HPM-GNRDE

Dual Intel®Xeon® 6 Processor EATX Server Board with IPMI2.0. Processor supports up to 350W TDP

User's Manual

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1 st	April 2025	Avalue	Initial Release
2 nd	June 2025	Avalue	Update 1.4 System Specifications

Declaration of Conformity

F©

This device complies with part 15 fcc rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received including interference that may cause undesired operation.

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.

CE statement

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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This manual is intended to be used as a practical and informative guide only and is subject to change without notice. It does not represent a commitment on the part of Avalue. This

product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support and Assistance

1. Visit the Avalue website at https://www.avalue.com/ where you can find the latest information about the product.

2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- · A complete description of the problem
- The exact wording of any error messages

To receive the latest version of the user's manual; please visit our Web site at: www.avalue.com

Product Warranty (Returns & Warranties policy)

1. Purpose

Avalue establishes the following maintenance specifications and operation procedures for providing the best quality of service and shortened repair time to our customers.

2. Warranty

2.1 Warranty Period

Avalue endeavors to offer customers the most comprehensive post-sales services and protection; besides offering a 2-year warranty for standard Avalue products, an extended warranty service can also be provided based on additional request from the customer. Within the warranty period, customers are entitled to receive comprehensive and prompt repair and warranty.

Standard products manufactured by Avalue are offered a 2-year warranty, from the date of delivery from Avalue. For ODM/OEM products manufactured by Avalue or PCBA with conformal coating, will follow up the define warranty of the agreement, otherwise will be offered 1-year warranty for ODM/OEM products but non-warranty for PCBA with conformal coating. For outsourcing parts kit by Avalue (ex: Motherboard, LCD touch panel, CPU, RAM, HDD) are offered a 6-month warranty, and Mobile/Tablet PC battery are offered a warranty of the half year, from the date of delivery by Avalue. Products before the mass production stage, i.e. engineering samples are not applied in this warranty or service policy. For extended warranty and cross-territory services, product defects resulting from design, production process or material are covered by the pre-set warranty period after the date of delivery from Avalue. For non-Avalue products, the product warranty and repair time shall be based on the service standards provided by the original manufacturer; in principle Avalue will provide these products a warranty service for no more than one year.

2.2 Maintenance services within the warranty period

In the case of Avalue product DOA (Defect-on-Arrival) when the customer finds any defect within 1 month after the delivery, Avalue will replace it with a new product in a soonest way. Except for custom products, once the customer is approved of a Cross-Shipment Agreement, which allows for delivery a new product to the customer before receiving the defective one, Avalue will immediately proceed with new product replacement for the said DOA case. On validation of the confirmed defect, Avalue is entitled to reserve the right whether to provide a new product for replacement. For the returned defective new product, it is necessary to verify that there shall be no bruise, alteration, scratch or marking to the appearance, and that none of the delivered accessories missing; otherwise, the customer will be requested to pay a processing fee. On the other hand, if the new product defect is resulting from incorrect configuration or erroneous use by the user instead of any problem of the hardware itself, the customer will also be requested to pay for relevant handling fees.

As for other conditions, Avalue will handle defects by way of repair. The customer will be requested to send the defective product to an Avalue authorized service center, and Avalue will return the repaired product back to the customer as soon as possible.

2.3 Ruling of an out-of-warranty defect

The following situations are not included in the warranty:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident or other causes. Avalue reserves the right for the ruling of the aforementioned situations.
- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules of non-Avalue products and accessories shall be in accordance with standards set up by the original manufacturer. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiration of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number.
- Products before the mass production stage, i.e. engineering samples.

3. Procedure for sending for repair

3.1 Attain a RMA number

A customer's rejected product returned for repair shall have a RMA (Return Merchandise Authorization) number. Without a RMA number, Avalue will not provide any repair service for the rejected product, and the product will be returned to the customer at customer's cost. Avalue will not issue any notice for the return of the product.

Each returned product for repair shall have a RMA number, which is simply the authorization of the return for repair; it is not a guarantee that the returned goods can be repaired or replaced. For applying for a RMA number, the customer may enter the eRMA webpage of Avalue https://www.avalue.com/en/member and log-in with an account number and a password authorized by Avalue. The system will then automatically issue a RMA number.

When applying for the RMA number, it is essential to fill in basic information of the customer and the product, together with detailed description of the problem encountered. If possible, avoid using ambiguous words such as "does not work" or "problematic". Without a substantial description of the problem, it is hard to start the repair and will cause prolonged repair time. Lacking detailed statement of fault steps also makes the problem hard to be identified, sometimes resulting in second-time repairs.

In case the customer can't define the cause of problem, please contact Avalue application engineers. Sometimes when the problem can be resolved even before the customer sends back the product.

On the other hand, if the customer only returns the key parts to Avalue for repair, it is necessary that the serial number of the entire unit is given in the "Problem Description" field, so that warranty period can be ruled accordingly; or Avalue will handle the case as an Out-of- warranty case.

3.2 Return of faulty product for repair

It is recommended that the customer not to return the accessories (manual, connection cables, etc.) with the products for repair, devices such as CPU, DRAM, CF memory card, etc., shall also be removed from the faulty goods before return for repair. If these devices are relevant to described repair problems and necessary to be returned with the goods; please clearly indicate the items included in the eRMA application form. Avalue shall not be responsible for any item that is not itemized. Moreover, make sure the problem(s) are detailed in the "Problem Description" field.

In the list of delivery, the customer may fill-in a value which is lower than the actual value, to prevent customs levying a higher tax over the excessive value of the return goods. The customer shall be held responsible for extra fees caused by this. We strongly recommend that "Invoice for customs purpose only with no commercial value" be indicated on the delivery note. Also for the purpose of expedited handling, please printout the RMA number and put it in the carton, also indicate the number outside of the carton, with the recipient addressing to Avalue RMA Department.

When returning the defective product, please use an anti-static bag or ESD material to pack it properly. In case of improper packing resulting in damages in the transportation process, Avalue reserves the right to reject the un-repaired faulty good at the customer's costs. Furthermore, it is suggested that the faulty goods shall be sent via a door-to-door courier service. The customer shall be held responsible for any customs clearance fee or extra expenses if Air-Cargo is used for the delivery.

In case of a DOA situation of a new product, Avalue will be responsible for the product and the freight. If the faulty goods are within the warranty period, the sender will take responsibility for the freight. For an out-of-warranty case, the customer shall be responsible for the freight of both trips.

3.3 Maintenance Charge

Avalue will charge a moderate repair fee for the following conditions:

- The warranty period has expired.
- Product has been altered or its label of the serial number has been torn off.
- Product functionality issues resulting from improper use by the user, unauthorized dismantle or alteration, unfit operation environment, improper maintenance, accident

or other causes. Avalue reserves the right for the ruling of the aforementioned situations.

- Product damage resulting from lightning, flood, earthquake or other calamities.
- The warranty rules for non-Avalue products and accessories shall be in accordance with standards set up by the original supplier. These products and accessories include RAM, HDD, FDD, CD-ROM, CPU, FAN, etc.
- Product upgrade request or test request submitted by the customer after expiry of the warranty.
- PCBA with conformal coating.
- Avalue semi-product and outsourced products without Avalue serial number
- Products before the mass production stage, i.e. engineering samples.
- In case the products received are examined as NPF (No Problem Found) within the warranty period, the customer shall be responsible for the freight of both trips.
- Please contact your local distributor to examine in advance to prevent unnecessary freight cost.

For system failure of out-of-warranty products, Avalue will provide a quotation prior to repair service. When the customer applies for the cost, please refer to the Quotation number. In case the customer does not return the DOA product that has already been replaced by a new one, or the customer does not sign back the quotation of the out-of-warranty maintenance, Avalue reserves the right of whether or not to provide the repair service. In case the customer does not reply in 3 months, Avalue shall directly scrap or return the product back to customer at customer's cost without further notice to the customer.

3.4 Maintenance service of phased-out products

For servicing phased-out products, Avalue provides an extended period, starting the date of phase-out, as a guaranteed maintenance period of such products, for continuance of the maintenance service to meet customer's requirements. In case of unexpected factors causing Avalue to be unable to repair/replace a warranted but phased-out product, Avalue will, depending on the availability, upgrade the product (free of charge with continued warranty period as of the original product), or, give partial refund (based on the length of the remaining warranty period) to solve this kind of problem.

3.5 Maintenance Report

On completion of repair of a defective product, a Maintenance Report indicating the maintenance result and part(s) replaced (if any) will be sent to the customer together with the product. If the customer demands an additional maintenance analysis report, a service fee of various level will be charged depending on the warranty status. In case the analysis result shows that the defect attributes to Avalue's faulty design or process, the analysis fee will be exempted.

4. Service Products

Avalue provides service products to manage with different customer needs. Should you have any need, please consult to Avalue Sales Department.

Defect Analysis Report (DAR)

Avalue provides DAR (Defect Analysis Report) services aiming to elevating customer satisfaction. A DAR includes defect cause identification/verification/suggestion and improvement precautions, with instructions on correct usage for the avoidance of any reoccurrence.

Upgrade Service

Avalue is capable to provide system upgrade service for customization requirements. This upgrade service is applicable for main parts, such as CPU, memory, HDD, SSD, storage devices; also replacements motherboards of systems. Please contact Avalue sales for details to evaluate the possibility of system upgrade service and obtain information of lead time and price.

-

Explanation of Graphical Symbols

	Warning	A WARNING statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or serious injury.
$\underline{\mathbb{V}}$	Caution	A CAUTION statement provides important information about a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or in damage to the equipment or other property.
L	Note	A NOTE provides additional information intended to avoid inconveniences during operation.
DC		Direct current.
		Alternating current
Ċ		Stand-by, Power on
FC		FCC Certification
CE		CE Certification
		Follow the national requirements for disposal of equipment.
3		Stacking layer limit
		This side up

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	-	
Y	Fragile Packaging	
Ť	Beware of water damage, moisture-proof	
	Carton recyclable	
	Handle with care	
Res	Follow operating instructions of consult inst	ructions for use.

Disposing of your old product

WARNING:

There is danger of explosion if the battery is mishandled or incorretly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or ther liquids. Dispose of the battery in accordance with local regulations and instructions from your service provider.

CAUTION:

- Lithium Battery Caution: Danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type. Dispose batteries according to manufacturer's instructions.

- Disposal of a BATTERY into fire or a hot oven, or mechanically crushing or cutting of a BATTERY, that can result in an EXPLOSION

- Leaving a BATTERY in an extremely high temperature surrounding environment that can result in an EXPLOSION or the leakage of flammable liquid or gas.

- A BATTERY subjected to extremely low air pressure that may result in an EXPLOSION or the leakage of flammable liquid or gas.

Mise en garde!

AVERTISSEMENT : Il existe un risque d'explosion si la batterie est mal manipulée ou remplacée de manière incorrecte. Remplacez uniquement par le même type de batterie. Ne le démontez pas et ne tentez pas de le recharger en dehors du système. Ne pas écraser, percer, jeter au feu, court-circuiter les contacts externes ou exposer à l'eau ou à d'autres liquides. Jetez la batterie conformément aux réglementations locales et aux instructions de votre fournisseur de services.

MISE EN GARDE:

- Pile au lithium Attention : Danger d'explosion si la pile n'est pas remplacée correctement. Remplacer uniquement par un type identique ou équivalent. Jetez les piles conformément aux instructions du fabricant.

- L'élimination d'une BATTERIE dans le feu ou dans un four chaud, ou l'écrasement ou le découpage mécanique d'une BATTERIE, pouvant entraîner une EXPLOSION

- Laisser une BATTERIE dans un environnement à température extrêmement élevée pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.

- UNE BATTERIE soumise à une pression d'air extrêmement basse pouvant entraîner une EXPLOSION ou une fuite de liquide ou de gaz inflammable.

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

Français: Attention!



Débranchez le câble d'alimentation de votre châssis chaque fois que vous travaillez avec le matériel. Ne faites pas de connexion lorsque le système est allumé. Les composants électroniques sensibles peuvent être endommagés par les surtensions soudaines. Seule les personnels expérimentés de l'électronique peuvent ouvrir le châssis du PC.

Il faut toujours mettre à la masse pour éliminer l'électricité statique avant de toucher la carte CPU. Les appareils électroniques modernes sont très sensibles aux électricité statique. Pour des raisons de sécurité, utilisez un bracelet électrostatique. Placez tous les composants électroniques sur une surface antistatique ou dans un sac antistatique quand ils ne sont pas dans le châssis.

Risque d'explosion si la batterie est remplacée par un type incorrect. Jetez les piles usagées selon les instructions





Warning!



Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

IT Room

RAL



Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Warning!



The device can only be used in a fixed location such as a lab or a machine room. When you install the device, ensure that the protective earthing connection of the socket-outlet is verified by a skilled person.

Warning!



acceptable. There is danger of explosion if the battery is mishandled or incorrectly replaced. Replace only with the same type of battery. Do not disassemble it or attempt to recharge it outside the system. Do not crush, puncture, dispose of in fire, short the external contacts, or expose to water or other liquids. Dispose of the battery in accordance with local

For RTC battery, current statement in the manual is

regulations and instructions from your service provider.

1.2 Packing List

Before installation, please ensure all the items listed in the following table are included in the package.

ltem	Description	Q'ty	
1	HPM-GNRDE motherboard	1	
2	I/O Shield	1	
3	LGA4710 CPU carrier-E2B	2	



If any of the above items is damaged or missing, contact your retailer.

1.3 Manual Objectives

This manual describes in details Avalue Technology HPM-GNRDE Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up HPM-GNRDE or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.4 System Specifications

System	
CPU	Dual Intel LGA4710 Sockets support Intel Xeon 6(6500P & 6700P) Processor
CFU	(Max. TDP at 350W)
BIOS	AMI UEFI BIOS
System Memory	16 x DDR5 6400MT/s RDIMM & 8000MT/s MRDIMM Up to 4TB
	System reset event
Watchdog Timer	0~6553 second.
	Temperature.
H/W Status	Fan.
Monitor	Voltage.
	Case open. (1 x 2.5mm pitch Box Wafer, Pinrex 753-71-02TW07 or equivalent)
	Intel VMD and Virtual RAID on CPU(VROC)
RAID	1 x Intel VROC header
	(Note: RAID key for CPU PCIe NVME only)
ТРМ	TPM 2.0 NuvoTon_NPCT760AABYX or equivalent
	TCM Nationz Z32H330TC or equivalent (Optional)
Other	IPMI 2.0 with AST 2600 BMC controller onboard.
Expansion Slot	
	5 x PCIe Gen5 x16 & 1 x PCIe Gen5 x8 slots
	Slot 1, PCIe Gen5 x16 from 1st CPU
	Slot 2, PCIe Gen5 x16 from 2nd CPU
PCle	Slot 3, PCIe Gen5 x16 from 2nd CPU
	Slot 4, PCIe Gen5 x16 from 2nd CPU
	Slot 5, PCIe Gen5 x16 from 2nd CPU
	Slot 6, PCIe Gen5 x8 from 1st CPU(This Slot is closest to the CPU)
Storage	
	1 x M.2 M-Key Slot to support 1 x PCIe 5.0 x4 NVMe SSD from 1st CPU
M.2	2242/2260/2280/22110 form factor
111.2	1 x M.2 M-Key Slot to support 1 x PCIe 5.0 x4 NVMe SSD from 1st CPU
	2242/2260/2280 form factor
	5x SATA III Supports up to 6.0 Gb/s
SATA	2 x Mini-SAS HD 4i (for 4x SATA Only)
	1 x 7pin SATA connector
Other	4 x Slim SAS 8i (SFF-8654) connector (from 1st CPU)
Otter	3 x MCIO x8 connectors (SFF-TA-1016) (from 2nd CPU)
Edge I/O	

		. ,	•	e) dual port right angle)		
	5 x RJ45 (Including MGMT, LAI	N1, 2, 3, an	d 4)		
	MGMT port: Dedicated IPMI function access					
	LAN 1: 1G	bE Ethernet port, LA	N1 shared v	with IPMI function access	S	
	(Connecto	r: 1 x 1G Base-T RJ	45 module	jack over 2 x USB 3.2 (Gen2 stacked	
LAN	receptacle)				
	LAN 2: 1G	bE Ethernet port				
	(Connecto	r: 1 x 1G Base-T F	RJ45 modu	lle jack over 2 x 3.2 C	Gen2 stacked	
	receptacle)				
	LAN 3 and	4: 2 x 10GbE Etherr	net ports			
	(Connecto	r: 1 x 2X1 10G Base-	T RJ45 mo	dule jack)		
	4 x USB 3	.2 Gen2 ports				
	(Connecto	r: 1 x 1G Base-T RJ4	5 module ja	ack over 2 x USB 3.2 Ge	n2 stacked	
	receptacle)	-			
USB	(Connecto	r: 1 x 1G Base-T RJ4	5 module ja	ack over 2 x USB 3.2 Ge	n2 stacked	
	receptacle		,			
	2 x USB 3.2 Gen2 ports by ASMEDIA ASM3142 (From PCIe Gen3 x2)					
	(Connector: USB 3.0 type A double stacked USB receptacle)					
				DB-9(male) and DB-15(fe	emale) dual	
VGA	port right a	•				
Onboard I/O	portrigite					
	1 x RS232	ports (1 x 2 0mm pit	ch Box Hea	ider) reserved		
СОМ	1 x RS232 ports (1 x 2.0mm pitch Box Header) reserved *(S/W disable, only supported Ubuntu 24.02 if enable function)					
CONN	Pin definition: Follow Avalue standard.					
	2 x USB 3.1 Gen1 ports					
	-1 x USB 3.1 Gen1 2.0mm pitch Box Header (Pinrex 52X-8020GB52 or					
	equivalent)					
USB						
	3 x USB 3.1 Gen1					
	-1 x USB3.1 Gen1 2.0mm pitch Box Header (Pinrex 52X-8020GB52 or					
	equivalent)					
	-1 x USB 3	3.1 Gen1 type A rece	ptacle			
CPU/System FAN	2 x 4 Pin 0	CPU Fan Header (4 P	in PWM)			
	6 x 4 Pin 0	Chassis Fan Header (4 Pin PWM	, 2 for front fans and 4 fo	or rear fans)	
Buzzer	1 x onboai	rd buzzer				
	1 x front p	anel connector (2.54	mm Pitch)			
	Pin	Function	Pin	Function		
Front Panel	1-3	HDD LED	2-4	POWER LED		
	5-7	RESET BUTTON	6-8	POWER BUTTON		
	9-11	STATUS LED	10-12	LAN1 ACT LED		
	11		1	1		

	13-15	UID LED	14-16	OTO	Y POWER LED		
		_				_	
	17-19	UID BUTTON	18-20		I2-X ACT LED		
	Notes: LAN	N2-X ACT LED, "X"	means the	max nı	umber of Etherne	t ports.	
RTC Battery	1 x Horizoi	ntal Socket Type CN	IOS Batter	y Holde	er with CR2450 +		
KIC Dallery	NXP/PCF8	35053ATKJ					
Clear CMOS	1 x Clear C	CMOS header (1 x 2	.0 mm pitc	h Head	er)		
	1 x Inlet se	ensor onboard					
	1 x Outlet	sensor onboard					
Other	1 x Inlet se	ensor header					
	1 x Outlet	sensor header					
		ard and external ser	nsors will c	o-exist)			
Display							
Display		ort (DR15 on odgo l	(0)				
Graphic Chipset	1 x VGA port (DB15 on edge I/O)						
		BMC controller					
Spec. & Resolution	1920x1200)@60Hz 32bpp					
Ethernet							
LAN Chipset	2 x Intel I210AT 1GbE controller						
LAN Ompset	1 x Intel E610-XAT2 10GbE controller supports 2 x 10GbE Ethernet ports						
	2 x 1G Base-T Ethernet Controller						
LAN Spec.	1 x Dual 10G Base-T Ethernet controller						
	1G LAN:						
		1 1	Dicht	Ta	eft		
	WOL	Status	Right Yellow	Green	Orange		
	Don't car	e No Link					
	Off	S3/S4/S5	Ŏ	Ŏ			
LED Indicator	On	10Mb Inactive		_			
	On On	10Mb Active 100Mb Inactive	В				
	On	100Mb Active	В	-			
	On	1Gb Inactive					
	On	1Gb Active	В	Ŏ			
	10G LAN:						

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		Dicht			Jser's Ma
Status		Right Yellow	Green	Orange	
No Link					
S5 AC on mo	ment	В			
S5 100Mb					
S5 100Mb					
S5 1Gb In					
S5 1Gb Ac		-X -		B 5	
S5 2.5Gb I					
S5 2.5 Gb 1	Active	-X -			
S5 5Gb Ir					
S5 5Gb Ad	ctive	╞╋╌			
S5 10Gb 1		-8-	-8-		
S5 10Gb 1	Active	ð	ð		
		Right	Le	ft	
Status		Yellow	Green	Orange	
No Link					
S5		The sar	ne with S0 s	tate	
100Mb Ina					
100Mb Act		В			
1Gb Inact					
1Gb Activ		В			
2.5Gb Inac		В	_		
2.5Gb Acti 5Gb Inact					
5Gb Activ		В			
10Gb Inac					
10Gb Acti		В			
Power Indica	tor: To ident	ify whether	the syster	m is ready or de	ad.
1. Power but	ton ON				
2. Power ind	icator ON				
3. BIOS initia	alization, Po	wer indicato	or from ON	l to blinking	
4. Power ind	icator to alw	ays on mea	ne.		
			113.		
		-	113.		
A. ON.		-	113.		
A. ON. B. System E	rror.				
	rror.	1	Memo		FAN status
B. System E		1			FAN status
B. System E Power		1		off	FAN status
B. System E Power Indicator OFF	Condition S5		Memo Power of		OFF
B. System E Power Indicator	Condition S5	n ways Failed	Memo Power o System	boot failed/VGA	
B. System E Power Indicator OFF	Condition S5		Memo Power of	boot failed/VGA	OFF
B. System E Power Indicator OFF	Condition S5	ways Failed	Memo Power o System is not re	boot failed/VGA	OFF
B. System E Power Indicator OFF ON	Condition S5 System al	ways Failed	Memo Power of System is not re VGA is	boot failed/VGA eady ready. (Informed	OFF ON
B. System E Power Indicator OFF ON ON	Condition S5 System al BIOS read	ways Failed dy to boot	Memo Power of System is not re VGA is by BIOS	boot failed/VGA eady ready. (Informed S)	OFF ON ON
B. System E Power Indicator OFF ON	Condition S5 System al	ways Failed dy to boot	Memo Power of System is not re VGA is by BIOS Blinking	boot failed/VGA eady ready. (Informed S)	OFF ON

HPM-GNRDE User's				
Mechanical &				
Environmental				
Power Requirement	1 x Std. 24 pin ATX Connector			
rower Kequitement	4 x 8 Pin SSI 12V Connectors			
ACPI	Yes, S0 and S5			
Dower Mode	H/W: ATX power well design only			
Power Mode	BMC: AT (Default)			
On continue Terror	0 ~ 50°C (32 ~ 122°F)to support up to 350W TDP CPU			
Operating Temp.	0 ~ 50°C (32 ~ 122°F)to support up to 270W TDP CPU			
Storage Temp.	-40 °C to 85 °C			
Operating Humidity	40°C 95% non-condensing			
	EATX form factor			
Size (L x W)	12" x 14.5" (304.8mm x 368.3mm), PCB thickness is 2.8mm			
Weight	1.95 kg			
	Follow Avalue standard test.			
	Random Vibration Operation			
	Reference IEC60068-2-64 Testing procedures			
	1. Test PSD : 0.00454G²/Hz , 1.5 Grms			
	2. System condition : operation mode			
	3. Test frequency : 5~500 Hz			
	4. Test axis : X,Y and Z axis			
	5. Test time : 30 minutes per each axis			
	6. System condition : Operation mode			
	7. IEC60068-2-64 Test Fh			
	Storage : mSATA			
	Random vibration test (Non-operation)			
	Reference IEC60068-2-64 Testing procedures			
Vibration Test	1. PSD: 0.00808G ² /Hz , 2.0 Grms			
	2. Non-Operation mode			
	3. Test Frequency : 5-500Hz			
	4. Test Axis : X,Y and Z axis			
	5. 30 min. per each axis			
	6. System condition : Non-Operation mode			
	7. IEC 60068-2-64 Test:Fh			
	Package Vibration Test:			
	Reference IEC60068-2-64 Testing procedures			
	1. Test PSD : 0.026G ² /Hz , 2.16 Grms			
	2. Non-operation mode			
	3. Test frequency : 5~500 Hz			
	4. Test axis : X,Y and Z axis			

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	5. Test time : 30 minutes per each axis
	6. IEC 60068-2-64 Test Fh
	Follow Avalue standard test.
	Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed
	Test Ea : Drop Test
Drop Test	1 Test phase : One corner, three edges, six faces
	2 Test high : 96.5cm
	3 Package weight : 5Kg
	4 Test drawing
	Windows 11 SAC and LTSC
OS Information	Windows Server 2025.
03 information	Ubuntu 24.02
	Red Hat Enterprise Linux (RHEL) 8.0 or above



Note: Specifications are subject to change without notice.

DIMM pop	pulation requirements				
			Install D	IMM Qty:	
DIMM No.	CPU MEM Ch.	1	4	4	8
DIMM1	CPU1 CH-A DIMM0	V	V		V
DIMM2	CPU1 CH-B DIMM0			V	V
DIMM3	CPU1 CH-C DIMM0		V		V
DIMM4	CPU1 CH-D DIMM0			V	V
DIMM5	CPU1 CH-E DIMM0		V		V
DIMM6	CPU1 CH-F DIMM0			V	V
DIMM7	CPU1 CH-G DIMM0		V		V
DIMM8	CPU1 CH-H DIMM0			V	V

DIMM pop	pulation requirements				
			Install DIMM Qty:		
DIMM No.	CPU MEM Ch.	2	8	8	16
DIMM1	CPU1 CH-A DIMM0	V	V		V
DIMM2	CPU1 CH-B DIMM0			V	V
DIMM3	CPU1 CH-C DIMM0		V		V
DIMM4	CPU1 CH-D DIMM0			V	V
DIMM5	CPU1 CH-E DIMM0		V		V
DIMM6	CPU1 CH-F DIMM0			V	V
DIMM7	CPU1 CH-G DIMM0		V		V
DIMM8	CPU1 CH-H DIMM0			V	V
DIMM9	CPU2 CH-A DIMM0	V	V		V
DIMM10	CPU2 CH-B DIMM0			V	V
DIMM11	CPU2 CH-C DIMM0		V		V
DIMM12	CPU2 CH-D DIMM0			V	V
DIMM13	CPU2 CH-E DIMM0		V		V
DIMM14	CPU2 CH-F DIMM0			V	V
DIMM15	CPU2 CH-G DIMM0		V		V
DIMM16	CPU2 CH-H DIMM0			V	V

1.5 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of HPM-GNRDE.



2. Hardware Configuration

User's Manual

2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



Closed

Closed 2-3

The jumper settings are schematically depicted in this manual as follows:

0 0		1 2 3 O
Open	Closed	Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers		
Label	Function	Note
JPBOOT_UART5	Boot UART5 setting	3 x 1 header, pitch 2.00mm
JPALLPWRON1	Force PWRON setting	3 x 1 header, pitch 2.00mm
JPCMOSCLEAR1	Clear CMOS	3 x 1 header, pitch 2.00mm
Connectors		
Label	Function	Note
SYS_FAN1-6	System fan connector 1-6	4 x 1 wafer, pitch 2.54mm
CPU_FAN1-2	CPU fan connector 1-2	4 x 1 wafer, pitch 2.54mm
VGA COM1	Serial port 1 connector	
VGA_CONT	VGA connector	
JCOM2	Serial port 2 connector	5 x 2 wafer, pitch 2.00mm
JCOM5	BMC_UART5 debug connector	4 x 1 header, pitch 2.54mm

MGMT1	MGMT port	
PCIE1	PCIe Gen5 x16	
PCIE2	PCIe Gen5 x16	
PCIE3	PCIe Gen5 x16	
PCIE4	PCIe Gen5 x16	
PCIE5	PCIe Gen5 x16	
PCIE6	PCIe Gen5 x8 (The slot closest to CPU)	
JFP1	Front Panel connector	10 x 2 wafer, pitch 2.54mm
	2 x USB3.2 Gen2 connector	
USB_LAN1	1 x RJ-45 Ethernet (LAN1 Share IPMI	
	Port)	
USB_LAN2	2 x USB3.2 Gen2 connector	
	1 x RJ-45 Ethernet	
LAN3_4	2 x RJ-45 Ethernet	
USB1	2 x USB3.2 Gen2 connector	
USB2	USB3.2 Gen1 connector	
JUSB1	USB3.2 Gen1 connector	10 x 2 wafer, pitch 2.00mm
JUSB2	USB3.2 Gen1 connector	10 x 2 wafer, pitch 2.00mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00mm
JESPI1	ESPI connector	6 x 2 header, pitch 2.00mm
SATA1	Serial ATA connector	
MINISAS-HD1/2	2 x Mini-SAS HD 4i (for 4x SATA Only)	
SLIMSAS1-4	4 x Slim SAS 8i (SFF-8654) connector	
JRAID_KEY1	VROC Header	4 x 1 header, pitch 2.00mm
DIMM1-16	16 x DDR5 RDIMM socket	
JCASE_OPEN1	CASE OPEN connector	2 x 1 wafer, pitch 2.50mm
ATX12V1	ATX 12V power connector 1	4 x 2 wafer, pitch 4.20mm
ATX12V2	ATX 12V power connector 2	4 x 2 wafer, pitch 4.20mm
ATX12V3	ATX 12V power connector 3	4 x 2 wafer, pitch 4.20mm
ATX12V4	ATX 12V power connector 4	4 x 2 wafer, pitch 4.20mm
ATXPWR1	ATX power connector	12 x 2 wafer, pitch 4.20mm
JPMBUS1	Power supply PMBus connector	5 x 1 wafer, pitch 2.54mm
JINLET_SER1	Inlet Thermal Sensor	4 x 1 wafer, pitch 2.00mm
JOUTLET_SER1	Outlet Thermal Sensor	4 x 1 wafer, pitch 2.00mm
JHDD_SER1	HDD Backplane thermal Sensor	5 x 1 wafer, pitch 2.00mm
JPEHPSMB1	CPU PCIE HP SMB connector	5 x 1 header, pitch 2.00mm

JNMI_BTN1	NMI button	3 x 1 header, pitch 2.00mm	
M2(NGFF)1/2	2 x M.2 M-Key PCIe 5.0 x4 NVMe SSD		
JCPLD_JTAG1	CPLD JTAG header	5 x 2 header, pitch 2.54mm	
MCIO1-3	3 x MCIO x8 connectors (SFF-TA-1016)		
JPMFG1	MFG mode select	3 x 1 header, pitch 2.00mm	

2.3 Setting Jumpers & Connectors

Force PWRON setting (JPALLPWRON1) 2.3.1



* Default

Clear CMOS (JPCMOSCLEAR1) 2.3.2



* Default



Enable

3



Normal RTC Reset*

	3
۰	1

Clear RTC REGISTERS



2.3.3 Boot UART5 setting (JPBOOT_UART5)



Disable*



Enable BOOT FROM UART5

	3
	1

* Default

2.3.4 CPLD JTAG header (JCPLD_JTAG1)



	9
	1

Signal	PIN	PIN	Signal
+3.3VSB	10	9	JTAG_TDI_CONN
NC	8	7	NC
NC	6	5	JTAG_TMS_CONN
+3.3VSB	4	3	JTAG_TDO_CONN
CPLD_JTAG_MUX_CTL	2	1	JTAG_TCK_CONN



2.3.5 System fan connector 1 (SYS_FAN1)



Signal	PIN
SYS_PWM1	4
FAN_R2_TACH1	3
+12V	2
GND	1

2.3.6 System fan connector 2 (SYS_FAN2)





Signal	PIN
SYS_PWM2	4
FAN_R2_TACH2	3
+12V	2
GND	1



2.3.7 System fan connector 3 (SYS_FAN3)



Signal	PIN
SYS_PWM3	4
FAN_R2_TACH3	3
+12V	2
GND	1

2.3.8 System fan connector 4 (SYS_FAN4)





Signal	PIN
SYS_PWM4	4
FAN_R2_TACH4	3
+12V	2
GND	1


2.3.9 System fan connector 5 (SYS_FAN5)



Signal	PIN
GND	1
+12V	2
FAN_R2_TACH5	3
SYS_PWM5	4

2.3.10 System fan connector 6 (SYS_FAN6)





Signal	PIN
GND	1
+12V	2
FAN_R2_TACH6	3
SYS_PWM6	4



2.3.11 CPU fan connector 1 (CPU_FAN1)



Signal	PIN
GND	1
+12V	2
FAN_R2_TACH0	3
CPU0_PWM	4

2.3.12 CPU fan connector 2 (CPU_FAN2)





Signal	PIN
GND	1
+12V	2
FAN_R2_TACH7	3
CPU1_PWM	4

2.3.13 SPI connector (JSPI1)



	7
	1

Signal	PIN	PIN	Signal
SPI_DED_IO2	8	7	SPI_DED_IO3
SPI_DED_MOSI	6	5	SPI_ DED_MISO
SPI_DED_CLK	4	3	SPI_ DED_CS0_N
GND	2	1	ON_BIOS_SPI_VCC

2.3.14 Serial port 2 connector (JCOM2)



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T		• 1	
	•	•	c
IL-	_		

Signal	PIN	PIN	Signal
COM_RXD2	2	1	COM_DCD#2
COM_DTR#2	4	3	COM_TXD2
COM_DSR#2	6	5	GND
COM_CTS#2	8	7	COM_RTS#2
NC	10	9	COM_RI#2

2.3.15 BMC_UART5 debug connector (JCOM5)



1	

Signal	PIN
UART5_TX	1
UART5_RX	2
GND	3
+3.3VSB	4

2.3.16 ATX 12V power connector 1 (ATX12V1)



5			1
п		۲	
Ч	H	3	
8		8	4

Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND



2.3.17 ATX 12V power connector 2 (ATX12V2)



Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND

2.3.18 ATX 12V power connector 3 (ATX12V3)





Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND

2.3.19 ATX 12V power connector 4 (ATX12V4)





Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND

2.3.20 ATX power connector (ATXPWR1)

1

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Signal	PIN	PIN	Signal
+3.3V	13	1	+3.3V
-12V	14	2	+3.3V
GND	15	3	GND
FM_PS_EN_ PSU_N	16	4	+5V
GND	17	5	GND
GND	18	6	+5V
GND	19	7	GND
NC	20	8	PWRGD_PS_ PWROK_R
+5V	21	9	+V5SB
+5V	22	10	+12V
+5V	23	11	+12V
GND	24	12	+3.3V



2.3.21 Power supply PMBus connector (JPMBUS1)

2.3.22 USB3.1 Gen1 connector (JUSB1)



Signal	PIN
PSU_z_SCL	1
PSU_z_SDA	2
PSU_ALERT_z_N	3
GND	4
NC	5

11	19
10	1

Signal	PIN	PIN	Signal
		1	+V5S_USB_FRONT1
+V5S_USB_FRONT1	19	2	USB3_z_RN6
USB3_z_RN7	18	3	USB3_z_RP6
USB3_z_RP7	17	4	GND
GND	16	5	USB3_z_TN6
USB3_z_TN7	15	6	USB3_z_TP6
USB3_z_TP7	14	7	GND
GND	13	8	USB_z_PN6
USB_z_PN7	12	9	USB_z_PP6
USB_z_PP7	11	10	FRONTUSB3_OC1_N



HPM-GNRDE User's Manual 2.3.23 USB3.1 Gen1 connector (JUSB2)





Signal	PIN	PIN	Signal
		1	+V5S_USB_FRONT2
+V5S_USB_FRONT2	19	2	USB3_z_RN8
USB3_z_RN9	18	3	USB3_z_RP8
USB3_z_RP9	17	4	GND
GND	16	5	USB3_z_TN8
USB3_z_TN9	15	6	USB3_z_TP8
USB3_z_TP9	14	7	GND
GND	13	8	USB_z_PN8
USB_z_PN9	12	9	USB_z_PP8
USB_z_PP9	11	10	FRONTUSB3_OC2_N

2.3.24 Front Panel connector (JFP1)



1 19					
Signal	PIN	PIN	Signal		
+3.3VSB	2	1	HDD_LED_P		
PWRLED_R_N	4	3	LED_HDD_ACTIVITY_B_N		
FP_PWR_BTN_N_R	6	5	FP_RST_BTN_N_R		
GND	8	7	GND		
LAN1_FRONT_LED_ACT_P	10	9	STATUS_LED_P		
LAN1_LED_ACT_N	12	11	STATUS_LED_N		
SBPWRLED_P	14	13	FRONT_UID_LED_N		
GND	16	15	FRONT_UID_LED_P		
LAN2_FRONT_LED_ACT_P	18	17	FP_UID_BTN_N_R		
LAN2_LED_ACT_N	20	19	GND		

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2.3.25 Inlet Thermal Sensor (JINLET_SER1)



Signal		
+3.3VSB	4	
SMB_INLET_TEMPSENSOR_SDA	3	
SMB_INLET_TEMPSENSOR_SCL		
GND	1	

2.3.26 Outlet Thermal Sensor (JOUTLET_SER1)





Signal	
GND	1
SMB_OUTLET_TEMPSENSOR_SCL	2
SMB_OUTLET_TEMPSENSOR_SDA	3
+3.3VSB	4

2.3.27 HDD Backplane thermal Sensor (JHDD_SER1)



Signal	PIN
SSD_LED_N	1
GND	2
SMB_HDBP_TEMPSENSOR_SCL	3
SMB_HDBP_TEMPSENSOR_SDA	4
+3.3VSB	5

2.3.28 CASE OPEN connector (JCASE_OPEN1)





Signal	PIN
FP_CHASSIS_INTRUSION	1
GND	2







Signal	PIN
GND	1
PU_VROC_HW_KEY_CONN_PIN2_R	2
GND	3
PU_VROC_HW_KEY_R_LVC3	4

2.3.30 CPU PCIE HP SMB connector (JPEHPSMB1)



1

Signal	PIN
FM_SMB_CPU0_ALERT_N	5
GND	4
SMB_PEHPCPU0_LVC3_SDA	3
GND	2
SMB_PEHPCPU0_LVC3_SCL	1

2.3.31 ESPI connector (JESPI1)



	11
	1

Signal	PIN	PIN	Signal
ESPI_CONN_ALERT_P1V8_N	12	11	ESPI_CONN_RESET_P1V8_N
GND	10	9	NC
ESPI_CONN_CLK_P1V8	8	7	ESPI_CONN_D3_P1V8
ESPI_CPU0_CS_HDR_N	6	5	ESPI_CONN_D2_P1V8
RST_PLTRST_LPC_HEADER_N	4	3	ESPI_CONN_D1_P1V8
+3.3VSB	2	1	ESPI_CONN_D0_P1V8

2.3.32 NMI button (JNMI_BTN1)





Signal	PIN
GND	3
FP_NMI_BTN_N_R	2
NC	1

3. Drivers Installation

All the drivers are available on Avalue Downloads Area (<u>https://www.avalue.com/en/support/download</u>). Type the model name and press Enter to find all the relevant software, utilities, and documentation.

Note:

The box PC with projected capacitive type touchscreen and Windows 7 (or later) OS does not require touch driver installation. This is because there is a HID touch digitizer built-in driver in Windows 7 or later.

		Chipset 1	Audio 1	Graphics 1	LAN 1	Other 1	
Chi	pset						Total 1 Files
No.	Release Date	Title	Description				Download
01	2023-09-20	Intel Chipset Driver for Win10 x64	Windows	10 64bit			
Auc	lio						Total 1 Files
No.	Release Date	Title	Description				Download
01	2023-09-20	Realtek Audio Driver for Win10 x64	Windows	10 64bit			
			(For re	ference c	only)		
	Note : Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.						

3.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

www.avalue.com.



Note: The installation procedures and screen shots in this section are based on Windows 11 operation system. If the warning message appears while the installation process, click Continue to go on.



	adme File Information
***	*********
*	Product: Intel(R) Chipset Device Software
*	Package version: 10.1.19928.8615
*	Installer version: 3.1.7.201
*	Date: 07/24/2024
***	***************************************
	NOTE:
	For the list of supported chipsets, please refer
	to the Release Notes
***	*********************
*	CONTENTS OF THIS DOCUMENT
***	***************************************
Thi	s document contains the following sections:
1.	Overview
2.	System Requirements
21)

Step 3. Click Install.

Intel(R) Chipset Device Software Completion	(intel)
You have successfully installed the following product:	
ntel(R) Chipset Device Software	
Press Finish to complete the setup process.	
	Finish

Step 4. Click Finish to complete setup.

Step1. Click Next.



Step 2. Click Accept.

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3.2 Install VGA Driver

🗾 Win2025 All drivers can be found on the Avalue X Confirm Installation Official Website: www.avalue.com. The installer is ready to install Win2025 on your computer. Click "Next" to start the installation. Note: The installation procedures and screen shots in this section are based on Windows 11 operation system. < <u>B</u>ack <u>N</u>ext > Cancel Step 3. Click Next. 🗾 Win2025 X 🔙 Win2025 X Installation Complete Welcome to the Win2025 Setup Wizard Win2025 has been successfully installed. The installer will guide you through the steps required to install Win2025 on your computer. Click "Close" to exit. WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.

Step 1. Click Next to continue installation.

< <u>B</u>ack

<u>N</u>ext >

Cancel



Step 2. Click Next.

Step 4. Setup completed.

< <u>B</u>ack

Close

Cancel

All drivers can be found on the Avalue Official Website:

www.avalue.com.

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.

Installing Drivers			
Install or update	edrivers for Intel® Network C	onnections.	
		Cancel	

Step 1. Click OK to continue installation.

Installing Drivers		
Drivers for Intel® Network	k Connections were successfully installed.	
	<i>p</i>	

Step 2. Setup completed.

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3.4 Install QuickAssist Technology Driver

All drivers can be found on the Avalue Official Website:

www.avalue.com.

Ø		
	Note:	The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click Next to continue installation.



Step 2. Click Next.

Setup Options	in her
Select the program features you want installed.	inte
Click the icons in the tree below to change the wa	y features will be installed.
Drivers and Software Sample Code and Tools	Installs drivers and software necessary for Intel(R) QuickAssist Technology
	This feature requires 4800KB on your hard drive. It has 1 of 1 subfeatures selected. The subfeatures require 2356KB on your hard drive.
U	

Step 3. Click Next.

📮 Intel(R) QuickAssist Technology Install Wizard	×
Ready to Install the Program	Indeal
The wizard is ready to begin installation.	intel.
Click Install to begin the installation.	
If you want to review or change any of your installation setting exit the wizard.	is, click Back. Click Cancel to
< Back	Install

Step 4. Click Install.

install wizard Completed			intel
The install wizard has succe Technology. Click Finish to			ssist
To learn how to use Intel(R the Readme.txt file	l) QuickAssist	Technology, brow	se
You can find a summary of the installa Files\Intel\Intel(R) QuickAssist Techno		Readme.txt file in	C:\Program

Step 5. Click Finish to complete setup.

HPM-GNRDE User's Manual 3.5 Install VROC Driver

All drivers can be found on the Avalue Official Website:

www.avalue.com.



Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click Install to continue installation.



Step 2. Click Next.



Step 3. Click Accept.



Step 4. Click Next.

Warnings	Service Configuration
Destination	The Intel(R) Virtual RAID on CPU (VROC) out-of-band (OOB) service facilitates remote
	management of storage functionality. By default, this service does not run during system startup.
	Zun the Intel(R) VROC OOB service during system startup
	← Back Next →
9.0.0.2063	

Step 5. Click Next.

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Step 6. Click Install.



Step 7. Click Continue.



Step 8. Setup completed.



4.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

4.2 Starting Setup

AMI BIOS[™] is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing <ESC> or immediately after switching the system on, or

By pressing the < ESC> or key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <ESC> or to enter SETUP

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

4.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
\downarrow	Move to next item
<i>←</i>	Move to the item in the left hand
\rightarrow	Move to the item in the right hand
Esc key	Main Menu Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values
F3 key	Optimized defaults
F4 key	Save & Exit Setup

• Navigating Through The Menu Bar

Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

• To Display a Sub Menu

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A " \geq " pointer marks all sub menus.

4.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the <Enter> key again.

4.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

HPM-GNRDE User's Manual 4.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

4.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.

Main Advanced Platform CFG	Aptio Setup – AMI Socket CFG Server Mgmt Secur	ity Boot Save & Exit
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Access Level	American Megatrends 5.35 UEFI 2.9; PI 1.7 OACQZ 0.71 x64 03/31/2025 09:49:09 Administrator	Choose the system default language
Platform Information Platform Processor S3M IBL RC Revision BIOS ACM SINIT ACM	BeechnutCityRP A06D1 - GNR XCC Bx S3M 2.0 IBL SKU - A0 3544.P34 1.0.7 1.0.7	++: Select Screen ↑↓: Select Item Enter: Select
Memory Information Total Memory BIOS Name BIOS Version System Language System Date	32768 MB HPGNRDOJ 1.00 [English] [Fri 04/11/2025]	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System Time Ver	[11:43:14] sion 2.22.1294 Copyright (C) 20	25 AMI

4.6.1.1 System Language

This option allows choosing the system default language.

4.6.1.2 System Date

Use the system date option to set the system date. Manually enter the Month, day and year.

4.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen. Visit the Avalue website (<u>www.avalue.com</u>) to download the latest product and BIOS information.

4.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

Main Advanced Platform CFG Socke	Aptio Setup – AMI t CFG Server Mgmt Securit	y Boot Save & Exit
<pre>Expert Mode > Trusted Computing AST2600 Super ID Configuration > Serial Port Console Redirection > Option ROM Dispatch Policy USB Configuration > Network Stack Configuration > NVMe Configuration > Intel(R) I210 Gigabit Network Connec 00:04:5F:96:D2:46 > Intel(R) I210 Gigabit Network Connec 00:04:5F:96:D2:47 > Intel(R) Ethernet Controller E610 for 00:04:5F:96:D2:48 > Intel(R) Ethernet Controller E610 for 00:04:5F:96:D2:49 > Driver Health</pre>	stion – ⊃ 10GBASE-T –	Switch Expert mode or DQV mode ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2	.22.1294 Copyright (C) 2025	AMI

	Options	Description	
Expert mode	DQV mode [Default]	Switch Expert mode or DQV mode.	
	Expert mode	Switch Expert mode of DQV mode.	

4.6.2.1 Trusted Computing

TPM 2.0 Device Found		Enables or Disables BIOS
Firmware Version:	7.2	support for security device.
Vendor:	NTC	O.S. will not show Security Device. TCG EFI protocol and
		INT1A interface will not be
Active PCR banks	SHA256	available.
Available PCR banks	SHA256,SHA384	
SHA256 PCR Bank	[Enabled]	
SHA384 PCR Bank	[Disabled]	
Pending operation	[None]	
Physical Presence Spec Version 👘	[1.3]	
TPM 2.0 InterfaceType	[TIS]	++: Select Screen
Device Select	[Auto]	↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
		ESC: EXIL

	Options	Description
Security Device Support	Disable, Enable [Default]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA256 PCR Bank	Disabled, Enabled [Default]	Enables or Disables SHA256 PCR Bank.
SHA384 PCR Bank Disabled [Default], Enabled		Enables or Disables SHA384 PCR Bank.
Pending operation	None [Default] TPM Clear	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.
Physical Presence Spec	1.2	Select to Tell O.S. to support PPI Spec Version 1.2
Version	1.3[Default]	or1.3 Note some HCK tests might not support 1.3.
Device Select	TPM 2.0 Auto [Default]	TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

4.6.2.2 AST2600 Super IO Configuration

Advanced	Aptio Setup — AMI	
AST2600 Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
Super IO Chip ▶ Serial Port 1 Configuration	AST2600	I (Gunn)
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	2.22.1294 Copyright (C) 2025	AMI

Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).

4.6.2.2.1 Serial Port 1 Configuration

Advanced	Aptio Setup – AMI	
Serial Port 1 Configuration Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	Enable or Disable Serial Port (COM)
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
Version 2	2.22.1294 Copyright (C) 2025	F4: Save & Exit ESC: Exit

ltem	Option	Description
Serial Port	Enabled [Default] , Disabled	Enable or Disable Serial Port (COM).

4.6.2.3 Serial Port Console Redirection

Advanced	Aptio Setup — AMI	
COMO Console Redirection Console Redirection Settings Serial Port for Out-of-Band Managemer Windows Emergency Management Services Console Redirection EMS Console Redirection Settings		Console Redirection Enable or Disable.
		<pre>++: Select Screen t1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Options	Description
Console Redirection	Disabled [Default] ,	Console Redirection Enable or Disable.
	Enabled	

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Console Redirection EMS	Disabled [Default] ,	Console Redirection Enable or Disable.
	Enabled	Console Redirection Enable of Disable.

4.6.2.4 Option ROM Dispatch Policy

AMI ROM Dispatch Policy : A5.01.3		If system fails to boot and
Restore if Failure Primary Video Ignore	[Enabled] [Enabled]	this option is set to 'Enabled', software will reset
TTIMO 9 VIGEO ISHOLE	[Endbied]	settings of this page as well
Device Group Default ROM Policy		as CSM page to its default
(CSM not Active) - 'UEFI' used:		values automatically.
Device Class Option ROM Dispatch	Policy:	
	[Enabled]	
	[Enabled]	
	[Enabled]	
On Board Network Controller	[Enabled]	
Slot # 1 Empty	[Enabled]	
Slot # 2 Empty	[Enabled]	++: Select Screen
Slot # 3 Empty	[Enabled]	↑↓: Select Item
Slot # 4 Empty	[Enabled]	Enter: Select
Slot # 5 Empty	[Enabled]	+/-: Change Opt.
Slot # 6 Empty	[Enabled]	F1: General Help
Slot # 7 Empty	[Enabled]	F2: Previous Values
UNDUTION Observices Devices (a) Ostia	- 994	F3: Optimized Defaults F4: Save & Exit
WARNING: Changing Device(s) Optio		ESC: Exit
dispatch policy may affect system to post and/or boot!PROCEED WITH		ESU: EXIL
to post and/or boot:PROCEED WITH	CHOITON:	

Item	Options	Description
Restore if Failure	Disabled Enabled [Default] ,	If system fails to boot and this option is set to 'Enabled', software will reset settings of this page as well as CSM page to its default values automatically.
Primary Video Ignore	Disabled Enabled [Default] ,	If software will detect that due to the Policy settings. Option ROM of Primary Video Device will not dispatch, it will ignore this device policy settings, and restore it to 'Enable' automatically.
Slot#1 Empty	Enabled [Default], Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#2 Empty	Enabled [Default] , Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#3 Empty	Enabled [Default] , Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#4 Empty	Enabled [Default] , Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#5 Empty	Enabled [Default] , Disabled	Enable or Disable Option ROM execution for selected Slot.
Slot#6 Empty	Enabled [Default] , Disabled	Enable or Disable Option ROM execution for selected Slot.

4.6.2.5 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.



Item	Options	Description
Legacy USB Support	Enabled [Default] , Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Enabled [Default] , Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	Disabled Enabled [Default] ,	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec [Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec [Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto [Default] Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices	Auto [Default] Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

	5	
Advanced	Aptio Setup – AMI	
Network Stack	[Disabled]	Enable/Disable UEFI Network Stack
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.22.1294 Copyright (C	C) 2025 AMI

4.6.2.6 Network Stack Configuration

Item	Option	Description
Network stack	Enabled Disabled [Default]	Enable/Disable UEFI Network Stack.

4.6.2.7 NVMe Configuration



4.6.3 Platform Config

Main Advanced Platform CFG Socket	Aptio Setup – AMI CFG Server Mgmt Security	y Boot Save & Exit
Expert Mode(PLT config) ▶ IBL-IO Configuration ▶ Miscellaneous Configuration	(DQV mode)	Switch Expert mode or DQV mode
Setup Warning: Setting items on this Screen to incor may cause system to malfunction!	rect values	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Expert Mode(PLT config)	DQV mode [Default] Expert mode	Switch Expert mode or DQV mode.

4.6.3.1 IBL-IO Configuration

Platform CFG	Aptio Setup – AMI	
IBL-IO Configuration		Specify what state to go to when power is re-applied after a power failure (G3 state).
State After G3 After Type 8 Global Reset Last State	[S5 State] [Disabled]	
Enhance Port 80h LPC Decoding Flash Protection Range Registers (FPRR)	[Enabled] [Disabled]	
SPD Write Disable	[True]	
		++: Select Screen f↓: Select Item
		Enter: Select +/−: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
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Item	Option	Description
State After G3	S0 State	Specify what state to go to when power is
State Alter GS	S5 State[Default]	re-applied after a power failure (G3 state).
After Type 8 Global Reset Last	Disabled[Default]	Specify whether platform's previous state
State	Enabled	will be considered when deternining

		whether to power-up after non-thernal and non-explicitly requested type 8 globeal resets.
Enhance Port 80h LPC	Disabled	Support the word/dword decoding of port
Decoding	Enabled[Default]	80h behind LPC.
Flash Protection Range	Disabled[Default]	Enable Fleeb Protection Dange Degisters
Registers(FRRR)	Enabled	Enable Flash Protection Range Registers.
	Ture[Default]	Enchle/Dischle setting CDD Write Dischle
SPD Write Disable	False	Enable/Disable setting SPD Write Disable.

4.6.3.2 Miscellaneous Configuration

Platform (Aptio Setup – AMI CFG	
Miscellaneous Configuration	n	Select active Video type
		<pre>++: Select Screen 1↓: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
	Version 2.22.1294 Copyright ((C) 2025 AMI

ltem	Option	Description
	Auto[Default]	Select active Video type.
Active Video	Onboard Device(BMC	Early display always output to BMC-VGA.
Active video	VGA)	BIOS P.O.S.T display output to PCIe if system
	PCIE Device	have discrete GPU with Option Auto/PCIe-Device.

4.6.4 Socket Config

Main Advanced Platform CFG Socket	Aptio Setup – AMI CFG Server Mgmt Security	y Boot Save & Exit
Expert Mode(Socket config) > Processor Configuration > Memory Configuration > IIO Configuration > Advanced Power Management Configurati	(DQV mode) on	Switch Expert mode or DQV mode
		<pre>++: Select Screen t4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	22.1294 Copyright (C) 2025	AMI

Item	Options	Description	
Export Mode (Seeket config)	DQV mode[Default]	Switch Expert mode or DQV mode.	
Expert Mode (Socket config)	Expert mode	Switch Expert mode of DQV mode.	

4.6.4.1 Processor Configuration

	Change Per-Socket Settings
Socket 0 Socket 1 000A06D1* 000A06D1 2.100GHz 2.100GHz 15H 15H 08H 08H 01000380 01000380 112KB 112KB 2048KB 2048KB 294912KB 294912KB Intel(R) Xeon(R) 6740P Intel(R) Xeon(R) 6740P [ALL LPS]	
	000A06D1* 000A06D1 2.100GHz 2.100GHz 15H 15H 08H 08H 01000380 01000380 112KB 112KB 2048KB 2048KB 294912KB 294912KB Intel(R) Xeon(R) 6740P Intel(R) Xeon(R) 6740P [ALL LPS] [Disabled]

ltem	Option	Description
Enable LP [Global]	All LPs [Default] Single LP Two LPs	Enables Logical processor (Software Method o Enable/Disable Logical Processor threads).
Skip Flex Ratio Override	Disabled[Default]	Skip Flex Ratio override to use power-on default
		HPM-GNRDE User's Manual 69

	Enabled	Flex Ratio values. In multi-socket systems, this will
		allow mixed flex ratio limits.
APIC Physical Mode	Disabled[Default]	Enable/Disable the APIC physical destination
	Enabled	mode.

4.6.4.2 Memory Configuration

Soci	Aptio Setup — AMI ket CFG	
Integrated Memory Controller (iMC)		Maximum Host DDR Memory Frequency Selections in MT/s. If the "AUTO" option has been selected, a frequency is chosen automatically based on
Host Memory Frequency ▶ Memory Topology ▶ Memory RAS Configuration		the minimum tCK given by the SPD. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support). Note: For ♥ ++: Select Screen 14: Select Item
		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
-		
Version	2.22.1294 Copyright (C) 20	25 AMI

Auto[Default]3200360036004000400044004400440052005600	Item	Option	Description
		Auto [Default] 3200 3600 4000 4400 4800 5200	Maximum Memory Frequency Selections in MT/s. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory suppot (limited by processor

4.6.4.2.1 Memory Topology

Aptio Setup - AMI Socket CFG	
Socket0.ChA.Dimm0: 5600MT/s Actica SRx8 16GB RDIMM Socket1.ChA.Dimm0: 5600MT/s Actica SRx8 16GB RDIMM	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.22.1294 Copyright (C) 2025	AMI

4.6.4.2.2 Memory RAS Configuration

Aptio Setup - AMI Socket CFG		
 Memory RAS Configuration Se	tup	Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity
Mirror Mode UEFI ARM Mirror Mirror TADO	[Disabled] [Disabled] [Disabled]	 Hendeling the memory of bedefing the memory to be mirrored. If rank sparing is enabled partial mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirror ing will not take effect. Enabling any type work take effect. Enabli
	Version 2.22.1294 Copyright	(C) 2025 AMI

ltem	Option	Description
Mirror Mode	Disabled [Default] Full Mirror Mode	Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half, Partial Mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Enabling any type of Mirror Mode will disable XPT Prefetch.

UEFI ARM Mirror	Disabled[Default]	Imitate behavior of UEFI based Address Range
	Enabled	Mirror with setup option.
Mirror TAD0	Disabled [Default]	Enable Mirror on entire memory for TAD0.
	Enabled	

4.6.4.3 IIO Configuration

Socket CFG	
IIO Configuration	
 Socket0 Configuration Socket1 Configuration Global Configuration **: Select Screen **: Select Item T1: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit 	
Version 2.22.1294 Copyright (C) 2025 AMI	

4.6.4.3.1 Socket0 Configuration

Socket CFG	
SocketO Configuration	
PCIe0 Slot1 PCIe1 i210/i210/BMC2600/Renesas PCIe2 SLIMSAS-1/1/2/2 PCIe3 Slot6/E610/M.2-1 PCIe4 SLIMSAS-3/3/4/4 PCIe5 M.2-2/ASM3142/JMB585	
	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
4.6.4.3.1.1 PCI Express 0

	Aptio Setup – AMI Socket CFG	I
PCI Express 0 	[Auto]	Press <enter> to bring up the Intel VMD for Volume Management Device Configuration menu.</enter>
	Version 2.22.1294 Copyright	(C) 2025 AMI

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_xx_x16 x2x2x4x_x8 x4x2x2x_x8 x_x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x4x2x2x2x2x2 x4x4x4x2x2 x_x8x4x2x2 x4x4x4x2x2 x4x4x2x2x2 x4x2x2x2x2 x2x2x2x2x2 x2x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2 x2x2x2x2x2 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.1.1.1 Intel VMD technology

	Aptio Setup – AMI Socket CFG	
Intel VMD technology Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 size MemBar2 attribute VMD for Direct Assign		Enable/Disable VMD in this IID Domain. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ver	rsion 2.22.1294 Copyright (C) 20	925 AMI

ltem	Option	Description
Intel VMD technology	Disabled [Default]	
	Enabled	Intel VMD technology

4.6.4.3.1.1.2 Port A ~ Port H

Port A		This option disables the link so that the no training occur
Surprise Hot Plug Capable	[Disable]	but the CFG space is still active.
PCIe Loopback Mode	[Disable]	doctive.
Link Disable	[No]	
Override Max Link Width	[Auto]	
Support VC1	[Disable]	
Requested Link Speed	[Auto]	
DeEmphasis	[-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	++: Select Screen
SRIS	[Auto]	î↓: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS – 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest 🦷	[Enable]	
Rate on port		
		▼

Item	Option	Description
	No [Dofault]	This option disables the link so that the
Link Disable	No [Default] Yes	no training occurs but the CFG space is
	fes	still active.
	Auto [Default]	
	x1	
	x2	Override the max link width that was set
Override Max Link Width	x4	by bifurcation.
	x8	5
	x16	
	Disable[Default]	Enable/Disable PCIe Port VC1 support.
Support VC1	Enable	x2 ports share the same VC1 channel.
	Auto[Default]	
	Gen 1 (2.5 GT/s)	
	Gen 2 (5 GT/s)	
Requested Link Speed	Gen 3 (8 GT/s)	Choose Link Speed for this PCIe port.
	(<i>'</i>	
	Gen 4 (16 GT/s)	
	Gen 5 (32 GT/s)	
DeEmphasis	-6.0 dB[Default]	DeEmphais control (LNKCON2[6]) for
·	-3.5 dB	this PCIe port.
	Distinct	Configure port clocking via LNKCON[6].
Clocking	Common	This refers to this components and the
Clocking	Auto[Default]	down stream component. ;Auto' keeps
	Adio[Deladit]	board default.
Data Link Footure	Disable	Enable/Disable data link feature
Data Link Feature		negotiation in the Data Link Feature
Exchange	Enable [Default]	Capabilities (DLFCAP) register.
	128B	
	256B	Configure Max Payload Size Supported
MPSS	512B	in PCIe Device Capabilities register.
	Auto[Default]	'Auto' keeps hardware default.
		This option can disable ASPM support in
ASPM Support	Disabled [Default]	a PCIe root port. 'Auto' keeps hardware
	Auto	default.
		Enable/disable the Extended Sync
Extended Sync	Disable [Default]	Mode (D:x F:0 O:7Ch B:7) where x is
	Enable	0-9.
		'Disable' option can disable PCIe 10-bit
		•
		Tag Requester (not Completer) supoort
		in a PCIe Root Port. 'Auto' keeps
		hardware default. When disabled
	_	system FW does not configure 10-bit
	Disable	Tag in hierarchy under Root Port,
PCIe 10-bit Tag Support	Auto[Default]	however OS could reconfigure and
	Force Enable	enable it . Advanced user may use
		'Force Enable' option to enforce
		enabling 10-bit Tag in a hierarchy
		wherer Root Port is 10-bit Tag
		Completer capable, but not all nodes
		support 10-bit Tag Completer. The user
		HDM CNDDE Llear's Manual 75

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		assures, there will be no peer-to-peer
		traffic from node with 10-bit Tag
		Requester capability to a node without
		10-bit Tag Completer capability, In such
		hierarchy 10-bit Tag Requester is not
		enabled in Root Port regardless of Root
		Port capability.
		Controls the reporting of unsupported
Uppupperted Pequeet	Disable [Default]	requests that IIO itself detects on
Unsupported Request	Enable	requests its receives from a PCI
		Express/DMI port.
	KTI Option[Default]/Auto/	
	Enable for Remote InvItoM Hybrid	Enable/Disable IODC (IO Direct Cashe):
IODC Configuration	Push/InvItoM AllocFlow/	Generate snoops instead of memory
IODC Configuration	Enable for Remote InvItoM Hybrid	lookups, for remote InvItoM(IIO) and/or
	AllocNonAllow/Enable for Remote	WCiLF(cores).
	InvItoM and Remote WViLF	
МСТР	Disable	Enable/Disable MCTP.
MCTF	Enable [Default]	
Equalization Bypass To	Disable	Equalization Bypass To Highest Rate
Highest Rate on port	Enable [Default]	Support Enable/Disable.
	Disable [Default] Enable	Enable/Disable Intel Volume
Intel VMD Technology		Management Device Technology on
	Ellable	specific root port.

4.6.4.3.1.2 PCI Express 1

	Aptio Setup – AMI Socket CFG	
PCI Express 1 	[Auto]	Press <enter> to bring up the Intel VMD for Volume Management Device Configuration menu. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</enter>
	Version 2.22.1294 Copyright (C) (2025 AMI

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the

User's Manual

x_x8x_x8	controller.
x_x_x_x16	
x2x2x4x_x8	
x4x2x2x_x8	
x_x8x2x2x4	
x2x2x4x4x4	
x4x2x2x4x4	
x4x4x2x2x4	
x2x2x2x2x_x8	
x2x2x2x2x4x4	
x2x2x4x2x2x4	
x4x2x2x2x2x4	
x2x2x2x2x2x2x2x4	
x_x8x4x2x2	
x4x4x4x2x2	
x x8x2x2x2x2	
x2x2x4x4x2x2	
x4x2x2x4x2x2	
x4x4x2x2x2x2	
x2x2x2x2x4x2x2	
x2x2x4x2x2x2x2	
x4x2x2x2x2x2x2x2	
x2x2x2x2x2x2x2x2x2x2	

4.6.4.3.1.2.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology Intel VMD technology CfgBar size CfgBar attribute MemBar1 size	[Disable] 25 [64-bit prefetchable] 26	Enable/Disable VMD in this IIO Domain.
MemBar1 attribute MemBar2 size MemBar2 attribute VMD for Direct Assign	[32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Intel VMD technology	Disabled [Default]	Intel VMD technology
	Enabled	Inter VMD technology

HPM-GNRDE User's Manual 4.6.4.3.1.2.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Soc	Aptio Setup – AMI Ket CFG	
Soc Port A Surprise Hot Plug Capable PCIe Loopback Mode Link Disable Override Max Link Width Support VC1 Requested Link Speed DeEmphasis Max Link Width Current Link Width		▲ This option disables the link so that the no training occurs but the CFG space is still active.
Current Link Speed Clocking SRIS Data Link Feature Exchange MPSS Completion Timeout Value ASPM Support L1 Exit Latency Extended Sync PCIE 10-bit Tag Support Unsupported Request IODC Configuration MCTP Equalization Bypass To Highest Rate on port	Link Did Not Train [Auto] [Auto] [Enable] [Auto] [260ms to 900ms] [Disable] [8uS - 16uS] [Disable] [Auto] [Disable] [KTI Option] [Enable] [Enable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Intel VMD technology	[Disable]	
Version	n 2.22.1294 Copyright (C)	2025 AMI

4.6.4.3.1.3 PCI Express 2

	Aptio Setup – AMI Socket CFG	
PCI Express 2 Intel VMD technology Bifurcation Port A(PCIE Slot4) Port B Port C Port C Port C Port E Port F Port G Port H		Press (Enter> to bring up the Intel VMD for Volume Management Device Configuration menu. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vens	ion 2.22.1294 Copyright (C) 202	5 AMI

Item	Option	Description
	Auto[Default]	Select PCIe port Bifurcation for selected slot(s)
Bifurcation	x4x4x4x4	Port Format: xGxExCxA The port can further be
	x4x4x_x8	x2x2 Disable-disable all PCIe Lanes and the

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x_x8x4x4	controller.	
x_x8x_x8		
x_x_x_x16		
x2x2x4x_x8		
x4x2x2x_x8		
x_x8x2x2x4		
x2x2x4x4x4		
x4x2x2x4x4		
x4x4x2x2x4		
x2x2x2x2x_x8		
x2x2x2x2x4x4		
x2x2x4x2x2x4		
x4x2x2x2x2x4		
x2x2x2x2x2x2x2x4		
x_x8x4x2x2		
x4x4x4x2x2		
x_x8x2x2x2x2		
x2x2x4x4x2x2		
x4x2x2x4x2x2		
x4x4x2x2x2x2		
x2x2x2x2x4x2x2		
x2x2x4x2x2x2x2x2		
x4x2x2x2x2x2x2x2		
x2x2x2x2x2x2x2x2x2x2		
x2x2x4x2x2x4 x4x2x2x2x2x2x4 x2x2x2x2x2x2		

4.6.4.3.1.3.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable/Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 size VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

HPM-GNRDE User's Manual 4.6.4.3.1.3.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Soc	Aptio Setup – AMI Ket CFG	
Soc Port A Surprise Hot Plug Capable PCIe Loopback Mode Link Disable Override Max Link Width Support VC1 Requested Link Speed DeEmphasis Max Link Width Current Link Width		▲ This option disables the link so that the no training occurs but the CFG space is still active.
Current Link Speed Clocking SRIS Data Link Feature Exchange MPSS Completion Timeout Value ASPM Support L1 Exit Latency Extended Sync PCIE 10-bit Tag Support Unsupported Request IODC Configuration MCTP Equalization Bypass To Highest Rate on port	Link Did Not Train [Auto] [Auto] [Enable] [Auto] [260ms to 900ms] [Disable] [8uS - 16uS] [Disable] [Auto] [Disable] [KTI Option] [Enable] [Enable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Intel VMD technology	[Disable]	
Version	n 2.22.1294 Copyright (C)	2025 AMI

4.6.4.3.1.4 PCI Express 3

	Aptio Setup - AMI Socket CFG	
PCI Express 3 Port A(PCLE Slot2) Port B Port C Port D Port C Port C Port F Port G Port H	[Auto]	Press (Enter> to bring up the Intel VMD for Volume Management Device Configuration menu. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ve	ersion 2.22.1294 Copyright (C) 202	5 AMI

Item	Option	Description
	Auto[Default]	Select PCIe port Bifurcation for selected slot(s)
Bifurcation	x4x4x4x4	Port Format: xGxExCxA The port can further be
	x4x4x_x8	x2x2 Disable-disable all PCIe Lanes and the

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x_x8x4x4	controller.
x_x8x_x8	
x_x_x_x16	
x2x2x4x_x8	
x4x2x2x_x8	
x_x8x2x2x4	
x2x2x4x4x4	
x4x2x2x4x4	
x4x4x2x2x4	
x2x2x2x2x_x8	
x2x2x2x2x4x4	
x2x2x4x2x2x4	
x4x2x2x2x2x4	
x2x2x2x2x2x2x2x4	
x_x8x4x2x2	
x4x4x4x2x2	
x_x8x2x2x2x2	
x2x2x4x4x2x2	
x4x2x2x4x2x2	
x4x4x2x2x2x2	
x2x2x2x2x4x2x2	
x2x2x4x2x2x2x2	
x4x2x2x2x2x2x2x2	
x2x2x2x2x2x2x2x2x2x2	
x2x2x2x2x2x2x2x2x2x2	

4.6.4.3.1.4.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable/Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 size VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Option	Description
Intel VMD technology	Disabled [Default]	Intel VMD technology
	Enabled	Inter VMD technology

HPM-GNRDE User's Manual 4.6.4.3.1.4.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Soc	Aptio Setup – AMI Ket CFG	
Port A		This option disables the link so that the no training occurs but the CFG space is still
Surprise Hot Plug Capable PCIE Loopback Mode Link Disable Override Max Link Width Support VC1 Requested Link Speed DeEmphasis Max Link Width Current Link Width	[Disable] [Disable] [No] [Auto] [Disable] [Auto] [-6.0 dB] Max Width x16 Link Did Not Train Link Did Not Train	active.
Current Link Speed Clocking SRIS Data Link Feature Exchange MPSS Completion Timeout Value ASPM Support L1 Exit Latency Extended Sync PCIe 10-bit Tag Support Unsupported Request IODC Configuration MCTP	Link Uld Not Train [Auto] [Auto] [Enable] [Auto] [260ms to 900ms] [Disable] [8uS - 16uS] [Disable] [Auto] [Disable] [KTI Option] [Enable]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Equalization Bypass To Highest Rate on port Intel VMD technology	[Enable] [Disable]	

4.6.4.3.1.5 PCI Express 4

	Aptio Setup – AMI Socket CFG	
PCI Express 4 		Press <enter> to bring up the Intel VMD for Volume Management Device Configuration menu.</enter>
	ersion 2.22.1294 Copyright (C) 2025	- AMI

Item	Option	Description
	Auto[Default]	Select PCIe port Bifurcation for selected slot(s)
Bifurcation	x4x4x4x4	Port Format: xGxExCxA The port can further be
	x4x4x_x8	x2x2 Disable-disable all PCIe Lanes and the

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x_x8x4x4	controller.	
x_x8x_x8		
x_x_x_x16		
x2x2x4x_x8		
x4x2x2x_x8		
x_x8x2x2x4		
x2x2x4x4x4		
x4x2x2x4x4		
x4x4x2x2x4		
x2x2x2x2x_x8		
x2x2x2x2x4x4		
x2x2x4x2x2x4		
x4x2x2x2x2x4		
x2x2x2x2x2x2x2x4		
x_x8x4x2x2		
x4x4x4x2x2		
x_x8x2x2x2x2		
x2x2x4x4x2x2		
x4x2x2x4x2x2		
x4x4x2x2x2x2		
x2x2x2x2x4x2x2		
x2x2x4x2x2x2x2x2		
x4x2x2x2x2x2x2x2		
x2x2x2x2x2x2x2x2x2x2		
x2x2x4x2x2x4 x4x2x2x2x2x2x4 x2x2x2x2x2x2		

4.6.4.3.1.5.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable/Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 size VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Option	Description	
Intel VMD technology	Disabled [Default]	Intel VMD technology	
	Enabled	Inter VMD technology	

HPM-GNRDE User's Manual 4.6.4.3.1.5.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Soc	Aptio Setup – AMI Ket CFG	
Port A		This option disables the link so that the no training occurs but the CFG space is still
Surprise Hot Plug Capable PCIE Loopback Mode Link Disable Override Max Link Width Support VC1 Requested Link Speed DeEmphasis Max Link Width Current Link Width	[Disable] [Disable] [No] [Auto] [Disable] [Auto] [-6.0 dB] Max Width x16 Link Did Not Train Link Did Not Train	active.
Current Link Speed Clocking SRIS Data Link Feature Exchange MPSS Completion Timeout Value ASPM Support L1 Exit Latency Extended Sync PCIe 10-bit Tag Support Unsupported Request IODC Configuration MCTP	Link Uld Not Train [Auto] [Auto] [Enable] [Auto] [260ms to 900ms] [Disable] [8uS - 16uS] [Disable] [Auto] [Disable] [KTI Option] [Enable]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Equalization Bypass To Highest Rate on port Intel VMD technology	[Enable] [Disable]	

4.6.4.3.1.6 PCI Express 5

	Aptio Setup - AMI Socket CFG	
PCI Express 5 Intel VMD technology Bifurcation Port A(MCIO3) Port B Port C Port D Port E(MCIO2) Port F Port G Port H	[Auto]	Press <enter> to bring up the Intel VMD for Volume Management Device Configuration menu. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</enter>
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Item	Option	Description
	Auto[Default]	Select PCIe port Bifurcation for selected slot(s)
Bifurcation	x4x4x4x4	Port Format: xGxExCxA The port can further be
	x4x4x_x8	x2x2 Disable-disable all PCIe Lanes and the

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x_x8x4x4	controller.	
x_x8x_x8		
x_x_x_x16		
x2x2x4x_x8		
x4x2x2x_x8		
x_x8x2x2x4		
x2x2x4x4x4		
x4x2x2x4x4		
x4x4x2x2x4		
x2x2x2x2x_x8		
x2x2x2x2x4x4		
x2x2x4x2x2x4		
x4x2x2x2x2x4		
x2x2x2x2x2x2x2x4		
x_x8x4x2x2		
x4x4x4x2x2		
x_x8x2x2x2x2		
x2x2x4x4x2x2		
x4x2x2x4x2x2		
x4x4x2x2x2x2		
x2x2x2x2x4x2x2		
x2x2x4x2x2x2x2x2		
x4x2x2x2x2x2x2x2		
x2x2x2x2x2x2x2x2x2x2		
x2x2x4x2x2x4 x4x2x2x2x2x2x4 x2x2x2x2x2x2		

4.6.4.3.1.6.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable/Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 size VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Ve	ersion 2.22.1294 Copyright (C) 20	25 AMI

Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

HPM-GNRDE User's Manual 4.6.4.3.1.6.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Soci	Aptio Setup – AMI <et cfg<="" th=""><th></th></et>	
Port A		▲ This option disables the link
		so that the no training occurs
		but the CFG space is still
Surprise Hot Plug Capable	[Disable]	active.
PCIe Loopback Mode	[Disable]	
Link Disable	[No]	
Override Max Link Width	[Auto]	
Support VC1	[Disable]	
Requested Link Speed DeEmphasis	[Auto] [–6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	++: Select Screen
SRIS	[Auto]	14: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS - 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
мстр	[Enable]	
Equalization Bypass To Highest	[Enable]	
Rate on port		
Intel VMD technology		▼
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4.6.4.3.2 Socket1 Configuration



4.6.4.3.2.1 PCI Express 0

	Aptio Setup – AMI Socket CFG	
PCI Express 0 	[Auto]	Press <enter> to bring up the Intel VMD for Volume Management Device Configuration menu. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</enter>
	Version 2.22.1294 Copyright (C) 2025 AMI

Item	Option	Description
Bifurcation	Auto[Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_x2x4x4 x2x2x4x x8x2x2x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x4x4 x2x2x4x4 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.1.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable/Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar1 attribute MemBar2 size MemBar2 attribute	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable]	
VMD for Direct Assign	[Disable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Ve	ersion 2.22.1294 Copyright (C) 20	25 AMI

Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.1.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A		▲ This option disables the line so that the no training occur
Surprise Hot Plug Capable	[Disable]	but the CFG space is still active.
PCIe Loopback Mode	[Disable]	active.
Link Disable	[No]	
Override Max Link Width	[Auto]	
Support VC1	[Disable]	
Requested Link Speed	[Auto]	
DeEmphasis	[-6.0 dB]	
Max Link Width	Max Width ×16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	→+: Select Screen
SRIS	[Auto]	î↓: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS - 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit FSC: Exit
PCIe 10-bit Tag Support Unsupported Request	[Auto] [Disable]	ESU: EXIT
IODC Configuration	[KTI Option]	
MCTP		
Equalization Bypass To Highest	[Enable] [Enable]	
Rate on port	[Luante]	
Intel VMD technology	[Disable]	
THET WID COUNDINGS	[DI30DIC]	

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4.6.4.3.2.2 PCI Express 1

PCI Express 1		Press <enter> to bring up the</enter>
		Intel VMD for Volume Management Device
		Configuration menu.
Bifurcation	[Auto]	
Port A Port B		
Port C		
Port D		
Port E(MCIO1) Port F		
Port G		
Port H		++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
		LOOP EAST

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_x8x_x8 x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.2.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup - AMI Socket CFG	
Intel VMD technology		Enable∕Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 attribute VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.2.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A 		This option disables the link so that the no training occur but the SEC encode is still
Surprise Hot Plug Capable	[Disable]	but the CFG space is still active.
PCIe Loopback Mode	[Disable]	detive.
Link Disable	[No]	
Override Max Link Width	[Auto]	
Support VC1	[Disable]	
Requested Link Speed	[Auto]	
DeEmphasis	[-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	↔ Select Screen
SRIS	[Auto]	î↓: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable] [8uS – 16uS]	F2: Previous Values F3: Optimized Defaults
L1 Exit Latency Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest	[Enable]	
Rate on port	[2.10010]	
Intel VMD technology	[Disable]	₩

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4.6.4.3.2.3 PCI Express 2

PCI Express 2		Press <enter> to bring up the</enter>
		Intel VMD for Volume Management Device
Intel VMD technology		Configuration menu.
Bifurcation Port A(PCIe Slot4)	[Auto]	
Port B		
Port C Port D		
Port E		
Port F		
Port G Port H		
lor c n		++: Select Screen
		t↓: Select Item Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

ltem	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_x8x_x8 x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x4x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x4x2x2x2 x2x2x4x2x2 x4x4x2x2x2 x2x2x4x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2x2 x2x2x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2x2 x2x2x2x2x2x2 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.3.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup — AMI Socket CFG	
Intel VMD technology		Enable∕Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 size MemBar2 attribute VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.3.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A		▲ This option disables the link so that the no training occur
		but the CFG space is still
Surprise Hot Plug Capable	[Disable]	active.
PCIe Loopback Mode	[Disable]	
Link Disable	[No]	
Override Max Link Width	[Auto] [Disable]	
Support VC1	[DISable] [Auto]	
Requested Link Speed DeEmphasis	[Hulo] [-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	↔+: Select Screen
SRIS	[Auto]	14: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS – 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest 👘	[Enable]	
Rate on port		
		▼

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4.6.4.3.2.4 PCI Express 3

PCI Express 3		Press <enter> to bring up the Intel VMD for Volume</enter>
		Management Device Configuration menu.
Bifurcation	[Auto]	
Port A(PCIe Slot2) Port B		
Port C		
Port D		
Port E Port F		
Port G		
Port H		
		++: Select Screen ↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x4x4x4 x2x2x4x4x4 x2x2x2x2x4x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x2x2x2x4 x2x2x4x2x2 x4x4x4x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x4x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x4x2x2x2x2 x2x2x2x2x2x2 x2x2x2x2x2x2 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.4.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable∕Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 attribute MemBar2 attribute VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.4.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A		▲ This option disables the link so that the no training occur
		but the CFG space is still
Surprise Hot Plug Capable	[Disable]	active.
PCIe Loopback Mode	[Disable]	
Link Disable	[No]	
Override Max Link Width	[Auto] [Disable]	
Support VC1	[DISable] [Auto]	
Requested Link Speed DeEmphasis	[HULU] [-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	↔+: Select Screen
SRIS	[Auto]	14: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS – 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest 👘	[Enable]	
Rate on port		
		*

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4.6.4.3.2.5 PCI Express 4

PCI Express 4		Press <enter> to bring up the</enter>
		Intel VMD for Volume Management Device
		Configuration menu.
Bifurcation Port A(PCIe Slot5)	[Auto]	
Port B		
Port C		
Port D Port E		
Port F		
Port G		
Port H		++: Select Screen
		14: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
		Loor Lart

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x_x8 x_x8x_x8 x_x_x16 x2x2x4x_x8 x4x2x2x_x8 x_x8x2x2x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.5.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable∕Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 attribute MemBar2 attribute VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.5.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A		This option disables the link
		so that the no training occur
		but the CFG space is still
Surprise Hot Plug Capable	[Disable]	active.
PCIe Loopback Mode	[Disable]	
Link Disable Override Max Link Width	[No] [Auto]	
Support VC1	[Huto] [Disable]	
Requested Link Speed	[Auto]	
DeEmphasis	[-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	→+: Select Screen
SRIS	[Auto]	14: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS – 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest 👘	[Enable]	
Rate on port		
		▼

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4.6.4.3.2.6 PCI Express 5

PCI Express 5 Press <enter> to bring up the Intel VMD technology Bifurcation [Auto] Port A(MCI03) Port B Port C Port C Port B Port C Port C Port C Port F Port G Port H **: Select Screen 11: Select Item Enter: Select */: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</enter>		Aptio Setup – AMI Socket CFG	
	 Intel VMD technology Bifurcation Port A(MCI03) Port B Port C Port C Port E(MCI02) Port F Port G 	[Auto]	Management Device Configuration menu. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit

Item	Option	Description
Bifurcation	Auto [Default] x4x4x4x4 x4x4x_x8 x_x8x4x4 x_x8x_x8 x_x8x4x4 x_x8x_x8 x_x2x16 x2x2x4x_x8 x4x2x2x_x8 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x4x2x2x4x4 x2x2x2x2	Select PCIe port Bifurcation for selected slot(s) Port Format: xGxExCxA The port can further be x2x2 Disable-disable all PCIe Lanes and the controller.

HPM-GNRDE User's Manual 4.6.4.3.2.6.1 Intel VMD technology

Please refer to 4.6.4.3.1.1.1 for more information.

	Aptio Setup – AMI Socket CFG	
Intel VMD technology		Enable∕Disable VMD in this IIO Domain.
Intel VMD technology CfgBar size CfgBar attribute MemBar1 size MemBar2 attribute MemBar2 attribute VMD for Direct Assign	[Disable] 25 [64-bit prefetchable] 26 [32-bit non-prefetchable] 21 [64-bit non-prefetchable] [Disable]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Intel VMD technology	Disabled [Default] Enabled	Intel VMD technology

4.6.4.3.2.6.2 Port A ~ Port H

Please refer to 4.6.4.3.1.1.2 for more information.

Port A		▲ This option disables the link so that the no training occur
		but the CFG space is still
Surprise Hot Plug Capable	[Disable]	active.
PCIe Loopback Mode	[Disable]	
Link Disable	[No]	
Override Max Link Width	[Auto] [Disable]	
Support VC1	[DISable] [Auto]	
Requested Link Speed DeEmphasis	[HULU] [-6.0 dB]	
Max Link Width	Max Width x16	
Current Link Width	Link Did Not Train	
Current Link Speed	Link Did Not Train	
Clocking	[Auto]	++: Select Screen
SRIS	[Auto]	14: Select Item
Data Link Feature Exchange	[Enable]	Enter: Select
MPSS	[Auto]	+/-: Change Opt.
Completion Timeout Value	[260ms to 900ms]	F1: General Help
ASPM Support	[Disable]	F2: Previous Values
L1 Exit Latency	[8uS – 16uS]	F3: Optimized Defaults
Extended Sync	[Disable]	F4: Save & Exit
PCIe 10-bit Tag Support	[Auto]	ESC: Exit
Unsupported Request	[Disable]	
IODC Configuration	[KTI Option]	
MCTP	[Enable]	
Equalization Bypass To Highest 👘	[Enable]	
Rate on port		
		*

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4.6.4.3.3 Global Configuration

	Aptio Setup – AMI Socket CFG	
Global Configuration		Enable/Disable PCIe Hot Plug globally
Hot Plug Hot Plug Polling Rate ASPM Support (Global)	[Disable] [SOOMS] [Per-Port]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Item	Options	Description
Hot Plug	Enable Disable [Default]	Hot Plug.
ASPM Support (Global)	Disable Per-Port [Default]	This option can disable ASPM support for all PCIe root ports.

4.6.4.3.4 Intel VMD technology

Aptio Setup – AMI Socket Config	
Intel VMD technology	
 Intel VMD for Volume Management Device on Socket 0 Intel VMD for Volume Management Device on Socket 1 	++: Select Screen T↓: Select Item Enter: Select +/-: Change Opt.
	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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HPM-GNRDE User's Manual 4.6.4.3.4.1 Intel VMD for Volume Management Device on Socket 0

	Socket Config	
VMD Config for IOU O(PCIe Slot6) Enable/Disable VMD	[Disable]	Enable/Disable VMD in this Stack.
VMD Config for IOU 1(PCIe Slot4) Enable/Disable VMD	[Disable]	
VMD Config for IOU 2(PCIe Slot2) Enable/Disable VMD	[Disable]	
VMD Config for IOU 3 Enable/Disable VMD	[Disable]	
VMD Config for IOU 4 Enable/Disable VMD	[Disable]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Item	Option	Description	
Enable/Disable VMD	Disable [Default]	Enable/Disable VMD in this Stack.	
	Enable		

4.6.4.3.4.2 Intel VMD for Volume Management Device on Socket 1

	Aptio Setup – AMI Socket Config			
VMD Config for IOU 0(PCIe Slot7) Enable/Disable VMD	[Disable]	Enable/Disable VMD in this Stack.		
VMD Config for IOU 1(PCIe Slot5) Enable/Disable VMD	[Disable]			
VMD Config for IOU 2(PCIe Slot3) Enable/Disable VMD	[Disable]			
VMD Config for IOU 4(PCIe Slot1) Enable/Disable VMD	[Disable]			
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
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Item	Option	Description
Enable/Disable VMD	Disable [Default] Enable	Enable/Disable VMD in this Stack.

4.6.4.4 Advanced Power Management Configuration



4.6.4.4.1 CPU P State Control

CPU P	State Con	trol				Enable/Disable EIST (P-States
	Capable			Package TDP (W)	DTS_Max	
0 1 2 3 4	Yes No No No No	048 000 000 000 000 000	21 00 00 00 00		000 000 000	
EIST F Boot p Turbo Energy CPU FI	tep (Psta SD Functi verformanc Mode) Efficien vex Ratio ore Flex R	on e mode t Turbo Override		(HW (Ma (Er (Er	nable] L_ALL] NX Performance] Nable] Nable] .sable]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

ltem	Option	Description	
SpeedStep (Betetee)	Disable	Enchle/Dischle EIST (D. States)	
SpeedStep (Pstates)	Enable [Default]	Enable/Disable EIST (P-States).	
EIST PSD Function	HW_ALL [Default]	Chasse HW/ ALL/SW/ ALL in DSD return	
EIST PSD Function	SW_ALL	Choose HW_ALL/SW_ALL in _PSD return.	
De et nerfermenes mede	Max Performance[Default]	Select the performance state that the BIOS	
Boot performance mode	Max Efficient	will set before OS hand off.	

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	Set by Intel Node Manager	
Turbo Mode	Disable	Enable/Disable processor Turbo Mode
	Enable [Default]	(requires EMTTM enabled too).
Energy Efficient Turbe	Enable [Default]	Energy Efficient Turbo Disable, MSR
Energy Efficient Turbo	Disable	0x1FC[19].
CDU Flow Datia Oversida	Disable [Default]	Enable/Disable CPU Flex Ratio
CPU Flex Ratio Override	Enable	Programming.

4.6.4.4.2 CPU C State Control

	Aptio Setup – AMI Socket CFG	
CPU C State Control Monitor MWAIT C1 to C1e Promotion ACPI C6x Enumeration	[Enable] [Enable] [Auto]	Allows Monitor and MWAIT instructions.
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Option	Description
Monitor MWAIT	Disable Enable [Default]	Allows Monitor and MWAIT instructions.
C1 to C1e Promotion	Disable	Allows CPU to automatically demote to C1.
	Enable [Default]	Takes effect after reboot.
ACPI C6x Enumeration	Disable Auto [Default]	ACPI C6x Enumeration.

4.6.5 Server Mgmt

Main Advanced Platform CFG	Aptio Setup – AMI Socket CFG Server Mgmt	Security Boot Save & Exit
BMC Self Test Status	PASSED	▲ Enable/Disable interfaces to
BMC Device ID	32	communicate with BMC
BMC Device Revision	1	
BMC Firmware Revision	0.09	
IPMI Version	2.0	
IPMI BMC Interface	KCS	
BMC Support	[Enabled]	
IPMI Interface Type	[Kcs Interface]	
Wait For BMC	[Disabled]	
FRB-2 Timer	[Enabled]	
FRB-2 Timer timeout	6	
FRB-2 Timer Policy	[Do Nothing]	
OS Watchdog Timer	[Disabled]	→+: Select Screen
OS Wtd Timer Timeout	10	↑↓: Select Item
OS Wtd Timer Policy	[Reset]	Enter: Select
		+/−: Change Opt.
BMC Configured Power		F1: General Help
Control Policy	Power Restore	F2: Previous Values
Power Control Policy	[Unspecified]	F3: Optimized Defaults F4: Save & Exit
		F4: Save & Exit ESC: Exit
System Event Log		LOC. LAIT
 Bmc self test log 		
 BMC network configuration 		
Ve	rsion 2.22.1294 Copyright (C) 2025 AM1
Main Advanced Platform CFG	Aptio Setup – AMI Socket CEG Server Mømt	Security Boot Save & Exit
	oberter er ur ber ver fignit	
BMC Device ID	32	▲ Press <enter> to view the</enter>
BMC Device Revision	1	System Event Log Records.
BMC Firmware Revision	0.09	
IPMI Version	2.0	
IPMI BMC Interface	KCS	



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Item	Options	Description
BMC Support	Enabled [Default] Disabled	Enable/Disable interfaces to communicate with BMC.
IPMI Interface Type	Kcs Interface [Default] Ssif Interface Ipmb Interface Usb Interface Oem1 Interface Oem2 Interface	Type of Interface to communicate BMC from HOST.
Wait For BMC	Enabled Disabled [Default]	Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces.
FRB-2 Timer	Enabled [Default] Disabled	Enable or Disable FRB-2 time (POST timer).
FRB-2 Timer timeout	6	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value.
FRB-2 Timer Policy	Do Nothing [Default] Reset Power Down Power Cycle	Configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.
OS Watchdog Timer	Enabled Disabled [Default]	If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.
Power Control Policy	Do Not PowerUp Last Power State Power Restore Unspecified [Default]	Configure how the system should respond if AC Power is lost, Reset not required as selected Power policy will be set in BMC when policy is saved.

4.6.5.1 System Event Log



ltem	Option	Description
SEL Components	Enabled [Default]	Change this to enable or disable event logging
SEL Components	Disabled	for error/progress codes during boot.
No[Default]		
Erase SEL	Yes, On next reset	Choose options for erasing SEL.
	Yes, On every reset	
	Do Nothing [Default]	
When SEL is Full	Erase Immediately	Choose options for reactions to a full SEL.
Delete Oldest Record		
	Disabled	
	Both	Disable the logging of EFI Status Codes or log
Log EFI Status Codes	Error code[Default]	only error code or only progress code or both.
	Progress code	

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4.6.5.2 Bmc self test log

	Aptio Setup — AMI Server Mgmt	
Log area usage = 00 out of 20 logs		Erase Log Options
Erase Log When log is full	[Yes, On every reset] [Clear Log]	
Log Empty		
		++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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ltem	Option	Description
Erase Log	Yes, On every reset [Default] No	Erase Log Options.
When log is full	Clear Log [Default] Do not log any more	Select the action to be taken when log is full.

4.6.5.3 BMC network configuration

	Aptio Setup – AMI Server Mgmt		
BMC network configuration жножножножножножножножно Configure IPv4 support жножножножножножножножножно		 Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network 	
Lan channel 1(dedicated RTL8211F)		parameters during BIOS phase	
Configuration Address source Current Configuration Address source	[Unspecified] DynamicAddressBmcDhcp		
Station IP address	0.0.0.0		
Subnet mask	0.0.0.0		
Station MAC address	06-F6-BD-CA-BD-B9		
Router IP address	0.0.0.0		
Router MAC address	00-00-00-00-00-00	→+: Select Screen	
		↑↓: Select Item	
Lan channel 2(shared I210)		Enter: Select	
Configuration Address source	[Unspecified]	+/-: Change Opt.	
Current Configuration Address	DynamicAddressBmcDhcp	F1: General Help	
source		F2: Previous Values	
Station IP address	0.0.0.0	F3: Optimized Defaults	
Subnet mask	0.0.0.0	F4: Save & Exit	
Station MAC address	BE-7E-EB-94-55-71	ESC: Exit	
Router IP address	0.0.0.0 00-00-00-00-00-00		
Router MAC address	00-00-00-00-00		
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ltem	Option	Description
Configuration Address source	Unspecified [Default]	Select configure LAN channel parameters
	Static DynamicBmcDhcp	statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC
	DynamicBmcNonDhcp	network parameters during BIOS phase.
Configuration Address source	Lippopolified[Default]	Select to configure LAN channel parameters
	Unspecified [Default] Static DynamicBmcDhcp	statically or dynamically(by BIOS or BMC).
		Unspecified option will not modify any BMC
		network parameters during BIOS phase.

4.6.5.4 BMC User Settings

Aptio Setup – AMI Server Mgmt		
BMC User Settings	Press <enter> to Add a User.</enter>	
▶ Add User		
▶ Delete User		
▶ Change User Settings	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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4.6.5.4.1 BMC Add User Details



Item	Description	
User Name	Enter BMC User Name.	

4.6.5.4.2 BMC Delete User Details

Aptio Setup – AMI Server Mgmt	
BMC Delete User Details	Enter BMC User Name
User Name User Password	
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.22.1294 Copyright (C)	2025 AMI

Item	Description	
User Name	Enter BMC User Name.	
4.6.5.4.3 BMC Change User Settings

	Aptio Setup – AMI Server Mgmt	
BMC Change User Settings		Enter BMC User Name
User Name User Password Change User Name Change User Password User Access Channel No User Privilege Limit	[Disabled] O [No Access]	
		<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Item	Description	
User Name	Enter BMC User Name.	

4.6.6 Security

	Aptio Setup – (
Main Advanced Platform C	G Socket CFG Server Mg	mt Security Boot Save & Exit
Password Description		Secure Boot configuration
If ONLY the Administrator's then this only limits access only asked for when entering If ONLY the User's password is a power on password and boot or enter Setup. In Setu have Administrator rights. The password length must be in the following range:	s to Setup and is g Setup. is set, then this must be entered to	
Minimum length	3	
Maximum length	20	++: Select Screen
Adala ta ta ta da a Basaran d		↑↓: Select Item
Administrator Password User Password		Enter: Select
user Password		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
▶ Secure Boot		ESC: Exit
	/ersion 2.22.1294 Copyrig	nt (C) 2025 AMI

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Main Advanced F	latform CFG Socket	Aptio Setup – AMI CFG Server Mgmt		y Boot Save & Exit	
Password Descripti	on		9	Set Administrator Password	
then this only lim only asked for whe If ONLY the User's is a power on pass	password is set, t word and must be en p. In Setup the Use rights. h must be ange:	and is hen this tered to			
Maximum length		20		↔: Select Screen t↓: Select Item	
Administrator Pass User Password			- F F	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit	
▶ Secure Boot			E	ESC: Exit	
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Administrator Password

Set setup Administrator Password

User Password

Set User Password

4.6.6.1 Secure Boot



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Item	Option	Description
	Dischlad /Defeult	Secure Boot feature is Active if Secure Boot is Enabled,
Secure Boot	Disabled [Default] Enabled	Platform Key(PK) is enrolled and the System is in User mode.
		The mode change requires platform reset.
	Standard [Dafault]	Secure Boot mode options: Standard or Custom. In Custom
Secure Boot Mode	Standard [Default] Custom	mode, Secure Boot Policy variables can be configured by a
	Custom	physically present user without full authentication.

4.6.6.1.1 Expert Key Management

	Aptio Setup –	AMI Security
Vendor Keys Factory Key Provision ▶ Restore Factory Keys ▶ Reset To Setup Mode ▶ Enroll Efi Image ▶ Export Secure Boot variables	Valid [Enabled]	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
Secure Boot variable Size Platform Key (PK) 862 Key Exchange Keys (KEK) 3066 Authorized Signatures (db) 6133 Forbidden Signatures(dbx) 70365 Authorized TimeStamps(dbt) 0 DSRecovery Signatures(dbr) 0	1 Test(AMI) 2 Factory 4 Factory 371 Factory 0 No Keys	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Versio	n 2.22.1294 Copyrig	ht (C) 2025 AMI

	Aptio Setup -	AMI Security	y <mark>y</mark>
Vendor Keys	Valid		Force System to User Mode. Install factory default Secure
Factory Key Provision ▶ Restore Factory Keys ▶ Reset To Setup Mode ▶ Enroll Efi Image ▶ Export Secure Boot variable	[Enabled] :s		Boot key databases
Secure Boot variable		de Coulto	
 Platform Key (PK) Key Exchange Keys (KEK) 	Install factory		
 Authorized Signatures (db) Forbidden Signatures(dbx) 	Press 'Yes' to proceed	'No' to cance	e1
 Authorized TimeStamps(dbt) OsRecovery Signatures(dbr) 	Yes	No	elect Screen elect Item
			: Select Change Opt.
			F1: General Help F2: Previous Values
			F3: Optimized Defaults F4: Save & Exit
			ESC: Exit
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Vendor Keys Valid	
Factory Key Provision [Enabled] ▶ Restore Factory Keys ▶ Reset To Setup Mode ▶ Ennoll Efi Image	Allow Efi image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)
Export Secure Boot variables Secure Boot variable Size Keys Key Source Select a File system	
PciRoot(0x11)/Pci(0x8,0x0)/Pci(0x0,0x0)/USB(0x1,0x0)/HD(1,N	BR,0x102FB27F,0x800,0x39A2BF4)
▶ OsRecovery Signatures(dbr) O O No Keys	<pre>f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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	ltem	Option	Description
Facto	ory Key Provision	Disabled [Default] Enabled	Install factory default Secure Boot keys after the platform reset and while the Sysstem is in Setup mode.

4.6.7 Boot



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	Aptio Setup – AMI	Boot
Boot Option #1	(UEFI: KingstonDataTraveler 3.0, Partition 1]	Sets the system boot order
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2	2.22.1294 Copyright (C) 2025	AMI

ltem	Option	Description
Setup Prompt Timeout	1~ 65535	Set the default timeout before system boot. A value of 65535 will disable the timeout completely.
Bootup NumLock State	On [Default] Off	Select the keyboard NumLock state
Quiet Boot	Disabled [Default] Enabled	Enables or disables Quiet Boot option
Boot Option #1	Hard Disk [Default] NVME CD/DVD SD USB Device Network	Set the system boot order.
Boot Option #2	Hard Disk NVME [Default] CD/DVD SD USB Device Network	Set the system boot order.
Boot Option #3	Hard Disk NVME CD/DVD [Default] SD USB Device Network	Set the system boot order.
Boot Option #4	Hard Disk NVME CD/DVD SD [Default] USB Device	Set the system boot order.

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	Network	
	Hard Disk	
	NVME	
Boot Option #5	CD/DVD	Set the system best order
Boot Option #5	SD	Set the system boot order.
	USB Device	
	Network[Default]	
		Enables or disables Optimized Boot. Enabling
		Optimized Boot will disable Csm support and
Optimized Boot	Disabled[Default]	disable connecting Network devices to decrease
	Enabled	boot time. While disabling Optimized Boot, make
		sure to restore Csm Support option to previous
		value before enabling Optimized Boot.

4.6.8 Save and exit

Aptio Setup – AMI Main Advanced Platform CFG Socket CFG Server Mgmt Security Boot <mark>Save & Exit</mark>		
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes Discard Changes Default Options Restore Defaults Save as User Defaults Restore User Defaults Boot Override UEFI: KingstonDataTraveler 3.0, Partition 1 (KingstonDataTraveler 3.0) Launch EFI Shell from filesystem device	Exit system setup after saving the changes. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.22.1294 Copyright (C) 2025	AMI	
Aptio Setup – AMI Main Advanced Platform CFG Socket CFG Server Mgmt Securit	y Boot Save & Exit	
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset	Exit system setup after saving the changes.	
Save Changes Discard Changes Default Options Restore Defaults Restore User Defaults Boot Overnide UEFI: KingstonDataTraveler 3.0, F (KingstonDataTraveler 3.0) Launch EFI Shell from filesystem device	 ★: Select Screen ↓: Select Item nter: Select /-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit 	

4.6.8.1 Save Changes and Exit

Use the save changes and reset option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

4.6.8.2 Discard Changes and Exit

Use the Discard changes and Exit option to exit the system without saving the changes made to the BIOS configuration setup program.

4.6.8.3 Save Changes and Reset

Reset the system after saving the changes.

4.6.8.4 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

4.6.8.5 Save Changes

Changes made to BIOS settings during this session are committed to NVRAM. The setup program remains active, allowing further changes.

4.6.8.6 Discard Changes

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The BIOS setup continues to be active.

4.6.8.7 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

4.6.8.8 Save as User Defaults

This option saves a copy of the current BIOS settings as the User Defaults. This option is useful for preserving custom BIOS setup configurations.

4.6.8.9 Restore User Defaults

This option restores all BIOS settings to the user defaults. This option is useful for restoring previously preserved custom BIOS setup configurations.







Unit: mm

6. Maintenance & Troubleshooting

System Maintenance Introduction If the components of the product fail they must be replaced. Please contact the system reseller or vendor to purchase the replacement parts. Please follow the safety precautions outlined in the sections that follow

General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

1. Follow the electrostatic precautions outlined below whenever the device is opened.

2. Make sure the power is turned off and the power cord is disconnected whenever the product is being installed, moved or modified.

3. To prevent the risk of electric shock, make sure power cord is unplugged from wall socket. To fully disengage the power to the unit, please disconnect the power cord from the AC outlet. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.

4. Do not apply voltage levels that exceed the specified voltage range. Doing so may cause fire and/or an electrical shock. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.

5. Electric shocks can occur if the product chassis is opened when it is running. To avoid risk of electric shock, this device must only be connected to a supply mains with protective earth.

6. Do not drop or insert any objects into the ventilation openings of the product.

7. If considerable amounts of dust, water, or fluids enter the device, turn off the power supply immediately, unplug the power cord, and contact your dealer or the nearest service center.

8. This equipment is not suitable for use in locations where children are likely to be present.

- 9. DO NOT:
- Drop the device.
- In a site where the ambient temperature exceeds the rated temperature.

Anti-Static Precautions

WARNING:

Failure to take ESD precautions during the installation of the product may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the product. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the product is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad: When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- Only handle the edges of the electrical component. When handling the electrical component, hold the electrical component by its edges. Please ensure the following safety precautions are adhered to at all times.

Maintenance and Cleaning

When maintaining or cleaning the product, please follow the guidelines below.

WARNING:

- For safety reasons, turn-off the power and unplug the PC before cleaning.
- If you dropped any material or liquid such as water onto the PC when cleaning, unplug the power cable immediately and contact your dealer or the nearest service center. Always make sure your hands are dry when unplugging the power cable.

Maintenance and Cleaning

Prior to cleaning any part or component of the product, please read the details below.

- Never spray or squirt liquids directly onto any other components.
- The interior of the device does not require cleaning. Keep fluids away from the device interior.
- Be cautious of all small removable components when vacuuming the device.
- Never drop any objects or liquids through the openings of the device.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the device.
- Avoid eating, drinking and smoking within vicinity of the device.

Basic Troubleshooting

# of Beeps	Description
1	Memory not Installed
2	Recovery started
3	Typically for development use.
	The beep code is generated when DXEIPL PPI or DXE Core is not found.
4	Recovery failed
4	S3 Resume failed
7	Typically for development use.
	The beep code is generated when platform cannot be reset because reset
	PPI is not available.

DXE Beep Codes

# of Beeps	Description
1	Invalid password
	Typically for development use.
4	The beep code is generated when some of the Architectural Protocols are
	not available.
5	No Console Input or Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
	Typically for development use.
7	The beep code is generated when platform cannot be reset because reset
	protocol is not available.
8	Platform PCI resource requirements cannot be met

