

IM-HM65

MS-9897 (v1.x) Industrial Computer Board



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Revision History

Revision	Revision History	Date
V1.0	For PCB v1.x	2012/ 06

Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- The openings on the enclosure are for air convection hence protects the equipment from overheating. **DO NOT COVER THE OPENINGS.**
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- Always Unplug the Power Cord before inserting any add-on card or module.
- All cautions and warnings on the equipment should be noted.
- Never pour any liquid into the opening that could damage or cause electrical shock.
- If any of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well or you can not get it work according to User's Manual.
 - The equipment has dropped and damaged.
 - The equipment has obvious sign of breakage.
- **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者:

這是甲類資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。



廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

CE Conformity

Hereby, we declare that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.



FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below:



- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

NOTICE 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE 2

Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

WEEE Statement



ENGLISH

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life.

DEUTSCH

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. Wir haben europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы.

ESPAÑOL

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su período de vida.

NEDERLANDS

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Elektrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet

meer beschouwd worden als vervuiling. Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus.

SRPSKI

Po Direktivi Evropske unije ("EU") o odbačenoj eelektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja.

POLSKI

Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. "produkty oraz wyposażenie elektryczne i elektroniczne" nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia.

TÜRKÇE

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılmayacak ve bu elektronik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır.

ČESKY

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti.

MAGYAR

Az Európai Unió („EU”) 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetők lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén.

ITALIANO

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita.

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Chapter 1

Overview

Thank you for choosing the IM-HM65, an excellent industrial computer board.

Based on the innovative **Intel® HM65** chipset for optimal system efficiency, the IM-HM65 accommodates the **Intel® Sandy Bridge mobile** processor and supports up to 2 DDR3 1066MHz Non-ECC, unbuffered SO-DIMM slots to provide the maximum of 8GB memory capacity.

In the advanced-level and mid-range market segment, the IM-HM65 provides a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

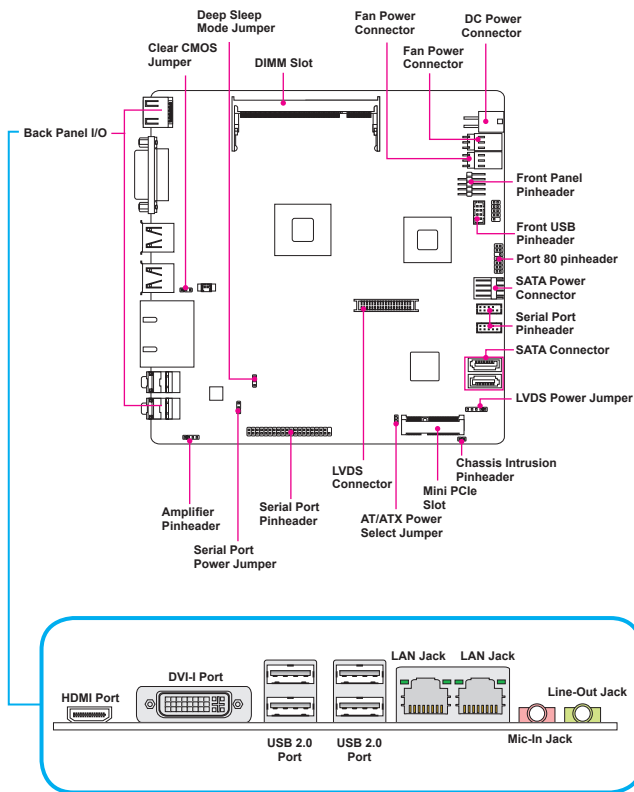
Mainboard Specifications

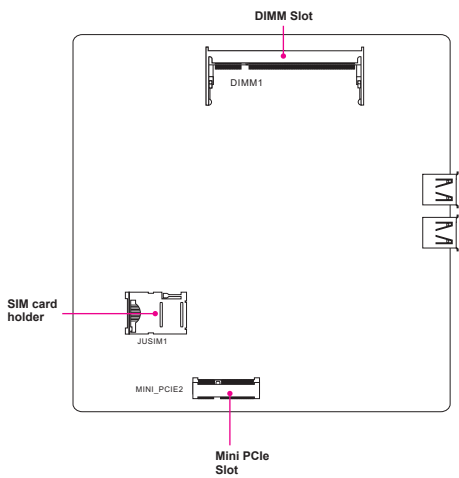
CPU	<ul style="list-style-type: none">■ Intel Sandy Bridge mobile processor
Chipset	<ul style="list-style-type: none">■ Intel HM65 PCH
Memory	<ul style="list-style-type: none">■ 2 unbuffered non-ECC DDR3 800/ 1066/ 1333 SO-DIMM slots■ Supports the maximum of 8GB■ Supports Dual Channel
LAN	<ul style="list-style-type: none">■ 1 Intel 82574L GbE controller■ 1 Intel 82579LM GbE controller
Storage	<ul style="list-style-type: none">■ 2 SATA 3Gb/s ports by Intel HM65 PCH
Audio	<ul style="list-style-type: none">■ HDA Codec by Realtek® ALC886■ Compliant with Azalia 1.0 specs
Graphics	<ul style="list-style-type: none">■ 1 HDMI port■ 1 DVI-I port
Back Panel I/O	<ul style="list-style-type: none">■ 1 HDMI port■ 1 DVI-I port■ 4 USB ports■ 2 RJ-45 LAN jacks■ 1 microphone audio jack■ 1 Line-Out audio jack
Onboard Connectors/ Pin-headers/ Switch	<ul style="list-style-type: none">■ 1 USB 2.0 pinheader (2 ports)■ 3 serial port connectors (supports 6 ports)■ 1 SPI Flash ROM pinheader (for debugging)■ 1 LVDS connector■ 1 chassis intrusion connector■ 1 amplifier pinheader
Slot	<ul style="list-style-type: none">■ 2 Mini PCIe slots
Form Factor	<ul style="list-style-type: none">■ Mini-ITX: 170mm x 170mm

Environmental

- Operating Temperature: 0°C to 60°C
- Storage Temperature: -20°C to 80°C
- Humidity: 0% ~ 90% RH, non-condensing

Mainboard Layout





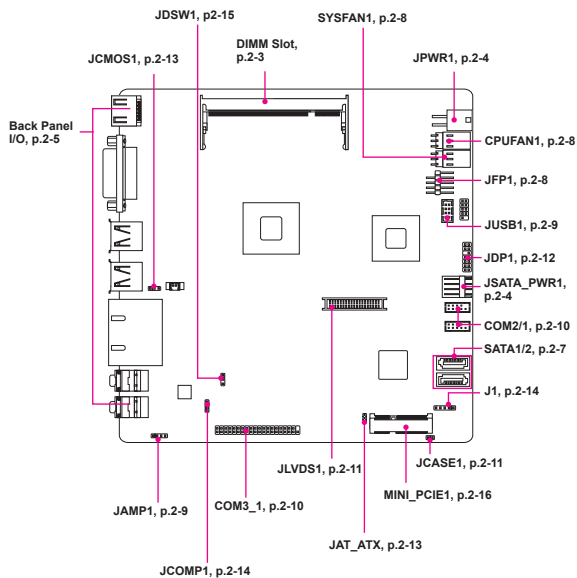
msi[™]

Chapter 2

Hardware Setup

This chapter provides you with the information on mainboard hardware configurations. Incorrect setting of jumpers and connectors may damage your mainboard. Please pay special attention not to connect these headers in wrong direction. **DO NOT** adjust any jumper while the mainboard is powered on.

Quick Components Guide



Memory

► Installing Memory Modules

1. Locate the SO-DIMM slot. Align the notch on the DIMM with the key on the slot and insert the DIMM into the slot.
2. Push the DIMM gently downwards until the slot levers click and lock the DIMM in place.
3. To uninstall the DIMM, flip the slot levers outwards and the DIMM will be released instantly.

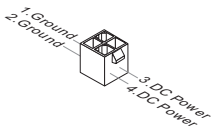
Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

Power Supply

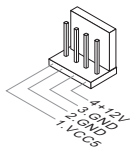
DC Power Connector: JPWR1

This connector provides 12/19/24V DC power input.

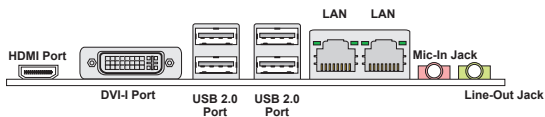


SATA Power Connector: JSATA_PWR1

This connector provides power to SATA hard drives.



Back Panel I/O



▶ HDMI Port **HDMI**[™] HIGH-DEFINITION MULTIMEDIA INTERFACE

The High-Definition Multimedia Interface (HDMI) is an all-digital audio-video interface that is capable of transmitting uncompressed streams. HDMI supports all types of TV formats, including standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable.

▶ DVI-I Port

The DVI-I (Digital Visual Interface-Integrated) connector allows you to connect an LCD monitor. It provides a high-speed digital interconnection between the computer and its display device. To connect an LCD monitor, simply plug your monitor cable into the DVI connector, and make sure that the other end of the cable is properly connected to your monitor (refer to your monitor manual for more information.)

▶ USB 2.0 Port

The USB 2.0 port is for attaching USB 2.0 devices such as keyboard, mouse, or other USB compatible devices.

▶ LAN

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.



		Left LED (Active LED)	Right LED (100M/1000M Speed LED)
LED Color		Yellow	Green/Orange
10M Cable Plug-in	No Transmission	Yellow (Lighting)	OFF
	Transmission	Yellow (Blinking)	OFF
100M Cable Plug-in	No Transmission	Yellow (Lighting)	Green (Lighting)
	Transmission	Yellow (Blinking)	Green (Lighting)
1000M Cable Plug-in	No Transmission	Yellow (Lighting)	Orange (Lighting)
	Transmission	Yellow (Blinking)	Orange (Lighting)
In S3/S4/S5 Standby State		Yellow (Lighting)	OFF

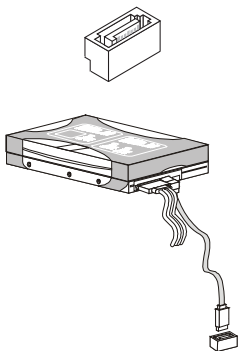
▶ Audio Jack

- **Line-Out (Green)** - for speakers or headphones
- **Mic-In (Pink)** - for microphones

Connector

Serial ATA Connector: SATA1 ~ SATA2

This connector is a high-speed Serial ATA interface port. Each connector can connect one Serial ATA device.

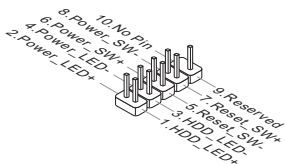


Important

Please do not fold the Serial ATA cable into a 90-degree angle. Otherwise, data loss may occur during transmission.

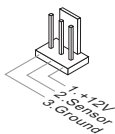
Front Panel Pinheader: JFP1

This front panel connector is provided for electrical connection to the front panel switches & LEDs and is compliant with Intel Front Panel I/O Connectivity Design Guide.



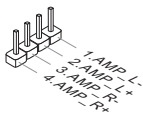
Fan Power Connectors: CPUFAN1 & SYSFAN1

These fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the fan control.



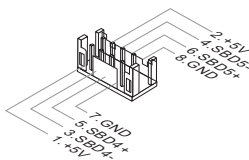
Audio Amplifier Pinheader: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.



Front USB Pinheader: JUSB1

This connector, compliant with Intel I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.



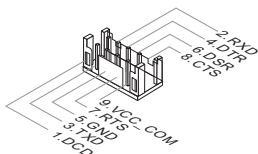
Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

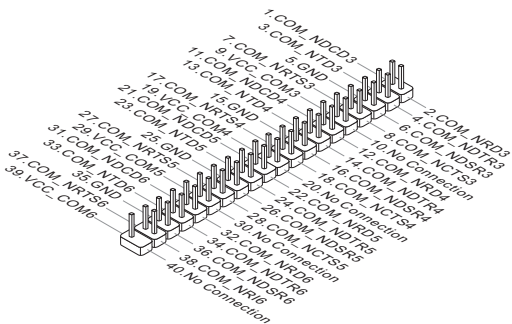
Serial Port Pinheader: COM1, COM2, COM3_1

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach serial devices to it through the optional serial port bracket.

COM1/ COM2



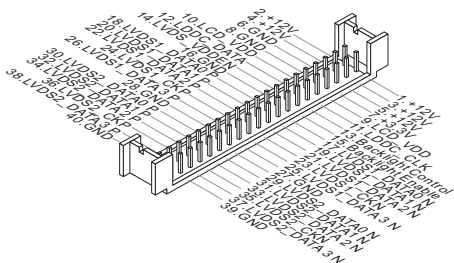
COM3_1



LVDS Connector: JLVDS1

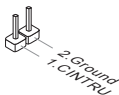
The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels. After connecting an LVDS interface flat panel to this connector, be sure to check the panel datasheet and set the JVDD1 jumper to proper power voltage.

JLVDS1



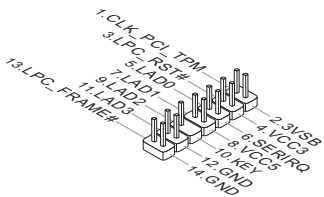
Chassis Intrusion Connector: JCASE1

This connector connects to the chassis intrusion switch cable. If the computer case is opened, the chassis intrusion mechanism will be activated. The system will record this intrusion and a warning message will flash on screen. To clear the warning, you must enter the BIOS utility and clear the record.



Port 80 Pinheader: JDP1

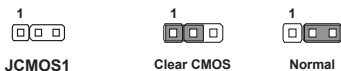
This pinheader is intended for Transport Control Protocol (TCP) port 80.



Jumper

Clear CMOS Jumper: JCMOS1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.

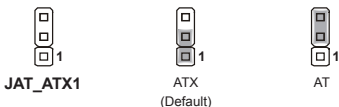


Important

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

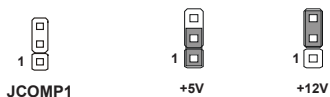
AT/ATX Select Jumper: JAT_ATX1

This jumper allows users to select between AT and ATX power.



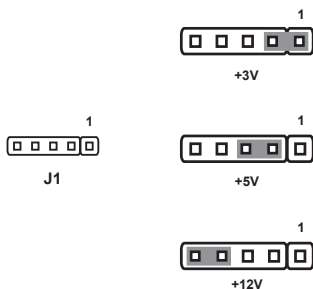
Serial Port Power Jumper: JCOMP1

This jumper specifies the operation voltage of the onboard serial ports.



LVDS Power Jumper: J1

Use this jumper to specify the LVDS power.



Deep Sleep Mode Jumper: JDSW1

Use this jumper to specify the deep sleep mode (S4/S5).



JDSW1



Enable
(default)



Disable

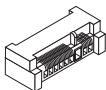
Important

Avoid adjusting the jumper when the system is on; it will damage the main-board.

Slot

Mini PCI-E (Peripheral Component Interconnect Express) Slot

The Mini PCI-E slot is provided for wireless LAN card, and Robson NAND Flash card.



Important

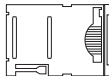
When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Sim card holder

The holder is provided for sim card.



Sim card



Holder

Chapter 3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

Control Keys

← →	Select Screen
↑ ↓	Select Item
Enter	Select
+ -	Change Option
F1	General Help
F7	Previous Values
F9	Optimized Defaults
F10	Save & Exit
Esc	Exit


Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑ ↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

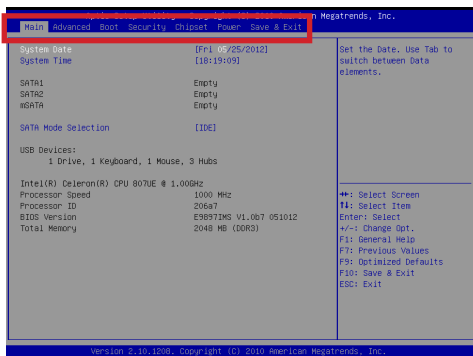
Sub-Menu

If you find a right pointer symbol  appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑ ↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar



► Main

Use this menu for basic system configurations, such as time, date, etc.

► Advanced

Use this menu to set up the items of special enhanced features.

► Boot

Use this menu to specify the priority of boot devices.

► Security

Use this menu to set supervisor and user passwords.

► Chipset

This menu controls the advanced features of the onboard chipsets.

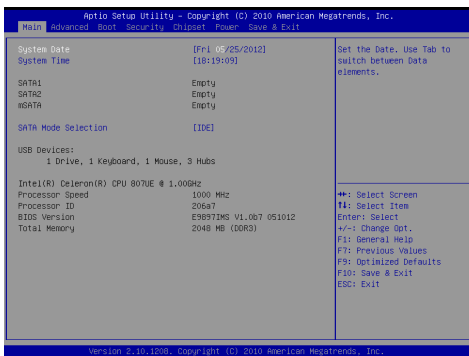
► Power

Use this menu to specify your settings for power management.

► Save & Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main



► System Date

This setting allows you to set the system date. The date format is <Day>, <Month> <Date> <Year>.

► System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

► SATA1/ 2

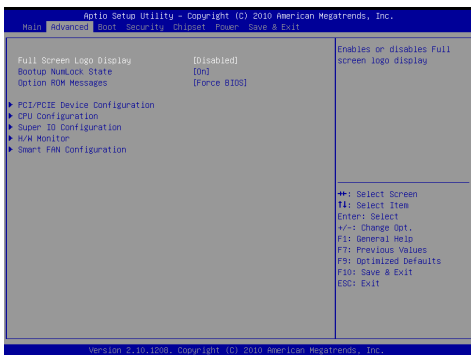
[Type]	Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.
--------	---

[LBA/Large Mode]	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors
[Block (Multi-Sector Transfer)]	Any selection except Disabled determines the number of sectors transferred per block
[PIO Mode]	Indicates the type of PIO (Programmed Input/Output)
[DMA Mode]	Indicates the type of Ultra DMA
[S.M.A.R.T.]	This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.
[32 Bit Data Transfer]	Enables 32-bit communication between CPU and IDE controller

► **SATA Mode Selection**

This setting specifies the SATA controller mode.

Advanced



► Full Screen Logo Display

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo. When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

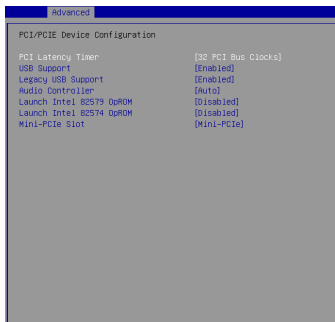
Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

► Bootup NumLock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

► Option ROM Messages

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

► PCI/PCIE Device Configuration**► PCI Latency Timer**

This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. For better PCI performance, you should set the item to higher values.

► USB Support

This setting enables/disables support for USB devices.

► Legacy USB Support

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

► Audio Controller

This setting enables/disables the onboard audio controller.

► **Launch Intel 82579/ 82574 OpROM**

These settings enable/disable the initialization of the onboard PXE Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

► **Mini-PCIe Slot**

This setting determines the operation mode of the Mini PCIe slot.

► **CPU Configuration**



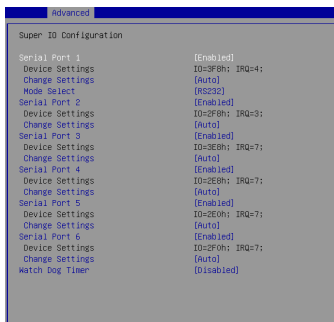
► **Intel Virtualization Tech**

Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple "Virtual" systems.

► **EIST**

EIST (Enhanced Intel SpeedStep Technology) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

► Super IO Configuration**► Serial Port 1/ 2/ 3/ 4/ 5/ 6**

This setting enables/disables the specified serial port.

► Change Settings

This setting is used to change the address & IRQ settings of the specified serial port.

► Mode Select

Select an operation mode for the serial port 1.

► Watch Dog Timer

You can enable the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

► H/W Monitor

These items display the current status of all monitored hardware devices/ components such as voltages, temperatures and all fans' speeds.



► Smart Fan Configuration



► Smart FAN1/ FAN2 Function

These settings enable/disable the Smart Fan function. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU/system temperature, avoiding the overheating to damage your system.

Boot



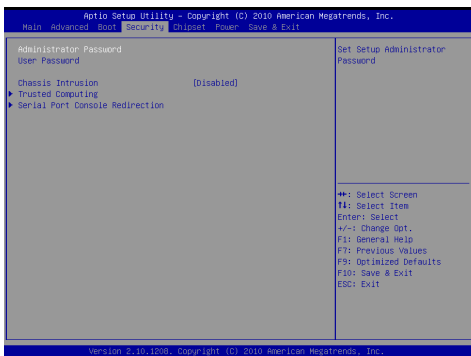
► Boot Option #1 / #2 / #3

This setting allows users to set the sequence of boot devices where BIOS attempts to load the disk operating system.

► Hard Drive BBS Priorities

This setting allows users to set the priority of the specified devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑ ↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

Security



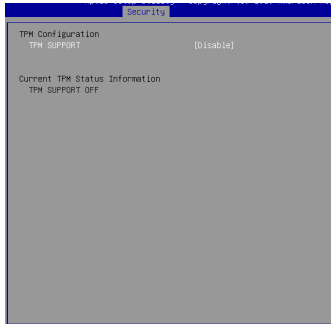
► Administrator Password

Administrator Password controls access to the BIOS Setup utility.

► User Password

User Password controls access to the system at boot and to the BIOS Setup utility.

► Trusted Computing



► TPM SUPPORT

This setting controls the Trusted Platform Module (TPM) designed by the Trusted Computing Group (TCG). TPMs are special-purpose integrated circuits (ICs) built into a variety of platforms to enable strong user authentication and machine attestation - essential to prevent inappropriate access to confidential and sensitive information and to protect against compromised networks.

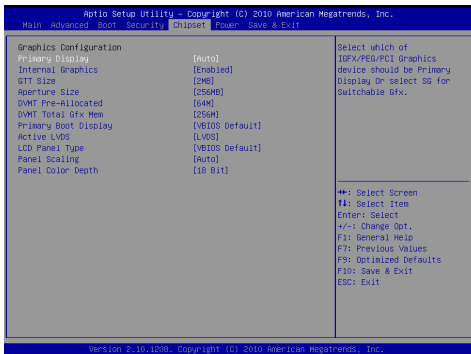
► Serial Port Console Redirection



► Console Redirection

Console Redirection operates in host systems that do not have a monitor and keyboard attached. This setting enables/disables the operation of console redirection. When set to [Enabled], BIOS redirects and sends all contents that should be displayed on the screen to the serial COM port for display on the terminal screen. Besides, all data received from the serial port is interpreted as keystrokes from a local keyboard.

Chipset



► Primary Display

This setting specifies which is your primary graphics adapter.

► Internal Graphics

The setting enables/ disables the internal graphics.

► GTT Size

The Graphics Translation Table (GTT) is a Translation Lookaside Buffer (TLB) used to map the virtual memory space of the graphics aperture to that of the physical address space. At less 1MB for Intel Smart 2D Display Technology direct access to the pre-allocated memory space is necessary.

► Aperture Size

Aperture memory will not be used until on-board memory is running low. That means it will usually not impact gaming performance because developers are trying hard to not exceed the on-board memory limits. However most games requiring more and more texture memory supported. A good number seems to be 256MB Aperture Size for all.

▶ **DVMT Pre-Allocated**

This setting defines the DVMT pre-allocated memory. Pre-allocated memory is the small amount of system memory made available at boot time by the system BIOS for video. Pre-allocated memory is also known as locked memory. This is because it is "locked" for video use only and as such, is invisible and unable to be used by the operating system.

▶ **DVMT Total Gfx Mem**

This setting specifies the memory size for DVMT.

▶ **Primary Boot Display**

Use the field to select the type of device you want to use as the display(s) of the system.

▶ **Active LVDS**

This item is used for turning on/off LVDS support. (LVDS or No LVDS)

▶ **LCD Panel Type**

This setting allows you to set your preferences for the boot display device.

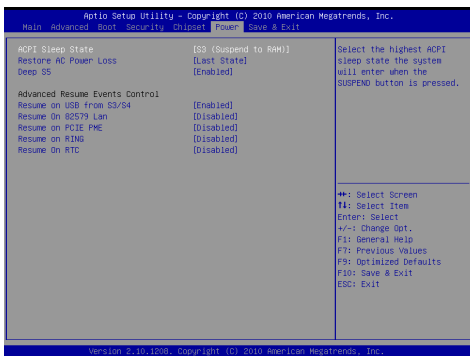
▶ **Panel Scaling**

This item is used for setting screen scaling up or none. (Auto / Off / Force Scaling)

▶ **Panel Color Depth**

This item is used for setting the matching LFP Panel color depth. (18bit or 24bit).

Power



► ACPI Sleep State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field.

► Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]	Leaves the computer in the power off state.
[Power On]	Leaves the computer in the power on state.
[Last State]	Restores the system to the previous status before power failure or interrupt occurred.

▶ **Deep S5**

The setting enables/disables the Deep S5 power saving mode. S5 is almost the same as G3 Mechanical Off, except that the PSU still supplies power, at a minimum, to the power button to allow return to S0. A full reboot is required. No previous content is retained. Other components may remain powered so the computer can “wake” on input from the keyboard, clock, modem, LAN, or USB device.

▶ **Resume on USB from S3/S4**

The item allows the activity of the USB device to wake up the system from S3/S4 sleep state.

▶ **Resume on 82579 LAN**

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard LAN is detected.

▶ **Resume on PCIE PME**

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard PCIE PME is detected.

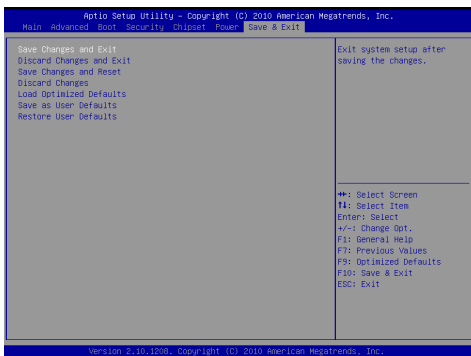
▶ **Resume on RING**

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

▶ **Resume on RTC**

When [Enabled], you can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

Save & Exit



▶ **Save Changes and Exit**

Save changes to CMOS and exit the Setup Utility.

▶ **Discard Changes and Exit**

Abandon all changes and exit the Setup Utility.

▶ **Save Changes and Reset**

Save changes to CMOS and reset the system.

▶ **Discard Changes**

Abandon all changes.

▶ **Load Optimized Defaults**

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

▶ **Save as User Defaults**

Save changes as the user's default profile.

▶ **Restore User Defaults**

Restore the user's default profile.

Chapter 4

System Resources

This chapter provides information on system resources.

RESOURCE LIST

SIO : 4Eh

TPM : 2Eh

PCH GPIO

GPIO Pin	Type	FUNCTION	Usage	Pull up processing	Power	GPIO Pin
GPIO_00	IO		BMBUSY#	PULL UP IOK TO +3VRUN	+3VRUN	GPIO_00
GPIO_01	IO		PCH_SPIW#	PULL UP IOK TO +3VRUN	+3VRUN	GPIO_01
GPIO_02	IO	NA				GPIO_02
GPIO_03	IO	NA				GPIO_03
GPIO_04	IO	NA				GPIO_04
GPIO_05	IO	NA				GPIO_05
GPIO_06	IO		PCH_Out : EN232 Com Port EN Pin_In : EN232	PULL UP 4.7K TO +5VRUN	+5VRUN	GPIO_06
GPIO_07	IO		TEST POINT			GPIO_07
GPIO_08	IO			PULL DOWN 1K		GPIO_08
GPIO_09	IO			PULL UP IOK TO 3VSB	3VSB	GPIO_09
GPIO_10	IO			PULL UP IOK TO 3VSB	3VSB	GPIO_10
GPIO_11	IO		SCI_WAKE_UP#	PULL UP IOK TO +3VSUS	+3VSUS	GPIO_11
GPIO_12	IO		PCH_Out : PM_LANPHY_ENABLE# S79LAN_In : LAN_DISABLE_N	PULL UP IOK TO +3.3M_LAN	+3.3M_LAN	GPIO_12
GPIO_13	IO		HDA_DOCK_RST#	PULL UP IOK TO 3VSB	3VSB	GPIO_13
GPIO_14	IO			PULL UP IOK TO 3VSB	3VSB	GPIO_14
GPIO_15	IO			PULL UP 1K TO 3VSB	3VSB	GPIO_15
GPIO_16	IO	NA				GPIO_16
GPIO_17	IO	NA				GPIO_17
GPIO_18	IO		PCH_In : MINI_PCIE2_CLKREQ# mini pcie2_Out : MINI_PCIE2_CLKREQ#	PULL UP IOK TO +3VSUS	+3VSUS	GPIO_18
GPIO_19	IO		BBS_BIT0	PULL UP IOK TO +3VRUN	+3VRUN	GPIO_19
GPIO_20	IO			PULL UP IOK TO +3VRUN	+3VRUN	GPIO_20
GPIO_21	IO		SATA0GP_R	PULL UP IOK TO +3VRUN	+3VRUN	GPIO_21
GPIO_22	IO			PULL UP IOK TO +3VRUN	+3VRUN	GPIO_22
GPIO_23	IO	NA				GPIO_23
GPIO_24	IO		PCH_Out : USB_EN	PULL UP 4.7K TO 5VSB	5VSB	GPIO_24
GPIO_25	IO			PULL UP IOK TO 3VSB	3VSB	GPIO_25
GPIO_26	IO		PCIECLKREQ#	PULL UP IOK TO +3VSUS	+3VSUS	GPIO_26
GPIO_27	IO		TEST POINT			GPIO_27
GPIO_28	IO		PLL_ODVR_EN	PULL DOWN 1K		GPIO_28
GPIO_29	IO		PCH_In : PM_SLP_LAN# S79LAN_In : +3.3M_LAN_CTL_V1.05M_LAN_In:EN Pin			GPIO_29
GPIO_30	IO		PCH_Out : SUSWARM# SIO_In : SUSWARM# SIO_GPIO02	PULL UP IOK TO +3VSUS	+3VSUS	GPIO_30
GPIO_31	IO		AC_PRESENT	PULL UP IOK TO +3VSUS	+3VSUS	GPIO_31
GPIO_32	IO		PM_CLKRUN#	PULL UP 8.2K TO +3VSUS	+3VRUN	GPIO_32
GPIO_33	IO	NA				GPIO_33

GPIO_34	IO			PULL UP 10K TO +3VRUN	+3VRUN	GPIO_34
GPIO_35	IO	MB_ID0		PULL UP 10K TO +3VRUN	+3VRUN	GPIO_35
GPIO_36	IO			PULL UP 10K TO +3VRUN	+3VRUN	GPIO_36
GPIO_37	IO			PULL UP 1K TO +3VRUN	+3VRUN	GPIO_37
GPIO_38	IO			PULL UP 4.7K TO +3VRUN	+3VRUN	GPIO_38
GPIO_39	IO	CRB_SV_DET		PULL DOWN 100K		GPIO_39
GPIO_40	IO	PCH_In : OC1#	USB PWR chip_Out : OC#	PULL UP 10K TO 3VSB	3VSB	GPIO_40
GPIO_41	IO	PCH_In : OC2#	USB PWR chip_Out : OC#	PULL UP 10K TO 3VSB	3VSB	GPIO_41
GPIO_42	IO			PULL UP 10K TO 3VSB	3VSB	GPIO_42
GPIO_43	IO			PULL UP 10K TO 3VSB	3VSB	GPIO_43
GPIO_44	IO			PULL UP 10K TO 3VSB	3VSB	GPIO_44
GPIO_45	IO			PULL UP 10K TO 3VSB	3VSB	GPIO_45
GPIO_46	IO	PCH_In : PCIE_CLK_REQ1#	579 LAN_Out : PCIE_CLK_REQ1#	PULL UP 10K TO 3VSB	3VSB	GPIO_46
GPIO_47	IO	PEG_A_CLKRQ#				GPIO_47
GPIO_48	IO	PCH_Out : #EM485		PULL UP 4.7K TO +5VRUN	+5VRUN	GPIO_48
GPIO_49	IO	PCH_Out : #EM422		PULL UP 4.7K TO +5VRUN	+5VRUN	GPIO_49
GPIO_50	IO	PCI_REQ#1		PULL UP 8.2K TO +3VRUN	+3VRUN	GPIO_50
GPIO_51	IO			PULL DOWN 1K		GPIO_51
GPIO_52	IO	PCI_REQ#2		PULL UP 8.2K TO +3VRUN	+3VRUN	GPIO_52
GPIO_53	IO	NA				GPIO_53
GPIO_54	IO	PCI_REQ#3		PULL UP 8.2K TO +3VRUN	+3VRUN	GPIO_54
GPIO_55	IO			PULL DOWN 1K		GPIO_55
GPIO_56	IO			PULL UP 10K TO 3VSB	3VSB	GPIO_56
GPIO_57	IO			PULL UP 4.7K TO 3VSB	3VSB	GPIO_57
GPIO_58	IO	SML1_CLK Connect to SIO GPIO20				GPIO_58
GPIO_59	IO	PCH_In : OCD#	USB PWR chip_Out : OC#	PULL UP 10K TO 3VSB	3VSB	GPIO_59
GPIO_60	IO	PCH_Out : DRAMRST_CNTRL_PCH	CPU_In : DRAMRST_CNTRL_PCH	PULL UP 1K TO +3VSUS	+3VSUS	GPIO_60
GPIO_61	IO	PCH_Out : LPCPD#	TPM 1.2 Chip_In : LPCPD_N	PULL UP 4.7K TO +3VRUN	+3VRUN	GPIO_61
GPIO_62	IO	TEST POINT				GPIO_62
GPIO_63	IO	TEST POINT				GPIO_63
GPIO_64	IO	TEST POINT				GPIO_64
GPIO_65	IO	Out : CLK_48M_SIO	In : CLK_48M_SIO			GPIO_65
GPIO_66	IO	TEST POINT				GPIO_66

System Resources

GPIO_67	IO	NA				GPIO_67
GPIO_68	IO	NA				GPIO_68
GPIO_69	IO	NA				GPIO_69
GPIO_70	IO	NA				GPIO_70
GPIO_71	IO	NA				GPIO_71
GPIO_72	IO		BATLOW#		PULL UP 10K TO +3VSUS	+3VSUS GPIO_72
GPIO_73	IO		PCH_In : PCIE_CLK_REQ0#	mini_pcie_Out : PCIE_CLK_REQ0#	PULL UP 10K TO +3VSUS	+3VSUS GPIO_73
GPIO_74	IO		SML1ALERT#		PULL UP 10K TO +3VSUS	+3VSUS GPIO_74
GPIO_75	IO		SML1_DATA Connect to SIO GPIO16			GPIO_75

SIO F81866D

GPIO Pin	Type	FUNC/TYPE	Usage	Pull up processing	Power	MUXED/UNMUXED
GPIO_00	I/O	OD	ERP_CTRL0#		I_VSB3V	
GPIO_01	I/O	OD	ERP_CTRL1#		I_VSB3V	
GPIO_02	I/O	I	SUS_WARN#		I_VSB3V	
GPIO_03	I/O	O/OD	SUS_ACK#		I_VSB3V	
GPIO_04	I/O	I	SLP_SUS#		I_VSB3V	
GPIO_05	I/O	O	SOUT5		I_VSB3V	
GPIO_06	I/O	I	SIN5		I_VSB3V	
GPIO_07	I/O	O	RTS5#		I_VSB3V	
GPIO_10	I/O	OD	LED_VSB#		I_VSB3V	
GPIO_11	I/O	OD	LED_VCC#		I_VSB3V	
GPIO_12	I/O	I/OOD	NC		I_VSB3V	
GPIO_13	I/O	I/OOD	NC		I_VSB3V	
GPIO_14	I/O	I/OOD	NC		I_VSB3V	
GPIO_15	I/O	O	WDTO#	PULL UP 10K TO 3VSB	I_VSB3V	
GPIO_16	I/O	OD	SML1_DATA		I_VSB3V	
GPIO_17	I/O	I	PECL_SIO		I_VSB3V	
GPIO_20	I/O	OD	SML1_CLK		I_VSB3V	
GPIO_21	I/O	I	ATX_PWR_OK	PULL UP 4.7K TO 3VRUN	I_VSB3V	
GPIO_22	I/O	I	PSIN#		I_VSB3V	
GPIO_23	I/O	OD	PWSOUT#	PULL UP 4.7K TO 3VSB	I_VSB3V	
GPIO_24	I/O	I	SLP_S3		I_VSB3V	
GPIO_25	I/O	OD	SIO_PSON#	PULL UP 4.7K TO 5VSB	I_VSB3V	
GPIO_26	I/O	OD	PWROK	PULL UP 4.7K TO 3VRUN	VBAT	
GPIO_27	I/O	OD	RSMRST#	PULL UP 4.7K TO 3VSUS	VBAT	
GPIO_30	I/O	I	DCD3#		3VCC	
GPIO_31	I/O	I	RI3#		3VCC	
GPIO_32	I/O	I	CTS3#		3VCC	
GPIO_33	I/O	O	DTR3#		3VCC	
GPIO_34	I/O	O	RTS3#		3VCC	
GPIO_35	I/O	I	DSR3#		3VCC	
GPIO_36	I/O	O	SOUT3		3VCC	
GPIO_37	I/O	I	SIN3#		3VCC	
GPIO_40	I/O	I	DCD4#		3VCC	
GPIO_41	I/O	I	RI4#		3VCC	
GPIO_42	I/O	I	CTS4#		3VCC	
GPIO_43	I/O	O	DTR4#		3VCC	