

MAN0872 Series

Intel[®] Socket 1155 CoreTM i7 / CoreTM i5 / CoreTM i3 / Celeron[®] Processor All-In-One Mini ITX Board with DP / DVI-I / LVDS

User's Manual



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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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Chapter 1 Introduction



The MANO872 is a Mini ITX board with LGA1155 socket for Intel[®] CoreTM i7 / Intel[®] CoreTM i5 / Intel[®] CoreTM i3 / Intel[®] Celeron[®] (G6950) desktop processor with 22nm technology. The board integrates Intel[®] Q77 chipset that delivers outstanding system performance through high-bandwidth interfaces, multiple I/O functions for interactive applications and various embedded computing solutions. There are two 204-pin DDR3 SO-DIMM sockets for dual channel DDR3 1333/1600MHz memory with maximum capacity up to 16GB; assuming dual channel mode of two 8GB double-sided unbuffered, non-ECC SO-DIMM memory configuration. The board also features Gigabit Ethernet, two SATA 3.0 ports (support SATA RAID 0/1/5/10 by Q77) at maximum transfer rate up to 6Gb/s, two SATA 2.0 ports at maximum transfer rate up to 3Gb/s, four USB 3.0 and four USB 2.0 high speed compliant ports that can achieve the best stability and reliability for industrial applications.

1.1 Features

- LGA1155 socket 3rd Generation Intel[®] Core[™] i7 / i5 / i3 / Celeron[®] processors
- 2 DDR3 1333/1600MHz up to 16GB
- PCI-Express Gen. 3 supported
- 2 SATA-600 with RAID 0, 1, 5 and 10 supported
- 2 SATA-300 with 1 SATADOM supported
- 4 USB 3.0 supported
- iAMT 8.0 supported
- TPM 1.2 supported
- Triple view display

Specifications 1.2

CPU

- Intel[®] Core[™] i7 desktop processor. Intel[®] Core[™] i5 desktop processor. Intel[®] Core[™] i3 desktop processor. Intel[®] Celeron[®] desktop processors.

- -

System Chipset

Intel[®] Q77. .

CPU Socket

LGA1155.

DRAM Transfer Rate

1333/1600MHz.

BIOS

AMI BIOS via SPI interface with socket.

System Memory .

- Two 204-pin unbuffered DDR3 SO-DIMM sockets.
- Maximum up to 16GB DDR3 1333/1600MHz memory with two SO-DIMMs using 8GB memory technology.

Onboard Multi I/O .

- Controller: Nuvoton NCT6627UD.
- Serial ports: Three RS-232 ports (COM2/3/4) and one RS-232/422/485 port (COM1).

SATADOM (Optional) .

One SATADOM supported; co-layout with a SATA-300 socket (according to SATA 2.0 signal).

Serial ATA

- Supports SATA 3.0 and SATA 2.0.
- Two SATA 3.0 ports (6Gb/s performance) with SATA RAID 0/1/5/10 by Q77 and two SATA 2.0 ports (3Gb/s performance).

USB Interface

- Four USB 3.0 ports with fuse protection.
- Four USB 2.0 ports with fuse protection.
- Display
 - One Display Port.
 - One LVDS 24-bit dual channel.
 - One DVI-I.



Note: Due to Intel design limitation and BIOS default option, under DOS only VGA display

- Watchdog Timer •
 - 1~255 seconds; up to 256 levels.
- **Expansion Interface** • One PCI-Express x16 slot.
- Ethernet .

 - LAN1 $Intel^{
 entropy}$ 82579LM supports 10/100/1000Mbps. LAN2 $Intel^{
 entropy}$ 82583V supports 10/100/1000Mbps.
- Audio •
 - HD audio compliant (with line/speaker-out and MIC-in) via ALC662.
 - Internal audio feature for speaker-out via wafer connector.
- **Power Management** .
 - ACPI (Advanced Configuration and Power Interface).
- **Form Factor**
 - Mini ITX form factor.

<u>Note</u>: All specifications and images are subject to change without notice.

1.3 **Utilities Supported**

- Chipset driver •
- Ethernet driver •
- Graphics driver •
- Audio driver

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Chapter 2 Board and Pin Assignments

163.83 157.48 131.18 56.18 -19.71 0.00 159.84 154.94 159,84 (\bigcirc) $(\bigcirc$ 145.91 Ħ -118.13 2 70,91 48.20 47.25 (* (* 6) 0 0 0 0 0 0 0 0 0 0 0 Ĭ 36.46 36.25 . . . 22.86 € Q 0.00 10.16-10.16 ШП ТШ 128.29 125.70 96.05 -88.96 -163.83 157.48 82.25 19.68 59.94 38.31 4 82 0 00 6 17

2.1 Board Dimensions and Fixing Holes

Top Side



Bottom Side



2.2 Board Layout

Top Side



I/O Bracket



Bottom Side

2.3 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. The following illustration shows how to set up jumper.



Before applying power to MANO872 Series, please make sure all of the jumpers are in factory default position. Below you can find a summary table and onboard default settings.

Jumper	Description		Setting
JP1	Restore BIOS Optimal Defaults Default: Normal Operation		1-2 close
JP2 (Optional)	LVDS Voltage Selection		All open
JP3	LVDS Voltage Selection Default: +3.3V		1-2 close
JP4	USB Port 4 and 5 Power Selection Default: Standby Power +5V		1-2 close
JP5	SATA/SATADOM Selection Default: SATA		2-3 close
JP7	LVDS Backlight Control Mode Setting Default: PWM Mode	VDS Backlight Control Mode Setting efault: PWM Mode	
JP8	Auto Power On Default: Disable		1-2 close
	COM1 Data/Power Selection	CN15A Pin 1: DCD	3-5 close
JPTU	Default: RS-232 Data	CN15A Pin 9: RI	4-6 close
JP11			3-5, 4-6 close
JP12	COM1 RS-232/422/485 Mode Setting Default: RS-232		1-2 close
JP14			3-5, 4-6 close
	COM3 Data/Power Selection	CN13 Pin 1: DCD	3-5 close
JP 13	Default: RS-232 Data	CN13 Pin 8: RI	4-6 close
JP16	Mini Card Interface Selection Default: PCI-Express Interface		1-2 Close

2.3.1 Restore BIOS Optimal Defaults (JP1)

Put jumper clip to pin 2-3 for a few seconds then move it back to pin 1-2. Doing this procedure can restore BIOS optimal defaults.

Function	Setting	
Normal operation (Default)	1-2 close	
Restore BIOS optimal defaults	2-3 close	123

2.3.2 LVDS Voltage Selection (JP2 and JP3)

The board supports voltage selection for flat panel displays. Use JP3 to set LVDS connector (CN6) pin 1~6 VCCM to +3.3V or +5V voltage level. Use JP2 (optional) to set LVDS connector (CN6) pin 1~6 VCCM to +12V voltage level. To prevent hardware damage, before connecting please make sure that the input voltage of LVDS flat panel is correct.

Function	JP3 Setting
+3.3V level (Default)	1-2 close
+5V level	2-3 close
Function	JP2 Setting



2.3.3 USB Port 4 and 5 Power Selection (JP4)

Use JP4 for setting USB power signal on connector CN9 to standby power or system power.

Function	Setting	
Standby power +5V level (Default)	1-2 close	
System power +5V level	2-3 close	1 2

2.3.4 SATA/SATADOM Selection (JP5)

Use JP5 for enabling connector CN4 to support SATA or SATADOM.

Function	Setting	
SATADOM	1-2 close	
SATA (Default)	2-3 close	1 2 3

2.3.5 LVDS Backlight Control Mode Setting (JP7)

The JP7 is enabled to select PWM or DC control mode for inverter connector (CN7). These two control modes are for adjusting LVDS brightness.

Function	Setting	2
PWM mode (Default)	1-2 close	
DC mode	3-4 close	

2.3.6 Auto Power On (JP8)

If JP8 is enabled for AC power input, the system will be automatically power on without pressing soft power button. If JP8 is disabled for AC power input, it is necessary to manually press soft power button to power on the system.

Function	Setting	
Disable auto power on (Default)	1-2 close	
Enable auto power on	2-3 close	123

2.3.7 COM1 Data/Power Selection (JP10)

The COM1 port has +5V level power capability on DCD and +12V level on RI by setting this jumper. When COM1 is set to +5V or +12V level, please make sure the communication mode is RS-232 (see section 2.3.8).

Function	Setting
Power: Set CN15A pin 1 to +5V level	1-3 close
Data: Set CN15A pin 1 to DCD (Default)	3-5 close
Power: Set CN15A pin 9 to +12V level	2-4 close
Data: Set CN15A pin 9 to RI (Default)	4-6 close



2.3.8 COM1 RS-232/422/485 Mode Setting (JP11, JP12, JP14)

Use these jumpers to set COM1 port to operate as RS-232, RS-422 or RS-485 communication mode. When these jumpers are set to operate as RS-422 or RS485 mode, please make sure COM1 is on data mode (see section 2.3.7)

Function	Setting
RS-232 mode (Default)	JP11 3-5, 4-6 close JP12 1-2 close JP14 3-5, 4-6 close
RS-422 mode	JP11 1-3, 2-4 close JP12 3-4 close JP14 1-3, 2-4 close
RS-485 mode	JP11 1-3, 2-4 close JP12 5-6 close JP14 1-3, 2-4 close



2.3.9 COM3 Data/Power Selection (JP13)

The COM3 port has +5V level power capability on DCD and +12V level on RI by setting this jumper.

Function	Setting
Power: Set CN13 pin 1 to +5V level	1-3 close
Data: Set CN13 pin 1 to DCD (Default)	3-5 close
Power: Set CN13 pin 8 to +12V level	2-4 close
Data: Set CN13 pin 8 to RI (Default)	4-6 close

2	4	6
0		
1	3	5

2.3.10 Mini Card Interface Selection (JP16)

Use JP16 for setting Mini Card to PCI-Express or mSATA .

Function	Setting	1
PCI-Express Interface (Default)	1-2 close	2
mSATA Interface	2-3 close	

2.4 Connectors

Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected. Here is a summary table which shows all connectors on the hardware.

Connector	Description
CN1	PCI-Express x16 Slot
CN2	24-pin ATX Power Connector
CN3	Serial ATA 2.0 port 2 Connector
CN4	Serial ATA 2.0 port 3 Connector (Optional for SATADOM)
CN6	LVDS Connector
CN7	Inverter Connector
CN8	USB 2.0 Port 6 and 7 Connector
CN9	USB 2.0 Port 4 and 5 Connector
CN10	LAN1 (WG82579LM), USB 3.0 Port 2 and 3 Connector
CN11	LAN2 (WG82583V), USB 3.0 Port 0 and 1 Connector
CN12	DVI-I Connector
CN13	COM3 Connector
CN14	COM4 Connector
CN15	COM1 and COM2 Connector
CN16	HD Audio Jack
CN17	Internal Audio Connector
CN18	Display Port Connector
SCN2	PCI-Express Mini Card and mSATA Connector
ATX1	4-pin +12V ATX Power Connector
FAN1	CPU Fan Connector
FAN2	System Fan Connector
JP6	Front Panel Connector
JP9	Digital I/O Connector
SATA1~2	Serial ATA 3.0 port 0 and 1 Connectors
DIMM1~2	DDRIII SO-DIMM Connectors

2.4.1 ATX Power Connectors (CN2 and ATX1)

Steady and sufficient power can be supplied to all components on the board by connecting power connector. Please make sure all components and devices are properly installed before connecting the power connector.

External power supply plug fits into this connector in only one orientation. Properly press down power supply plug until it completely and firmly fits into this connector. Loose connection may cause system instability.

Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWR OK	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND



The CN2 is a 24-pin ATX power connector. Its pin assignments are given in table below.

The ATX1 is a 4-pin +12V ATX power connector for connecting CPU core voltage, see table below.

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

2	1
눕	
Ľ	Ľ

2.4.2 Serial ATA Connectors (CN3, CN4, SATA1 and SATA2)

These Serial Advanced Technology Attachment (Serial ATA or SATA) connectors are for high-speed SATA interfaces. They are computer bus interfaces for connecting to devices such as hard disk drives.

This board has two SATA 2.0 ports (CN3 and CN4) with 3Gb/s performance and two SATA 3.0 ports (SATA1 and SATA2) with 6Gb/s performance. Note that CN4 can be set to support SATADOM by configuring jumper JP5 (see section 2.3.4).

CN3/SATA1/SATA2 Signal
GND
SATA_TX+
SATA_TX-
GND
SATA_RX-
SATA_RX+
GND



Pin	CN4 Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND(DEFAULT)/+5V

2.4.3 LVDS Connector (CN6)

This board has a 40-pin connector (CN6) for LVDS LCD interface. It is strongly recommended to use the matching JST SHDR-40VS-B 40-pin connector for LVDS interface. Pin $1\sim$ 6 VCCM can be set to +3.3V, +5V or +12V level by JP2 and JP3 (see section 2.3.2).

1	8-bit	single	channel
---	-------	--------	---------

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	EDID DATA	8	EDID CLK
9	GND	10	GND
11	N.C.	12	N.C.
13	N.C.	14	N.C.
15	GND	16	GND
17	N.C.	18	N.C.
19	N.C.	20	N.C.
21	GND	22	GND
23	Channel A D0-	24	N.C.
25	Channel A D0+	26	N.C.
27	GND	28	GND
29	Channel A D1-	30	N.C.
31	Channel A D1+	32	N.C.
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



24-bit single channel

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	EDID DATA	8	EDID CLK
9	GND	10	GND
11	N.C.	12	N.C.
13	N.C.	14	N.C.
15	GND	16	GND
17	N.C.	18	N.C.
19	N.C.	20	N.C.
21	GND	22	GND
23	Channel A D0-	24	N.C.
25	Channel A D0+	26	N.C.
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

18-bit dual channel

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	EDID DATA	8	EDID CLK
9	GND	10	GND
11	N.C.	12	Channel B D0-
13	N.C.	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	N.C.
31	Channel A D1+	32	N.C.
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

24-bit dual channel

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	EDID DATA	8	EDID CLK
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

Note: See section 5.5 for LVDS resolution setting in BIOS menu.

2.4.4 Inverter Connectors (CN7)

The CN7 is DF13-8P-1.25V 8-pin connector for inverter. We strongly recommend you to use the matching DF13-8S-1.25C connector to avoid malfunction.

Pin	Signal
1	VBL1 (+12V level)
2	VBL1 (+12V level)
3	VBL2 (+5V level)
4	VBL_ENABLE
5	GND
6	GND
7	GND
8	LVDS_BRICTL



2.4.5 USB Connectors (CN8 and CN9)

The CN8 and CN9 are USB connectors carrying USB port 6 and 7 and USB port 4 and 5, respectively. They are for installing versatile USB 2.0 compliant interface peripherals. These connectors are designed with +5V level standby power which can provide power when system is in suspend mode. Note that the power signal on CN9 can also be set to system power (see section 2.3.3).

Pin	Signal	Pin	Signal
1	USB VCC (+5V level standby power)	2	USB VCC (+5V level standby power)
3	USB DX-	4	USB DY-
5	USB DX+	6	USB DY+
7	GND	8	GND
9	GND	10	GND



2.4.6 LAN and USB Connectors (CN10 and CN11)

The board comes with two high performance plug and play ethernet interfaces (RJ-45) which are fully compliant with the IEEE 802.3 standard. Connection can be established by plugging one end of the ethernet cable into this RJ-45 connector and the other end to a 1000/100/10-Base-T hub.

The Universal Serial Bus (compliant with USB 3.0 (5Gb/s)) connectors on the rear I/O are for installing USB peripherals such as keyboard, mouse, scanner, etc. Note that the CN10 carries LAN1, USB 3.0 port 2 and 3 signals while CN11 carries LAN2, USB 3.0 port 0 and 1 signals.

Pin	LAN1 Signal (WG82579LM)	Pin	LAN1 Signal (WG82579LM)
L1	MDI0+	L5	MDI2+
L2	MDI0-	L6	MDI2-
L3	MDI1+ L7		MDI3+
L4	MDI1- L8		MDI3-
А	100 LAN LED (Green)/ 1000 LAN LED (Orange)		
В	Active LED		



Pin	USB Signal	Pin	USB Signal
1	USB_VCC (+5V level standby power) 10		USB_VCC (+5V level standby power)
2	USB_Data2-	11	USB_Data3-
3	USB_Data2+	12	USB_Data3+
4	GND	13	GND
5	SSRX2-	14	SSRX3-
6	SSRX2+	15	SSRX3+
7	GND	16	GND
8	SSTX2-	17	SSTX3-
9	SSTX2+	18	SSTX3+

Pin	LAN2 Signal (WG82583V)	Pin	LAN2 Signal (WG82583V)
L1	MDI0+	L5	MDI2+
L2	MDI0-	L6	MDI2-
L3	MDI1+	L7	MDI3+
L4	MDI1-	L8	MDI3-
А	100 LAN LED (Green)/ 1000 LAN LED (Orange)		
В	Active LED		



Pin	USB Signal	Pin	USB Signal
1	USB_VCC (+5V level standby power)	10	USB_VCC (+5V level standby power)
2	USB_Data0-	11	USB_Data1-
3	USB_Data0+	12	USB_Data1+
4	GND	13	GND
5	SSRX0-	14	SSRX1-
6	SSRX0+	15	SSRX1+
7	GND	16	GND
8	SSTX0-	17	SSTX1-
9	SSTX0+	18	SSTX1+

2.4.7 DVI-I Connector (CN12)

The board comes with a high rise DVI-I (Digital Video Interface – Integrated) interface providing transmission of fast and high quality video signal between source device (e.g. graphic card) and display device (e.g. monitor). The DVI-I interface supports both digital and analog.

Pin	Signal	Pin	Signal
1	TX2-	2	TX2+
3	Ground	4	NC
5	NC	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-	0- 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		



2.4.8 COM Connectors (CN13, CN14 and CN15)

The COM3 and COM4 interfaces are available through CN13 and CN14, respectively. Each of these connectors is a 2x5 pin 2.0 pitch box header, see table below for its pin assignments.

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



The CN15 is a double-deck DB-9 connector. The upper connector (CN15A) is for COM1 and the lower connector (CN15B) is for COM2. Note that the connectors (CN13 and CN15A) come with power capability on DCD and RI pins by setting jumpers (see section 2.3.7 and 2.3.9).

Pin	Pin	Signal
1	10	Data Carrier Detect (DCD)
2	11	Receive Data (RXD)
3	12	Transmit Data (TXD)
4	13	Data Terminal Ready (DTR)
5	14	Ground (GND)
6	15	Data Set Ready (DSR)
7	16	Request to Send (RTS)
8	17	Clear to Send (CTS)
9	18	Ring Indicator (RI)



2.4.9 HD Audio Jack (CN16)

The board provides a HD audio jack on the rear I/O. Install audio driver, and then attach audio devices to CN16.

Pin Color	Signal
Green	Line-out
Pink	MIC-in

(« »)	
	0
P	

2.4.10 Internal Audio Connector (CN17)

CN17 is an internal audio connector for line-out and microphone.

Pin	Signal	
1	Lineout-L	
2	GND	
3	Lineout-R	
4	GND	
5	MIC-in	

2.4.11 Display Port Connector (CN18)

Display Port is a digital display interface standard which is available through connector CN18.

Pin	Signal
1	LANE 0
2	GND
3	LANE 0#
4	LANE 1
5	GND
6	LANE 1#
7	LANE 2
8	GND
9	LANE 2#
10	LANE 3
11	GND
12	LANE 3#
13	HDMI_DET
14	GND
15	AUX CH
16	GND
17	AUX CH#
18	Hot Plug Detect
19	GND
20	DP_PWR(3.3V)



2.4.12 PCI-Express Mini Card and mSATA Connector (SCN2)

SCN2 (soldered on the bottom side) is a PCI-Express Mini Card connector which supports a PCI-Express x1 link, a SATA link and a USB 2.0 link. A PCI-Express Mini Card can be applied to either PCI-Express or USB 2.0 and SATA also. It complies with PCI-Express Mini Card spec v1.2.

Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	W_DISABLE#
21	GND	22	PERST#
23	PE_RXN/ SATA_RXP	24	+3.3VSB
25	PE_RXP/ SATA_RXN	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PE_TXN3/ SATA_TXN	32	SMB_DATA
33	PE_TXP3/ SATA_TXP	34	GND
35	GND	36	USB_D8-
37	GND	38	USB_D8+
39	+3.3VSB	40	GND
41	+3.3VSB	42	No use
43	GND	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB



2.4.13 FAN Connectors (FAN1 and FAN2)

Fans are always needed for cooling down CPU and system temperature. The board has two fan connectors. You can find fan speed option(s) at BIOS Setup Utility if either fan is installed. For further information, see BIOS Setup Utility: Advanced\HW Monitor\PC Health Status.

CPU fan interface is available through FAN1, see table below.

Pin	Signal	
1	GND	
2	+12V level	
3	Rotation detection	
4	Speed control	

System fan interface is available through FAN2, see table below.

Pin	Signal		
1	GND	1	3
2	+12V level		0
3	Rotation detection		-

2.4.14 Front Panel Connector (JP6)

Pin	Signal
1	PWRLED+
2	EXT SPK-
3	GND
4	Buzzer
5	PWRLED-
6	N.C.
7	N.C.
8	EXT SPK+
9	PWRSW-
10	PWRSW+
11	HW RST-
12	HW RST+
13	HDDLED-
14	HDDLED+



Power LED

Pin 1 connects anode(+) of LED and pin 5 connects cathode(-) of LED. The power LED lights up when the system is powered on. The pin 3 is defined as GND.

External Speaker and Internal Buzzer

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

Power On/Off Button

Pin 9 and 10 connect the power button on front panel to the CPU board, which allows users to turn on or off power supply.

System Reset Switch

Pin 11 and 12 connect the case-mounted reset switch that reboots your computer without turning off the power switch. It is a better way to reboot your system for a longer life of system 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 is assigned as cathode(-) and pin 14 is assigned as anode(+).

2.4.15 Digital I/O Connector (JP9)

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

Pin	Signal	Pin	Signal
1	DIO 8	2	DIO 1
3	DIO 7	4	DIO 2
5	DIO 6	6	DIO 3
7	DIO 5	8	DIO 4
9	GND	10	GND

Chapter 3 Hardware Installation

Before installing the processor, please access Intel® website for more detail information of Processor Integration Video (LGA1155):

http://www.intel.com/support/tw/processors/sb/CS-030860.htm .

3.1 Installing the Processor

The LGA1155 processor socket comes with a cover to protect the processor. Please install the processor into the CPU socket step by step as below:

Step1 Opening the socket:

- Disengage load lever by releasing down and out on the hook. This will clear retention tab. .
- Rotate load lever to open position at approximately 135°.
- Rotate load plate to open position at approximately 150°.



<u>Note</u>: Apply pressure to corner with right-hand thumb when opening or closing load lever otherwise lever will bounce back (as a mouse trap) causing bent contacts.

Step2 Removing the socket protective cover:

- Place thumb against the front edge of the protective cover and rest index finger on the rear grip to maintain control of the cover.
- Lift the front edge of the protective cover to disengage from the socket. Keep control of the cover by holding the rear grip with index finger.
- Lift protective cover away from the socket, being careful not to touch the electrical . contacts.





Vertical removal is NOT recommended, as it requires higher force and can lead to socket contact damage.





<u>Caution</u>: Never touch fragile socket contacts to avoid damage and do not touch processor sensitive contacts at any time during installation.

Step3 Processor installation:

• Lift processor package from shipping media by grasping the substrate edges.



- Scan the processor package gold pads for any presence of foreign material. If necessary, the gold pads can be wiped clean with a soft lint-free cloth and isopropyl alcohol.
- Locate connection 1 indicator on the processor which aligns with connection 1 indicator chamfer on the socket, and notice processor keying features that line up with posts along socket walls.



- Grasp the processor with thumb and index finger along the top and bottom edges. (Do not touch the orientation notches.) The socket will have cutouts for your fingers to fit into (see image below).
- Carefully place the processor into the socket body vertically (see image below).



<u>Caution</u>: Do not use a vacuum pen for installation.



• Verify that package is within the socket body and properly connected to orientation keys.



- Close the socket (see image below):
 - 1. Gently lower the load plate.
 - 2. Make sure load plate's front edge slides under the shoulder screw cap as the lever is lowered.
 - 3. Latch the lever under the top plate's corner tab, being cautious not to damage the motherboard with the tip of the lever.



Step4 Fan heatsink handling:

1. Orientate the CPU cooling fan to fixing holes on the board.



2. Screw the CPU cooling fan onto the board.



3. Make sure the CPU fan is plugged to the CPU fan connector.



Step5 Removing the processor:

- Open the socket:
 - 1. Disengage the load lever.
 - 2. Open the load plate
- Remove the Processor package, holding along the top and bottom edges, or by using a vacuum pen.
- Maintain Processor horizontal and remove Processor with a vertical motion to avoid damaging the socket contacts.



• Place the processor in a specially designed tray or ESD retainer for storage. Do not place directly on table resting on gold lands

- Assemble LGA1155 socket protective cover:
 - 1. Hold protective cover at 45 degree angle to the LGA1155 Socket.
 - 2. Carefully lower protective cover on hinge side first, to contact with the outside wall of the LGA1155 Socket:
 - 3. Engage protective cover retention features to outside of LGA1155 Socket, AND align 2 cover corners to socket corners (This step is critical to avoid Bent Contact Damage!).
 - 4. Lower protective cover to attach to the LGA1155 Socket on Shoulder screw side.
- Perform Visual and Tactile verification that protective cover is properly seated in the LGA1155 Socket:

Hold cover and move gently "side by side" to feel the play within the cover and the LGA1155 Socket.



• Close the socket load plate and engage the load lever (see image below).


Installing the Memory 3.2

The board supports two 204-pin DDR3 SO-DIMM memory sockets with maximum memory capacity up to 16GB.

Note: A DDR3 module has the same physical dimensions as a DDR2 SO-DIMM but is notched differently to prevent installation on a DDR2 SO-DIMM socket.

Please follow steps below to install the memory modules:

- Push down latches on each side of the SO-DIMM socket. •
- Align the memory module with the socket that notches of memory module must match the • socket keys for a correct installation.
- Install the memory module into the socket and push it firmly down until it is fully seated. • The socket latches are levered upwards and clipped on to the edges of the SO-DIMM.
- Install any remaining SO-DIMM modules. •

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Chapter 4 Hardware Description

4.1 Microprocessors

The MANO872 Series supports Intel[®] CoreTM i7 / CoreTM i5 / CoreTM i3 / Celeron[®] processors, which enable your system to operate under Windows[®] XP, Windows[®] 7 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.

4.2 BIOS

The MANO872 Series uses AMI Plug and Play BIOS with a single 64Mbit SPI Flash.

4.3 System Memory

The MANO872 Series supports two 204-pin DDR3 SO-DIMM sockets for a maximum memory of 16GB DDR3 SDRAMs. The memory module comes in sizes of 1GB, 2GB and 4GB.

4.4 I/O Port Address Map

The Intel[®] CoreTM i7 / CoreTM i5 / CoreTM i3 / Celeron[®] processors communicate via I/O ports. Total 1KB port addresses are available for assigning to other devices via I/O expansion cards.

Input/output (IO) [00000000 - 0000001F] Direct memory access controller [00000000 - 00000CF7] PCI bus [00000010 - 0000001F] Motherboard resources [00000020 - 00000021] Programmable interrupt controller [00000022 - 0000003F] Motherboard resources [00000024 - 00000025] Programmable interrupt controller [00000028 - 00000029] Programmable interrupt controller [0000002C - 0000002D] Programmable interrupt controller [0000002E - 0000002F] Motherboard resources [00000030 - 00000031] Programmable interrupt controller [00000034 - 00000035] Programmable interrupt controller [00000038 - 00000039] Programmable interrupt controller [0000003C - 0000003D] Programmable interrupt controller [00000040 - 00000043] System timer [00000044 - 0000005F] Motherboard resources [0000004E - 0000004F] Motherboard resources [00000050 - 00000053] System timer [00000061 - 00000061] Motherboard resources [00000062 - 00000063] Motherboard resources [00000063 - 00000063] Motherboard resources [00000065 - 00000065] Motherboard resources 🖁 [00000065 - 0000006F] Motherboard resources [00000067 - 00000067] Motherboard resources [00000070 - 00000070] Motherboard resources [00000070 - 00000077] System CMOS/real time clock [00000072 - 0000007F] Motherboard resources [00000080 - 00000080] Motherboard resources [00000080 - 00000080] Motherboard resources [00000081 - 00000091] Direct memory access controller [00000084 - 00000086] Motherboard resources [00000088 - 00000088] Motherboard resources [0000008C - 0000008E] Motherboard resources [00000090 - 0000009F] Motherboard resources [00000092 - 00000092] Motherboard resources 🖁 [00000093 - 0000009F] Direct memory access controller [000000A0 - 000000A1] Programmable interrupt controller [000000A2 - 000000BF] Motherboard resources [000000A4 - 000000A5] Programmable interrupt controller [000000A8 - 000000A9] Programmable interrupt controller [000000AC - 000000AD] Programmable interrupt controller [00000080 - 00000081] Programmable interrupt controller [000000B2 - 000000B3] Motherboard resources [00000084 - 00000085] Programmable interrupt controller [00000088 - 00000089] Programmable interrupt controller [000000BC - 000000BD] Programmable interrupt controller [000000C0 - 000000DF] Direct memory access controller [000000E0 - 000000EF] Motherboard resources 🖁 [000000F0 - 000000FF] Numeric data processor [00000200 - 0000020F] Motherboard resources [00000274 - 00000277] ISAPNP Read Data Port [00000279 - 00000279] ISAPNP Read Data Port [00000290 - 00000297] Motherboard resources [000002E8 - 000002EF] Communications Port (COM4) [000002F8 - 000002FF] Communications Port (COM2)

🧓 [00000380 - 00000388] Intel(R) HD Graphics
[000003E8 - 000003EF] Communications Port (COM3)
[000003F8 - 000003FF] Communications Port (COM1)
- 🖳 [00000400 - 00000453] Motherboard resources
B) [0000E000 - 0000E01F] Intel(R) 82583V Gigabit Network Connection
- 😼 [0000E000 - 0000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 7 - 1E1C
- 😼 [0000F000 - 0000F03F] Intel(R) HD Graphics
- 💡 [0000F040 - 0000F05F] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
IO000F060 - 0000F07F] Intel(R) 82579LM Gigabit Network Connection
G0000F080 - 0000F08F] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
- 🗃 [0000F090 - 0000F09F] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
- 🗃 [0000F0A0 - 0000F0A3] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
- 🗃 [0000F080 - 0000F087] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
[0000F0C0 - 0000F0C3] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
[0000F0D0 - 0000F0D7] Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
[0000F0E0 - 0000F0EF] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F0F0 - 0000F0FF] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F100 - 0000F103] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F110 - 0000F117] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F120 - 0000F123] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F130 - 0000F137] Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
[0000F140 - 0000F147] Intel(R) Active Management Technology - SOL (COM5)
[0000FFFF - 0000FFFF] Motherboard resources
U0000FFFF - 0000FFFF] Motherboard resources

4.5 Interrupt Controller (IRQ) Map

The interrupt controller (IRQ) mapping list is shown as follows:

🛄 Interrupt req	uest (IRQ)
— 🧕 (ISA) 0	System timer
— 🖉 (ISA) 3	Communications Port (COM2)
🦪 (ISA) 4	Communications Port (COM1)
🦪 (ISA) 7	Communications Port (COM3)
— 🥑 (ISA) 7	Communications Port (COM4)
— 🧕 (ISA) 8	System CMOS/real time clock
— 🛃 (ISA) 9	Microsoft ACPI-Compliant System
— 🚽 (ISA) 13	Numeric data processor
	Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
	Intel(R) 7 Series/C216 Chipset Family Universal Serial Bus (USB) Controller - 1E31
	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 1 - 1E10
🔶 (PCI) 16	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
—夏 (PCI) 16	Intel(R) HD Graphics
	Intel(R) Management Engine Interface
	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 7 - 1E1C
(PCI) 18	Intel(R) 82583V Gigabit Network Connection
- 🔁 (PCI) 19	Intel(R) 7 Series/C216 Chipset Family 2 port Serial ATA Storage Controller - 1E08
	Intel(R) 7 Series/C216 Chipset Family 4 port Serial ATA Storage Controller - 1E00
— 📝 (PCI) 19	Intel(R) Active Management Technology - SOL (COM5)
(PCI) 20	Intel(R) 82579LM Gigabit Network Connection
	Microsoft UAA Bus Driver for High Definition Audio
🚔 (PCI) 23	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26

4.6 Memory Map

The memory mapping list is shown as follows:

🖃 🧰 Me	mory
	[000A0000 - 000BFFFF] Intel(R) HD Graphics
	[000A0000 - 000BFFFF] PCI bus
	[000D0000 - 000D3FFF] PCI bus
	[000D4000 - 000D7FFF] PCI bus
	[000D8000 - 000DBFFF] PCI bus
	[000DC000 - 000DFFFF] PCI bus
	[000E0000 - 000E3FFF] PCI bus
	[000E4000 - 000E7FFF] PCI bus
9	[20000000 - 201FFFFF] System board
9	[40004000 - 40004FFF] System board
	[BFA00000 - BFA00FFF] Motherboard resources
	[BFA00000 - FEAFFFFF] PCI bus
	[E0000000 - EFFFFFFF] Intel(R) HD Graphics
	[F7800000 - F78FFFFF] Intel(R) HD Graphics
田田	I [F7C00000 - F7C1FFFF] Intel(R) 82583V Gigabit Network Connection
😼	[F7C00000 - F7CFFFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 7 - 1E1C
田田	I [F7C20000 - F7C23FFF] Intel(R) 82583V Gigabit Network Connection
田田	I [F7D00000 - F7D1FFFF] Intel(R) 82579LM Gigabit Network Connection
	[F7D20000 - F7D2FFFF] Intel(R) 7 Series/C216 Chipset Family Universal Serial Bus (USB) Controller - 1E31
	[F7D30000 - F7D33FFF] Microsoft UAA Bus Driver for High Definition Audio
	[F7D35000 - F7D350FF] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
÷	[F7D36000 - F7D363FF] Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	[F7D37000 - F7D373FF] Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
田田	[F7D38000 - F7D38FFF] Intel(R) 82579LM Gigabit Network Connection
2	[F7D39000 - F7D39FFF] Intel(R) Active Management Technology - SOL (COM5)
	[F7D3B000 - F7D3B00F] Intel(R) Management Engine Interface
	[F8000000 - FBFFFFFF] Motherboard resources
- <u>-</u>	[FED00000 - FED003FF] High precision event timer
	[FED10000 - FED17FFF] Motherboard resources
- <u>-</u>	[FED18000 - FED18FFF] Motherboard resources
	[FED19000 - FED19FFF] Motherboard resources
	[FED1C000 - FED1FFFF] Motherboard resources
<u> </u>	[FED20000 - FED3FFFF] Motherboard resources
- <u>S</u>	[FED40000 - FED44FFF] System board
<u> </u>	[FED45000 - FED8FFFF] Motherboard resources
3	[FED90000 - FED93FFF] Motherboard resources
<u> </u>	[FEE00000 - FEEFFFFJ] Motherboard resources
- <u>S</u>	[FF000000 - FFFFFFF] Intel(R) 82802 Firmware Hub Device
	[FF000000 - FFFFFFF] Motherboard resources

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# **Chapter 5 AMI BIOS Setup Utility**

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

#### 5.1 Starting

To enter the setup screens, follow the steps below:

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



Note: If your computer can not boot after making and saving system changes with Setup, you can restore BIOS optimal defaults by setting JP1 (see section 2.3.1).

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

#### 5.2 **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>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

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

Hot Keys	Description	
→← Left/Right	The Left and Right < Arrow> keys allow you to select a setup screen.	
<b>∱</b> ↓ 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>	
F2	The <f2> key allows you to Load Previous Values.</f2>	
F3	The <f3> key allows you to Load Optimized Defaults.</f3>	
F4	The <f4> key allows you to save any changes you have made and exit Setup. Press the <f4> key to save your changes.</f4></f4>	
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>	

### 5.3 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. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.

Main       Advanced       Chipset       Boot       Security       Save & Exit         BIOS Version       MAN0872v.100       Set the Date. Use Tab to switch between Date elements.         System Date       [Thu 07/19/2012]       Set the Date. Use Tab to switch between Date elements.         System Time       [Ifu 07/19/2012]       +	Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
BIOS Version       MAN0872v.100       Set the Date. Use Tab to switch between Date elements.         System Date       [Thu 07/19/2012]       switch between Date elements.         System Time       [16:12:39]       Access Level       Administrator         Access Level       Administrator       ++: Select Screen         II: Select Item       Enter: Select       +/-: Change Opt.         F1: General Help       F2: Previous Values       F3: Optimized Defaults         F4: Save & Exit       ESC: Exit       ESC: Exit	Main Advanced	Chipset Boot Security Save & Exit	
Build Date       06/05/2012       Switch between Date elements.         System Date       [Thu 07/19/2012]       Switch between Date elements.         System Time       [16:12:39]       Access Level       Administrator         Access Level       Administrator       ++: Select Screen       11: Select Item         Enter: Select Item       Enter: Select Item       Enter: Select Item       Enter: Select Item         Enter: Select Item       Enter: Select Item       Enter: Select Item       Enter: Select Item         Variation 2 15 1226       Convision (C) 2012 American Magnetical Magnetical Iter       Fit Save & Exit       Esc: Exit	BTOS Version	MAN0872v.100	Set the Date Use Tab to
System Date       [Thu 07/19/2012]         System Time       [16:12:39]         Access Level       Administrator         ++: Select Screen       11: Select Item         Enter: Select       +/-: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit         ESC: Exit       ESC: Exit	Build Date	06/05/2012	switch between Date elements.
System Date       [Thu 07/19/2012]         System Time       [16:12:39]         Access Level       Administrator         **: Select Screen       11: Select Item         Enter: Select       t/-: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit         ESC: Exit       ESC: Exit			
System Time       [16:12:39]         Access Level       Administrator         **: Select Screen         11: Select Item         Enter: Select         +/-: Change Opt.         F1: General Help         F2: Previous Values         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit	System Date	[Thu 07/19/2012]	
Access Level Administrator ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	System Time	[16:12:39]	
Access Level Administrator ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Access Level	Administrator	
++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit </pre>			
++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
\$\pmathcal{1}\$: Select Item         Enter: Select         \$\pmathcal{2}\$-1; Change Opt.         F1: General Help         F2: Previous Values         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit			→+: Select Screen
Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			<b>1</b> : Select Item
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			Enter: Select
F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			+/-: Change Opt.
F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			F1: General Help
F3: Optimized Defaults F4: Save & Exit ESC: Exit			F2: Previous Values
F4: Save & Exit ESC: Exit			F3: Optimized Defaults
ESC: Exit			F4: Save & Exit
Version 2 15 1226 convright (c) 2012 American Megatrands Tre			ESC: Exit
Version 2 15 1226 convright (c) 2012 American Megatrands Tre			
Version 2 15 1226 convright (c) 2012 American Megatronde The			
Version 2 15 1226 convright (C) 2012 American Megatrands The			
version 2.13.1220. Copyright (C) 2012 American Megacrenus, Inc.	Ver	rsion 2.15.1226. Copyright (C) 2012 American Me	egatrends, Inc.

#### System Date/Time

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.

## 5.4 Advanced Menu

The Advanced menu also 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:

- ACPI Settings
- Trusted Computing
- CPU Configuration
- SATA Configuration
- PCH-FW Configuration
- ► AMT Configuration
- ► USB Configuration
- ► NCT6627UD Super IO Configuration
- ► NCT6627UD HW Monitor

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced Chips	et Boot Security Save	& Exit
<ul> <li>ACPI Settings</li> <li>Trusted Computing</li> <li>CPU Configuration</li> <li>SATA Configuration</li> <li>PCH-FW Configuration</li> <li>AMT Configuration</li> <li>USB Configurantion</li> <li>NCT6627UD Super IO Configuration</li> <li>NCT6627UD HW Monitor</li> </ul>	juration	System ACPI Parameters.
		<pre>→+: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2	.15.1226. Copyright (C) 2012	American Megatrends, Inc.

#### • ACPI Settings

You can use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

Aptio Setup Utili Advanced	ty - Copyright (C) 2012 American	Megatrends, Inc.
ACPI Settings		Select ACPI sleep state the system will enter when the
ACPI Sleep State		SUSPEND button is pressed.
		<pre>→+: Select Screen  ↑↓: Select Item Enton: Select</pre>
		+/-: Change Opt.
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.15.122	26. Copyright (C) 2012 American M	egatrends, Inc.

#### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed. Configuration options are Suspend Disabled, S1 only (CPU Stop Clock), and S3 only (Suspend to RAM).

To correctly support wake by use of USB from the S3 system power state, please refer to the following Microsoft's link:

http://support.microsoft.com/kb/841858/en-us

#### • Trusted Computing

This screen provides function for specifying the TPM settings.

Aptio Setup Utili Advanced	ty - Copyright (C) 2012 A	merican Megatrends, Inc.
Configuration Security Device Support	[Disable]	Enables or Disables BIOS support for security device.
Current Status Information SUPPORT TURNED OFF		Device. TCG EFI protocol and INTIA interface will not be available.
		<pre> ++: Select Screen  \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>
Version 2.15.122	6. Copyright (C) 2012 Ame	erican Megatrends, Inc.

#### Security Device Support

Use this item to enable or disable BIOS support for security device.

#### **Current Status Information**

Display current TPM status information

#### • CPU Configuration

This screen shows the CPU information.

Aptio Setup Utility - Advanced	Copyright (C) 2012 American	Megatrends, Inc.
Aptio Setup Utility - Advanced CPU Configuration Intel(R) Core(TM) i7-3770 CPU @ 3.40 CPU Signature Microcode Patch Max CPU Speed Min CPU Speed CPU Speed Processor Cores Intel HT Technology Intel VT-x Technology Intel SMX Technology 64-bit EIST	Copyright (C) 2012 American GHZ 306a8 10 3400 MHz 1600 MHz 3400 MHz 4 Supported Supported Supported Supported Supported Supported Supported Supported Supported Supported Supported Supported	Megatrends, Inc. Enable/Disable Intel SpeedStep →+-: Select Screen ↑↓: Select Item Enter: Select
Turbo Mode Intel Virtualization Technology Hyper-threading	[Enabled] [Enabled] [Enabled]	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
version 2.13.1220. C	by right (C) 2012 American M	egacienus, Inc.

#### EIST

Enable or disable Intel[®] SpeedStep. When enabled, CPU speed is controlled by the operating system. When disabled, CPU runs at its default speed.

#### Turbo Mode

This item is for enabling or disabling turbo mode. When enabled, it allows processor cores to run faster than marked frequency under certain conditions.

#### Intel Virtualization Technology

This item allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

#### Hyper-threading

Use this item to enable or disable Hyper-Threading Technology, which makes a single physical processor perform multi-tasking function as two logical ones.

### • SATA Configuration

In this Configuration menu, you can see the currently installed hardware in the SATA ports. During system boot up, the BIOS automatically detects the presence of SATA devices.

Aptio : Advanced	Setup Utility - Copyright (C) 2012 American	Megatrends, Inc.
SATA Controller(s) SATA Mode Selection	[Enabled] [IDE]	Enable or disable SATA Device.
Serial ATA Port 0 Software Preserve Serial ATA Port 1 Software Preserve Serial ATA Port 2 Software Preserve Serial ATA Port 3 Software Preserve	INTEL SSDSC2MH (120.0GB) SUPPORTED Empty Unknown ASUS DRW-24 ATAPI N/A Empty Unknown	
		<pre>→+: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Versi	ion 2.15.1226. Copyright (C) 2012 American M	legatrends, Inc.

#### SATA Controller(s)

Enable or disable SATA device.

#### SATA Mode Selection

Determine how SATA controller(s) operate. Operation mode options are: IDE Mode, AHCI Mode and RAID Mode.

#### • PCH-FW Configuration

This screen displays Management Engine (ME) Firmware information.

Aptio S Advanced	etup Utility - Copyright (C) 2012 Americar	n Megatrends, Inc.
ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU	8.1.0.1265 Normal Mode Full Sku Firmware 5MB	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Versio	on 2.15.1226. Copyright (C) 2012 American	Megatrends. Inc.

#### • AMT Configuration

Use this screen to configure AMT parameters.

Advanc	Aptio Setup Utility - Copyright (C) 2012 America ^{ced}	an Megatrends, Inc.
Intel AMT Disable ME	[Enabled] [Disabled]	Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device. ++: Select Screen \$\$\$ Select Item
		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.15.1226. Copyright (C) 2012 American	Megatrends, Inc.

#### Intel AMT

Enable or disable Intel[®] Active Management Technology BIOS Extension.

#### Disable ME

Enable or disable ME functionality.

#### • USB Configuration

You can use this screen to 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.

Aptio Setup Utility - Advanced	Copyright (C) 2012 American	Megatrends, Inc.
USB Configuration USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs		Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will
Legacy USB Support		keep USB devices available only for EFI applications.
		<pre> ++: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.15.1226. C	Copyright (C) 2012 American Me	egatrends, Inc.

### **USB** Devices

Display all detected USB devices.

#### Legacy USB Support

Use this item to enable or disable support for USB device on legacy operating system. The default setting is Enabled. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications.

### • NCT6627UD Super IO Configuration

You can use this screen to select options for the Super IO Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

Aptio Setup Utility - C Advanced	Copyright (C) 2012 Americ	an Megatrends, Inc.
NCT6627UD Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
NCT6627UD Super IO Chip > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration	NCT6627UD	
		<pre>++: Select Screen  †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
Version 2.15.1226. Co	pyright (C) 2012 American	F4: Save & EXIT ESC: Exit n Megatrends, Inc.

#### Serial Port 1~4 Configuration

Use this item to set parameters of serial port 1 to 4.

#### • NCT6627UD HW Monitor

Use this screen for Smart Fan configuration and hardware health status monitoring.

Aptio Setup Ut Advanced	ility - Copyright (C) 2012 Amo	erican Megatrends, Inc.
Pc Health Status		Enable or Disable Smart Fan
Smart Fan Function		
SYS Thermistor Temp CPU PECI Temp SysFan Speed CpuFan Speed VCORE +12V +3.3V +5V	: +35 C : +34.25 C : N/A : 4326 RPM : +0.904 V : +12.032 V : +3.392 V : +5.024 V	
		<pre></pre>
Version 2.15	.1226. Copyright (C) 2012 Amer	rican Megatrends, Inc.

This screen displays the temperature of system and CPU, cooling fan speed in RPM and system voltages (VCORE, +12V, +3.3V and +5V).

#### Smart Fan Function

Enable or disable Smart Fan function.

## 5.5 Chipset Menu

The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- PCH-IO Configuration
- System Agent (SA) Configuration

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

Main	Apti Advanced	o Setup Uti Chipset	lity - Copyright Boot Security	(C) 2012 American M Save & Exit	Megatrends, Inc.
▶ PCH-IO ▶ System	Configurati Agent (SA)	on Configuratio	on		PCH Parameters
					<pre>→+: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Ve	rsion 2.15.1	226. Copyright (	C) 2012 American Me	gatrends, Inc.

#### • PCH-IO Configuration

This screen allows you to set PCH parameters.

Aptio Setup Main Advanced <mark>Chipset</mark>	Utility - Copyright (C) 2012 American Boot Security Save & Exit	Megatrends, Inc.
Intel PCH RC Version ▶ USB Configuration ▶ PCH Azalia Configuration	Q77	USB Configuration settings.
Launch PXE OpROM policy PCH LAN Controller Wake on LAN	[Do not Launch] [Enabled] [Enabled]	
		<pre> ++: Select Screen  \$ 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.1	5.1226. Copyright (C) 2012 American Mo	egatrends, Inc.

#### **USB** Configuration

Use this item for USB configuration settings.

#### PCH Azalia Configuration

Use this item for PCH Azalia configuration settings.

#### Launch PXE OpROM policy

Control the execution of UEFI and Legacy PXE OpROM.

#### **PCH LAN Controller**

Enable or disable PCH LAN controller.

#### Wake on LAN

Enable or disable Wake on LAN functionality.

#### • System Agent (SA) Configuration

This screen shows System Agent information and provides function for specifying related parameters. For items marked with "▶", please press <Enter> for more options.

Aptio Setup Chipset	Utility - Copyright (C) 2012 Am t	erican Megatrends, Inc.
System Agent Bridge Name VT-d Capability	IvyBridge Supported	Check to enable VT-d function on MCH.
VT-d		
► Graphics Configuration ► Memory Configuration		<pre>→+: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
		F4: Save & Exit ESC: Exit
Version 2.2	15.1226. Copyright (C) 2 <u>012 Ame</u> r	rican Megatrends, Inc.

#### VT-d

Enable or disable Intel[®] chipset virtualization technology for directed I/O. VT-d can help end users improve security and reliability of the systems and also improve performance of I/O devices in virtualized environment.

#### **Graphics Configuration**

Use this item for graphics configuration settings.

#### Memory Configuration

Use this item for memory configuration settings.

#### • Graphics Configuration

Graphics Configuration       Select which of IGFX/PEG/PC         Primary Display       [Auto]         Primary IGFX Boot Display       [CRT]         Secondary IGFX Boot Display       [DP]         LVDS Panel Type       [800x600 18Bit]         LVDS Brightness       [70%]         DVMT Pre-Allocated       [64M]         DVMT Total Gfx Mem       [256M]         ++: Select Screen       11: select Item         Enter: Select       +/-: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit	Aptio Setup Utility Chipset	- Copyright (C	) 2012 America	an Megatrends, Inc.
Primary Display       [Auto]       Primary Display or select s         Primary IGFX Boot Display       [DP]       for Switchable Gfx.         LVDS Panel Type       [800x600 18Bit]       [VDS Brightness         DVMT Pre-Allocated       [64M]       [VMT Total Gfx Mem         DVMT Total Gfx Mem       [256M]       ++: Select Screen         ++: Select Item       Enter: Select         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit	Graphics Configuration			Select which of IGFX/PEG/PCI Graphics device should be
Primary IGFX Boot Display       [CRT]       for Switchable Gfx.         Secondary IGFX Boot Display       [DP]       [VDS Panel Type       [800x600 18Bit]         LVDS Brightness       [70%]       [0VMT Pre-Allocated       [64M]         DVMT Total Gfx Mem       [256M]       ++: Select Screen         11: Select Item       Enter: Select       +-: Change Opt.         F1: General Help       F2: Previous Values       F3: Optimized Defaults         F4: Save & Exit       F4: Save & Exit       F4: Save & Exit	Primary Display			Primary Display Or select SG
Secondary IGFX Boot Display [DP] LVDS Panel Type [800x600 18Bit] LVDS Brightness [70%] DVMT Pre-Allocated [64M] DVMT Total Gfx Mem [256M] ++: Select Screen 11: select Item Enter: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	Primary IGFX Boot Display	[CRT]		for Switchable Gfx.
LVDS Panel Type [800x600 18Bit] LVDS Brightness [70%] DVMT Pre-Allocated [64M] DVMT Total Gfx Mem [256M] ++: Select Screen 11: Select Item Enter: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	Secondary IGFX Boot Display	[DP]		
LVDS Brightness [70%] DVMT Pre-Allocated [64M] DVMT Total Gfx Mem [256M] ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	LVDS Panel Type	[800×600	18Bit]	
DVMT Pre-Allocated [64M] DVMT Total Gfx Mem [256M] ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	LVDS Brightness	[70%]		
DVMT Total Gfx Mem [256M] ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	DVMT Pre-Allocated	[64M]		
<pre>→+: Select Screen  †↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>	DVMT Total Gfx Mem	[256M]		
<pre>++: Select Screen  \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>				
<pre>++: Select Screen  fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit</pre>				
11: Select ItemEnter: Select+/-: Change Opt.F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & Exit				→+: Select Screen
Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit				fl: Select Item
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit				Enter: Select
F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit				+/-: Change Opt.
F2: Previous values F3: Optimized Defaults F4: Save & Exit				F1: General Help
F4: Save & Exit				F2: Previous values
F4. Save & EXIC				F3: Optimized Defaults
ESC+ Evit				ESC. EVIT
ESC. EXIL				
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#### **Primary Display**

Allow you to select which graphics controller to use as the primary boot device.

#### **Primary IGFX Boot Display**

Allow you to select the display device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. Primary IGFX boot display options are: CRT, DVI, LVDS and DP.

#### Secondary IGFX Boot Display

Use this item to select secondary display device. Secondary IGFX boot display options are: CRT, DVI, LVDS and DP.

#### LVDS Panel Type

Use this item to select LVDS panel used by internal graphics controller by selecting the appropriate setup item.

#### LVDS Brightness

Select LVDS brightness that ranges from 30% to 100%. The default setting is 70%.

#### **DVMT Pre-Allocated**

Select DVMT pre-allocated memory size.

#### **DVMT Total Gfx Mem**

Select DVMT total memory size.

### 5.6 Boot Menu

The Boot menu allows users to change boot options of the system.

MainAdvancedChipsetBootSecuritySave & ExitBootConfigurationSetup Prompt TimeoutBootup Numlock StateQuiet BootFast BootDriver Option PrioritiesBoot Option PrioritiesBoot Option #1Boot Option #2CD/DVD ROM Drive BBS PrioritiesHard Drive BBS PrioritiesHard Drive BBS PrioritiesFast BootCD/DVD ROM Drive BBS PrioritiesFast BootFast Boot Option #2CD/DVD ROM Drive BBS PrioritiesFast Boot Drive BBS PrioritiesHard Drive BBS PrioritiesFast Boot Drive BBS Priorities </th <th>Aptio Setup Utility</th> <th>- Copyright (C) 2012 American</th> <th>Megatrends, Inc.</th>	Aptio Setup Utility	- Copyright (C) 2012 American	Megatrends, Inc.
Boot Configuration Setup Prompt Timeout Bootup Numlock StateImage: Configuration Setup Prompt Timeout Image: Configuration Key Image: Configuration Key Image: Configuration Key Image: Configuration Priorities Boot Option Priorities Boot Option Priorities Boot Option #1 Boot Option #2Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities[SATA PS: ASUS D] [SATA PM: INTEL SSD]**: select Screen 11: select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Main Advanced Chipset Boot	Security Save & Exit	
Bootup Numlock State[On]65535(0xFFFF) means indefinite waiting.Quiet Boot[Disabled]Image: Disabled]Image: Disabled]Driver Option PrioritiesBoot Option PrioritiesImage: Disabled]Image: Disabled]Boot Option #1[SATA PS: ASUS D]Image: Disabled]Boot Option #2[SATA PM: INTEL SSD]Image: Disabled]CD/DVD ROM Drive BBS PrioritiesImage: Disabled]Image: Disabled]Hard Drive BBS PrioritiesImage: Disabled]Image: Disabled]Hard Drive BBS PrioritiesImage: Disabled]Image: Disabled]F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & ExitESC: ExitImage: Disabled]	Boot Configuration Setup Prompt Timeout	1	Number of seconds to wait for setup activation key.
Quiet Boot[Disabled]Fast Boot[Disabled]Driver Option PrioritiesBoot Option PrioritiesBoot Option #1[SATA PS: ASUS D]Boot Option #2CD/DVD ROM Drive BBS PrioritiesHard Drive BBS PrioritiesHard Drive BBS PrioritiesF1: Select ItemEnter: Select+-: Change Opt.F1: General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & ExitESC: Exit	Bootup Numlock State	[On]	65535(0xFFFF) means indefinite waiting.
Fast Boot       [Disabled]         Driver Option Priorities         Boot Option Priorities         Boot Option #1       [SATA PS: ASUS D]         Boot Option #2       [SATA PM: INTEL SSD]         CD/DVD ROM Drive BBS Priorities       ++: Select Screen         Hard Drive BBS Priorities       ++: Select Item         Enter: Select       +/-: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit         ESC: Exit       ESC: Exit	Quiet Boot	[Disabled]	
Driver Option Priorities Boot Option #1 [SATA PS: ASUS D] Boot Option #2 [SATA PM: INTEL SSD] CD/DVD ROM Drive BBS Priorities Hard Drive BBS Prior	Fast Boot	[Disabled]	
Boot Option Priorities         Boot Option #1       [SATA PS: ASUS D]         Boot Option #2       [SATA PM: INTEL SSD]         CD/DVD ROM Drive BBS Priorities       ++: Select Screen         Hard Drive BBS Priorities       +/: Change Opt.         F1: General Help       F2: Previous Values         F3: Optimized Defaults       F4: Save & Exit         ESC: Exit       ESC: Exit	Driver Option Priorities		
Boot Option #1 [SATA PS: ASUS D] Boot Option #2 [SATA PM: INTEL SSD] CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities Hard Drive BBS Priorities Fi Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Boot Option Priorities		
Boot Option #2 [SATA PM: INTEL SSD] CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Boot Option #1	[SATA PS: ASUS D]	
CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities Hard Drive BBS Priorities ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Boot Option #2	[SATA PM: INTEL SSD]	
	CD/DVD ROM Drive BBS Priorities Hard Drive BBS Priorities		<pre>++: Select Screen  \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>

#### • Setup Prompt Timeout Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

#### Bootup Num Lock State

Use this item to select the power-on state for the keyboard NumLock.

#### Quiet Boot

Select to display either POST output messages or a splash screen during boot-up.

• Fast Boot

Enable or disable boot with initialization of minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

#### • Boot Option Priorities

These are settings for boot priority. Specify the boot device priority sequence from the available devices.

#### • Boot Option #1..#2

These items are used to form the boot order and are dynamically generated. They represent either a legacy BBS (BIOS Boot Specification) class of devices or a native EFI boot entry. Press <Return> on each option to select the BBS class / EFI boot entry desired.

CD/DVD ROM Drive BBS/Hard Drive BBS Priorities

These items are for configuring the boot order for a specific device class. These options are only visible if at least one device for this class is detected.

## 5.7 Security Menu

The Security menu allows users to change the security settings for the system.

Aptio Setup Utility - Copyr Main Advanced Chipset Boot Secur	ight (C) 2012 American Megatrends, Inc. <mark>ity</mark> Save & Exit
Password Description If ONLY the Administrator's password is so then this only limits access to Setup and only asked for when entering Setup. If ONLY the User's password is set, then is a power on password and must be entered boot or enter Setup. In Setup the User with have Administrator rights. The password length must be in the following range: Minimum length 3	Set Administrator Password is this d to 11
Maximum length 20 Administrator Password User Password	<pre> ++: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

#### • Administrator Password

This item indicates whether an administrator password has been set (installed or uninstalled).

• **User Password** This item indicates whether an user password has been set (installed or uninstalled).

## 5.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.

Aptio Setup Utility - Copyright (C) 2012 American Main Advanced Chipset Boot Security Save & Exit	Megatrends, Inc.
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults Save as User Defaults	Exit system setup after saving the changes.
Restore User Defaults	
Boot Override SATA PS: ASUS DRW-24DIST SATA PM: INTEL SSDSC2MH120A2 Launch EFI Shell from filesystem device	++: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help E2: Previous Values
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Manaian 2 15 1226 comunisht (c) 2012 American M	anaturanda

#### • Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

#### • Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

#### • Save Changes and Reset

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 Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

### • Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

#### • Save Changes

When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

### • Discard Changes

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

### • Restore Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

#### • Save as User Defaults

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

#### • Restore User Defaults

It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

#### • Launch EFI Shell from filesystem device

Attempt to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

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## Appendix A Watchdog Timer

## **About 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.

## How to Use Watchdog Timer

Start		
$\downarrow$		
Un-Lock WDT:		
	O 2E 87	; Un-lock super I/O
	O 2E 87	; Un-lock super I/O
$\downarrow$		•
Select Logic device:		
-	O 2E 07	
	O 2F 08	
$\downarrow$		
Activate WDT:		
	O 2E 30	
	O 2F 01	
$\downarrow$		
Set Second or Minute:		
	O 2E F5	
		N-00 or 09 (See W) Note below)
1	U ZF N	
↓ Sathaaa timar:		
Set base timer:		
1		, IVI-00,01,02,FF(Hex) , Value-0 to 255
wD1 counting re-set timer:		
		M-00.04.00 FF
	O ZF IVI	; MI=00,01,02,FF
JE to dischle W/DT:		
,ir to disable wor:	0.25.20	
	0 2E 30	· Can be disabled at any time
	0 26 00	, Gail be uisabled at any time
Timeout Value Range		

■ 1 to 255

Minute / Second

#### Program Example •

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second; N=08 (Min), 00(Sec)
2E, F6	
2F, M	Set Value; M=00~FF

Note:
If N=00h, the time base is set to second.

**M** = time value

- 00h: Time-out Disable
- 01h: Time-out occurs after 1 second
- 02h: Time-out occurs after 2 seconds
- 03h: Time-out occurs after 3 seconds

FFh: Time-out occurs after 255 seconds

If **N**=08h, the time base is set to minute.

M = time value

00h: Time-out Disable

01h: Time-out occurs after 1 minute

02h: Time-out occurs after 2 minutes 03h: Time-out occurs after 3 minutes

FFh: Time-out occurs after 255 minutes

# Appendix B Digital I/O

## **Using Digital Output Function**

- O 2E 87
- O 2E 07
- O 2F 08
- O 2E 30
- O 2F 02 Setting DIO is active
- O 2E E0
- O 2F 00 00: The respective DIO is programmed as an output port
- O 2E E1
- O 2F NN NN: Setting output value

## Sol Note:

**NN**=01 means output value is "00000001", DIO1 is output high, the rest DIO2~DIO8 are output low.

## **Using Digital Input Function**

- O 2E 87
- O 2E 87
- O 2E 07
- O 2F 08
- O 2E 30
- O 2F 02 Setting DIO is active
- O 2E E0
- O 2F  ${f FF}~{f FF}$ : The respective DIO is programmed as an input port
- O 2E E1
- I 2F Read Input value

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# Appendix C Configuring SATA for RAID

## Configuring SATA Hard Drive(s) for RAID Function

Before you begin the SATA configuration, please prepare:

- Two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID with the SATA controller, you may prepare only one hard drive.
- An empty formatted floppy disk.
- Windows XP setup disk.

#### Please follow up the steps below to configure SATA hard drive(s):

- 1. Install SATA hard drive(s) in your system.
- 2. Enter the BIOS Setup to configure SATA controller mode and boot sequence.
- 3. Configure RAID by the RAID BIOS.
- 4. Making a SATA driver disk.
- 5. Install the SATA controller driver during the OS installation.

#### 1. Installing SATA hard drive(s) in your system.

Connect one end of the SATA signal cable to the rear of the SATA hard drive, and the other end to available SATA port(s) on the board. Then, connect the power connector of power supply to the hard drive.

#### 2. Configuring SATA controller mode and boot sequence by the BIOS Setup.

You have to make sure whether the SATA controller is configured correctly by system BIOS Setup and set up BIOS boot sequence for the SATA hard drive(s).

2.1. Turn on your system, and then press the <Del> button to enter BIOS Setup during running POST (Power-On Self Test). If you want to create RAID, just go to the Advanced Settings menu, select the "SATA Mode Selection", and press <Enter> for more options. A list of options appears, please select "RAID".

[Enabled] [RAID] WDC WD5000AAKX en-US WDC WD5000AAKX en-US Empty Unknown ASUS DRW-24 en-US	Determines how SATA controller(s) operate.
eii-03	<pre> ++: Select Screen  11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	<pre>[Enabled] [RAID] WDC WD5000AAKX en-US WDC WD5000AAKX en-US Empty Unknown ASUS DRW-24 en-US</pre>

2.2. Set DVD-ROM for First Boot Option under the Boot Settings menu to boot DVD-ROM after system restarts.

Aptio Setup Uti Main Advanced Chipset	lity - Copyright (C) 2012 American Boot Security Save & Exit	Megatrends, Inc.
Boot Configuration Setup Prompt Timeout Bootup Numlock State Quiet Boot Fast Boot Driver Option Priorities	1 [On] [Disabled] [Disabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities Boot Option #1 Boot Option #2 Boot Option #3 CD/DVD ROM Drive BBS Prioriti Hard Drive BBS Priorities	[P3: ASUS DRW-24] [WDC WD5000AAKX] [WDC WD5000AAKX] es	<pre>→+: Select Screen  ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.15.2	L226. Copyright (C) 2012 American №	Negatrends, Inc.

2.3. Save and exit the BIOS Setup.

#### 3. Configuring RAID by the RAID BIOS.

Enter the RAID BIOS setup utility to configure a RAID array. Skip this step and proceed if you do not want to create a RAID.

3.1. After the POST memory testing and before the operating system booting, a message "Press <Ctrl-I> to enter Configuration Utility" shows up, accordingly, press <Ctrl + I> to enter the RAID BIOS setup utility.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.						
RAID VOl	umes:					
ID	Name	Level	Strip	Size	Status	Bootable
0	Volume0	RAIDO(Stripe)	128KB	465.8GB	Normal	Yes
Physical ID 0 1	Devices: Device Model WDC WD5000AAKX-0 WDC WD5000AAKX-0	Serial # WD-WCAYUCM26947 WD-WMAYUF937005		Size 465.7GB 465.7GB	Type/Statu Member Dis	s(Vol ID) k(0) k(0)
Press <ctr< td=""><td>L-I&gt; to enter Confi</td><td>guration Utility.</td><td></td><td></td><td></td><td></td></ctr<>	L-I> to enter Confi	guration Utility.				

3.2. After you press <Ctrl + I>, the Create RAID Volume screen will appear. If you want to create a RAID array, select the Create RAID Volume option in the Main Menu and press <Enter>.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.			
1. Create RAI 2. Delete RAI 3. Reset Disk RAID Volumes: None Defined. Physical Devices: ID Device Model 0 WDC WD5000AAKX-0 1 WDC WD5000AAKX-0	[ MAIN MENU D Volume s to Non-RAID [ DISK/VOLUME INFO Serial # WD-WCAYUCM26947 WD-WMAYUF937005	<pre>4. Recovery Volume Options 5. Acceleration Options 6. Exit  MATION ]  Size Type/Status(Vol ID) 465.7GB Non-RAID Disk 465.7GB Non-RAID Disk</pre>	
[1]-Select	[ESC]-Exit	[Enter]-Select Menu	

3.3. After entering the Create Volume Menu screen, you can type the disk array name with 1~16 letters (letters cannot be special characters) in the item "Name".

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.			
[ CREATE VOLUME MENU ] Name: Volume0 RAID Level: RAID0 (Stripe) Disks: Select Disks Strip Size: 128KB Capacity: 931.5 GB Sync: N/A Create Volume			
[ HELP ] Enter a unique volume name that has no special characters and is 16 characters or less.			
[]]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select			

3.4. When finished, press <Enter> to select a RAID level. There are three RAID levels: RAID0, RAID1 and RAID5 & RAID10. Select a RAID level and press <Enter>.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
[ CREATE VOLUME MENU ] Name: Volume0 RAID Level: RAID0(Stripe) Disks: Select Disks Strip Size: 128KB Capacity: 931.5 GB Sync: N/A Create Volume				
[ HELP ]				
[lt]Change [	TAB]-Next [ESC]-Previous Menu	[ENTER]-Select		
3.5. Set the stripe block size. The KB is the standard unit of stripe block size. The stripe block size can be 4KB to 128KB. After the setting, press <Enter> for the array capacity.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
[ CREATE VOLUME MENU ]         Name:       volume0         RAID Level:       RAID0(Stripe)         Disks:       Select Disks         Strip Size:       128KB         Capacity:       931.5         Sync:       N/A         Create volume				
[ HELP ] The following are typical values: RAIDO - 128KB RAID10 - 64KB RAID5 - 64KB				
[ †]Change	[TAB]-Next [E	SC]-Previous Menu	[ENTER]-Select	

3.6. After setting all the items on the menu, select Create Volume and press <Enter> to start creating the RAID array.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
[ CREATE VOLUME MENU ] Name: Volume0 RAID Level: RAID0(Stripe) Disks: Select Disks Strip Size: 128KB Capacity: 931.5 GB Sync: N/A Create Volume				
[ HELP ] - The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.				
[[]]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select				

3.7. When prompting the confirmation, press <Y> to create this volume, or <N> to cancel the creation.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
	[ CREATE VOLUME MENU ] Name: volume0 RAID Level: RAID0(Stripe) Disks: Select Disks Strip Size: 128KB Capacity: 200 GB Sync: N/A			
	WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST. Are you sure you want to create this volume? $(Y/N)$ :			
	Press ENTER to create the specified volume.			
	[[]]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select			

After the creation is completed, you can see detailed information about the RAID Array in the Disk/Volume Information section, including RAID mode, disk block size, disk name, and disk capacity, etc.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
[ MAIN MENU ]         1. Create RAID Volume       4. Recovery Volume Options         2. Delete RAID Volume       5. Acceleration Options         3. Reset Disks to Non-RAID       6. Exit         [ DISK/VOLUME INFORMATION ]				
RAID Volumes: ID Name O VolumeO Physical Devices: ID Device Model O WDC WD5000AAKX-0 1 WDC WD5000AAKX-0	RAID Volumes:         ID Name       Level         Strip       Size         Strip       Size         Volume0       RAIDO(Stripe)         128KB       200.0GB         Normal       Yes         Physical Devices:       Size         ID       Device Model         Serial       #         Size       Type/Status(Vol ID)         0       WDC WD5000AAKX-0         WD-WCAYUCM26947       465.7GB         Member       Disk(0)         1       WDC WD5000AAKX-0         WD-WMAYUF937005       465.7GB			
[†]-Select	[ESC]-Ex	tit [Enter]-Select Menu		

### Delete RAID volume

If you want to delete a RAID volume, select the Delete RAID Volume option in Main Menu. Press <Enter> and follow on-screen instructions.

Intel(R) Rapid Storage Technology - Option ROM - 11.0.0.1339 Copyright(C) 2003-11 Intel Corporation. All Rights Reserved.				
[ MAIN MENU ]         1. Create RAID Volume       4. Recovery Volume Options         2. Delete RAID Volume       5. Acceleration Options         3. Reset Disks to Non-RAID       6. Exit         [ DISK/VOLUME INFORMATION ]				
RAID Volumes: ID Name O VolumeO	Level RAIDO(Stripe)	Strip 128KB	Size Status 200.0GB Normal	Bootable Yes
Physical Devices: ID Device Model 0 WDC WD5000AAKX-0 1 WDC WD5000AAKX-0	Serial # WD-WCAYUCM26947 WD-WMAYUF937005		Size Type/Sta 465.7GB Member D 465.7GB Member D	ntus(Vol ID) hisk(0) hisk(0)
[†]-Select	[ESC]-	Exit	[Enter]-Select	Menu

Please press <Esc> to exit the RAID BIOS utility. Now, you can proceed to install a SATA driver controller and the operating system.

### 4. Making a SATA driver disk.

To install the operating system onto a serial ATA hard disk successfully, you need to install the SATA controller driver during the OS installation. Without the driver, the hard disk may not be recognized during the Windows setup process. First of all, please format a blank floppy disk. Secondly, follow up these steps below to produce a SATA driver disk.

Users can insert the driver DVD and the formatted blank floppy disk in another system. And then, please copy all of file of the "f6flpy-x32" folder in the driver DVD to a floppy disk.

# <u>Note</u>: Please copy all of file of the "f6flpy-x64" folder, if installing 64-bit Windows Operating System.

#### 5. Installing the SATA controller driver during the OS installation

Now, the SATA driver disk is ready, and BIOS settings configured, you can proceed to install Windows 2000/XP onto your SATA hard drive using the SATA driver. Here is an example for Windows XP installation.

5.1. Restart your system to boot the Windows 2000/XP Setup disk, and press <F6> button as soon as you see the message "Press F6 if you need to install a 3rd party SCSI or RAID driver". After pressing the <F6> button, there will be a few moments for some files being loaded before next screen appears.

Windows Setup	
Press F6 if you	need to install a third party SCSI or RAID driver

5.2. When you see the screen below, insert the floppy disk containing the SATA driver and press <S>.



5.3. If the Setup correctly recognizes the driver of the floppy disk, a controller menu will appear below. Use the <Arrow> keys to select "Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller" and press <Enter>. Then it will begin to load the SATA driver from the floppy disk.

	You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
	Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
	Intel(R) ICH7R/DH SATA RAID controller Intel(R) ICH7MDH SATA RAID controller Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller Intel(R) Mobile Express Chipset SATA RAID controller
E	NTER - Select E3 - Evit
<u>Nc</u> Wit	<u>ote</u> : If a message on the screen saying that one or some file(s) cannot be found, plea check the floppy disk or copy the correct SATA driver again from the driver DVD ndows Setup
<u>Nc</u>	ote:       If a message on the screen saying that one or some file(s) cannot be found, plea         check the floppy disk or copy the correct SATA driver again from the driver DVD         ndows       Setup         You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.
<u>Nc</u> wii	Dete: If a message on the screen saying that one or some file(s) cannot be found, plear check the floppy disk or copy the correct SATA driver again from the driver DVD ndows Setup You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer. Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.
<u>Nc</u>	Dete: If a message on the screen saying that one or some file(s) cannot be found, plead check the floppy disk or copy the correct SATA driver again from the driver DVD andows Setup You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer. Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen. Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller Intel(R) 7 Series Chipset Family SATA AHCI Controller Intel(R) 1 CH7R/DH SATA RAID controller
Wi	Mick - Screet (1) - Exit Set: If a message on the screen saying that one or some file(s) cannot be found, pleacheck the floppy disk or copy the correct SATA driver again from the driver DVD (ndows Setup) You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer. Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen. Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller Intel(R) 7 Series Chipset Family SATA AHCI Controller Intel(R) 1 CH7R/DH SATA RAID controller
Wi	Dete:       If a message on the screen saying that one or some file(s) cannot be found, pleat check the floppy disk or copy the correct SATA driver again from the driver DVD         Indows Setup

<u>Note</u>: If you are installing AHCI, please select "Intel 7 Series/C216 Chipset Family SATA AHCI Controller".

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## **Appendix D** Intel[®] iAMT Settings

The Intel[®] Active Management Technology (Intel[®] iAMT) has decreased a major barrier to IT efficiency that uses built-in platform capabilities and popular third-party management and security applications to allow IT a better discovering, healing, and protection their networked computing assets.

In order to utilize Intel[®] iAMT you must enter the ME BIOS (<Ctrl + P> during system startup), change the ME BIOS password, and then select "Intel[®] iAMT" as the manageability feature.

### **Entering MEBx**

- 1. You must go to BIOS to enable Intel[®] iAMT function.
- 2. Exit from BIOS after starting Intel[®] iAMT, and press <Ctrl + P> to enter MEBx Setting.



 $\frac{1}{2}$  <u>Note</u>: It is better to press <Ctrl + P> before the screen popping out.



## Set and Change Password

1. You will be asked to set a password when first log in. The default password is "admin".

Intel(R) Management Engine BIOS Extension v8.0.0.0061/Intel(R) ME v8.1.0.1265 Copyright(C) 2003-12 Intel Corporation. All Rights Reserved.			
MAIN MENU			
<pre>MEBx Login &gt; Intel(R) ME General Settings &gt; Intel(R) Standard Manageability Configuration MEBx Exit Intel(R) ME Password</pre>			
Intel(R) ME Password			
$[\downarrow\uparrow]$ = Move Highlight [Enter] = Enter Entry [Esc] = Exit			

2. You will be asked to change the password before setting ME.

Intel(R) Management Engine BIOS Extension v8.0.0.0061/Intel(R) ME v8.1.0.1265 Copyright(C) 2003-12 Intel Corporation. All Rights Reserved.			
MAIN MENU			
<pre>MEBx Login &gt; Intel(R) ME General Settings &gt; Intel(R) Standard Manageability Configuration MEBx Exit Intel(R) ME Password</pre>			
Intel(R) ME Password			
$[\downarrow\uparrow]$ = Move Highlight [Enter] = Enter Entry [Esc] = Exit			

- 3. You must confirm your new password while revising. The new password must contain: (example: **!!11qqQQ**) (default value).
  - Eight characters
  - One upper case
  - One lower case
  - One number
  - One special symbol, such as ! < \$ or ; , ( , ", excepted)

Underline (  $_$  ) and space are valid characters for password, but they won't make higher complexity.

## Intel[®] iAMT Web Console

1. From a web browser, please type http://(IP ADDRESS):16992, which connects to  ${\rm Intel}^{\circledast}$  iAMT Web.

Example: http://10.1.40.214:16992



2. To log on, you will be required to type in username and password for access to the Web.

USER: admin (default value) PASS: (MEBx password) 3. Enter the iAMT Web.

🏉 Intel® Active Manageme	🖉 Intel® Active Management Technology - Windows Internet Explorer 🗧 🖉 🗷					
🕒 🗸 🖉 http://10.1	.40.214:16992/index.htm		🖌 🛃 🗙 Google	P -		
🚖 🔅 🌈 Intel® Active M	Aanagement Technology		🟠 🔹 🔝 🔹 🖶 🔹 🔂 網頁(P)	• ۞ 工具(0) • "		
Intel [®] Active Mar Computer: AMT	nagement Technolog	у		(intel)		
System Status	System Status					
Hardware Information System	Power	On				
Processor	IP address	10.1.40.214				
Disk	System ID	03000200-0400-0500-0006-000700080009				
Event Log	Date	10/20/2008				
Power Policies	Time	1:50 pm				
Network Settings User Accounts	Refresh					
	c	opyright © 2005-2008 Intel Corp. Intel® Active Management Technology firr	nvare version: 5.0.2-build 1121			
				~		
			😜 網際網路	🔍 100% 🔻 🖉		

4. Click Remote Control, and select commands on the right side.

🖉 Intel® Active Manager	nent Technology - Windows Internet Explorer		
🚱 🗣 🔊 http://192	2.168.1.5:16992/remote htm	Google 🖌	- <i>م</i> ا
檔案(E) 编辑(E) 檢視()	Y 我的展景(A) 工具(D) 説明(B)		🤶 -
Google C-	✓ 開始 0 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		() 設定-
🚖 🕸 🌈 Intel® Active	e Management Technology	<b>∆</b> • <b>□</b> • <b>⊡</b>	網頁(2) - 🌍 工具(2) -
Intel®Active Ma	nagement Technology		
Computer: IntelAMT			(intel)
System Status Hardware Information	Remote Control		
System Processor	Power state: On		
Memory Disk	Select a boot cotion:		
Event Log Remote Control	Cycle power off and on "     Normal boot		
Power Policies Network Settings	O Reset* Boot from local CD/DVD drive Boot from local hard drive		
User Accounts			
	"Caution: These commands may cause user application data loss.		
	Send Command		
			-
		😡 🍚 網際網路	<b>A</b> 100% -
🐮 開始 🔰 🚺 😭	🙆 👋 🖉 Inde 1999 Active Manage 🦉 未命名 - 小量家. 🕢 文件 I - Microsoft Word CH		2 @ @ 🔁 💧 上午 11:45

5. When you have finished using the iAMT Web console, close the Web browser.

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