Lanner

Telecom Datacenter Appliances

Innovative Platforms for Next Generation Network Infrastructure

HMB-1000 (HTB-1000) User Manual

Version: 1.0

Date of Release: 2018-09-26

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.

Resources	URL
Lanner	http://www.lannerinc.com
Product Resource	http://www.lannerinc.com/download-center
RMA	http://eRMA.lannerinc.com

Copyright and Trademarks

Acknowledgement

Compliances and Certification

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. The 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.

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. The 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 another 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).

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- Portez des lunettes de sécurité pour protéger vos yeux.
- N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- Ne travaillez pas seul si des conditions dangereuses sont présentes.
- Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.
- La machine ne peut être utilisée qu'à un lieu fixe comme en laboratoire, salle d'ordinateurs ou salle de classe.

Sécurité de fonctionnement

L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.

- Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Consignes de sécurité électrique

- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm2 ou 10 AWG.

Revision History

Version	Date	Descriptions
1.0	2018/09/26	Official Release

Table of Contents

CHAPTER 1: PRODUCT OVERVIEW

The HMB-1000 x86 Compute Blade uses Dual Broadwell-EP/Haswell-EP Processors. It can be installed into latest Lanner HTCA-6000 Series network appliances.

- Supports up to two Intel Haswell-EP/Broadwell-EP E5-2600 v3/v4 processors with PCH C612 chipset
- Supports 16x 288-pin 2400MHz DDR4 DIMMs
- Compatible with HTCA-6600 and HTCA-6200
- Supports 5 hot-swappable cooling fans

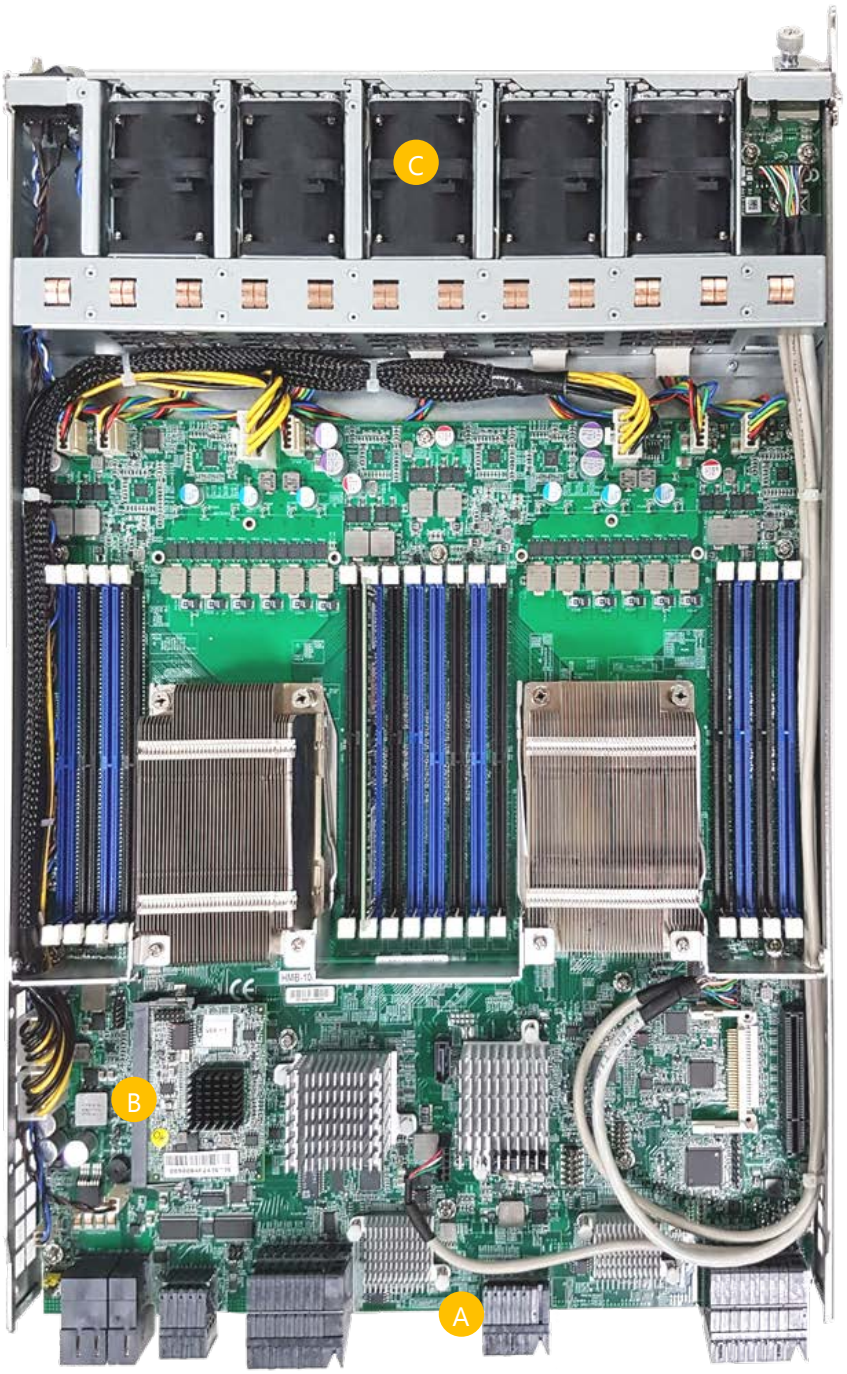
Ordering Information

SKU No.	Description
HMB-1000A	Haswell-EP/Broadwell-EP x2 sockets, DDR4 sockets x16 with tray, without QAT
HMB-1000B	Haswell-EP/ Broadwell-EP x2 sockets, DDR4 sockets x16 with tray, with QAT

System Specifications

Processor		Dual Intel Haswell-EP/Broadwell-EP E5-2600 v3/v4
Controller		PCH: Intel C612 chipset LAN: 2x Intel Fortville XL710
Interface		▸ 6x PCI-Express Gen3 x8 (To front side module) from each MB (HMB-1000B) ▸ Max 8x PCI-Express Gen3 x8(HMB-1000A) ▸ PCH 2x PCI-Express Gen 2 for Switch board Control from master MB1 ▸ 1x PCI-Express Gen3 x8 Slot(HMB-1000B)
IPMI		1x OPMA connector
System Compatibility		HTCA-6600 and HTCA-6200
Environmental Parameters	Temperature	0 to 40° C Operating -40 to 70° C Storage
	Humidity (RH)	5 to 90% Non-condensing
System Dimensions	(WxDxH)	317.8 x 352.2 x 20 mm
	Weight	5 KG
Certification	CE FCC	Class A Class A

I/O Overview

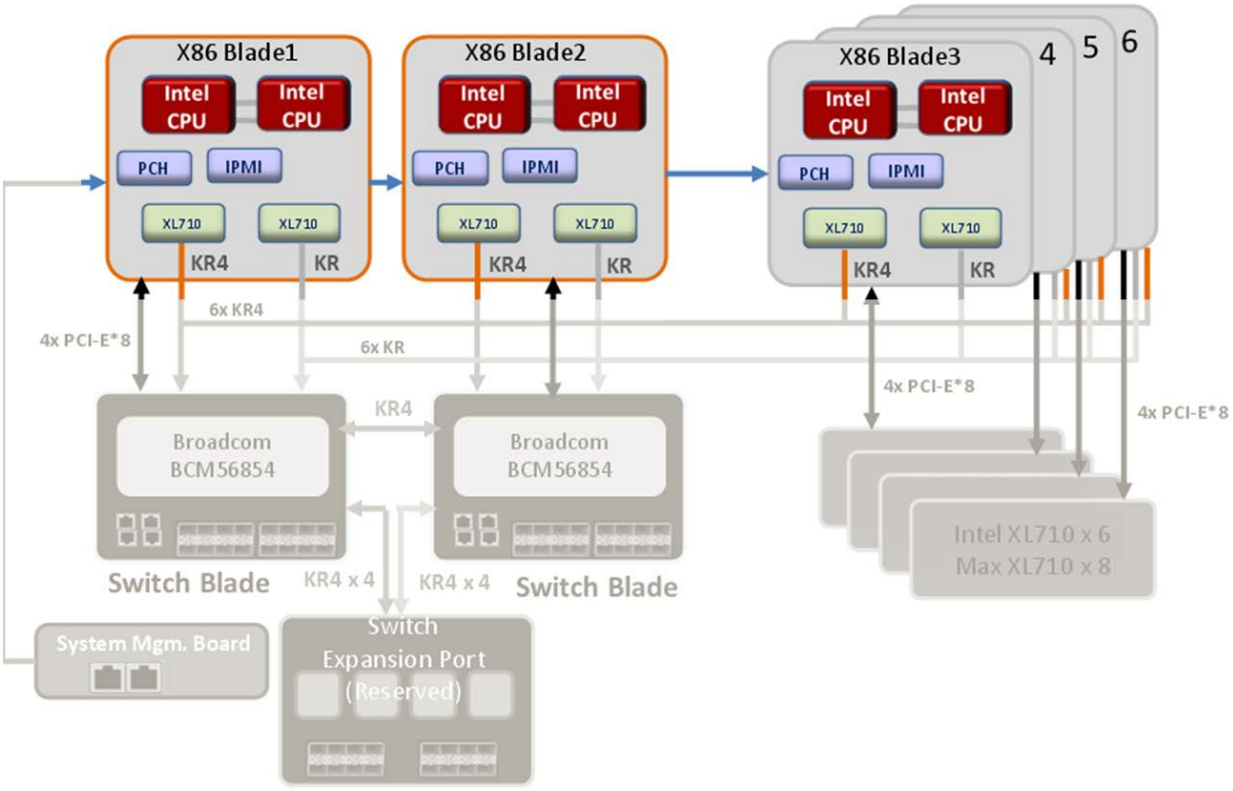


No.	Description
A	PCIE x8 Press fit connector
B	OPMA slot
C	Cooling fans

CHAPTER 2: MOTHERBOARD INFORMATION

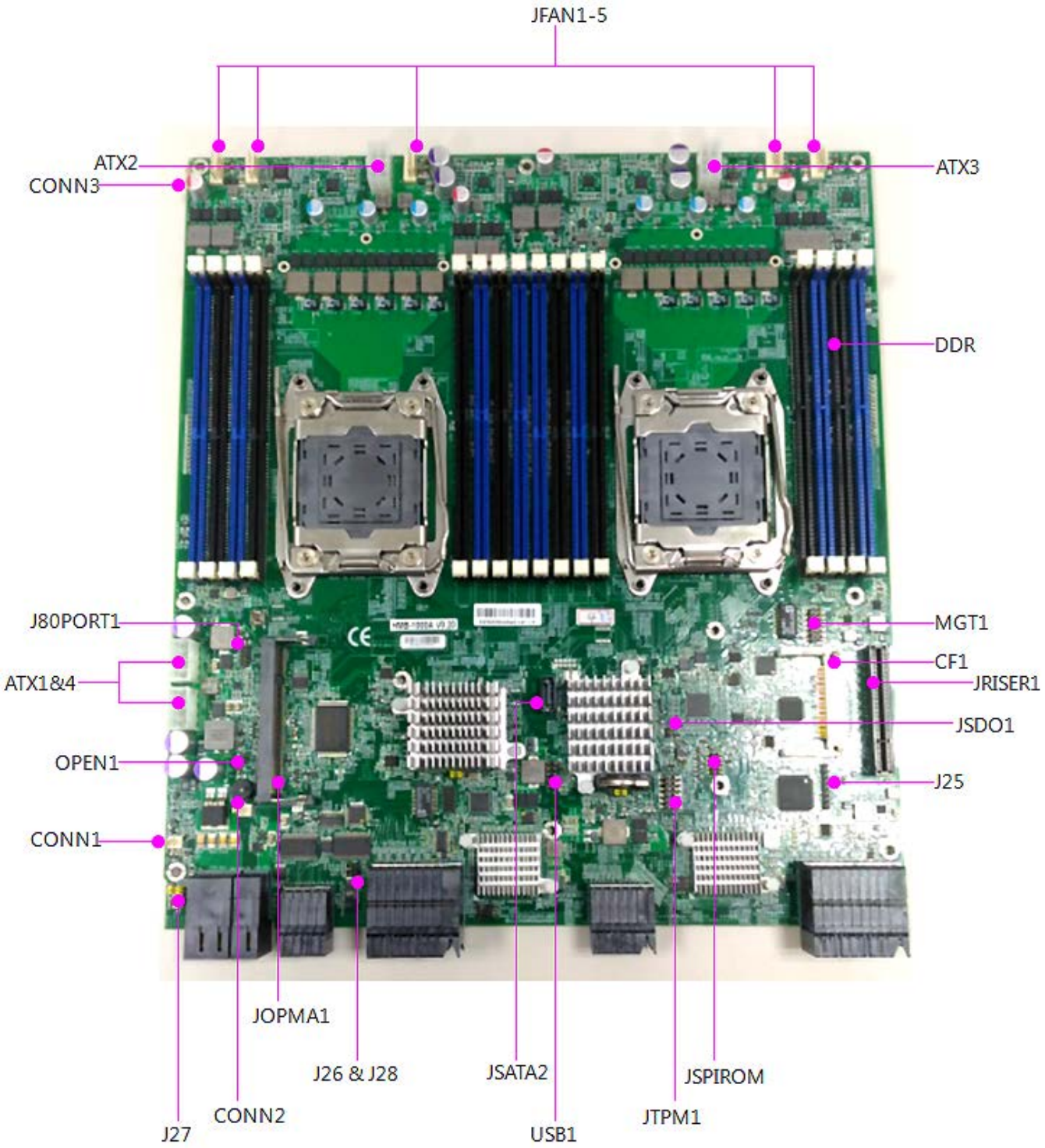
Block Diagram

The block diagram indicates how data flows among components on the motherboard. Please refer to the following figure for your motherboard's layout design.



Motherboard Layout

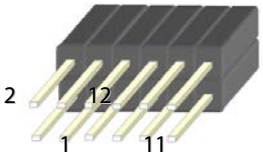
The motherboard layout shows the connectors and jumpers on the board. Refer to the following picture as a reference of the pin assignments and the internal connectors.



Internal Jumper & Connectors

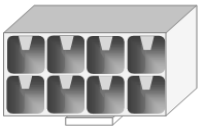
MGT1: 2x6 pin header for RJ-45 LAN management port

Pin	Description	Pin	Description
1	MGT2_MDIP_0	**2**	MGT2_MDIN_0
3	MGT2_MDIP_1	**4**	MGT2_MDIN_1
5	MGT2_MDIP_2	**6**	MGT2_MDIN_2
7	MGT2_MDIP_3	**8**	MGT2_MDIN_3
9	MGT_LAN2_100#	**10**	MGT_LAN2_ACT#
11	MGT_LAN2_1G#	**12**	P3V3_AUX



ATX1~ATX4: four 8-pin ATX power connectors

Pin	Description	Pin	Description
1	GND	**2**	+12V
3	GND	**4**	+12V
5	GND	**6**	+12V
7	GND	**8**	+12V

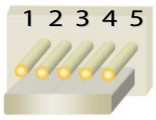


SATA1: **7-pin SATA signal connector for SATA storage device**

Pin	Description	Pin	Description
1	GND	**2**	TX_P
3	TX_M	**4**	GND
5	RX_M	**6**	RX_P
7	GND		

FAN1~5: 5-pin FAN connectors

Pin	Description	Pin	Description
1	GND	**2**	12V
3	RPM Sense	**4**	RPM Sense
5	PWM Status		



SW2: Reset Switch

Pin	Description
1-2	GND
3-4	FP_RST_SEL

SW1: PSON power switch for debug.

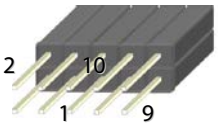
Pin	Description
1-2	GND
3-4	FP_SWIN_R

CONN2: PSON power switch

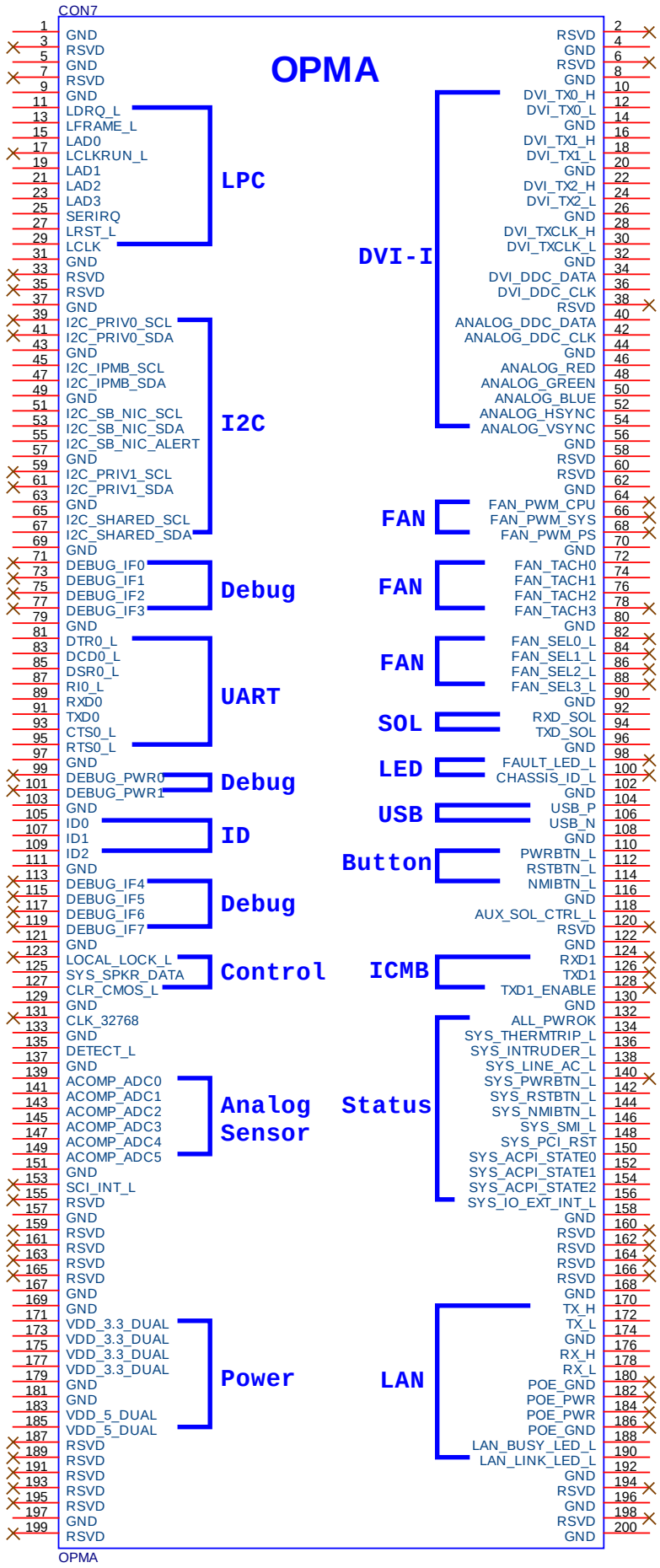
Pin	Description
1	GND
2	FP_SWIN_R

USB1: 2x5-pin internal USB pin header

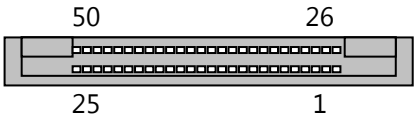
Pin	Description	Pin	Description
1	USB_VCC	**2**	USB_VCC
3	USBD0-	**4**	USBD1-
5	USBD0+	**6**	USBD1+
7	Ground	**8**	Ground
9	USB Port#1Ground	**10**	USB Port#2 Ground



OPMA1: OPMA socket for IPMI card.



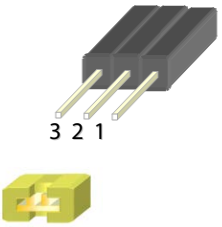
CF1: CompactFlash card slot



Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	GND	**2**	DATA3	**3**	DATA4	**4**	DATA5
5	DATA6	**6**	DATA7	**7**	CE1#	**8**	A10
9	OE#	**10**	A9	**11**	A8	**12**	A7
13	CFVCC3	**14**	A6	**15**	A5	**16**	A4
17	A3	**18**	A2	**19**	A1	**20**	A0
21	DATA0	**22**	DATA1	**23**	DATA2	**24**	WP
25	CD2-	**26**	CD1-	**27**	DATA11	**28**	DATA12
29	DATA13	**30**	DATA14	**31**	DATA15	**32**	CE2#
33	VS1#	**34**	IOR#	**35**	IOW#	**36**	WE#
37	READY#	**38**	CFVCC3	**39**	CSEL	**40**	VS2#
41	RESET	**42**	WAIT#	**43**	INPACK#	**44**	REG#
45	DASP#	**46**	DIAG#	**47**	DATA8	**48**	DATA9
49	DATA10	**50**	GND				

J27 Software reset: Select front panel reset option

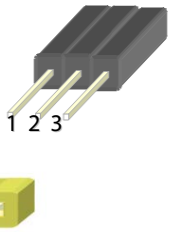
Pin	Description	Pin	Description
1.2 	HW reset	2.3 	SW reset (Default)



J24: CMOS Jumper

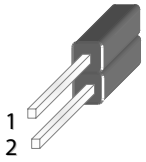
You may set jumper pins to clear CMOS

Pin	Description	Pin	Description
1.2 	Normal (Default)	2.3 	Clear CMOS



OPEN1: Chassis Open Detect mainboard protection jumper. (a short-pin cap will be connected to the top compartment of the system chassis. When the top compartment is lifted/removed, the board functions will be disabled once the jumper cap is lifted along with the top compartment. This is to protect the board from being tampered by anyone who removes the top compartment.

Pin	Description	Pin	Description
1	GND	**2**	FM_INTRUDER#



CONN3: HS pin header

Pin	Description	Pin	Description
1	HSWAP_ENABLE_N	**2**	GROUND

CHAPTER 3: HARDWARE SETUP

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

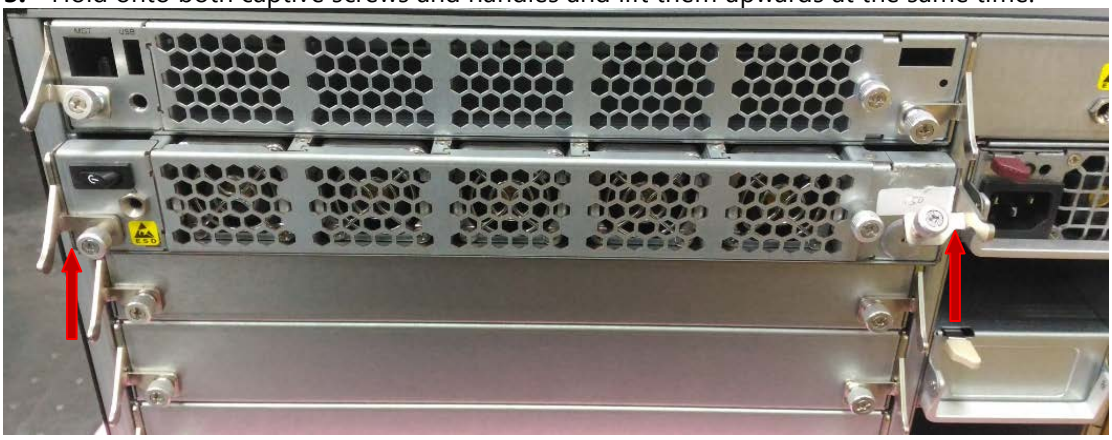
Warning: (1) To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power sources. (2) Please wear ESD protected gloves before conducting the following steps. This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

Accessing the CPU Blade(s)

You have to access the CPU blade(s) in order to install or replace CPUs, heatsinks and DDR memory DIMMs. Please follow the steps below to access CPU blades.

1. Select a CPU blade you wish to access the internal components.
2. Rotate and loosen the captive screws circled in the picture below. You may apply a screwdriver to conduct this task.

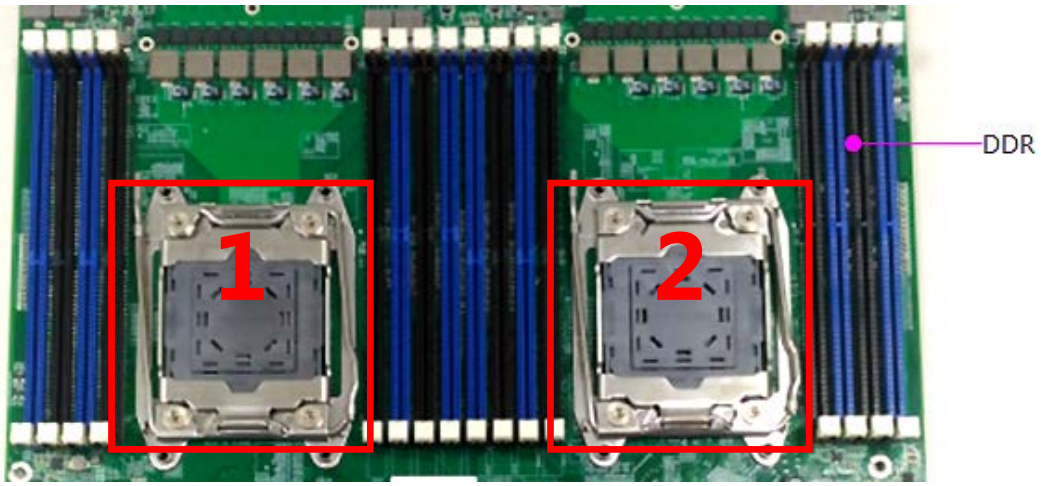
3. Hold onto both captive screws and handles and lift them upwards at the same time.



4. Apply some force to pull the CPU blade out.

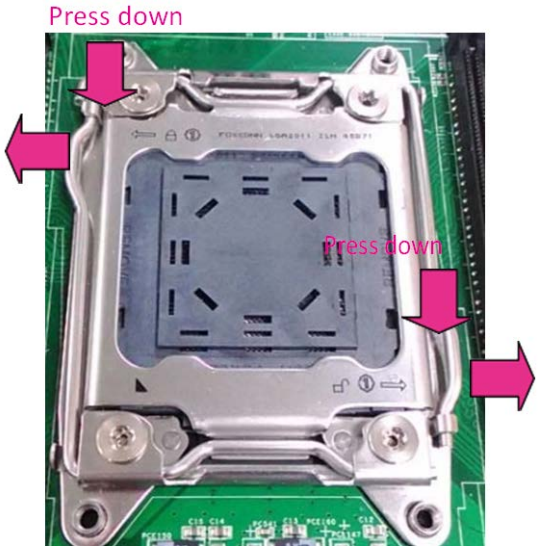
Installing the CPU and Heatsink

If only one CPU is to be installed, make sure you populate the CPU slot on the left.



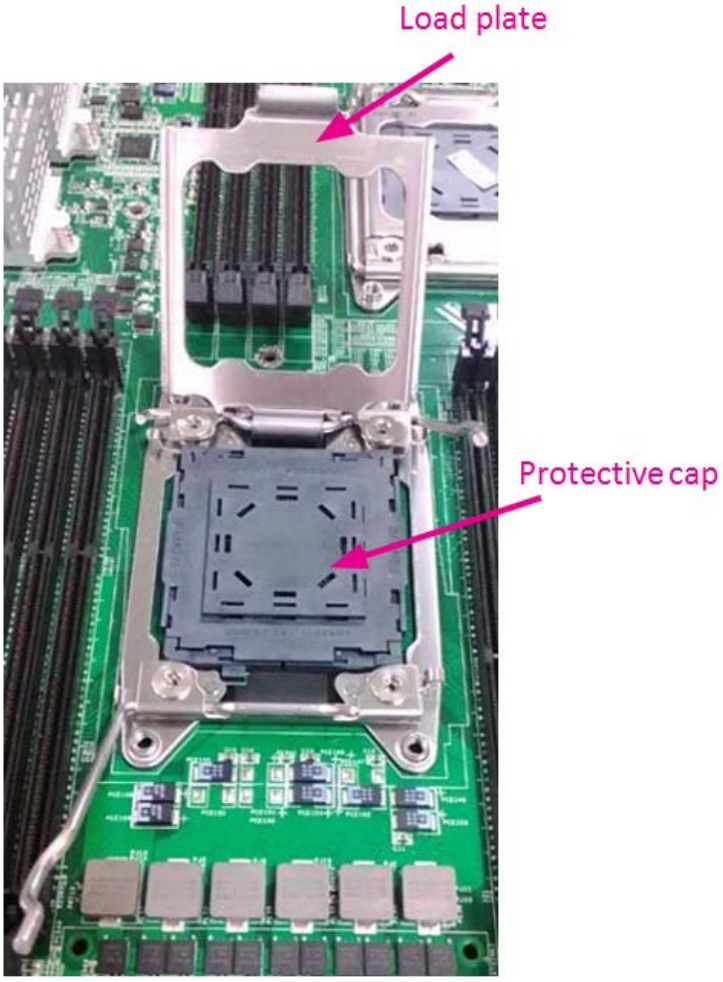
Follow the procedures below for installing a CPU

1. Locate the CPU socket(s)
2. Press the left load lever down, move it out of the retention tab. Then, do the same to the right. There are two levers for each CPU socket.



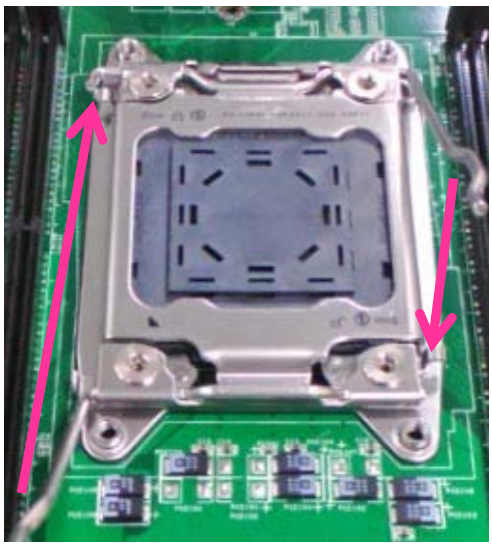
3. Lift the load levers.

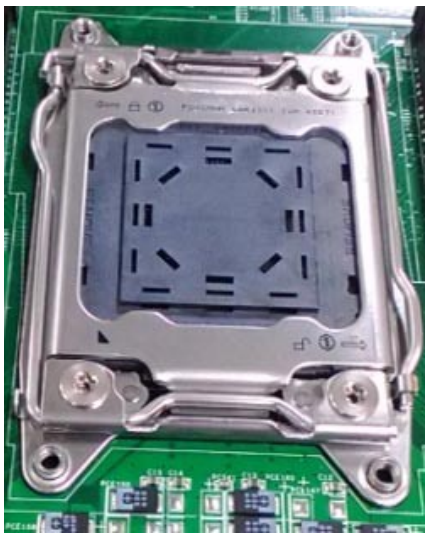
4. Open the load plate and also the protective cap.



5. Align 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.

6. Put the protective cap onto the CPU. Close the load plate and push the load lever to lock it back to the retention tab.





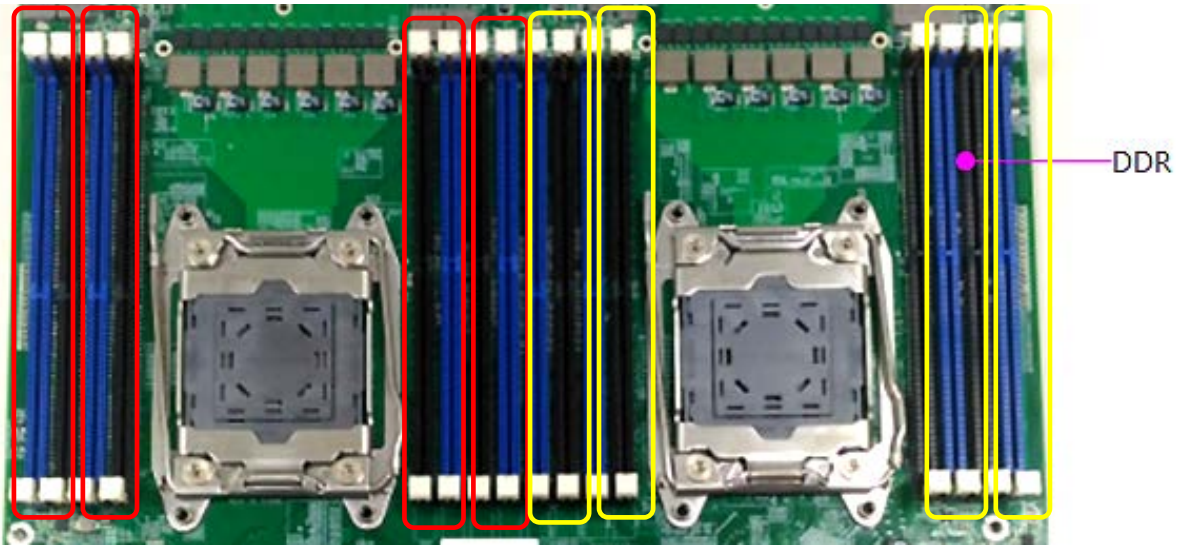
7. Put the heat sink on the installed CPU and match the screws with the screw holes on the board. Fasten two screws which are opposite to each other at a time and then the other two. It is easier this way to avoid the force of spring.
8. Place the heat sink cover on top of the installed heat sink and fasten it with screws on the chassis.

Note: (1) If you have only one CPU, install it on the left side (CPU socket No.1with the front panel facing you). Failing to do so will result in boot failure. (2)To protect the CPU socket pins, retain the CPU cap when the CPU is not installed.

Installing the System Memory

The motherboard supports 16x memory slots for DDR4 DIMM, organized in 8 pairs. The CPU requires at least 1 memory module to boot and run from.

- Supported Capacities: 8/16/32 GB
- Maximum RAM: 512 GB (32GB per slot)



DIMM Population Guidelines

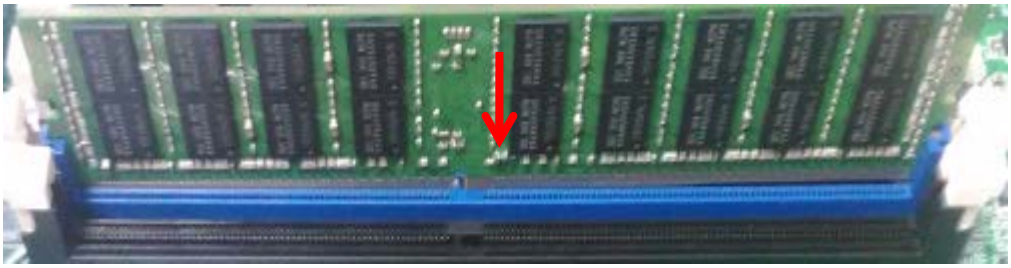
Please do follow the memory module installation instructions to install the DIMM, and make sure the DIMM population guidelines are met:

- Populate at least one DIMM for the left CPU socket.
- Within a pair (channel), the blue socket is always farther from the CPU than the other black socket; when installing the DIMMs, please start with the blue one.
- Please use memory modules of the same capacity, speed and from the same manufacturer to avoid compatibility issues.

Memory Module Installation Instructions

Please follow the steps below to install the DIMM memory modules.

1. Power off the system and locate the DDR DIMM slot.
2. Pull open the DIMM slot latches
3. Align the DIMM module and make sure the notches of the module aligned with the socket keys in the slot.

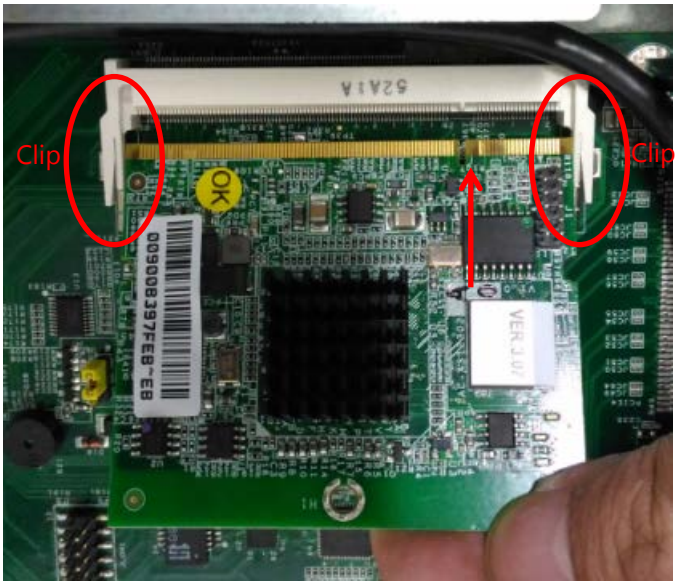


4. Insert the module into the slot until it's firmly seated and close the latches.

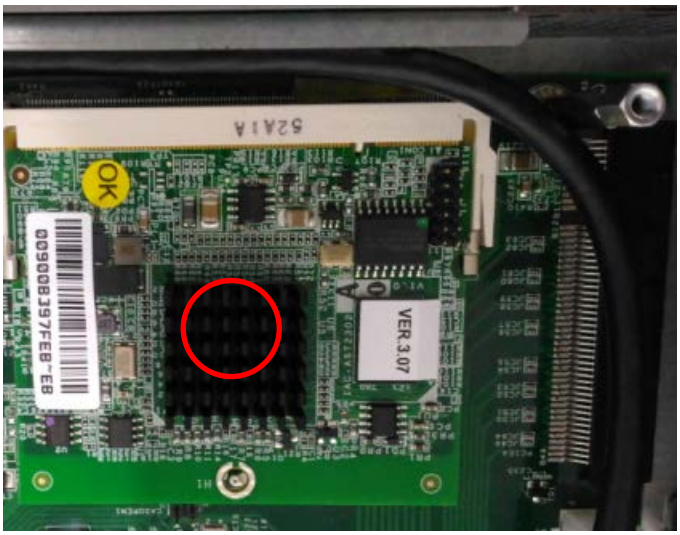
Installing an IPMI Card

The motherboard provides one OPMA socket which is used to install an IPMI card. Please follow the steps below for instructions.

1. Locate the OPMA socket.
2. Insert an IPMI card into the socket and then gently press it down. Remember to align the gold fingers and make sure the two clips securely secure the card.



3. Apply a screw to secure the IPMI card.



APPENDIX: 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 the 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 an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form " to your supplier.

2. 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.

3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.

4. 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.

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
	09: Cache RMA Problem	15: PS2	21: Shut Down
03: CMOS Data Lost	10: Memory Socket Bad	16: LAN	22: Panel Fail
04: FDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
05: HDC Fail	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)
06: Bad Slot			

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date