

MANO110 Series AMD64 Athlon X2/Turion X2/Athlon Mini ITX Board with AMDRS780E+SB710 User's Manual



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If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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	Table	of	Contents
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Disclaimersii				
ESD Precautionsiii				
CHAPTER		1		
INTRODU	CTION	1		
1.1	Specifications	2		
1.2	Utilities Supported	4		
CHAPTER	8 2	5		
JUMPERS	AND CONNECTORS	5		
2.1	Board Dimensions and Fixing Holes	5		
2.2	Board Layout	8		
2.3	Jumper Settings	10		
	2.3.1 COM1 ~ COM4 Mode Selection Jumpers (JP1, JP	4.		
JP2, JF	P3)	. 11		
	2.3.2 CF Mode Setting Jumpers (JP5)	13		
	2.3.3 CF Power Setting Jumpers (JP5)	13		
	2.3.4 CMOS Clear Jumpers (JP6)	14		
2.4	Connectors	15		
	2.4.1 PS/2 Keyboard and Mouse Connector (CN1)	16		
	2.4.2 VGA+DVI Connector (CN2)	16		
	2.4.3 HDMI Connector (CN3)	18		
	2.4.4 COM1 Connector (CN4)	18		
	2.4.5 USBx2 + LAN Connectors (CN5, CN6)	19		
	2.4.6 Audio Phone Jack Connector (CN7)	20		
	2.4.7 Speaker Output Connector (CN10)	20		
	2.4.8 ATX 12V Power Connector (CN13)	20		
	2.4.9 CPU Fan Connector (CN14)	21		
	2.4.10 SATA Connectors (CN15, CN16)	21		
	2.4.11 System Fan Connector (CN17)	21		
	2.4.12 USB Port5 ~ Port8 Connectors (CN19, CN20)	22		
(0) 10 0	2.4.13 COM2, COM3 and COM4 Connectors			
(CN30,	,CN24,CN25,)	23		
	2.4.14 SMBUS Connector (CN26)	23		
	2.4.15 Mini PCIe slot (CN27)	24		
	2.4.16 ATX Power Connector (CN28)	26		
	2.4.17 DIO Connector (CN29)	27		
	2.4.18 Flat Panel Bezel Connector (CN31)	28		
	2.4.19 UF Connector (CN32)	29		
CHAPTER		31		
HARDWA	RE DESCRIPTION	31		
3.1	Microprocessors	31		
3.2	BIOS	31		
3.3	System Memory	31		

3.4	I/O Port Address Map		
3.5	Interrupt Controller		
CHAI	PTER 4		
AMI E	BIOS SETUP UTILITY		
4.1	Starting		
4.2	Navigation Keys		
4.3	Main Menu		
4.4	Advanced Menu		
	CPU Configuration		
	Advanced Chipset Settings		
	Onboard Device Configuration	41	
	PCI/PnP Settings		
4.5	Power ACPI Settings		
	Power Management		
	Hardware Health Configuration		
4.6	Boot Menu	49	
	Boot Device Priority	50	
	Hard Disk Drives	51	
	Security Settings		
	Boot Settings Configuration	53	
4.7	Exit Menu	54	
APPE	ENDIX A	56	
WAT	WATCHDOG TIMER		
APPE	APPENDIX B62		
DIGI	ΓΑL Ι/Ο	62	

v

CHAPTER 1

INTRODUCTION



The MANO110 is Mini ITX board with AMD Socket AM2/AM2+, support AMD AthIon[™] X2/Turion[™] X2/AthIon[™] Processors. It integrates AMD RS780E with ATI Radeon[™] HD3200 Graphics and SB710 that deliver outstanding system performance through highbandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 200-pin unbuffered DDR2 SO-DIMM sockets with maximum memory capacity up to 4GB. It also features Dual Giga-bit Ethernet, two SATA2 for Serial ATA hard drives at maximum transfer rate up to 300MB/sec, eight USB 2.0 high speed compliant, built-in high definition audio codec that can achieve the best stability and reliability for industrial applications. It provides one PCI Express x 16 slot(8 lanes) which can support AMD Hybrid CrossFire technology. . Additionally, it provides you with unique embedded features, such as 4 serial ports (COM ports) and Mini ITX form factor that applies an extensive array of PC peripherals.

1.1 Specifications

- CPU
 - AMD AthlonTM X2/TurionTM X2/AthlonTM Processors
- System Chipset
 - AMD RS780E & SB710
- CPU Socket
 - Socket AM2/AM2+
- BIOS
 - AMI BIOS with Axiomtek standard features
- System Memory
 - Two x 200-pin unbuffered DDR2 SO-DIMM sockets
 - Maximum to 4GB memory capacity
- Onboard Multi I/O
 - Controller: Fintek F71863/F81216
 - Four Serial Ports (RS-232 ports)

• USB Interface

- Eight USB ports with fuse protection and complies with USB Spec. Rev. 2.0
- Graphics
 - ATI RadeonTM HD3200 Graphics: one HDMI, one DVI-D and one VGA outputs.
 - Display mode: (1)HDMI + DVI-D (2)HDMI + VGA (3)
 VGA + DVI-D

When connecting HDMI + DVI-D + VGA at the same time, the default dual view displays will be HDMI + DVI-D.

- Watchdog Timer
 - 1~255 seconds; 255 levels
- Expansion Interface
 - One PCI Express x 16 slot(8 lanes)

- Ethernet
 - Two RTL8111D Giga-bit Ethernet controllers via PCIe x1
- Audio
 - HD Audio compliant (with MIC-in/Line-in/line-out & Speaker) via ALC888
 - Amplifier: TPA3005D2 Stereo 6 Watt
- **Power Management** •
 - ACPI (Advanced Configuration and Power Interface)
- Form Factor •
 - Mini ITX form factor



NOTE All specifications and images are subject to change without notice.

Introduction

1.2 Utilities Supported

- Chipset Driver
- LAN Driver
- High Definition Audio Codecs Driver
- HDMI Audio Codecs Driver



Under Microsoft Windows XP operating systems the AMD Chipset Driver requires Microsoft .NET Framework prior to installation. The AMD Chipset Driver is an application that allows you to control the configuration of your AMD product. You can verify that you have the .NET Framework by checking in the Add/Remove Programs list in the Control Panel. If the .NET Framework is not listed, please download, and install before proceeding. For more information, please visit Microsoft .NET Framework. MANO110 Series Mini ITX Board User's Manual

CHAPTER 2

JUMPERS AND CONNECTORS 2.1 Board Dimensions and Fixing Holes







Solder Side

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Rear I/O

2.2 Board Layout



Component Side

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Solder Side

2.3 Jumper Settings

Proper jumper settings configure the **MANO110** to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Jumper	Default Setting		Jumper Setting
104	COM1 Mode	CN4 Pin 1: DCD	Short 3-5
JP1	Selection	CN4 Pin 9: RI	Short 4-6
	COM3 Mode	CN24 Pin 1: DCD	Short 3-5
JP2	Selection	CN24Pin 8: RI	Short 4-6
JP3	COM4 Mode Selection	CN25 Pin 1: DCD	Short 3-5
		CN25 Pin 8: RI	Short 4-6
104	COM2 Mode	CN30 Pin 1: DCD	Short 3-5
JP4	Selection	CN30 Pin 9: RI	Short 4-6
IDE	CF Mode Select : Slave		Short 1-3
JP5	CF Power Select: 5V		Short 2-4
JP6	Clear CMOS Setting : Normal		Short 2-4

Description	Function	Jumper Setting
COM1 (JP1)	Pin 1=5V	2 4 6 0 0 0 1 3 5
	*Pin 1=DCD (Default)	2 4 6 1 3 5
	Pin 9=12V	2 4 6 D D D D D D D D
	*Pin 9=RI (Default)	2 4 6 D D D D D D D D
COM2 (JP4)	Pin 1=5V	6
	*Pin 1=DCD (Default)	6 • • 5 4 • • 3 2 • • 1
	Pin 9=12V	6 🗆 🗆 5 4 🗖 🗖 3 2 🗖 🗖 1
	*Pin 9=RI (Default)	6 🗆 🗆 5 4 🗖 🗆 3 2 🗖 🗖 1

• 2.3.1 COM1 ~ COM4 Mode Selection Jumpers (JP1, JP4, JP2, JP3)

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Description	Function	Jumper Setting
COM3 (JP2)	Pin 1=5V	1 🗆 2 3 🔲 4 5 🗌 6
	*Pin 1=DCD (Default)	1
	Pin 8=12V	1
	*Pin 8=RI (Default)	1

Description	Function	Jumper Setting
COM4 (JP3)	Pin 1=5∨	1 🗆 🗆 2 3 🗆 4 5 🗆 🗆 6
	*Pin 1=DCD (Default)	1
	Pin 8=12∨	1 🗆 🛛 2 3 🗆 🗘 4 5 🗆 🗖 6
	.*Pin 8=Rl (Default)	1 🗆 🗆 2 3 🗆 🗖 4 5 🗆 🗖 6

Description	Function	Jumper Setting
CF Mode Select	Slave(Default)	2 4 6 D D D D 1 3 5
	Master	2 4 6 D D D D 1 3 5

2.3.2 CF Mode Setting Jumpers (JP5)

•	2.3.3	CF Power Setting Jumpers (JP5)
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Description	Function	Jumper Setting
CF Power Select	+5V(Default)	2 4 6 1 3 5
	+3.3V	2 4 6 D D D D D D D D

• 2.3.4 CMOS Clear Jumpers (JP6)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Description	Function	Jumper Setting
CMOS Clear	Normal (Default)	2 4 6 1 3 5
	Clear CMOS	2 4 6 1 3 5

Description	Connector
PS/2 Keyboard and Mouse Connector	CN1
DVI and VGA Connector	CN2
HDMI Connector	CN3
COM1 Connector	CN4
LAN1, USB Port1 and USB Port2 Connector	CN5
LAN2, USB Port2 and USB Port4 Connector	CN6
Audio Connector	CN7
Reserved.	CN8
Reserved	CN9
Speaker Output Connector	CN10
Reserved	CN11
PCIex16 slot, Support up to PCIex8	CN12
ATX12V Power Connector	CN13
CPU FAN Connector	CN14
SATA Port1 Connector	CN15
SATA Port2 Connector	CN16
System FAN Connector	CN17
Reserved	CN18
USB Port5 and USB Port6 Connector	CN19
USB Port7 and USB Port8 Connector	CN20
Reserved	CN21
DDRII SO-DIMM Solt1	CN22
DDRII SO-DIMM Slot2	CN23
COM3 Connector	CN24
COM4 Connector	CN25
SMBus Connector	CN26
Mini PCIe slot	CN27
ATX Power Connector	CN28
DIO Connector	CN29
COM2 Connector	CN30
Front Panel Connector	CN31
CF Connector	CN32

2.4 Connectors

• 2.4.1 PS/2 Keyboard and Mouse Connector (CN1)

The board supports one PS/2 keyboard and Mouse interface.

Pin	Signal	Pin	Signal	
1	K/B Data	7	M/S Data	
2	NC	8	NC	
3	GND	9	GND	
4	VCC	10	VCC	
5	K/B CLK	11	M/S CLK	
6	NC	12	NC	

• 2.4.2 VGA+DVI Connector (CN2)

CN2 is a double deck VGA & DVI connector. **CN2A** is a standard 15-pin DB15 connector commonly used for the CRT VGA display. **CN2B** is a DVI connector for the digital visual interface display.

Pin	Signal	Pin	Signal	Pin	Signal	
1	Red	2	Green	3	Blue	
4	N/A	5	GND	6	AGND	
7	AGND	8	AGND	9	N/A	
10	GND	11	N/A	12	DDC DAT	
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK	
	$\begin{array}{c c c c c c c c c c c c c c c c c c c $					

Pin	Signal	Pin	Signal	
1	TX2-	2	TX2+	
3	Ground	4	CRT_SPD_CLK	
5	CRT_SPD DATA	6	DVI_SPD_CLK	
7	DVI_SPD DATA	8	CRT-VSYNC	
9	TX1-	10	TX1+	
11	Ground	12	NC	
13	NC	14	VGAVCC	
15	Ground	16	FPDETECT	
17	TX0-	18	TX0+	
19	Ground	20	NC	
21	NC	22	Ground	
23	TXC+	24	TXC-	
C1	CRT-RED	C2	CRT-GREEN	
C3	CRT-BLUE	C4	CRT-HSYNC	
C5	VGAGND			
	CN2B(E	OVI-D+C	RT2)	
$\begin{array}{c cccc} 1 & 8 & C1 & C2 \\ \hline \\ $				

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Pin	Signal	Pin	Signal	
1	TMDS Data2+	2	TMDS Data2 Shield	
3	TMDS Data2-	4	TMDS Data1+	
5	TMDS Data1 Shield	6	TMDS Data1-	
7	TMDS Data0+	8	TMDS Data0 Shield	
9	TMDS Data0-	10	TMDS Clock+	
11	TMDS Clock Shield	12	TMDS Clock-	
13	CEC	14	Reserved (N.C. on device)	
15	SCL	16	SDA	
17	DDC/CEC Ground	18	+5 V Power	
19	Hot Plug Detect	20		
HDMI Connector (CN3)				

• 2.4.3 HDMI Connector (CN3)

• 2.4.4 COM1 Connector (CN4)

Pin	Signal	
1	DCD, Data carrier detect	
2	RXD, Receive data	
3	TXD, Transmit data	COM1(CN4)
4	DTR, Data terminal ready	10000
5	GND, ground	
6	DSR, Data set ready	
7	RTS, Request to send	
8	CTS, Clear to send	
9	RI, Ring indicator	

• 2.4.5 USBx2 + LAN Connectors (CN5, CN6)

The board supports two three-layer USB & LAN connectors, CN5 and CN6. The upper CN5B and CN6B ports are for LAN. The board is equipped with a high performance Plug and Play Ethernet interface fully compliant with the IEEE 802.3 standard. To connect the board to 10-Base-T, 100-Base-T or 1000 Base-T hub, just plug one end of cable to the Ethernet connector and connect the other end (phone jack) to a 10-Base-T, 100-Base-T or 1000 Base-T hub. The lower double-deck CN5A and CN6A are USB 2.0 ports compliant (480Mbps) that can be connected to any USB peripherals, such as keyboard, mouse, and scanner.

Pin	Signal	
1	LAN1_MDI0+	
2	LAN1_MDI0-	CN5B . CN6B
3	LAN1_MDI1+	
4	LAN1_MDI1-	
5	LAN1_MDI2+	12245678
6	LAN1_MDI2-	
7	LAN1_MDI3+	
8	LAN1_MDI3-	
Α	100 LAN LED(Green)/	
	1000 LAN LED(Orange)	
В	Active LED	

Pin	Signal	CN5A, CN6A
1, 5	USB Vcc	
2, 6	USB -	
3, 7	USB +	
4, 8	USB GND	

2.4.6 Audio Phone Jack Connector (CN7)



• 2.4.7 Speaker Output Connector (CN10)

1	negative output for left channel				
2	positive output for left channel	4			1
3	negative output for right channel	0	0	0	
4	positive output for right channel				

• 2.4.8 ATX 12V Power Connector (CN13)

Connect the power cable to $\ensuremath{\text{ATX1}}$ for +12V ATX power supply.

Pin	Signal	
1	GND	
2	GND	
3	+12V	1 2
4	+12V	

• 2.4.9 CPU Fan Connector (CN14)

FAN1 is a CPU fan connector. The fan connector on MANO110 provides power to the fan.

Pin #	Signal Name	
1	Ground	0000
2	+12V	4 1
3	Rotation detection	CN14
4	NC	01114

• 2.4.10 SATA Connectors (CN15, CN16)

These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal	SATA(CN15,CN16)
1	GND	
2	SATA_TX+	
3	SATA_TX-	
4	GND	1 7
5	SATA_RX-	
6	SATA RX+	
7	GND	

• 2.4.11 System Fan Connector (CN17)

Pin	Signal	CN17
1	GND	
2	+12V	
3	Sensor	1 3

MANO110 Series Mini ITX Board User's Manual

• 2.4.12 USB Port5 ~ Port8 Connectors (CN19, CN20)

These Universal Serial Bus (USB) connectors on this board are for installing versatile USB interface peripherals. These are 10-pin standard USB connectors.

Pin	Signal	Pin	Signal	
1	+5V	2	+5V	USB(CN19,CN20)
3	USB-	4	USB-	
5	USB+	6	USB+	
7	Ground (GND)	8	Ground (GND)	1 3 5 7 9
9	Key	10	Ground (GND)	

• 2.4.13 COM2, COM3 and COM4 Connectors (CN30,CN24,CN25,)

Please refer to the RS-232 pin assignment as listed below:

Pin	Signal	Pin	Signal	
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)	00110/0/4
3	Receive Data (RXD)	4	Request to Send (RTS)	2 4 6 8 10
5	Transmit Data (TXD)	6	Clear to Send (CTS)	■ □ □ □ □ 1 3 5 7 9
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)	
9	Ground (GND)	10	Кеу	

• 2.4.14 SMBUS Connector (CN26)

Connector SMBUS1 is for SMBUS interface support.

Pin	Signal	SMBUS(CN26)
1	CLOCK	3 🗖
2	DATA	
3	GND	1

• 2.4.15 Mini PCIe slot (CN27)

CN27 is a PCI Express Mini Card connector with support for a PCI Express x1 link and a USB 2.0 link. A PCI Express Mini Card can be applied to either PCI Express or USB 2.0. The USB 2.0 support will be helpful during the transition to PCI Express, because peripheral vendors will need time to design their chipsets to have the PCI Express function. During the transition, PCI Express Mini Cards can be quickly implemented by using USB 2.0.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3V
3	N.C	4	GND
5	N.C	6	+1.5V
7	GND	8	N.C
9	GND	10	N.C
11	CLK-	12	N.C
13	CLK+	14	N.C
15	GND	16	N.C
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	PERST#
23	PERN3	24	+3.3VSB
25	PERP3	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETN3	32	SMB_DATA
33	PETP3	34	GND
35	GND	36	USB_D7-
37	N.C	38	USB_D7+
39	N.C	40	GND
41	N.C	42	N.C
43	N.C	44	N.C



MANO110 Series Mini ITX Board User's Manual

• 2.4.16 ATX Power Connector (CN28)

Steady and sufficient power can be supplied to all components on the board through the power connector. Please make sure all components and devices are properly installed before connecting the power connector. If you use a 20-pin ATX power supply, please remove the small cover from the power connector before plugging in the power cord; otherwise, please do not remove it.

Pin	Signal	Pin	Signal		
1	3.3V	2	3.3V		
3	GND	4	5V		
5	GND	6	5V		
7	GND	8	PW_OK		
9	5V_SB	10	12V		
11	3.3V	12	-12V		
13	GND	14	PS_ON		
15	GND	16	GND		
17	GND	18	-5V		
19	5V	20	5V		
	CN28				
2 1 1 1 1 1 1 1 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1					

• 2.4.17 DIO Connector (CN29)

The board is equipped an 8-channel digital I/O connector **CN29** that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Signal	Pin	Signal	
1	DIO0	2	DIO4	DIO(CN29)
3	DIO1	4	DIO5	97531
5	DIO2	6	DIO6	
7	DIO3	8	DIO7	10 8 6 4 2
9	GND	10	+5V	

• 2.4.18 Flat Panel Bezel Connector (CN31)



Power LED

This 3-pin connector named as Pin 1, 3 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 3, Pin 5 as -. The Power LED lights up when the system is powered ON.

External Speaker and Internal Buzzer Connector

Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 6 (-).

ATX Power On/Off Button

This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

System Reset Switch

Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

HDD Activity LED

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.19 CF Connector (CN32) The board is equipped with a CompactFlashTM disk type-II socket on the solder side to support an IDE interface CompactFlashTM disk card with DMA mode supported. The socket is especially designed to avoid incorrect installation of the CompactFlashTM disk card. When installing or removing the CompactFlashTM disk card, please make sure the system power is off. The CompactFlashTM disk card is defaulted as the C: or D: disk drive in your PC system.

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND





CHAPTER 3

HARDWARE DESCRIPTION

3.1 Microprocessors

The MANO110 Series supports AMD AthlonTM X2/TurionTM X2/AthlonTM Processors' which make your system operated under Windows7 and Linux environments. The system performance depends on the microprocessor. Make sure all correct settings are arranged for your installed microprocessor to prevent the CPU from damages.

3.2 BIOS

The MANO110 Series uses American Megatrends BIOS with 8Mbit SPI Flash, DMI, Plug and Play.

3.3 System Memory

The MANO110 Series industrial CPU card supports two 200-pin unbuffered DDR2 SO-DIMM sockets for a maximum memory of 4GB DDR2 SDRAMs. The memory module can come in sizes of 64MB, 128MB, 256MB, 512MB, 1GB and 2GB.

3.4 I/O Port Address Map

There are total 1KB port addresses available for assignment to other devices via I/O expansion cards.

Address	Devices	
000-01F	DMA controller #1	
020-02D 024-025 028-029 02C-02D	Interrupt controller #1	
02E-02F	Forwarded to LPC(LPC Super I/O 2)	
030-031 034-035 038-039 03C-03D	Interrupt controller #2	
040-043 050-053	Timer/Counter (8254)	
04E-04F	Forwarded to LPC(LPC Super I/O 1)	
060-06F	Forwarded to LPC(Microcontroller for Keyboard Controller)	
070-077	Real time clock, NMI	
080-091 DMA page register		
092	Processor I/F(Reset Generator)	
093-09F	DMA page register	
0A0-0BF	Interrupt controller #2	
0C0-0DF	DMA controller #2	
0F0	Processor I/F	
0F8-0FF	Math processor	
170-177	Forward to CF(IDE) Controler)	
1F0-1F7	Forward to SATA Controler)	
300-31F	Prototype card	
378-37F	Parallel Port (LPT)	
380-38F	SDLC #2	
3A0-3AF	SDLC #1	
3B0-3BF	MDA video card	
3C0-3CF	EGA card	

MANO110 Series Mini ITX Board User's Manual

Address	Devices
3D0-3DF	CGA card
3F8-3FF	Serial port #1 (COM1)
3E8-3EF	Serial port #3 (COM3)
2F8-2FF	Serial port #2 (COM2)
2E8-2EF	Serial port #4 (COM4)

3.5 Interrupt Controller

The **MANO110 Series** is a 100% PC compatible control board. It consists of 16 interrupt request lines, and four out of them can be programmable. The mapping list of the 16 interrupt request lines is shown as the following table.

IRQ	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	PCI Device Share
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	ACPI Controller
IRQ10	Serial port #3
IRQ11	Serial port #4
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	SATA channe

CHAPTER 4

AMI BIOS SETUP UTILITY

This chapter provides users with detailed description how to set up basic system configuration through the AMIBIOS8 BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

- 1. Turn on the computer and press the key immediately.
- 2. After you press the <Delete> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

4.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include <F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, and so on.



Note Some of navigation keys differ from one screen to another.

← Left/Right	The Left and Right <arrow> keys allow you to select a setup screen.</arrow>
↑ ↓ Up/Down	The Up and Down <arrow> keys allow you to select a setup screen or sub-screen.</arrow>
+– Plus/Minus	The Plus and Minus <arrow> keys allow you to change the field value of a particular setup item.</arrow>
Tab	The <tab> key allows you to select setup fields.</tab>
F1	The <f1> key allows you to display the General Help screen.</f1>
F10	The <f10> key allows you to save any changes you have made and exit Setup. Press the <f10> key to save your changes.</f10></f10>

MANO110 Series Mini ITX Board User's Manual

Esc	The <esc> key allows you to discard any changes you have made and exit the Setup. Press the <esc> key to exit the setup without saving your changes.</esc></esc>
Enter	The <enter> key allows you to display or change the setup option listed for a particular setup item. The <enter> key can also allow you to display the setup sub- screens.</enter></enter>

4.3 Main Menu

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

	BIOS SETUP UTILITY	
Main Advanced Power	Boot Exit	
System Overview		Use [ENTER], [TAB]
System Time System Date • CF(IDE) Master • CF(IDE) Slave • SATA1 • SATA2	[14:51:57] [Mon 05/17/2010] : [Not Detected] : [Not Detected] : [Not Detected] : [Not Detected]	or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time.
System Information		
		 ← Select Screen ↑↓ Select Item ← Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
-02 61 (0) 0		The Tree

• System Time/Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

• CF (IDE) Master/Slave

Select one of the hard disk drives to configure CF (IDE) devices installed in the system by pressing <Enter> for more options.

• SATA1/SATA2

Select one of the hard disk drives to configure SATA devices installed in the system by pressing <Enter> for more options.

• System Information

Display system information. installed in the system by pressing <Enter> for more information.

4.4 Advanced Menu

The Advanced menu allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- CPU Configuration
- Chipset
- Onboard Device Configuration
- USBConfiguration
- PCIPnP

For items marked with "▶", please press <Enter> for more options.

BIOS SETUP UTILITY	
Main <mark>Advanced Power Boot Exit</mark>	
Advanced Settings	Configure CPU.
WARNING: Setting wrong values in below sections may cause system to malfunction.	
▶ CPU Configuration	
► Chipset	
Unboard Device Configuration	
► USB Configuration	
▶ PCIPNP	
	← Select Screen
	14 Select Item
	Enter Go to Sub Screen
	F1 General Help
	F10 Save and Exit
	ESC Exit
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CPU Configuration

This screen shows the CPU Configuration.

BIOS SETUP UTIL	ITY
Advanced	
CPU Configuration	
Module Version: 13.63 AGESA Version:3.5.4.0 Physical Count : 1 Logical Count : 2	
AMD Athlom (tm) 64 X2 Dual Core Processor 4 Revision : G2 Cache L1 : 256KB Cache L2 : 1024KB Cache L3 : N/A Speed : 2200MHZ , NB C1K : N/A Current FSB Multiplier : 11x Maximum FSB Multiplier : 11x Able to Change Freq . : Yes uCode Patch Level : None Required	200+ Select Screen
v02.61 (C) Copyright 1985-2006, Ame	rican Megatrends, Inc.

Advanced Advanced Chipset Settings WARMING: Setting wrong values in below sections may cause system to malfunction. Nor thBridge2 Configuration Image: Nor thBridge2 Configuration Image: Select Screen Image: Select Sc

Advanced Chipset Settings

AMI BIOS Setup Utility

MANO110 Series Mini ITX Board User's Manual

Advanced		
Internal Graphics Configurat	tion	Options
Primary Video Controller UMA Frame Buffer Size	[IGFX-GFX0-GPP-PCI] [Auto]	GFX0-GPP-IGFX-PCI GPP-GFX0-IGFX-PCI PCI-GFX0-GPD-IGFX
Surround View	[Auto]	IGFX-GFX0-GPP-PCI
		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit
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• Primary Video Controller.

IGFX-GFX0-GPP-PCI: Display from onboard VGA first. GFX0-GPP-IGFX-PCI: Display from external PCIe VGA card first.

• UMA Frame Buffer Size.

Frame buffer size is the total amount of system memory allocated solely for the onboard graphics controller. MS-DOS, for example, will use only this memory for display. Options are: Auto (default), 128MB, 256MB, 512MB.

• FB Location.

The optional settings are: Below 4G; Above 4G. FB Location

Onboard Device Configuration

	BIOS SETUP UTILITY	
Advanced		
Onboard Device Configurati	on	Options
Onboard LAN Boot	[Disabled]	Enabled Disabled
Configure F71863 F81216D I Serial Port1 Address Serial Port2 Address Serial Port3 Address Serial Port3 IRQ Serial Port4 Address Serial Port4 IRQ	08210 Chipset [3F8/IRQ4] [2F8/IRQ3] [3E8] [10] [2E8] [11]	 Select Screen Select Item Change Option General Help Save and Exit ESC Exit
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• Onboard LAN Boot.

Use these items to enable or disable the Boot ROM function of the onboard LAN chip when the system boots up.

• HD Audio Azalia Device.

Use these items to enable or disable the audio function of the onboard audio chip when the system boots up.

Serial Port1 Address

This item specifies the base I/O port address and Interrupt Request address of serial port 1. The Optimal setting is *3F8/IRQ4*.

• Serial Port2 Address

This item specifies the base I/O port address and Interrupt Request address of serial port 2. The Optimal setting is *2F8/IRQ3*.

• Serial Port3 Address

This item specifies the base I/O port address. Request address of serial port 3. The Optimal setting is *3E8*

• Serial Port3 IRQ

This item specifies the IRQ used by the serial port 3.

• Serial Port4 Address

This item specifies the base I/O port address. Request address of serial port 4. The Optimal setting is *2E8*.

• Serial Port4 IRQ

This item specifies the IRQ used by the serial port 4.

USB Configuration

You can select options for the USB Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

USB Configuration Enables support for legacy USB. AUTO option disables legacy USB. AUTO option disables legacy support if no USB Devices Enabled : 1 Keyboard, 1 Mouse, 1 Drive Legacy USB Support Enabled1 USB 2.0 Controller Mode HiSpeed1 BIOS EHCI Hand-Off Enabled1 Legacy USB1.1 HC Support Enabled1 VSB 2.0 Controller Mode HiSpeed1		
Module Version - 2.24.5-13.4Tegacy USB. HUTU option disables legacy support if no USB devices are connected.USB Devices Enabled : 1 Keyboard, 1 Mouse, 1 DriveUSB devices are connected.Legacy USB Support[Enabled] USB 2.0 Controller ModeBIOS EHCI Hand-Off[Enabled] Legacy USB1.1 HC Support		
USB Devices Enabled : no USB devices are 1 Keyboard, 1 Mouse, 1 Drive no USB devices are Legacy USB Support [Enabled] USB 2.0 Controller Mode [HiSpeed] BIOS EHCI Hand-Off [Enabled] Legacy USB1.1 HC Support [Enabled]		
LegacyUSBSupport[Enabled]USB2.0ControllerMode[HiSpeed]BIOSEHCIHand-Off[Enabled]LegacyUSB1.1HCSupport[Enabled]		
► USB Mass Storage Device Configuration ★ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit		
 v02.61 (C) Copyright 1985-2006, American Megatrends, Inc. Legacyu USB Support Use this item to enable or disable support for USB device on 		
legacy operating system. The default setting is <i>Enabled</i> .		
 USB 2.0 Controller Mode Use this item to configure the USB 2.0 controller. The default setting is <i>FullSpeed</i>. 		
BIOS EHCI Hand-Off		
without an EHCI hand-off feature. The default setting is Enabled.		
Legacy USB 1.1 HC Support		
Use this item to enable or disable support for USB 1.1 dev The default setting is <i>Enabled</i> .		

I

PCI/PnP Settings

	BIOS SETUP UTILITY	
Advanced		
Advanced PCI/PnP S	ettings	Clear NURAM during
WARNING: Setting w may cause	rong values in below sections system to malfunction.	
Clear NURAM	[No]	
Plug & Play O/S	[No]	
IRQ3 IRQ4 IRQ5 IRQ7 IRQ9 IRQ10 IRQ10 IRQ11 IRQ14 IRQ15 DMA Channel 0	[Available] [Available] [Available] [Available] [Available] [Available] [Available] [Available] [Available]	 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit
DMA Channel 1	[Available]	'
v02.61 (C)Copyright 1985-2006, American Me	egatrends, Inc.

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INFAINO I TO	00103		Doura	030/3	manuai

Advanced		
D1 9 D1 0/9	DI-1	A Ring of monomy block
riug α riag 0/5	ruoj	
7702		to reserve for legacy
IKU3	lHvailableJ	ISH devices.
1KU4	lAvailablel	
IRQ5	[Ava i lable]	
IRQ7	[Available]	
IRQ9	[Available]	
IRQ10	[Ava i lable]	
IRQ11	[Available]	
IRQ14	[Available]	
IRQ15	[Available]	
DMA Channel 0	[Available]	← Select Screen
DMA Channel 1	[Available]	↑↓ Select Item
DMA Channel 3	[Available]	+- Change Option
DMA Channel 5	[Available]	F1 General Help
DMA Channel 6	[Available]	F10 Save and Exit
DMA Channel 7	[Available]	ESC Exit
Reserved Memory Size	[Disabled]	- ↓
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• Clear NVRAM

Use this item to clear the data in the NVRAM (CMOS). Here are the options for your selection, *No* and *Yes*.

• Plug & Play O/S

When the setting is No, Use this item to configure all the devices in the system. When the setting is Yes and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. The default setting is *No*.

• IRQ3/4/5/7/9/10/11/14/15

These items will allow you to assign each system interrupt a type, depending on the type of device using the interrupt. The option "Available" means the IRQ is going to assign automatically. Here are the options for your selection, *Available* and *Reserved*.

DMA Channel 0/1/3/5/6/7

These items will allow you to assign each DMA channel a type, depending on the type of device using the channel. The option "Available" means the channel is going to assign automatically. Here are the options for your selection, *Available* and *Reserved*.

Reserved Memory Size

This item allows BIOS to reserve certain memory size for specific PCI device.

4.5 Power ACPI Settings

	BIOS SETUP UTILITY	
Main Advanced <mark>Power</mark>	Boot Exit	
ACPI Settings Suspend mode Repost Video on S3 Resume ACPI Version Features ACPI APIC support > Power Management > Hardware Health Configurat	[Auto] [No] [ACPI v1.0] [Enabled] tion	Select the ACPI state used for System Suspend.
		 Select Screen Select Item Change Option General Help Save and Exit ESC Exit
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• Suspend mode

Use this item to select the ACPI state used for System Suspend. The optional settings are: S1 (POS); S3 (STR).

- **Repost Video on S3 Resume** This feature allows you to repost video on S3 resume.
- **ACPI Version Features** Set this value to allow or prevent the system to be complaint with the ACPI version.

• ACPI APIC support

When set to disable, the system disable the Advanced Configuration and Power Interface (ACPI) support in the Advanced Programmable Interrupt Controller (APIC). When set to enable, the ACPI APIC table pointer is included in the RSDT pointer list.

Power Management

B	IOS SETUP UTILITY	
Power		
Power Management		Select Power button
Power Button Mode	[On/Off]	Tunctionarity.
ADVANCED RESUME EVENT CONTROLS		
Keyboard PowerOn Mouse PowerOn Restore on AC Power Loss Resume On Ring RTC Resume	(Disabled) (Disabled) (Off) (Disabled) (Disabled)	
		 Select Screen Select Item Change Option General Help Save and Exit ESC Exit
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• Power Button Mode

This option specifies how the externally mounted power button on the front of the computer chassis is used. The default setting is On/Off

• Keyboard PowerOn

Keyboard set to support power on function.

Mouse PowerOn

Mouse set to support power on function.

• Restore on AC Power Loss

This item can control how the PC will behave once power is restored following a power outage, or other unexpected shutdown.

Resume On Ring

This item enables or disables the function of Resume On Ring that resumes the system through incoming calls.

RTC Resume

You can set "Resume On RTC Alarm" item to enabled and key in Data/time to power on system.

Hardware Health Configuration

BIOS SETUP UTILITY			
en e			
Hardware Health Configu	ration	Fan confiruration mode setting	
CPU Temperature	:38°C/100°F		
CPUFan Speed	:2068 RPM		
SYSFan Speed	:N/A		
VCORE VLDT VDDA VDIMM 3.3VCC VSB VBAT CPUFan Mode Setting Temperature 1 Limit of Temperature 1 Limit of	:1.232 V :1.168 V :2.252 V :1.787 V :3.360 V :3.376 V :3.280 V (Enabled] Highest [060] Lowest [045]	 ← Select Screen 14 Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit 	
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- Cuban Mode Setting (Smart Fan) When set to disable, the CPU FAN are always on.
- **Temperature 1 Limit of Highest** Set the temperature limit for CPU FAN high speed.
- Temperature 1 Limit of Lowest Set the temperature limit to for CPU FAN low speed.

4.6 Boot Menu

The Boot menu allows users to change boot options of the system. You can select any of the items in the left frame of the screen to go to the sub menus:

- Boot Device Priority
- Hard Disk Drives
- Security
- Boot Settings Configuration

For items marked with "▶", please press <Enter> for more options.

BIOS SETUP UTILITY			
Main Advanced Power <mark>Boot</mark> Exit			
Boot Settings Boot Device Priority Hard Disk Drives Security Boot Settings Configuration	Specifies the Boot Device Priority sequence.		
	 ✓ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit 		
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Boot Device Priority

The Boot Device Priority screen specifies the order in which the system checks for the device to boot from the available devices.

BIOS SETUP UTILITY			
Boot Device Priority Ist Boot Device [CD/DVD:3M-ASUS DVD] 2st Boot Device [SATA:4M-ST380817AS]		Specifies the boot sequence from the available devices. A device enclosed in parenthesis has been disabled in the corresponding type	
		 ← Select Screen ↑ ↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit 	
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Hard Disk Drives

Use this screen to view the hard disk drives in the system.

BIOS SETUP UTILITY			
Hard Disk Drives		Specifies the boot	
1st Drive	[SATA:4M-ST380817AS]	sequence from the available devices.	
		← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
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AMI BIOS Setup Utility

• Security Settings

Boot Security Settings Install or Change the password. Supervisor Password :Not Installed - Change Supervisor Password + Security Settings - · Security Settings · Security Setting	BIOS SETUP UTILITY		
Security Settings Install or Change the password. Supervisor Password :Not Installed - Change Supervisor Password - * Select Screen ti Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit	Boot		
Supervisor Password :Not Installed Change Supervisor Password Change Supervisor Pass	Security Settings	Install or Change the	
Change Supervisor Password ← Select Screen t↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit	Supervisor Password :Not Installed	haaamor a .	
 ← Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit 	Change Supervisor Password		
 ← Select Screen ↑4 Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit 			
 ← Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit 			
← Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit			
Enter Change F1 General Help F10 Save and Exit ESC Exit		← Select Screen ↑↓ Select Item	
F10 Save and Exit ESC Exit		Enter Change F1 General Help	
		F10 Save and Exit ESC Exit	
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• Change Supervisor Password

Select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

BIOS SETUP UTILITY Boot Boot Settings Configuration Disabled: Displays normal POST messages. Enabled: Displays OEM Quiet Boot Logo instead of POST AddOn ROM Display Mode [Force BIOS] messages. Bootup Num-Lock [ON] Wait For 'F1' If Error [Enabled] Select Screen ÷ ţ1 Select Item Change Option +--**F1** General Help Save and Exit F10 ESC Exit v02.61 (C)Copyright 1985-2006, American Megatrends, Inc

Boot Settings Configuration

Quick Boot

Enabling this item lets the BIOS skip some power on self tests (POST).The default setting is *Enabled*.

AddOn ROM Display Mode

This item selects the display mode for option ROM. The default setting is *Force BIOS*.

Boot Num-Lock

Use this item to select the power-on state for the NumLock. The default setting is *On*.

• Wait For 'F1' If Error

If this item is enabled, the system waits for the F1 key to be pressed when error occurs. The default setting is *Enabled*.

4.7 Exit Menu

The Exit menu allows users to load your system configuration with optimal or failsafe default values.

BIOS SETUP UTILITY	
Main Advanced Power Boot <mark>Exit</mark>	
Rain Housinged Power Boot Exit Exit Options	Exit system setup after saving the changes. F10 key can be used for this operation. ← Select Screen 14 Select Item Enter Go to Sub Screen F1 General Help E10 Supe and Exit
uA2.61 (C)Comuright 1985-2006, American Meg	ESC Exit

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select *Save Changes and Exit* from the Exit menu and press <Enter>. Select Ok to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration. Select *Discard Changes and Exit* from the Exit menu and press <Enter>. Select Ok to discard changes and exit.

• Discard Changes

Use this item to abandon all changes.

• Load Optimal Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Setup options if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

APPENDIX A

WATCHDOG TIMER

A1 Watchdog Timer

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

A1.1 Program Watchdog Timer

The Watchdog timer is built in super I/O F71863. The F71863 I/O address port is 2E hex and 2F hex. 2E hex is index port. 2F hex is data port.

Un-lock Super I/O	
Select logical device and set register	Ļ
Enable Watchdog Timer Function	Ļ
Use Watchdog Timer Function	Ļ
Lock Super I/O	ļ

Watchdog Timer Register			
Index Port (2E hex)	Data Port (2F hex)	Description	
87 hex		Unlock Super I/O.	
		Two successive writes of 87 hex be applied to 2E hex.	
2B hex (F71863)	Bit 4	Select WDTO pin function.	
		1: WDT Output.	
		0: GPIO14.	
07 hex	07 hex	Select register of watchdog timer	
30 hex	Bit 0	Write 1 to enable watchdog timer. Disable is write 0.	
F0 hex	Bit 7	Write 1 to enable WDTO# output	
F5 hex	Bit 3	Write 0 set second as counting unit. Write 1 is minute.	
F5 hex	Bit 5	Write 1 counting enable	
F5 hex	Bit 4	Write 1 Output mode pulse	
F5 hex	Bit 0:1	1: 25 ms pulse width	

MANO110 Series Mini ITX Board User's Manual

MANO110 Series Mini ITX Board User's Manual

Watchdog Timer Register			
Index Port (2E hex)	Data Port (2F hex)	Description	
F6 hex	Value	0: Stop timer.	
		1~FF hex: Write non-zero value the counter to load the value to watchdog counter and start counting down.	
		Write new value to this register can reset timer to count with the new value.	
AA hex		Lock Super I/O Write AA hex to 2E/2F hex.	

A1.2 Example Program Code

The sample code is for debug.exe. Sample code is index port 2E hex, data port 2F hex and time-out value 30 second.

A1.2.1 Set and Start Up The Watchdog Timer Unlock Super I/O O 2E 87 O 2E 87 T Set WDTO Multifunction Pin Definition O 2E 2B O 2F 10 J Select Logic Device 7 O 2E 07 O 2F 07 T Active Logic Device O 2E 30 O 2F 01 J **Enable WDT** O 2E F0 O 2F 80 Set WDT Time-out Value is 30 O 2E F6 O 2F 1E T Enable WDT Counting And setting Mode is: Second Mode/Output mode Pulse, Pulse width 25 O 2E F5 O 2F 31 ↓ Lock Super I/O

O 2E AA

A1.2.2 Reset The Watchdog Timer Unlock Super I/O O 2E 87 O 2E 87 T Select Logic Device 7 O 2E 07 O 2F 07 ↓ Active Logic Device O 2E 30 O 2F 01 ↓ Set WDTO Multifunction Pin GPIO14 Definition O 2E 2B O 2F 00 ↓ **Disable WDT** O 2E F0 O 2F 00 **Clear Status** O 2E F5 O 2F 40 Back to original register value O 2E F5 O 2F 00 T Set WDT Time-out Value O 2E F6 O 2F 00 ↓ Lock Super I/O O 2E AA

MANO110 Series Mini ITX Board User's Manual

1.2.3 Disable The Watchdog Timer Unlock Super I/O O 2E 87 O 2E 87 ↓ Select Logic Device 8 O 2E 07 O 2F 07 ↓ Inactive Logic Device O 2E 30 O 2F 00 ↓ Lock Super I/O O 2E AA

APPENDIX B

DIGITAL I/O

Digital I/O Software Programming Example

Pin	Signal	Pin	Signal	
1	DIO0	2	DIO4	CN20
3	DIO1	4	DIO5	2 4 6 8 10
5	DIO2	6	DIO6	
7	DIO3	8	DIO72	1 3 5 7 9
9	GND	10	+5V	

GPIO control

#define	SMBusBase 0x0B00	
#define	PCA9554SlaveAddr 0x40	
#define	ICH_SMBUS_HOST_STAT	0x00
#define	ICH_SMBUS_HOST_CTRL	0x02
#define	ICH_SMBUS_HOST_CMD	0x03
#define	ICH_SMBUS_HOST_ADDR	0x04
#define	ICH_SMBUS_HOST_DATA_0	0x05
#define	ICH_SMBUS_HOST_DATA_1	0x06
#define	ICH_SMBUS_HOST_BLK_DATA	0x07
#define	ICH_SMBUS_SLVE_STAT	0x10

MANO110 Series Mini ITX Board User's Manual

Configure GPIO pin direction as 4 inputs and 4 outputs

- outb(0xFF,SMBusBase + ICH_SMBUS_HOST_STAT); // Clear host status
- outb(PCA9554SlaveAddr, SMBusBase + ICH_SMBUS_HOST_ADDR); // Set slave address
- outb(0x03, SMBusBase + ICH_SMBUS_HOST_CMD); // Configuration register for PCA9554
- outb(0xF0, SMBusBase + ICH_SMBUS_HOST_DATA_0); //
- outb(0x48, SMBusBase + ICH_SMBUS_HOST_CTRL); // Trigger SMBus Byte operation

Configure GPIO output pin to high

- outb(0xFF,SMBusBase + ICH_SMBUS_HOST_STAT); // Clear host status outb(PCA9554SlaveAddr, SMBusBase + ICH_SMBUS_HOST_ADDR); // Set slave address
- outb(0x01, SMBusBase + ICH_SMBUS_HOST_CMD); // Output register for PCA9554
- outb(0x0F, SMBusBase + ICH_SMBUS_HOST_DATA_0);
- outb(0x48, SMBusBase + ICH_SMBUS_HOST_CTRL); // Trigger SMBus Byte operation