 PCA-6108P6 PCA-6108P8	○	○
AIMB-740 AIMB-741 AIMB-742	○	○

✕ The nut has to be removed from the stud

○ The nut has to be installed at the stud

Figure 2.2: Label indicating screw locations

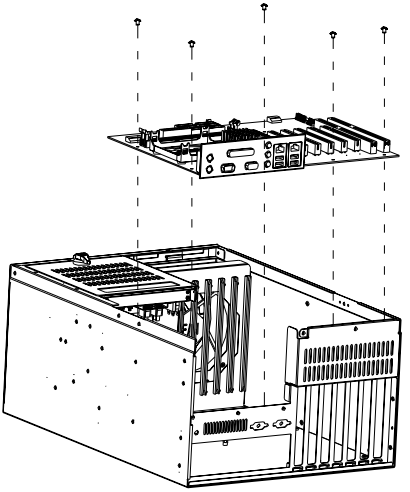


Figure 2.3: Installing a motherboard

2.3 Installing Disk Drives

To install a slim type CD-ROM drive (or CD-R/W drive or DVD-ROM drive), HDD, or FDD, please refer to the detailed procedure below:

2.3.1 Installing a SATA HDD for IPC-7143

IPC-7143 supports both SATA I and SATA II HDD. Users can easily install a SATA HDD into the HDD trays without opening the chassis cover.

1. Open the front door by turning the rotary lock.
2. Shift the latch on the SATA HDD tray toward the left to unlock it, and then poke the handle to draw the tray out.
3. Put a SATA HDD into the proper location in the tray and then fasten it with 4 to 6 screws.
4. Slide the tray back into the drive bay until it plugs tightly into the connector on the SATA backplane. Shift the latch on the HDD tray toward the right to lock it.

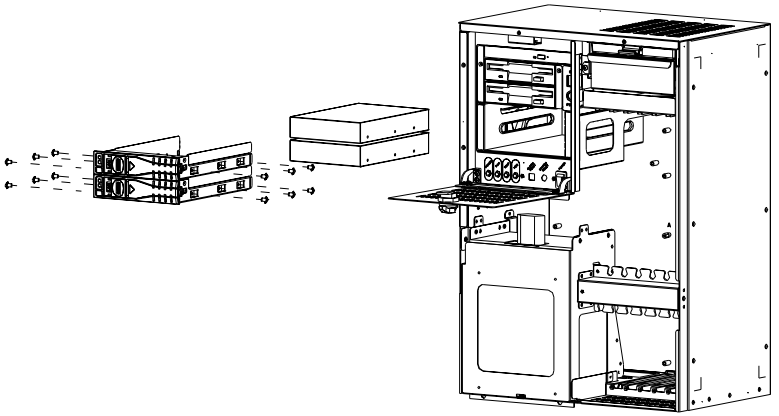


Figure 2.4: Installing SATA HDD

2.3.2 Installing IDE HDD for IPC-7143

1. Remove the chassis front cover and top cover.
2. Loosen the two screws on the front of the disk drive housing and then pull it forwards.
3. Insert the disk drive into the proper location in the disk drive housing, and then secure it using the supplied screws. (see Figure 2.5)
4. Please refer to Figures 2.6 through 2.10 for cable installation. Connect a 34-pin flat cable from the motherboard to an FDD, or a 40-pin flat cable to an IDE HDD or slim-CD-ROM drive. Plug the power connector into each disk drive.
5. Return the disk drive housing back to its original location and fasten it with two screws.

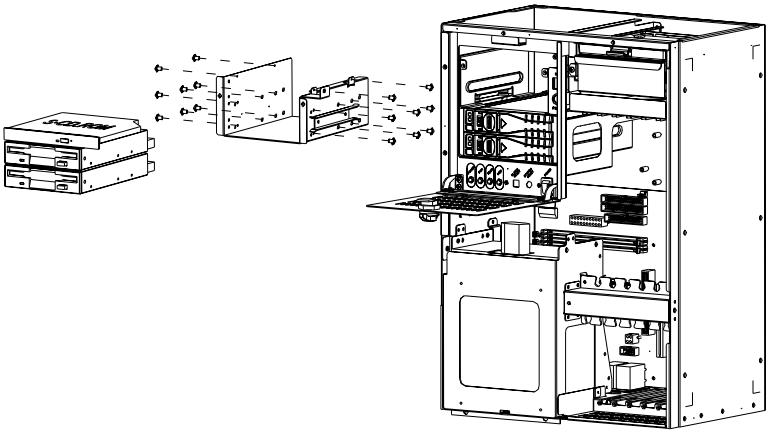


Figure 2.5: Installing IDE disk drive housing

Figure 2.6: Attached IDE 40-pin cable for IPC-7143

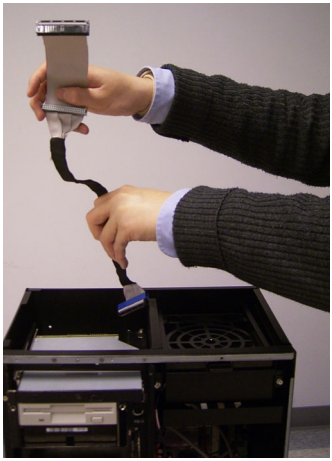
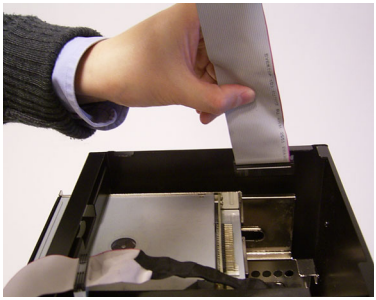


Figure 2.7-1 Figure 2.7-2

Figure 2.7: Installing the attached IDE 40-pin cable



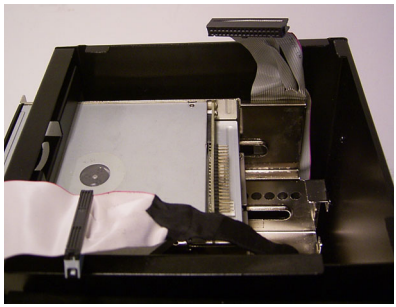


Figure 2.8-1 Figure 2.8-2

Figure 2.8: Installing the attached 34-pin FDD cable

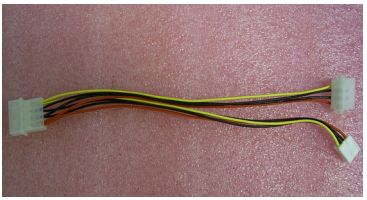


Figure 2.9-1

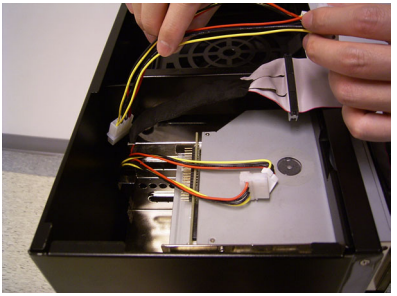


Figure 2.9-2

Figure 2.9: Installing power wires

Figure 2.10-1

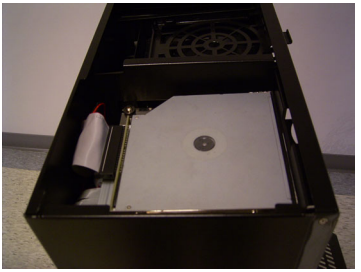


Figure 2.10-2

Figure 2.10: Replacing the disk drive housing

2.3.3 Installing IDE HDD for IPC-7141

1. Remove the chassis front cover and top cover.
2. Loosen the four screws on the top of the disk drive housing and then lift it up.
3. Insert the disk drive into the proper location in the disk drive housing, and then fasten it with the supplied screws.
4. Connect a 34-pin flat cable from the motherboard to an FDD, or a 40-pin flat cable to an IDE HDD or slim-CD-ROM drive. Plug in the power connector to each disk drive.
5. Return the disk drive housing back to its original location and fasten it with four screws.

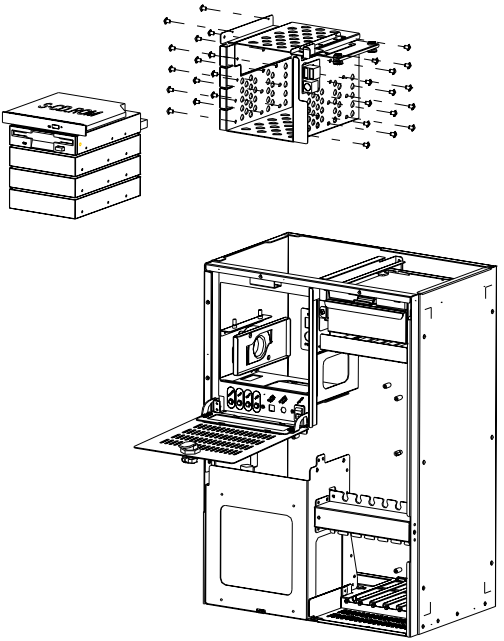


Figure 2.11: Removing the disk drive housing

2.3.4 Installing slim-type CD-ROM drive

1. Remove the disk drive housing.
2. Find a small interface converter in the accessory box (see Figure 2.12). Connect it to the slim-type CD-ROM drive. Then fix it to the CD-ROM by tightening the two screws provided.
3. Fix the CD-ROM unit to the drive housing by fastening the four screws.
4. Connect a 40-pin IDE flat cable and the 4-pin power connector to the CD-ROM drive.
5. Return the disk drive housing to the chassis and fasten it.
6. Return and fix the top cover and the front cover.

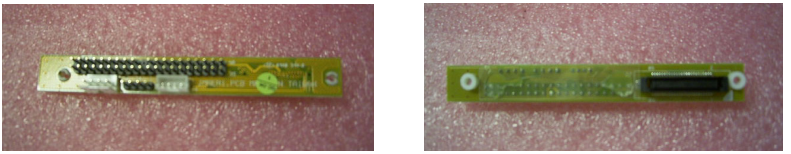


Figure 2.12: Interface converter for slim-type CD-ROM drive

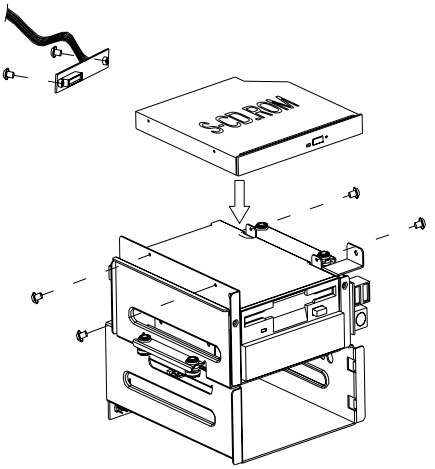


Figure 2.13: Installing the slim-type CD-ROM drive

2.4 Installing Add-on Cards

IPC-7143 (IPC-7141) supports up to seven add-on cards with Advantech ATX motherboard. To install an add-on card, please proceed as below.

1. Remove the chassis front cover.
2. Undo the three screws on the hold-down clamp and then lift it up.
3. Select a vacant slot and remove the corresponding I/O bracket attached to the rear plate of the chassis.
4. Insert an add-on card into the slot. If users install a full-length card, please make sure that the card bracket has been inserted properly and the other edge of the card has been inserted into the plastic guiding rail. Fasten the card with a screw on the top of the I/O bracket.

5. Repeat Steps 3 and 4 if there is more than one card.
6. There are two rows of notches on both sides of the hold-down clamp for holding rubber cushions. One side of the hold-down clamp is for cushioning PCI cards, and the other side is for cushioning ISA cards. Depending on the card height, the cushions can be inserted upward or downward. To protect the add-on cards from shock and vibration, insert the rubber cushions into the notches and then position the add-on cards snugly against the cushions
7. Return the hold-down clamp and fasten it.
8. Replace the chassis front cover.

2.5 Hold-down Clamp

The hold-down clamp protects all the cards from vibration and shock. After inserting the cards, remember to return the hold-down clamp according to the following steps.

1. After plugging in the cards, please insert the rubber cushions provided into the notches of the hold-down clamp and adjust them so that their positions correspond with the locations of the cards. (See Figure 2.14).
2. Put the hold-down clamp back into its original position.
3. Secure it to the chassis with the two screws.

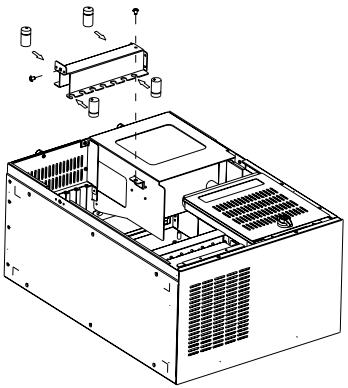


Figure 2.14: Installing the hold-down clamp

2.6 Bidirectional mounting

There are two accessory brackets for mounting the back or right side of the chassis (see Figure 2.15). These special brackets allow users to mount the chassis onto most surfaces, such as wall, panel, workbench, or table. Besides the above mounting ways, users can put IPC-7143 (IPC-7141) on the desktop. Please stick the attached four rubber pads along with the "L" mark on the chassis right side.

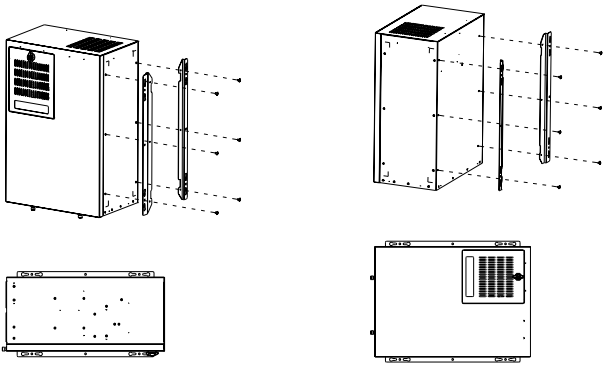


Figure 2.15: Back and right side of mounting

2.7 Bottom Access I/O Interfaces Design

For the traditional IPC chassis, the I/O interfaces are usually designed on the rear side. For special environments such as Computer Telephony applications, rear access to cables is very inconvenient. Users always need to leave some space between the chassis and the wall. Advantech saw the problem and has provided a more user-friendly solution, the IPC-7143 (IPC-7141). One of the unique features of the IPC-7143 (IPC-7141) is the I/O interfaces, and that the cables are on the bottom of the chassis. It means better organization and maintainance for the cables, and space saving in case the users need to mount IPC-7143 (IPC-7141) on the wall or workbench. There is an attached brace for a 400 W single power supply (IPC-7143-40Z and IPC-7141-40Z only) which can hold the power cord (see Figure 2.16). For other power supply options which don't have the attached brace, we also provide an extra plastic ring. Users can find it in the accessory box (see Figure 2.17).

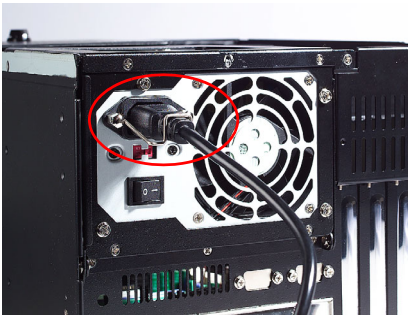


Figure 2.16: Attached brace for power cord

Figure 2.17: Plastic ring for power cord

CHAPTER 3

Operation

Chapter 3 Operation

3.1 The Front Panel of IPC-7143 /IPC-7141

Under the disk drive bay, there is one Power On/Off switch, one System Reset button, one Alarm Reset button and four LED indicators. The function of each is described below.

3.1.1 Switch and buttons

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

System Reset button: Press this button to reboot the system.

Alarm Reset button: Whenever a fault occurs in the system (e.g., fan failure or the temperature in the chassis is too high), the audible alarm will be activated. Press this button to stop the alarm beep.

Figure 3.1: Front LED panel buttons and switches

3.1.2 LED indicators

The following table shows the individual LED indicator function descriptions.

Table 3.1: LED indicator description

LED	Description	Green/Orange	Red
PWR	System power	Normal	Abnormal
FAN	Cooling fan status	Normal	Abnormal
TEMP	Temperature in the chassis	Normal	Abnormal
HDD	Hard disk drive activity	Data access	No light

When the system powers is on, the **PWR LED** is always **Green.**

When the **PWR LED** is **RED,** it indicates a redundant power supply module failure. To stop the alarm beep, press the Alarm Reset button. Then check out the redundant power supply module right away and replace the failed module with a good one.

When the **FAN LED** is **RED,** it indicates a failed cooling fan, and the alarm is also activated. To stop the alarm beep, press the **Alarm Reset** button and then replace the failed fan with a good one immediately.

If the **TEMP LED** is **RED,** it means that the inside of the chassis is overheated. An audible alarm will be activated. To stop the alarm beep, press the **Alarm Reset** button. Inspect the fan filter and the rear section of the chassis immediately. Make sure the airflow inside the chassis is smooth and not blocked by dust or other particles.

3.2 Replacing the Cooling Fan

There is one easily-maintained cooling fan and one blower which provide good airflow for the storage devices inside the IPC-7143 (IPC-7141). To replace the cooling fan, please refer to Figure 3.2 and proceed as below.

1. Open the small front door and then remove the chassis front cover.
2. Disconnect the cooling fan power connector.

3. Remove the filter module first. Then loosen the two screws on the front of the fan module and gently pull it out.
4. Loosen the four screws on the fan tray and the four screws on the rear side of the fan module (not the screws on the fan) and replace the fan with a new one.
5. Fix the new cooling fan on the tray by screwing four screws and then gently slide the tray into the chassis.
6. Connect back the fan power connector.
7. Screw the two screws on the front of the tray so that it can be fixed to the chassis.
8. Replace the chassis front cover.

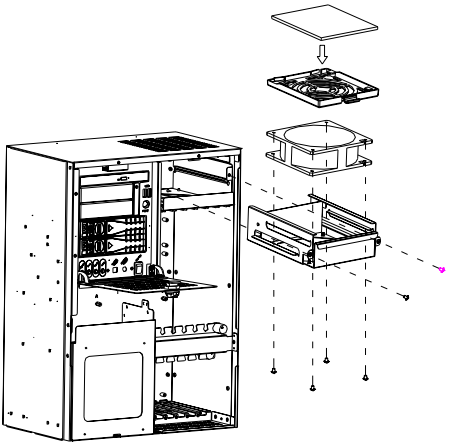


Figure 3.2: Replacing the fan

3.3 Replacing the Blower

There is a blower which is near the disk drive housing. It provides good airflow inside of IPC-7143 (IPC-7141). To replace the blower, please proceed as below.

1. Open the chassis front cover and top cover.
2. Loosen the four screws on the disk drive housing.

3. Disconnect all the cables and wires behind the disk drive bay.
4. For IPC-7143, remove the FDD and SATA HDD first and then lift up the disk drive housing. (For the IPC-7141, just lift up the disk drive housing directly.)
5. Unplug the blower power connector and undo the three screws on the left plate of the chassis. Then take out the blower module.
6. Remove the two screws on the blower bracket.
7. Replace the blower with a new one. Please be sure that the blower directs the air downwards.
8. Fix the blower to the bracket and then fasten it back on the chassis.
9. Replace the disk drive housing in the chassis and secure it.
10. Replace the chassis top and front covers.

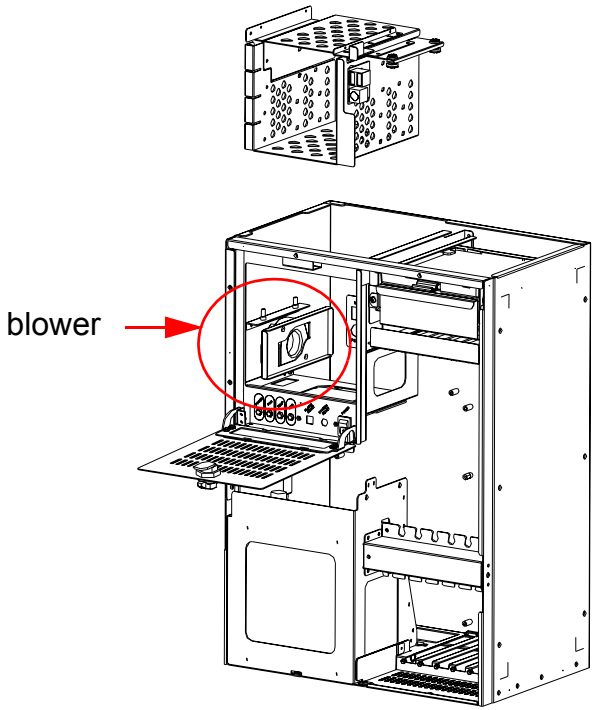


Figure 3.3: Replacing the blower unit

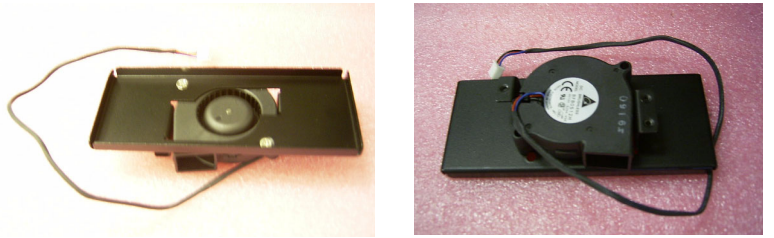


Figure 3.4: Side views of the blower unit

3.4 Replacing the Filter

The filter is to avoid the dust or the particles from the work environment and extend the system longevity. It's better to replace the new filter periodically. There is one easily maintained filter on top of the cooling fan in IPC-7143 (IPC-7141). To replace the filter, please refer to Figure 3.5 and proceed as follows.

1. Open the small front door and remove the chassis front cover.
2. Pull out filter holder and then remove the filter.
3. Replace it with a new one and return the filter holder.
4. Replace the chassis front cover and fasten it.

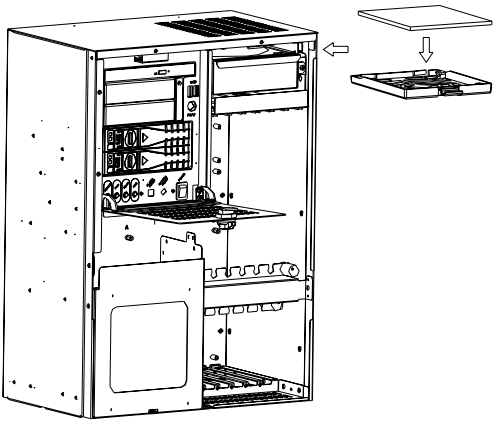


Figure 3.5: Replacing the filter

3.5 Replacing the Power Supply

IPC-7143 (IPC-7141) supports both PS/2 and redundant power supplies. To change the power supply, please refer to Figure 3.6 and proceed as below.

3.5.1 Replacing the single PS/2 power supply

1. Unplug the AC inlet from the power supply.
2. Open the front door and then remove the front cover.
3. Loosen the three screws located on either side of the power supply bracket and hold-down clamp, and on the bottom plate. Turn over the bracket.
4. Unplug the 20-pin ATX power connector and 4-pin +12V power connector from the motherboard, as well as the power connectors from all disk drives.
5. Remove the six screws which mount the power supply to the power supply bracket, then take out the power supply.
6. Place a new power supply into the power supply bracket and fasten it with four screws.
7. Refasten the power supply bracket and hold down clamp.
8. Plug the 20-pin ATX power connector and 4-pin +12V power connector to the motherboard and plug other power connectors to the disk drives and peripherals.
9. Return the front cover and then plug in the AC inlet.

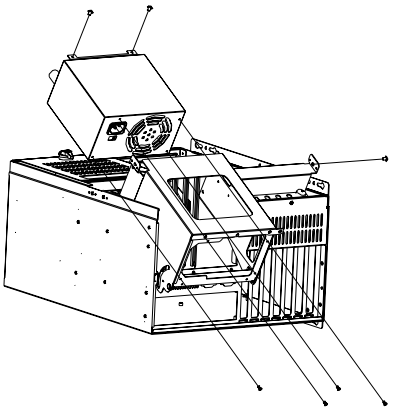


Figure 3.6: Changing the single power supply

3.5.2 Replacing the redundant power supply module

1. Push the reset button on the power supply to stop the alarm (see Figure 3.7).
2. Turn off the failed power supply module.
3. Loosen the thumbscrew of the failed module and then gently pull out the module by the handle (See Figure 3.8).
4. Make sure that the new power supply module is the same rating as the original one.
5. Slide the power supply module inward until it locks into the right position, then tighten the thumbscrew.
6. Return the handle to its original position and power up the new module.

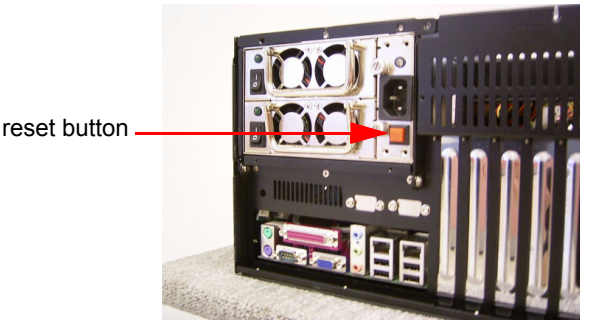


Figure 3.7: Pushing reset button on the power supply

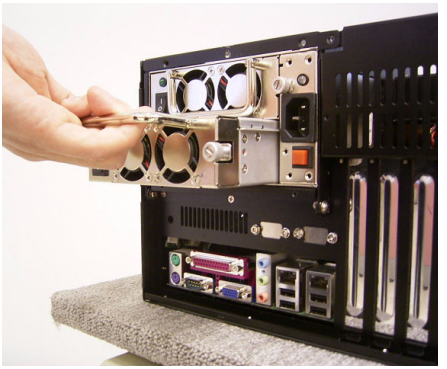


Figure 3.8: Replacing the failed module

CHAPTER 4

Alarm Board

Chapter 4 Alarm Board

The alarm board is located under the disk drive bay. The alarm board makes an audible alarm when:

a. Any power supply module or redundant power supply fails

b. One of the cooling fans fai1s

c. Internal temperature of the chassis is too high

To stop the alarm beep, simply press the Alarm Reset button on the front panel.

4.1 Alarm Board Layout

The layout and detailed specification of the alarm board are as follows.

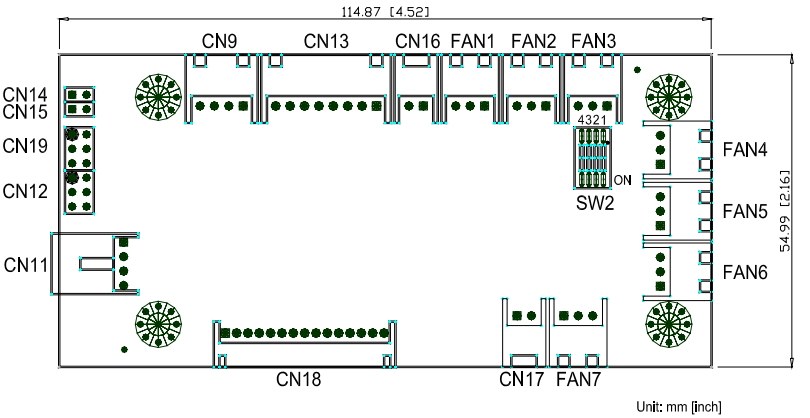


Figure 4.1: Alarm board layout

4.2 Alarm Board Specifications

Input Power: +5V, +12V

Input Signals:

- 7 FAN connectors
- One thermal board connector (can connect up to 8 thermal boards in series)
- One power good input
- One alarm reset input.
- One voltage signal connector (connect to backplane, includes ±12V, ±5V, +3.3V)
- One Hard Disk LED connector (connect to CPU card)

Output Signals:

- One LED board connector
- One LCM board connector
- One Buzzer output

Pin Definition

CN1: Auxiliary External Power Connector, standard mini 4-pin power connector			
Pin 1	+12V	Pin 3	GND
Pin 2	GND	Pin 4	+5V

CN4: Temperature Sensor (LM75) Connector			
Pin 1	+5V	Pin 3	T_SDAT
Pin 2	T_SCLK	Pin 4	GND

CN13: Voltage Detect Input Connector			
Pin 1	$+5V_{SB}$	Pin 5	+5V
Pin 2	GND	Pin 6	+3.3V

Pin 3	GND	Pin 7	-12V
Pin 4	-5V	Pin 8	+12V

CN16: Power Good Input			
Pin 1	Power Good A	Pin 2	GND

CN17: Alarm Reset Connector			
Pin 1	ALARM RESET	Pin 2	GND

CN18: LED Connector			
Pin 1	GND	Pin 9	Temperature Good LED
Pin 2	Power Good +5V	Pin 10	Temperature Fail LED
Pin 3	Power Good +12V	Pin 11	FAN Good LED
Pin 4	Power Good -5V	Pin 12	FAN Fail LED
Pin 5	Power Good -12V	Pin 13	N/A
Pin 6	HDD_1	Pin 14	Power Good +3.3V
Pin 7	Power Good LED	Pin 15	Power Good $+5V_{SB}$
Pin 8	Power Fail LED		

CN26: External HDD LED connector			
Pin 1	HLED_ACT	Pin 2	N/A

J1: External Buzzer			
Pin 1	Buzzer	Pin 2	+5V

SW1: Fan Number Select Switch			
Pin 1	GND	Pin 5	GND
Pin 2	FAN_SEL1	Pin 6	FAN_SEL3

Pin 3	GND	Pin 7	GND
Pin 4	FAN_SEL2	Pin 8	RESET

4.3 Switch Settings

FAN Number Setting

FAN NUMBER	SW 1-1	SW 1- 2	SW 1- 3	SW 1- 4
1	OFF	OFF	ON	OFF
2	OFF	ON	OFF	OFF
3	OFF	ON	ON	OFF
4	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF
6	ON	ON	OFF	OFF
7	ON	ON	ON	OFF

4.4 Thermal Sensor

There is one thermal sensor inside the chassis. Please refer to Figure 4.2 to find the location.

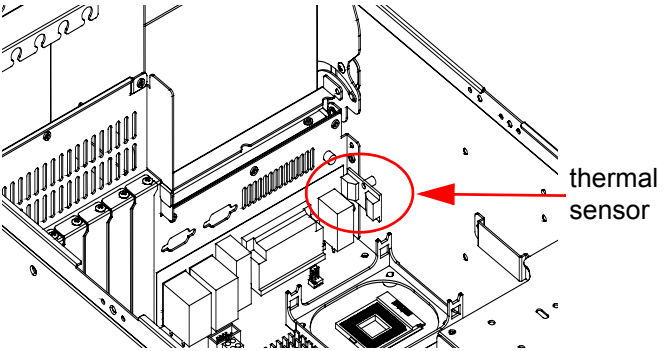


Figure 4.2: Thermal sensor location

When the temperature rises, the temperature sensor sends a signal to the alarm board and a continuous alarm will sound. To stop the alarm beep, press the Alarm Reset button on the front panel. Please refer to Figure 4.3 for the thermal board layout. Users can refer to the following temperature setting by adjusting the switch.

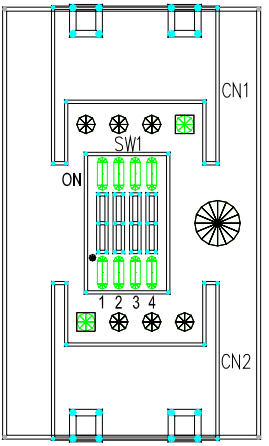


Figure 4.3: Thermal sensor module

Connector Pin Definition:

CN1: Temperature Sensor Connector			
Pin 1	+5V	Pin 3	T_SDAT
Pin 2	T_SCLK	Pin 4	GND

CN2: Temperature Sensor Connector			
Pin 1	+5V	Pin 3	T_SDAT
Pin 2	T_SCLK	Pin 4	GND

Thermal Switch Setting

TEMP INDEX	SW 1 -1	SW 1 - 2	SW 1 - 3	SW 1 - 4
TEMP 1	OFF	OFF	OFF	ON
TEMP 2	OFF	OFF	ON	ON
TEMP 3	OFF	ON	OFF	ON
TEMP 4	OFF	ON	ON	ON
TEMP 5	ON	OFF	OFF	ON
TEMP 6	ON	OFF	ON	ON
TEMP 7	ON	ON	OFF	ON
TEMP 8	ON	ON	ON	ON

CHAPTER 5

SATA Storage

Chapter 5 SATA Storage

There is a SATA backplane fixed behind the SATA disk drive housing. This backplane allows users to install up to two SATA I or SATA II HDDs. Please see the relevant information below.

5.1 2-slot SATA Backplane

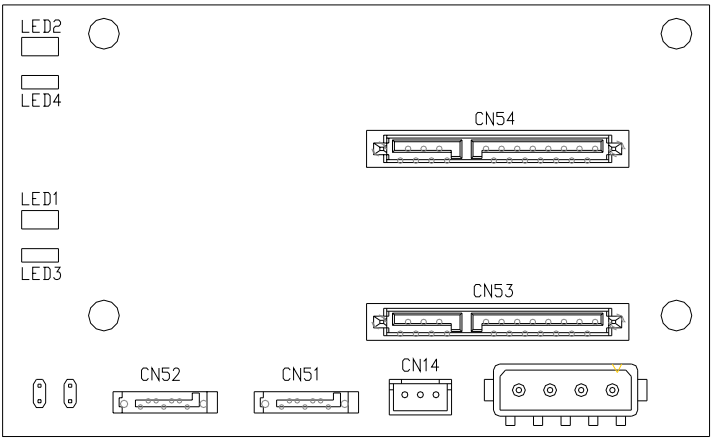


Figure 5.1: SATA backplane layout

5.2 Key Components Definition

Table 5.1: Key components definition

CN52, CN51	SATA HDD0, HDD1 connector connecting to mother-board
CN53, CN54	SATA connector connecting to SATA HDD0, HDD1
CN14	Fan Connectors
LED3 ~ LED4	SATA HDD0 ~ HDD1 Power LED (green)
LED1 ~ LED2	SATA HDD0 ~ HDD1 Read/Write LED (orange) (Supported by motherboard or add-on card)

Appendix A

Exploded Diagram and Parts List

Appendix A Exploded Diagram and Parts List

A.1 Exploded Diagram of IPC-7143

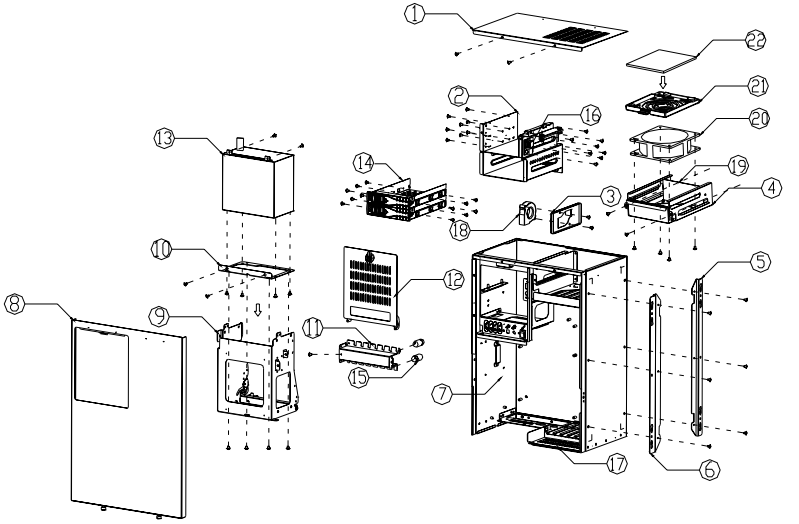


Figure A.1: Exploded diagram, IPC-7143

Table A.1: Parts list

1	TOP COVER	12	FRONT DOOR
2	DISK DRIVE BAY	13	POWER SUPPLY
3	FAN HOLDER 2	14	SATD HDD TRAY
4	FAN HOLDER 1	15	CLAMP PAD
5	MOUNTING BRACKET LEFT	16	USB BOARD
6	MOUNTING BRACKET RIGHT	17	IO BRACKET MB
7	CHASSIS U	18	FAN BLOWER (51 x 51 mm)
8	SIDE COVER U	19	FAN HOLDER BRACKET
9	POWER HOLDER U	20	COOLING FAN
10	PS BRACKET MB	21	FILTER COVER
11	HOLD DOWN CLAMP SUPPORT	22	FAN FILTER

A.2 Exploded Diagram of IPC-7141

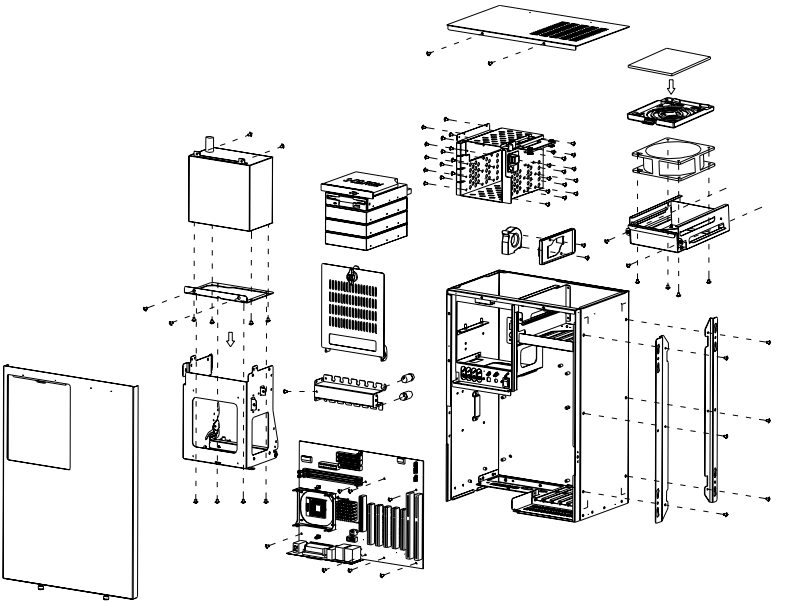


Figure A.2: Exploded diagram, IPC-7141

Table A.2: Parts list

1	TOP COVER	12	FRONT DOOR
2	DISK DRIVE BAY	13	POWER SUPPLY
3	FAN HOLDER 2	14	USB BOARD
4	FAN HOLDER 1	15	CLAMP PAD
5	MOUNTING BRACKET LEFT	16	FAN FILTER
6	MOUNTING BRACKET RIGHT	17	IO BRACKET MB
7	CHASSIS U	18	FAN BLOWER (51 x 51 mm)
8	SIDE COVER U	19	FAN HOLDER BRACKET
9	POWER HOLDER U	20	COOLING FAN
10	PS BRACKET MB	21	FILTER COVER
11	HOLD DOWN CLAMP SUPPORT	24	

Appendix B

Optional Motherboards

Appendix B Optional Motherboards

B.1 Optional Motherboards

IPC-7143/7141 support a variety of Advantech ATX motherboards as listed below. You can contact a local sales representative for detailed information.

Model Name	Bus				
	PCI	PCI/ISA	ISA	AGP	SATA
AIMB-740	4 (32-bit)	1	1	--	--
AIMB-741	4 (32-bit)	1	1	--	--
AIMB-742	4 (32-bit)	1	1	--	--
AIMB-744	2 (PCI-X 64-bit) 4 (PCI 32-bit)	--	1 (8X)	2	--
AIMB-750	2 (PCI-X 64-bit) 4 (PCI 32-bit)	--	1 (4X)	2	--
AIMB-760	1 (PCI-E 16X) 2 (PCI-E 1X) 5 (PCI 32-bit)	--	--	4	--

Appendix C

Safety Instructions

Appendix C Safety Instructions

C.1 English

1. Read these safety instructions carefully.
2. Keep this installation reference guide for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed 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 could cause damage.
7. The openings on the enclosure are for air convection. 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. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
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 over-voltage.
12. Never pour any liquid into an opening. This could 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 any 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 installation reference guide.
    e) The equipment has been dropped and damaged.
    f) The equipment has obvious signs of breakage.

7. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is equal to or less than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1.

Advantech disclaims all responsibility for the accuracy of any statements contained herein.

C.2 German – Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlußsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
    a) Netzkabel oder Netzstecker sind beschädigt.
    b) Flüssigkeit ist in das Gerät eingedrungen.
    c) Das Gerät war Feuchtigkeit ausgesetzt.
    d) Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.

e) Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.

f) Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

7. Bitte lassen Sie das Gerät nicht unbehehrt hinten unter -20° C (-4° F) oder oben 60° C (140° F), weil diesen Temperaturen das Gerät zerstören könten.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70 dB (A) oder weiger.

DISCLAIMER: This set of instructions is provided according to IEC704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.