Lanner

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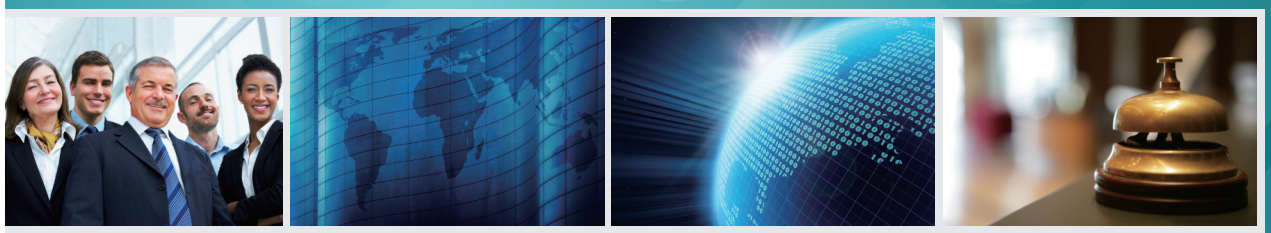
Network Application Platforms

Hardware platforms for next generation networking infrastructure



FW-8758 V2.0

User's Manual

Publication date:2012-05-04

About

Overview

Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:

NOTE: This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.

WARNING: This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

The listed websites are links to the on-line product information and technical support.

Resource	Website
Lanner	http://www.lannerinc.com
Product Resources	http://assist.lannerinc.com
RMA	http://eRMA.lannerinc.com

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Compliances

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

About

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

Follow these guidelines to ensure general safety:

- Keep the chassis area clear and dust-free during and after installation.
- Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Disconnect all power by turning off the power and unplugging the power cord before installing or removing a chassis or working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit; always check the circuit.

LITHIUM BATTERY CAUTION:

Risk of Explosion if Battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

- Installation only by a trained electrician or only by an electrically trained person who knows all English Installation and Device Specifications which are to be applied.
- Do not carry the handle of power supplies when moving to other place.
- The machine can only be used in a fixed location such as labs or computer facilities.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.

- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Rack Mounting Installation Environment Precaution

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.
3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips)."

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Chapter 1: Introduction

Thank you for choosing the FW-8758. Built around the Intel H61 chipset, the FW-8758 is a 1U network communication appliance that the supports an array of CPUs in LGA 1155 with TDP up to 95W, including 2nd generation Intel® Core i7-2600, i5-2400, i3-2120, Pentium G850, and Celeron G540 and upgradable to 3rd Generation Core i7-3770, i5-3550S, i3-3220 and Pentium G2120. The FW-8758 comes with 1 console port and 14 Gb (with an extension module of 8 ports). The Ethernet ports also equip with 3 pairs of bypass which are capable of abnormal state packet bypass.

Below are the key features of the FW-8758:

1. Dual-channeled DDR31066/1333MHz SDRAM DIMM sockets to support up to 16 GB of unbuffered, non-ECC DDR3 memory (Dual Channel utilize two 64-bit data channels for higher data throughput.)
2. The system can be fitted with a maximum of 14 GbE ports via front expansion modules. It also equips with a redundant power supply.
3. Low-Profile expansion for connecting the PCI-E slot using the (x)8 lane mode to add customized capabilities
4. Lanner Generation 3 Bypass: The Lanner Gen 3 Bypass can fully control each pair in 3 different states, i.e. powering off, Just-on, powering on. It also features dedicated watchdog timers to enable bypass automatically when system failures occur.

System Specification

Form Factor		Standard 19-inch Rackmount 1U
Platform	Processor Options	2nd generation Intel® Celeron® G540, Pentium® G850, CoreTM i3-2120, i5-2400, i7-2600 on LGA1155
		3rd generation Intel® Pentium® G2120, Core i3-3220, i5-3550S, i7-3770 on LGA1155
	Chipset	Intel H61
BIOS		AMI BIOS 8Mbit SPI Flash ROM
System Memory	Technology	Dual-Channel, Unbuffered, Non-ECC DDR3 1066/1333MHz
	Max. Capacity	16 GB
	Socket	2 x 240P DIMM
OS Support		Windows 2003, 2008 server, Linux kernel 2.6 and up
Storage	HDD Bays	2 x 2.5" or 1 x 3.5"
	CompactFlash	1 x Type II CompactFlash
Networking	Ethernet Ports	6 x GbE RJ45
	Bypass	3 pairs G3 (FW-8758A & FW-8758C)
	Controllers	6 x Intel 82583V for SKU A,B,C,D, 6 x 82574L for SKU E
	Ethernet Modules	Yes
	Management Port	N/A
	Security Acceleration	N/A
I/O Interface	Reset Button	Software programmable reset button (Through Pinhole)
	Console	1 x RJ45
	USB	2 x USB 2.0
	IPMI via OPMA slot	N/A
Expansion	PCIe	1 x PCI-E*8 golden finger for Ethernet module or expansion slot
	PCI	N/A
Cooling	Processor	3 x CPU fans with fan duct
	System	1 x cooling fan
Environmental Parameters	Temperature, ambient operating / storage	0 ~ 40° C / -20~70° C
	Humidity (RH), ambient operating / ambient non-operating	5~95%, non-condensing
Miscellaneous	LCD Module	2 x 20 characters
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	431x 44 x 415 mm
	Weight	8.2Kg
Power	Type / Watts	1U ATX 275W Redundant PSU or 1U ATX 220W Single PSU
	Input	AC 100~240V @50~60 Hz
Approvals and Compliance		CE emission, FCC Class A, RoHS

Chapter 1

Introduction

Package Contents

Your package contains the following items:

- FW-8758 Network Security Platform
- Power cable
- 1 crossover Ethernet cable (1.8 meter)
- 1 straight-through Ethernet cable (1.8 meter)
- 1 RJ-45 console cable
- Serial-ATA power/data cable
- 1 threaded-screw set
- 1 name plate label
- Drivers and user's manual CD.
- 1 ear bracket
- Optional Accessories:

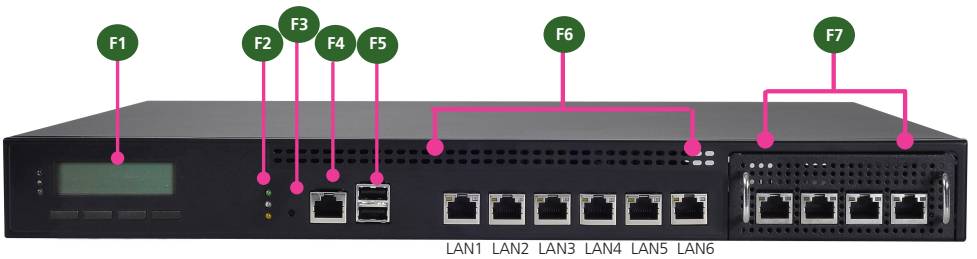
Rack mounting kit (optional)

This system has a variety of optional accessories including the power cords and rack mounting kits; for details, visit:

http://www.lannerinc.com/x86_Network_Appliances/FW-8758

Chapter 1

Front Panel Features



F1 System Panel

The LCD System Panel can be programmed to display operating status and configuration information. For more details or sample programming code, please refer to *Appendix C Programming the LCM*.

F2 Power/Status/HDD LED

Power: If the LED is on it indicates that the system is powered on. If it is off, it indicates that the system is powered off.

Status: This LED is programmable. You could program it to display the operating status with the behavior like:

If the LED is green, it indicates that the system's operational state is normal. If it

is amber, it indicates that the system is malfunctioning. If the LED is green, it indicates that the system's operational state is normal. If it is red, it indicates that the system is malfunctioning.

HDD: If the LED blinks, it indicates data access activities. Otherwise, it remains off.

F3 Reset Switch

The reset switch can be used to reboot the system without turning off the power.

F4 Console Port

By using suitable rollover cable or RJ-45 to DB-9 Female, you can connect to a computer terminal for diagnostic or configuration purpose. Terminal Configuration Parameters: 115200 baud, 8 data bits, no parity, 1 stop bit , no flow control.

F5 Two USB 2.0 Ports

It connects to any USB devices; for example, a flash drive.

F6 6 Gigabit LAN ports (provided by Intel 82583V)

Left LED (Yellow): If the LED is on, it indicates that the port is link/active. If it blinks, it indicates network activity.

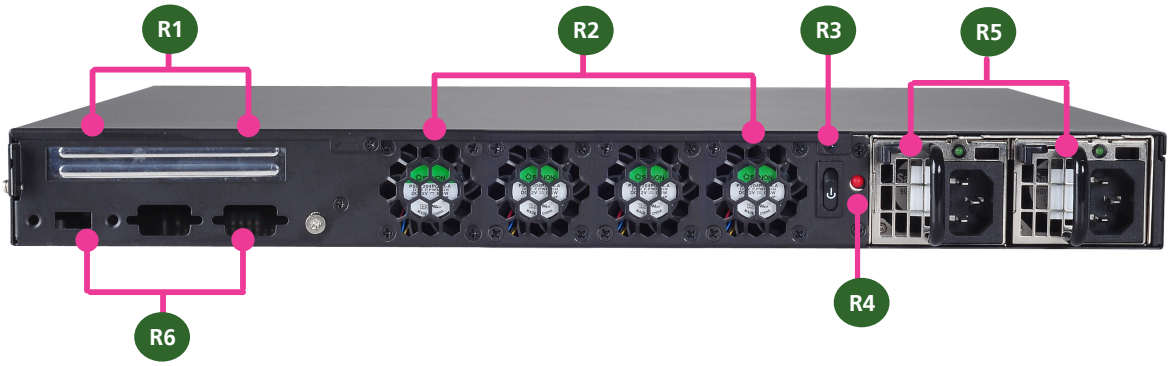
Right LED (Clear): If the LED is orange, it indicates that the connection speed is 1000Mbps. If the LED is green, it indicates that the connection speed is 100Mbps. If the LED is off, the connection speed is 10Mbps.

3 pairs (LAN1-LAN2, LAN3-LAN4, LAN5-LAN6) can be configured as LAN Bypass when failure events occur. This feature can be enabled dynamically with a watch dog timer. Refer to *Appendix D Programming Lan Bypass* for a sample implementation of this feature.

F7 The front slot can be fitted with a number of network modules including 4 or 8 ports Ethernet modules, GbE Fiber Modules or 10GbE Fiber modules. For more Network module information, visit Lanner product page: http://www.lannerinc.com/Network_Modules.

GbE Copper Modules			
Module	Port	LAN chip	Interface
NCM-IGM401A	4	Intel 82574L + PLX PEX8508	PCI-E*8
NCM-IGM801A	8	Intel 82574L + PLX PEX8618	PCI-E*8
NCM-IGM802A	8	Intel 82576EB + PLX PEX8624	PCI-E*8
GbE Fiber Modules			
NCM-ISM801A	8	Intel 82576EB + IDT89HPE24T6	PCI-E*8
10 GbE Fiber Modules			
NCM-IXM203A	2	Intel 82595ES	PCI-E*8

Rear Panel Features



R1 Low profile Expansion slot: A slot for connecting the extended PCI-E card

The slot is for installing an additional adapter card which is connected to the main board via a riser card.

R2 System Fans

R3 ATX Power Switch

R4 Hot-Swappable Redundant Power Supply Unit

The buzzer will alarm when one of the power supply units fails. To turn off the buzzer, press this switch. And you can replace the failed power supply without turning off the system power.

R5 Power Socket

The system requires an ATX 275W redundant PSU or an ATX 220W Single PSU.

R6 Optional Connectors

The system comes in with internal connectors for VGA, RS-232 serial and USB2.0 ports. These ports can be wired to be shown on the back panel..

Chapter 2: Hardware Setup

Preparing the Hardware Installation

To access some components and perform certain service procedures, you must perform the following procedures first.

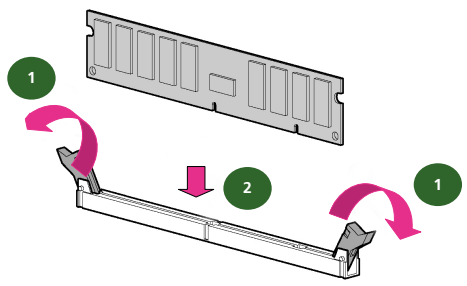
WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

1. Unpower the FW-8758 and remove the power cord.
2. Unscrew the 3 threaded screws from the top cover of the FW-8758 System.
3. Slide the cover backwards and open the cover upwards.

Installing the System Memory

The motherboard supports DDR3 memory to meet the higher bandwidth requirements of the latest operating system and Internet applications. It comes with two Double Data Rate(DDR3) Dual Inline Memory Modules (DIMM) sockets.

1. Open the DIMM slot latches.
2. Install the DIMM.



Note:

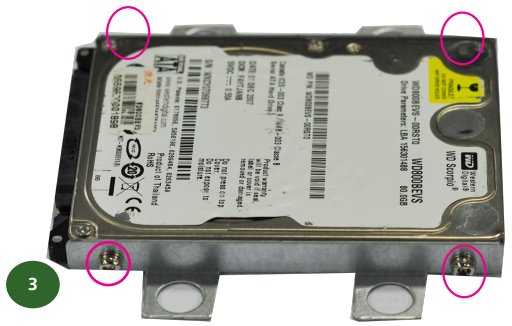
1. The motherboards can support up to 16 GB memory capacity in maximum.
2. The memory has to meet with the following standard: DDR3 1066/1333MHz, Non-ECC, Unbuffered

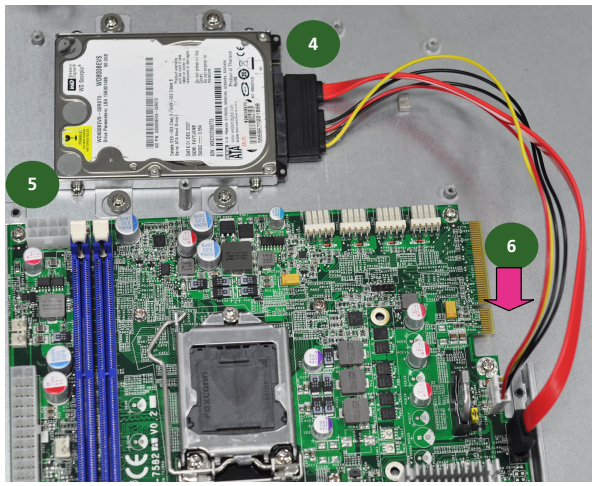
Installing the Hard Disk

The system can accommodate one Serial-ATA disks. Follow these steps to install a hard disk into the FW-8758:

1. Unsrew the 4 screws on the hard disk tray to take out the hard disk tray from the system.
2. Place hard disk on the hard disk tray and align the holes of the hard disk with the mounting holes on the tray.
3. Secure the hard disk with 4 mounting screws on the hard disk tray.
4. Connect the Serial-ATA power and data cables to the hard disk's power and data connectors respectively.
5. Fix the hard disk back to the system with the screws.
6. Plug the Serial-ATA cable to the Serial-ATA Connector on the main board.

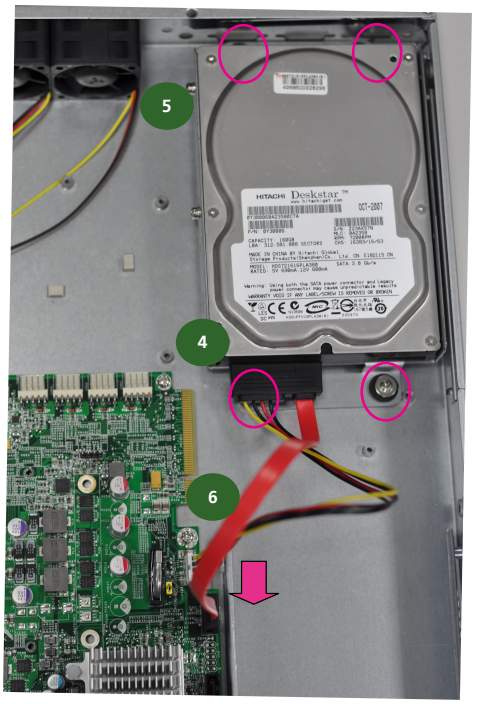
2.5" SATA Installation





You can use the 3.5" hard disk tray if you want to install *2* 2.5" hard disks to the system. The installation procedure is described below:

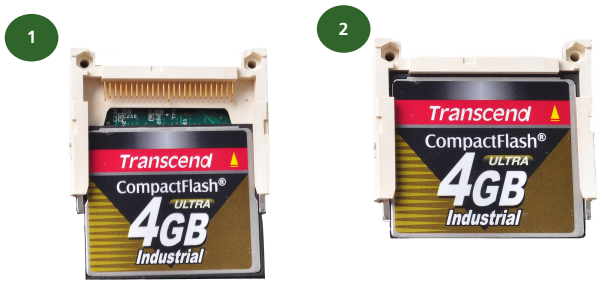
3.5" SATA Installation



Installing a CompactFlash Card

FW-8758 provides one CompactFlash slot. Follow the procedures bellow for installing a CompactFlash card.

1. Align CompactFlash card and the card slot with the arrow pointing toward the connector.
2. Push the card to insert into the connector.



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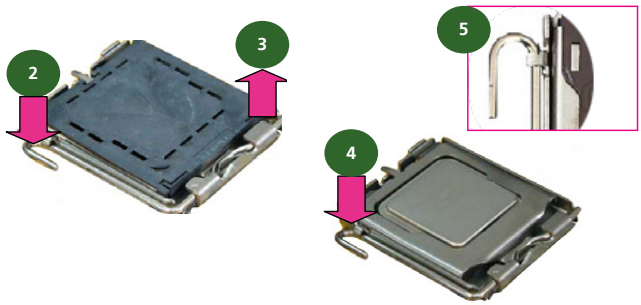
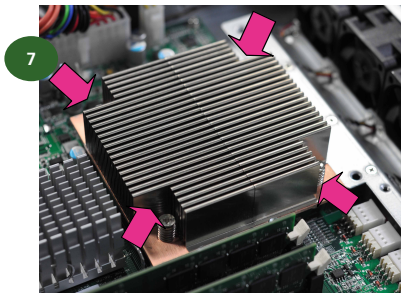
CPU and the Heat Sink Installation

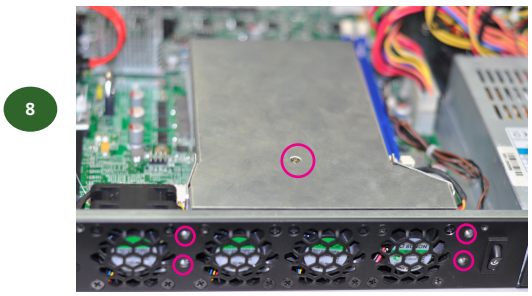
The FW-8758 sever system is powered by the MB-8758 sever board, which comes with one ZIF type LGA1155 CPU socket.

Follow the procedures bellow for installing a CPU

1. Remove the CPU socket cap.
2. Press the load lever and release it from the retention tab.
3. Lift the load lever and then the plate.
4. Align the cut-out of the CPU and the the notch on the socket. The CPU should fit perfectly into the socket. Note that the CPU fits in the socket in only one direction.
5. Close the plate and push the load lever to lock it back to the retention tab.
6. Peel off the sticker on the CPU to expose the thermal compound.
7. Put the heatsink on the installed CPU, match the screws with the screw holes on the board. Fasten two screws which are opposite to each other at a time and then the other two. It is easier this way because of the springiness of the bracket.
8. Place the heatsink cover on top of the installed heatsink and screw 5 screws to fasten it on the chassis.







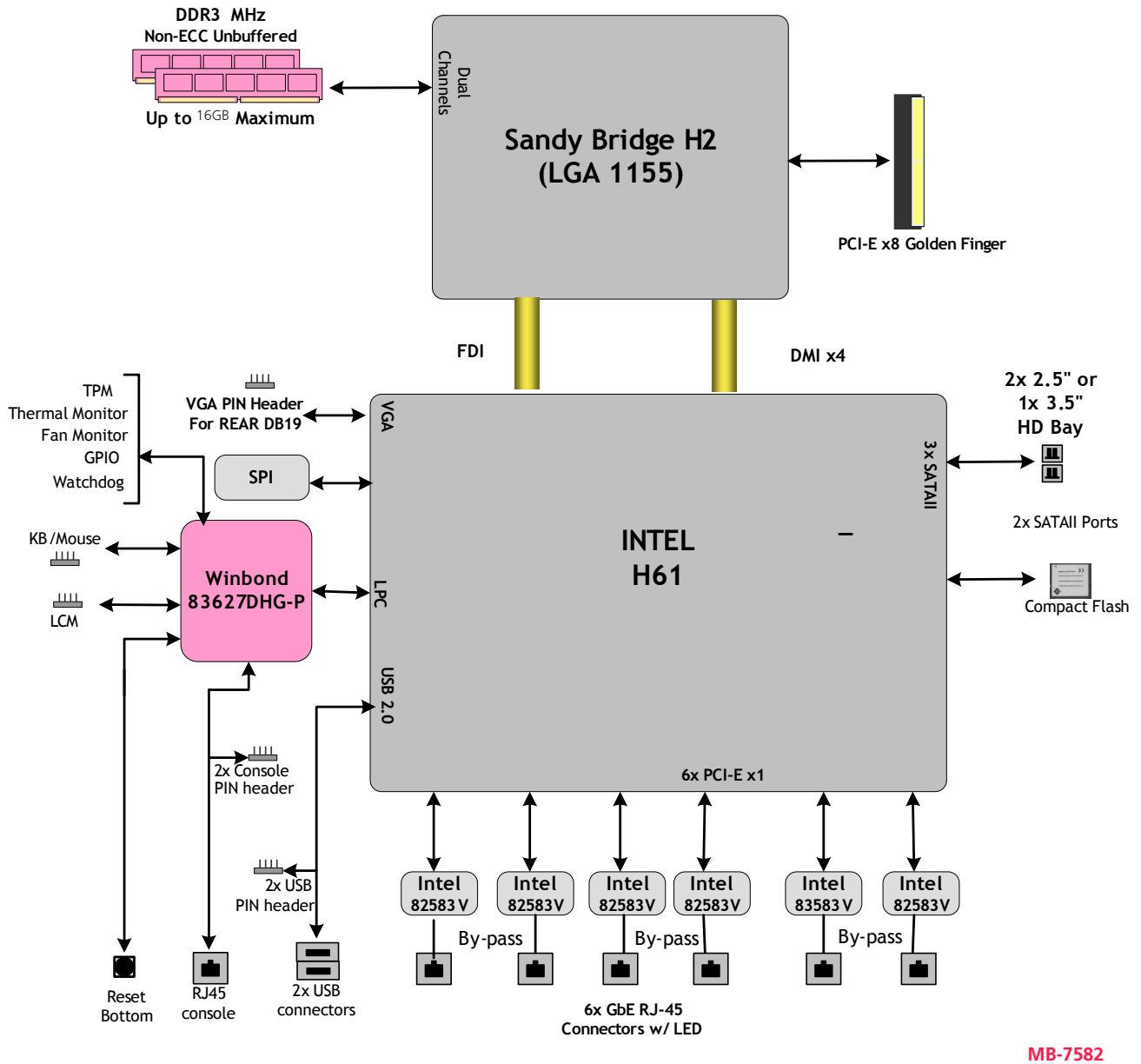
Note:

1. The CPU heat sink could only be installed in only one direction as shown in the picture.
2. To protect the CPU socket pins, retain the CPU cap when the CPU is not installed.

Chapter 3: Motherboard Information

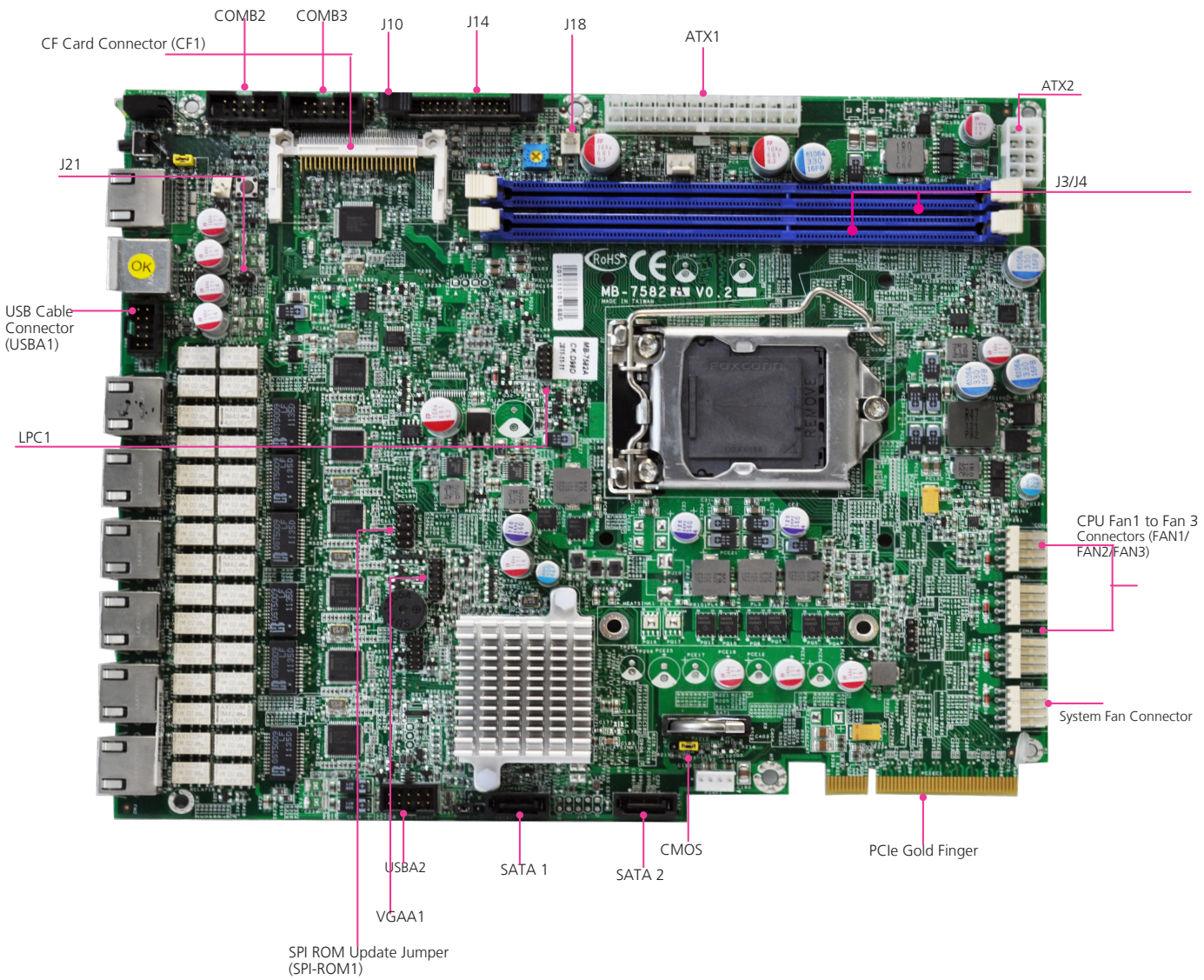
Block Diagram

The block diagram depicts the relationships among the interfaces or modules on the motherboard. Please refer to the following figure for your motherboard's layout design.



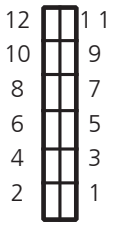
Motherboard Layout

The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



Jumper Settings

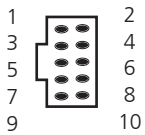
VGA Interface (VGAA1): An 2x6 (2.0mm) header for connecting the VGA interface cable. The VGA is provided by Intel® Graphic Media Accelerator 3150:



Pin No.	Pin Name	Pin No.	Pin Name
1	Red	2	GND
3	Green	4	GND
5	Blue	6	GND
7	HSYNC	8	NC
9	VSYNC	10	GND
11	Detect-display Data	12	Deteck-display CLOCK

USB Connector (USBA1/USBA2) : An 2x5 pin header for connecting the USB module cable. It complies with USB2.0 and support up to 480 Mbps connection speed.

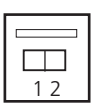
USBA2



USBA1

Pin No.	Pin Name	Pin No.	Pin Name
1	VCC	2	VCC
3	USBD-	4	USBD-
5	USBD+	6	USBD+
7	GND	8	GND
9	GND	10	GND

AT Mode Power Button Connector (J18): It is for connecting power switch in AT mode. Note that you will need to adjust the AT/ATX mode selection jumper J21.



Pin No.	Function
1	PSON#
2	Ground

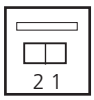
AT/ATX Mode Selection Jumper(J21): This jumper is used for switching power mode between AT and ATX. Please adjust them accordingly as described in the following jumper settings.

Pin No.	Function
--	ATX mode (Default)
1-2	AT mode

4 Pin TACT Power Button for debug purpose (SW1):

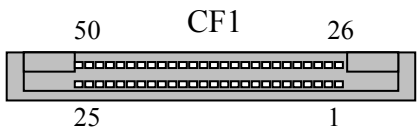
Pin No.	Function
1	Ground
2	Ground
3	PWR_BTN_N
4	PWR_BTN_N

2-pin System Power Switch (CONN2): This connector is for connecting power switch in ATX mode .



Pin No.	Pin name
1	PWR_BTN_N
2	GND

CompactFlash Connector (CF1): It is for connecting a Compact Flash card to be served as your system's storage.



PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	26	CF_DIS_N
2	DATA3	27	DATA11
3	DATA4	28	DATA12
4	DATA5	29	DATA13
5	DATA6	30	DATA14
6	DATA7	31	DATA15
7	-CF_DCS0	32	-CF_DCS1
8	GND	33	CF_VS1
9	GND	34	IOR#
10	GND	35	IOW#
11	GND	36	+3.3V
12	GND	37	CF_IDEIRQ
13	+3.3V	38	+3.3V
14	GND	39	MST_SLV
15	GND	40	CF_VS2
16	GND	41	CF_IDERST_N
17	GND	42	CF_IORDY
18	A2	43	CF_DMARQ
19	A1	44	CF_DDACK_N
20	A0	45	CFACT_N
21	DATA0	46	CF_PDIAG
22	DATA1	47	DATA8

PIN	DESCRIPTION	PIN	DESCRIPTION
23	DATA2	48	DATA9
24	NC	49	DATA10
25	CF_DIS_N	50	GND

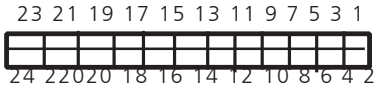
Power Debug Port(psvid_p1)

Pin No.	Function
1	H_VIDALERT_VR
2	H_VIDSOUT_VR
3	H_VIDSCK_VR
4	GND

Selection between PCI-E Reset and System Reset (J16): A 1x3 (2.54mm) pin header for PCI-E reset and system reset function.

Pin No.	Function
1-2	SYSTEM RESET
2-3	PCI-E Reset (Default)

Front LCD Module Connector(J14): A 2x5 (2.00mm) pin header for connecting the front system LCD display.



Pin No.	Function	PIN NO.	DESCRIPTION
1	+5V	2	Ground
3	LSLIN#	4	VEE
5	LAFD#	6	LINIT#
7	FL_PD1	8	FL_PD0
9	FL_PD3	10	FL_PD2
11	FL_PD5	12	FL_PD4
13	FL_PD7	14	FL_PD6
15	LCD-	16	+5V
17	KPA1	18	KPA2
19	KPA3	20	KPA4
21	LCM_RST	22	CTR-GRN
23	CTR-YEW	24	HDDLED_N

Hardware or Software Reset Jumper(J13, right next to SW2): The jumper can be adjusted to be in either hardware or software reset mode when the reset switch is pressed. The hardware reset will reboot the system without turning off the power. The software reset can be programmed to reset software to its default settings.

Pin No.	Function
1-2	Hardware reset
2-3	Software reset (default)

Clear CMOS jumper (J8): It is for clearing the CMOS memory and system setup parameters by erasing the data stored in the CMOS RAM such as the system passwords.

Pin No.	Function
1-2	Normal (Default)
2-3	Clear CMOS

DIMM Socket (J3, J4): The 240-pin DDR3 SO-DIMM is for connecting the DDR3 1066/1333 memory. The system can support up to 16 GB in maximum and Dual-channel architecture. Dual channel doubles data throughput from the memory to the memory controller by maximize memory throughput from 64-bit buses to 128-bit bus.

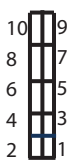
SATA 1 and 2 Connectors (SATA1, SATA2): It is for connecting a 2.5" SATA hard disk to be served as your system's storage. The system can support a maximum of 2 disks. It conforms with SATA II (3.0 Gbs).

Pin No.	Function
1	GND
2	TX_P
3	TX_M
4	GND
5	RX_M
6	RX_P
7	GND

Console Port Cconnector (COMB1)

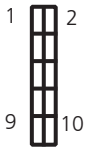
Pin No.	Function	Pin No.	Function
1	Request To Send (RTSB#)	2	Data Terminal Ready (DTRB#)
3	Transmit Data (TXDB)	4	GND
5	GND	6	Receive Data (RXDB)
7	Data Set Ready (DSRB #)	8	Clear To Send (CTSB#)

SPI-ROM Update Connector (SPI-ROM1): Using the appropriate cable to connect this 10-pin ISP header connector, the SPI Flash soldered on board can be updated.



Pin No.	Function	Pin No.	Function
1	SPI_HD1_N	2	PCH_SPI_CS1_N
3	SPI_CS0	4	V_3P3_SPI
5	SPI_ICH_MISO_R	6	SPI_HOLD0_L
7	NC	8	SPI_ICH_CLK_R
9	Ground	10	SPI_ICH_MOSI_R

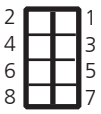
LPC I/O bus (Port 80) (LPC1): A 2x5 Pin Header 2.00mm. It is a proprietary connector for connecting a checkpoint device to output checkpoints throughout bootblock and Power-On Self Test (POST) to indicate the task the system is currently executing.



Pin No.	Function	Pin No.	Function
1	CLK_33M_P80	2	LPC_LAD1
3	RST_80DGPT_N	4	LPC_LAD0
5	LPC_FRAME_N	6	+3.3V
7	LPC_LAD3	8	Ground
9	LPC_LAD2	10	Ground

ATX Power Connector(ATX1, ATX2): These 24-pin and 8-pin connectors are for connecting ATX power supply plugs. Find the proper orientation when inserting the plugs, for the supply plugs are designed to fit these connectors in only one orientation.

Pin No.	Pin name	Pin No.	Pin name
1	+3.3V	2	+3.3V
3	+3.3V	4	-12V
5	Ground	6	Ground
7	+5V	8	PSON-
9	Ground	10	Ground
11	+5V	12	Ground
13	Ground	14	Ground
15	Power Good	16	NC
17	StandBy 5V	18	+5V
19	+12V	20	+5V
21	+12V	22	+5V
23	+3.3V	24	Ground



Pin No.	Pin name	Pin No.	Pin name
1	Ground	2	+12V
3	Ground	4	+12V
5	Ground	6	+12V
7	Ground	8	+12V

CPU Fan Connectors (CON1/CON2/CON3/CON4): 4-pin connector for connecting the smart fan. Connect CPU fans to CON3 and CON4; connect AUX fan to CON2; connect system fan to CON1. CON3 and CON4 will be referred to as CPU fans; CON1 and CON2 will be referred to as system/AUX fans respectively on the Smart Fan control menu in the *Hardware Health Configuration* of the BIOS.

Pin No.	Function
1	SYSFANOUTPWM
2	NC
3	SYSFANIN
4	VFAN1
5	Ground

CPU Socket: The LGA 1155 socket is for connecting the CPU.

PCIEC1: PCI Express x8 Connectors, PCIEx8 Signal

Pin No.	Function	Pin No.	Function
B1	+12V	A1	PRSNT1#
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND	A7	JTAG4
B8	+3.3V	A8	JTAG5
B9	JTAG1	A9	+3.3V
B10	3.3VAUX	A10	+3.3V
B11	WAKE#	A11	PERST#
B12	BYPASS0 Mode	A12	GND
B13	GND	A13	REFCLKA+
B14	CPUPETP0	A14	REFCLKA-
B15	CPUPETN0	A15	GND
B16	GND	A16	CPUPERP0
B17	LANM0_LATCH_H	A17	CPUPERN0
B18	GND	A18	GND
B19	CPUPETP1	A19	BYPASS1 Mode
B20	CPUPETN1	A20	GND
B21	GND	A21	CPUPERP1
B22	GND	A22	CPUPERN1
B23	CPUPETP2	A23	GND
B24	CPUPETN2	A24	GND
B25	GND	A25	CPUPERP2
B26	GND	A26	CPUPERN2
B27	CPUPETP3	A27	GND
B28	CPUPETN3	A28	GND
B29	GND	A29	CPUPERP3
B30	REFCLK1A+	A30	CPUPERN3
B31	REFCLK1A-	A31	GND
B32	GND	A32	LANM1_LATCH_H
B33	CPUPETP4	A33	LANM1_LATCH_L
B34	CPUPETH4	A34	GND
B35	GND	A35	CPUPERP4
B36	GND	A36	CPUPERN4
B37	CPUPETP5	A37	GND
B38	CPUPETN5	A38	GND
B39	GND	A39	CPUPERP5
B40	GND	A40	CPUPERN5
B41	CPUPETP6	A41	GND
B42	CPUPETN6	A42	GND
B43	GND	A43	CPUPERP6
B44	GND	A44	CPUPERN6
B45	CPUPETP7	A45	GND
B46	CPUPETN7	A46	GND
B47	GND	A47	CPUPERP7
B48	LANM0_LATCH_L	A48	CPUPERN7
B49	GND	A49	GND

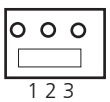
Serial Port #1 Connector (COMB2)

Pin No.	Function
1	Data Carrier Detect (DCDB#)
2	Data Set Ready (DSRB#)
3	Receive Data (RXDB)
4	Request To Send (RTSB#)
5	Transmit Data (TXDB)
6	Clear To Send (CTSB#)
7	Data Terminal Ready (DTRB#)
8	Ring Indicator (RIB #)
9	Ground
10	KEY

Generation 3 bypass firmware programming connector (COMB3)

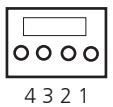
Pin No.	Function
1	NC
2	NC
3	Receive Data (RXDB)
4	Request To Send (RTSB#)
5	Transmit Data (TXDB)
6	Clear To Send (CTSB#)
7	NC
8	NC
9	Ground
10	P3V3_SB

Case Open Signal Connector (CONN1): Connecting this for detecting case open event



Pin No.	Function
1	GND
2	CASE OPEN
3	GND

SATA Power Connector (PS4P1)



Pin No.	Function
1	P12V
2	GND
3	GND
4	P5V

Chapter 4: BIOS Settings

Updating the BIOS

The Basic Input/Output System (BIOS) can be updated using the designated Flash Utility. To obtain the utility, please contact us either through the sales rep or technical support.

Note:

For the update version of the BIOS image, please visit Lanner's support page at http://assist.lannerinc.com. Then select *support center* from the Main Menu and look under the folder for the desired product category. The resources for each product including the BIOS image will be contained within a folder named by the product model.

Chapter 4

Accessing the BIOS menu

When you are installing a motherboard or when the system prompts "Run Setup" during start-up, you will use the BIOS Setup program to configure the system, . This section explains how to configure your system using this program.

Even if you are not prompted to enter the BIOS Setup program when you are installing a motherboard, you can still change the configuration of your computer later on with this program. For example, you may want to enable the security password feature or change the power management settings. This requires you to reconfigure your system by using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM .

When you start up the computer, the system provides you with the opportunity to run this program. Press <Delete> during the Power-On-Self-Test (POST) to enter the Setup utility (There are a few cases that other keys may be used, such as <F1>, <F2>, and so forth.); otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

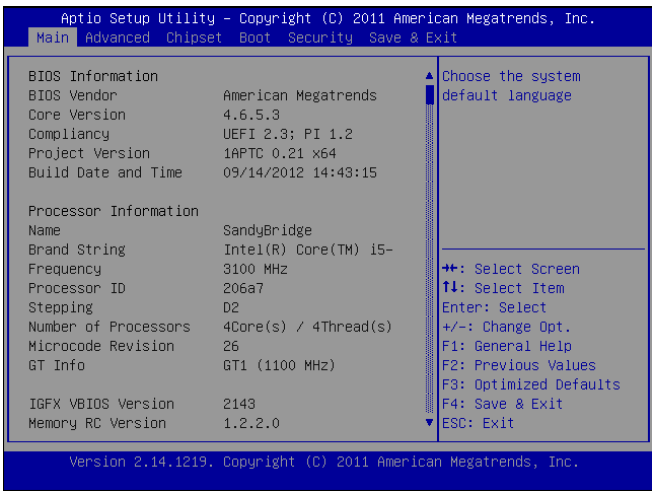
The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

Note: This manual describes the standard look of the setup screen. There may be some instances in which the motherboard features can vary from one to another due to customization. This means that some of the options described in this manual mays not match that of your motherboard's AMIBIOS.

Navigating the BIOS menu

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

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



Keys	Description
-><- Left/Right ^ v	The Left and Right <Arrow> keys allow you to select an setup screen. For example: Main screen, Advanced screen, Boot screen, and so on.
Up/Down	The Up and Down <Arrow> keys allow you to select an setup item or sub-screen.
+- Plus/Minuss	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item. For example: Date and Time.
Tab	The <Tab> key allows you to select setup fields.

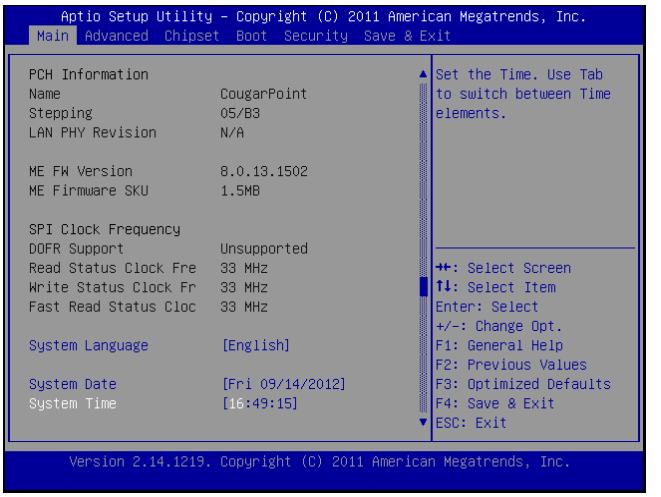
Note: The <F8> key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the <F8> key on your keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

The Main Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this chapter.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options are configured parameters and cannot be modified. On the other hand, Options in blue can be modified.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.



System Language

Use this item to choose the BIOS language.

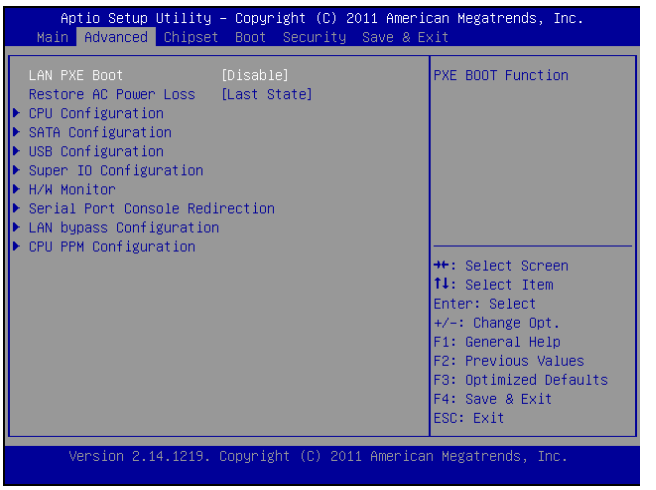
System Time/System Date

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

Advanced Settings

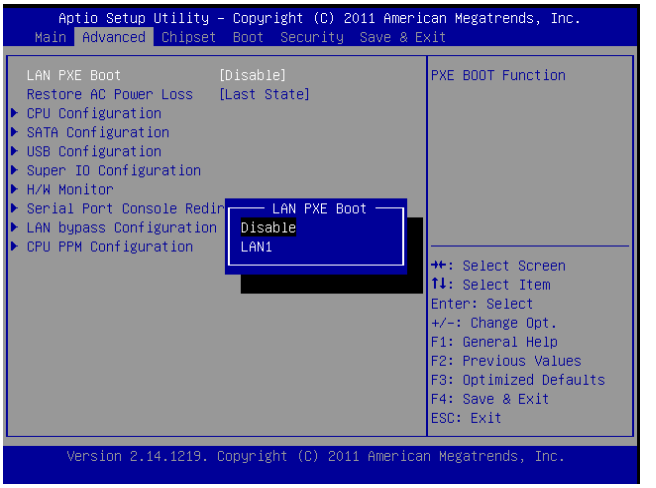
Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS

Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown at the right. The sub menus are described on the following pages.



LAN PXE Boot

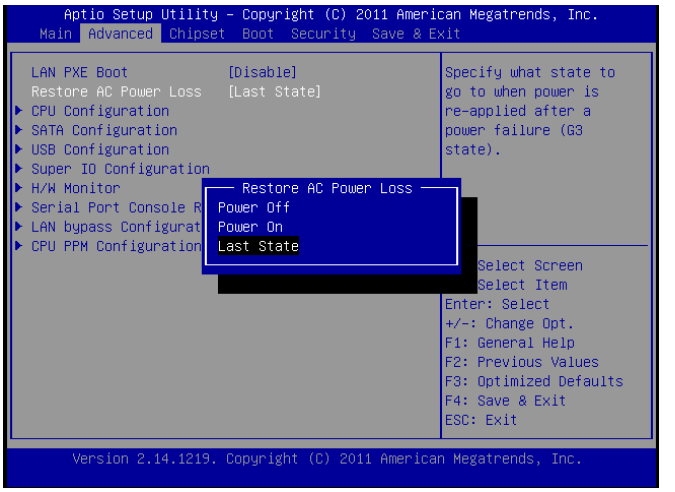
The Preboot eXecution Environment (PXE) allows you to boot computers using a network interface independently of data storage devices (like hard disks) or installed operating systems. Enable or disable this function on LAN1 with this option here.



Restore on AC Power Loss

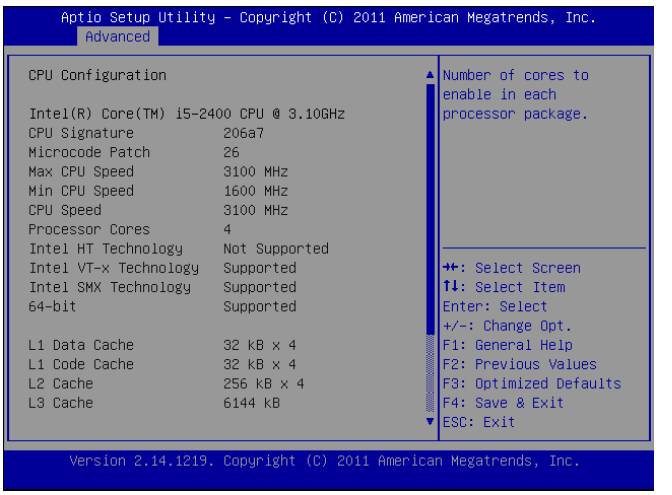
This option lets you set the state of the system when it has just recovered from a power outage.

Option	Description
Power Off	When setting to Power Off, the system goes into "off state" after an AC power interruption.
Power On	When setting to Power on, the system turns on automatically after a power interruption
Last State	When setting to Last State, the system goes into whatever the state was before the power interruption.



CPU Configuration Settings

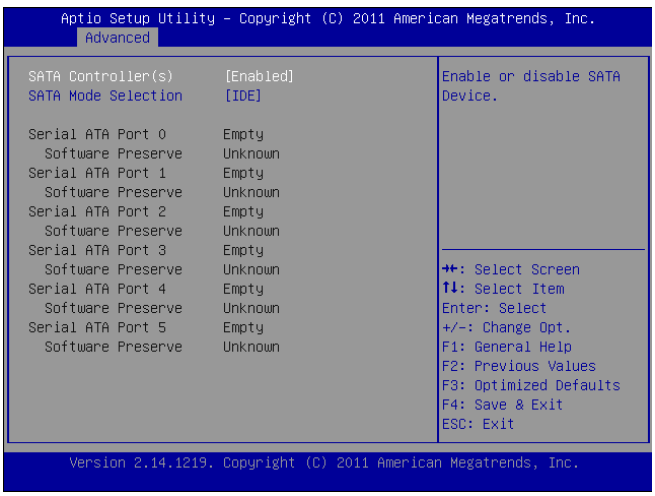
You can use this screen to view the capabilities and of your CPU. You can also use this menu to enable/disable certain functions of your CPU. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described below.



Item	Selection
Active Processor Core	Select the number of processor cores to be active.
Limit CPUID Maximum	Allows legacy operating systems to boot even without support CPUs with extended CPUID functions. Select to enable or disable this function
Execute Disable Bit	Select to enable or disable the No-Execution Page Protection Technology.
Intel Virtualization	The Intel VT is a hardware-assisted virtualization. This processor supports Intel Virtualization. Enable or disable this feature.

SATA Controllers Configuration Settings

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show "Empty" if no SATA device is installed to the corresponding SATA port.



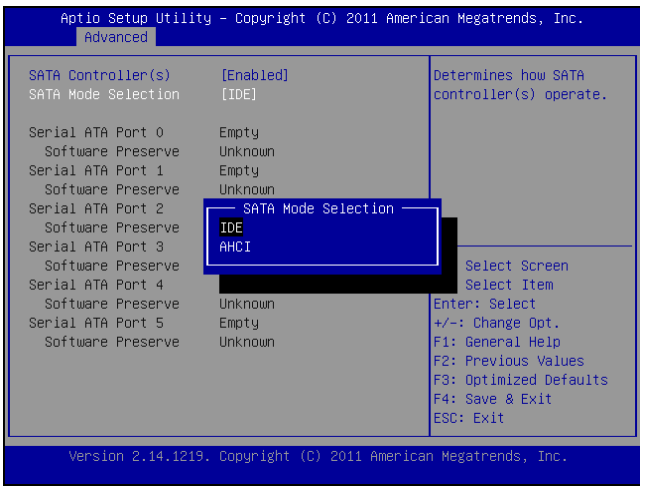
SATA Controllers

Item	Selection
Enable or Disable SATA Controller(s)	Set this value to enable or disable SATA controllers

SATA Mode Selection

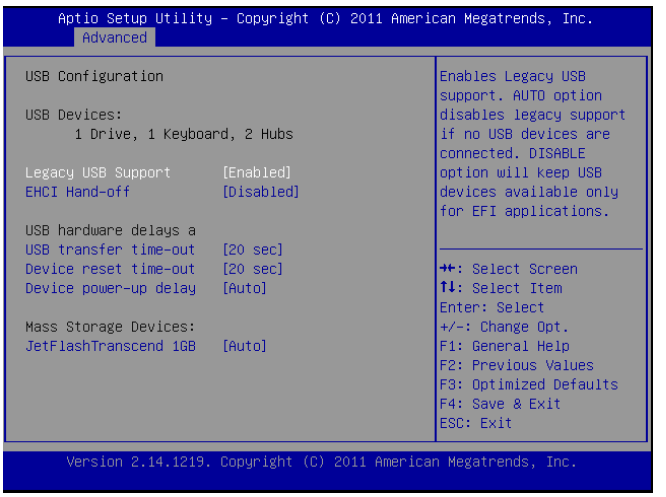
The system supports advanced SATA features such as software RAID.

Item	Selection
IDE Mode	Set to IDE mode when your want to use the Serial-ATA hard disk drives as Parallel ATA physical storage devices.
AHCI Mode	Set to AHCI mode when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced SATA features that increases storage performance or workloads where multiple simultaneous read/write requests are outstanding, most often occurring in server-type applications (native command queuing). It also facilitates hot swapping.



USB Configuration Setting

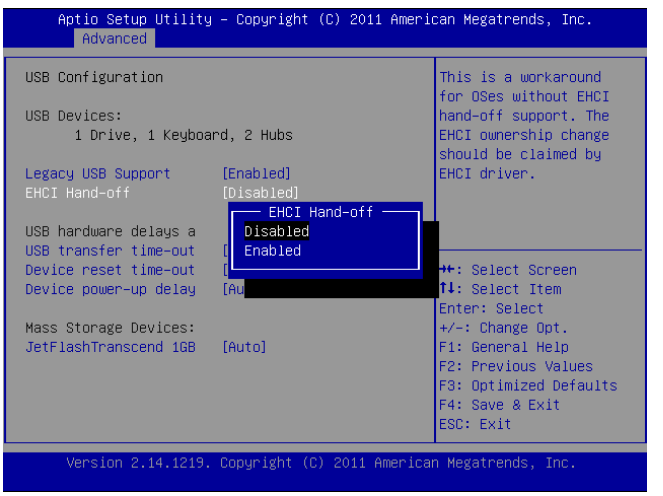
You can use this screen to select options for the USB Configuration. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.



Legacy USB Support

This option enable or disable the support for USB devices on legacy operating systems (OS), e.g., Windows ME/98/NT, and MS-DOS. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can be used on the system even when there is no USB drivers loaded on it.

Option	Description
Auto	Allow the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled If it is not detected, the USB control er legacy mode is disabled.
Enabled	Enable the support for USB devices on legacy operating system
Disabled	Disable this function.



EHCI Hand-Off

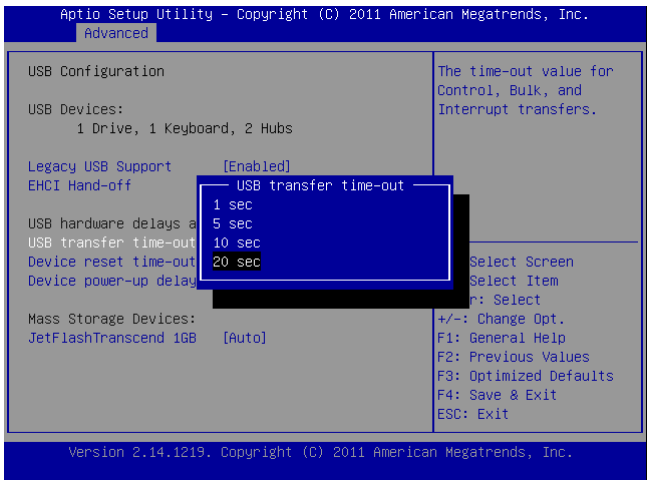
It allows you to enable support for operating systems which do not have the Enhanced Host Controller Interface hand-off (EHCI hand-off) feature for USB devices.

Option	Description
Enabled	Enable this feature
Disabled	Disable this feature

USB Hardware Delays a

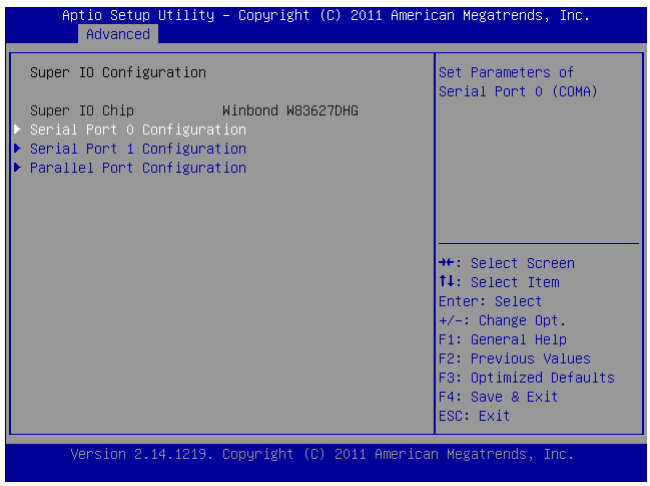
The menu sets delay time for USB operations.

Item	Description
USB transfer time-out	set transfers to an endpoint to complete within a specific time. • If set to zero, transfers will not time out because the host controller will not cancel the transfer. In this case, the transfer waits indefinitely until it is manually canceled or the transfer completes normally. • If set to a nonzero value (time-out interval), the host controller starts a timer when it receives the transfer request. When the timer exceeds the set time-out interval, the request is canceled.
Device reset time-out	This option sets the reset timing for the USB Mass Storage to be initialized. When set to 10 Sec, the BIOS will wait for up to 30 seconds for the USB flash drive to initialize.
Device power-up delay	This option sets the power-up timing for the USB Mass Storage to be initialized.



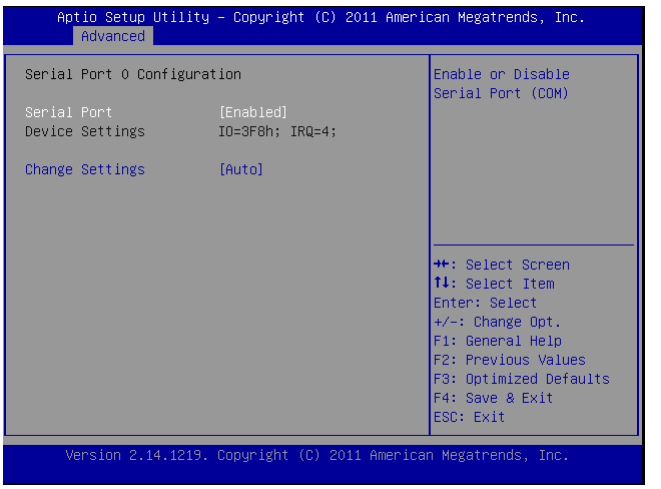
Super IO Configuration

The SuperIO configuration lets you view the IRQ address of the serial ports of the system. You can also enable or disable the serial communication ports here.



SuperIO Configuration

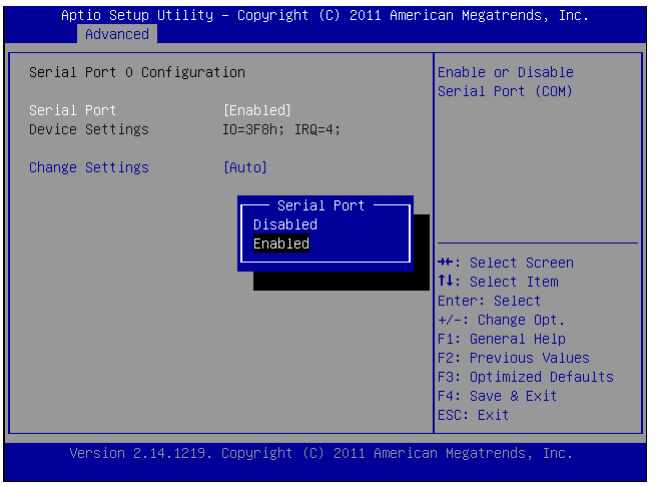
In this screen, you will be able to modify the IRQ address of the serial and parallel ports which are provided by the Winbond W83627DHG chip.



Serial Port 0/1 Configuration

This option specifies the base I/O port address and Interrupt Request address of serial port 0 and 1.

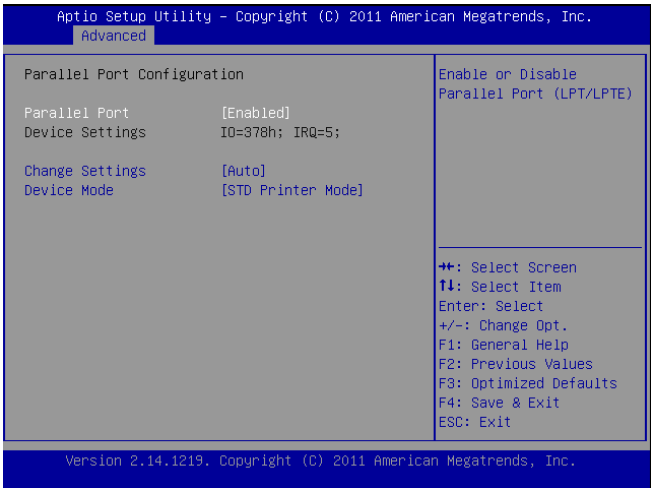
item	Selection
Enabled/ Disabled	Set this value to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable.
Change Settings	Selects the serial port base address and IRQ for the interrupt address.



Parallel Port Configuration

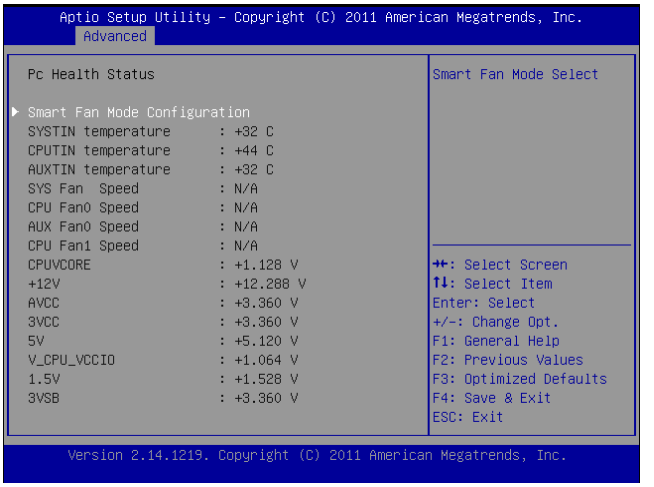
This option specifies the I/O address used by the parallel port.

Item	Selection
Parallel Port	Enable or disable this parallel port
Device Settings	Selects the serial port base address



Hardware Monitor Setting

This menu shows the hardware monitor configuration settings. Select an item then press <Enter> to display the configuration options.



System/CPU Temperature

The onboard hardware monitor automatically detects and displays the CPU and motherboard temperatures.

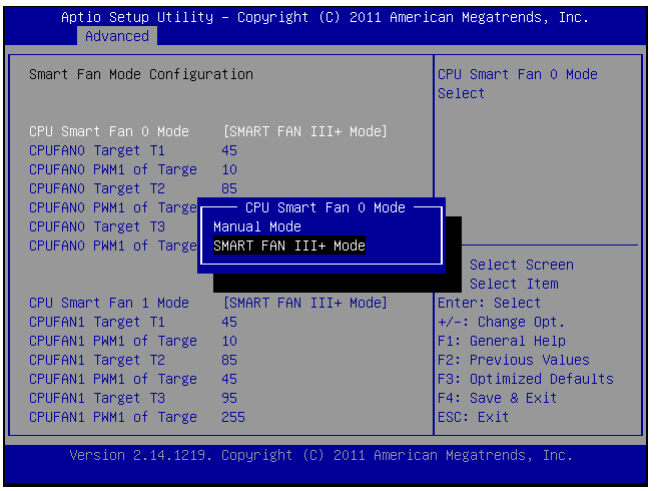
SYS/CPU/AUX FanSpeed

The onboard hardware monitor automatically detects and displays the CPU , chassis and system fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, it displays N/A.

CPU Voltage, 3.3V voltage, 5V voltage, 12V voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

Smart Fan Mode Configuration



It allows you to configure the smart fan feature. You can manually turn on the CPU fan or set the target CPU temperature at which the CPU fan will start running if the fan is not yet turned on. And the CPU fan can also be turned off automatically if the temperature for the CPU is at or below the specified value. Refer to *Motherboard Layout* on Chapter 3 *Block Diagram* for CPU fan connectors.

Item	Selection
Manual Mode	Manually set the fan speed. Valid values are from 0 to 255(full duty cycle)
Smart Fan Mode	This mode allows users to set target system temperature (3 levels) at which the fan will be running at a configured duty cycle: CPUFAN Target T1/T2/T3: enter the temperature in ^{0}C CPUFAN PWM: enter the proportion of duty cycle from 0 to 255 (full duty cycle).

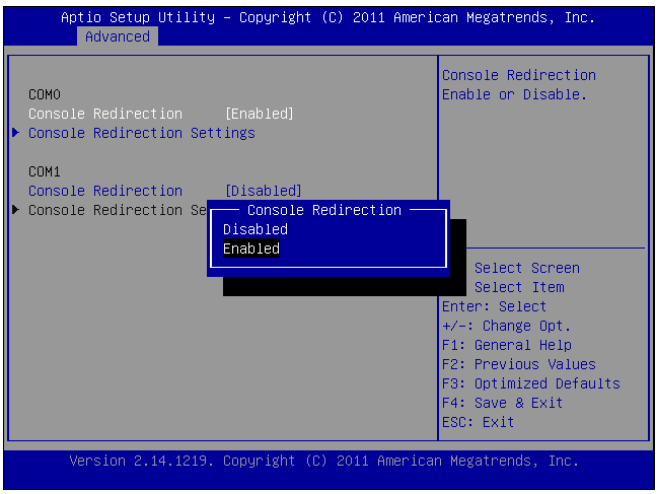
Serial Port Console Redirection

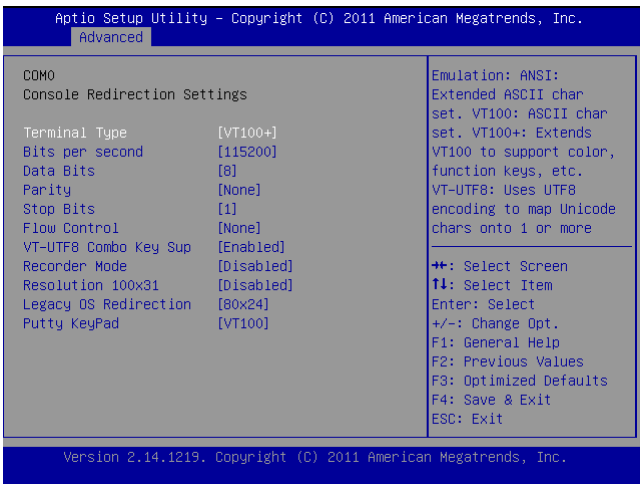
Use this menu to set the settings for BIOS remote access feature.

Item	Selection
Console Redirection	Enable or disable BIOS through remote access
Console Redirection Settings	Enter to view more options

COM0/COM1 Console Redirection Settings

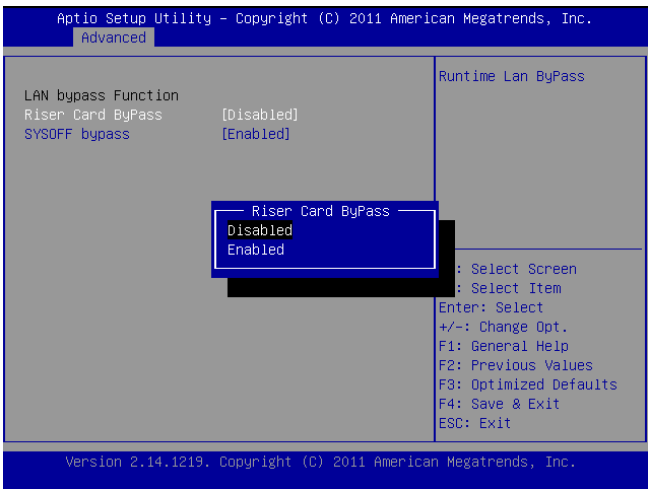
Item	Selection
Terminal Type	Sets the connection terminal type
Bits per second, Data bits, Parity, Stop Bits, Flow Control	Sets the terminal connection parameters such as the baud rate, parity check mechanism, etc.





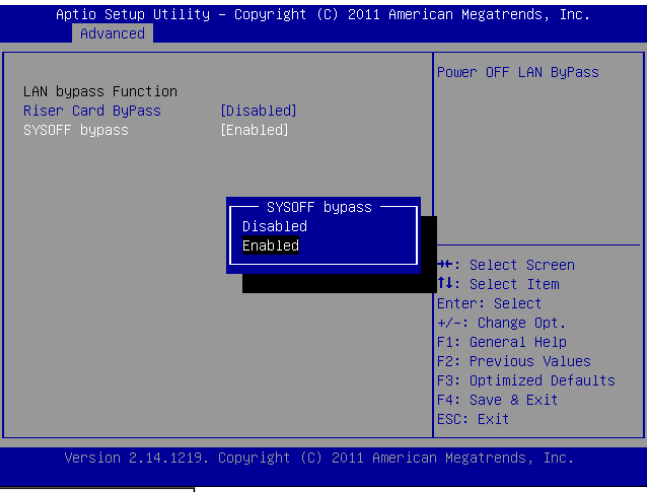
Lan Bypass Function

In this screen, you can configure the Lan Bypass functionality. The system have 8 LAN ports but only Lan3/4 and Lan5/6 have bypass function. (when facing the front panel and counting from the left).



Riser Card (or Power on/Runtime) Bypass Control

You can activate or deactivate the Lan Bypass ports. For the description of the physical ports that are capable of the LAN Bypass function, refer to the *Front Panel Feature* in *Chapter 1 Introduction*.



SYSOff Bypass Control

You can enable or disable the automatic activation of hardware Lan Bypass function in the event of a power failure. Hardware Bypass can automatically activate to allow network traffic to continue.

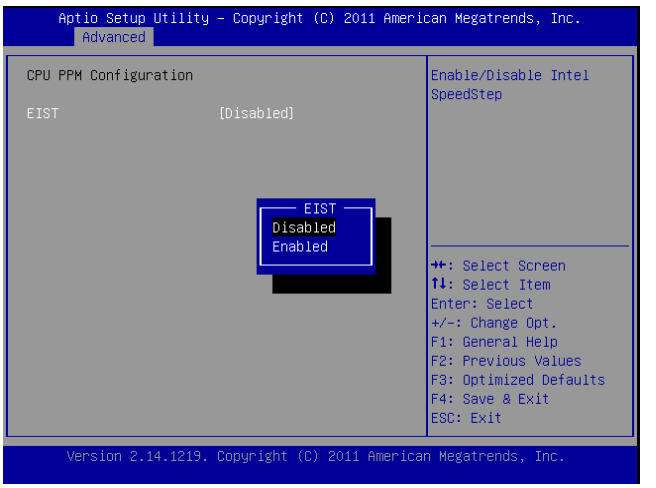
The Lan bypass can be turned on or off in two system states, i.e., power on and power off. The following are the illustration of the possibilities of LAN bypass configuration in each state.

Bypass settings / System Status	LAN Bypass for Port1 and Port 2		LAN Bypass 1&2 when power off
Power on	Enabled	Disabled	Enabled
	Bypass	Non-Bypass	
Power off	Bypass	Bypass	

Bypass settings / System Status	LAN Bypass for Port1 and Port 2		LAN Bypass 1&2 when power off
Power on	Enabled	Disabled	Disabled
	Non-Bypass	Non-Bypass	
Power off	Non-Bypass	Non-Bypass	

Sandy Bridge CPU PPM Configuration

In this section, you can configure the CPU Processor Power Management.



EIST (Enhanced Intel SpeedStep Technology)

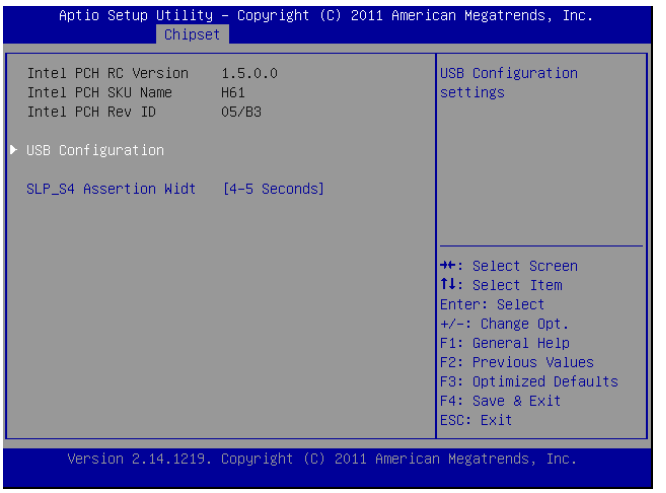
It allows you to enable or disable the EIST.

Option	Description
Enable	The operating system controls the CPU speed
Disabled	The CPU runs at its default speed.

Enhanced Intel SpeedStep® technology (EIST) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. There are some system requirements must be met, including CPU, chipset, motherboard, BIOS and operation system. Please refer to Intel website for more information

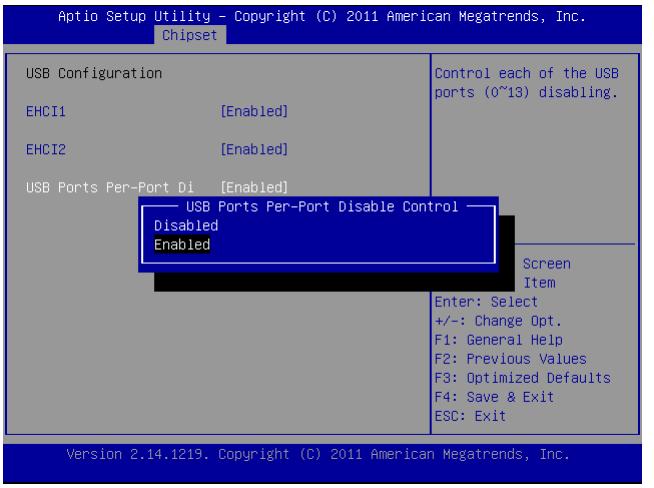
Chipset

The chipset menu will let you further configure your Intel CPU and PCH capabilities:



PCH I/O Configuration

It shows the model name and version of the Intel Platform Controller Hub on the system.

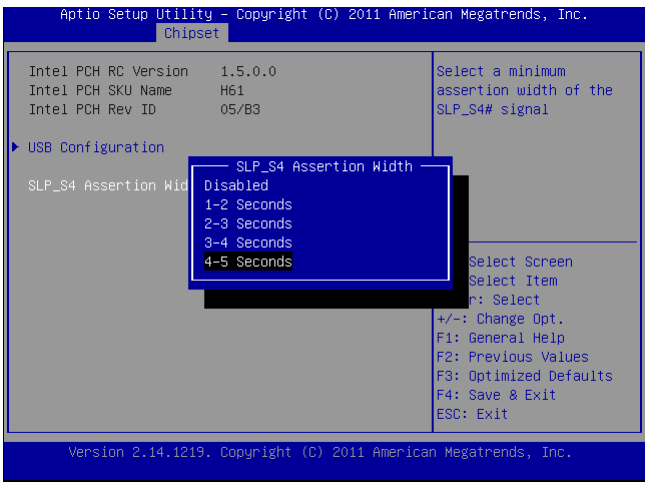


USB Configuration

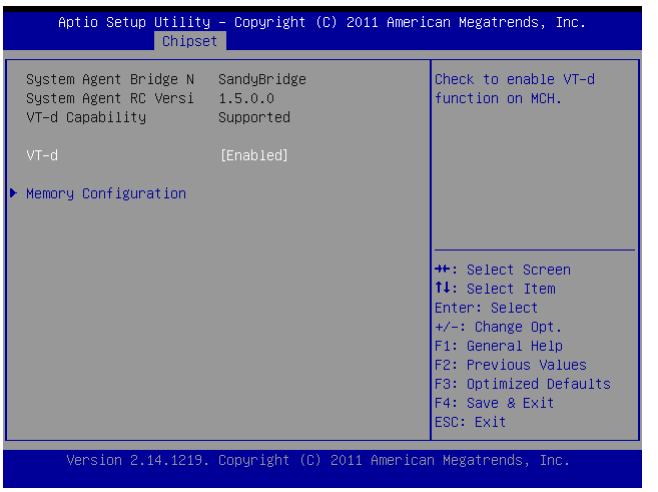
Enter to enable or disable USB EHCI (USB2.0) host controllers.

SLP_S4 Assertion Width

Select the mininum assertion width of the SLP_S4# signal. This field indicates the minimum assertion width of the SLP__S4# signal to ensure that the DRAM modules have been safely power-cycled. SLP_S4# is a signal for power plane control. This signal shuts off power to all non-critical systems when in the S4 (Suspend to Disk) or S5 (Soft Off) state.



System Agent (SA) Configuration

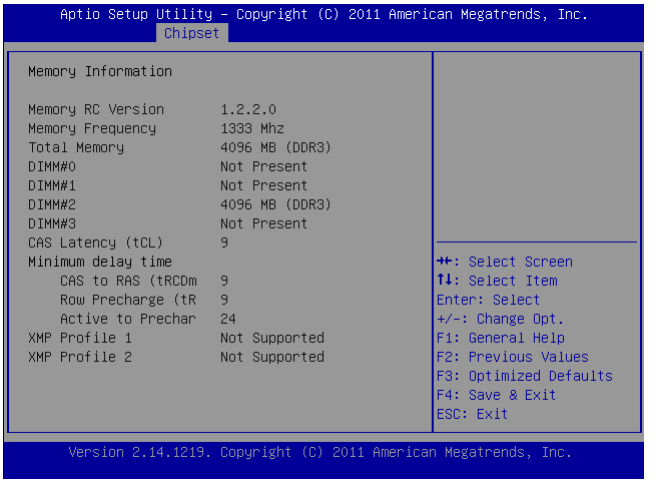


Intel VT-d

Select to enable or disable the Intel Virtualization Technology for Directed I/O" (VT-d). The Memory and I/O virtualization are supported by the chipset as part of Intel Virtualization Techonology for hardware-assisted virtualization.

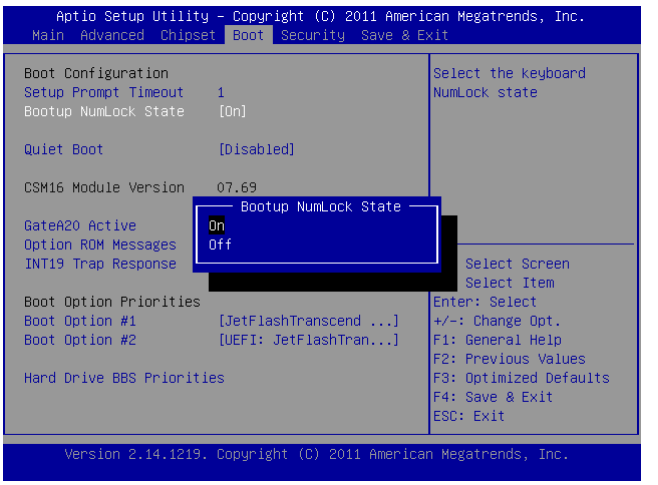
Memory Configuration

It shows the memory capacity of the system and the installed memory on the system.



Boot Setup

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display an Boot BIOS Setup option by highlighting it using the <Arrow> keys. Select an item on the Boot Setup screen to access the sub menus for the following described functions.

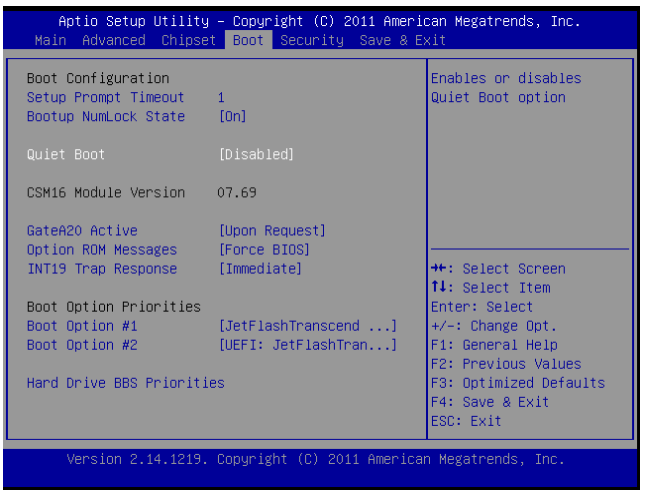


Boot Settings Configuration

In this screen, you will be able to configure the boot procedures and the related elements.

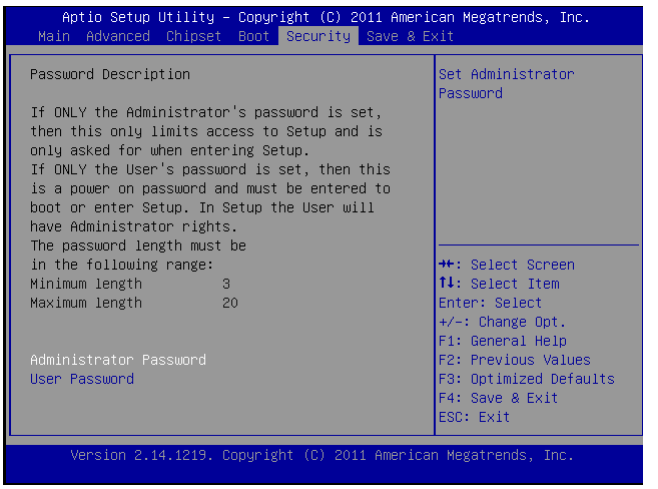
Items	Options
Setup Prompt Timeout	Specify the number of seconds for the boot setup prompt to wait for user's intervention during the POST.
Bootup Num-Lock State	This option lets you to enable or disable the function of the NumLock key.
Quiet Boot	Enabling this item allows the BIOS to suppress the message displayed during the POST.
GateA20 Active	This option sets the A20 address line controlling method for handling above 1MB memory access. By enabling the A20 gate, we have access to all 32 lines on the address bus, and hence, can refrence 32 bit addresses, or up to 0xFFFFFFFF - 4 GB of memory. The controlling mode includes: Upon Request: when it is enabled by user programs. ALWAYS: never disables the A20 line

Items	Options
Option ROM Messages	This option controls the display of ROM messages form the BIOS of add-on devices such as the graphics card or the SATA controller during the start-up sequence. Force BIOS: When setting to Force BIOS, third-party ROM messages will be forced to display during the start-up sequence. Keep Current: When setting to Keep Current, third-party ROM messages will only be displayed if the device's manufacturer has set the add-on device to do so.
Interrupt 19 Trap Response	Set this value to configure how option ROMs such as network controllers trap BIOS interrupt 19.
Boot Option Priorities	Use this screen to specify the order in which the system checks for the device to boot from.
Hard Drive BBS Priorities	You will enter a submenu that presents all the drives connected to the system. Here you can define the boot order for the Hard disks.



Security Settings

Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection, are described in this section. To access the sub menu for the following items, select the item and press <Enter>:



Administrator Password

If you have set an administrator password, you should enter the administrator password for accessing the system. Otherwise, you will only be able to see or change selected fields in the BIOS setup program.

User Password

If you have set a user password, you must enter the user password for accessing the system.

To set an Administrator/User password:

1. Select the option item and press Enter.
2. From the Create New Password box, key in a password, then press enter.
3. Confirm the password when prompted.

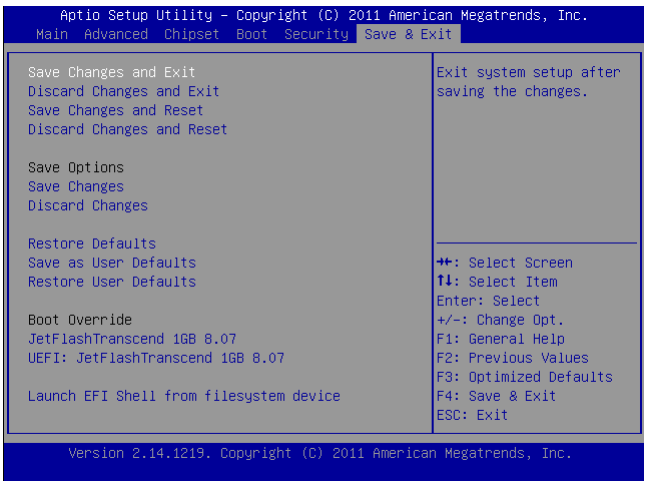
To change an administrator password:

1. Select the option item and press Enter.
2. From the Enter Current Password box, key in the current password, then press enter.
3. From the Create New Password box, key in a new password, then press Enter.
4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, then press Enter when prompted to create/confirm the password.

Save & Exit

Select the Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the <Arrow> keys. The following table lists the options in this menu.

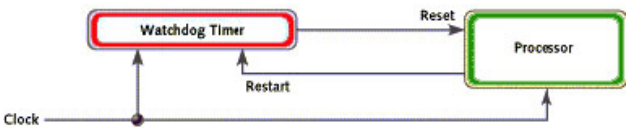


Item	Options
Saving Changes and Exit	Select this option to save changes and exit the BIOS menu. It will automatically resets if the changes made require rebooting the system to take effect.
Discard Changes and Exit	Select this option to discard changes and exit and BIOS menu to continue the booting process.
Save Changes and Reset	When you have completed the system configuration changes, select this option to leave setup and reboot the computer so the new system configuration parameters can take effect.
Discard Changes and Reset	This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select Yes to discard any changes and load the previously saved values.
Save Changes	Save your changes
Discard Changes	Discard changes
Restore Defaults	Restore to factory defaults
Save as User Defaults	Save all of your changes as an user default setting.
Restore User Defaults	Loads your saved user default setting.
Boot Override	This section of the Boot Menu allows booting from a specific device immediately. Therefore you should see an entry for all bootable devices.
Launch EFI Shell from filesystem device	This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available filesystem devices.

Appendix A: Programming Watchdog Timer

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

For sample watchdog code, see *watchdog* folder on the *Driver and Manual CD*



For sample watchdog code, see *watchdog* folder on the *Driver and Manual CD.*

Appendix B: Setting up Console Redirections

Console redirection lets you monitor and configure a system from a remote terminal computer by re-directing keyboard input and text output through the serial port. This following steps illustrate how to use this feature.

1. Connect one end of the console cable to console port of the system and the other end to serial port of the Remote Client System.
2. Configure the following settings in the BIOS Setup menu

   BIOS > Advanced > Remote Access Configuration > Serial Port Mode > [115200, 8 , n ,1]
3. Configure Console Redirection on the client system. The following illustration is an example on Windows platform:
   a. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.
   b. Enter any name for the new connection and select any icon.
   c. Click OK.
   d. From the "Connect to". Pull-down menu, select the appropriate Com port on the client system and click OK.
   e. Select 115200 for the Baud Rate, None. for Flow contorl, 8 for the Data Bit, None for Parity Check, and 1 for the Stop Bit.

Appendix C: Programming the LCM

The LCD panel module (LCM) is designed to provide real-time operating status and configuration information for the system. For sample LCM code, see *LCM* foler in the *Driver and Manual CD*. The driver and the program library can also be found in the folder.

The system support Parallel Text-based LCM. The LCM connects to the motherboard's parallel port. The LCD screen can display 2 lines, 20 characters per line.

Build

To build program source code on Linux platform, use the following steps as a guideline:

1. Copy the proper makefile from the Driver and Manual CD to your system: Makefile.linux
2. Type make to build source code:

   make Makefile (Note: omit the file extensions)

After compiled, the executable programs (plcm_test, plcm_cursor_char, Test) and the driver (plcm_drv.ko or plcm_drv.o) will appear in the program's folder.

Note: The OS supported by Lanner Bypass function include platforms based on Linux Kernel series 2.4.x and Linux Kernel series 2.6.x.

Install

Install the driver and create a node in the /dev directory by:

#insmod plcm_drv.ko

#mknod /dev/plcm_drv c 241 0

Note: If you cannot install the driver, check whether you have enabled the parallel port in the BIOS setting .

Execution

This section contains sample executable programs that you could test on your platform. It demonstrates some useful functionality that the LCM provides.

To execute, type:

#./plcm_test

Plcm_cursor_char. This program provides a menu to demonstrate the following functions:

Insert line (set the starting line to either line 1 or line 2)

Move Cursor right (select to move the cursor to the right)

Move Cursor Left (select to move the cursor to the left)

Add a char (select to display a character on the LCM screen)

Clear (select to clear the LCM display)

Leave (select to leave the program)

To execute, type:

#./ plcm_cursor_char

Note: For descriptions of the command, refer to the Readme file contained within the program's folder.

Appendix D: Programming LAN Bypass

The bypass function is used to link two independent Ethernet ports when the system fails or powers off. This means if your system is equipped with a LAN Bypass function, a system failure or power-off event will not interrupt your network traffic. There are typically two statuses for the bypass, one is "Normal" state and the other is "Bypass" status. Lanner Generation 3 bypass utility provides software for controlling the LAN Bypass function:

Lanner 's Bypass Modules include WDT (Watch Dog Timer) controller and Bypass switch.

Our Bypass Modules also include a software development kit that enables system designer to efficiently design systems to support bypass functionality. Lanner Bypass Modules with watchdog control have the following features:

1. Communication through SMBUS (I2C)
2. Independent bypass status control for each pair up to a total of 4 pairs
3. Lanner Bypass Modules can bypass systems Ethernet ports on a host system during three instances: Just-on (Just-on is the brief moment when the internal power supply turns on and booting process starts), system off, or upon software request (during run-time).
4. Software programmable bypass or normal mode
5. Software programmable timer interval:

   - JUST-ON watchdog timer, used during JUST-ON, has timer setting of 5~1275 seconds of timer interval.

   - Run-Time watchdog timer, used during run-time, has setting of 1~255 seconds of timer interval.

6. Multiple Watchdog Timers:

   -Two for run-time: It is designed to give you a more variety of controls of the bypass on port basis. By using dedicated watchdogs for different pairs of bypass, you have the flexibility to manage the bypass status for them differently.

   -One for just-on: It is designed to give you the precise control of the bypass during this phase. You can use this timer to delay enabling the bypass in just-on state.

Note:

1. For sample LAN bypass code and the Bypass Manual, see the *LAN_Bypass* folder on the *Driver and Manual CD or the Lanner Assist Website at* http://assist.lannerinc.com. And browse the *support center* and look for *Lanner LAN Bypass Module Manua*l under *Software Utility Manuals folder*.
2. For a description of the physical LAN ports equipped with this function, refer to *Front Panel Features* in *Chapter 1 Introduction*.

Appendix E: Terms and Conditions

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:

Improper or inadequate maintenance by the customer Unauthorized modification, misuse, or reversed engineering of the product Operation outside of the environmental specifications for the product.

RMA Service

Requesting a RMA#

6. To obtain a RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
7. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
8. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
9. Mark the RMA# clearly on the box.

Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

Appendix E

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

RMA No:	Reasons to Return: □ Repair(Please include failure details) □ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____	
Shipping by: □ Air Freight □ Sea □ Express_____ □ Others:_____	

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date