MB950

Intel® Core™ i3/i5/i7 ATX Motherboard

USER'S MANUAL

Version 1.0A

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IMPORTANT INFORMATION

1. When an Intel® Core[™] i7 processor is installed on board, please install an external graphics card to have graphics output, because Intel® Core[™] I7 processor does not support graphics in the microprocessor. Also, please note when an Intel® Core[™] i7 processor is installed, the memory module should be installed in DIMM1 socket; otherwise, the system will not boot.

2. When an external graphics card is installed on the motherboard, regardless of they type of processor on board, the onboard VGA and DVI ports/ connectors will not function. Use the graphics output connector on the graphics card.

3. The onboard PCI-E(x8) slot supports PCI-E(x4) link only. Please note that a PCI-E(x8) card installed on the board may or may not function normally.

Introduction

Product Description

The MB950 ATX motherboard offers the latest Socket H (LGA1156) supporting the Intel® Core[™] i7, Core[™] i5, Core[™] i3 processors or the Intel® Pentium® processor G6950, all developed on Intel's newest microarchitecture, formerly codenamed "Nehalem," and using Intel's 32nm and 45nm process technologies.

Designed as an enterprise-performance ATX motherboard, the MB950 is ideal for the latest generation of POS, kiosk, automation and multimedia applications such as gaming. Based on the Intel® Q57 chipset, the MB950 supports the processor-integrated graphics to provide two display streams in combination of the onboard VGA CRT and DVI-D video interfaces. Up to 16GB of maximum memory can be configured in four DDR3 socket at 1066/1333MHz.

In addition to the impressive computing performance, the board is equipped with high-end connectivity comprised of dual Gigabit LAN controllers, six SATA-II ports, one IDE, fourteen USB 2.0 ports, four COM ports and high-definition audio. Should greater performance or expansion be required, add-on cards can be connected to the onboard PCI-E(x16), PCI-E(x8) [(x4) Link], PCI-E(x1), four PCI, and ISA slot.

MB950 FEATURES

- Support Intel[®] Core[™] i7 / Core[™] i5 / Core[™] i3 / Pentium[®] G6950 processors
- 4x DDR3 DIMM (w/o ECC), Max. 16GB
- 2x Gigabit LAN
- 6x SATA II, 14x USB 2.0, 4x COM
- 1x PCI-E(x16), 1x PCE-E(x8) [(x4) Link], 1x PCE-E(x1), 4x PCI, 1x ISA, 1x IDE, 1x CF
- Support dual display; VGA/DVI-D
- Support iAMT6.0 (MB950AF only)

Checklist

Your MB950 package should include the items listed below.

- The MB950 ATX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (IDE, Serial ATA)

MB950 Specifications

Product Name	MB950		
Form Factor	Industrial Motherboard ATX		
CPU Type	Intel [®] Core(TM) i3 / i5/ i7 Processor		
CPU Speed	2.8GHz ~ 3.46GHz (73W)		
Last Level Cache	4MB		
CPU Socket	LGA1156		
Chipset	Intel [®] Q57 PCH , 27x27 mm FCBGA		
BIOS	AMI BIOS, support ACPI Function		
Memory	DDRIII 1066/1333MHz		
	- 240-pin DIMM x 4 (w/o ECC), Max.16GB		
VGA / DVI	Clarkdale processor integrated graphic(2X),		
	Two display streams supported in any combination of DP, DVI and		
	VGA ; Dual Independent display		
	- ASM 1142T level shifter for DVI		
	- VGA		
LAN	1. Q57 Gigabit MAC + PHY :Intel [®] 82578DM GbE		
	2. Intel [®] 82583V PCI-e Gigabit LAN controller x1		
USB	Q57 built-in USB 2.0 host controller, supports 14 ports		
Serial ATA	Q57 built-in SATA controller, supports 6 ports		
Parallel IDE/ CF	JMICRON JM368 (PCI-e to PATA) x1 for 1 PATA channel for IDE & CF		
	- IDE 40 pin		
PCI to ISA Bridge	TE IT8888C v 1 for high ISA bug		
Audio	OE7 huilt in High Definition Audio controllor + ALC222 Codeo w/7.1		
Audio	channels		
LPC I/O	Winhond W83627LIHG :		
21000	COM1 (RS232/422/485) COM2(RS232) COM3 (RS232) COM4		
	(RS232) with pin-9 with power for 4 ports (500 mA for each port)		
	Hardware monitor (2 thermal inputs, 4 voltage monitor inputs, VID0-4 & 2		
	Fan Headers)		
Digital IO	4 in & 4 out		
iAMT	Q57 built-in iAMT 6.0 (MB950AF only)		
KB/Mouse	Supports PS/2 Keyboard/Mouse connector		
Expansion Slots	1x PCI-e(x16) slot, 1x PCI-e [x8 slot](x4) slot, 1x PCI-e(x1),		
	4x PCI slot, 1x ISA		
Edge Connector	PS/2 for Keyboard and Mouse		
	GbE LAN RJ45 + dual USB stack connector		
	GbE LAN RJ45 + dual USB stack connector		
	Dual DB9 stack connector x1 for $OVI + VGA$		
	RCA Jack 3x2 for HD Audio		
On Board	2 x 5-pips header x 5 for 10 USB ports		
Header/Connector	12-pin header x1 for front audio outputs		
	10-pin box header x 2 for COM 2, 4		
	3-pin fan pin header x2		
	3-pin System fan pin header x1 (DC fan)		
	4-pin CPU fan pin header x1 (PWM fan control)		
	2 x 4 pins header for Digital I/O		
	5-pin neader X 1 for IrDA		
Watabdag Timar	Zo-pin neduel X I IOI Marallel Voc (256 pogmonto 0, 1, 2, 255 pog/min)		
System Valtara	1 C3 (200 Seyments, 0, 1, 2200 Sec/IIIII)		
Other	+3V, +3.3V, +12V, -12V, 3V3D		
Other Decard Cine			
Board Size	305mm x 244mm		

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the MB950 in order to set up a workable system. The topics covered are:

Installing the Memory
Setting the Jumpers
Connectors on MB950

Installing the CPU

The MB950 board supports an LGA1156 Socket (shown below) for Intel Clarkdale processors.

To install the CPU, unlock first the socket by pressing the lever sideways, then lift it up to a 90-degree. Then, position the CPU above the socket such that the CPU corner aligns with the gold triangle matching the socket corner with a small triangle. Carefully insert the CPU into the socket and push down the lever to secure the CPU. Then, install the heat sink and fan.



NOTE: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.

Installing the Memory

The MB950 board supports four DDR3 memory socket for a maximum total memory of 16GB in DDR3 DIMM memory type.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

- 1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
- 2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
- 3. To remove the DDR3 module, press the clips with both hands.



Setting the Jumpers

Jumpers are used on MB950 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on MB950 and their respective functions.

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Jumper Locations on MB950

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	COM1 Function	RS-232	RS-422	RS-485
246		JP2:	JP2:	JP2:
		1-2	3-4	5-6
	Jumper			
1 3 5	Setting	JP1:	JP1:	JP1:
	(pin closed)	3-5 & 4-6	1-3 & 2-4	1-3 & 2-4
		JP3:	JP3:	JP3:
		3-5 & 4-6	1-3 & 2-4	1-3 & 2-4

JP1, JP2, JP3: RS232/RS422/RS485 (COM1) Selection

JP4: COM1 RS232 RI/+5V/+12V Power Setting

JP4	Setting Function	
	Pin 1-2	101
1 🗆 🗆 2	Short/Closed	+12V
	Pin 3-4	
5 0 0 6	Short/Closed	RI
	Pin 5-6	
	Short/Closed	+5V

JP5: COM3 RS232 RI/+5V/+12V Power Setting

JP5	Setting	Function
	Pin 1-2	
1	Short/Closed	+12V
	Pin 3-4	
5 🗖 🗖 6	Short/Closed	RI
	Pin 5-6	
	Short/Closed	+5V

JP9: COM4 RS232 RI/+5V/+12V Power Setting

JP9	Setting	Function
	Pin 1-2	
1 🗆 🗆 2	Short/Closed	+12V
	Pin 3-4	
5 🗖 🗖 6	Short/Closed	RI
	Pin 5-6	
	Short/Closed	+5V

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JP11: COM2 RS232 RI/+5V/+12V Power Setting

JP11	Setting	Function
	Pin 1-2	+12V
1 🗆 🗆 2	Short/Closed	+12 V
	Pin 3-4	
5 🗖 🗖 6	Short/Closed	RI
	Pin 5-6	
	Short/Closed	+5V

JP7: Compact Flash Socket Master/Slave Setting

JP7	Compact Flash	
Short	Master	
o o Open	Slave	

JP8: Clear CMOS Contents

JP8	Setting	Function
123	Pin 1-2 Short/Closed	Normal
123	Pin 2-3 Short/Closed	Clear CMOS

Connectors on MB950

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0.... J21 J19 ■000000000000000 ٢ J26 õ 0,000,0 0000000000000 SYS FAN1 J12 o BAT1 J11 Se JP9 b 0 0 0 JSB3 USB Ô b 0 USB2 CPU_FAN1000 - USBE 00000 USB² ۵ O 0 000000 0000000000 000 .14 00 J2 С ø ٢ b С 0 0 \bigcirc 0 0 ٢ \bigcirc 0 h Connector Locations on MB950. Page CN1: PS/2 Keyboard and PS/2 Mouse Connectors 14 CN3: COM1 and COM3 Serial Ports 14 CN2: VGA and DVI 15 CN5: Gigabit LAN (82583V) + USB2/USB3..... ...15 CN6: Gigabit LAN (82578DM) + USB0/USB1 15 CN4: HD Audio Connector 16 13: ATX 12V Power Connector 16 J19: 24-pin ATX Power Connector 17 J16, J17, J18, J22, J23, J24: SATA II Connectors 17 J13: Front Panel Function Connector 18 J1: SPDIF I/O 16 J2 : Audio Pin Header for Chassis Front Panel.....16 J11 : Digital I/O Connector (4 in, 4 out) ..17 J12 : IRDA Connector..... ... 17 F USB1: USB4/USB5 Connector18 F USB2: USB6/USB7 Connector 19 F USB3: USB8/USB9 Connector 19 F USB4: USB10/USB11 Connector..... ...19 F_USB5: USB12/USB13 Connector..... 19 CPU FAN1: CPU Fan Power Connector20 SYS_FAN1: system Fan1 Power Connector ...20 J20, J21: COM4, COM2 RS232 Serial Ports J26: Parallel Port Connector..... 19 CN7: CF Socket.....20 J4: ISA Slot (shared with PCI4) 20 PCIE1: PCI-E X16 (PEG)20 PCIE2: PCI-E X1 Slot20 PCIE3: PCI-E X8 Slot (X4 Link) 20

Connector Locations on MB950



CN1: PS/2 Keyboard and PS/2 Mouse Connectors



PS/2 Mouse

PS/2 Keyboard

Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	GND
5V	4	4	5V
Keyboard clock	5	5	Mouse clock
N.C.	6	6	N.C.

CN3: COM1 and COM3 Serial Ports

	Pin #
COM3	
	1
	2
0()0	3
COM1	4
1 5	5
	6
	7
6 9	8
	9

Pin #	Signal Name			
	RS-232	R2-422	RS-485	
1	DCD	TX-	DATA-	
2	RX	TX+	DATA+	
3	TX	RX+	NC	
4	DTR	RX-	NC	
5	Ground	Ground	Ground	
6	DSR	NC	NC	
7	RTS	NC	NC	
8	CTS	NC	NC	
9	RI	NC	NC	
10	NC	NC	NC	



CN2: VGA and DVI

	51
l	1511

Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
N.C.	11	12	DDCDATA
HSYNC	13	14	VSYNC
DDCCLK	15		



Signal Name	Pin #	Pin #	Signal Name
DATA2-	1	2	DATA2+
GND	3	4	N.C.
N.C.	5	6	DDCCLK
DDCDATA	7	8	N.C.
DATA1-	9	10	DATA1+
GND	11	12	N.C.
N.C.	13	14	VCC
GND	15	16	Hot Plug
			Detect
DATA0-	17	18	DATA0+
GND	19	20	N.C.
N.C.	21	22	GND
CLK+	23	24	CLK-

CN5: Gigabit LAN (82583V) + USB2/USB3

CN6: Gigabit LAN (82578DM) + USB0/USB1



CN4: HD Audio Connector



J1: SPDIF I/O

1 3

	Pin #	Signal Name
■ □ 2 □ □ 4	1	SPDIF IN
	2	Ground
	3	SPDIF OUT
	4	Ground

J2 : Audio Pin Header for Chassis Front Panel

	Signal Name	Pin	Pin	Signal Name
1 🗖 0 2	MIC IN_L	1	2	Ground
	MIC IN_R	3	4	DET
00	LINE_R	5	6	Ground
90010	Sense	7	8	KEY
	LINE_L	9	10	Ground

Signal Name

J3: ATX 12V Power Connector

This connector supplies the CPU operating voltage.

		Pin #
1 0 0	72	1
3 0 0	4	2
	_	3
		4

1	Ground
2	Ground
3	+12V
4	+12V

	Signal Name	Pin #	Pin #	Signal Name
	3.3V	13	1	3.3V
110 01	-12V	14	2	3.3V
0 0	Ground	15	3	Ground
	PS-ON	16	4	+5V
õ õ	Ground	17	5	Ground
	Ground	18	6	+5V
0 0	Ground	19	7	Ground
	-5V	20	8	Power good
0 0	+5V	21	9	5VSB
240012	+5V	22	10	+12V
	+5V	23	11	+12V
	Ground	24	12	+3.3V

J19: 24-pin ATX Power Connector

J11 : Digital I/O Connector (4 in, 4 out)

	Signal Name	Pin #	Pin #	Signal Name
1 🗖 0 2	Ground	1	2	+5V
00	Out3	3	4	Out1
00	Out2	5	6	Out0
90010	IN3	7	8	IN1
	IN2	9	10	IN0

J12: IRDA Connector

111	Pin #	Signal Name
	5	SOUTB
0	4	GND
0	3	SINB
	2	KEY
	1	VCC5

J13: Front Panel Function Connector



Signal Name	Pin #	Pin #	Signal Name
SPK +	1	2	PWR LED +
NC	3	4	PWR LED- (GND)
SPK – (GND)	5	6	PWR LED- (GND)
SPK – (GND)	7	8	NC
NC	9	10	NC
AMT LED -	11	12	AMT LED +
PWR_SW	13	14	PWR_SW
NC	15	16	NC
RST	17	18	GND
HDD LED -	19	20	HDD LED +

J16, J17, J18, J22, J23, J24: SATA II Connectors



Pin #	Signal Name
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

J20, J21: COM4, COM2 RS232 Serial Ports

J20	J21
0000	5 0000∎1 00006

Signal Name	Pin #	Pin #	Signal Name
DCD#	1	6	DSR#
SIN#	2	7	RTS#
SOUT	3	8	CTS#
DTR#	4	9	RI#
GND	5	Х	KEY

	Signal Name	Pin #	Pin #	Signal Name
	Line printer strobe	1	14	AutoFeed
	PD0, parallel data 0	2	15	Error
	PD1, parallel data 1	3	16	Initialize
	PD2, parallel data 2	4	17	Select
	PD3, parallel data 3	5	18	Ground
	PD4, parallel data 4	6	19	Ground
	PD5, parallel data 5	7	20	Ground
	PD6, parallel data 6	8	21	Ground
	PD7, parallel data 7	9	22	Ground
13 26	ACK, acknowledge	10	23	Ground
	Busy	11	24	Ground
	Paper empty	12	25	Ground
	Select	13	N/A	N/A

J26: Parallel Port Connector





F_USB1: USB4/USB5 Connector

Signal Name	Pin	Pin	Signal Name
VCC	1	2	VCC
D0-	3	4	D1-
D0+	5	6	D1+
GND	7	8	GND
KEY	9	10	NC

- F_USB2: USB6/USB7 Connector
- F_USB3: USB8/USB9 Connector
- F_USB4: USB10/USB11 Connector
- F_USB5: USB12/USB13 Connector

CPU_FAN1: CPU Fan Power Connector

L			
1		1	
4	-	I	

Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

SYS_FAN1: system Fan1 Power Connector

			1
3	2	1	

Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

CN7: CF Socket

J4: ISA Slot (shared with PCI4)

PCIE1: PCI-E X16 (PEG)

PCIE2: PCI-E X1 Slot

PCIE3: PCI-E X8 Slot (X4 Link)

PCI1-PCI4: PCI 32-bit Slot

BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

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BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Main BIOS Setup

This setup allows you to view processor configuration used in your computer system and set the system time and date.

Main Advanced	PCIPnP	Boot	Security	/ Chipset Exit
System Overview Processor Intel(R) Core(TM) i5 CPU Speed : 3333MHz Count : 1		660 @ 3.33GHz		Use[ENTER], [TAB] or [SHIFT-TAB] to select a field.
System Memory Size : 8056MB				Configure system Time.
System Time System Date		[02:29:50] [Fri 01/02/2009]		<pre>Select Screen \$ \$ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit</pre>

BIOS SETUP UTILITY

- *Note:* If the system cannot boot after making and saving system changes with Setup, the AMI BIOS supports an override to the CMOS settings that resets your system to its default.
- *Warning:* It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

Advanced Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Adva	anced Settings		Configure CPU.			
WAR	NNG: Setting wrong may cause s					
► CPU	Configurations					
► IDE C	onfiguration					
Super	IO Configuration					
► Hardv	are Health Confgurat	tion				
► ACPI	Configuration				<- Select So	creen
► AHCI	Configuration				†↓ Select It	em
Intel A	MT Configuration				+- Change Fi	leld
Intel V	T-d Configuration				Tab Select Fi	leld
► MPS	Configuration				F1 General H	Help
PCI E	xpress Configuration				F10 Save and	Exit
► Remo	te Access Configurati	on			ESC Exit	
► USB (Configuration					

The Advanced BIOS Settings configurations are shown in the following pages, as seen in the computer screen. Please note that setting the wrong values may cause the system to malfunction.

REMARKS: The Intel AMT Configuration is available only on MB950AF, not MB950F.

	BI	OS SETUP UT	ILITY			
Main Advanced	PCIPnP	Boot	Securit	/ Chi	pset	Exit
Configure advance Module Version: (ed CPU setti 01.08	ngs		Configur	e CPU.	
Manufacturer: Intel Intel(R) Core(TM) i5 CPL Frequency : 3.33GI BLCK Speed : 133MF Cache L1 : 128KB Cache L2 : 512KB Cache L3 : 4096KB Ratio Status: Unlocked Ratio Actual Value: 9.5	J Hz Hz I (Min:09, Max:2	660 @ 3 25)	.33GHz	<- Sel ↑↓ Sel	lect Sc lect It	reen em
Ratio CMOS Setting MPS and ACPI MADT or Max CPUID Value Limit Intel(R) Virtualization Tec Intel(R) HT Technology Active Processor Cores A20M ► Intel PPM Configuratio	dering ch n	25 Modern o Disabled Enabled All Diabled	ordering	+- Cha Tab Sel F1 Ger F10 Sav ESC Ex:	ange Fi lect Fi neral H ze and it	eld eld elp Exit

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The CPU Configuration menu shows the following CPU details including the manufacturer, CPU type, its frequency and cache levels. Other options include:

Ratio CMOS Setting

Sets the ratio between CPU core clock and the FSB frequency.

MPS and ACPI MADT ordering

Modern ordering for Windows XP or later OSes. Legacy ordering for Windows 2000 or earlier OSes.

Max CPU ID Value Limit

Disabled for Windows XP.

Intel Virtualization Tech

When enabled, a VMM can utilize the additional HW Caps. Provided by Intel Vitualization Tech. Note: A full reset is required to change the setting.

Intel HT Technology

When disabled, only one thread per enabled core is enabled.

Active Processor Cores

Number of cores to enable in each processor package.

A20M

Legacy OSes and Aps may need A20 M enabled.

Intel PPM Configuration

This configuration includes the following options:

Intel SpeedStep tech

Disable: Disable GV3 Enable: Enable GV3

Intel TurboMode tech

Turbo mode allows processor cores to run faster than marked frequency in specific condition.

Intel C-STATE tech CState: CPU idle is set to C2/C3/C4.

C State package limit setting

Selected option will program into C State package limit register.

C3 State / C6 State

Nehalem C state action select.

C1 Auto Demotion

When enabled, CPU will conditionally demote C3/C6/C7 requests to C1 based on uncore auto-demote information.

C1 Auto Demotion / C3 Auto Demotion

When enabled, CPU will conditionally demote C6/C7 requests to C3 based on uncore auto-demote information.

Main Advanced	PCIPnP	Boot	Security	/	Chipset	Exit
IDE Configuration						
Mirrored IDER Configuration Configure SATA#1 as SATA#1 IDE Configuration SATA#2 IDE Configuration Primary IDE Master Primary IDE Master Secondary IDE Slave Third IDE Master Fourth IDE Master Primary IDE Master Fifth IDE Master Fifth IDE Slave Sixth IDE Master Sixth IDE Slave		[Enabled] [IDE] [Compatible] [Enhanced] : [Hard Disk] : [Not Detect : [Not Detect	ed] ed] ed] ed] ed] ed] ed] ed] ed]	<- ↑↓ +- F1 F10 ESC	Select Select Change Select General Save an Exit	Screen Item Field Field L Help nd Exit
Hark Disk Write Protect IDE Detect Time Out (Sec) ATA(PI) 80Pin Cable Detectin Jmicron 36x ATA Controller	on	{Disabled} [35] [Host & Devi [Enabled]	ce]			

The IDE Configuration menu is used to change and/or set the configuration of the IDE devices installed in the system.

Hard Disk Write Protect

Disable/Enable device write protection. This will be effective only if device is accessed through BIOS.

IDE Detect Time Out (Sec)

Select the time out value for detecting ATA/ATAPI device(s).

ATA(PI) 80pin Cable Detection

Select the mechanism for detecting 80pin ATA(PI) cable.

Jmicron 36x ATA Controller

Select ATA Controller Operate Mode

Main Advanced	PCIPnP	Boot	Security	Chipset Exit
Configure Win627	UHG Supe	er IO Chipset		
Serial Port1 Address Serial Port2 Address Serial Port2 Mode Serial Port3 Address Serial Port3 IRQ Select Serial Port4 Address Parallel Port Address Parallel Port Mode Parallel Port IRQ Restore on AC Power Loss Power On Function		[3F8] [2F8] [Normal] [3E0] [IRQ10] [Disabled] [378] [Normal] [IRQ7] [Power Off] [None]		<- Select Screen

BIOS SETUP UTILITY

Onboard Serial Port/Parallel Port

These fields allow you to select the onboard serial ports and their addresses. The default values for these ports are:

Serial Port 1	3F8
Serial Port 2	2F8/
Serial Port 3	3E0/IRQ10
Serial Port 4	Disabled
Parallel Port	378/IRQ7

Parallel Port Mode

This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Combination of ECP and EPP capabilities
Normal	Normal function

Restore on AC Power Loss

This field sets the system power status whether *on or off* when power returns to the system from a power failure situation.

Power On Function

This field is related to how the system is powered on . The options are *None, Mouse Left, Mouse Right, and Any Key.*

Main Advanced	PCIPnP	Boot	Securit	y Chipset Exit
Hardware Health C	onfiguratio	n		
System Temperature		: 45°C/113°F		
CPU Temperature		: 45°C/113°F		
SYSTEM Speed CPUFAN0 Speed		: 0 RPM : 5400 RPM		
Vcore(V)		: 1.160 V		
5V		: 5.273V		<- Select Screen
12V 3.3V		: 12.196 V : 3.392 V		↑↓ Select Item
1.5V		: 1.520 V		+- Change Field
VBAT		: 3.21 V		Tab Select Field
CPU smart fan		: Disabled		F1 General Help
ACPI Shut down Temperat	ure	: Disabled		F10 Save and Exit
				ESC Exit

The Hardware Health Configuration menu is used to show the operating temperature, fan speeds and system voltages.

CPU smart fan

The options are *Disabled*, 55 °C, 60 °C, 65 °C, 70 °C, 75 °C, 80 °C, and 85 °C.

ACPI Shutdown Temperature

The options are *Disabled*, 70°C/158°F, 75°C/167°F, 80°C/176°F, 85°C/185°F, 90°C/194°F, and 95°C/203°F.

Main	Advanced	PCIPnP	Boot	Security	Chipset Exit
ACP	I Settings				General ACPI
► Gen	eral ACPI Configura	ation			Configuration settings
					<- Select Screen
					↑↓ Select Item +- Change Field
					Tab Select Field
					F1 General Help
					F10 Save and Exit
					ESC Exit

BIOS SETUP UTILITY

Main Advanced	PCIPnP	Boot	Security	/ Chipset Exit
General ACPI Conf	General ACPI			
Suspend mode		[Auto]		Configuration settings
Repost Video on S3 Resur	ne	[No]		
				<- Select Screen

Suspend Mode

The options of this field are S1, S3 and Auto.

Repost Video on S3 Resumet

Determines whether to invoke VGA BIOS post on S3/STR resume.

Main	Advanced	PCIPnP	Boot	Security	/	Chipset	Exit
AHC	I Settings						
AHCI	BIOS Support		Enabled				
► AHC	I Port0 [Not Detect	ed]					
► AHC	I Port1 [Not Detect	ed]			<-	Select	Screen
► AHC	I Port2 [Not Detect	ed]			∱ L	Select	Ttem
► AHC	I Port3 [Not Detect	ed]			+-	Change	Field
► AHC	I Port4 [Not Detect	ed]			Tab	Select	Field
► AHC	I Port05[Not Detec	ted]			F1	General	l Help
					F10	Save an	nd Exit
					ESC	Exit	

AHCI BIOS Support

Enables for supporting AHCI controller operates in AHCI mode during BIOS control otherwise operates in IDE mode

AHCI Port

While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices.

		E	BIOS SETUP UTILI	TY	
Main	Advanced	PCIPnP	Boot	Security	y Chipset Exit
Intel A	MT Configura		Options:		
Intel AM	Γ Support		[Enabled]		Disabled
			[Disabled]		Enabled
AMT/ME	BIOS Extension (M	IEBx) Config	uration		
ME BIOS	Extension (MEBx)	Disabled]		<- Select Screen
					↑↓ Select Item
					+- Change Field
					Tab Select Field
					F1 General Help
					F10 Save and Exit
					ESC Exit

The Intel AMT Configuration configures the Intel Active Management Technology (AMT) options.

REMARKS: The Intel AMT Configuration is available only on MB950AF, not MB950F.

Main	Advanced	PCIPnP	Boot	Securit	y Chipset Exit
Intel VT-	-d		[Disabled]		Options: Disabled Enabled
					<- Select Screen

BIOS SETUP UTILITY

VT-d

Virtualization solutions allow multiple operating systems and applications to run in independent partitions all on a single computer. Using virtualization capabilities, one physical computer system can function as multiple "virtual" systems.

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	y Chipset Exit
MPS	Configuration	Select MPS			
MPS R	evision VT-d		[1.4]		Revision
					<- Select Screen
					↑↓ Select Item +- Change Field
					Tab Select Field
					F1 General Help
					F10 Save and Exit
					ESC Exit

MPS Version Control for OS

This option is specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is *1.4*.

Main	Advanced	PCIPnP	Boot	Security	y Chipset Exit						
PCI E	PCI Express Configuration Enable/Disable										
Active State Power Management			[Disabled]		PCI Express L0s and L1 link power states						
					<- Select Screen						

BIOS SETUP UTILITY

Main Advanced P	CIPnP Boot	Security	Chipset Exit	
Configure Remote Acc	rameters	Select Remote Access		
Remote Access	Enable	d t	type.	
Serial port number Serial Port Mode Flow Control Redirection After BIOS POST Terminal Type VT-UTF8 Combo Key Support Sredir Memory Display Delay	[COM1 [11152 [None] Alway: ANSI Enable No Del] 00 8,n,1] s 	<- Select Screen \$\DEL_SELECT Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	

When enabled, the Remote Acces type and parameters are shown:

Serial port number - Select Serial Port for console redirection.

Serial port mode - Select Serial Port settings.

Flow Control - Select Flow Control for console redirection.

Redirection After BIOS POST

Disable: Turns off the redirection after POST.

Boot Loader: Redirection is active during POST and during Boot Loader.

Always: Redirection is always active. (Some OSs may not work if set to Always.) **Terminal Type -** Select the target terminal type.

VT-UTF8 Combo Key Support – Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

Sredir Memory Display Delay – Gives the delay in seconds to display memory information.

USB Configuration

This option is used to configure USB mass storage class devices. BIOS SETUP UTILITY

Main Advance	ЯP	PCIPnP	Boot	Security	Chipset Exit
USB Configurati	Enables support for				
Module Version – 2.24.5.14.4 USB Devices Enabled: 2 Hubs					legacy USB. AUTO option disables legacy support if no USB devices are
Legacy USB Support USB 2.0 Controller Mode			[Enabled] [HiSpeed]		
BIOS EHCI Hand-Off Legacy USB1.1 HC Support USB Beep Message			[Enabled] [Disabled]		<- Select Screen + J Select Item +- Change Field Tab Select Field
					F1 General Help F10 Save and Exit ESC Exit

Legacy USB Support

Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.

Legacy USB1.1 HC Support

Support USB 1.1 HC.

USB Beep Message

Enables the beep during USB device enumeration.

PCIPnP Settings

Main	Advanced	PCIPnP	Boot	Securit	y Chipset Exit
Adva	nced PCI/PnI	Clear NVRAM during			
WARN	ING: Setting wro may cause	ng values in be system to malfu	low sections Inction.		System Boot
Clear N Plug & F PCI Late Allocate	VRAM Play O/S Incy Timer IRQ to PCI VGA		[No] [No] [64] [Yes]		
Palette S PCI IDE OffBoar	Snooping BusMaster d PCI/ISA IDE Ca	rd	[Disabled] [Enabled] [Auto]		
IRQ3 IRQ4 IRQ5 IRQ7 IRQ9 IRQ10 IRQ11 IRQ14 IRQ15			[Available] [Available] [Available] [Available] [Available] [Available] [Available] [Available]		<- Select Screen
DMA Ch DMA Ch DMA Ch DMA Ch DMA Ch DMA Ch	annel 0 annel 1 annel 3 annel 5 annel 6 annel 7 ed Memory Size		[Available] [Available] [Available] [Available] [Available] [Available] [Disabled]		

BIOS SETUP UTILITY

Clear NVRAM

This item is used for clearing NVRAM during system boot.

Plug & Play O/S

This lets BIOS configure all devices in the system or lets the OS configure PnP devices not required for boot if your system has a Plug and Play OS.

PCI Latency Timer

This item sets value in units of PCI clocks for PCI device latency timer register. Options are: 32, 64, 96, 128, 160, 192, 224, 248.

Allocate IRQ to PCI VGA

This assigns IRQ to PCI VGA card if card requests IRQ or doesn't assign IRQ to PCI VGA card even if card requests an IRQ.

Palette Snooping

This informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.

PCI IDE BusMaster

This uses PCI busmastering for BIOS reading / writing to IDE devices.

OffBoard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holiding the card. *AUTO*: Works for most PCI IDE cards.

IRQ#

Use the IRQ# address to specify what IRQs can be assigned to a particular peripheral device.

Reserved Memory Size

Size of memory block to reserve for legacy ISA devices.

Boot Settings

This option configures the settings during system boot including boot device priority and HDD/CD/DVD drives.

Main	Advanced	PCIPnP	Boot	Security	y Chipset Exit
Boot ► Bo	t Settings	nfiguration			Configure Settings during System Boot.
 ▶ Boot I ▶ Hard 	Device Priority Disk Drives				<- Select Screen

BIOS SETUP UTILITY

Boot Settings Configuration

This configuration includes the following items:

Quick Boot - Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quite Boot – *Disabled*: Displays normal POST messages. *Enabled*:

Displays OEM Logo instead of POST messages.

Bootup Num-Lock – Select Power-on state for Numlock.

PS/2 Mouse Support – Select support for PS/2 Mouse.

Wait for 'F1' If Error – Wait for F1 key to be pressed if error occurs. Hit 'DEL' Message Display – Displays "Press DEL to run Setup" in POST.

Interrupt 19 Capture – This allows option ROMS to trap interrupt 19.

Boot Device Priority

This specifies the boot sequence from the available devices. A device enclosed in parenthesis has been disabled in the corresponding type menu.

Hard Disk Drives

This specifies the Boot Device Priority sequence from available Hard Drives.

Security Settings

This setting comes with two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

			011EITT	
Main Advan	ced PCIPnP	Boot	Security	Chipset Exit
Security Sett Supervisor Pas User Password	i ngs ssword : Not Ins d : Not Installed	talled	Inst Pas	all or Change the sword.
Change Superv Change User Pa Boot Sector Viru	isor Password assword us Protection [Di	sabled]	<- ↑↓ +- Tab F1 F10 ESC	Select Screen Select Item Change Field Select Field General Help Save and Exit Exit

Advanced Chipset Settings

This setting configures the north bridge, south bridge and the ME subsystem. WARNING! Setting the wrong values may cause the system to malfunction. -

Main	Advanced	PCIPnP	Boot	Securit	y Chipset Exit
Adva WARN	INCE Chipsel IING: Setting wro may cause	Configure North Bridge features.			
► Nort ► Sourt ► ME	th Bridge Configur th Bridge Configura Subsystem Configu	ration lition Iration			<- Select Screen

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	/ Chipset	Exit
Nort	n Bridge Chip	Disabled				
Memo	ry Remap Featu	re	[Enabled]	15MB-16MB	
DRAN	I Frequency		[Auto]			
Config	gure DRAM Timi	ng by SPD	[Auto]			
Memo	ry Hole		[Disabled]	<- Select Scr	een
Initiate IGD G	e Graphic Adapte Graphics Mode S	er elect	[PEG/PC [Enabled,	I] 32MB]	 ↑↓ Select Ite +- Change Fie Tab Select Fie F1 General He 	m ld ld lp
NB PC	CIE Configuration	n			F10 Save and E	xit
PEG	Port		[Auto]		ESC Exit	
PEG ► Vide	Force GEN1 eo Function Conf	iguration	[Disabled]		

Memory Remap Feature

This allows remapping of overlaped PCI memory above the total physical memory.

DRAM Frequency

The options are Auto, 1067 MHz and 1333 MHz.

Configure DRAM Timing by SPD

The options are Auto and Manual.

Memory Hole

This option is used to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly.

Initiate Graphic Adapter

This option selects which graphics controller to use as the primary boot device.

IGD Graphics Mode Select

This option selects the amount of system memory used by the internal graphics device.

PEG Port

The options are Auto and Disabled.

PEG Force GEN1

Some non-graphics PCI-E devices may not follow PCI-E specifications and may incorrectly report their GEN capability or link width.

Video Function Configuration

The configuration allows setting to DVMT/FIXED memory.

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Vide	o Function Con	figuration	C	VMT Mode		
DVM DVN	T Mode Select IT/FIXED Memory	[DVMT N [25	lode] 6MB]			
				<	- Select So	creen
				+	↓ Select It - Change Fi	cem Leld
				Т	ab Select Fi	ield
				F	1 General H	Help
				F	10 Save and	Exit
				E	SC Exit	

Main Advanced	PCIPnP	Boot	Securit	y Chipset Exit
South Bridge Chipset Configuration				Enabled
USB Function EHCI Controller#1 EHCI Controller#2 GbE Controller First GbE LAN PXE Bo Second LAN 82583 PX Wake On PCIE LAN Wake On PCI PME Wake On Ring Wake On RTC Alarm HDA Controller SMBUS Controller SLP_S4# Min. Assertic	ot E Boot n Width	[Enabled] [Enabled] [Enabled] [Disabled] [Disabled] [Enabled] [Enabled] [Enabled] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled]	ed] ids]	Enabled Disabled <- Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit

HDA Controller

This option is used to enable the Southbridge high definition audio controller.

		81					
Main	Advanced	PCIPnP	Boot	Securit	y	Chipset	Exit
MES	Subsystem Co	onfiguration					
Mana	gement Engine V	ersion :	N/A		<- ↑↓ +- F1 F10 ESC	Select S Select D Change B Select B General Save and Exit	Screen Stem Sield Sield Help I Exit

BIOS SETUP UTILITY

Exit Setup

The exit setup has the following settings which are:

Main	Advanced	PCIPnP	Boot	Security	/ Chipset	Exit
Exit	Options				Exit system setup after saving the	
Save	Changes and E	xit			changes.	
Disca	rd Changes and	Exit				
Disca	rd Changes					
	0				<- Select S	Screen
Load Optimal Defaults				†↓ Select 1	Item	
Load Failsafe Defaults				+- Change H	Field	
Louu					Tab Select H	Field
					F1 General	Help
					F10 Save and	d Exit
					ESC Exit	

BIOS SETUP UTILITY

Save Changes and Exit

This option allows you to determine whether or not to accept the modifications and save all changes into the CMOS memory before exit.

Discard Changes and Exit

This option allows you to exit the Setup utility without saving the changes you have made in this session.

Discard Changes

This option allows you to discard all the changes that you have made in this session.

Load Optimal Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Load Failsafe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 2000, Windows XP and Windows Vista. The software and drivers are included with the board. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

Intel Chipset Software Installation Utility	44
Intel Graphics Driver Installation	46
Realtek HD Codec Audio Driver Installation	48
LAN Drivers Installation	49
Intel® Management Engine Interface	51

IMPORTANT NOTE:

After installing your Windows operating system (Windows 2000/XP/Vista), you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

Intel Chipset Software Installation Utility

The Intel® Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation under Windows 2000/XP/Vista. (Before installed Intel Chipset Software Installation Utility,Please update your system to Windows 2000 SP4 or Windows XP SP1A)

1. Insert the DVD that comes with the board. Click *Intel* and then *Intel*(*R*) *Chipset Software Installation Utility*.



3. When the Welcome screen appears, click *Next* to continue.

4. Click *Yes* to accept the software license agreement and proceed with the installation process.

5. On the Readme Information screen, click *Next* to continue the installation.

6. When the Setup Progress screen appears, click Next to continue.



7. The Setup process is now complete. Click *Finish* then restart the computer and for changes to take effect.



Intel Graphics Driver Installation

1. Insert the DVD that comes with the board. Click *Intel -> Intel*® *Q57 Chipset Family Graphics Driver*.



- 2. When the InstallShield Wizard screen appears, click Next.
- 3. When the Welcome screen appears, click Next to continue.



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4. Click *Yes* to accept the software license agreement and proceed with the installation process.

- 5. On Readme File Information screen, click Next to continue.
- 6. On Setup Progress screen, click *Next* to continue the installation.

Intel® Graphics Me	dia Accelerator Driver		
Intel® Graphi	cs Media Accelerator	Driver	(intel)
Setup Progress	and the second second		
Please wait while the Copying File: C:\Pro Copying File: C:\Pro	following setup operations are p gram Files\Intel/Intel(R) Graphics gram Files\Intel\Intel(R) Graphics gram Files\Intel\Intel(R) Graphics	erformed: Media Accelerator Driver Media Accelerator Driver	(uninstall\sv-SE (uninstall\th-TH (uninstall\th-TH (uninstall\th-TR) (uninstall\th-TR) (uninstall\th-TR) (uninstall\th-TA (uninstall\th-TW (uninstall\th-TW) (uninstall\th-TW)
	24444		
		the second s	
		Intel® In	stallation Framework

7. The Setup process is now complete. Click *Finish* to restart the computer and for changes to take effect.

Realtek HD Codec Audio Driver Installation

1. Insert the DVD that comes with the board. Click *Intel* and then *Realtek High Definition Audio Driver*.

2. Click Realtek High Definition Codec Audio Driver.



3. When the Welcome screen appears, click Next to continue.



4. The Setup process is now complete. Restart the computer when prompted for changes to take effect.

LAN Drivers Installation

Follow the steps below to start installing the Intel 82578DM or Intel 82583V LAN drivers.

1. Insert the DVD that comes with the board. Click *Intel* and then *Intel(R) PRO LAN Network Drivers*.



2. Click Intel(R) PRO LAN Network Drivers.

- 3. On the next screen, click Install Drivers to start the drivers installation.
- 4. When the Welcome screen appears, click *Next* to continue.

5. In the License Agreement screen, click *I accept the terms in license agreement* and *Next* to accept the software license agreement and proceed with the installation process.

6. When the Setup Options appears, click *Drivers* as shown below and *Next* to continue.

Intel(R) Network Connections	
Setup Options Select the program features you want installed.	(intel)
Install:	
Drivers Intel(R) PROSet for Windows* Device Manager Advanced Network Services Intel(R) Network Connections SNMP Agent	
Feature Description	
< <u>B</u> ack Next >	Cancel

7. When the Ready to Install the Program screen appears, click *Install* to continue.

🖟 Intel(R) Network Connections - InstallShield Wizar	d 🛛 🔀
Ready to Install the Program The wizard is ready to begin installation.	(intel)
Click Install to begin the installation.	
If you want to review or change any of your installation setting exit the wizard.	js, click Back. Click Cancel to
InstallShield	Install Cancel

8. The Setup process is now complete (InstallShield Wizard Completed). Click *Finish* to restart the computer and for changes to take effect.

Intel® Management Engine Interface

REMARKS: The Intel iAMT 6.0 Drivers can be installed on MB950AF, not MB950F.

1. Insert the drivers disc that comes with the motherboard. Click *Intel* and then *Intel(R) AMT 6.0 Drivers*. When the welcome screen of the Intel® Management Engine Components appears, click *Next* to continue. On the next screen, click *Next* to agree to the license agreement.



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DRIVER INSTALLATION

ntel® Management Engine Components	
Intel® Management Engine Components	P
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?	
INTEL SOFTWARE LICENSE AGREEMENT (Alpha / Beta, Organizational Use)	
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.	
The Software contains pre-release "alpha" or "beta" code, which may not be fully functional and which Intel Corporation ("Intel") may substantially modify in producing any "final" version of the Software. Intel can provide no assurance that it will ever produce or make generally	•
Back Yes No Intel® Installation Fram	iework.

2. On the next screen, the Readme File Information shows the system requirements and installation information, click *Next*.

Intel® Management Engine Components	
Intel® Management Engine Components Readme File Information	intel
Refer to the Readme file below to view the system requirements and installa **********************************	tion information.
< Back Next >) Installation Framework

3. When the Setup Progress screen appears, click *Next* to continue. Then, click *Finish* when the setup progress has been successfully installed to restart the computer.





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Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2E8h - 2FFh	Serial Port #4(COM4)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3E8h – 3EFh	Serial Port #3(COM3)
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2, 4
IRQ4	Serial Port #1, 3
IRQ5	Reserved
IRQ6	Reserved
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

```
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//--
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81865.H"
//-----
                        _____
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//----
int main (int argc, char *argv[])
{
           unsigned char bBuf;
           unsigned char bTime;
           char **endptr;
           char SIO;
           printf("Fintek 81865 watch dog program\n");
           SIO = Init F81865();
           if (SIO == 0)
                       printf("Can not detect Fintek 81865, program abort.\n");
                       return(1);
           }//if (SIO == 0)
           if (argc != 2)
           {
                       printf(" Parameter incorrect!!\n");
                       return (1);
           }
           bTime = strtol (argv[1], endptr, 10);
           printf("System will reset after %d seconds\n", bTime);
           if (bTime)
                       EnableWDT(bTime);
                                        }
           {
           else
                       DisableWDT();
           {
                                        }
           return 0;
//--
     _____
                         _____
void EnableWDT(int interval)
           unsigned char bBuf;
           bBuf = Get F81865 Reg(0x2B);
           bBuf &= (\sim 0 \times 20);
```

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Set_F81865_Reg(0x2B, bBuf); //Enable WDTO

```
Set F81865 LD(0x07);
                                   //switch to logic device 7
          Set F81865 Reg(0x30, 0x01); //enable timer
          bBuf = Get F81865 Reg(0xF5);
          bBuf &= (\sim 0 \times 0F);
          bBuf |= 0x52;
          Set F81865 Reg(0xF5, bBuf); //count mode is second
          Set F81865 Reg(0xF6, interval); //set timer
          bBuf = Get_F81865_Reg(0xFA);
          bBuf |= 0x\overline{0}1;
          Set F81865 Reg(0xFA, bBuf);
                                   //enable WDTO output
          bBuf = Get_F81865_Reg(0xF5);
          bBuf |= 0x\overline{2}0;
          Set F81865 Reg(0xF5, bBuf);
                                   //start counting
}
//-----
void DisableWDT(void)
ł
          unsigned char bBuf;
          Set F81865 LD(0x07);
                                   //switch to logic device 7
          bBuf = Get F81865 Reg(0xFA);
          bBuf \&= \sim 0 \times 01:
          Set F81865 Reg(OxFA, bBuf); //disable WDTO output
          bBuf = Get F81865 Reg(0xF5);
          bBuf \&= \sim 0 \overline{x} 20;
          bBuf |= 0x40;
          Set F81865 Reg(0xF5, bBuf); //disable WDT
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
#include "F81865.H"
#include <dos.h>
//-----
                   _____
unsigned int F81865 BASE;
void Unlock F81865 (void);
void Lock_F81865 (void);
//-----
unsigned int Init_F81865(void)
{
          unsigned int result;
          unsigned char ucDid;
          F81865_BASE = 0x4E;
          result = F81865 BASE;
          ucDid = Get F81865 Reg(0x20);
          if (ucDid == 0x07) {
{
goto Init Finish; }
}
                                                     //Fintek 81865
          F81865_BASE = 0x2E;
          result = F81865 BASE;
          ucDid = Get F81865 \text{Reg}(0x20);
          if (ucDid == 0x07)
                                                     //Fintek 81865
          {
                    goto Init Finish; }
          F81865_BASE = 0x00;
result = F81865 BASE;
```

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APPENDIX

```
Init_Finish:
        return (result);
3
//-----
void Unlock F81865 (void)
         outportb(F81865_INDEX_PORT, F81865_UNLOCK);
outportb(F81865_INDEX_PORT, F81865_UNLOCK);
//-----
void Lock_F81865 (void)
         outportb (F81865 INDEX PORT, F81865 LOCK);
void Set_F81865_LD( unsigned char LD)
{
         Unlock F81865();
         outportb (F81865_INDEX_PORT, F81865_REG_LD);
         outportb(F81865_DATA_PORT, LD);
         Lock F81865();
//-----
void Set F81865 Reg( unsigned char REG, unsigned char DATA)
         Unlock F81865();
         outportb(F81865_INDEX_PORT, REG);
         outportb (F81865_DATA_PORT, DATA);
         Lock F81865();
//------
unsigned char Get_F81865_Reg(unsigned char REG)
         unsigned char Result;
         Unlock F81865();
         outportb (F81865_INDEX_PORT, REG);
         Result = inportb (F81865 DATA PORT);
         Lock F81865();
         return Result;
,
//_____
//-----
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// PURPOSE.
//-----
            _____
//#ifndef __F91865_H
#define __F81865_H 1
//------
#define F81865_INDEX_PORT
#define F81865_DATA_PORT
                                    (F81865 BASE)
                                    (F81865 BASE+1)
#define F81865_REG_LD
                                              0x07
//-----
                  -----
#define F81865 UNLOCK
                                    0x87
#define F81865_LOCK
                                              0xAA
                        _____
              _____
unsigned int Init F81865(void);
void Set F81865_LD( unsigned char);
void Set_F81865_Reg( unsigned char, unsigned char);
unsigned char Get F81865 Reg( unsigned char);
//-----
                                  -----
```

#endif //__F81865_H