Lanner

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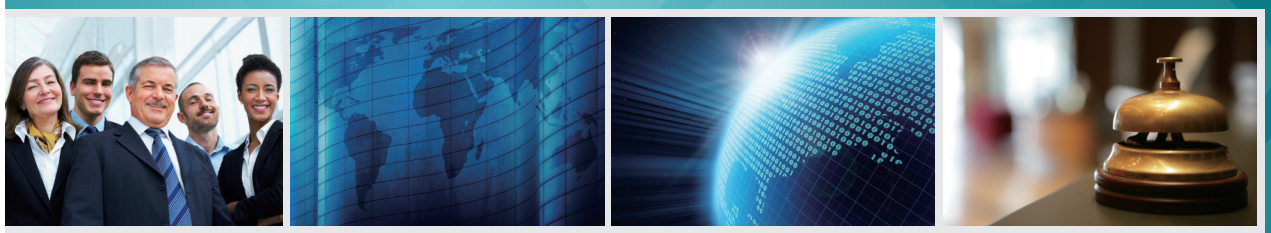
Network Application Platforms

Hardware platforms for next generation networking infrastructure



MR-350

User's Manual

Publication date:2012-07-11

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

Copyright and Trademarks

Acknowledgement

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.

Chapter 1: Introduction

The MR-350 platform, which includes the Freescale P1020 or P1011 communications processor with Marvell 88E6171R chipset, offers the value of extensive integration and extreme power smarts for a wide variety of network applications in the telecom, defense and industrial markets. Based on 45 nm technology for low power implementation, the P1011 and P1020 processors provide single- and dual- core solutions for the 533 MHz to 800 MHz performance range, along with advanced security and a rich set of interfaces.

Some key features of the MR-350 are summarized below:

- The CPU comes with a 32 L1 I-Cache and 32KB L1 D-Cache for each core and a 256KB L2 Cache with ECC
- The integrated security engine supports the cryptographic algorithms commonly used in IPsec, SSL, 3GPP and other networking and wireless security protocols.
- The system supports both DDR2 and DDR3 memory.
- One Mini-PCIe socket for wireless expansion adapters
- The system supports five GbE Ethernet ports via the Marvelll 88E6171R switch

System Specification

Form Factor		Desktop
Platform	Processor Options	Freescale P1011/1020 533MHz
	Chipset	Marvell 88E6171R Switch
BIOS		2MB NOR Flash with Bootloader
System Memory	Technology	DDR3
	Max. Capacity	512MB or 1GB
	Socket	Onboard
OS Support		Linux Kernel 2.6 and up
Storage	HDD Bays	1 x 2.5" (Optional)
	Flash	256MB Nand Flash
Networking	Ethernet Ports	5 x GbE RJ45
	Bypass	N/A
	Controllers	Marvell 88E6171R Switch
	Ethernet Modules	N/A
	Management Port	N/A
	Security Acceleration	Yes
I/O Interface	Reset Button	1 x reset button (momentary contat switch)
	Console	1 x RJ45
	USB	1x USB 2.0
	IPMI via OPMA slot	N/A
Expansion	PCIe	1 x Mini PCI-E expansion slot (MR-350B only)
	PCI	N/A
Cooling	Processor	CPU heatsink
	System	1 x cooling fan (MR-350B only)
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	N/A
	Watchdog	N/A
	Internal RTC with Li Battery	Yes
Physical Dimensions	Dimensions (WxHxD)	215x190x42(mm)
	Weight	1.1kg
Power	Type / Watts	36W Power Adapter
	Input	AC 110-240V
Approvals and Compliance		CE emission, FCC Class A, RoHS, Reach

Chapter 1

Introduction

Package Contents

Your package contains the following items:

- MR-350 Network Security Platform
- Power cable
- Nameplate

Chapter 1

Front Panel Features

F1 LED Indicators for 4 LANs

The LAN5/LAN4/LAN3/LAN2/LAN1 LED indicates the connection between the port and the next piece of network equipment.

LED	Behavior	Interpretation
LINK/ACT (Yellow)	On/Flashing	The port is linking.
	Off	The port is not linking.
SPEED (Green/Amber)	Amber	The connection speed is 1000Mbps.
	Green	The connection speed is 100Mbps.
	Off	The connection speed is 10Mbps.

F2 Power/Status/HDD LED

Power LED (Green):

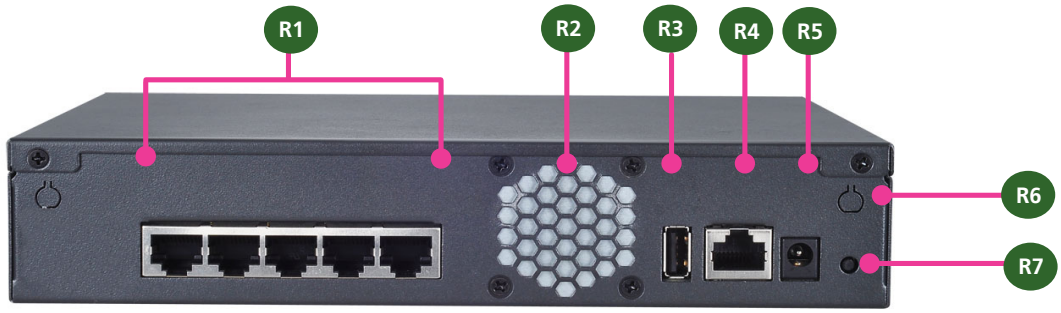
Green indicates that the system is powered on.

Status LED (Green/amber):

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

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

Rear Panel Features



R1 5 10/100/1000Mbps Ethernet Ports

These five Gigabit Ethernet ports are provided by Marvell 88E6161 GbE PHY through the SGMII interface.

R2 System Fan (*)

R3 USB 2.0 Port

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

R4 Console Port

By using suitable rollover cable (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, 1stop bit, and no flow control.

R5 DC-in Power Adapter Socket

The system requires a 12V/5A power input.

R6 Reserved Antenna Hole for Wireless Applications

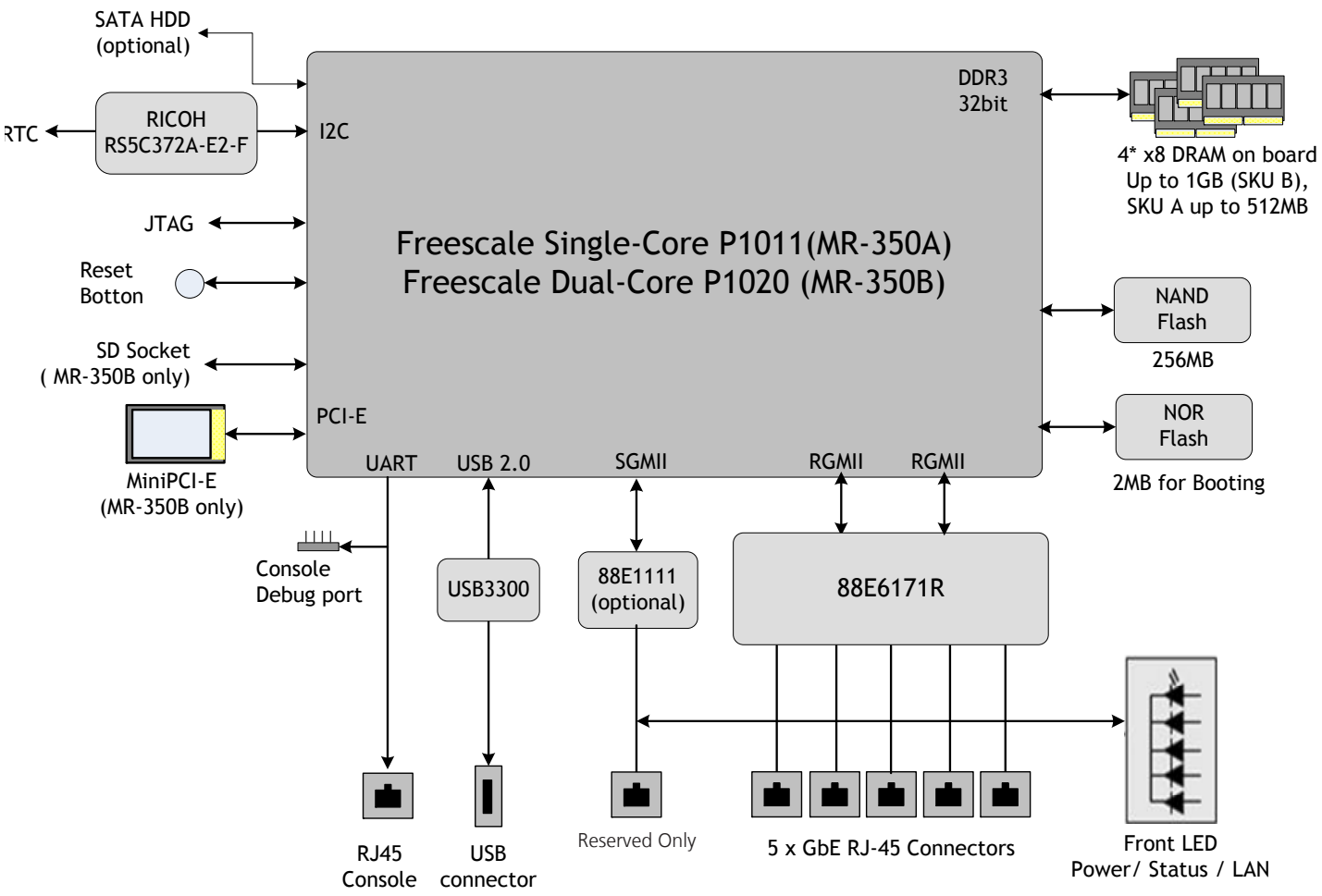
R7 Reset Button

* The system fan only exists on sku B. The Sku A is fanless.

Chapter 3: Motherboard Information

Block Diagram

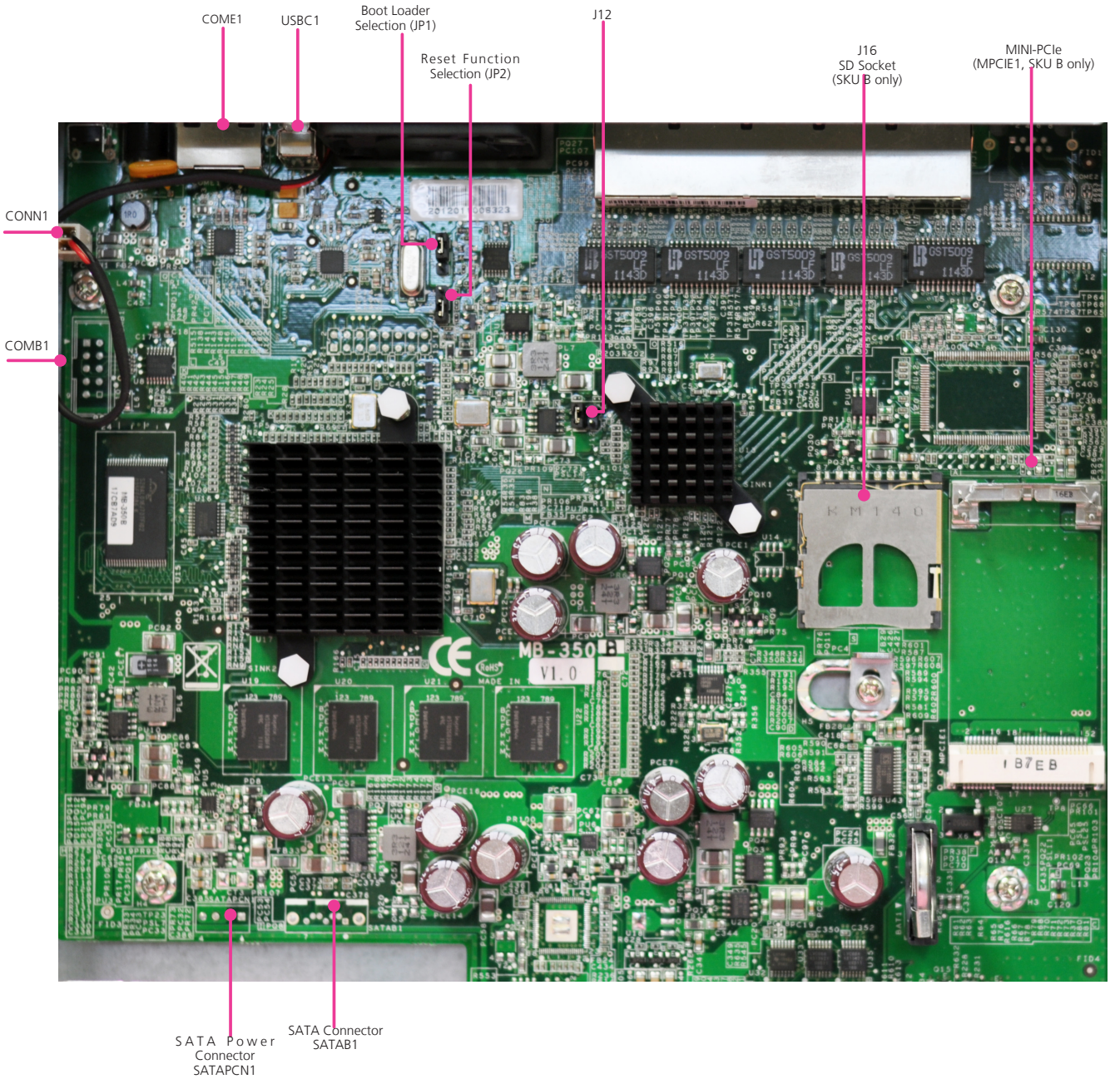
The block diagram depicts the relationships among the interfaces or modules on the motherboard. Please refer to the following figure for your motherboard's layout design.



Chapter 3

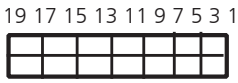
Motherboard Layout

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.



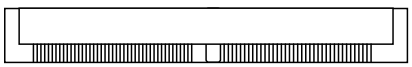
Jumper Settings

JTAG Port CPU (J1): A 2x8 (2.54mm) pin header is a debug port provided as a means for testing the main board and looking for possibility of field faults. It can also be used for flash writing.



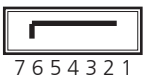
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	CPU_TDO	2	Pull high 10k to3.3V
3	CPU_TDI	4	Pull high 10k to3.3V
5	COP_RUNSTOP	6	COPVSENSE
7	CPU_TCLK	8	CKSTP_IN_N
9	CPU_TMS	10	NA
11	CPU_SRST_N	12	GND
13	CPU_HRST_N	14	NA
15	CKSTP_OUT_N	16	GND

Mini-PCIe Connector (MPCIE1): The 52-pin Mini-PCIe slot enables a Mini-PCIe expansion module to be connected to the board. For example, a WiMAX/WiFi module.



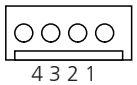
PIN NO.	FUNCTION	PIN NO.	FUNCTION
1		2	3.3V
3		4	GND
5		6	1.5V
7		8	
9	GND	10	
11	CLK_PCIE_N	12	
13	CLK_PCIE_P	14	
15	GND	16	
17		18	GND
19		20	
21	GND	22	
23	PCIE_RX_N	24	
25	PCIE_RX_P	26	GND
27	GND	28	1.5V
29	GND	30	
31	PCIE_TX_N	32	
33	PCIE_TX_P	34	GND
35	GND	36	
37		38	
39		40	GND
41		42	
43		44	
45		46	
47		48	1.5V
49		50	GND
51		52	3.3V
53	GND	54	GND
55	GND	56	GND
57	GND	58	GND

SATA Driver Connector (SATAB1): It is for connecting a 2.5" SATA harddisk to be served as your system's storage. The system can support up to1 disk of 2.5" in maximum.



Pin No.	Description
1	GND
2	TX_P
3	TX_N
4	GND
5	RX_N
6	RX_P
7	GND

Serial-ATA Power Connector (SATAPCN1): A 4-pin (2.54mm) connector used for connectig the SATA power cord.

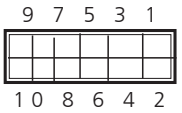


Pin No.	Description
1	NA
2	GND
3	GND
4	5V

Software Mode Pin Header (J12)

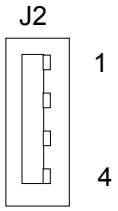
Pin No.	Description
00	Test Mode
01	Reserved
10	Unmanaged/For-warding
11	CPU attached / disabled

RS-232 Serial Port for the LCM (COMB1): The 10-pin connector is for connecting RS-232 serial devices such as the front LCD Module.



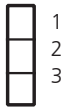
Pin No.	Function
1	NC
2	NC
3	RS232_1_SIN
4	RS232_1_RTS
5	RS232_1_SOUT
6	RTS232_1_CTS
7	NC
8	NC
9	GND
	NC

USBC1 Port (USBC1): It is for connecting the USB devices. It complies with USB 2.0 and can support 480 Mbit/s Mbps transmission rate.



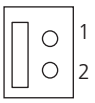
Pin No.	Function
1	USB_VCC
2	USB0-
3	USB0+
4	GND

Bootloader Mode Jumper (JP1): There are two bootloader modes on the MR-350 board; namely, failsafe and normal bootloader mode. Use this jumper to switch between them.



Pin No.	Function
Short 2-3	Failsafe
Short 1-2	Normal (Default)

System FAN Connector(CONN1): This 2-pin header is for connecting the system fan.



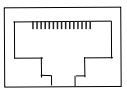
Pin No.	Function
1	GND
2	V_12

Software or Hardware Reset Function (JP2): 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.

Pin No.	Function
1-2	H/W RESET
2-3	S/W RESET

Console Port (COME1): The console port on the front panel.

Pin No.	Function
1	RS232_0_RTS
2	NC
3	RS232_0_SOUT
4	GND
5	GND
6	RS232_0_SIN
7	NC
8	RS232_0_CTS



Hardware or Software Reset Jumper(JP2): 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
Short 2-3	S/W Reset
Short 1-2	H/W Reset

Appendix A: 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 damages resulting from inadequate/loose packing of the defective units. All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

Appendix A

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