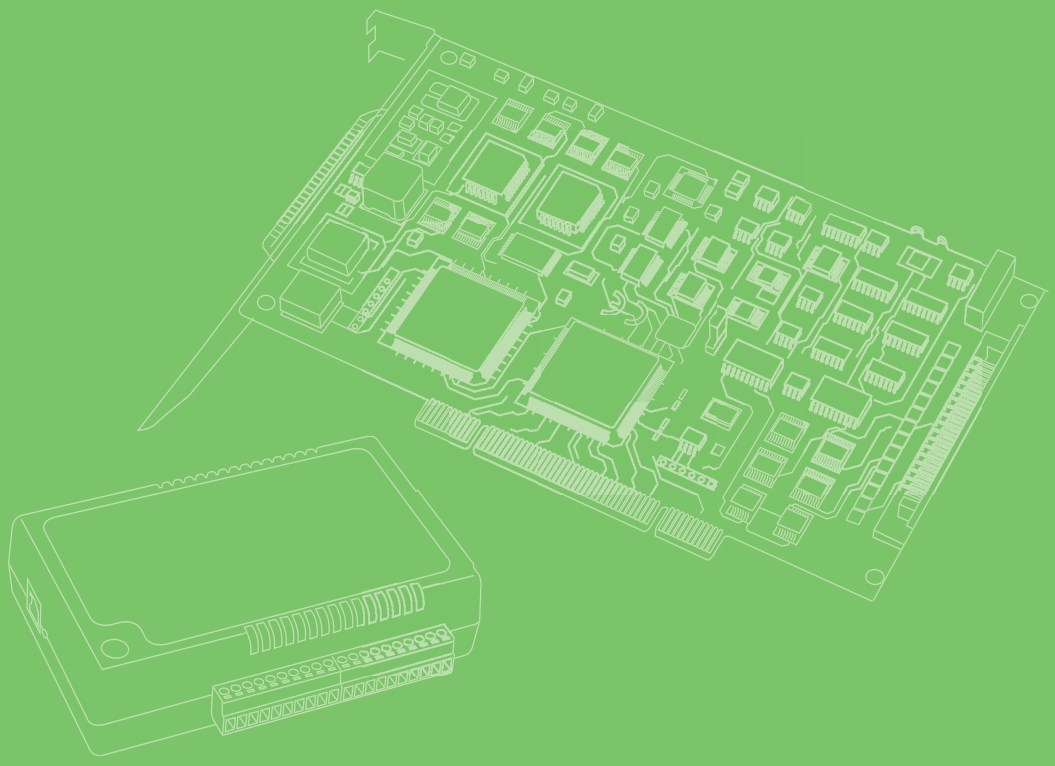

User Manual

MIC-3327DC01-A43E

3U CompactPCI® Intel® Atom™ N2600 Controller

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Part No. xxxxxxxxxx Edition 1

Printed in Taiwan March 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

This product has passed the CE 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.

- One MIC-3327 3U CompactPCI Controller
- One CD-ROM
- Startup manual

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

Hardware Configuration

1.1 Introduction

The MIC-3327 is a 3U CompactPCI® system control board, which support Intel® Atom™ N2600 1.6 GHz processor and highly integrated Intel® NM10 Express chip-set. It supports on board DDR3 SDRAM up to 2 GMB and dual Gigabit Ethernet.

The MIC-3327 is a powerful 3U CompactPCI controller which can fulfill your need in any mission critical applications, such as transportation, traffic control, and military defense applications.

Compact Mechanical Design

In order to decrease the thermal effect, Advantech provides a heat sink specially designed for the MIC-3327, so it only needs external cooling air from the chassis fans for ventilation.

1.2 Specifications

1.2.1 Standard Functions

- **Certification:** CE, FCC, Class A
- **CPU:** Intel® Atom N2600 1.6 GHZ
- **BIOS:** AMI UEFI 16 Mbit SPI BIOS
- **System Chipset:** Intel NM10
- **Memory:**
  - SDRAM: DDR3 800 MHz Support 2G
- **Graphics:**
  - Chipset: Intel Gfx integrated in Atom Processor
  - Resolution: 1600x1200
- **Ethernet:**
  - Interface: 1000/100/10M Base-T Giga Ethernet
  - Controller: Intel 82574L Ethernet Controller
  - Connector: RJ-45*2 (Pins reserved on PCB next to LAN2 for customer lead wire)
- **Bus:**
- PCI Bus: 7 x 32bit/33MHz Compact PCI Bus Master Interface (PCIe-PCI Bridge PERICOM PI7C9X110)
- **Serial:**
  - Interface: RS-232/422/485 Selectable (COM1~COM4)
  - UART: 954 compatible
  - Data bits: 5, 6, 7, 8
  - Stop Bits: 1, 1.5, 2
  - Parity: None, Even, Odd
  - Speed: 50 ~ 115.2 Kbps
  - Connector: COM1 (9 PIN, DB9 Front Panel), COM2 ~ COM4 (5 PIN, J2)
- **Audio:**
  - Line-IN(DB9: 7,8 PIN) Line-OUT (DB9: 2,3 PIN) (Pins reserved on PCB next to DB9 for customer lead wire)
  - MIC-in: 3.5” Audio Connector
- **SATA:** 1 x SATA interface, data transfer rate up to 300 MB/S
- **USB:** 3 x USB 2.0 channels up to 480Mbps, 2 as front I/O
- **P-IDE:** 1 x CompactFlash Slot Type II

- **Watchdog Timer:** 256 levels timer interval, from 1 to 255 sec or min setup by software
- **Front Panel Function (8HP):**
  - COM1: 1 x DB9, RS-232/422/485
  - Audio: 1 x DB9, 1 x 3.5” Audio Connector
  - Ethernet: 2 x RJ-45 Connector with LED
  - VGA: 1 x 15pin D-SUB Connector
  - USB: 2 x USB2.0, 4pin Connector
  - Button: Reset Button
  - LED: Power, HDD

1.2.2 Mechanical and Environmental Specifications

- **Environment:**
  - Humidity: 5~95%(non-condensing)
  - Operation Temp.: -20 ~ 60°C
  - Storage Temp.: -40 ~ 80°C
- **Physical:**
  - Dimensions (L x H): 160 x 100mm(3U)
  - Weight: 0.8Kg

1.2.3 OS Support

- Windows XPE

1.3 Function Block Diagram

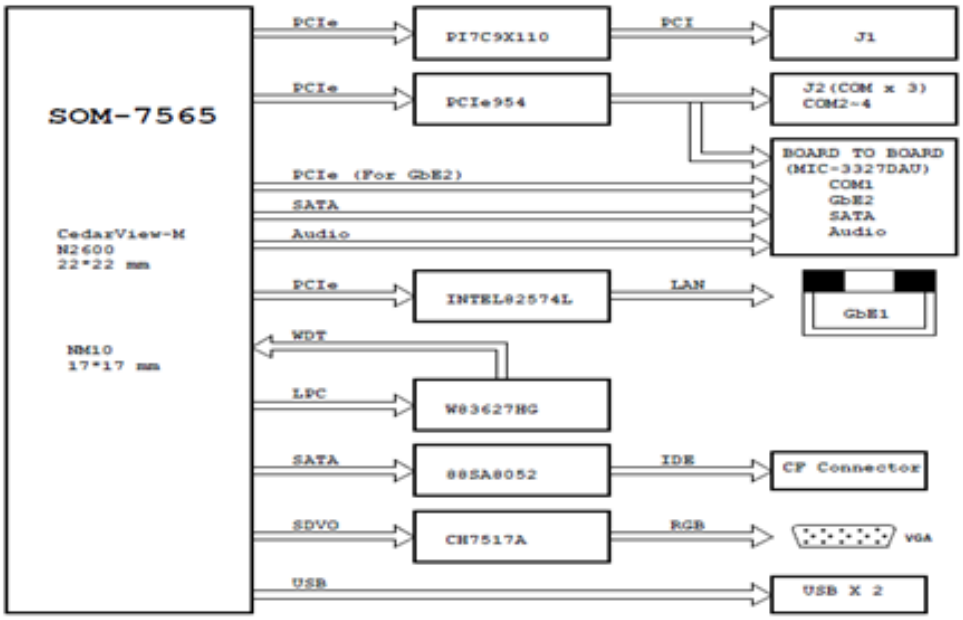

Figure 1.1 MIC-3327CB Function Block Diagram

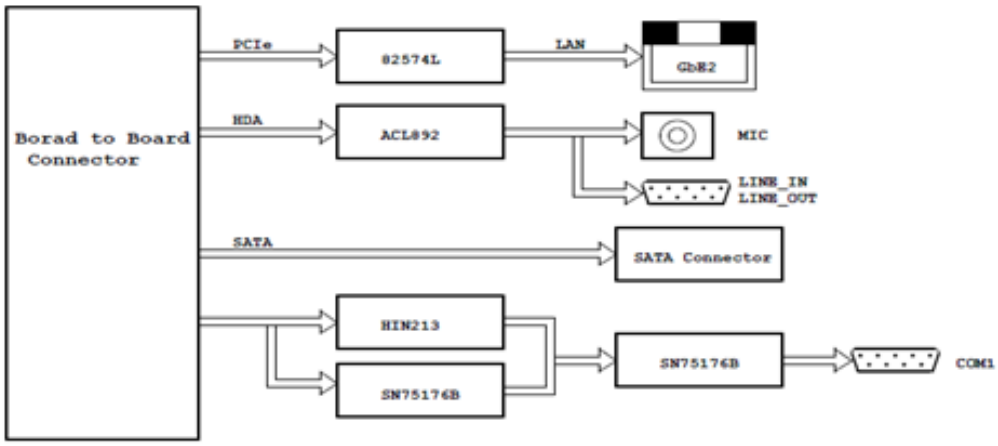

Figure 1.2 MIC-3327DAU Function Block Diagram

1.4 Board Dimensions

Figure 1.3 MIC-3327 Board Dimensions

1.5 DIP Switch Settings

Switch Locations

Table 1.1 and Table 1.2 list the switch function of MIC-3327.

Figure 1.4 shows the location of SW1 and SW2. They are on the MIC-3327DAU board.

Table 1.1 MIC-3327 Switch1 Description

Table 1.1: MIC-3327 Switch1 Description

SW1 PIN	1	2	3	4
COMx	X	COM2	COM3	COM4
RS-232	X	OFF	OFF	OFF
RS-422/RS-485	X	ON	ON	ON

Table 1.2: MIC-3327 Switch2 Description

SW2 PIN	1	2	3	4
COMx	COM1	COM2	COM3	COM4
RS-422 Master	ON	ON	ON	ON
RS-422 Slave/RS-485	OFF	OFF	OFF	OFF

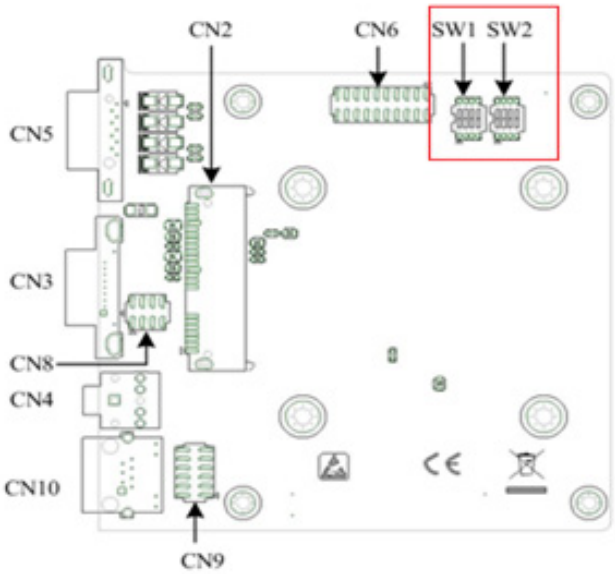

Figure 1.4 MIC-3327 Switch Location

1.6 Safety Precautions

Follow these simple precautions to protect yourself and the products.

1. 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.
2. Disconnect power before making any configuration changes. The sudden rush of power as you adjust a switch or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electrical discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

Chapter 2

Connecting Peripherals

2.1 Card Blasting Diagram

Since MIC-3327 is composed of one main board, one SOM board and one DAU board, for ease of understanding and a convenient naming, we will use 1F (1st level) to represent the main board, and 2F (2st level) to represent the DAU board in this manual (2F supports SATA connector).

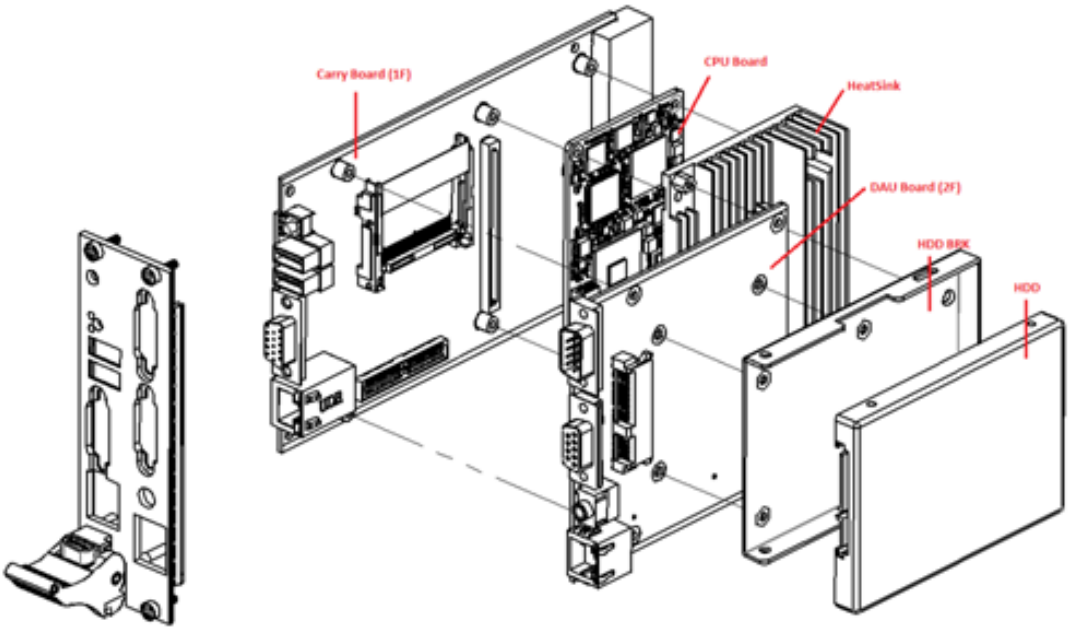

Figure 2.1 MIC-3327 Blasting Diagram

2.2 Connectors

Figures 2.2 and Figure 2.3 show MIC-3327 connector locations.

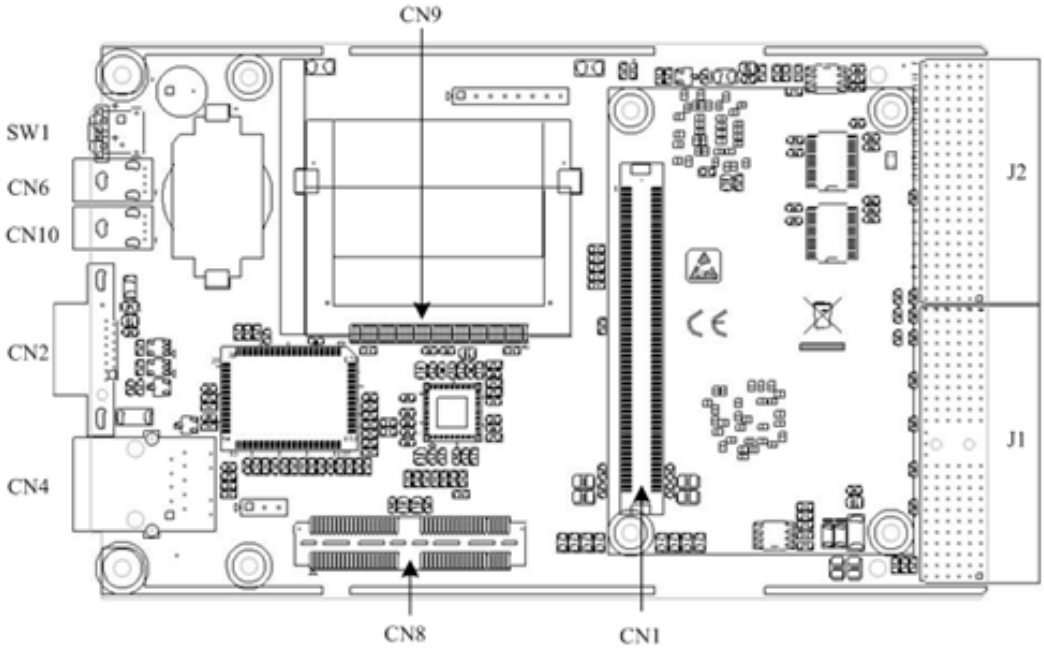

Figure 2.2 MIC-3327CB Board Connector Locations (1F)

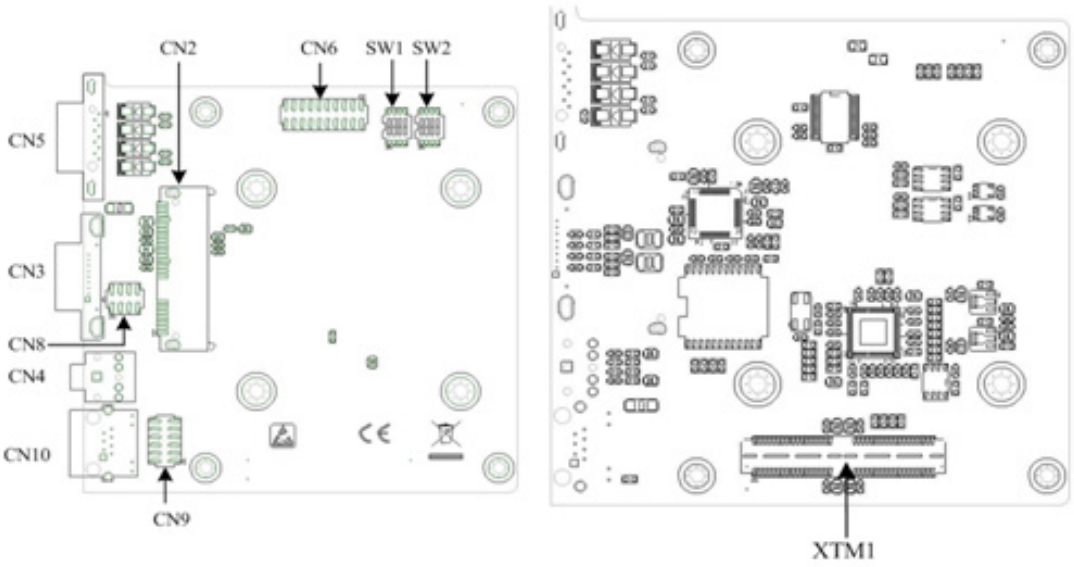

Figure 2.3 MIC-3327DAU Board Connector Locations (2F)

Table 2.1: MIC-3327 Connectors Description

Connector	Function	Description
1F-SW1	Reset	Reset Button
1F-CN1	SOM	SOM Connector
1F-CN2	VGA	D-Sub 15-pin (Female) on Front side panel
1F-CN4	LAN1	10/100/1000Base-T Ethernet on Front side panel
1F-CN6	USB1	USB1 Type-A Female on Front side panel.
1F-CN8	B to B Connector	B to B Connector
1F-CN9	CF	CF Connector
1F-CN10	USB2	USB2 Type-A Female on Front side panel
1F-J1	CPCI Connector	CPCI Connector
1F-J2	CPCI Connector	CPCI Connector
2F-CN2	SATA connector	Serial ATA 22P connector
2F-CN3	Audio(Line in/ Line out)	Audio connector
2F-CN4	MIC	MIC connector
2F-CN5	COM1	DB9 connector
2F-CN6	COM1 Type Select	RS-232/422/485 Selection
2F-CN8	Audio Jumper	Audio(Line in/ Line out/ MIC)
2F-CN9	LAN2 Jumper	10/100/1000Base-T Ethernet
2F-CN10	LAN2	10/100/1000Base-T Ethernet on Front side panel.
2F-XYM1	B to B Connector	B to B Connector
2F-SW1	COM2~COM4	COM2/COM3/COM4 Type Selection
2F-SW2	COM1~COM4 RS-422 Master/ Slave Select	COM1/COM2/COM3/COM4 RS-422 Master/ Slave Selection

Note! *If you choose to install standard Windows XPE OS on MIC-3327 controller, you need to install serial ports driver (the file in the CD-ROM: \driver\AdvPCISerialDriver\PCI_ICOM.exe).*

Warning! *To avoid damage to data, do not have the hard driver installed during transportation.*

2.3 Card Installation

The CompactPCI connectors are firm and rigid, but require careful handling while plugging and unplugging. Improper installation of a card can easily damage the back-plane of the chassis.

The inject/eject handle of MIC-3327 helps you install and remove the card easily and safely. Follow the procedure below to install the MIC-3327 into a chassis:

To install a card:

1. Hold the card vertically. Be sure that the card is pointing in the correct direction. The components of the card should be pointing to the right-hand side.
2. Holding the lower handle, pull out the red portion in the middle of the handle to unlock it.

Caution! *Keep your fingers away from the hinge to prevent them from getting pinched.*

3. Insert the card into the chassis by sliding the upper and lower edges of the card into the card guide.
4. Push the card into the slot gently by sliding the card along the card guide until the handles meet the rectangular holes of the cross rails.

Note! *If the card is correctly positioned and has been slid all the way into the chassis, the handle should match the rectangular holes. If not, remove the card from the card guide and repeat step3 again. Do not try to install a card by forcing it into the chassis.*

5. Lift the lower handle up to push the card into place.

To remove a card:

1. Unscrew the four screws on the front panel.
2. Press the lower handle down to release the card from the backplane.
3. Slide the card out.

Figure 2.4 Chassis Installation/ Removal

Chapter 3

BIOS Setup and System

3.1 BIOS Setup and System Assignments

The MIC-3327 adapts Advantech's SOM-7565 CPU module.

Further information about the SOM-7565 CPU module can be found in user manual of SOM-7565. You can find this manual on the driver and utility CD of MIC-3327 in the accessory package.

Or please download SOM-7565 user's manual at: http://www.advantech.com.cn/acl_common/products.

Please note that you can try to “LOAD BIOS DEFAULTS” from the BIOS Setup manual if the MIC-3327 does not work properly.

Appendix A

Watchdog Timer Programming

A.1 MIC-3327DC01-A43E Watchdog Timer Programming

```
--------------------------------------------------------------------------------
Enter the extended function mode, interruptible double-write
--------------------------------------------------------------------------------
MOV DX,4EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
--------------------------------------------------------------------------
Configured logical device 8, configuration register CRF6
--------------------------------------------------------------------------
MOV DX,4EH
MOV AL,2BH
OUT DX,AL
MOV DX,4FH
IN AL,DX
AND AL.OEFH;Setbit 4=0 Pin 89=WDTO
OUT DX,AL
MOV DX,4EH
MOV AL,07H; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,4FH
MOV AL,08H; select logical device 8
OUT DX,AL;
MOV DX,4EH
MOV AL,30H;Set watch dog activate or inactivate
OUT DX,AL
MOV DX,4FH
MOV AL,01H; 01:activate 00:inactivate
OUT DX,AL;
MOV DX,4EH
MOV AL,F5H; Setting counter unit is second
OUT DX,AL
MOV DX,4FH
MOV AL,00H
OUT DX,AL;
MOV DX,4EH
MOV AL,F6H
OUT DX,AL
MOV DX,4FH
MOV AL,05H; Set 5 seconds
OUT DX,AL
;----------------------------------------
```

```
; Exit extended function mode
;----------------------------------------
MOV DX,4EH
MOV AL,AAH
OUT DX,AL
```

Appendix B

Pin Assignments

B.1 J1 Connector

Table B.1: J1 Connector

PIN	A	B	C	D	E	F
1	5V	-12V	TRST#	+12V	5V	GND
2	TCK	5V	TMS	TDO	TDI	GND
3	INTA#	INTB#	INTC#	5V	INTD#	GND
4	RSV1	GND	V(I/O)	INTP	INTS(SERIRQ)	GND
5	RSV2	RSV3	RST#	GND	GNT0#	GND
6	REQ0#	GND	3.3V	CLK0	AD[31]	GND
7	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
8	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
9	C/BE[3]	IDSEL	AD[23]	GND	AD[22]	GND
10	AD[21]	GND	3.3V	AD[20]	AD[19]	GND
11	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
12						
13						
14						
15	3.3V	FRAME#	IRDY#	GND	TRDY#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
17	3.3V	REQA#	GNTA#	GND	PERR#	GND
18	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
19	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
20	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
21	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
22	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
23	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
24	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
25	5V	REQ64#	ENUM#	3.3V	5V	GND

B.2 J2 Connector

Table B.2: J2 Connector

PIN	A	B	C	D	E	F
1/26	CLK1	GND	REQ1#	GNT1#	REQ2#	GND
2/27	CLK2	CLK3		GNT2#	REQ3#	GND
3/28	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
4/29	V(I/O)			GND		GND
5/30	COM2_TX+		V(I/O)			GND
6/31	COM2_TX-	COM2_TX	COM2_RX	GND	COM2_CTS	GND
7/32	COM2_RX+	GND	V(I/O)		COM2_RTS	GND
8/33	COM2_RX-	COM3_TX	COM3_RX	GND	COM3_CTS	GND
9/34	COM3_TX+	GND	V(I/O)		COM3_RTS	GND
10/35	COM3_TX-	COM3_RX+	COM3_RX-	GND		GND
11/36	COM4_TX+	GND	V(I/O)			GND
12/37	COM4_TX-	COM4_TX	COM4_RX	GND	COM4_CTS	GND
13/38	COM4_RX+	GND	V(I/O)		COM4_RTS	GND
14/39	COM4_RX-	USB+	USB-	GND		GND
15/40		GND		REQ5#	GNT5#	GND
16/41				GND		GND
17/42		GND		REQ6#	GNT6#	GND
18/43				GND		GND
19/44		GND				GND
20/45	CLK5			GND		GND
21/46	CLK6	GND				GND
22/47						GND

B.3 USB 2.0 Connector

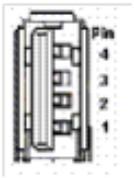

Table B.3: USB2.0 Connector PIN Description	
PIN	**Signal**
1	VCC
2	USB_P-
3	USB_P+
4	GND

B.4 VGA Connector

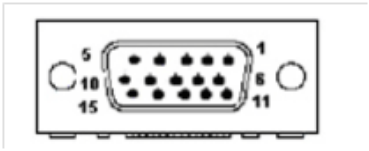

Table B.4: VGA Connector PIN Description	
PIN	**Signal**
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	N/C
10	GND
11	N/C
12	VGA_SDA
13	HSYNC
14	VSYNC
15	VGA_SCL

B.5 COM1 Port Connector

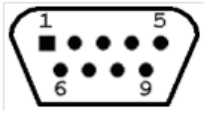

Table B.5: COM1 Port Connector PIN Description	
PIN	**Signal (RS-232)**
1	NDCD
2	NRX
3	NTX
4	NDTR
5	GND
6	NDSR
7	NRTS
8	NCTS
9	NRI

B.6 Ethernet 10/100/1000Base-T RJ-45Connector

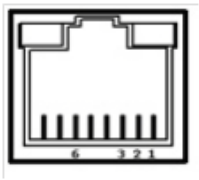

Table B.6: Ethernet RJ-45 Connector PIN Description		
PIN	**10/100 Base-T Signal**	**1000 Base-T Signal**
1	TD+	Data0+
2	TD-	Data0-
3	RD+	Data1+
4	N/C	Data1-
5	N/C	Data2+
6	RD-	Data2-
7	N/C	Data3+
8	N/C	Data3-

B.7 Audio Connector

MIC-3327 offers the audio interface. MIC, LIN-OUT, LINE-IN are available. The audio interfaces are accessed via the operating system.

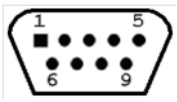

Table B.7: Audio Connector PIN Description

PIN	Signal
1	GND
2	Line_Out_L
3	Line_Out_R
4	GND
5	GND
6	GND
7	Line_In_L
8	Line_In_R
9	GND

B.8 Serial ATA 22P Connector

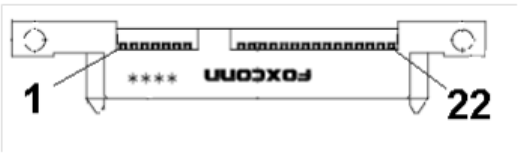

Table B.8: Serial ATA 22P Connector PIN Description

PIN	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	+3.3V
9	+3.3V
10	+3.3V
11	GND
12	GND
13	GND
14	+5V
15	+5V
16	+5V

Table B.8: Serial ATA 22P Connector PIN Description	
17	GND
18	--
19	GND
20	--
21	--
22	--

B.9 CompactFlash Interface

The sockets accepts an IDE-compatible CompactFlash memory card.

Table B.9: CompactFlash Interface PIN Description

PIN	Signal	PIN	Signal
1	GND	26	N/C
2	PDD3	27	PDD11
3	PDD4	28	PDD
4	PDD5	29	PDD
5	PDD6	30	PDD
6	PDD7	31	PDD
7	PDCS*	32	PDCS*
8	GND	33	N/C
9	GND	34	PDIOR*
10	GND	35	PDIOW*
11	GND	36	CF-36
12	GND	37	IRQ14
13	+5V	38	+5V
14	GND	39	SANMODE
15	GND	40	N/C
16	GND	41	IDERST*
17	GND	42	PDIORDY
18	PDA2	43	R/C
19	PDA1	44	CF-44
20	PDA0	45	CFLED
21	PDD0	46	P66DET
22	PDD1	47	PDD8
23	PDD2	48	PDD9
24	N/C	49	PDD10
25	N/C	50	GND

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