

Full-size SBC

FSB-G41H

FSB-G41H

Intel® Core™ 2 Duo/
Core™ 2 Quad LGA775 Processor
Full-size CPU Card
With Two DDR3 1066/800 DIMM
Gigabit Ethernet, IDE, SATA 3.0Gb/s

FSB-G41H Manual Rev. A 2nd Ed.
Aug. 2012

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- **1709070800** SATA Cable
- **1701340704** FDD Flat Cable
- **1701400453** ATA-100 Cable
- **1700060192** Keyboard and Mouse Cable
- **1701260307** LPT and COM Flat Cable with bracket
- **1701100305** COM Flat Cable with bracket
- **1709100201** USB Cable w/ Bracket
- **CD-ROM for manual (in PDF format) and drivers**
- **FSB-G41H CPU Card**

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

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Chapter

1

**General
Information**

1.1 Introduction

AAEON announces a new full-size form factor Single Board Computer (SBC) with PICMG 1.3 - **FSB-G41H**, which is based on the use of Intel® Core™ 2 Duo / Core™ 2 Quad / Pentium® D/ Celeron® processor. FSB-G41H utilizes Intel® LGA 775 CPU with high CPU core frequencies with the Front Side Bus (FSB) running at 800/1066/1333 MHz.

FSB-G41H supports DDR3 800/1066 system memory up to 4GB. The VGA Controller of FSB-G41H integrates Intel® G41H chipset and integrates GMA X4500 Graphic Engine to provide higher performance of graphic processing. AAEON's got Intel's long-term supply commitment and will guarantee product's long-life cycle to our precious customers.

In addition to the powerful computing engine, FSB-G41H equips with seven USB2.0 ports, two COM ports, one keyboard & one mouse connectors, and one parallel port. Moreover, it also supports four SATA 3.0Gb/s that support RAID 0/1/5/10, one IDE, one Floppy, and one CompactFlash™ Type 2 slots. These versatile expansion interfaces bring FSB-G41H a great flexibility to serve different application demands.

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1.2 Features

- Intel® Core™ 2 Duo/ Core™ 2 Quad/ Pentium® D/ Celeron® LGA 775 Processor, FSB 800/1066/1333 MHz
- Intel® G41+ ICH7R
- 240-Pin Dual-Channel DDR3 800/1066 DIMM Slot x 2 (Up To 4GB)
- 10/100/1000Base-TX Ethernet x 2
- Intel® G41 Integrated GMA X4500 Graphic Engine
- HDAC Daughter Board
- Onboard SATA 3.0Gb/s x 4 Support RAID 0/1/5/10, IDE x 1, Floppy x 1, CompactFlash™ Type 2 x 1
- COM x 2, USB2.0 x 7, Parallel x 1 ,
- PCI-Express [x16] x 1, PCI-Express[x4] x 1, PCI x 4 Expansions
- ATX 2.1
- PICMG 1.3

1.3 Specification

System

- Form Factor PICMG 1.3
- Processor LGA 775 Intel® Core™ 2 Quad/
Core™ 2 Duo/ Pentium® D/ Celeron®,
FSB 800/1066/1333 MHz with a Max
TDP 100W
- System Memory 240-pin Dual-channel DDR3
1066/800 DIMM Slot x 2, up to 4GB
- Chipset Intel G41+ ICH7R
- Ethernet Intel 82574L, 10/100/1000Base-TX x
2, RJ-45 x 2 on the bracket
- BIOS Award SPI BIOS - 8Mb ROM
- Expansion PCI-Express [x16] x 1 /PCI-Express
Interface [x4] x 1/ PCI x 4
- Watchdog Timer 1~255 steps, can be set with software
on Super I/O
- RTC Internal RTC
- Battery Lithium Battery
- Power ATX 2.1
- Requirement
- Operating 32°F ~ 140°F (0°C ~ 60°C)
Temperature
- Board Size 13.3"(L) x 5"(W) (339mm x 126mm)

- Gross Weight 1.2 lb (0.5kg)
- MTBF (Hours) 60,000

Display

- VGA Controller Intel G41 integrated GMA X4500 Graphic Engine
- Resolution 2048x1536 @ 75 Hz for CRT

I/O: ITE IT8718F

- Storage IDE slot x 1, SATA 3.0Gb/s x 4 with RAID 0,1,5 and 10, CompactFlash™ Type 2 x 1, Standard Floppy Disk x 1
- Serial Port COM port x 2:(Internal Pin Header x 2)
COM 1: RS-232
COM 2: RS-232/422/485
- Parallel Port Supports SPP/EPP/ECP mode
- Universal Serial Bus USB2.0 x 7 (Internal 5x2-pin header x 3 up to 6 USB, USB2.0 type A on the bracket x 1)
- PS/2 Port Keyboard x 1, Mouse x 1
- Audio (Daughter Board) HDAC Daughter board , Mic-in/Line-in/Line-out/CD-in
- IrDA Supports IrDA header x 1

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

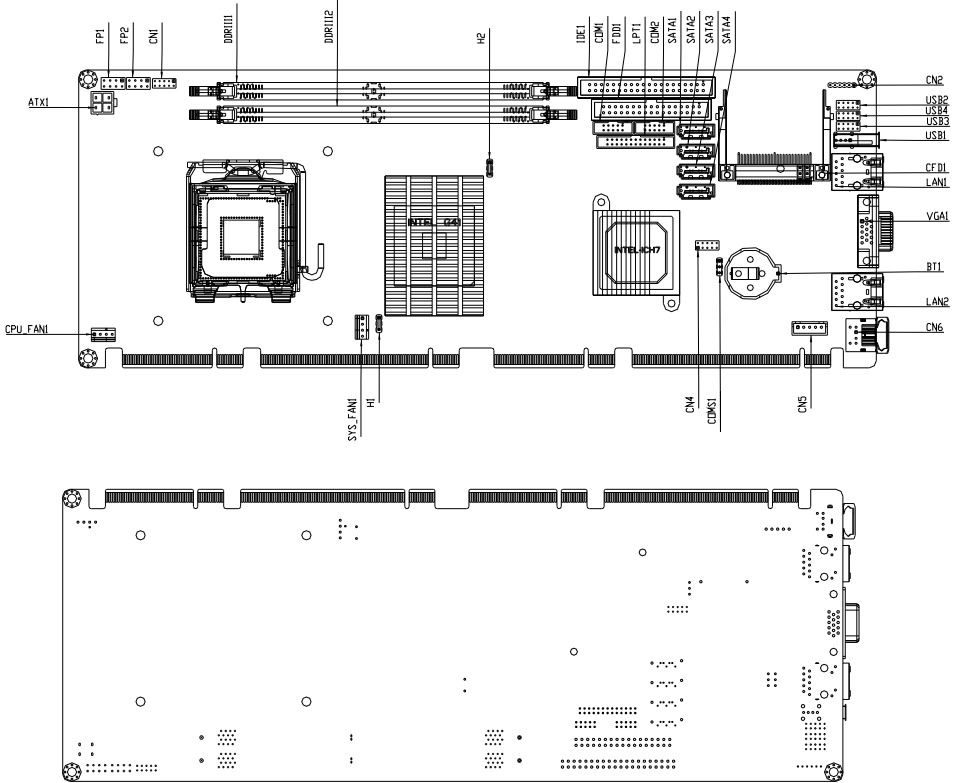
Warning!

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

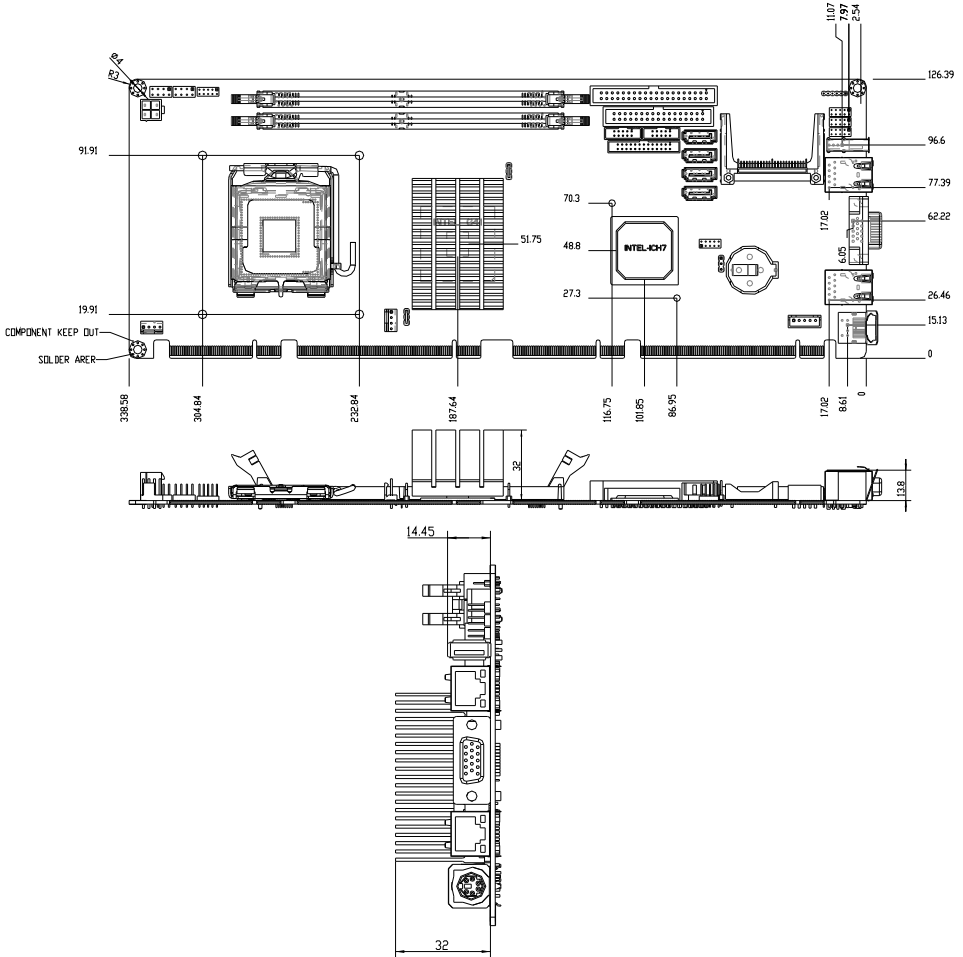
Caution!

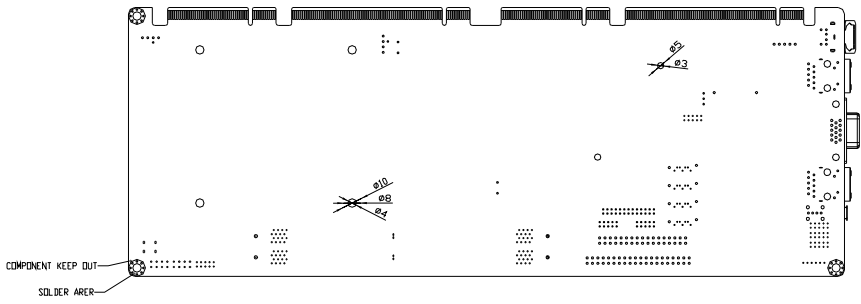
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers



2.3 Mechanical Drawings





2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
COMS1	Clear CMOS
JP1	CompactFlash Voltage Selection

2.5 List of Connectors

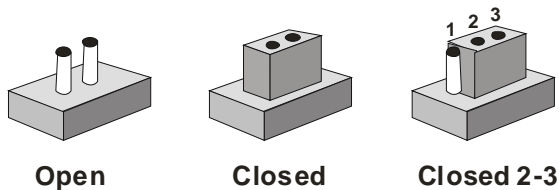
The table below shows the function of each board's connectors:

Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
CN1	Digital I/O
CN2	IrDA Connector
CN3	Audio Pin Header
CN5	Internal Keyboard Connector
CN6	Keyboard/Mouse Connector
COM1	RS-232 Serial Port Connector
COM2	RS-232 / 422 / 485 Serial Port Connector
SATA1~SATA4	SATA Connector
LAN1 ~ LAN2	LAN Connector
DIMMIII1,DIMMIII2	DDR3 DIMM Slot
USB1	USB Connector
USB2 ~ USB6	USB Pin Header
CPU_FAN1	4 Pin CPU Fan Connector
SYS_FAN1	4 Pin System Fan Connector
ATX1	4 pin ATX Power +12V Connector
IDE1	IDE Connector
FDD1	Floppy Connector
CFD1	Compact Flash Connector
LPT1	PARALLEL PORT Connector
VGA1	VGA Connector

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 Clear CMOS (CMOS1)

CMOS1	Function
1-2	Clear
2-3	Normal (default)

2.8 CompactFlash Voltage Selection (JP1)

JP1	Function
1-2	+3.3V
2-3	+5V (default)

2.9 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	Power On Button (+)	2	Reset Switch (+)
3	Power On Button (-)	4	Reset Switch (-)
5	IDE LED (+)	6	Power LED (+)
7	IDE LED (-)	8	Power LED (-)

2.10 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Keyboard Lock (+)
3	N.C.	4	GND
5	Internal Buzzer (-)	6	I2C Bus SMB Clock
7	External Speaker (-)	8	I2C Bus SMB Data

Note: Internal Buzzer Enable, Close Pin 5, 7

2.11 Digital I/O (CN1)

This connector offers 4-pair of digital I/O functions and address is 801H.

The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	Digital- IN/OUT(Bit 7)	2	Digital- IN/OUT (Bit 6)
3	Digital- IN/OUT (Bit 5)	4	Digital- IN/OUT (Bit 4)
5	Digital- IN/OUT (Bit 3)	6	Digital- IN/OUT (Bit 2)
7	Digital- IN/OUT (Bit 1)	8	Digital- IN/OUT (Bit 0)
9	+5V	10	GND

The pin definitions and registers mapping are illustrated below:

Address: 801H

4 in / 4 out

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
GPI 27 (MSB)	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20 (LSB)

8 in

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
GPI 27 (MSB)	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20 (LSB)

8 Out

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
GPO 27 (MSB)	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20 (LSB)

2.12 IrDA Connector(CN2)

Pin	Signal
1	+5V
2	N.C
3	CIRTX
4	GND

5	IRRX
6	N.C

2.13 Audio Pin Header (CN3)

Pin	Signal	Pin	Signal
1	-HDA_RST	2	HDA_SYNC
3	HDA_SDIN2	4	HDA_SDOUT
5	GND	6	HDA_BITCLK
7	GND	8	+5V
9	N.C	10	+3.3V

2.14 Internal Keyboard Connector (CN5)

Pin	Signal
1	KBCLK
2	KBDAT
3	N.C
4	GND
5	+5V

2.15 RS-232 Serial Port Connector (COM1)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

2.16 RS-232/422/485 Serial Port Connector (COM2)

Pin	Signal	Pin	Signal
1	DCD(422TXD-/485DATA-)	2	RXD(422RXD+)
3	TXD(422TXD+/485DATA+)	4	DTR(422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

2.17 USB Connector (USB2-6)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD-	4	GND
5	USBD+	6	USBD+
7	GND	8	USBD-
9	GND	10	+5V

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
<p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p>						

Chapter

3

**Award
BIOS Setup**

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The FSB-G41H CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

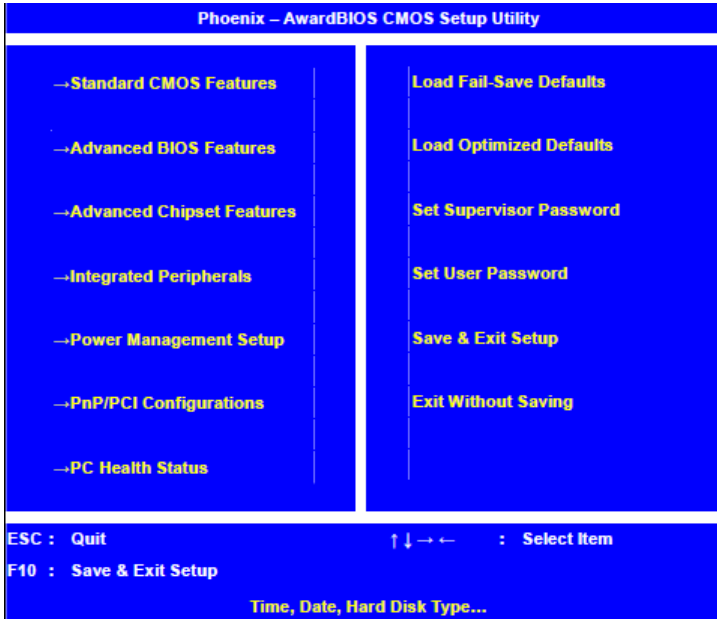
Exit Without Saving

Abandon all CMOS value changes and exit setup.

Setup Menu

Press Delete to run Setup

Root Setup Menu



Setup menu: Standard CMOS Features

Phoenix – AwardBIOS CMOS Setup Utility		
Standard CMOS Features		
Date (mm:dd:yy)	Month:date:year	Item Help Menu Level → Here displays item helps.
Time (hh:mm:ss)	Hour:minute:second	
→ IDE Channel 0 Master	[None]	
→ IDE Channel 0 Slave	[None]	
→ IDE Channel 2 Master	[None]	
→ IDE Channel 2 Slave	[None]	
→ IDE Channel 3 Master	[None]	
→ IDE Channel 3 Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/ VGA]	
Halt On	[All , But Keyboard]	
Base Memory	Mem size	
Extend Memory	Mem size	
Total Memory	Mem size	
↑↓←→:MOVE +/ -/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default		

Item Content Summary :

IDE Channel # Master/Slave	Primary Master	Optimal Default, Failsafe Default ON
	Primary Slave	Optimal Default, Failsafe Default OFF
Press [Enter] to enter next page for detail hard drive settings. Been notified that both defaults are set to have only one channel enabled.		
Drive A	None	Failsafe Default
	360K , 5.25 in.	
	1.2M , 5.25 in.	
	720K , 3.5 in.	
	1.44M, 3.5 in.	Optimal Default
	2.88M, 3.5 in.	

Drive A type selection.		
Drive B	None	Default
	360K , 5.25 in.	
	1.2M , 5.25 in.	
	720K , 3.5 in.	
	1.44M, 3.5 in.	
	2.88M, 3.5 in.	
Drive B type selection.		
Video	EGA/VGA	Default
	CGA 40	
	CGA 80	
	MONO	
Video Type selection.		
Halt On	All Errors	
	No Errors	
	All , But Keyboard	Default
	All , But Diskette	
	All, But Disk/Key	

Setup Submenu: Advanced BIOS Features

IDE Channel # Master/Slave

Phoenix – AwardBIOS CMOS Setup Utility
IDE Channel # Master

IDE HDD Auto-Detection	[Press Enter]	Item Help Menu Level → Here displays item helps.
IDE Primary Master/Slave	[Auto]	
Access Mode	[Auto]	
Capacity	(Size) MB	
Cylinder	number	
Head	number	
Precomp	number	
Landing Zone	number	
Sector	number	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

IDE HDD Auto-Detection	To auto-detect the HDD's size, head... on this channel.	
IDE Channel # Master	None	
	Auto	Default
	Manual	
Access Mode	CHS	
	LBA	
	Large	
	Auto	Default

Setup menu: Advanced BIOS Features

Phoenix – AwardBIOS CMOS Setup Utility		
Advanced BIOS Features		
→CPU Feature	[Press Enter]	Item Help Menu Level → Here displays item helps.
→Hard Disk Boot Priority	[Press Enter]	
Virus Warning	[Disabled]	
CPU L3 Cache	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[USB-CDROM]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enabled]	
x MPS Version Control For OS	[1.4]	
OS Select For DRAM > 64MB	[Non-OS2]	
Report NO FDD For Win 95	[No]	
Small Logo(EPA) Show	[Enabled]	
↑↓←→:MOVE +/-:PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default		

Item Content Summary :

Virus Warning	Enabled	Fail-Safe Default
	Disabled	Optimized Default
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area m BIOS will show a warning message on screen and alarm beep.		
CPU L3 Cache	Disabled	
	Enabled	Default
Quick Power On Self Test	Disabled	
	Enabled	Default
Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.		
First Boot Device	Floppy	
	Hard Disk	Default
	CDROM	
	USB-FDD	
	USB-ZIP	
	USB-CDROM	
	Legacy LAN	
	Disabled	
Select Your Boot Device Priority.		
Second Boot Device	Floppy	
	Hard Disk	
	CDROM	Default
	USB-FDD	
	USB-ZIP	
	USB-CDROM	
	Legacy LAN	
	Disabled	
Select Your Boot Device Priority.		
Third Boot Device	Floppy	
	Hard Disk	
	CDROM	
	USB-FDD	
	USB-ZIP	
	USB-CDROM	Default
	Legacy LAN	

	Disabled	
Select Your Boot Device Priority.		
Boot Other Device	Disabled	
	Enabled	Default
Select Your Boot Device Priority		
Swap Floppy Drive	Disabled	Default
	Enabled	
If the system has two floppy drives , choose enable to assign physical drive B to logical drive A and vice-versa.		
Boot up NumLock Status	Off	
	On	Default
Selects power on state for NumLock		
Gate A20 Option	Normal	Fail-Safe Default
	Fast	Optimized Default
Fast – lets chipset control GateA20 and Normal – a pin in the keyboard controller controls GateA20. Default is Fast.		
Typematic Rate Setting	Disabled	Default
	Enabled	
Keystrokes repeat at a rate determined by the keyboard controller – when enabled , the typematic rate and typematic delay can be selected.		
Security Option	Setup	Default
	System	
Select whether the password is required every time the system boots or only when you enter setup.		
APIC Mode	Disabled	Fail-Safe Default
	Enabled	Optimized Default
When Power Management -> ACPI function set to Enable, suggest enable this option. When Power Management -> ACPI function set to Disabled, suggest disable this option.		
MPS Version Control For OS	1.1	Fail-Safe Default
	1.4	Optimized Default
OS Select For DRAM > 64MB	Non-OS2	Default
	OS2	
Select OS 2 only if you are running OS/2 operating system with greater than 64MB of RAM on the system.		
Report NO FDD For WIN 95	No	Default
	Yes	
Small Logo(EPA) Show	Disabled	
	Enabled	Default

Setup menu: Advanced BIOS Features

CPU Feature

Phoenix – AwardBIOS CMOS Setup Utility
CPU Feature

PPM Mode	[Native Mode]	Item Help Menu Level → Here displays item helps.
Limit CPUID MaxVal	[Disabled]	
C1E Function	[Auto]	
CPU C State Capability	[Disable]	
Execute Disable Bit	[Enabled]	
Virtualization Technology	[Disabled]	
Core Multi-Processing	[Enabled]	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

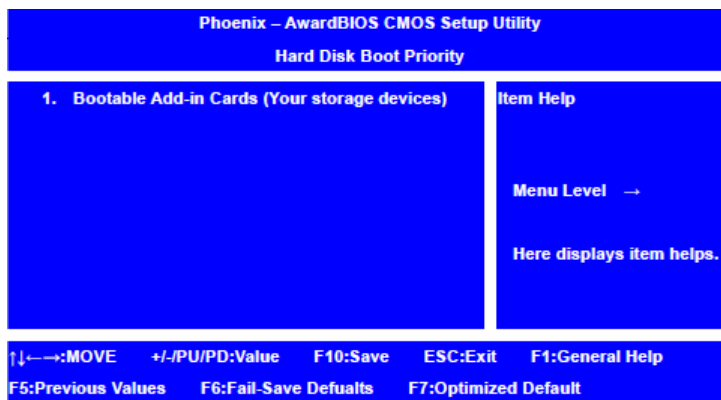
Item Content Summary :

PPM Mode	Native Mode	Default
	SMM Mode	
Native mode is for fully support ACPI OS (ex. WINXP , VISTA...), SMM mode is for legacy OS (ex. Win2K...)		
Limit CPUID MaxVal	Disabled	Default
	Enabled	
Set Limit CPUID MaxVal to 3, Should Be "Disabled" for WinXp		
C1E Function	Auto	Default
	Disabled	
COU C1E Function Select.		

COU C State Capability	Disable	Default
	C2	
	C3	
	C4	
User Can Select The Lowest C State Supported According As CPU And MB.		
Execute Disable Bit	Enabled	Default
	Disabled	
When disabled, forces the XD feature flag to always return 0.		
Virtualization Technology	Enabled	
	Disabled	Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Core Multi-Processing	Enabled	Default
	Disabled	

Setup menu: Advanced BIOS Features

Hard Disk Boot Priority



Item Content Summary :

Bootable ADD-in Cards	Use <↑> or <↓> to select a device , then press <+> to move it up , or <-> to move it down the list. Press <ESC> to exit this menu.
-----------------------	--

Setup menu: Advanced Chipset Features

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features Features

System BIOS Cacheable	[Enabled]	Item Help Menu Level → Here displays item helps.
Memory Hole at 15M016M	[Disabled]	
→PCI Express Root Port Func	[Press Enter]	
Disable MCHBAT MMIO	[Enabled]	
** VGA Setting **		
PEG/Onchip VGA Control	[Auto]	
On-Chip Frame Buffer Size	[32MB]	
DVMT Mode	[Enable]	
Total GFX Memory	[128MB]	
PAVP Mode	[Lite]	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

System BIOS Cacheable	Disabled	
	Enabled	Default
Memory Hole at 15M-16M	Disabled	Default
	Enabled	
PCI Express Root Port Func	[Press Enter] to detail options	
Disable MCHBAT MMIO	Enabled	Default
	Disabled	
Disable MCHBAT MMIO END of POST.		
PEG/Onchip VGA Control	Onchip VGA	
	PEG Port	
	Auto	Default

On-Chip Frame Buffer Size	32MB	Default
	64MB	
	128MB	
DVMT Mode	Disable	
	Enable	Default
Total GFX Memory	128MB	Default
	256MB	
	MAX	
For Win XP, the MAX value is base on system memory size 512MB for 1GB DRAM 768MB for 1.5GB to 2GB 1GB for above 2GB		
PAVP Mode	Disable	
	Lite	Default
	Paranoid	

Setup menu: Advanced Chipset Features

PCI Express Root Port Function

Phoenix – AwardBIOS CMOS Setup Utility
 PCI Express Root Port Func

PCI Express Port 1 [Auto] PCI Express Port 2 [Auto] PCI Express Port 3 [Auto] PCI Express Port 4 [Auto] PCI Express Port 5 [Auto] PCI Express Port 6 [Auto] PCI Express Port Mode [vr1.0a]	Item Help Menu Level → Here displays item helps.
--	--

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

PCI Express Port #1-#6	Auto	Default
	Enabled	
	Disabled	
PCI-E Compliancy Mode	v1.0a	Default
	V1.0	

Setup menu: Integrated Peripherals

Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals

→OnChip IDE device [Press Enter] →Onboard Device [Press Enter] →SuperIO Device [Press Enter] COM2 RS232/422/485 Type [RS232] →Digital I/O Device [Press Enter] USB Device Setting [Press Enter]	Item Help Menu Level → Here displays item helps.
--	---

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

OnChip IDE Device	[Press Enter] to detail option settings.	
Onboard Device	[Press Enter] to detail option settings.	
SuperIO Device	[Press Enter] to detail option settings.	
COM2 RS232/422/485 Type	RS232	Default
	RS422	
	RS485	
Digital I/O Device	[Press Enter] to detail option settings.	
USB Device Setting	[Press Enter] to detail option settings.	

Setup menu: Integrated Peripherals

OnChip IDE Device

Phoenix – AwardBIOS CMOS Setup Utility

OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help Menu Level → Here displays item helps.
IDE DMA transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
***On-Chip Serial ATA Setting ***		
SATA Mode	[IDE]	
On-Chip Serial ATA	[Enhanced Mode]	
SATA PORT Speed Settings	[Disabled]	
X PATA IDE Mode	Primary	
SATA Port	P1,P3 is Secondary	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

IDE HDD Block Mode	Disabled	Fail-Safe Default
	Enabled	Optimized Default
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.		
IDE DMA transfer access	Disabled	
	Enabled	Default
On-Chip Primary PCI IDE	Disabled	
	Enabled	Default

IDE Primary Master PIO	Auto	Default
	Mode 0	
	Mode 1	
	Mode 2	
	Mode 3	
	Mode 4	
IDE Primary Slave PIO	Auto	Default
	Mode 0	
	Mode 1	
	Mode 2	
	Mode 3	
	Mode 4	
IDE Primary Master UDMA	Disabled	Fail-Safe Default
	Auto	Optimized Default
IDE Primary Slave UDMA	Disabled	Fail-Safe Default
	Auto	Optimized Default
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.		
On-Chip Secondary PCI IDE	Disabled	
	Enabled	Default
IDE Secondary Master PIO	Auto	Default
	Mode 0	
	Mode 1	
	Mode 2	
	Mode 3	
	Mode 4	
IDE Secondary Slave PIO	Auto	Default
	Mode 0	
	Mode 1	
	Mode 2	
	Mode 3	
	Mode 4	
IDE Secondary Master UDMA	Disabled	Fail-Safe Default
	Auto	Optimized Default
IDE Secondary Slave UDMA	Disabled	Fail-Safe Default
	Auto	Optimized Default

SATA Mode	IDE	Default
	RAID	
	AHCI	
On-Chip Serial ATA	Disabled	
	Combined Mode	
	Enhanced Mode	Default
	SATA Only	
<p>[Disabled]: Disabled SATA Controller. [Auto]: Auto arrange by BIOS. [Combined Mode]: PATA and SATA are combined. Max. of 2 IDE drives in each channel. [Enhanced Mode]: Enable both SATA and PATA. Max. of 6 IDE drives are supported. [SATA Only]: SATA is operating in legacy mode.</p>		
SATA PORT Speed Settings	Disabled	Default
	Force GEN I	
	Force GEN II	

Setup menu: Integrated Peripherals

Onboard Device

Phoenix – AwardBIOS CMOS Setup Utility
Onboard Device

AZAlia/AC97 Audio Select [Auto]	Item Help Menu Level → Here displays item helps.
--	---

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

Azalia/AC97 Audio Select	Auto	Default
	Azalia	
	AC97 Audio and Modem	
	AC97 Audio only	
	AC97 Modem only	
	All Disabled	

Setup menu: Advanced BIOS Features

SuperIO Device

Phoenix – AwardBIOS CMOS Setup Utility		
SuperIO Device		
Onboard FDC Controller	[Enabled]	Item Help Menu Level → Here displays item helps.
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	
x UR2 Duplex Mode	Half	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
x ECP Mode Use DMA	3	
82574 LAN 1 Control	[Enabled]	
82574 LAN 2 Control (G2 ver)	[Enabled]	
Onboard Lan Boot ROM	[Disabled]	
PWRON After PWR-Fail	[off]	
↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default		

Item Content Summary :

Onboard FDC Controller	Disabled	
	Enabled	Default
Onboard Serial Port 1	Disabled	
	3F8/IRQ4	Default
	2F8/IRQ3	
	3E8/IRQ4	
	2E8/IRQ3	
	Auto	
Onboard Serial Port 2	Disabled	
	3F8/IRQ4	
	2F8/IRQ3	Default
	3E8/IRQ4	
	2E8/IRQ3	
	Auto	
UART Mode Select	Normal	Default
	IrDA	
	ASKIR	
	SCR	
Onboard Parallel Port	Disabled	
	378/IRQ7	Default
	278/IRQ5	
	3BC/IRQ7	
Parallel Port Mode	SPP	Default
	EPP	
	ECP	
	ECP+EPP	
82574 LAN 1 Control	Disabled	
	Enabled	Default
82574 LAN 2 Control(G2 ver.)	Disabled	
	Enabled	Default
Onboard Lan Boot ROM	Disabled	Default
	Enabled	
Decide whether to invoke the boot ROM of the onboard LAN chip.		
PWRON After PWR-Fail	Off	Default
	On	
	Former-Sts	

Setup menu: Integrated Peripherals

Digital I/O Device

Phoenix – AwardBIOS CMOS Setup Utility

Digital I/O Device

Digital I/O Port	801h	Item Help
Port 1	[Input]	Menu Level → Here displays item helps.
Port 2	[Input]	
Port 3	[Input]	
Port 4	[Input]	
Port 5	[Output]	
Port 6	[Output]	
Port 7	[Output]	
Port 8	[Output]	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

Port 1	Input	Default
	Output	
Port 2	Input	Default
	Output	
Port 3	Input	Default
	Output	
Port 4	Input	Default
	Output	
Port 5	Input	
	Output	Default
Port 6	Input	
	Output	Default
Port 7	Input	
	Output	Default
Port 8	Input	
	Output	Default

Setup menu: Integrated Peripherals

USB Device Setting

Phoenix – AwardBIOS CMOS Setup Utility

USB Device Setting

USB 1.0 Controller	[Enabled]	Item Help Menu Level → Here displays item helps.
USB 2.0 Controller	[Enabled]	
USB Operation Mode	[High Speed]	
USB Keyboard Function	[Enabled]	
USB Mouse Function	[Enabled]	
USB Storage Function	[Enabled]	
*** USB Mass Storage Device Boot Setting ***		

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

USB 1.0 Controller	Disabled	
	Enabled	Default
[Enable] or [Disable] Universal Host Controller Interface for Universal Serial Bus.		
USB 2.0 Controller	Disabled	
	Enabled	Default
[Enable] or [Disable] Universal Host Controller Interface for Universal Serial Bus.		
USB Operation Mode	Full/Low Speed	
	High Speed	Default
Auto decide USB device operation mode. [High speed]: If USB device was high speed device, then it operated on high speed mode. If USB device was full/low speed device, then it operated on full/low speed mode. [Full/Low Speed]: All of USB device operated on full/low speed mode.		
USB Keyboard Function	Disabled	
	Enabled	Default
USB Mouse Function	Disabled	
	Enabled	Default
USB Storage Function	Disabled	
	Enabled	Default

Setup menu: Power Management Setup

Phoenix – AwardBIOS CMOS Setup Utility		
Power Management Setup		
PCI Express PM Function	[Press Enter]	Item Help
ACPI Function	[Enabled]	
ACPI Suspend Type	[S3(STR)]	
Run VGABIOS if S3 Resume	[Auto]	Menu Level →
Power Management	[User Define]	
Video Off Method	[Blank Screen]	Here displays item helps.
Video Off In Suspend	[No]	
Suspend Type	[Stop Grant]	
MODEM Use IRQ	[3]	
Suspend Mode	[Disabled]	
HDD Power Down	[Disabled]	
Soft-Off by PWR-BTTN	[Instant-Off]	
Wake-Up by PCI card	[Enabled]	
Power On by Ring	[Disabled]	
USB KB Wake-Up From S3	[Disabled]	
Resume by Alarm	[Disabled]	
x Date(of Month) Alarm	0	
x Time(hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer Event **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	
Secondary IDE 0	[Disabled]	
Secondary IDE 1	[Disabled]	
FDD, COM, LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	
HPET Support	[Enabled]	
HPET Mode	[32-bit mode]	
↑↓←→:MOVE +/~/PU/PD:Value F10:Save ESC:Exit F1:General Help		
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default		

Item Content summary :

ACPI Function	Enabled	Default
	Disabled	
ACPI Suspend Type	S1(POS)	
	S3(STR)	Default
	S1&S3	
Run VGABIOS if S3 Resume	Auto	Default
	Yes	
	No	
Power Management	User Define	Default
	Min Saving	
	Max Saving	
Video Off Method	Blank Screen	Fail-Safe Default
	V/H SYNC + Blank	
	DPMS	Optimized Default
Video Off In Suspend	No	Fail-Safe Default
	Yes	Optimized Default
Suspend Type	Stop Grant	Default
	PwrOn Suspend	
MODEM Use IRQ	NA	
	3	Default
	4	
	5	
	7	
	9	
	10	
	11	
Suspend Mode	Disabled	Default
	1 Min	
	2 Min	
	4 Min	
	8 Min	
	12 Min	
	20 Min	
	30 Min	
	40 Min	
1 Hour		

HDD Power Down	Disabled	Default
	1 Min	
	2 Min	
	3 Min	
	4 Min	
	5 Min	
	6 Min	
	7 Min	
	8 Min	
	9 Min	
	10 Min	
	11 Min	
	12 Min	
	13 Min	
	14 Min	
15 Min		
Soft-Off by PWR-BTTN	Instant-Off	Default
	Delay 4 Sec.	
Wake-Up by PCI card	Disabled	
	Enabled	Default
Power On by Ring	Disabled	Default
	Enabled	
USB KB Wake-Up From S3	Disabled	Default
	Enabled	
Resume by Alarm	Disabled	Default
	Enabled	
Primary IDE 0	Disabled	Default
	Enabled	
Primary IDE 1	Disabled	Default
	Enabled	
Secondary IDE 0	Disabled	Default
	Enabled	
Secondary IDE 1	Disabled	Default
	Enabled	
FDD, COM, LPT Port	Disabled	Default
	Enabled	

PCI PIRQ[A-D]#	Disabled	Default
	Enabled	
HPET Support	Disabled	
	Enabled	Default
HPET Mode	32-bit mode	Default
	64-bit mode	

Setup menu: Power Management Setup

PCI Express PM Function

Phoenix – AwardBIOS CMOS Setup Utility
PCI Express PM Function

Root Port ASPM	[Disabled]	Item Help
DMI Port ASPM	[Disabled]	
		Menu Level →
		Here displays item helps.

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
 F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content Summary :

Root Port ASPM	Disabled	Default
	L0s	
	L1	
	L1/L0s	
DMI Port ASPM	Disabled	Default
	L0s	

Setup menu : PnP/PCI Configurations

Phoenix – AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

Init Display First	[PCI Slot]	Item Help Menu Level → Here displays item helps.
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Auto(ESCD)]	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
INT Pin 1 Assignment	[Auto]	
INT Pin 2 Assignment	[Auto]	
INT Pin 3 Assignment	[Auto]	
INT Pin 4 Assignment	[Auto]	
INT Pin 5 Assignment	[Auto]	
INT Pin 6 Assignment	[Auto]	
INT Pin 7 Assignment	[Auto]	
INT Pin 8 Assignment	[Auto]	
** PCI Express relative items **		
Maximum Payload Size	[128]	

↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default

Item Content summary :

Init Display First	PCI Slot	Default
	Onboard	
Reset Configuration Data	Disabled	Default
	Enabled	
Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot).		
Resources Controlled By	Auto(ESCD)	Default
	Manual	
BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ, DMA, and memory base address fields, since BIOS automatically assigns them.		

PCI/VGA Palette Snoop	Disabled	Default
	Enabled	
INT Pin 1 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
	Device(s) using this INT: Network Cntrlr - Bus 2 Dev 0 Func 0 Display Cntrlr - Bus 0 Dev 0 Func 0 Bridge Device - Bus 0 Dev 28 Func 4 Bridge Device - Bus 0 Dev 28 Func 0 USB 1.0/1.1 UHCI Cntrlr - Bus 0 Dev 28 Func 3	
INT Pin 2 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	

Device(s) using this INT: Network Cntrlr - Bus 3 Dev 0 Func 0 Bridge Device - Bus 0 Dev 28 Func 5		
INT Pin 3 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
Device(s) using this INT: USB 1.0/1.1 UHCI Cntrlr - Bus 0 Dev 29 Func 2		
INT Pin 4 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
Device(s) using this INT: IDE Cntrlr - Bus 0 Dev 31 Func 2 USB 1.0/1.1 UHCI Cntrlr - Bus 0 Dev 29 Func 1 SMBus Cntrlr - Bus 0 Dev 31 Func 3		

INT Pin 5 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
	INT Pin 6 Assignment	Auto
3		
4		
5		
7		
9		
10		
11		
12		
14		
15		
Device(s) using this INT:		
INT Pin 7 Assignment	Auto	Default
	3	
	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
	Device(s) using this INT:	
INT Pin 8 Assignment	Auto	Default
	3	

	4	
	5	
	7	
	9	
	10	
	11	
	12	
	14	
	15	
Device(s) using this INT: USB 1.0/1.1 UHCI Cntrlr - Bus 0 Dev 29 Func 0 USB 2.0 EHCI Cntrlr - Bus 0 Dev 29 Func 7		
Maximum Payload Size	128	Default
Set maximum TLP payload size for the PCI Express devices. The unit is byte.		

Setup submenu: PC Health Status

Phoenix – AwardBIOS CMOS Setup Utility		
PC Health Status		
Shutdown Temperature	[Disabled]	Item Help
(+) Vcore	1.23 V	
(+) 1.5V	1.48 V	
(+) 3.3V	3.39 V	
(+) 5V	5.05 V	
(+) 12V	12.28V	
Voltage Battery	3.04 V	
System Temperature	47 °C	
CPU Temperature	54 °C	
System FAN Speed	0 RPM	Menu Level →
CPU FAN Speed	0 RPM	Here displays item helps.
Backplane FAN Speed	0 RPM	
↑↓←→:MOVE +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Save Defaults F7:Optimized Default		

Item Content summary :

Shutdown Temperature	60°C/140°F	
	65°C/149°F	
	70°C/158°F	
	Disabled	Default

Other Root Options**Load Fail-safe Defaults**

Load Fail-safe Default values for all the setup questions.

If you highlight this item and press [Enter], a dialog box asks if you want to install Fail-safe Default settings for all the items in the Setup utility. Press [Y] and then press [Enter] , the Fail-safe Default setting thus will be loaded.

Load Optimal Defaults

Load optimal Default values for all the setup questions.

If you highlight this item and press [Enter], a dialog box asks if you want to install optimal settings for all the items in the Setup utility. Press [Y] and then press [Enter] , the optimal settings setting thus will be loaded.

Set Supervisor Password

Setting supervisor's password.

Highlight this item and press [Enter], a dialog box asks the password you want set. Key in your password and press[Enter] to set your new password.

Set User Password

Setting user's password.

Highlight this item and press Enter, a dialog box asks the password you want set. Key in your password and press [Enter] to set your new

password.

Save & Exit Setup

Highlight this item and press [Enter], a dialog box asks if you want to save any changes that you have made in the Setup utility and exit the Setup utility. When the Save to CMOS dialog box appears, press [Y] & [Enter] to save the changes and exit, or press [N] & [Enter] to return to the setup main menu. [F10] key can be used for this operation.

Exit Without Saving

Highlight this item and press [Enter], a dialog box asks if you want to exit the Setup utility without saving any changes that you have made in the Setup utility. When the Save to CMOS dialog box appears, press [Y] & [Enter] to exit the Setup utility without saving, or press [N] & [Enter] to return to the setup main menu. [ESC] key can be used for this operation.

Chapter

4

**Driver
Installation**

The FSB-G41H comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

- Step 1 – Install INF Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Driver
- Step 4 – Install RAID Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the FSB-G41H CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install INF Driver

1. Click on the **step1 -- INF** folder and then double click on the **Setup.exe**
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Step 2 – Install VGA Driver

1. Click on the **step2 -- VGA** folder and select the OS your system is
2. Double click on **.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 3 – Install LAN Driver

1. Click on the **Step3 - LAN** folder and double click on **autorun.exe**
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Step 4 – Install RAID Driver

Install Driver in Windows Vista / XP / 2000

New Windows Vista / XP / 2000 Installation

The following details the installation of the drivers while installing **Windows XP/ 2000.**

1. When you start installing Windows XP and older operating systems, you may encounter a message stating, "Setup could not determine the type of one or more mass storage devices installed in your system". If this is the case, then you are already in the right place and are ready to supply the driver. If this is not the case, then press F6 when prompted at the beginning of Windows setup.
2. Press the "S" key to select "Specify Additional Device".
3. You should be prompted to insert a floppy disk containing the Intel® RAID driver into the A: drive.

Note: For Windows Vista you can use Floppy, CD/DVD or USB.

Important

Please follow the instruction below to make an "Intel® RAID Driver" for yourself.

1. Insert the AAEON CD into the CD-ROM drive
 2. Click the "Browse CD" on the Setup screen
 3. Copy all the contents in \\Step4 - RAID\F6 Install Floppy\32bit or 64bit to a formatted floppy diskette
 4. The driver diskette for Intel® ICH10DO RAID Controller is done
-

For Windows Vista:

1. During the Operating system installation, after selecting the location to install Vista click on "Load Driver" button to install a third party SCSI or RAID driver.

2. When prompted, insert the floppy disk or media (Floppy, CD/DVD or USB) you created in step 3 and press Enter.
3. You should be shown a list of available SCSI Adapters. This list should include “Intel(R) ICH8R/ICH9R/ICH10R/DO SATA RAID Controller” when the system is in RAID mode and “Intel(R) ICH10D/DO SATA AHCI Controller” when the system is in AHCI mode.
4. Select the appropriate Intel RAID controller and press ENTER.
5. The next screen should confirm that you have selected the Intel® RAID controller. Press ENTER again to continue.
6. You have successfully installed the Intel® Matrix Storage Manager driver, and Windows setup should continue.
7. Leave the disk in the floppy drive until the system reboots itself. Windows setup will need to copy the files from the floppy again after the RAID volume is formatted, and Windows setup starts copying files.

Appendix

A

Programming the Watchdog Timer

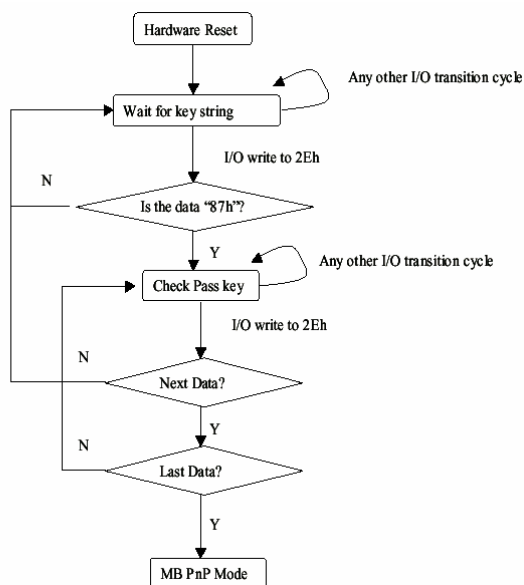
A.1 Programming

FSB-G41H utilizes ITE 8718 chipset as its watchdog timer controller. (K version)

Below are the procedures to complete its configuration and the AAEMON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8718 enters the normal mode with all logical devices disabled except KBC.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configuration Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value (LSB) Register
07H	74H	R/W	00H	WatchDog Timer Time-out Value (MSB) Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed.
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (Mouse) interrupt
5	WDT is reset upon a KBC (Keyboard) interrupt
4	Reserved
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT status 1: WDT value reaches 0 0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select 1: Second 0: Minute
6	WDT output through KRST (pulse) enable
5	WDT Time-out value Extra select 1: 4s. 0: Determine by WDT Time-out value select (bit7 of this register)
4	WDT output through PWROK1/PWROK2 (pulse) enable
3	Select the interrupt level ^{note} for WDT

WatchDog Timer Time-out Value (LSB) Register (Index=73h,

Default=00h)

Bit	Description
-----	-------------

7-0	WDT Time-out value 7-0
-----	------------------------

WatchDog Timer Time-out Value (MSB) Register (Index=74h,

Default=00h)

Bit	Description
-----	-------------

7-0	WDT Time-out value 15-8
-----	-------------------------

A.2 ITE8718 Watchdog Timer Initial Program

```
.MODEL SMALL
```

```
.CODE
```

Main:

```
CALL Enter_Configuration_mode
```

```
CALL Check_Chip
```

```
mov cl, 7
```

```
call Set_Logic_Device
```

```
;time setting
```

```
mov cl, 10 ; 10 Sec
```

```
dec al
```

Watch_Dog_Setting:

```
;Timer setting
```

```
mov al, cl
```

```
mov cl, 73h
```

```
call Superio_Set_Reg
;Clear by keyboard or mouse interrupt
mov al, 0f0h
mov cl, 71h
call Superio_Set_Reg
;unit is second.
mov al, 0C0H
mov cl, 72h
call Superio_Set_Reg
; game port enable
mov cl, 9
call Set_Logic_Device
```

```
Initial_OK:
CALL Exit_Configuration_mode
MOV AH,4Ch
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh
MOV CX,04h
Init_1:
MOV AL,BYTE PTR CS:[SI]
```

```
OUT DX,AL
INC SI
LOOP Init_1
RET
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR
MOV AX,0202h
CALL Write_Configuration_Data
RET
Exit_Configuration_Mode ENDP
```

```
Check_Chip PROC NEAR
```

```
MOV AL,20h
CALL Read_Configuration_Data
CMP AL,87h
JNE Not_Initial
```

```
MOV AL,21h
CALL Read_Configuration_Data
CMP AL,12h
JNE Not_Initial
```

Need_Initial:

STC

RET

Not_Initial:

CLC

RET

Check_Chip ENDP

Read_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

MOV DX,WORD PTR CS:[Cfg_Port+06h]

IN AL,DX

RET

Read_Configuration_Data ENDP

Write_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

XCHG AL,AH

MOV DX,WORD PTR CS:[Cfg_Port+06h]

OUT DX,AL

RET

Write_Configuration_Data ENDP

Superio_Set_Reg proc near

push ax

```
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near

Set_Logic_Device  proc  near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h

DW 02Eh,02Fh
```


END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected




































Appendix

B

I/O Information

B.1 I/O Address Map
























Input/output (IO)	
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000073]	System CMOS/real time clock
[00000074 - 0000007F]	Motherboard resources
[00000080 - 00000090]	Direct memory access controller
[00000091 - 00000093]	Motherboard resources
[00000094 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000290 - 00000297]	Motherboard resources
[000002F8 - 000002FF]	Communications Port (COM2)
[00000378 - 0000037F]	Printer Port (LPT1)
[000003B0 - 000003BB]	Intel(R) G41 Express Chipset
[000003C0 - 000003DF]	Intel(R) G41 Express Chipset
[000003F0 - 000003F5]	Standard floppy disk controller
[000003F6 - 000003F6]	Primary IDE Channel
[000003F7 - 000003F7]	Standard floppy disk controller
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources

	[000000C0 - 000000DF]	Direct memory access controller
	[000000E0 - 000000EF]	Motherboard resources
	[000000F0 - 000000FF]	Numeric data processor
	[000001F0 - 000001F7]	Primary IDE Channel
	[00000274 - 00000277]	ISAPNP Read Data Port
	[00000279 - 00000279]	ISAPNP Read Data Port
	[00000290 - 00000297]	Motherboard resources
	[000002F8 - 000002FF]	Communications Port (COM2)
	[00000378 - 0000037F]	Printer Port (LPT1)
	[00000380 - 000003BB]	Intel(R) G41 Express Chipset
	[000003C0 - 000003DF]	Intel(R) G41 Express Chipset
	[000003F0 - 000003F5]	Standard floppy disk controller
	[000003F6 - 000003F6]	Primary IDE Channel
	[000003F7 - 000003F7]	Standard floppy disk controller
	[000003F8 - 000003FF]	Communications Port (COM1)
	[00000400 - 000004BF]	Motherboard resources
	[000004D0 - 000004D1]	Motherboard resources
	[00000500 - 0000051F]	Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
	[00000800 - 0000087F]	Motherboard resources
	[00000880 - 000008BF]	Motherboard resources
	[00000A79 - 00000A79]	ISAPNP Read Data Port
	[00000D00 - 0000FFFF]	PCI bus
	[0000D000 - 0000DFFF]	Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E0
	[0000DF00 - 0000DF1F]	Intel(R) Gigabit CT Desktop Adapter #2
	[0000E000 - 0000EFFF]	Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E2
	[0000EF00 - 0000EF1F]	Intel(R) Gigabit CT Desktop Adapter #3
	[0000F500 - 0000F50F]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	[0000F600 - 0000F603]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	[0000F700 - 0000F707]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	[0000F800 - 0000F803]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	[0000F900 - 0000F907]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	[0000FA00 - 0000FA0F]	Intel(R) 82801G (ICH7 Family) Ultra ATA Storage Controllers - 27DF
	[0000FB00 - 0000FB1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
	[0000FC00 - 0000FC1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
	[0000FD00 - 0000FD1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
	[0000FE00 - 0000FE1F]	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
	[0000FF00 - 0000FF07]	Intel(R) G41 Express Chipset



B.2 1st MB Memory Address Map

Address Range	Device
[00000000 - 0009FFFF]	System board
[000A0000 - 000BFFFF]	Intel(R) G41 Express Chipset
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000E0000 - 000EFFFF]	System board
[000F0000 - 000FFFFF]	System board
[00100000 - 7DC8FFFF]	System board
[7DC90000 - 7DCFFFFF]	System board
[7DD00000 - 7DDFFFFF]	System board
[7DD00000 - FEBFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Intel(R) G41 Express Chipset
[E0000000 - EFFFFFFF]	Motherboard resources
[F9800000 - FD7FFFFF]	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[FD800000 - FDBFFFFF]	Intel(R) G41 Express Chipset
[FDC00000 - FDCFFFFF]	Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E0
[FDC00000 - FDCFFFFF]	Intel(R) Gigabit CT Desktop Adapter #2
[FDCFC000 - FDCFFFFF]	Intel(R) Gigabit CT Desktop Adapter #2
[FDE00000 - FDEFFFFF]	Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E2
[FDE00000 - FDEFFFFF]	Intel(R) Gigabit CT Desktop Adapter #3
[FDEFC000 - FDEFFFFF]	Intel(R) Gigabit CT Desktop Adapter #3
[FDFFE000 - FDFFE3FF]	Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
[FDFFF000 - FDFFF3FF]	Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
[FE800000 - FEBFFFFF]	Intel(R) G41 Express Chipset
[FEC00000 - FEC00FFF]	System board
[FED00000 - FED000FF]	System board
[FED00000 - FED003FF]	High precision event timer
[FED13000 - FED1DFFF]	System board
[FED20000 - FED8FFFF]	System board
[FEE00000 - FEE00FFF]	System board
[FFB00000 - FFB7FFFF]	System board
[FFB80000 - FFBFFFFF]	Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF]	System board

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	
	(ISA) 0 High precision event timer
	(ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
	(ISA) 3 Communications Port (COM2)
	(ISA) 4 Communications Port (COM1)
	(ISA) 6 Standard floppy disk controller
	(ISA) 8 High precision event timer
	(ISA) 9 Microsoft ACPI-Compliant System
	(ISA) 12 PS/2 Compatible Mouse
	(ISA) 13 Numeric data processor
	(ISA) 14 Primary IDE Channel
	(PCI) 15 Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
	(PCI) 16 Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
	(PCI) 16 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
	(PCI) 16 Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E0
	(PCI) 16 Intel(R) G41 Express Chipset
	(PCI) 16 Intel(R) Gigabit CT Desktop Adapter #2
	(PCI) 17 Intel(R) 82801GR/GH/GHM (ICH7 Family) PCI Express Root Port - 27E2
	(PCI) 17 Intel(R) Gigabit CT Desktop Adapter #3
	(PCI) 18 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
	(PCI) 19 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
	(PCI) 19 Intel(R) 82801GB/GR/GH (ICH7 Family) Serial ATA Storage Controller - 27C0
	(PCI) 23 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
	(PCI) 23 Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC

B.4 DMA Channel Assignments

Direct memory access (DMA)	
	2 Standard floppy disk controller
	4 Direct memory access controller

Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
IDE1	IDE Connector	Catch Electronics	1137-020-40SA	IDE Cable	1701400453
SATA1	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA2	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA3	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA4	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
FDD1	Floppy Connector	Catch Electronics	1137-000-34SA	Floppy Disk Drive Cable	1701340704
LPT1	Parallel Port Connector	Catch Electronics	1147-000-26S	LPT Cable	1701260307
FP1	Front Panel Connector	JIH VEI Electronics	21B22564-XXS 10B-01G-6/3-V XX		N/A
FP2	Front Panel Connector	JIH VEI Electronics	21B22564-XXS 10B-01G-6/3-V XX		N/A
USB2	USB Pin Header	JIH VEI Electronics	21B22050-XXS 10B-01G-4/2.8	USB Cable	1709100201
USB3	USB Pin Header	JIH VEI Electronics	21B22050-XXS 10B-01G-4/2.8	USB Cable	1709100201
USB4	USB Pin Header	JIH VEI Electronics	21B22050-XXS 10B-01G-4/2.8	USB Cable	1709100201
CN1	Digital I/O Pin Header	JIH VEI Electronics	21B22050-XXS 10B-01G-4/2.8		N/A
CN3	Audio Pin Header	JIH VEI Electronics	21N22050-10S1 0B-01G-4/2.8-V		N/A

Full-size SBC

FSB-G41H

			1-G		
ATX1	4P Power Connector	Catch Electronics	1121-700-04S		N/A
CPU_FAN1	FAN Connector	Catch Electronics	1190-700-042		N/A
SYS_FAN1	FAN Connector	Catch Electronics	1190-700-042		N/A
USB1	USB Connector	HO-BASE	KS-001V-ANW		N/A
LAN1(G2、VG)	Ethernet Connector	UDE	RDA-1A5BAK1A		N/A
LAN2(G2)	Ethernet Connector	UDE	RDA-1A5BAK1A		N/A
CN2	IrDA Connector	JIH VEI Electronics	21B12050-XXS10B-01G-4/2.8		N/A
CN6	Mini-Din PS/2 Connector	TechBest	DN508BS1-6-L	KB/MS Cable	1700060192
CN5	KB Pin Header	HO-BASE	2503-WS-5		N/A
COM1	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701260307
COM2	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
VGA1	CRT Display Connector	Catch Electronics	3125-000-15SB		N/A
CFD1	Compact Flash Connector	ComWeal	60328226		N/A