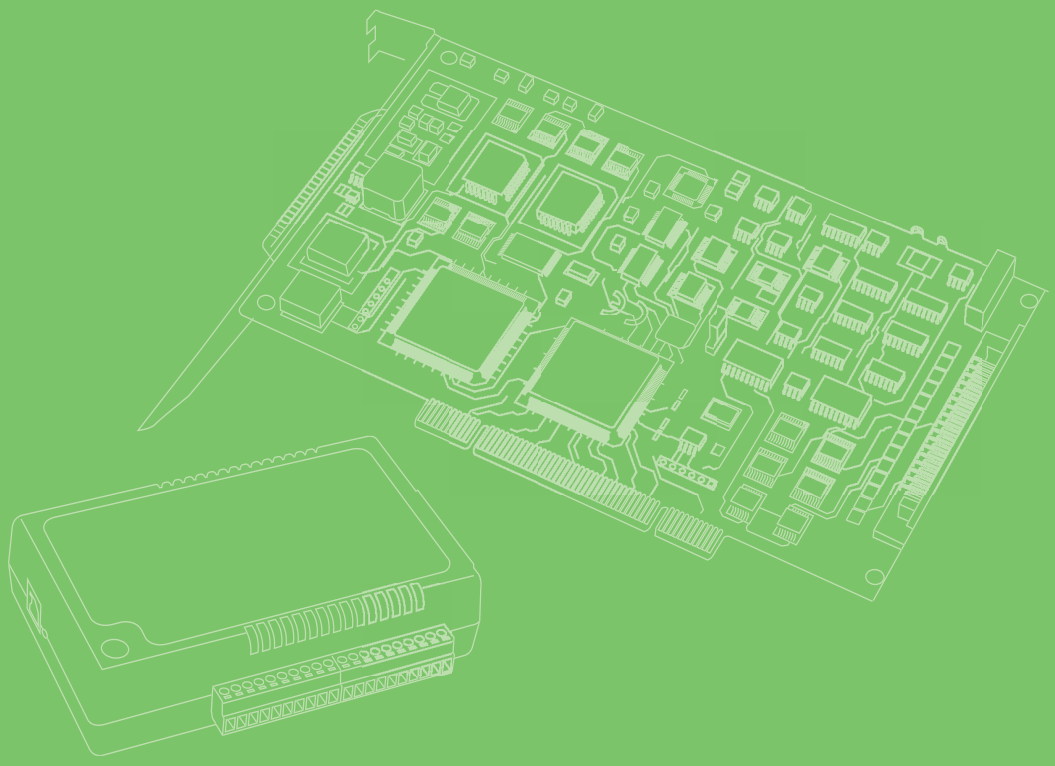

User Manual

MIC-3106

4U CompactPCI Chassis with 3U 32-bit backplane

ADVANTECH

Enabling an Intelligent Planet

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Part No. xxxxxxxx Edition 1

Printed in Taiwan July 2014

Product Warranty (2 years)

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 merchandize 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.

Declaration of Conformity

CE/FCC

This product has passed the CE/FCC test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

Technical Support and Assistance

1. Visit the Advantech web site at http://support.advantech.com where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning! *Warnings indicate conditions, which if not observed, can cause personal injury!*

Caution! *Cautions are included to help you avoid damaging hardware or losing data. e.g.*

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note! *Notes provide optional additional information.*

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- 1 x MIC-3106 unit
- 1 x Startup Manual
- 1x Registration and 2 years Warranty card

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Contents

Chapter 1

General Information

1.1 Introduction

The MIC-3106 is Advantech's new generation IPC using the CompactPCI standard, it offers 4U height rackmount platform, with compact features, and most importantly compact in price.

The dimensions of the MIC-3106 are 134 x 177 x 238 mm^3, which is the standard 4U height standalone/ wall mount CPCI system. With two CPCI peripheral slots, users have a high degree of flexibility for configuring their own system. With the features of CompactPCI, the MIC-3106 is an open platform with front access modular design, and high reliability which makes the MCI-3106 the perfect choice for industrial applications where high availability matters.

The MIC-3106 has two levels of CPU performance choices. One is an Intel Core i3-3217UE CPU for high performance applications, and the other is an Intel Atom N455 CPU which is the most cost effective for low power consumption applications.

1.2 Specifications

- Power Supply
  - Power Type: ATX
  - Input Voltage: 100~240 VAC
  - Wattage: 180W
  - ON/OFF Switch: Lockable Toggle Switch
- Backplane
  - System Slot: 1, on the right
  - Peripheral Slot: 2 slots
  - PCI Bus: 32-bit 33 MHz
- Dimensions (WxHxD mm^3): 134 x 177 x 238
- Weight (kg): 4.33kg
- Temperature
  - Operating: 0~50°C
  - Non-operating: -20~60°C
- Humidity (non-condensing)
  - Operating: 10 ~ 85% @ 40°C
  - Non-operating: 10 ~ 95% @ 40°C
- Vibration (5 ~ 500 Hz)
  - Operating: 2Grms (without HDD)
  - Non-operating:3G
- Shock (11ms)
  - Operating: 10G
  - Non-operating: 30G
- Regulatory: CE, FCC, CCC, UL, RoHS
- Compliance: PICMG 2.0 Rev. 3.0

1.3 CPU Options

L1	Processor System	CPU	Intel Atom N455, 1.66GHz
		Memory	2GB On board
		Storage	1 x CompactFlash Type II 1 x 2.5” SATA HDD
	Front I/O	VGA	1 x DB15 port
		Ethernet	2 x 10/100/1000 Mbps, RJ45 connector
		USB 2.0	3 x Type A
		Serial	2 x RS232, DB9 connector
		PS/2	1
	Operating System	Windows	XP, XPE, 7
H1	Processor System	CPU	Intel 3rd Gen. Core i3-3217UE, 1.6GHz
		Memory	4GB On board
		Storage	1 x CFast 1 x 2.5” SATA HDD
	Front I/O	VGA	1 x DB15 port
		Ethernet	2 x 10/100/1000 Mbps, RJ45 connector
		USB 3.0	2 x Type A
		Serial	2 x RS232, RJ45 connector
		PS/2	1
	Operating System	Windows	XP,XPE, 7

1.4 Ordering Information

Part Number	Description
MIC-3106-L1-AE	Atom N455 CPU with 2 peripheral slots
MIC-3106-H1-AE	Core i3-3217UE CPU with 2 peripheral slots

1.5 Optional Accessories

Part Number	Description
1990024035N000	Fan filter 130 x 10 x 12 mm3 (for MIC-3106)
1750002440	Bottom side fan 60 x 60 x 13 mm3
1750007398-01	Top side blower 51 x 51 x 15 mm3
1960064154N001	4HP bracket cover
1960064193N001	Wall Mount Kit for MIC-3106
1960064183N001	Table Mount for MIC-3106

1.6 Board Dimensions

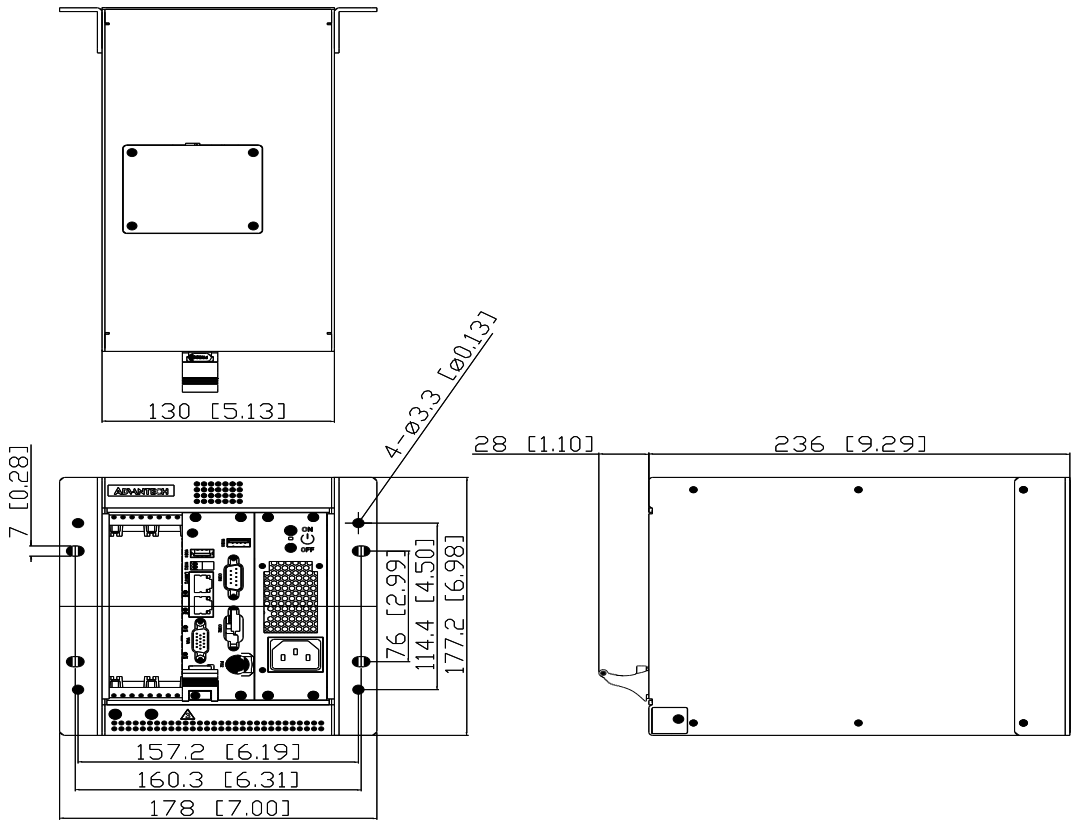


Figure 1.1 Board Dimensions

1.7 Exploded View

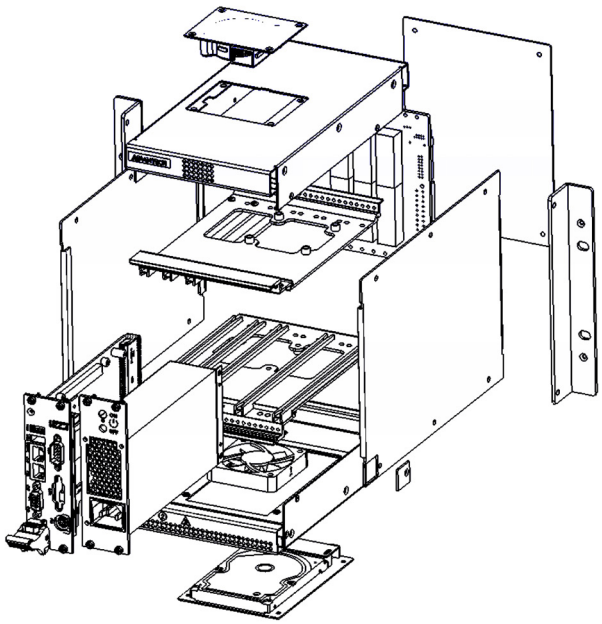


Figure 1.2 Exploded View

Chapter 2

System Setup

2.1 System Install

Warning! *Before starting the installation process, make disconnect all power from the chassis. Do this by turning off the power switch, and unplugging the power cord from the power outlet. When in doubt, consult with an experienced technician.*

2.1.1 Attaching the Rackmount Handles

The rackmount handles for the front panel are in the accessory box. To install the handles, simply secure them to the front panel with the screws provided.

2.1.2 Chassis Front and Rear Sections

There are 6 slots on the MIC-3106. From the right side to left side, the power supply unit and power ON/OFF switch and LED panel occupies 2 slots, CPU module occupies 2 slots, 2 peripheral slots.

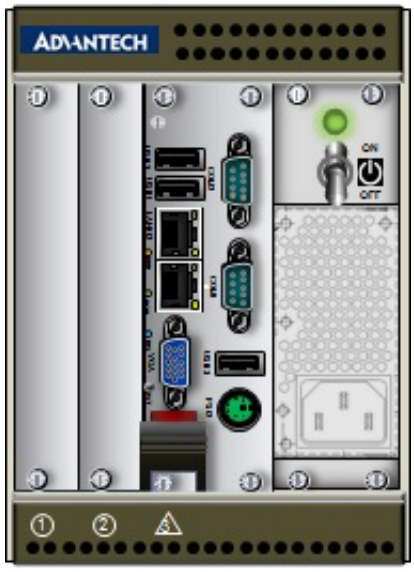


Figure 2.1 Chassis Front Section

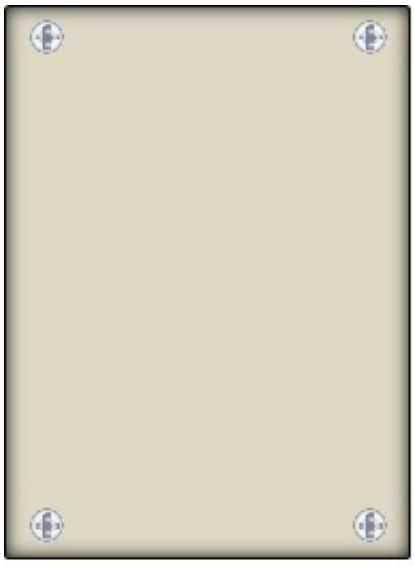


Figure 2.2 Chassis Rear Section

2.1.3 Front Bracket Cover

If the front side peripheral slots are not used, user could add the front bracket cover to seal these unused slots. The front bracket cover is 4HP.

Figure 2.3 Front Bracket Cover 4HP(Up)

2.2 Power Bracket Panel

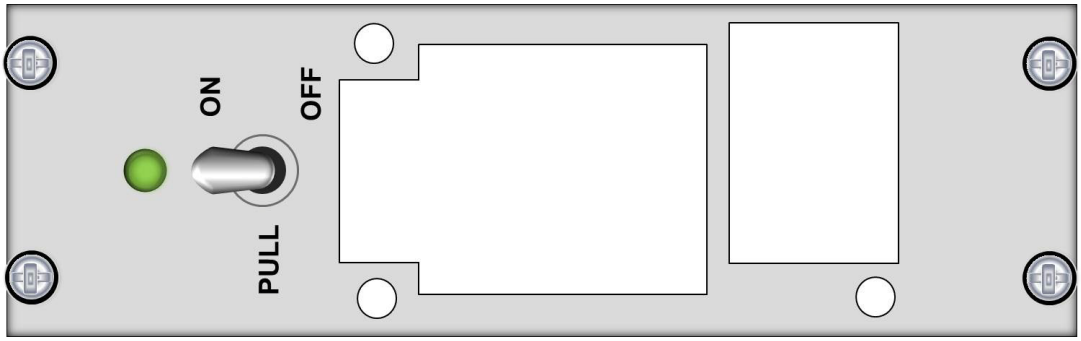


Figure 2.4 Power Bracket Panel

2.2.1 Power ON/OFF Status LED

The Power Bracket Panel with a green LED indicates power ON/OFF status.

2.2.2 Power ON/OFF Toggle Switch

The Power Bracket Panel with a lockable toggle switch turns ON/OFF the power supply. Pull out the toggle switch to unlock it.

2.3 CPU Module Panel

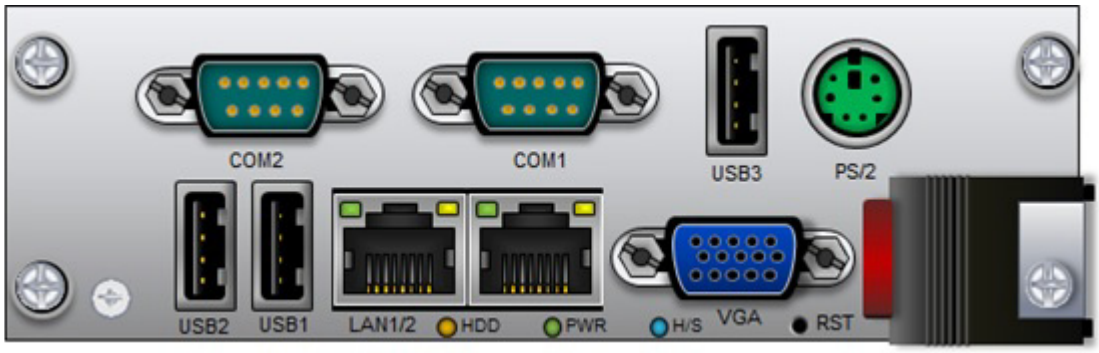


Figure 2.5 CPU Module Panel

2.3.1 System Status LED

The CPU Module Panel with HDD, Power and Hot Swap LEDs indicate the corresponding status.

2.3.2 Reset Button

The CPU Module Panel with a Reset Button for hot reset.

2.4 Cooling Fan and Filter

The cooling mechanism of the MIC-3106 is to swap the heat by air cycling. The cooling fans are located in the bottom and top sides of the chassis. These fans are a very low noise variety for quiet environments. And the fan filter prevents dust entering into the chassis.

2.4.1 Cooling Fan

The bottom fan sucks the air inward and the top fans blow the air out. The cooling fans are easy to maintain. Please refer to sections 2.4.1.1 and 2.4.1.2 to replace defective fans.

2.4.1.1 Bottom Cooling Fan

The procedure for installing a bottom cooling fan into the MIC-3106 is below. Please follow these steps carefully.

1. Remove the power cable.
2. Unscrew the four screws from the bottom chassis.
3. Unscrew the back panel.
4. Uninstall the fan's power cable.
5. Remove the bottom fans bracket.

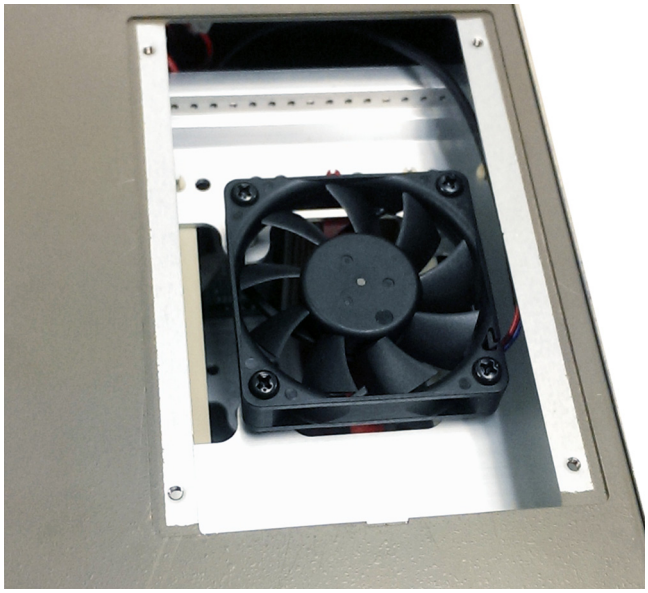


Figure 2.6 Bottom Cooling Fan

6. Unscrew the four screws from the fan's stand.
7. Replace the fan
8. Screw the four fan screws
9. Pass through the fan's power cable and install the power cable.
10. Screw the back panel.
11. Assemble the fan's bracket and screw the four screws of bottom fans bracket.

2.4.1.2 Top Cooling Fan

The procedure for installing a top cooling fan into the MIC-3106 is below. Please follow these steps carefully.

1. Remove the power cable.
2. Unscrew each of the 4 screws from the top chassis.
3. Unscrew the back panel.
4. Uninstall the fan's power cable.
5. Remove the fan's bracket.

Figure 2.7 Top Cooling Fan

6. Unscrew each of the two screws from fan's stand.
7. Replace the fans.
8. Screw the each of the fans four screws
9. Pass through the fans power cable and install the power cable.
10. Secure the back panel.
11. Assemble the fans bracket and screw the 4 screws of bottom fan's bracket.

2.4.2 Fan Filter

Refer to the procedure below produce to replace the fan filter if it's blocked with dust or other particles. The procedure for installing a fan filter into the MIC-3106 is below. Please follow these steps carefully.

1. Remove the handle of MIC-3106.
2. Unscrew the screw from right bottom side of the chassis.
3. Take out the plank of fans filter.

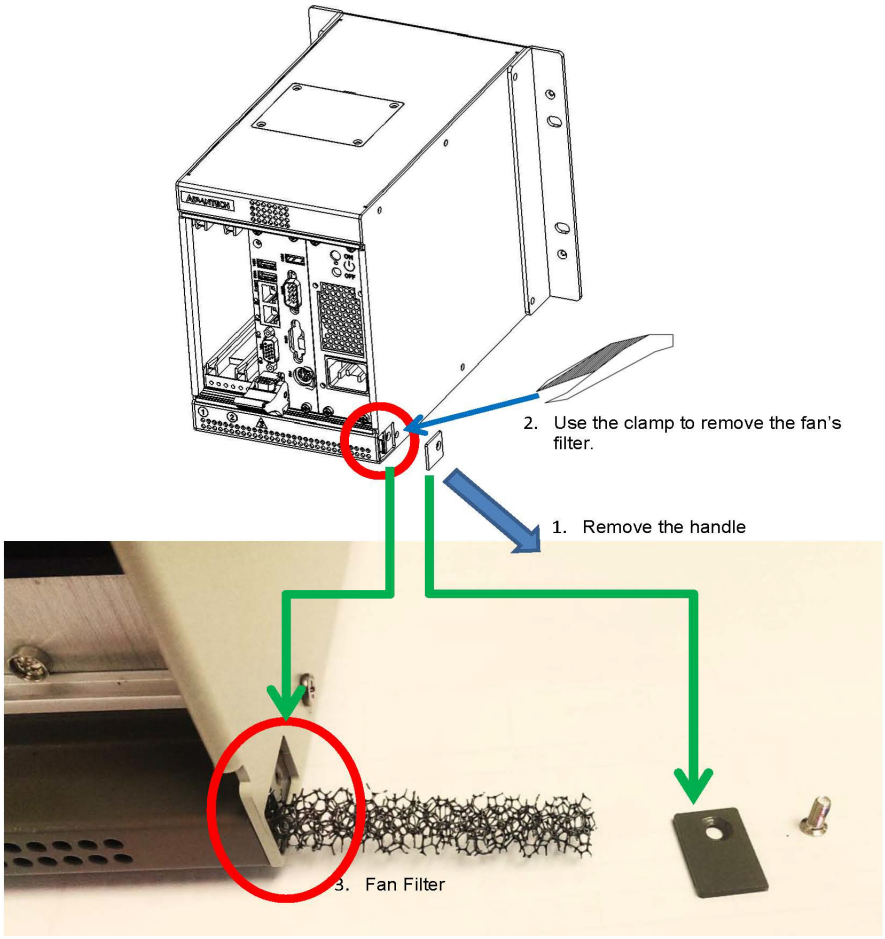


Figure 2.8 Fan Filter

4. Use the clamp to remove the fan's filter.
5. Insert the new filter.
6. Screw the screw and attach the bracket.

2.5 Installing System and Peripheral Card

Warning! *The CompactPCI connectors are rigid and require gentle handling when being inserted and removed. Improper handling of the cards may damage the backplane. The system slots usually have obvious indicators, i.e. red card guide rail, triangle mark enclosing the slot number.*

Figure 2.9 System/ Peripheral Slots

Warning! *A system card can only be installed in a system slot. Do not insert a system card into any other slot, or insert any peripheral card into the system slot.*

2.5.1 CompactPCI Card Installation/Removal Procedure

The handle on CompactPCI cards and Peripheral Card ensures simple and safe installation and removal. Follow the board installation image below to install a CompactPCI module with CompactPCI system.

Figure 2.10 Inserting a Peripheral Card

Chapter 3

Backplane

In this chapter, we will describe the backplane for the MIC-3106 chassis.

3.1 MIB-3104P2 Backplane

MIB-3104P2 is a 3U CompactPCI 32-bit backplane with optional rear I/O.

Specifications

- Standard CompactPCI height for 3U cards
- CompactPCI Compliancy
  - PICMG 2.0 CompactPCI core specification R3.0
  - PICMG 2.1 CompactPCI hot swap R2.0
- Dimensions: 80.3 x 128.7 mm
- PCI bus clock: up to 32-bit/33MHz
- System Slot: one on right hand side
- System Slot Rear I/O: P2 rear I/O with AB-type shroud (optional)
- Peripheral slots: 2
- Peripheral Slots Rear I/O: P2 rear I/O with AB-type shroud (optional)
- Power Connectors: 20 pin ATX connector
- V (I/O) switch: 3.3V or 5V selectable, default 5V
- Other connectors: panel connector, fan connectors, USB connector, SATA connector.

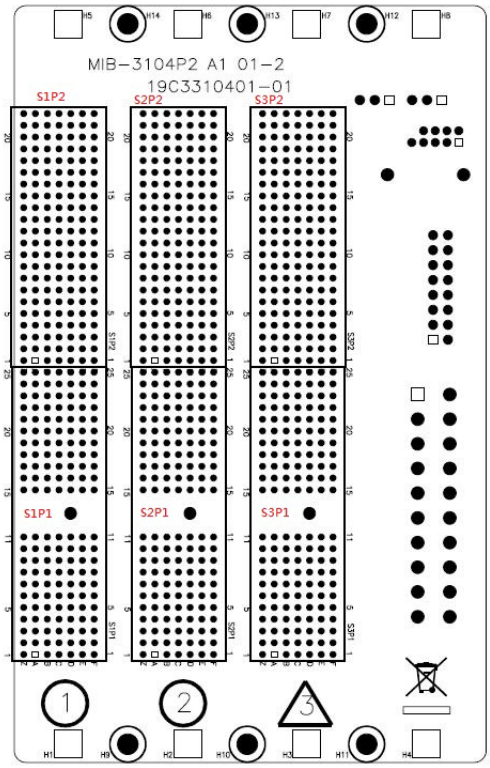


Figure 3.1 MIB-3104P2 Front View

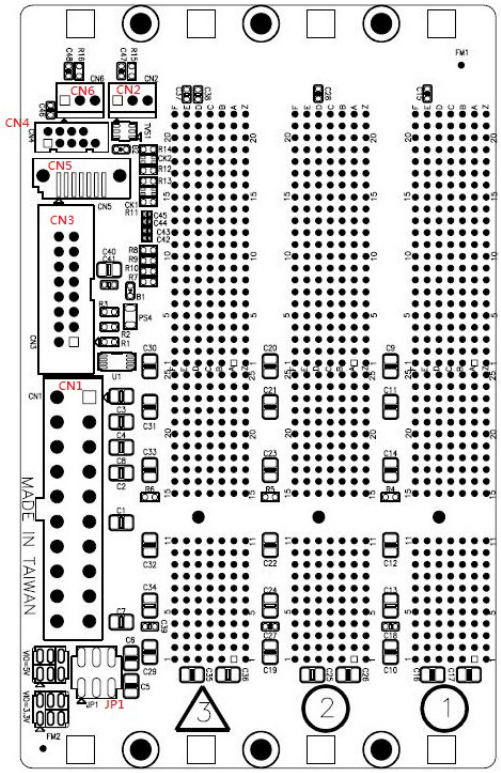


Figure 3.2 MIB-3104P2 Rear View

3.2 Pin Assignment

3.2.1 System Slot S3P1

Pin	Z	A	B	C	D	E	F
25	GND	+5V	REQ64#	ENUM#	+3.3V	+5V	GND
24	GND	AD[1]	+5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	+3.3V	AD[4]	AD[3]	+5V	AD[2]	GND
22	GND	AD[7]	GND	+3.3V	AD[6]	AD[5]	GND
21	GND	+3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	+3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	+3.3V	PAR	C/BE[1]#	GND
17	GND	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	+3.3V	FRAME#	IDRY#	BDSEL	TRDY#	GND
12-14	Key						
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	+3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ0#	GND	+3.3V	CLK0	AD[31]	GND
5	GND	Reserved	Reserved	PCIRST#	GND	GNT0#	GND
4	GND	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	+5V	INTD#	GND
2	GND	TCK	+5V	TMS	TDO	TDI	GND
1	GND	+5V	-12V	TRST#	+12V	+5V	GND
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**

Table 3.1: System Slot S8P1

3.2.2 System Slot S3P2

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	NC	NC	NC	GND
20	GND	CLK5	GND	NC	NC	NC	GND
19	GND	GND	GND	NC	NC	NC	GND
18	GND	NC	NC	NC	NC	NC	GND
17	GND	NC	NC	PRST#	REQ6#	CNT6#	GND
16	GND	NC	USB6_P	DEG#	NC	NC	GND
15	GND	NC	USB6_N	FAL#	REQ5#	GNT5#	GND
14	GND	NC	USB6_OC#	USB5_OC#	SATA_TX2N	NC	GND
13	GND	NC	NC	SATA_TX2P	NC	NC	GND
12	GND	NC	NC	USB5_P	SATA_RX2N	NC	GND
11	GND	NC	NC	SATA_RX2P	NC	NC	GND
10	GND	NC	NC	USB5_N	NC	NC	GND
9	GND	NC	NC	NC	NC	NC	GND
8	GND	NC	NC	NC	NC	NC	GND
7	GND	NC	NC	NC	NC	NC	GND
6	GND	NC	NC	NC	NC	NC	GND
5	GND	NC	GND	NC	NC	NC	GND
4	GND	NC	NC	NC	NC	NC	GND
3	GND	CLK4	GND	CNT3#	REQ4#	GNT4#	GND
2	GND	CLK2	CLK3	GND	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**

Table 3.2: System Slot S8P2

3.2.3 Peripheral Slot S1P1 to S2P1

Pin	Z	A	B	C	D	E	F
25	GND	+5V	REQ64#	ENUM#	+3.3V	+5V	GND
24	GND	AD[1]	+5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	+3.3V	AD[4]	AD[3]	+5V	AD[2]	GND
22	GND	AD[7]	GND	+3.3V	AD[6]	AD[5]	GND
21	GND	+3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	+3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	+3.3V	PAR	C/BE[1]#	GND
17	GND	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	+3.3V	FRAME#	IDRY#	BDSEL	TRDY#	
12-14	Key						
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	+3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ#	GND	+3.3V	CLK	AD[31]	GND
5	GND	Reserved	Reserved	PCIRST#	GND	GNT#	GND
4	GND	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	+5V	INTD#	GND
2	GND	TCK	+5V	TMS	TDO	TDI	GND
1	GND	+5V	-12V	TRST#	+12V	+5V	GND
Pin	**Z**	**A**	**B**	**C**	**D**	**E**	**F**

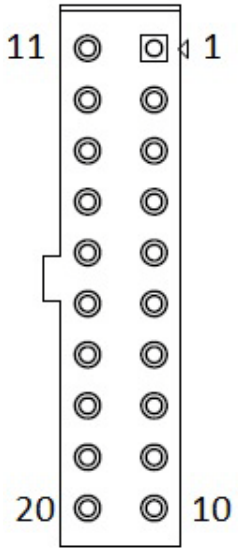
Table 3.3: Peripheral Slot S1P1 to S7P1

3.2.4 Peripheral Slot S1P2 to S2P2

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
1-21	GND	NC	NC	NC	NC	NC	GND

Table 3.4: Peripheral Slot S1P2 to S7P2

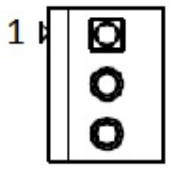
3.2.5 ATX Connector CN1



Pin	Signal	Pin	Signal
11	+3.3V	1	+3.3V
12	-12V	2	+3.3V
13	GND	3	GND
14	PS_ON#	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	PWR_OK
19	+5V	9	5V STB
20	+5V	10	+12V

Table 3.5: ATX Connector CN1

3.2.6 Fan Connector CN2, CN6

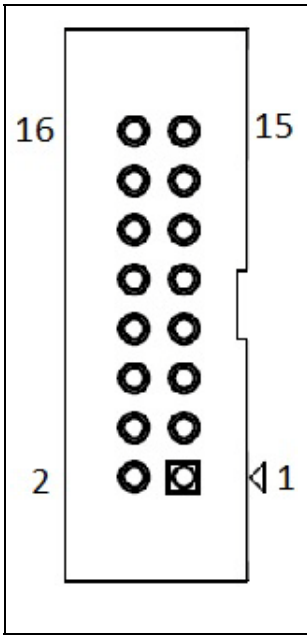


Pin	Signal
1	GND
2	+12V
3	FAN_PULSE

Table 3.6: Fan Connector CN2, CN6, CN7

3.2.7 Panel Connector CN3

Warning! *The Panel Connector only connects (ATX_PSON/ GND) for toggle switch and (5V_LED+/ 5V_LED-) for Power LED. Other signals are not used and reserved for further applications.*

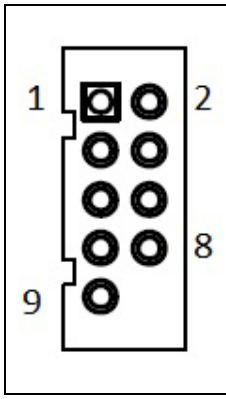


Pin	Signal	Pin	Signal
16	TEMP_SDA	15	TEMP_SCL
14	FAN3_PULSE	13	GND
12	FAN1_PULSE	11	FAN2_PULSE
10	PRST#	9	GND
8	ATX_PSON	7	GND
6	12V_LED+	5	12V_LED-
4	3.3V_LED+	3	3.3V_LED-
2	5V_LED+	1	5V_LED-

Table 3.7: Panel Connector CN3

3.2.8 USB Connector CN4

Warning! *The USB Connector is only supported by the L1 system (CPU) card.*



Pin	Signal	Pin	Signal
1	USB_+5V	2	USB_+5V
3	USB5_N	4	USB6_N
5	USB5_P	6	USB6_P
7	GND	8	GND
9	FGND		

Table 3.8: USB Connector CN4

3.2.9 SATA Connector CN5

Warning! *The SATA Connector is only supported by L1 system (CPU) card.*

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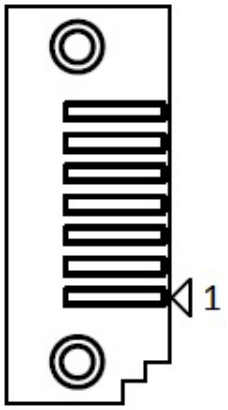


Pin	Signal
7	GND
6	RX+
5	RX-
4	GND
3	TX-
2	TX+
1	GND

Table 3.9: SATA Connector CN5

3.2.10 V(I/O) Switch JP1

Warning! *Do not put the SW1 on +3.3V position, unless the system's V(I/O) is defined as +3.3V.*

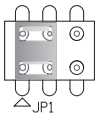
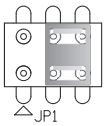
JP1	V(I/O)
	+5V (Default)
	+3.3V

Table 3.10: V(I/O) Switch SW1

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