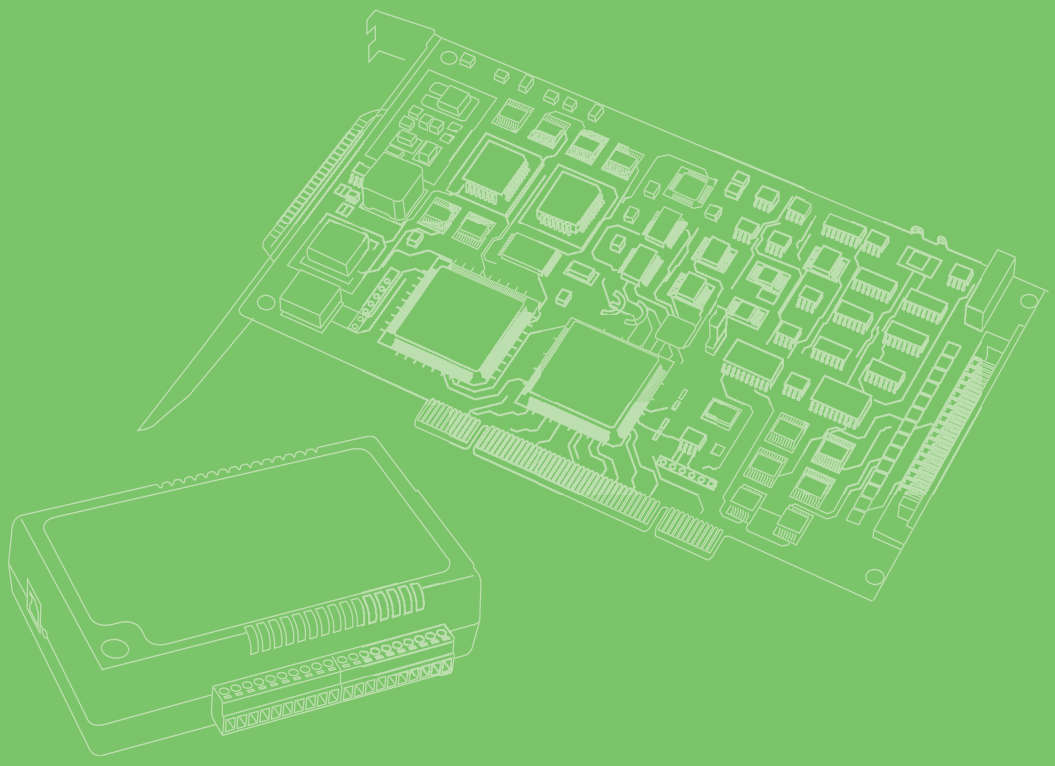

User Manual

MIC-3323

3U CompactPCI® Intel® Core® 2 Duo L7500 / Atom™ Processor D510 Controller

ADVANTECH
eAutomation

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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-3323 all-in-one single board computer
- One utility CD-ROM
- This user 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

Sections include:

- Introduction
- Specifications
- Function Block Diagram
- Board Dimensions
- Dip Switch Settings
- Safety Precautions

1.1 Introduction

The MIC-3323 is a 3U CompactPCI® system control board, which support two different CPU grade, The first adapts high performations Intel® Core® 2 Duo 1.6GHz processor and highly integrated Intel® 965GM Express chipset, The second kind adapts Intel® Atom™ Processor D510 1.66GHZ(dual core)and ICH8M chipset. It supports on board DDR2 SDRAM up to 4 GMB and dual Gigabit Ethernet.

The MIC-3323 is a powerful 3U CompactPCI controller which can fulfill your need in any mission critical applicaitons, such as transportaiton, traffic control, and millitary defense applicaitons.

Compact Mechanical Design

In order to decrease the thermal effect, Advantech provides a heat sink specially designed for the MIC-3323, so it only needs external cooling air from the chassis fans for ventilation.

1.2 Specifications

1.2.1 Standard Functions

- **Certifications:** CE, FCC class A
- **CPU:**
  - MIC-3323D01-D23E support Intel® Core® 2 DuoL7500 1.6 GHZ
  - MIC-3323D01-A33E support Intel® Atom D510 1.66 GHz
- **BIOS:**
  - AWARD™ 4 Mbit Flash BIOS (for MIC-3323D01-D23E)
  - AMI 16 Mbit Flash BIOS (for MIC-3323D01-A33E)
- **System Chipset:**
  - Intel® 965 GMCH (for MIC-3323D01-D23E)
  - Intel® ICH8M (for MIC-3323D01-A33E)
- **Memory:**
  - SDRAM DDR2 533/667 MHz 2GB (for MIC-3323D01-D23E)
  - SDRAM DDR2 667 MHz 2GB (for MIC-3323D01-A33E)
- **Socket:** 2 x 200-pin SODIMM sockets
- **SATA:** 1 X SATA interface, data transfer rate up to 300 MB/S
- **Serial Ports:**
  - Interface: RS-232
  - UART: 2 X 16C550 compatible
  - Data bits: 5, 6, 7, 8
  - Stop Bits: 1, 1.5, 2
  - Parity: None, Even, Odd
  - Speed: 50 ~ 115.2Kbps
  - Data Signal: TXD, RXD, RTS, CTS, DTR, DSR, DCD, RI, GND
  - Connector: 2 X DB-9
- **Ethernet:**
  - Ethernet LAN: 2X1000/100/10M Base-TX Gigabit Ethernet
  - Controller Chips: PCI-Express x 1 Intel @ 82574E Ethernet Controller
  - Connector: RJ-45*2
- **PS/2 Connector:** Used to Keyboard and mouse
- **USB Port:** Two USB2.0 Channels up to 480 MB

- **PCI Bus:** PCI-PCI bridge PERICOM PI7C8150, 7 x 32 bit/33 MHz, CompactPCI bus master interface, 3.3 V VIO
- **Watchdog Timer:** 256 levels timer interval, from 0 to 255 seconds/minutes setup by software, jumper less selection, generates system reset.(for MIC-3323D01-D23E)
- **Hot-swap:** Supports for all signal to allow peripheral boards to be Hot swapped.
- **Input /Output Bus Interface:** PICMG®2.0 Rev.3.0 Compatible
- **CompactPCI Compliance:** PICMG®2.1 Rev.2.0

1.2.2 Display

- **Display:**
  - DB15 VGA connector
  - Support up to 1920 x 1024 pixels

1.2.3 Mechanical and Environmental Specifications

- **Board Size (W x H):** 160 x 100 mm (3U)
- **Operating Temperature:** 0 ~ 50°C (32~122°F)
- **Storage Temperature:** -40 ~ 80°C
- **Vibration Protection**: IEC 68 2-64 (Random 1 Oct./min, 1hr/axis.) HDD: 0.2 Grms @ 5 ~ 500 Hz
- **Board Weight:** 0.8 kg

1.2.4 OS Support

- Windows XP/Windows 7/ Windows Embedded Standard 2009/ Windows Embedded Standard 7

1.3 Function Block Diagram

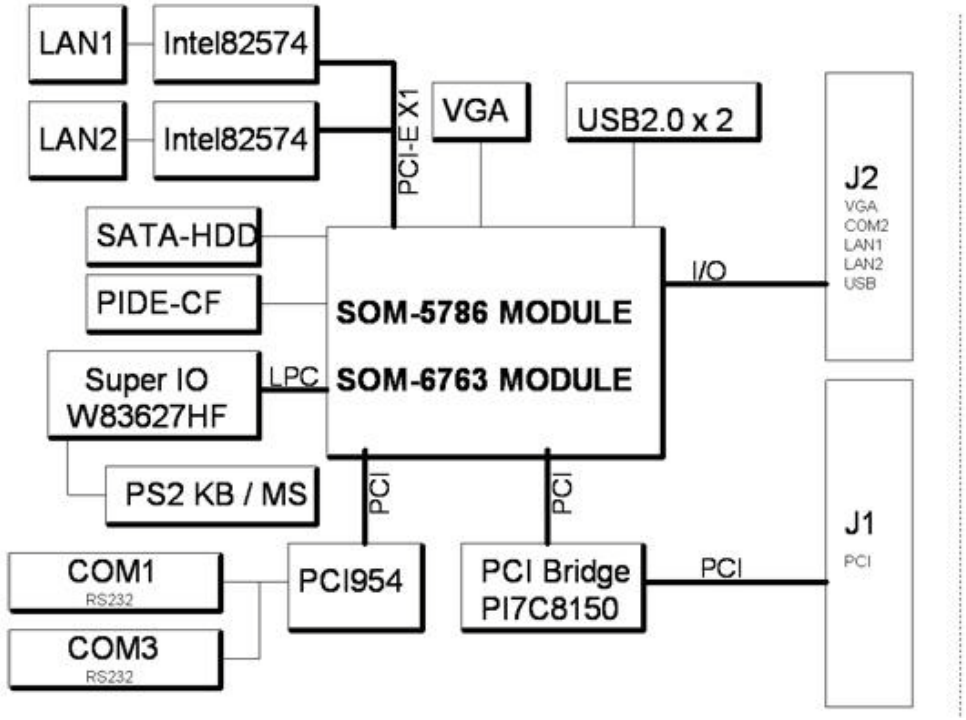


Figure 1.1 MIC-3323 Function Block Diagram

1.4 Board Dimensions

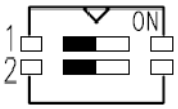
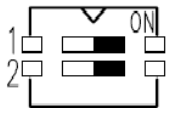
Figure 1.2 MIC-3323 Board Dimensions

1.5 Dip Switch Settings

Switch Locations (For Rear I / O LAN support option)

Table 1.1 lists the switch functions of MIC-3323 (be sure that the switch is white one). Figure 1.3 and Figure 1.4 show the locations of SW1 respectively, SW1 is on the daughter board (daughter board includes two kinds of card ,One support SATA connector. Another support CF connector, Figure 1.3 and Figure 1.4 show two kinds of card).

Table 1.1: MIC-3323 Switch Descriptions

DIP-SW mode	Setting	Function
2F-SW1 Mode		Bit-1: ON LAN1 on Front I/O Bit-2: ON LAN2 on Front I/O
		Bit-1: OFF LAN1 on Rear I/O Bit-2: OFF LAN2 on Rear I/O

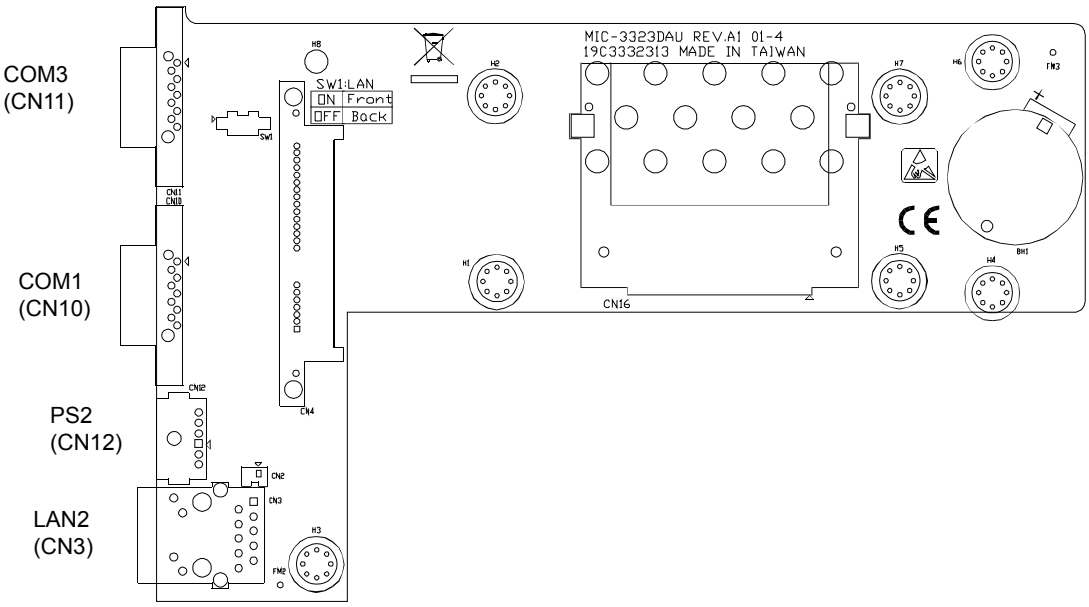


Figure 1.3 MIC-3323 S2 Location (SATA) (2F)

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 onthe 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

Sections include:

- Card Blasting Diagram
- Connectors
- Card Installation

2.1 Card Blasting Diagram

Since MIC-3323 is composed of one mother board, one SOM board and one daughter board, for ease of understanding and a convenient naming, we will use 1F (1st level) to represent the main board, and 2F (2nd level) to represent the daughter board hereafter in this manual (2F supports SATA connector).

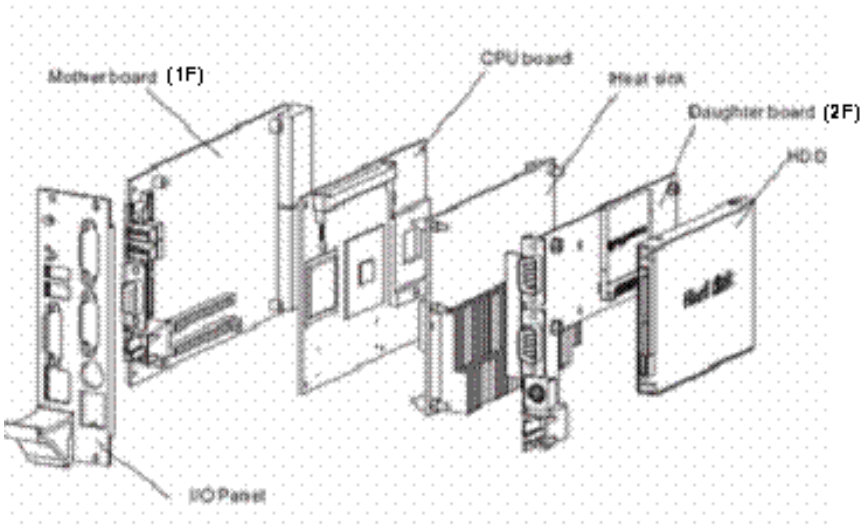


Figure 2.1 MIC-3323 Blasting Diagram

2.2 Connectors

Figure 2.2 and 2.3 show MIC-3323 connector locations.

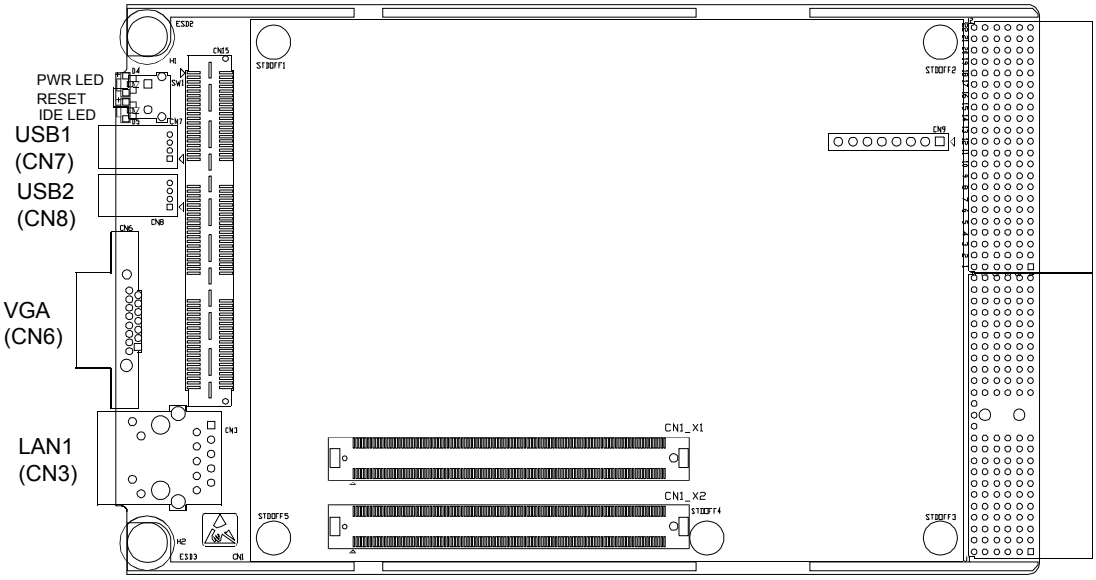


Figure 2.2 MIC-3323 Connector Locations (1F)

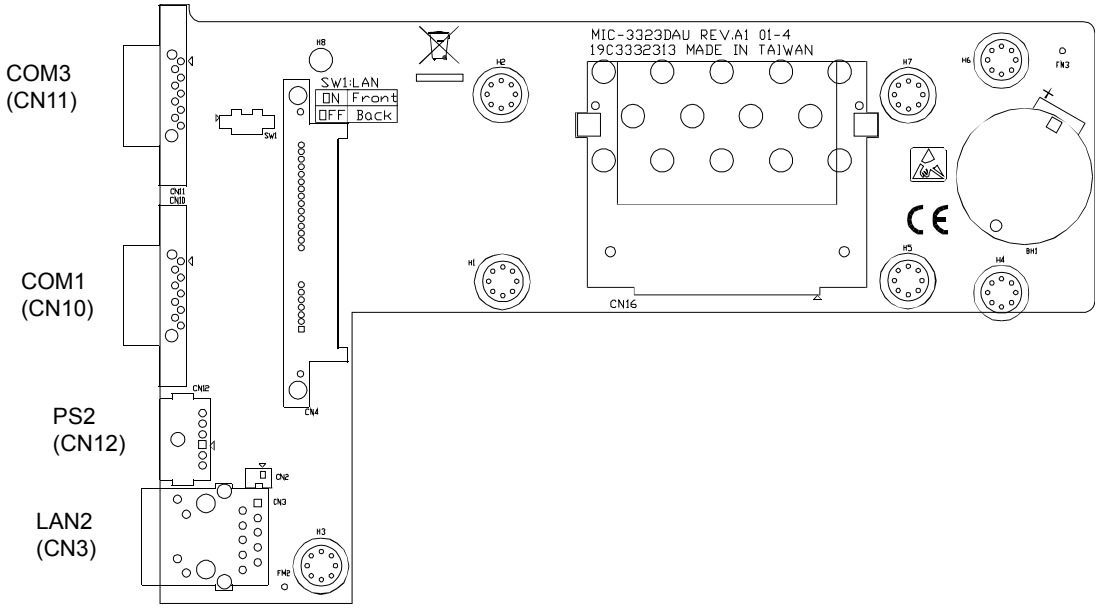


Figure 2.3 MIC-3323 Connector Locations for SATA (2F)

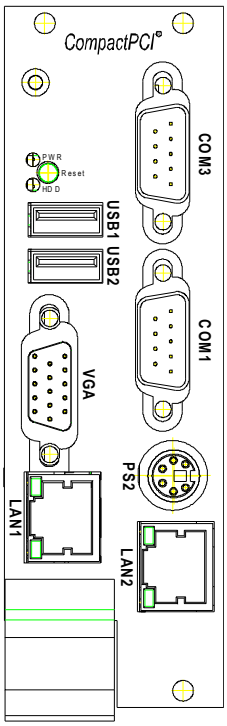


Figure 2.4 MIC-3323 Panel

Table 2.1: MIC-3323 Connectors Descriptions		
Number	**Function**	**Description**
1F-D4	PWR	PWR LED
1F-D5	Reset	Reset button
1F-SW1	HDD	HDD(or CF Card) LED
1F-CN7	USB1	USB1 Type-A Female on Front side panel.
1F-CN8	USB2	USB2 Type-A Female on Front side panel.
1F-CN6	VGA	D-Sub 15-pin (Female) on Front side panel.
1F-CN3	LAN1	10/100/1000Base-TX Ethernet on Front side panel.
2F-CN10	COM1	Serial port: RS-232 on Front I/O
2F-CN11	COM3	Serial port: RS-232 on Front I/O
2F-CN12	PS2	Standard Mini-DIN 6-pin supports K/B and Mouse on Front I/O.
2F-CN3	LAN2	10/100/1000Base-TX Ethernet on Front side panel.
2F-CN2	Battery	Battery Connector
2F-CN15(Only for MIC-3323D02)	CF	CompactFlash socket
2F-CN4 (Only for MIC-3323D01)	SATA	Serial ATA 22P connector
2F-SW1	LAN MODE	For Rear I / O LAN support option Bit-1 Setting: LAN1 Front I/O or Rear I/O Bit-2 Setting: LAN1 Front I/O or Rear I/O

Note! *If you choose to install standard Windows XP OS on MIC-3323 controller, you need to install serial ports driver (the file in the CD-ROM: \driver\AdvPCISerialDriver\PCI_ICOM.exe). After installation, you will find the information in Windows Device Manager as follows. The COM3 in Device Manager is equivalent with Hardware COM1 on MIC-3323, and the COM5 in Device Manager is equivalent with Hardware COM3, in addition to the COM4 in Device Manager will be reserved to support Rear I/O (the COM4 in Device Manager is equivalent with Rear I/O Hardware COM2).*

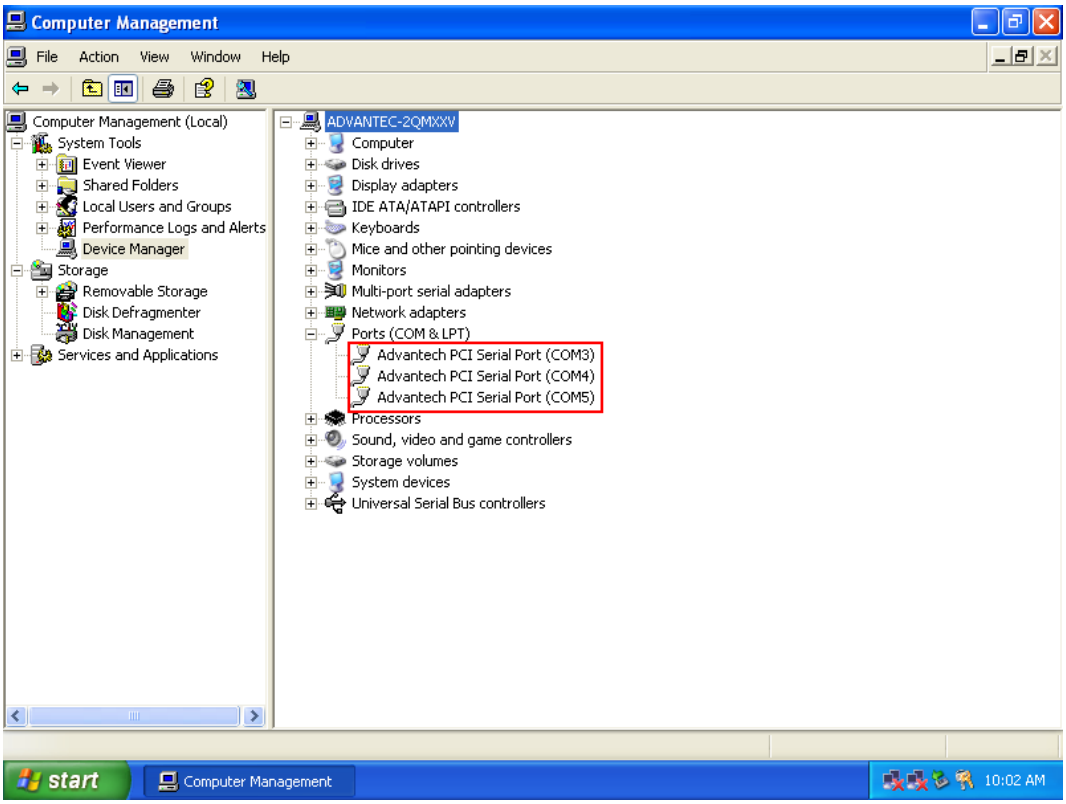


Figure 2.5 MIC-3323 Windows Device Manager

Warning! *To avoid damage to data do not have a hard drive 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 backplane of the chassis.

The inject/eject handle of MIC-3323 helps you install and remove the card easily and safely. Follow the procedure below to install the MIC-3323 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 step 3 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.

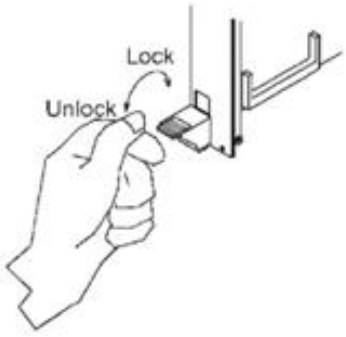


Figure 2.6 Chassis Installation/Removal

Chapter 3

BIOS Setup and System Assignments

Sections include:

- **BIOS Setup and System Assignments**

3.1 BIOS Setup and System Assignments

MIC-3323 adapts Advantech's SOM-5786FG /6763D CPU module.

SOM-5786FG for MIC-3323D01-D23E;

SOM-6763D for MIC-3323D01-A33E.

Further information about the SOM-5786FG /6763D CPU module can be found in user manual of SOM-5786FG /6763D. You can find this manual on the driver and utility CD of MIC-3323 in the accessory package. Or Please download SOM-5786FG/6763D 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-3323 does not work properly.

Appendix A

Watchdog Timer Programming

Sections include:

- MIC-3323D01-D23E Watchdog Timer Programming

A.1 MIC-3323D01-D23E Watchdog Timer Programming

To program the watchdog timer, you must write a program which writes a value to I/O port address 4.

1. SMBus Address: Pin 3 internal pull up 100K = 0X9C, External pull up 4.7K = 0X6E2.
2. Enable WDT function: Configuration and function select register Index-03h3.

Table A.1: Index-03h

Bit	Name	P/W	PWR	Description
1-0	PIN10_MODE	R/W	VSB3V	00:GPI010 01: LED10 IN this mode can use REG Ox06 (bit1,0) to select LED frequency 10,11 :WD_OUT

3. Watchdog Control: Watchdog Timer Control Register - Index 36h
   Power-on default [7:0] =0000_0000b.

Table A.2: Watchdog Timer Index 36h

Bit	Name	P/W	PWR	Description
7	Reserved	RO	VSB3V	Reserved.
6	STS	WD	TMOUT	Watchdog is timeout. When the watchdog is timeout, this bit will be set to one. If set to 1, write 1 will clear this bit. Write 0, no effect
5	WD	ENABLE	R/W	Enable watchdog timer.
4	WD	PULSE	R/W	Watchdog output level or pulse. If set 0 (default), the pin of watchdog is level output, if write 1, the pin will output with a pulse.
3	WD	UNIT	R/W	Watchdog unit select. Default 0 is select sec-ondWrite 1 to select minute
2	WD HAC TIVE	RW	VSB3V	Program WD2 output level. If set to 1 and watchdog asserted, the pin will be high. If set to 0 and watchdog asserted, this pin will drive low (default)
1-0	WD_PS WIDTH	RW	VSB3V	Watchdog pulse width selection. If the pin out-put is selected to pulse mode. The pulse width can be choice. 00b- 1m second. 01b- 20m second. 10b -100m second. 11b- 4 second

4. Watchdog reset timing control: Watchdog Timer Range Register - Index 37h
   Power-on default [7:0] =0000_0000b

Table A.3: Watchdog Timer Range - Index 37h

Bit	Name	P/W	PWR	Description
7-0	WD_TIME	R/W	VSB3	Watchdog timing range from 0 - 255. The unit is either second or minute programmed by the watchdog timer control register bit

Appendix B

Pin Assignments

Sections include:

- J1 Connectors
- J2 Connectors
- USB 2.0 Ports
- VGA Connector
- COM port
- PS/2 Keyboard and Mouse Connector
- Ethernet 10/100/1000Base-T RJ-45 Connector
- Serial ATA 22P connector
- CompactFlash Interface

B.1 J1 Connectors

Table B.1: J1 Connectors

Pin	A	B	C	D	E	F
25	5V	REQ64#	ENUM#	3.3V	5V	GND
24	AD1	5V	V(I/O)	AD0	ACK64#	GND
23	3.3V	AD4	AD3	5V	AD2	GND
22	AD7	GND	3.3V	AD6	AD5	GND
21	3.3V	AD9	AD8	GND	C/BE0#	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
19	3.3V	AD15	AD14	GND	AD13	GND
18	SERR#	GND	3.3V	PAR	C/BE1#	GND
17	3.3V	N/C	N/C	GND	PERR#	GND
16	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12~14	KEY					
11	AD18	AD17	AD16	GND	C/BE2#	GND
10	AD21	GND	3.3V	AD20	AD19	GND
9	C/BE3#	N/C	AD23	GND	AD22	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
7	AD30	AD29	AD28	GND	AD27	GND
6	REQ0#	N/C	3.3V	CLK0	AD31	GND
5	N/C	N/C	PCI_RST#	GND	GNT0#	GND
4	N/C	GND	V(I/O)	N/C	N/C	GND
3	INTA	INTB	INTC	5V	INTD	GND
2	TCK	5V	TMS	TDO	TDI	GND
1	5V	-12V	TRST#	12V	5V	GND

V(I/O): PCI buffer voltage form backplane

#: Low active

B.2 J2 Connectors

Table B.2: 64-Bit J2 Connectors

Pin	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	LAN2_MD0 +	LAN2_MD2 -	LAN2_MD2 +	GND
20	CLK5	N/C	LAN2_MD0	GND	LAN2_MD3 +	GND
19	N/C	GND	LAN2_MD1 +	LAN2_MD1 -	LAN2_MD 3-	GND
18	LAN1_MD1-	LAN1_MD0 +	LAN1_MD0	GND CLK7	LAN1_MD0	GND
17	LAN1_MD1+	GND	N/C	REQ6#	GNT6#	GND
16	LAN1_MD2+	LAN1_MD2 -	N/C	GND	N/C	GND
15	LAN1_MD3-	GND	N/C	REQ5#	GNT5#	GND
14	LAN1_MD3+	VGA_HS	VGA_VS	GND	VGA_G	GND
13	VGA_DDC DAT	GND	N/C	VGA_B	VGA_R	GND
12	VGA_DDC CLK	USB_P2+	USB_P2	GND	N/C	GND
11	USB_OC2#	GND	N/C	USB_P-	USB_P+	GND
10	LAN1_LINK/ ACT#	COM_DSR 2#	COM_CTS 2#	GND	USB_OC3#	GND
9	COM_DCD2#	GND	N/C	COM_RI2#	LAN2_LIN K/ACT#	GND
8	COM_DTR2#	COM_RTS 2#	COM_RXD 2	GND	COM_TXD 2	GND
7	LAN1_SPE ED_100#	GND	N/C	GNT7#		GND
6	LAN2_SPE ED_1000#	LAN2_SPE ED_100#	REQ7#	GND	LAN1_SP EED_1000 #	GND
5	PS2_MSDAT	N/C	N/C	PS2_MSC KL	N/C	GND
4	N/C	N/C	PS2_KBCL K	GND	PS2_KBDA T	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	N/C	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

B.3 USB 2.0 Ports

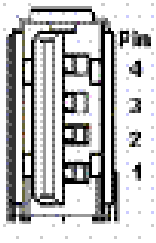


Table B.3: USB 1.1 Ports

Pin	Signal
1	VCC
2	USB_P-
3	USB_P+
4	GND

B.4 VGA Connector

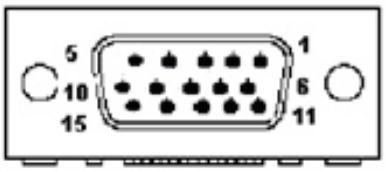


Table B.4: VGA Connector Pin Definitions

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/
12	VGA_SDA
13	HSYNC
14	VSYNC
15	VGA_SCL

B.5 COM port

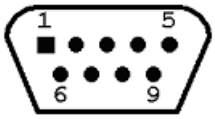


Table B.5: COM Port Pin Definitions	
Pin	**RS-232**
1	NDCD
2	NRX
3	NTX
4	NDTR
5	GND
6	NDSR
7	NRTS
8	NCTS
9	NRI

B.6 PS/2 Keyboard and Mouse Connector

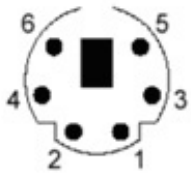


Table B.6: PS/2 Keyboard & Mouse Port Pin Definitions	
Pin	**Signal**
1	KB
2	MS
3	GND
4	VCC
5	KB
6	MS

B.7 Ethernet 10/100/1000Base-T RJ-45 Connector

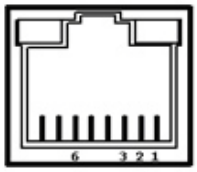


Table B.7: Ethernet Connector Definitions		
Pin	**10/100 Base-T Signal**	**1000 Base-T Signal**
1	TD+	Data0+
2	TD-	Data0-
3	RD+	Data1+
4	N/C	Data1-
5	N/C	Data2+
6	RD-	Data2-
7	N/C	Data3+
8	N/C	Data3-

B.8 Serial ATA 22P connector

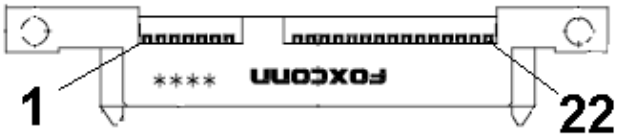


Table B.8: Serial ATA 22P connectorPin Definitions	
Pin	**Signal**
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	--
9	--
10	--
11	GND
12	GND
13	GND
14	+5V
15	+5V
16	+5V

Table B.8: Serial ATA 22P connectorPin Definitions	
17	GND
18	--
19	GND
20	--
21	--
22	--

B.9 CompactFlash Interface

The socket accepts an IDE-compatible CompactFlash memory card.

Table B.9: CompactFlash Interface Pin Definitions			
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	N/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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