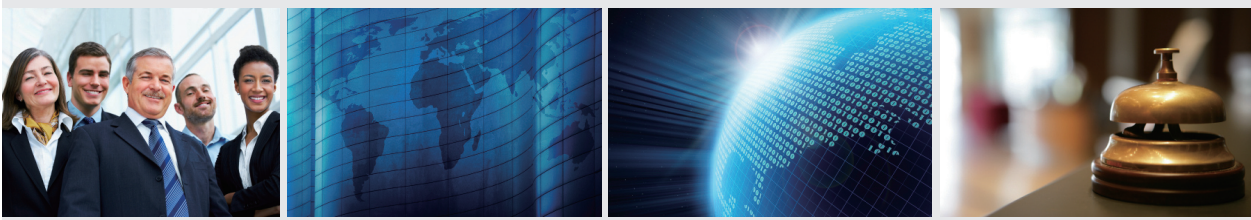


# Network Application Platforms

Hardware platforms for next generation networking infrastructure



## FW-8756

User's Manual

Publication date:2011-03-23



## Overview

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### 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	<a href="http://www.lannerinc.com">http://www.lannerinc.com</a>
Product Resources	<a href="http://assist.lannerinc.com">http://assist.lannerinc.com</a>
RMA	<a href="http://eRMA.lannerinc.com">http://eRMA.lannerinc.com</a>

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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.



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### Chapter 1: Introduction

Thank you for choosing the FW-8756. The FW-8756 is a 1U network communication appliance that is designed to meet your demand for quality network application platform.

The FW-8756 supports different class of Intel 90 nm CPUs packaged in LGA 775 for user selection including Intel Core2 Quad, Intel Core 2 Duo, and Intel Celeron.

The FW-8756 comes with 1 FE and 6 Gb Ethernet ports with three pair capable to be an abnormal state packet dual latch bypass (the newest Generation 3 bypass). In addition, with the Lanner riser card, an optional expansion LAN module can be added.

Here is the list of some key features of the FW-8756 system:

- Built on Intel chipset G41 and ICH7R
- Two COM ports: 1 x RJ45 Serial Console port (CISCO TYPE) and 1 pin header on board (2x5)
- Two USB 2.0 Ports on the front panel and one USB2.0 pinheader (2x5)
- one 3.5" SATA II HDD or two 2.5" SATA II
- One VGA pin header (Sku A only)
- One IPMI management port through the OPMA connector (Sku B only)
- One PCI-Ex8 for expansion riser card
- 3 pairs of the Generation 3 bypass ports

Please refer to the chart below for a summary of the system's specifications.

### System Specification

Feature	Description	
<b>Form Factor</b>		1U Rackmount
<b>Platform</b>	Processor	Supports Intel Core2 Quad, Core2 Duo, PentiumD, Celeron Processors, LGA775
	Chipset	Intel G41 + ICH7R
	Embedded Accelerator	by request
<b>System Memory</b>	Technology	DDR3 800/1066/1333 MHz
	Max Capacity	4GB
	Socket	2 x 240P DIMM
<b>OS Support</b>		Windows, Linux
<b>Storage</b>	HDD Bay(s)	1 x 3.5" or 2 x 2.5"
	Storage Interface	2 x Serial ATA, 1 x CompactFlash
<b>Networking</b>	Ethernet Port Density	6 x RJ45 GbE Onboard 1 x RJ45 FE 1 x Optional Module
	Controller	6 x Intel 82574L 1 x Intel FE LAN
	Network Module(s)	1 x Tray to fit Lanner 8800 Series Modules
	Bypass	3 x pairs of LAN bypass
<b>I/O Interface</b>	Console	1 x RJ45
	USB	2 x USB 2.0
	IPMI via OPMA slot	Optional
<b>Expansion</b>	PCI	1 x Mini-PCI
<b>Cooling</b>	Processor	1U Passive heatsink with 3 cooling fans
	System	1 x Cooling Fan with Smart Fan
<b>Environmental Parameters</b>	Temperature, ambient operating / storage	0°C~40°C / -20°C~60°C
	Humidity (RH), ambient operating and non-operating	5 ~ 95%, non condensing
<b>Miscellaneous</b>	LCD Module	2 x 20 Character Optional Graphic LCM
	Watchdog	Yes
	Internal RTC with Li Battery	Yes
<b>Physical Dimensions</b>	Dimensions (WxHxD)	431 x 44.4 x 395 mm
	Weight	6 kg (13.2 lbs)
	Type / Watts	1U ATX /200W
	Input	AC 90~264V@47~63Hz
<b>Power</b>	Output	+5V output: 1V min, 12V max; +3.3V output: 1V min, 14V max; +12V output 1V min, 14V max
<b>Approvals &amp; Compliance</b>		CE Emission, FCC Class A, RoHS



### Ordering Information

FW-8756A	STD 1FE + 6GbE ports, with 3 pairs bypass
FW-8756B	STD 6GbE ports, with 3 pairs bypass & IPMI only used with 2.5" HDD

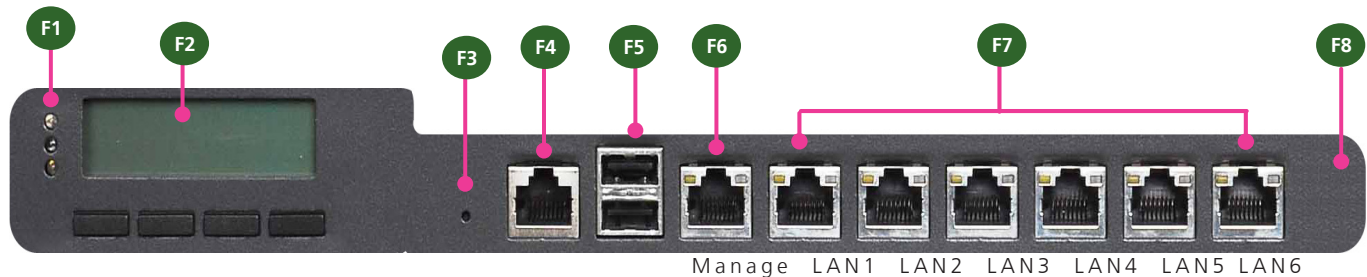
### Package Contents

Your package contains the following items:

- FW-8756 Network Security Platform
- Power cable
- 1 crossover Ethernet cable (1.8 meters)
- 1 straight-through Ethernet cable (1.8 meters)
- 1 RJ-45 to DB-9 female console cable (Cisco type)
- CPU heat sink
- 1 threaded-screw set
- 1 short ear-bracket set
- Front name-plate label
- Drivers and user's manual CD.



### Front Panel Features



#### F1 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:** 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 is on, it indicates that the system's storage is functional. If the LED blinks, it indicates data access activities. If it is off, it indicates that there is no hard disk present or functional.

#### F2 System Panel: LCD 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 the User's Manual CD.

#### 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 (Cisco console cable), you can connect to a computer terminal for diagnostic or configuration purpose. Default 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 Management Port

This FastEthernet port can be connected for configuration or troubleshooting purpose. A conformity with IPMI (Intelligent Platform Management Interface) can be implemented on this port through the Open Platform Management Architecture (OPMA) interface.

#### F7 6 Gigabit LAN ports

**Right LED:** 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. And if it is off, it indicates that the speed is 10Mbps.

**Lefts LED:** If the LED is on, it indicates that the port is linked. If it blinks, it indicates there is traffic.

Using suitable RJ-45 cable, you can connect FW-8756 system to a computer, or to any other piece of equipment that has an Ethernet connection; for example, a hub or a switch. Moreover, 3 pair (LAN1-LAN2, LAN3-LAN4, LAN5-LAN6) can be configured as LAN Bypass when failure events occur. This feature can be implemented in hardware in conjunction with a watch dog timer functionality. Refer to Appendix D for a sample implementation of this feature.

**F8 LAN 7, LAN 8:** An optional expansion of LAN switch. This expansion of LAN switch can add up to additional 8 Ethernet ports.

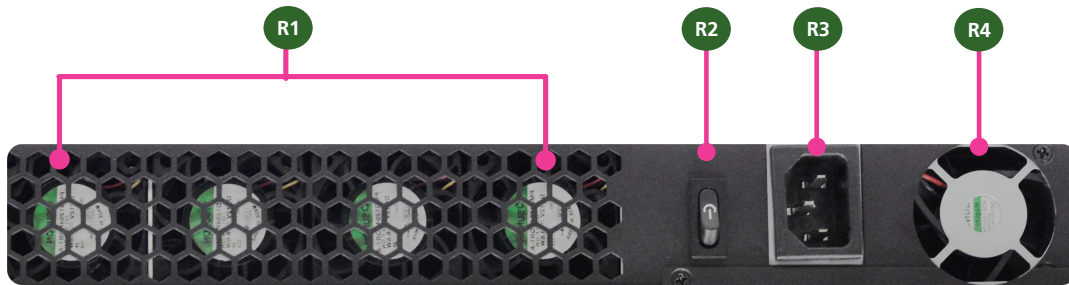


#### Note:

1. The availability of LAN Bypass varies depending on the model.
2. The number of LAN ports varies depending on the model.



### Rear Panel Features



R1 System Fan, CPU Fans 1, 2, 3

R2 Power-on Switch

It is a switch to turn on or off the power.

R3 AC Power-in socket

It is a 200W ATX power supply unit with input range of 90~264V@47-63Hz.

R4 Power Supply Fan



## 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.

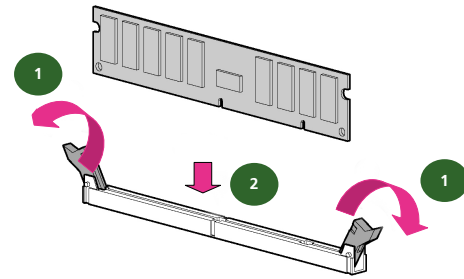
1. Unpower the FW-8756 and remove the power cord.
2. Unscrew the screws (three on each side and two on the rear) from the top cover of the FW-8756 System.
3. Slide the cover backwards and open the cover upwards.



### Installing the System Memory

The motherboard supports DDR3 memory that features data transfer rates of 800, 1066, and 1333 MHz to meet the higher bandwidth requirements of the latest operating system and Internet applications. It comes with two Double Data Rate three (DDR3) Dual In-line Memory Modules (DIMM) sockets.

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



#### Note:

1. All DIMMs installed must be the same speed (DDR3 800, 1066, or 1333). Do not install DIMMs supporting different speeds.

### Installing the Hard Disk

The system can accommodate two 2.5" or one 3.5" Serial-ATA disks. Follow these steps to install a hard disk into the FW-8756:

1. Unscrew 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 disk cables to the hard disk's power and drive connectors respectively.
5. Plug the Serial-ATA cable to the Serial-ATA Connector on the main board.
6. Repeat steps 2 to 5 to install a second disk (if there is one).
7. Put the hard disk tray with the installed hard disk back to the system and secure it with the mounting screws.

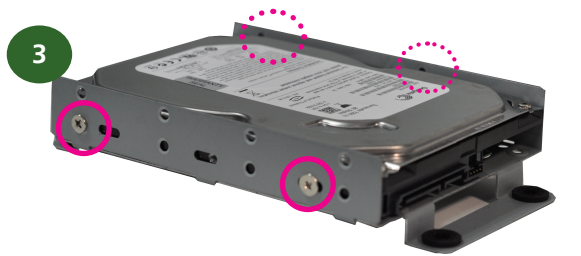


#### Note:

1. The 3.5" disk tray also supports 2.5" HDD installation. To do this, take off one side of the tray first to make room for SATA cables. Attach the HDD to the tray by fixing the screws to the slot on the bottom of the tray.
2. FW-8756 SKU B can support *only* the 2.5" HDD.



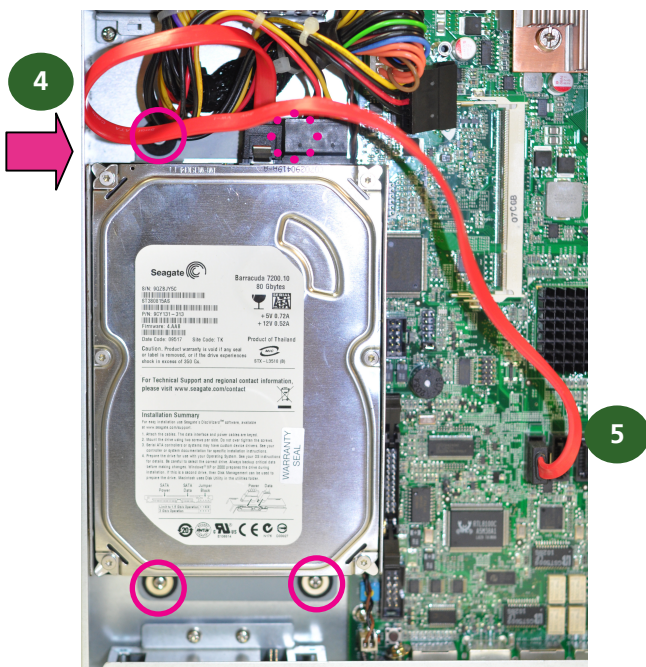
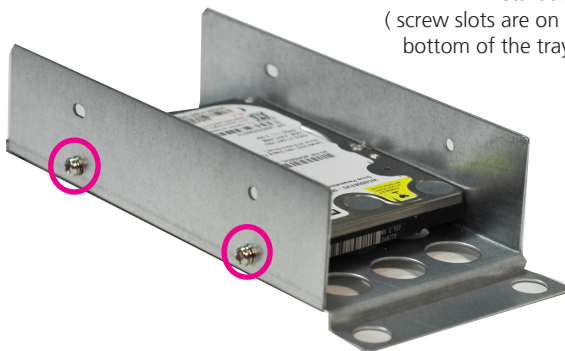




3.5" HDD installation



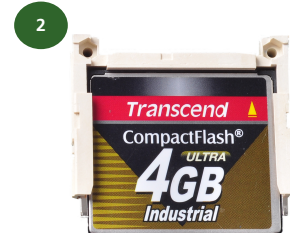
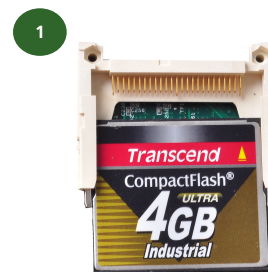
3.5" HDD installation  
(screw slots are on the bottom of the tray)



## Installing a CompactFlash Card

FW-8756 provides one CompactFlash slot. Follow the procedures below 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.



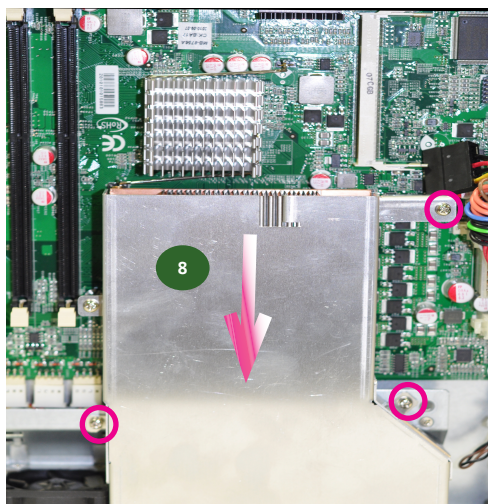
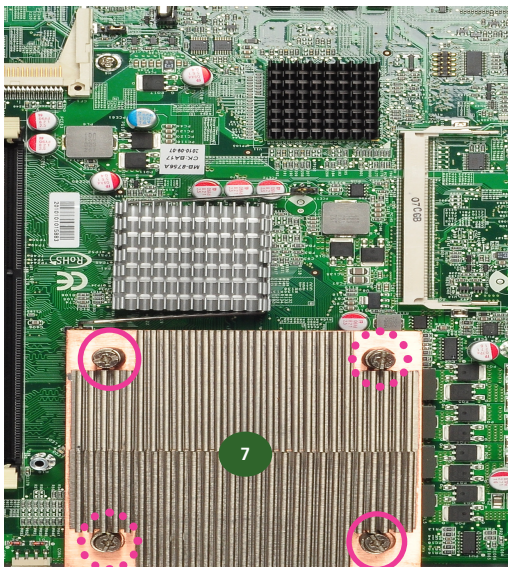
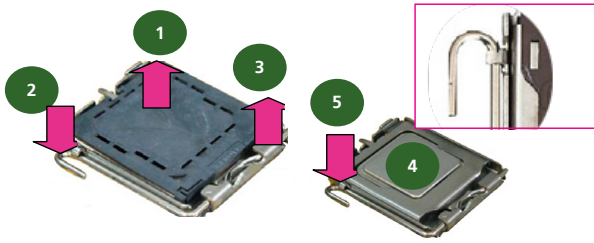
## CPU and the Heat Sink Installation

The FW-8756 server system is powered by the MB-8756 server board, which comes with one ZIF type LGA775 CPU socket.

Follow the procedures below 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 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 heat sink on top of the installed CPU, and 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 heat sink cover on top of the installed heat sink and screw the three screws to fasten it on the case.





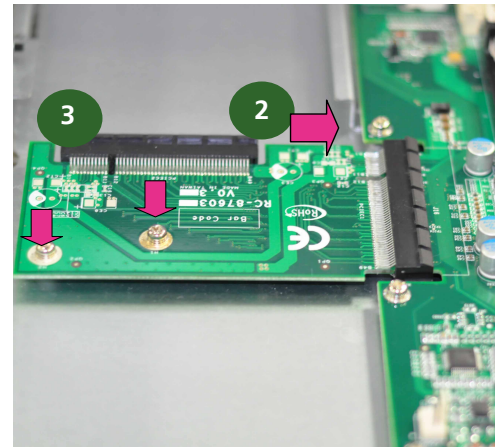
Note:

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



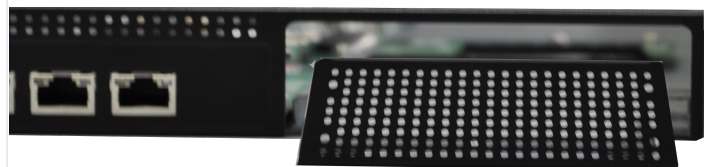
## Riser Card Installation

1. Align the riser card with the PCI-E golden finger connector.
2. Insert the card into the connector firmly.
3. Fasten the screws to fix the card onto the board.



## Front Ethernet Module Installation

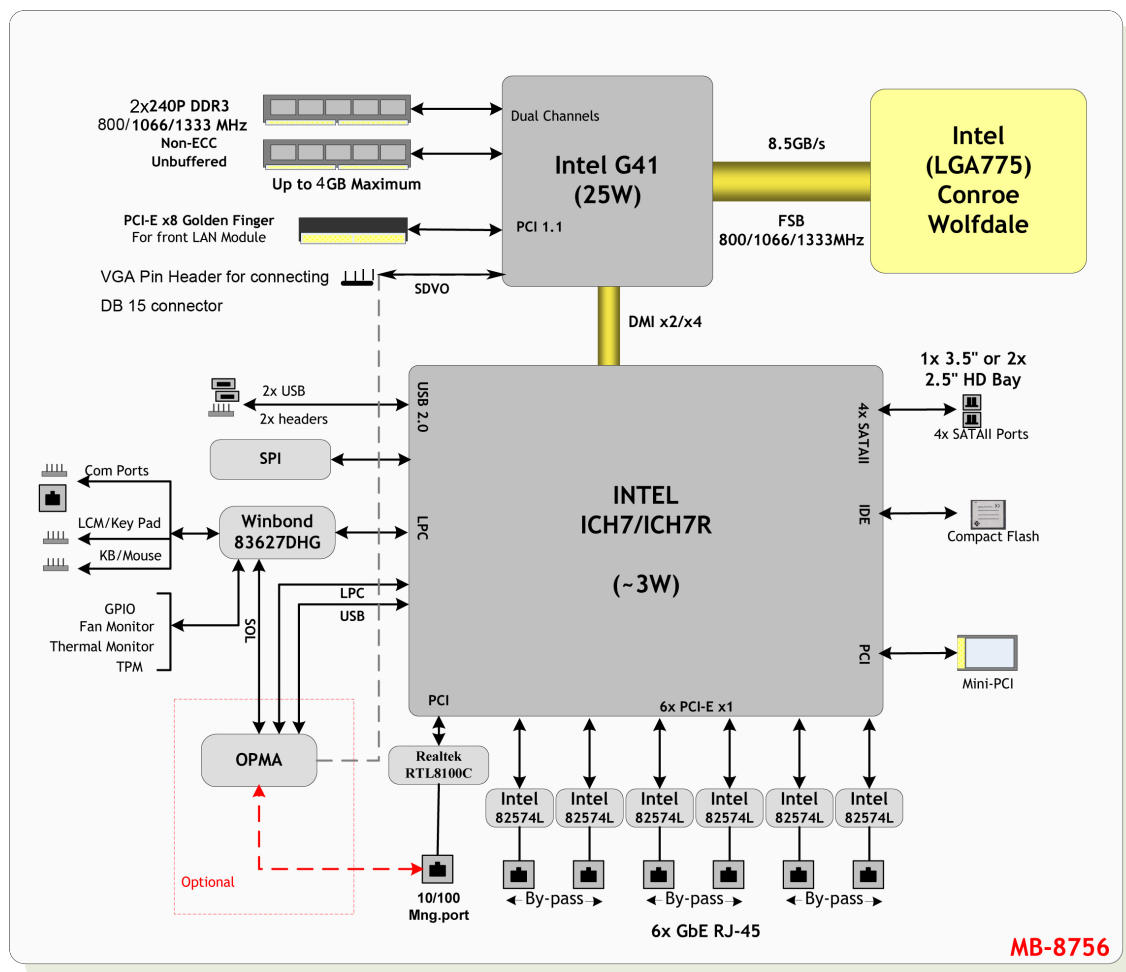
1. To install the front Ethernet module, take off the front bezel first by unfastening the threaded screws at the bottom of the case.
2. Insert the Ethernet module into the front expansion slot. You should hear a click when the module connects to the riser card.
3. Fasten the screw back on the bottom of the case to secure the module on the system.



### Chapter 3: Motherboard Information

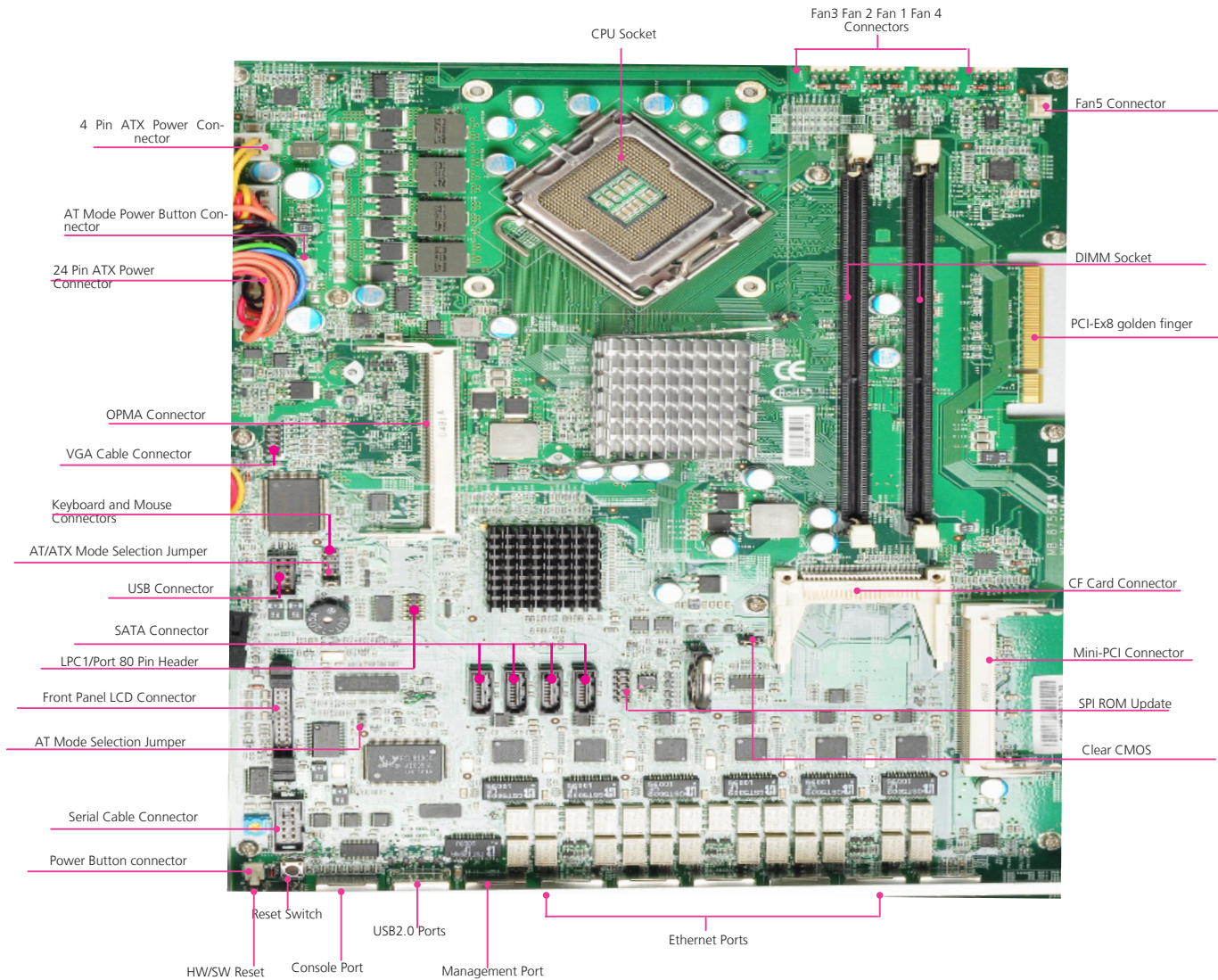
#### Block Diagram

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.



# Chapter 3

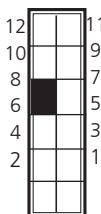
## Motherboard Information

### Jumper Settings

**ATX Power Connector(ATX1, ATX2):** These 4-pin and 24-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.

**VGA Interface (J1):** It is for connecting the VGA interface cable.


Function	Pin No.
DDCCLK	12
GND	10
GND	8
GND	6
GND	4
GND	2



Pin No.	Function
11	DDC-Data
9	VSYNC
7	HSYNC
5	Blue
3	Green
1	Red

**Keyboard and mouse interface Connectors(PKMB1):** It is for connecting the PS/2 keyboard and mouse interface cable.

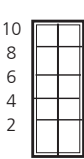
Pin No.	Function
VCC	1
MSDATA	3
KBDATA	5
GND	7



Pin No.	Function
2	MSCLK
4	KEY
6	KEY
8	KBCLK

**USB Connector(J12) :** It is for connecting the USB module cable. It complies with USB2.0 and support up to 480 Mbps connection speed.

Pin No.	Function
USB Port#2 Ground	10
Ground	8
USBD1+	6
USBD1-	4
USB_VCC	2



Pin No.	Function
9	USB Port#1 Ground
7	Ground
5	USBD0+
3	USBD0-
1	USB_VCC

**SATA 1 and 2 Connectors(J6, J7, J8, J9):** It is for connecting a 2.5" SATA harddisk to be served as your system's storage. The system can support up to 2 disks for 2.5" or 1 for 3.5" in maximum. The system's BIOS supports 3 modes of SATA configuration, i.e., IDE, RAID, and AHCI. The ICH7R provides hardware support for Advanced Host Controller Interface (AHCI) which is a programming interface for SATA host controllers. AHCI provides advanced performance and usability enhancements with SATA such as Hot-Plug, no master/savle designation for SATA devices and native command queuing.

**Note:** To configure your Hard disk using the integrated AHCI/RAID functionality, the Intel® Matrix Storage Manager software has to be installed on your Operating System. Visit the Intel support page at

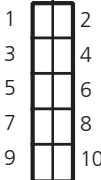
[http://www.intel.com/design/chipsets/matrixstorage\\_sb.htm#benefit](http://www.intel.com/design/chipsets/matrixstorage_sb.htm#benefit) for more information and download links. Operating systems other Microsoft Windows Vista and Microsoft Windows 7 require to pre-install the Intel Rapid Storage Technology driver during the F6 installation of Windows setup ("Press F6 if you need to install a third party SCSI or RAID driver...").

The Intel controller hubs are also supported by Linux. Beginning with Linux kernel version 2.6.27, the mdadm utility 3.0 supports RAID 0, RAID 1, RAID 10, and RAID 5.

To use the RAID features in dmraid and mdadm, you will need to set up the RAID volume using the Intel® Matrix Storage Manager option ROM (click CTRL + I when prompted during boot to enter the option ROM user interface).

**LPC I/O bus (Low Pin Count 1 bus):** It is an Intel proprietary connector for connecting a checkpoint device to output checkpoints throughout booting and Power-On Self Test (POST) to indicate the task the system is currently running. It can also be called port 80 for outputting debugging messages.

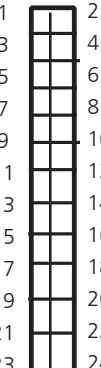
Pin No.	Function
1	CLK
3	PLTRST#
5	LPC_FRAME N
7	LPC_AD3
9	LPC_AD2



Pin No.	Function
2	LPC_AD1
4	LPC_ADO
6	VCC
8	GND
10	GND

**Front LCD Module Connector(J11):** The 24-pin connector is for connecting the front system panel. Refer to Appendix C for a simple demonstration of the LCM implementation.

Function	Pin No.
VCC	1
LSTIN-	3
LAFD-	5
LPD1	7
LPD3	9
LPD5	11
LPT7	13
LCD	15
K1	17
K3	19
GND	21
GPIO	23



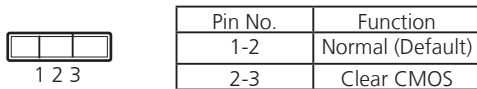
Pin No.	Function
2	IOGND
4	VEE
6	LINIT-
8	LPD0
10	LPD2
12	LPD4
14	LPD6
16	VCC
18	K2
20	K4
22	VCC3
24	VCC3



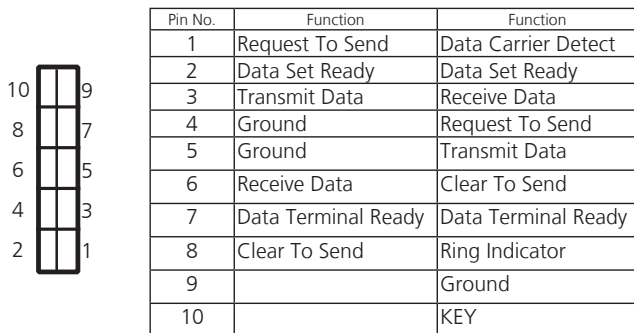
# Chapter 3

Function	Pin No.
Key	10
Ring Indicator	8
Clear to Send	6
Request to Send	4
Data Set Ready	2

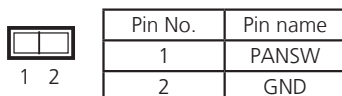
Clear CMOS jumper (J10): It is for clearing the CMOS memory and system setup parameters by erasing the data stored in the CMOS RAM such as the system passwords.



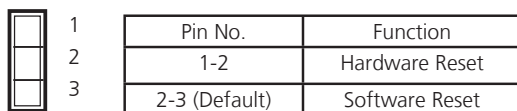
Serial Interface Connectors(J5): It is for connecting the RS-232 serial port module cable.



Power Button Connector(CONN2): It is for connecting the cable of the system power switch on the back panel.



Hardware or Software Reset Jumper(J14): 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 a software to its default setting.



DIMM Socket (U4, U5): The 240-pin DDR3 DIMM is for connecting the DDR3 800/1066/1333 Mhz memory. The system can support up to 4 GB in maximum (2 modules in total).

PCI-Ex8 Golden Finger(J16): It is for connecting the riser card to add the expansion cards for example, an Ethernet card.

## Motherboard Information

CompactFlash Card Connector (CF1): It is for connecting the CompactFlash Card.

Mini-PCI Socket(CON6): It is for connecting Mini-PCI compatible cards which may be a graphic accelerator card, Wi-Fi module, etc.



Pin No.	Description	Pin No.	Description
1	TIP	2	RING
3	8PMJ-3	4	8PMJ-1
5	8PMJ-6	6	8PMJ-2
7	8PMJ-7	8	8PMJ-4
9	8PMJ-8	10	8PMJ-5
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELP
15	CHSGND	16	RESERVED
17	INT-B	18	+5V
19	+3.3V	20	INT-A
21	RESERVED	22	RESERVED
23	GROUND	24	3.3VAUX
25	CLK	26	RST
27	GROUND	28	+3.3V
29	REO	30	GNT
31	+3.3V	32	GROUND
33	AD31	34	PME
35	AD29	36	RESERVED
37	GROUND	38	AD30
39	AD27	40	+3.3V
41	AD25	42	AD28
43	RESERVED	44	AD26
45	C_BE-3	46	AD24
47	AD23	48	IDSEL
49	GROUND	50	GROUND
51	AD21	52	AD22
53	AD19	54	AD20
55	GROUND	56	PAR
57	AD17	58	AD18
59	C_BE-2	60	AD16
61	IRDY	62	GROUND
63	+3.3V	64	FRAME
65	CLKRUN	66	TRDY
67	SERR	68	STOP
69	GROUND	70	+3.3V
71	PERR	72	DEVSEL
73	C_BE-1	74	GROUND
75	AD14	76	AD15
77	GROUND	78	AD13
79	AD12	80	AD11
81	AD10	82	GROUND
83	GROUND	84	AD9
85	AD8	86	C_BE-0
87	AD7	88	+3.3V



# Chapter 3

## Motherboard Information

Pin No.	Description	Pin No.	Description
89	+3.3V	90	AD6
91	AD5	92	AD4
93	RESERVED	94	AD2
95	AD3	96	AD0
97	+5V	98	RESERVED-WIP
99	AD1	100	RESERVED-WIP
101	GROUND	102	GROUND
103	AC_SYNC	104	M66EN
105	AC_SDATA_IN	106	AC_SDATA_OUT
107	AC_BIT_CLK	108	AC_CODEC_ID0
109	AC_CODEC_ID1	110	AC_RESET
111	MOD_AUDIO_MON	112	RESERVED
113	AUDIO_GND	114	GROUND
115	SYS_AUDIO_OUT	116	SYS_AUDIO_IN
117	SYS_AUDIO_OUT_GND	118	SYS_AUDIO_IN_GND
119	AUDIO_GND	120	AUDIO_GND
121	RESERVED	122	MPCIACT
123	VCC5VA	124	3.3AUX

CPU Fan Connectors(CON4/CON1/CON2/CON3): The 4-pin connector is for connecting the CPU/System fans. Connect CPU fan to CON1/CON2/CON4 and system fan to CON3 to monitor the hardware thermal with the smart fan feature.



Pin No.	Function
1	FAN TACH
2	FAN Status
3	FAN Driving
4	GND

Fan Connector(CON5): The 3-pin connector is for connecting the chassis fan.



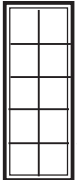
Pin No.	Function
1	GND
2	+12VDC

CPU Socket: The LGA 775 socket is for connecting the CPU.

Power-switch on board(SW1): It is used for turning on or off the power once the power supply is applied to the board.

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

Function	Pin No.
NC	1
ICH_SPI_CS0#	3
SB_SPI_MISO	5
KEY	7
GND	9



Pin No.	Function
2	NC
4	V_3P3_SPI_R
6	SPI_HD_N
8	ICH_SPI_CLK
10	ICH_SPI_MOSI

AT Mode Power Button Connector (CONN1): It is for connecting the power switch in AT mode in lieu of the following jumper selections, i.e., you don't need to adjust the AT/ATX Mode Selection jumper(J24) or the AT Mode jumper(J13) when an AT mode power switch is used.

AT/ATX Mode Selection Jumper(J24): Please adjust the jumpers (J24 and J13) respectively as described in the following jumper settings when connecting the power switch in AT mode.



Pin No.	Function
--	AT mode
1-2	ATX mode

AT Mode Jumper(J13): It is for adjusting the jumper setting for the AT power mode. Note that you have to adjust the jumper J24 accordingly.



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

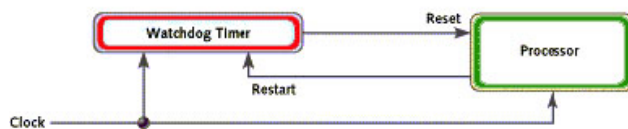


### Appendix A: Programming Watchdog Timer

---

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*





### 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. The following steps illustrate how to use this feature. The BIOS of the system allows the redirection of console I/O to a serial port. With this configured, you can remotely access the entire boot sequence through a console port or an IPMI management port.

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 for FW-8756:  
  
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. A. Click the start button, point to Programs > Accessories > Communications and select Hyper Terminal.
  - b. 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 control, 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* folder on the *Driver and Manual CD*. The driver and the program library can also be found in the folder.

The system support Parallel Graphic-based LCM. The LCM connects to the motherboard's parallel port. The LCD screen can display 128x64x1 bit matrix.

#### 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`, `Test`) and the driver (`plcm_drv.ko` or `plcm_drv.o`) will appear in the program's folder.



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

#### Install

```
#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.

**plcm\_test:** This program runs with the following parameters:

- `./plcm_test [-filename] <BMP file>`: displays bmp on LCM
- `./plcm_test [-set_left]`: switches screen to the left
- `./plcm_test [-set_right]`: switches screen to the right
- `./plcm_test [-display_on]`: set display on [normal

operation]

`./plcm_test [-display_off]`: turns display off

`./plcm_test [-factory]`: factory test (run through the following functions in sequence:

Display Control - All On

Display Control - All On

Set initial display beginning on page 0

Set initial display beginning on line 0

Set initial display beginning on line 0

Keypad Input Testing)



**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 crash or powers off. This means if your system is equipped with a LAN Bypass function, a condition in your system will not interrupt your network traffic. There are typically two communication status for the bypass function, one is "Normal" and another is "Bypass". Lanner 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:

- Communication through SMBUS (I2C)
- Independent bypass status control for each pair up to a total of 4 pairs
- 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).
- Software programmable bypass or normal mode
- 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.

Please refer to the **Lanner Bypass Watchdog module-User Guide** in the LAN\_Bypass\_Watchdog folder for implementation guidance.

For sample LAN bypass code, see the LAN\_Bypass\_Watchdog folder on the *Driver and Manual CD*.

For a description of the physical LAN ports equipped with this function, refer to *Front Panel Features* in *Chapter 1*



### Appendix E: Driver Installation

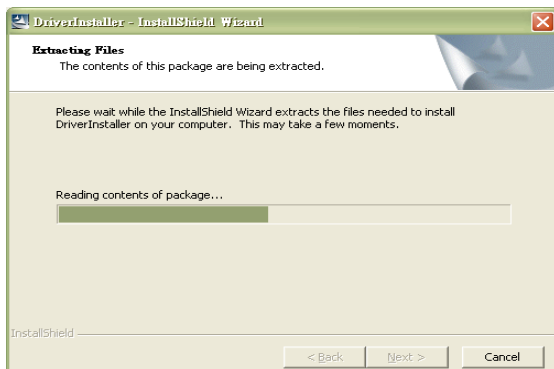
#### LAN Adapters Driver Installation

This section provides the instructions on how to install Intel® Gigabit LAN adapter drivers.

#### Windows Operating systems

To install the Intel® Gigabit LAN controller driver on a Windows Operating System:

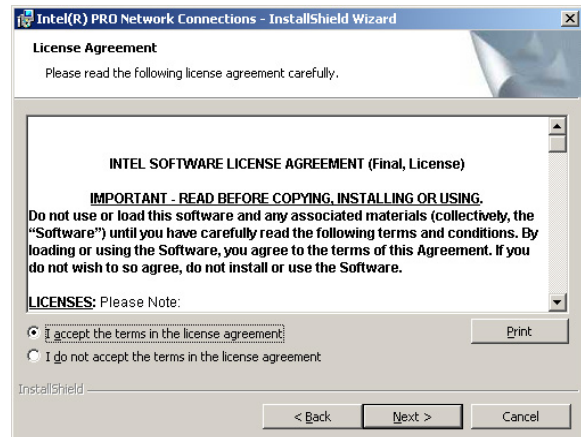
1. Restart the computer, and then log on with Administrator privileges.
2. Insert the Drivers and User's Manual CD to the optical drive.
3. Browse the contents of the support CD to locate the file executable file from the \Driver\LAN\- 4. The **DriverInstaller**–InstallShield Wizard starts off by extracting files. The **Intel Network Connections**–InstallShield Wizard will appear, as shown in the following screen, when the process is done.



5. The **Intel Network Connections**–InstallShield Wizard



6. Select the “I accept the terms in the license agreement” and then click Next.



7. Select the programs that you wish to install. Make sure that you have selected the drivers. Select the **Intel Network SNMP Agent** if you would like to install the agent for your network card to send the SNMP information to the Network Management System.



8. Click **Install** to proceed.
9. Click Finish to close the installation program.

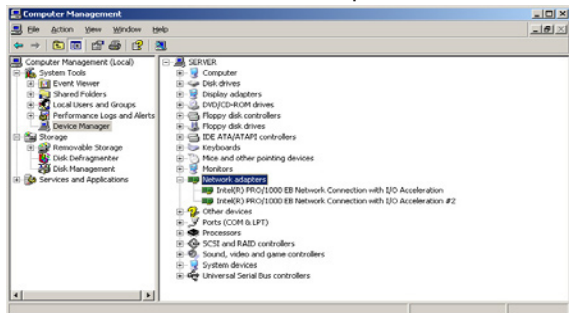


To verify the LAN controller driver installation, do the following steps:

1. Right-click on the My Computer icon, and then select Properties from the menu.

Click the Hardware tab, then click the Device Manager button.

Click the + sign next to the Network adapters, then the Intel Pro/1000 [...] adapter should be listed.



### Linux

Follow these instructions when installing the Intel® LAN controller base driver for the Red Hat® and Linux operating system.

1. Insert the Drivers and user's manual CD to the optical drive and mount the optional drive in the Linux platform.
2. Copy the base driver tar file from the motherboard/system support CD to the directory of your local hard disk. The Intel® LAN driver for Linux OS is located in the following directory:

`\Driver\LAN\. The name format of driver file is "e100-<Version>.tar.gz". For example: the file name of driver version 7.0.38 is "e100(or1000)-7.0.38.tar.gz".`

3. Untar/unzip the archive, where <x.x.x> is the version number for the driver tar file:

```
tar xzf e1000-<x.x.x>.tar.gz
```

4. Change to the driver src directory on your system, where <x.x.x> is the version number for the driver tar:

```
cd e1000-<x.x.x>/src/
```

5. Compile the driver module by typing the following command:

```
make install
```

6. The binary will be installed as:

```
/lib/modules/<kernel_version>/kernel/drivers/net/e1000.o
```

The install locations listed above are the default locations. They might not be correct for certain Linux distributions.

7. Load the module using either the insmod or modprobe command:

```
modprobe igb
```

```
insmod igb
```

Note that for 2.6 kernels the insmod command can be used if the full path to the driver module is specified. For example:

```
insmod /lib/modules/<KERNEL_VERSION>/kernel/drivers/net/igb/igb.ko
```

With 2.6 based kernels also make sure that older igb drivers are removed from the kernel, before loading the new module:

```
rmmod igb; modprobe igb
```

8. Assign an IP address to the interface by entering the following, where <x> is the interface number:



```
ifconfig eth<x> <IP_address>
```

9. Verify that the interface works. Enter the following, where <IP\_address> is the IP address for another machine on the same subnet as the interface that is being tested:

```
ping <IP_address>
```

### VGA Driver Installation

This section provides the instructions on how to install VGA adapter drivers.

#### Windows Operating systems

1. Restart the computer, and then log on with Administrator privileges.
2. Insert the Drivers and user's manual CD to the optical drive.
3. Browse the contents of the support CD to locate the file executable program from the \Driver\Vga\_driver. Then, Double-click the executable program.
4. You may need to install the drivers manually if there is no available executable program for installing the drivers automatically.
5. To install the drivers manually, use the Found New Hardware wizard of the Windows.
6. During the steps make sure that you choose to install the hardware by manually selecting the drivers that you wish to install. When this option appears, you should select the directory containing the drivers for the VGA adapter.



### Appendix F: Terms and Conditions

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#### 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 F

## Terms and Conditions

### RMA Service Request Form

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

<b>RMA No:</b>		Reasons to Return: <input type="checkbox"/> Repair(Please include failure details)	
		<input type="checkbox"/> Testing Purpose	
Company:		Contact Person:	
Phone No.		Purchased Date:	
Fax No.:		Applied Date:	
Return Shipping Address: _____			
Shipping by: <input type="checkbox"/> Air Freight <input type="checkbox"/> Sea <input type="checkbox"/> Express _____			
<input type="checkbox"/> 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**

**Confirmed By Supplier**

\_\_\_\_\_  
Authorized Signature / Date

\_\_\_\_\_  
Authorized Signature / Date

