

Embedded Computing Platform

Hardware Platforms for Intelligent Edge Computing

LEC-2290B User Manual

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About this Document

This manual describes the overview of the various functionalities of this product, and the information you need to get it ready for operation. It is intended for those who are:

- responsible for installing, administering and troubleshooting this system or Information Technology professionals.
- assumed to be qualified in the servicing of computer equipment, such as professional system integrators, or service personnel and technicians.

Icon Descriptions

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

description of these icons:



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



Warning or Important: This mark indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

To obtain additional documentation resources and software updates for your system, please visit the <u>Lanner</u> <u>Download Center</u>. As certain categories of documents are only available to users who are logged in, please be registered for a Lanner Account at <u>http://www.lannerinc.com/</u> to access published documents and downloadable resources.

Technical Support

In addition to contacting your distributor or sales representative, if there are any technical queries, you could submit a support ticket to our **Lanner Technical Support** department.

Documentation Feedback

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Compliances and Certification

CE

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

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note 🖗

- 1. An unshielded-type power cord is required to meet FCC emission limits and to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
- 2. Use only shielded cables to connect I/O devices to this equipment.
- **3.** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- 1. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
- 2. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

EMC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

Safety Guidelines

Follow these guidelines to ensure general safety:

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

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

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

Lithium Battery Caution

- There is risk of Explosion if Battery is replaced by an incorrect type.
- Dispose of used batteries according to the instructions.
- Installation only by a skilled person who knows all Installation and Device Specifications which are to be applied.
- ▶ Do not carry the handle of power supplies when moving to another place.
- ▶ Please conform to your local laws and regulations regarding safe disposal of lithium BATTERY.
- Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- Exposing a battery to high temperatures may cause it to explode or leak flammable substances.
- A battery exposed to extremely low air pressure may explode or leak flammable liquids or gases.

Avertissement concernant la pile au lithium

- Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- Jetez les piles usagées conformément aux instructions.
- L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- > Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.

Operating Safety

- Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- > Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Sécurité de fonctionnement

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

Mounting Installation Precaution

The following should be put into consideration for rackmount or similar mounting installations:

- Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ► The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- ► Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.
- ► Elevated Operating Ambient If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Grounding Reliable grounding of rack mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Installation & Operation:

- This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.
- Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à une prise de terre correctement câblée
 Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.

Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.

- ► The machine can only be used in a restricted access location and must be installed by a skilled person. Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.
- This product is intended to be supplied by a Listed Power Adapter or DC power source, rated 12-24Vdc, 17.5-8A minimum, Tma = 70°C, and the altitude of operation = 5000m.
- Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.

Electrical Safety Instructions

Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire is required and the part connecting the conductor must be greater than 4 mm2 or 10 AWG.

Consignes de sécurité électrique

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

Grounding Procedure for Power Source

- Loosen the screw of the earthing point.
- Connect the grounding cable to the ground.
- ▶ The protection device for the power source must provide 30 A current.
- This protection device must be connected to the power source before power.
- The cable hould 16 AWG

Procédure de mise à la terre pour source d'alimentation

- Desserrez la vis du terminal de mise à la terre.
- Branchez le câble de mise à la terre à la terre.
- L'appareil de protection pour la source d'alimentation doit fournir 30 A de courant.
- Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation.
- Le câble doit 16 AWG

This equipment is for INDOOR USE ONLY





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CHAPTER 1: PRODUCT OVERVIEW

The LEC-2290B, a GPU intelligent edge computing appliance, is a robust box PC powered by the Intel® Core™ i7- 9700TE (Codenamed Coffee Lake S) processor.

Product Features

- ▶ Intel® Core[™] i7-9700TE
- > 2x DDR4 2133/2400 SO-DIMM, Max. 64GB
- > 2x RJ45 GbE LAN, 4x PoE, 4x USB3.0, 6x COM Ports, 8x DI & 8x DO
- 2x Removable HDD/SSD External Slot w/ RAID, 1x mSATA
- Built-in TPM 2.0 & IPMI Support

Package Content

Your package contains the following items:

- 1x Edge Al Appliance
- 4x Rubber Foot
- > 2x 4-pin Terminal Block, 1x 2-pin Terminal Block, 1x 20-pin Terminal Block

$\langle \rangle$	
	3

Note: If you should find any components missing or damaged, please contact your dealer immediately for assistance.

Ordering Information

SKU No.	Description
LEC-2290B	Intel [®] Core [™] i7-9700TE, 16GB System Memory, 128GB mSATA and 2.5" 256GB SATA Storage, 1x PCIe*16 expansion slot (Intel [®] AI Software Suite Preinstalled), +9~30VDC Input with 270W AC/DC Adapter.

System Specifications

	CPU	Support Intel [®] Core [™] i7-8700/ i7-9700TE (Coffee Lake S)	
	Frequency	Up to 3.2 GHz/1.8GHz	
Processor System	Core Number	6 Cores/ 8 Cores	
	Chipset	C246	
Fanless		No	
	Technology	DDR4 2133/2400 SO-DIMM	
Memory	Max. Capacity	Up to 64 GB	
	Socket	2x 260-pin SO-DIMM	
Graphic	Graphic Processor	Intel® UHD Graphics 630	
	Codec	TSI 92HD73C HD code	
Audio	Interface	1x for MIC-in and 1x for Line-out	
	Controller	Intel i210iT Ethernet controller	
	Speed	10/100/1000 Mbps	
Ethernet		2x GbE RJ45 Ports;	
	Interface	4x PoE RJ45 Ports, IEEE 802.3af / IEEE 802.3at	
		(Total PoE Budget of 60W)	
Storage	HDD/SSD	2x Removable HDD/SSD external slot with RAID	
Storage	mSATA	1x mSATA	
	COM Port	6x D-Sub Ports, support RS232/422/485	
	Ethernet Ports	6x RJ45 GbE Ethernet Ports (4x PoE)	
		4x PoE supporting IEEE802.3af (15.5W),	
	PoE	1x Single port supporting IEEE802.3at (25.5W),	
		Max power output of 4x port POE: 60W	
		4x OSB 5.0 Type A Ports	
	Audio	1x Mic-In, TxLine-Out	
1/0	Power Switch	IX 2pin Remote Power Switch	
1/0	LED Indicator	1x Poset Button 1x Power-on button	
	Reset/Power Button	(Red-stand by, Green-Operating)	
	Display	1x DP max. 4096x2304@60Hz;	
	Display	2x HDMI max. 4096x2304@24Hz	
	Digital I/O	1x terminal block Isolation: 8x DI (12V), and 8x DO	
		1x 4-Pin Terminal block (Pin define: -/+/+/-) for 9~30V DC	
	Power input	input (normal 12VDC & 24VDC)	
	Antenna	4x SMA-type Antenna Hole	
		1x PCIe *16 Slot,	
Expansion Interface	PCIe	1x PCle *4 Slot,	
		$1 \times M = 2 \text{ PCIe} + USB = 0 \text{ with Nano-SIM}$	
	Processor	Passive CPU heatsink	
Cooling	System	2x Smart Fans (Optional)	
	Connector	1x 4pin terminal block	
	Power Supply Voltage	9~30 VDC (-/+/+/-)	
Power	Power Consumption (Idle)	29.5W@ +12VDC-IN	
	Power Consumption (Full Load)	121.6W@ +12VDC-IN	

Environment	Operating Temperature Storage Temperature	 -20°C~45°C for Intel® Core™ i7-8700(3.2GHz) @TDP 65W Intel® Core™ i5-8500(3.3GHz) @TDP 62W Intel® Core™ i3-8300(3.7GHz) @TDP 62W -20°C~55°C for Intel® Core™ i7-8700T(2.4GHz) @TDP 35W Intel® Core™ i5-8500(2.7GHz) @TDP 35W Intel® Core™ i3-8100(3.1GHz) @TDP 35W -40°C to +70°C 		
	Relative Humidity	10%~90% (Non-condensing)		
Mochanical	Dimension (W x H x D)	275 x 225 x 115mm (without mounting)		
IVIECHANICAI				
	Mounting	Wallmount kit		
	Microsoft Windows	Windows 10 IoT 64-bit series		
OS Support	Linux	Ubuntu 18.10 64bit and above / Cent OS 7 and above / Fedora 30 64bit and above / Kernel 3.12		
Certification	EMC	FCC/CE Class A		
	Safety	N/A		

Front Panel



No.		Description
F1	COM Port	3x DB9 Male Connector for RS232/422/485
F2	LAN Port	2x GbE RJ45 port with LED indicators
F3	USB 3.0 Port	4x USB 3.0 Type A
F4	Audio Jack	3.5mm Line-out and Mic-in Jack
F5	Remote Switch	1x 2-pin Remote Power Switch
F6	System Status LED Indicator	System Power HDD Status HDD Status
F7	Power Button	1x Power On/Off button with LED Indicator
F8	Reset Button	1x Reset Button (Default SW Reset)
FQ	PoF Port	4x PoE Port with LED indicators. Any single port supports IEEE 802.3at 25.4W
1.5	FOLFOIL	under total PoE power budget at 60W.
F10	Storage Bay	2x HDD/SSD Disk Bays (9.5mm height each max.)
F11	DC Input	1x 4 pin terminal block (pin define: -/+/+/-) for 12V DC input (max. 200W)

Rear Panel



No.		Description
R1	DIO	1x 20 pin terminal block 8 DI (12V) & 8 DO (12V,100mA) Isolation
R2	Display Port	1x Display Port
R3	HDMI Port	2x HDMI Port
R4	COM Port	3x DB9 Male Connector for RS232/422/485
R5	DC Input	1x 4-pin terminal block for DC 9~36V system power source
DC	Module Slot	Removable PGN Module Slot supporting Dual SIM and 2x Antenna
RO	(Antenna Port)	Hole with dust cover
R7	PCIE Slot	1x PCIe*16 Slot

CHAPTER 2: MOTHERBOARD INFORMATION

Block Diagram

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





Rear View



PCIE1

Internal Jumpers and Connectors

Expansion

MPCIE1: MCCIE Mini Card Slot

PIN	DESCRIPTION	PIN	DESCRIPTION
1	WAKE#	2	+3.3V
3	RSVD	4	GND
5	RSVD	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
	KE	Y	
17	RSVD	18	GND
19	RSVD	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D+
37	GND	38	USB_D-
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	RSVD	46	LED_WPAN#
47	RSVD	48	+1.5V
49	RSVD	50	GND
51	RSVD	52	+3.3V



JNGFF1: M.2 Slot (B-KEY)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	CONFIG3	2	3V3_AUX
3	GND	4	3V3_AUX
5	GND	6	CARD PWROFF
7	USB D+	8	W_DIS
9	USB D-	10	DAS/DSS#
11	GND		
	KEY	В	
21	CONFIG0	20	AUDIO_0
23	NC	22	AUDIO_1
25	NC	24	AUDIO_2
27	GND	26	AUDIO_3
29	PERn1/USB3RX-	28	UIM_RFU
31	PERp1/USB3RX+	30	UIM_RESET



33	GND	32	UIM_CLK
35	PETn1/USB3TX-	24	UIM_DATA
37	PETp1/USB3TX+	36	UIM_PWR
39	GND	38	DEVSLP
41	PETn0/SATA_B+	40	GNSS0
43	PETp0/SATA_B-	42	GNSS1
45	GND	44	GNSS2
47	PERn0/SATA_A-	46	GNSS3
49	PERp0/SATA_A+	48	GNSS4
51	GND	50	PRESET#
53	REFCLK-	52	CLKREQ#
55	REFCLK+	54	WALE#
57	GND	56	NC
59	ANTCTL0	58	NC
61	ANTCTL1	60	COEX3
63	ANTCTL2	62	COEX2
65	ANTCTL3	64	COEX1
67	PEDET	66	SIM_DET
69	PEDET/CONFIG1	68	SUSCLK
71	GND	70	3V3_AUX
73	GND	72	3V3_AUX
75	CONFIG2	74	3V3_AUX

PCIE1: x16 PCIE Slot

Pin No	DESCRIPTION	Pin No	DESCRIPTION
B1	12V	A1	PRSNT1#
B2	12V	A2	12V
B3	12V	A3	12V
B4	GND	A4	GND
B5	SMCLK	A5	JTAG2
B6	SMDAT	A6	JTAG3
B7	GND	A7	JTAG4
B8	3.3V	A8	JTAG5
B9	JTAG1	A9	3.3V
B10	3.3VAUX	A10	3.3V
B11	WAKE#	A11	PERST#
	K	EY B	
B12	RSVD	A12	GND
B13	GND	A13	REFCLKA+
B14	HSOP0	A14	REFCLKA-
B15	HSON0	A15	GND
B16	GND	A16	HSIP0

B17	PRSNT2#	A17	HSIN0	
B18	GND	A18	GND	
B19	HSOP1	A19	RSVD	
B20	HSON1	A20	GND	
B21	GND	A21	HSIP1	
B22	GND	A22	HSIN1	
B23	HSOP2	A23	GND	
B24	HSON2	A24	GND	
B25	GND	A25	HSIP2	
B26	GND	A26	HSIN2	
B27	HSOP3	A27	GND	
B28	HSON3	A28	GND	
B29	GND	A29	HSIP3	
B30	RSVD	A30	HSIN3	
B31	PRSNT2#	A31	GND	
B32	GND	A32	RSVD(REFCLKB+)	
B33	HSOP4	A33	RSVD(REFCLKB-)	
B34	HSON4	A34	GND	
B35	GND	A35	HSIP4	
B36	GND	A36	HSIN4	
B37	HSOP5	A37	GND	
B38	HSON5	A38	GND	
B39	GND	A39	HSIP5	
B40	GND	A40	HSIN5	
B41	HSOP6	A41	GND	
B42	HSON6	A42	GND	
B43	GND	A43	HSIP6	
B44	GND	A44	HSIN6	
B45	HSOP7	A45	GND	
B46	HSON7	A46	GND	
B47	GND	A47	HSIP7	
B48	PRSNT2#	A48	HSIN7	
B49	GND	A49	GND	
B50	HSOP8	A50	RSVD	
B51	HSON8	A51	GND	
B52	GND	A52	HSIP8	
B53	GND	A53	HSIN8	

B54HSOP9A54GNDB55HSON9A55GNDB56GNDA56HSIP9B57GNDA57HSIN9B58HSOP10A58GNDB59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA64HSIP11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB72GNDA73HSIN13B73GNDA74GNDB74HSOP14A74GNDB75HSON15A78GNDB76GNDA77HSIN14B77GNDA77HSIN14B78HSON15A78GNDB79HSON15A79GNDB79HSON15A79GNDB80GNDA80HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND				
B55HSON9A55GNDB56GNDA56HSIP9B57GNDA57HSIN9B58HSOP10A58GNDB59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA64HSIP11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB73GNDA72HSIN13B74HSOP14A74GNDB75HSON15A76GNDB76GNDA77HSIN14B77GNDA77GNDB78HSOP15A78GNDB79HSON15A79GNDB79HSON15A79GNDB79HSON15A79GNDB79HSON15A78GNDB79HSON15A78GNDB79HSON15A79GNDB70GNDA80HSIP15B73GNDA81HSIN15B74GNDA77GNDB75HSON15A78GNDB76GNDA80HSIP15 <td< td=""><td>B54</td><td>HSOP9</td><td>A54</td><td>GND</td></td<>	B54	HSOP9	A54	GND
B56GNDA56HSIP9B57GNDA57HSIN9B58HSOP10A58GNDB59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA64HSIP11B66HSOP12A66GNDB67HSON12A66GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB72GNDA72HSIP13B73GNDA73GNDB74HSOP14A74GNDB75HSON15A78GNDB76GNDA74HSIP14B77GNDA77HSIN14B78HSOP15A78GNDB79HSON15A79GNDB79HSON15A79GNDB80GNDA80HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B55	HSON9	A55	GND
B57GNDA57HSIN9B58HSOP10A58GNDB59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA65HSIN11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB72GNDA73HSIN13B73GNDA73GNDB74HSOP14A74GNDB75HSON14A75GNDB76GNDA77HSIN14B77GNDA77GNDB76GNDA78GNDB77HSON15A79GNDB78HSOP15A80HSIP15B80GNDA80HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B56	GND	A56	HSIP9
B58HSOP10A58GNDB59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA65HSIN11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSOP13A71GNDB72GNDA72HSIP13B73GNDA73HSIN13B74HSOP14A74GNDB75HSON14A75GNDB76GNDA77HSIN14B77GNDA77GNDB78HSOP15A78GNDB79HSON15A79GNDB79HSON15A79GNDB79HSON15A81HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B57	GND	A57	HSIN9
B59HSON10A59GNDB60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA65HSIN11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB73GNDA72HSIP13B74HSOP14A74GNDB75HSON15A78GNDB76GNDA77HSIN14B77GNDA78GNDB78HSOP15A78GNDB79HSON15A79GNDB79RSVD(CARD_DET#)A82GND	B58	HSOP10	A58	GND
B60GNDA60HSIP10B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA65HSIN11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSON13A70GNDB71HSON13A71GNDB73GNDA72HSIP13B74HSOP14A74GNDB75HSON15A78GNDB76GNDA77HSIN14B77GNDA78GNDB78HSOP15A78GNDB79HSON15A79GNDB79RSN12#A81HSIN15B81PRSNT2#A82GND	B59	HSON10	A59	GND
B61GNDA61HSIN10B62HSOP11A62GNDB63HSON11A63GNDB64GNDA64HSIP11B65GNDA65HSIN11B66HSOP12A66GNDB67HSON12A67GNDB68GNDA68HSIP12B69GNDA69HSIN12B70HSOP13A70GNDB71HSON13A71GNDB73GNDA73HSIN13B74HSOP14A74GNDB75HSON14A75GNDB76GNDA77HSIN14B77GNDA77GNDB78HSOP15A78GNDB79HSON15A79GNDB79RSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B60	GND	A60	HSIP10
B62 HSOP11 A62 GND B63 HSON11 A63 GND B64 GND A64 HSIP11 B65 GND A65 HSIN11 B66 HSOP12 A66 GND B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A77 HSIN14 B77 GND A77 HSIN14 B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79	B61	GND	A61	HSIN10
B63 HSON11 A63 GND B64 GND A64 HSIP11 B65 GND A65 HSIN11 B66 HSOP12 A66 GND B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A77 HSIN14 B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80	B62	HSOP11	A62	GND
B64 GND A64 HSIP11 B65 GND A65 HSIN11 B66 HSOP12 A66 GND B67 HSON12 A67 GND B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81	B63	HSON11	A63	GND
B65 GND A65 HSIN11 B66 HSOP12 A66 GND B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A77 HSIN14 B77 GND A76 HSIP14 B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 </td <td>B64</td> <td>GND</td> <td>A64</td> <td>HSIP11</td>	B64	GND	A64	HSIP11
B66 HSOP12 A66 GND B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A77 HSIP14 B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B65	GND	A65	HSIN11
B67 HSON12 A67 GND B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A77 HSIN13 B75 HSON14 A75 GND B76 GND A77 HSIN14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 </td <td>B66</td> <td>HSOP12</td> <td>A66</td> <td>GND</td>	B66	HSOP12	A66	GND
B68 GND A68 HSIP12 B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A76 HSIP14 B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B67	HSON12	A67	GND
B69 GND A69 HSIN12 B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN12 B74 HSOP14 A74 GND B75 HSON14 A74 GND B76 GND A75 GND B76 GND A76 HSIP14 B77 GND A76 HSIP14 B77 GND A77 HSIN13 B76 GND A77 HSIN14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B68	GND	A68	HSIP12
B70 HSOP13 A70 GND B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A74 GND B76 GND A76 HSIP14 B77 GND A76 HSIP14 B77 GND A77 HSIN14 B77 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B69	GND	A69	HSIN12
B71 HSON13 A71 GND B72 GND A72 HSIP13 B73 GND A73 HSIP13 B74 HSOP14 A74 GND B75 HSOP14 A74 GND B76 GND A75 GND B76 GND A76 HSIP14 B77 GND A77 HSIN14 B77 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B70	HSOP13	A70	GND
B72 GND A72 HSIP13 B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A76 HSIP14 B77 GND A77 HSIN14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B71	HSON13	A71	GND
B73 GND A73 HSIN13 B74 HSOP14 A74 GND B75 HSON14 A75 GND B76 GND A76 HSIP14 B77 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B72	GND	A72	HSIP13
B74HSOP14A74GNDB75HSON14A75GNDB76GNDA76HSIP14B77GNDA77HSIN14B78HSOP15A78GNDB79HSON15A79GNDB80GNDA80HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B73	GND	A73	HSIN13
B75HSON14A75GNDB76GNDA76HSIP14B77GNDA77HSIN14B78HSOP15A78GNDB79HSON15A79GNDB80GNDA80HSIP15B81PRSNT2#A81HSIN15B82RSVD(CARD_DET#)A82GND	B74	HSOP14	A74	GND
B76 GND A76 HSIP14 B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B75	HSON14	A75	GND
B77 GND A77 HSIN14 B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B76	GND	A76	HSIP14
B78 HSOP15 A78 GND B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B77	GND	A77	HSIN14
B79 HSON15 A79 GND B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B78	HSOP15	A78	GND
B80 GND A80 HSIP15 B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B79	HSON15	A79	GND
B81 PRSNT2# A81 HSIN15 B82 RSVD(CARD_DET#) A82 GND	B80	GND	A80	HSIP15
B82 RSVD(CARD_DET#) A82 GND	B81	PRSNT2#	A81	HSIN15
	B82	RSVD(CARD_DET#)	A82	GND

PCIE2 x8PCIE Slot (none-standard x8 PCIE SLOT)

Pin No	DESCRIPTION	Pin No	DESCRIPTION
B1	12V	A1	PRSNT1#
B2	12V	A2	12V
B3	12V	A3	12V

B4	GND	A4	GND	
B5	SMCLK	A5 JTAG2		
B6	SMDAT	A6	JTAG3	
B7	GND	A7	JTAG4	
B8	3.3V	A8	JTAG5	
B9	JTAG1	A9	3.3V	
B10	3.3VAUX	A10	3.3V	
B11	WAKE#	A11	PERST#	
	KEY B			
B12	RSVD	A12	GND	
B13	GND	A13	REFCLK+	
B14	HSOP0	A14	REFCLK-	
B15	HSON0	A15	GND	
B16	GND	A16	HSIP0	
B17	PRSNT2#	A17	HSIN0	
B18	GND	A18	GND	
B19	HSOP1	A19	PoE_INT	
B20	HSON1	A20	GND	
B21	GND	A21	HSIP1	
B22	GND	A22	HSIN1	
B23	HSOP2	A23	GND	
B24	HSON2	A24	GND	
B25	GND	A25	HSIP2	
B26	GND	A26	HSIN2	
B27	HSOP3	A27	GND	
B28	HSON3	A28	GND	
B29	GND	A29	HSIP3	
B30	RSVD	A30	HSIN3	
B31	PRSNT2#	A31	GND	
B32	GND	A32	12V	
B33	USB2_P9	A33	12V	
B34	USB2_N9	A34	GND	
B35	GND	A35	12V	
B36	GND	A36	12V	
B37	USB3_TX5+	A37	GND	
B38	USB3_TX5-	A38	GND	
B39	GND	A39	A39 USB3_RX5+	

B40	GND	A40	USB3_RX5-
B41	SATA_TX1+	A41	GND
B42	SATA_TX1-	A42	GND
B43	GND	A43	SATA_RX1+
B44	GND	A44	SATA_RX1-
B45	SATA_TX2+	A45	GND
B46	SATA_TX2-	A46	GND
B47	GND	A47	SATA_RX2+
B48	4G_PERST#	A48	SATA_RX2-
B49	VSIM_SW	A49	GND

Storage

MSATA1: MSATA Slot (Full Size)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	N.C	2	+3.3V
3	N.C	4	GND
5	N.C	6	N.C
7	N.C	8	N.C
9	GND	10	N.C
11	N.C	12	N.C
13	N.C	14	N.C
15	GND	16	N.C
	KE	Y	
17	N.C	18	GND
19	N.C	20	N.C
21	GND	22	N.C
23	SATA_RXp	24	+3.3V
25	SATA_RXn	26	GND
27	GND	28	N.C
29	GND	30	N.C
31	SATA_TXn	32	N.C
33	SATA_TXp	34	GND
35	GND	36	N.C
37	GND	38	N.C
39	+3.3V	40	GND
41	+3.3V	42	N.C
43	GND	44	N.C
45	N.C	46	N.C
47	N.C	48	N.C
49	N.C	50	GND
51	N.C	52	+3.3V



Power

PW1: DC IN Connector (1x4 Pin 5.0mm Terminal block)

PIN NO.	DESCRIPTION
1	DC_IN (-)
2	DC_IN (+)
3	DC_IN (+)
4	DC_IN (-)

Display

DP1: Display Port Interface

Pin No.	Description	Pin No.	Description
1	LANE0+	2	GND
3	LANE0-	4	LANE1+
5	GND	6	LANE1-
7	LANE2+	8	GND
9	LANE2-	10	LANE3+
11	GND	12	LANE3-
13	GND	14	GND
15	AUX CH+	16	GND
17	AUX CH-	18	HOT PLUG
19	RETURN	20	DP PWR

HDMI1/HDMI2: High-Definition Multimedia Interface

Pin No.	Description	Pin No.	Description
1	DATA2+	2	GND
3	DATA2-	4	DATA1+
5	GND	6	DATA1-
7	DATA0+	8	GND
9	DATA0-	10	CLK+
11	GND	12	CLK-
13	N.C	14	N.C
15	DDC CLK	16	DDC DAT
17	GND	18	HDMI_VCC
19	HPD		





Ethernet

Ethernet LAN1/LAN2: Dual RJ-45 with LED

D'a Ma	Description					
PIN INO.	Fast E-Net	Giga Net				
1	TX+	MD0+				
2	TX-	MD0-				
3	RX+	MD1+				
4	T45	MD2+				
5	T45	MD2-				
6	RX-	MD1-				
7	T78	MD3+				
8	T78	MD3-				
9	10-/100-/1000+					
10	10+/100+/1000-					
11	Link+/ACT-					
12	Link-//	ACT+				



USB

USB1/USB2: USB 3.0 Double Stack Type A

PIN NO	9		8	-	7	6		5
Description	USB1_TX+	ι	JSB1_TX-	GI	١D	USB1_RX	+	USB1_RX-
PIN NO	1		2		3			4
Description	USB_VCC1		USB1_D-		US	USB1_D+		GND
PIN NO	9		8	-	7	6		5
Description	USB1_TX+	ι	JSB1_TX-	GI	٧D	USB1_RX	+	USB1_RX-
PIN NO	1		2			3		4
Description	USB_VCC1		USB1_	D-	US	B1_D+		GND



JUSB1: Internal USB Connector

PIN NO.	DESCRIPTION	PIN NO	DESCRIPTION
1	USB_VCC	2	GND
3	KEY	4	+USB
5	-USB	6	-USB
7	+USB	8	KEY
9	GND	10	USB_VCC



I/O Function

COM1~6: Serial Port 1~6 (RS232/422/485)

Pin No.	Description	Description	Description
1	DCD#	Tx-	RxTx-
2	RX	Tx+	RxTx+
3	ТХ	Rx+	
4	DTR#	Rx-	
5	GND	GND	GND
6	DSR		
7	RTS#		
8	CTS#		
9	RI#		



DIO1: Isolation Digital Input / Output

PIN NO.	DESCRIPTION	PIN NO	DESCRIPTION
1	DO_0	2	DI_0
3	DO_1	4	DI_1
5	DO_2	6	DI_2
7	DO_3	8	DI_3
9	DO_4	10	DI_4
11	DO_5	12	DI_5
13	DO_6	14	DI_6
15	DO_7	16	DI_7
17	DO_COM	18	I_COM
19	DO_COM	20	12V_OUT(400mA)

Audio

LINE1: 3.5mm Headphone Jack (Green)

PIN	DESCRIPTION
1	GND
2	LINE_OUT_L
3	GND
4	GND
5	LINE_OUT_R

MIC1: 3.5mm Headphone Jack (Pink)

PIN	DESCRIPTION
1	GND
2	MIC_L
3	GND
4	GND
`5	MIC_R

Other Connectors

SP1: SPI Interface (Debug Only)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_HOLD	2	N.C
3	SPI_CS#	4	SPI_VCC
5	SPI_MO	6	N.C
7	N.C	8	SPI_CLK
9	GND	10	SPI_MI



J80PORT1: LPC Debug 80Port (Debug Only)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SPI_HOLD	2	N.C
3	SPI_CS#	4	SPI_VCC
5	SPI_MO	6	N.C
7	N.C	8	SPI_CLK
9	GND	10	SPI_MI

2		10
1		9
-	LPC1	

JTPM1: TPM Module Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	SERIRQ#	2	+3.3V
3	LAD0	4	+3.3V
5	LAD1	6	GND
7	LFRAME#	8	key
9	LPC_CLK	10	PLTRST#
11	LAD2	12	LAD3

2	12
1	11
	JTPM1

CN1: MCU Debug Connector (Debug Only)

PIN NO.	DESCRIPTION
1	EXT_TX
2	GND
3	EXT_RX

CN1

1 2 3

Jumper Settings & Switch Settings

CMOS1: Clear CMOS

Description	CMOS1
Normal (Default)	1-2
Clear CMOS	2-3



PSBTN2: External Power Button (1x2 Pin 3.81mm Terminal Block)

PIN NO.	DESCRIPTION
1	PS_IN
2	GND

SW1: Ignition Function Setting

SW NO.	DESCRIPTION	Off	On
S1	DETECT POWER GOOD	Disable	Enable
S2	LOW POWER DETECT	Disable	Enable
S3	MCU WATCH DOG	Disable	Enable
S4	PROGRAM MODE	Disable	Enable



SW2: MCU Communication Port Select

Description	SW2
	S1/S2 on
Connect Internal RS232(COM7)	S3/S4 off
Connect external RS232 from CN1.	/S2 off
(Debug & Update FW)	S3/S4 on



JIGBTN1: Disable Ignition Function

1-2 Short

1-2 Open

DESCRIPTION

JIG1: Disable Ignition Function

Description.

Normal

IG mode

Feature	DESCRIPTION
Power button from MCU	1-2 Short
Power button from PSBTN1	1-2 Open

JIG	BTN1
1	
2	

DIO Specifications

Digital Input (DI)

Channel	8	
Туре	Sink / Source Type	
Voltage (max)	30V	
Input Impedance	8.2K ohm	
Response Time	<2ms	
Isolation Voltage (RMS)	3750VDC	

Digital Output (DO)

Channel	8
DO Туре	Sink Type
DO Mode	Level
Work Voltage	5~24V
Driver Current (max)	200mA
Resp	<2ms
Isolation Voltage (RMS)	3750VDC

Power Output

Voltage	12V@400mA (25°C)
lasistica Valteres (DMC)	1500 VDC (60s)
Isolation Voltage (RMS)	1800 VDC (1s)

CHAPTER 3: COMMAND LINE

You can configure the value of voltage, power on delay, DI/DO and others on LEC-2290 via the MCU command line.

Below are the requirements to enable the command line

- 1. Host communication interface: COM#7 (RS-232)
- 2. Support baud rate: 57600/ 8N1
- 3. Communication protocol: ANSI terminal.

Use below formula to set/get your command line:

GET VariableName

SET VariableName value

MCU Command	Write/Read (SET/GET)	VariableName	Value	
	SET	STARTUP_VOLTAGE	0(default)	0mV
Startup Voltage(IIIV)	GET	STARTUP_VOLTAGE		
Shutdowm Voltogo (mV)	SET	INPUT_VOLTAGE_MIN	8500(default)	8500mV
Shutdowin Voltage (mV)	GET	INPUT_VOLTAGE_MIN		
BowerOn Delay (Sec)	SET	POWERON_DELAY	4(default)	4S
PowerOn Delay (Sec)	GET	POWERON_DELAY		
PowerOff Delay (Sec)	SET	SHUTDOWN_DELAY	4(default)	4S
	GET	SHUTDOWN_DELAY		
Input Voltage	GET	INPUT_VOLTAGE		
Device ID	GET	DEVICE_ID	LEC-2290_N	
Firmware Version	GET	VERSION	0.07B	
Ignition	GET	IGNITION		
Digital POE	SET	DIGITAL_POE	15(default)	0~15
	GET	DIGITAL_POE		
Digital DO	SET	DIGITAL_DO	0(default)	0~255
Digital DI	GET	DIGITAL_DI		
Save flash	SAVE			

Example

1. The minimum voltage for startup	Setting: 6V(6000mV)
SET STARTUP VOLTAGE 6000	command
OK	response massage
GET STARTUP_VOLTAGE	command
STARTUP_VOLTAGE= 6000	response massage
2. The delay time for POWERON_DEL/	AY state Setting: 4 S
SET POWERON_DELAY 4	command
ОК	response massage
	company d

JET POWERON_DELAT	commanu
POWERON_DEALY= 4	response massag

3. Device ID

GET DEVICE_ID DEVICE_ID= LEC-2290_N command

response massage

e

4. Firmware Version

GET VERSION	command
VERSION= 0.07B	response massage

5. Ignition state (Read only)

GET IGNITION	command
IGNITION= 0	response massage (0: Ignition off / 1: ignition on)

6. Control the ON/OFF of each POE port

SET DIGITAL_POE 1			command		
OK	response massage				
GET DIGITAL_POE			command		
DIGITAL_POE	= 1		response massage		
POE1/bit0	=	1			
POE2/bit1	=	2			
POE3/bit2	=	4			
POE4/bit3	=	8			
To achieve POE1~4 enable, please entry value setting at 15.					

7. Write/Read Digital DO state Setting: DO1/DO2/DO3/DO4/DO5/DO6/DO7/DO8

SET DIGITAL	_DO 3	command			
ОК		response massage			
GET DIGITAL	_DO	command			
DIGITAL_DO)= 3	response massage			
DO1/bit0	=	1			
DO2/bit1	=	2			
DO3/bit2	=	4			
DO4/bit3	=	8			
DO5/bit4	=	16			
DO6/bit5	=	32			
DO7/bit6	=	64			
DO8/bit7	=	128			
To achieve DO1~8 enable, please entry value setting at 255.					

8. Save setting

SAVE	command
OK Flash Updated.	response massage

CHAPTER 4: HARDWARE SETUP

To reduce the risk of personal injury, electric shock, or damage to the unit, please remove all power connections to completely shut down the device, and wear ESD protection gloves when conducting the steps in this chapter.

Open the Chassis

- 1. Power off the system and disconnect the power cord. Unscrew the four (4) screws securing the cover.
- <image>
- 2. Loosen all the screws and lift the cover chassis up.

Installing Memory Card

The system supports one (1) slot for mSATA memory card. Please follow the steps for installation.

 Power off the system and open the system chassis cover. Locate the mSATA memory slot on the motherboard.



- 2. Align the notch of the memory card with the socket key in the pin slot.
- 3. Insert the memory card pins at 30 degrees into the socket until it is fully seated.

4. Push down on the memory card and secure it with two screws.



Installing System Memory

The motherboard supports two (2) memory slots for DDR4 registered DIMM. Please follow the steps for installation.

 Power off the system and open the system chassis cover. Locate the memory slots on the motherboard.



- 2. Align the notch of the module with the socket key in the pin slot.
- Insert the memory card pins at 30 degrees into the socket until it is fully seated.





Installing 4G Module (Optional)

This system comes with an external M.2 slot, supporting dual SIM design. The following will discuss the installation of 4G module and SIM cards.

To Install the 4G Module:

- **1.** Locate the M.2 slot on the motherboard. Align the notch of the module card with the socket key in the slot, and insert it at 30 degrees into the socket until it is fully seated.
- 2. Push down on the module and secure it with one (1) screw.





 Loosen the <u>two</u> (2) screws that secure the tray and draw out the tray by its grip.



2. Slide open the socket cover and lift the cover on its hinges.



3. Insert the SIM card into the slot in the cover with the gold contacts facing down.



4. Push down the cover to close, and the SIM card will come in contact with the metal contacts in the socket. Finally, Slide the socket cover to the Lock position.


Installing IPMI BMC Card (Optional)

IPMI provides better server management, server monitoring, and remote access. IPMI is independent of the system's CPU operating system via hardware applied directly into the motherboard. Please follow the steps for installation.

 Power off the system and turn the system upside down. Locate the four (4) screws on the bottom panel.



- Loosen the screws and lift up to remove, and place it aside. Watch out for the metal pillars on each corner and PCIe pins.
- 3. Locate the BMC module slot on the motherboard.





- 4. Align the notch of the module with the socket key in the pin slot.
- 5. Insert the BMC card pins at 30 degrees into the socket until it is fully seated.



 Push down on the module until the slot latches catches and clicks into place. Then, secure into place with one (1) screw.



Installing the Disk Drive(s) (Optional)

The system supports two 2.5" HDD/SSD drive bays, with one 2.5" SSD drive included. The following will discuss disk drive installation procedures.

1. Power off the system and unplug the power cord. Unscrew the two thumbscrews that fix the tray on the system. Pull the drive tray out.

 Install the disk onto the tray and secure with four (4) screws, two on each side.
 Make sure the SATA connector faces outwards as shown in the image.

two on each side. A connector faces the image.



3. Insert the tray into the bay and fasten the two thumbscrews that fix the tray on the system.





Wall-Mounting the System (Optional)

The system can be mounted on a flat surfaced wall. Please take the following into considerations when mounting

the system onto the wall.

- The wallmount kit contains the following items:
- 1x pair of Wall Brackets
- 6x Screws (for the wall brackets)



1. Invert the system to expose the bottom side. Secure the two wall brackets to the system base using four (4) screws, two (2) per bracket.



NOTE: The demonstrated screw type can fit in general drywall or shelves. Please identify the wall type and select the suitable fixing approach to secure this system to the wall, and consult a qualified trained person if you are unsure.

3. Insert the expansion anchor bolts into the holes



RC EK S

4. Drive four (4) long screws into the anchoring bolts to secure the system.





M4 x 2mm

Rackmount the System (Optional)

With a rackmount kit, LEC-2290 can be installed into a rack. Please contact Lanner's sales representative for purchasing the rackmount kit.

The rackmount kit contains the following:

- 2x Rackmount Brackets
- 2x Ear Brackets
- 1x Screws Pack



1. Align the ear brackets to the rackmount brackets and secure using four (4) screws on each side.



2. Next, place the system in the center of the bracket, and secure with four (4) screws on the bottom side.



3. Position the system with its front facing you, gently lift it, and insert it into the rack. Attach the ear brackets to the rack rails using rack-mount screws (not provided).



CHAPTER 5: SOFTWARE SETUP

Entering BIOS

The system has AMI BIOS built-in, with a SETUP utility that allows users to configure required settings or to activate certain system features. Pressing the **<Tab>** or **** key immediately allows you to enter the Setup utility.

Control Keys	Description			
→←	select a setup screen, for instance, [Main], [Advanced], [Chipset], [Security], [Boot],			
	and [Save & Exit]			
∕↑↓	select an item/option on a setup screen			
<enter></enter>	select an item/option or enter a sub-menu			
+/-	to adjust values for the selected setup item/option			
F1	to display General Help screen			
F2	to retrieve previous values, such as the parameters configured the last time you			
	had entered BIOS.			
F3	to load optimized default values			
F4	to save configurations and exit BIOS			
<esc></esc>	to exit the current screen			

Main Page

Setup main page contains BIOS information and project version information.

BIOS Information		Set the Date. Use Tab
BIOS Vendor	American Megatrends	to switch between Date
Core Version	5.0.1.3 0.58 x64	elements.
Compliancy	UEFI 2.7; PI 1.6	Default Ranges:
Project Version	FLEB2291B00006V207	Year: 2005-2099
Build Date and Time	06/29/2023 13:52:24	Months: 1-12
Access Level	Administrator	Days: dependent on mont
	[Wed 06/12/2024]	
System Time	[06:45:43 <mark>]</mark>	<pre> ><: Select Screen</pre>
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		F4: Save & Exit ESC: Exit

Feature	Description				
	BIOS Vendor: American Megatrends				
	Core Version: AMI Kernel version, CRB code base, X64				
PLOS Information	Compliancy: UEFI version, PI version				
BIOS Information	Project Version: BIOS release version				
	Build Date and Time: MM/DD/YYYY HH:MM:SS				
	Access Level: Administrator / User				
	To set the Date, use <tab></tab> to switch between Date elements.				
Sustam Data	Default Range of Year: 2005-2099				
System Date	Default Range of Month: 1-12				
	Days: dependent on Month.				
System Time	To set the Date, use <tab></tab> to switch between Date elements.				

Advanced Page

Select the **Advanced** menu item from the BIOS setup screen to enter the "Advanced" setup screen. Users can select any of the items in the left frame of the screen.

Aptio Setup Utility - Copyright (C) 2023 Amer:	ican Megatrends, Inc.
Main Advanced Chipset Security Boot Save & I	Exit
/	-+
> CPU Configuration	CPU Configuration
> Power & Performance	Parameters
> PCH-FW Configuration	T
> Trusted Computing	1
> Super IO Configuration	1
> Hardware Monitor	T.
> F81216SEC Super IO Configuration	1
> Raiser Card Hardware Monitor	T
> Watch Dog Timer Configuration	T
> Serial Port Console Redirection	
> PCI Subsystem Settings	<pre> ><: Select Screen</pre>
> USB Configuration	^v: Select Item
> CSM Configuration	Enter: Select
> Control Legacy PXE Boot	+/-: Change Opt.
	Fl: General Help
> Network Stack Configuration	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
1	ESC: Exit

CPU Configuration

Aptio Setup Utility Advanced	- Copyright (C) 2023 Ame:	rican Megatrends, Inc.
/		+\
CPU Configuration		<pre>^ Enable/Disable moving * of DRAM contents to PRM </pre>
Type	Intel(R) Core(TM)	* memory when CPU is in
	0x906FD	*1
I Speed	1800 MHz	*1
I Ll Data Cache	32 KB x 8	*1
I Ll Instruction Cache	32 KB x 8	*
I L2 Cache	256 KB x 8	+
L3 Cache	12 MB	+1
L4 Cache	N/A	+1><: Select Screen
Microcode Revision	D6	+1^v: Select Item
VMX	Supported	+ Enter: Select
SMX/TXT	Supported	+ +/-: Change Opt.
		+ F1: General Help
C6DRAM		+ F2: Previous Values
Software Guard	[Disabled]	+ F3: Optimized Defaults
Extensions (SGX)		v F4: Save & Exit
I		ESC: Exit
/		+/
Version 2.20.1275.	Copyright (C) 2023 Americ	can Megatrends, Inc.
Aptio Setup Utility	- Copyright (C) 2023 Ame	rican Megatrends, Inc.
Advanced		
CDU Elen Desie	(Di	
CPU Flex Ratio	[Disabled]	[Enables utilization of
CDU Flow Datio	10	+ additional hardware
CPU Flex Ratio	10	+ capabilities provided
Settings	(Enabled)	+ by Intel (R) Irusted
Adiagant Cache Line	[Enabled]	+ Charges require a full *
Profetch	[Enabled]	the state and a total
I Intel (VMV)	[Enabled]	+ power cycre to take +
Virtualization	[Enabled]	+
Technology		*1
Active Processor Cores	[211]	*Loc: Select Screen
BIST	[Disabled]	*I^v: Select Item
AP threads Idle Manner	[MWAIT Loop]	* Enter: Select
I AES	[Enabled]	*1+/-: Change Opt.
MachineCheck	[Enabled]	* F1: General Help
MonitorMWait	[Enabled]	* F2: Previous Values
Intel Trusted	[Disabled]	+ F3: Optimized Defaults
Execution Technology		v F4: Save & Exit
I		ESC: Exit
\		+,
Version 2.20.1275.	Copyright (C) 2023 Americ	can Megatrends, Inc.
Aptio Setup Utility	- Copyright (C) 2023 Ame:	rican Megatrends, Inc.
Advanced		
Hardware Drefetcher	[Enabled]	AlPaget TPM Any content
Adjacent Cache Line	[Enabled]	+ITxt may not functional
Prefetch	[Linuxred]	+lafter MIX content gets
I Intel (VMX)	[Enabled]	+lreset.
Virtualization	(+1
Technology		+1
Active Processor Cores	[A11]	+1
BIST	[Disabled]	+1
AP threads Idle Manner	IMWAIT LOODI	+1
AES	[Enabled]	+1
MachineCheck	[Enabled]	* ><: Select Screen
MonitorMWait	[Enabled]	* ^v: Select Item
Intel Trusted	[Disabled]	* Enter: Select
Execution Technology		* +/-: Change Opt.
Alias Check Request	[Disabled]	* Fl: General Help
DPR Memory Size (MB)	4	* F2: Previous Values
Reset AUX Content	[no]	* F3: Optimized Defaults
1		v F4: Save & Exit
		ESC: Exit
\		+,
	0001123 000E ((1) 2022 7movi	and the second sec

Feature	Options Description				
CEDRAM	Disabled	Enable/Disable moving of DRAM contents to PRM memory			
Соркам	Enabled	when CPU is in C6 state			
Coffware Cuard	Disabled				
Sollware Guard	Enabled	Enable/Disable Software Guard Extensions (SGX)			
Extensions (SGX)	Software Controlled				
CPU Flex	Disabled	Enable (Dicable CDL) Elex Patio Programming			
Ratio Override	Enabled				
CPU Flex	20	This value must be between Max Efficiency Ratio (LFM) and			
Ratio Settings	20	Maximum non-turbo ratio set by Hardware (HFM).			
Hardwara Brofotchar	Disabled	To turn on (off the MLC streamer profetcher			
	Enabled	To turn on on the Mile streamer prefetcher.			
Adjacent Cache	Disabled	To turn on off profetching of adjacent cache lines			
Line Prefetch	Enabled	To turn on/on prefetching of adjacent cache lines.			
Intel (VMX)	Disabled	When enabled a VMM can utilize the additional bardware			
Virtualization	Enabled	capabilities provided by Vanderpool Technology			
Technology	LINADIEG	capabilities provided by valuerpoor recimology.			
	All				
	1				
	2				
Active Processor	3	Number of cores to enable in each processor package			
Cores	4	Number of cores to enable in each processor package.			
	5				
	6				
	7				
BIST	Disabled	Enable/Disable BIST (Built-In Self-Test) on reset			
	Enabled				
AP threads Idle	HALT Loop				
Manner	MWAIT Loop	AP threads Idle Manner for waiting signal to run			
Manner	RUN Loop				
ΔΕς	Disabled	Enable/Disable AFS (Advanced Encryption Standard)			
	Enabled	Enable, Disable ALS (Advanced Encryption Standard)			
MachineCheck	Disabled	Enable/Disable Machine Check			
Widefinite Check	Enabled				
MonitorMWait	Disabled	Enable/Disable MonitorMWait			
	Enabled				

Intel Trusted Execution Technology	Disabled Enabled	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.			
Alias Check Request	Disabled Enabled	Enables Txt Alias Checking Capability Changes require full Txt capability before it will take effect. It is a one-time only change; next reboot will be reset.			
DPR Memory Size (MB)	4	Reserve DPR memory size (0-255) MB			
Reset AUX Content	yes no	Reset TPM Aux content. Txt may not functional after AUX content gets reset.			

Power & Performance

CPU - Power Management (Control	Select the performance		
Boot performance mode	will set starting from			
Intel(R) SpeedStep(tm)	[Enabled]			
Kace IO HAIT (KIH)	[Enabled]			
States	[Disabled]	i i i		
		><: Select Screen		
		^v: Select Item		
		Enter: Select		
		+/-: Change Opt.		
		Fl: General Help		
		F2: Previous Values		
		F3: Optimized Defaults		
		F4: Save & Exit		
		[ESC: Exit		

Feature	Options	Description
Boot performance mode	Max Battery Max Non-Turbo Performance Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.
Intel(R)	Disabled	Allows more than two frequency ranges to be
SpeedStep(tm)	Enabled	supported.
Race To Halt (RTH)	Disabled Enabled	Enable/Disable Race To Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State faster to reduce overall power. (RTH is controlled through MSR 1FC bit 20)
Turbo Mode	Disabled Enabled	Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).
C states	Disabled Enabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

PCH-FW Configuration

Aptio Setup Utility Advanced	- Copyright (C) 2	023 American Megatrends, Inc.
/		,
ME Firmware Version	12.0.64.1551	When Disabled ME will
ME Firmware Mode	Normal Mode	be put into ME
ME Firmware SKU	Corporate SKU	Temporarily Disabled
ME Firmware Status 1	0x90000255	Mode.
ME Firmware Status 2	0x3285810E	1
ME State	[Enabled]	
> Firmware Update Configu	ration	
		 ><: Select Screen
		^v: Select Item
l)		Enter: Select
E		+/-: Change Opt.
		Fl: General Help
l i li		F2: Previous Values
D		F3: Optimized Defaults
l.		F4: Save & Exit
l		ESC: Exit
		,

Feature	Options	Description			
ME State	Disabled	When Disabled ME will be put into ME Temporarily Disabled			
	Enabled	Mode.			

PCH-FW Configuration

1	Aptio Setup Advanced	Utility	- Copyright	(C) 2023	American	Megatrends,	Inc.
Me Fi	∛ Image Re-	Flash	[Disabled]		En; Im; 	able/Disable age Re-Flash	Me FW function.
					 >< ^v En: +/- F1 F2 F3 F4 ES0	: Select Sore : Select Iter ter: Select -: Change Opt : General Hel : Previous Va : Optimized I : Save & Exit C: Exit	een n Lp Alues Defaults
	Version 2.	20.1275.	Copyright (C	1) 2023 At	merican Me	egatrends. Tr	nc.

Feature	Options	Description
Me FW Image	Disabled	Frankla (Disable Mar DM) has an Da Flack for sting
Re-Flash	Enabled	Enable/Disable we FW image Re-Flash function.

Trusted Computing

Aptio Setup Utility Advanced	- Copyright (C) 2023 American Megatrends, Inc.
Configuration		Enables or Disables
	[Enable]	BIOS support for
Support		security device. O.S.
NO Security Device		will not show Security
ound		Device. TCG EFI
		protocol and INTIA
		interface will not be
		available.
		I
		<pre> ><: Select Screen</pre>
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Feature	Options	Description
Security Device	Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and
Support	Enabled	INT1A interface will not be available.

Trusted Computing (TPM2.0)

Aptio Setup Utility	- Copyright (C) 202	23 American Megatrends, Inc.
Auvanceu		+
TPM20 Device Found		^ Enables or Disables
Firmware Version:	5.0	* BIOS support for
Vendor:	IFX	* security device. 0.S.
		* will not show Security
	[Enable]	* Device. TCG EFI
Support		* protocol and INTIA
Active PCR banks	SHA-1, SHA256	<pre>* interface will not be</pre>
Available PCR banks	SHA-1, SHA256	* available.
		*1
SHA-1 PCR Bank	[Enabled]	*
SHA256 PCR Bank	[Enabled]	* ><: Select Screen
		* ^v: Select Item
Pending operation	[None]	* Enter: Select
Platform Hierarchy	[Enabled]	* +/-: Change Opt.
Storage Hierarchy	[Enabled]	+ Fl: General Help
Endorsement	[Enabled]	+ F2: Previous Values
Hierarchy		+ F3: Optimized Defaults
		v F4: Save & Exit
		ESC: Exit
		+
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Version 2.20.1275. Aptio Setup Utility	Copyright (C) 2023 - Copyright (C) 202	American Megatrends, Inc. 23 American Megatrends, Inc.
Version 2.20.1275. Aptio Setup Utility Advanced	Copyright (C) 2023 - Copyright (C) 202	American Megatrends, Inc. 23 American Megatrends, Inc.
Version 2.20.1275. Aptio Setup Utility Advanced Active PCR banks	Copyright (C) 2023 - Copyright (C) 202 SHA-1.SHA256	American Megatrends, Inc. 23 American Megatrends, Inc. ^ITPM 1.2 will restrict
Active PCR banks	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256	American Megatrends, Inc. 23 American Megatrends, Inc. ^ TFM 1.2 will restrict + support to TFM 1.2
Active PCR banks Available PCR banks	Copyright (C) 2023 - Copyright (C) 202 SHA-1,SHA256 SHA-1,SHA256	American Megatrends, Inc. 23 American Megatrends, Inc. ^ TFM 1.2 will restrict + support to TFM 1.2 + devices. TFM 2.0 will
Active PCR banks Available PCR banks	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ TFM 1.2 will restrict + support to TFM 1.2 + devices, TFM 2.0 will + lrestrict support to TFM
Aptio Setup Utility Advanced Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ TFM 1.2 will restrict + support to TFM 1.2 + devices, TFM 2.0 will + restrict support to TFM *12.0 devices, Auto will
Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank	Copyright (C) 2023 - Copyright (C) 202 SHA-1,SHA256 SHA-1,SHA256 [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 hoth with the
Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [None]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0
Aptio Setup Utility Advanced Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [None] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0 * devices if not found
Version 2.20.1275. Aptio Setup Utility Advanced Active PCR banks Available PCR banks SHA-1 PCR Bank SHA-256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [None] [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0 * devices if not found, *!
Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0 * devices if not found, *
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0 * devices if not found, * * *
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TEM2 0 UEEL Spec	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	American Megatrends, Inc. 23 American Megatrends, Inc. ^ 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 the * default set to TPM 2.0 * devices if not found, * * *
Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2]	American Megatrends, Inc. 23 American Megatrends, Inc. ^/[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 the */default set to TPM 2.0 */devices if not found, */ */ */><: Select Screen */^v: Select Item
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1 3]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 American Megatrends, Inc. 22 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 Americ
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1.3]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 American Megatrends, Inc. 21 American Megatrends, Inc. 22 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 29 American Megatrends, Inc. 20 Americ
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1.3]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 Americ
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA-256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1.3] [TIS]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 Americ
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType Device Select	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1.3] [TIS] [Auto]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 American Megatrends, Inc. 21 American Megatrends, Inc. 22 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 Americ
Active PCR banks Active PCR banks Available PCR banks SHA-1 PCR Bank SHA-256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType Device Select	Copyright (C) 2023 - Copyright (C) 202 SHA-1, SHA256 SHA-1, SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TCG_2] [1.3] [TIS] [Auto]	American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 23 American Megatrends, Inc. 24 American Megatrends, Inc. 25 American Megatrends, Inc. 26 American Megatrends, Inc. 27 American Megatrends, Inc. 28 American Megatrends, Inc. 29 American Megatrends, Inc. 29 American Megatrends, Inc. 20 American Megatrends, Inc. 21 American Megatrends, Inc. 21 American Megatrends, Inc. 22 American Megatrends, Inc. 23 American Megatrends, Inc. 24 Americ

Feature	Options	Description
Security Device Support	Enabled Disabled	Enables or disables BIOS support for security device. By disabling this function, OS will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
SHA-1 PCR Bank	Enabled Disabled	Enables or disables SHA-1 PCR Bank.
SHA256 PCR Bank	Enabled Disabled	Enables or disables SHA256 PCR Bank.

Pending	None	Schedules an Operation for the Security Device. NOTE: Your computer will	
operation	TPM Clear	reboot during restart in order to change State of Security Device.	
Platform	Enabled	Fredelan an discloler Distance Lienander	
Hierarchy	Disabled	Enables or disables Platform Hierarchy.	
Change and Lille memoly a	Enabled	Freeklas en dischlas Charrana Uismanha	
Storage Hierarchy	Disabled	Enables or disables Storage Hierarchy.	
Endorsement	Enabled	Fredelar an dischlar Frederar ach Historich	
Hierarchy	Disabled	Enables or disables Endorsement Hierarchy.	
		Select the TCG2 Spec Version,	
TPINIZ.0 UEFI Spec		TCG_1_2: Supports the Compatible mode for Win8/Win10	
Version	ICG_2	TCG_2 : Supports new TCG2 protocol and event format for Win10 or later.	
Physical Presence	1.2	Select to tell OS to support PPI Spec Version 1.2 or 1.3.	
Spec Version	1.3	NOTE: Some HCK tests might not support 1.3.	
TPM 20	TIC	Colort TDM 20 Device for the Communication Interface	
InterfaceType	115	Select I Pivi 20 Device for the Communication Interface.	
	TPM 1.2	TPM 1.2 will restrict support to TPM 1.2 devices; while TPM 2.0 will restrict	
Device Select	TPM 2.0	support to TPM 2.0 devices; Auto will support both with the default set to	
	Auto	TPM 2.0 devices. If not found, TPM 1.2 devices will be enumerated.	

Super IO Configuration

/	Megatrends, Inc.
Super IO Chip F81866 > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration > Serial Port 5 Configuration > Serial Port 6 Configuration > Power Loss Configuration > Fower Loss Configuration > Serial Port 6 Configuration > Fower Loss Configuration > Serial Port 6 Configuration > Fower Loss Configuration	Parameters of
<pre>> Power Loss Configuration ><: 5 ^v: 5 Enter +/-: F1: 0 F2: F</pre>	
F3: 0 F4: 5 F5: 1	Select Screen Select Item er: Select Change Opt. General Help Previous Values Optimized Defaults Save & Exit

Serial Port 1-6 Configuration

Aptio Setup Utility · Advanced	- Copyright (C) 2023 Ameri	can Megatrends, Inc.
		+
Seriai Port i Configurat. 	ion	Serial Port (COM)
Serial Port	[Enabled]	1
Device Settings	IO=3F8h; IRQ=4;	!
 Change Settings COM1 MODE COM1 Termination 	[Auto] [RS232] [Disabled]	
 		<pre>><: Select Screen ><: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275.	Copyright (C) 2023 America	n Megatrends, Inc.

Feature	Options	Description	
Serial Port	Disabled	Enables or disables Serial Port 1.	
Schurront	Enabled		
Device Settings	NA	IO=3F8h; IRQ = 4;	
	Auto		
	IO=3F8h; IRQ=4;		
Character Catting and	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;		
Change Settings	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO device	
	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;		
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;		
	RS232		
COM# MODE	RS485	Select Com Mode as RS232/RS485/RS422	
	RS422		
COM#	Disabled	COM DC 422/405 De seisen Tempinetien	
Termination Enabled		COM RS-422/485 Receiver Termination	

Power Loss Configuration

Aptio Setup Utility - Copyright (C) 2023 i Advanced	American Megatrends, Inc.
/ Power Loss Configuration	Set the state after power loss.
AC Power Loss State [Always OFF]	
	<pre>><: Select Screen ^v: 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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Feature	Options	Description	
	Always OFF		
AC Power Loss	Always ON	Set power state after power loss.	
State	Last state		

H/W Monitor

Aptio Setup Utili Advanced	ty - Copyright (C) 20	23 American Megatrends, Inc.
/ Pc Health Status) I
CPU temperature SYSTEM temperature VCore VGT 5V 12V VSB3V VBAT	: +46 C : +45 C : +0.808 V : +0.672 V : +4.961 V : +12.144 V : +3.312 V : +3.056 V	<pre>><: Select Screen ^v: Select Item Enter: Select !+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2 20 122	5 Conuright (C) 2023	American Megatrande Inc

F81216SEC Super IO Configuration

Aptio Setup Util Advanced	ity - Copyright (C) 2023 Ame	rican Megatrends, Inc.
/ Serial Port 1 Config 	guration	Enable or Disable Serial Fort (COM)
Serial Port	[Enabled]	1
Device Settings	IO=2D0h; IRQ=7;	
Change Settings	[Auto]	- it is a set of the s
Change Settings 	[Standard Serial Port Mode]	
		<pre>><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Manajan 2 20 12	75 Conuright (C) 2022 Amori	ann Magatranda Ina

Feature	Options	Description
Serial Port	Disabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO=2D0h; IRQ=7;
Change Settings	Auto IO=240h; IRQ=7; IO=240h; IRQ=3,4,5,6,7,10,11,12; IO=248h; IRQ=3,4,5,6,7,10,11,12; IO=250h; IRQ=3,4,5,6,7,10,11,12; IO=258h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO Serial Port Device
Change Settings	Standard Serial Port Mode IrDA Active pulse 1.6 uS, Full Duplex IrDA Active pulse 1.6 uS, Half Duplex IrDA Active pulse 3/16 bit time, Full Duplex IrDA Active pulse 3/16 bit time, Half Duplex	Select an optimal setting for Super IO Serial Port Device

Raiser Card Hardware Monitor

Aptio Setup Uti Advanced	lity - Copyright (C) 2023 .	American Megatrends, Inc.
Pc Health Status		
Graphic Card temperaturel	: +39 C	
Graphic Card temperature2	: +45 C	
Fanl Speed	: 9933 RPM	1
Fan2 Speed	: 9677 RPM	
		<pre> ><: Select Screen</pre>
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
		+

Watch Dog Timer Configuration

Aj	Ad	Setup vanced	Utility - Copyright	(C) 2023 American Megatrends, Inc.
Watch	Dog	Timer	Configuration	Enabled or Disabled
		Timer		
				 ><: Select Screen
				^v: Select Item Enter: Select
				+/-: Change Opt. Fl: General Help
				F2: Previous Values F3: Optimized Defaults
				F4: Save & Exit ESC: Exit
	Tore	ion 2	20, 1275 Converight (C)	2023 American Magatrands Inc

Feature	Options	Description
Watch Dog	Enabled	Fracklas an dischlas Match Dan Timon function
Timer	Disabled	Enables of disables watch Dog Timer function

Serial Port Console Redirection

Aptio Setup Utility - Copyright (C) 2023 A Advanced	merican Megatrends, Inc.
COM0 Console Redirection [Enabled] > Console Redirection Settings	Console Redirection Enable or Disable.
Legacy Console Redirection > Legacy Console Redirection Settings	
	 ><: Select Screen ^v: Select Item Enter: Select
	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
	F4: Save & Exit ESC: Exit

Feature	Options	Description
COM0	Enabled	
Console	Disabled	Enables or disables Console Redirection
Redirection	Disabled	

Console Redirection Settings

Aptio A	o Setup Utility dvanced	y - Copyright (C) 2	2023 American Megatrends, Inc.	
/	Redirection Set Type second s trol Combo Key Mode on 100x31 yPad	<pre>ttings [VT100+] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [VT100]</pre>	<pre> Emulation: ANSI: ^ Extended ASCII char * set. VT100: ASCII char * set. VT100+: Extends * VT100 to support color, * function keys, etc. * VT-UTF8: Uses UTF8 + encoding to map Unicode v </pre>	
Ver	sion 2.20.1275.	. Copyright (C) 202	23 American Megatrends, Inc.	
Terminal Type	VT100 VT100+ VT-UTF8 ANSI 9600 19200	Emulation: ANSI: Extended ASC VT100: ASCII char s VT100+: Extends V VT-UTF8: Uses UTF bytes.	Cll char set. et. T100 to support color, function keys, etc. 8 encoding to map Unicode chars onto 1 or mor	
Bits per second	38400 57600 115200 7	Selects serial port to on the other side. L	transmission speed. The speed must be matche ong or noisy lines may require lower speeds.	
Data Bits	8	Data Bits		
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit		
Stop Bits	1 2	Stop bits indicate the beginning). The with slow devices n	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	

Flow Control	None Hardware RTS/CTS	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.	
VT-UTF8 Combo	Disabled		
Key Support	Enabled	Enables VI-UIF8 Combination Key Support for ANSI/VI 100 terminals	
Recorder Mode	Disabled	With this mode enabled only text will be sent. This is to capture	
	Enabled	Terminal data.	
Resolution 100x31	Disabled	Enables or disables extended terminal resolution	
	Enabled		
	VT100		
Dutter Kau Dad	LINUX		
	XTERMR6	Select Function Key and Key Dad on Dutty	
	SCO	Select runctionkey and keyPad on Pully.	
	ESCN		
	VT400		

Console Redirection Settings

Aptio Setup Utility Advanced	- Copyright (C) 2023 A	merican Megatrends, Inc.
/	ion Cattings	
Legacy console Redifect	Ion Sectings	display redirection of
Redirection COM Port	[COM0]	Legacy OS and Legacy
Resolution	[80x24]	OPROM Messages
Redirect After POST	[Always Enable]	1
		i i
I		1
I		1
E. C.		1
I		
I		><: Select Screen
I		^v: Select Item
I		Enter: Select
1		+/-: Change Opt.
1		Fl: General Help
1		F2: Previous Values
I.		F3: Optimized Defaults
1		F4: Save & Exit
Î.		ESC: Exit
\		+7
Version 2.20.1275.	Copyright (C) 2023 Ame	rican Megatrends, Inc.

Feature	Options	Description
Redirection	60140	Select a COM port to display redirection of Legacy OS and
COM Port	COMU	Legacy OPROM Messages.
Decolution	80x24	On Legacy OS, the Number of Rows and Columns supported
Resolution	80x25	redirection.
		When Bootloader is selected, Legacy Console Redirection is
Redirection After	Always Enable	disabled before booting to legacy OS. When Always Enable is
BIOS POST	BootLoader	selected, then Legacy Console Redirection is enabled for legacy
		OS. Default setting for this option is set to Always Enable .

PCI Subsystem Settings

AMI PCI Driver Version : A5.01.17	Re-enable Bus Master
	Attribute disabled
CI Settings Common for all Devices:	during Pci enumeration
BME DMA Mitigation [Disabled]	for PCI Bridges after
	SMM Locked
Change Settings of the Following PCI Devices:	- I.
	1
WARNING: Changing PCI Device(s) settings may	1
have unwanted side effects! System may HANG!	1
PROCEED WITH CAUTION.	
	<pre> ><: Select Screen</pre>
	^v: Select Item
	Enter: Select
	+/-: Change Opt.
	Fl: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit

Feature	Options			D	escription			
BME DMA	Disabled	Re-enable	Bus	Master	Attribute	disabled	during	Pci
Mitigation	Enabled	enumeratio	n for l	PCI Bridge	es after SMI	M Locked		

USB Configuration

Aptio	Setup Utility -	- Copyright (C)	2023 American Megatrends, Inc.
/			\
USB Config	juration		^ Enables Legacy USB
I TOD Made In			* support. AUTO option
USB MOdule	USB Module version		<pre>* disables legacy support * lif no USB devices are</pre>
I USB Contro	USB Controllers:		* connected DISABLE
1 1 XH	ICI		* option will keep USB
USB Device	s:		* devices available only
None	<u>+</u>		* for EFI applications.
I. Contraction of the second sec			*1
Legacy USE	3 Support	[Enabled]	*
XHCI Hand-	-off	[Enabled]	* ><: Select Screen
Driver Sur	port	[Enabled]	* V: Select Item
Direct Day	-port		*I+/-: Change Opt.
USB hardwa	are delays		*[F1: General Help
and time-o	outs:		+ F2: Previous Values
USB transf	fer time-out	[20 sec]	+ F3: Optimized Defaults
Device res	set time-out	[20 sec]	v F4: Save & Exit
1			ESC: Exit
\	0 00 1075 (
versi	ion 2.20.1275. (Lopyright (C) 2	023 American Megatrends, Inc.
2000	Comm. Theiling	Comminist (C)	2022 American Manaturada Tar
Aptio	secup othicty -	- copyright (C)	2023 American Megatrends, Inc.
/			\
1			^ [Maximum time the device ^]
USB Contro	llers:		+ will take before it *
1 XH	ICI		+ properly reports itself *
USB Device	s:		* to the Host Controller. *
None	:		* 'Auto' uses default *
	Current	(Frahlad)	* [value: for a Root port *]
Legacy USE	off	[Enabled]	<pre>^/IC IS IOU ms, IOF a Hup +/ */nort the delay is taken v/</pre>
USB Mass S	Storage	[Enabled]	*1
Driver Sup	port		*[]
i			* ><: Select Screen
USB hardwa	are delays		* ^v: Select Item
and time-o	outs:		* Enter: Select
USB transf	fer time-out	[20 sec]	* +/-: Change Opt.
Device res	set time-out	[20 sec]	* F1: General Help
Device pow	er-up delay		* F2: Previous values
			viF4: Save & Exit
		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	IESC: Exit
· \			/
Versi	on 2.20.1275. 0	Copyright (C) 2	023 American Megatrends, Inc.
Feature	Options		Description
		Enables Legacy	USB support.
	Enabled	Auto option c	lisables legacy support if no USB devices are
Legacy USB	Disabled	connected.	
Support			
	Auto	Disabled optio	n will keep USB devices available only for EFI
		applications	
XHCI Hand-off	Enabled	This is a workar	ound for OSes without XHCI hand-off support. The
	Disabled	XHCI ownership	change should be claimed by XHCI driver.

USB Mass Storage Driver Support	Disabled Enabled	Enables or disables USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec <mark>20 sec</mark>	The time-out value for Control, Bulk, and Interrupt transfers
Device reset time-out	10 sec 20 sec 30 sec 40 sec	USB mass storage device Start Unit command time-out
Device power-up delay	<mark>Auto</mark> 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.

Network Stack Configuration

Aptio Setur Advanced) Utility - Copyright 1	(C) 2023 American	Megatrends,	Inc.
Network Stack	[Disabled]	En4 Net 	able/Disable twork Stack	UEFI
 		 >< ^v En +/- F1 F2 F3 F4 ES	: Select Scre : Select Item ter: Select -: Change Opt : General Hel : Previous Va : Optimized D : Save & Exit C: Exit	en p lues efaults
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Feature	Options	Description		
Notwork Stock	Disabled	Frables or disables UEFI Network Stady		
Network Stack	Enabled	Enables of disables UEFI Network Stack		

CSM Configuration

Aptio Setup Utility Advanced	7 - Copyright (C) 2023	American Megatrends, Inc.
/ Compatibility Support N	Nodule Configuration	Enable/Disable CSM Support.
CSM Support	[Enabled]	i i
CSM16 Module Version	07.82	
Option ROM execution		
Network	[Legacy]	
Video	[Legacy]	><: Select Screen
Other PCI devices	[Legacy]	^v: Select Item
		Lnter: Select +/-: Change Opt.
i		F1: General Help
I		F2: Previous Values
1		F3: Optimized Defaults
1		F4: Save & Exit
1		ESC: Exit
Version 2 20 1275	Converight (C) 2023 M	marican Megatrands Inc

Feature	Options	Description
CSM Support	Disabled	Enables or disables CSM Support
	Enabled	
	Do Not Launch	
Network	UEFI	Controls the execution of UEFI and Legacy PXE OpROM
	Legacy	
	Do Not Launch	
Storage	UEFI	Controls the execution of UEFI and Legacy Storage OpROM
	Legacy	
	Do Not Launch	
Video	UEFI	Controls the execution of UEFI and Legacy Video OpROM
	Legacy	
Other PCI device	Do Not Launch	Determines Opposed everytion policy for devices other than
	UEFI	Notwork Storage or Video
	Legacy	Network, Storage, or video

Control Legacy PXE Boot

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Control Legacy PXE Boot		Control Legacy PXE Boot from which Lan
Control Legacy PXE Boot from	[Disabled]	
		<pre>><: Select Screen ^v: 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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Feature	Options	Description
Control	Disabled	
Legacy PXE	MGMT Lan1	Control Legacy PXE Boot from which Lan
Boot from	MGMT Lan2	

Chipset

Select the Chipset menu item from the BIOS setup screen to enter the Platform Setup screen. Users can select any of the items in the left frame of the screen.

	Aptio Set	up Utility -	Copyright	(C) 20	23 Amer:	ican Megatrends, Inc.
Ma:	In Advance	ed Chipset	Security	Boot	Save & I	Exit
> Syst > PCH- 	tem Agent -IO Config	(SA) Configu uration	ration			System Agent (SA) Parameters
						<pre>><: Select Screen ><: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 3	2.20.1275. C	opyright ((C) 2023	America	an Megatrends, Inc.
System Agent (SA) Configuration

Aptio Setup Utility Chipse	- Copyright (C) 2 t	2023 American Megatrends, Inc.
/ System Agent (SA) Confi 	guration	Memory Configuration Parameters
SA PCIe Code Version VI-d	7.0.112.32 Supported	
<pre>> Memory Configuration > Graphics Configuration > DMI/OPI Configuration > PEG Port Configuration</pre>		
VT-d Above 4GB MMIO BIOS assignment	[Enabled] [Enabled]	><: Select Screen ^v: Select Item Enter: Select
X2APIC Opt Out 	[Disabled]	<pre>+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
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Feature	Options	Description
VT-d	Disabled Enabled	VT-d capability
Above 4GB MMIO BIOS assignment	Enabled Disabled	Enable/Disable above 4GB MemoryMappedIO BIOS assignment This is enabled automatically when Aperture Size is set to 2048MB.
X2APIC Opt Out	Enabled Disabled	Enable/Disable X2APIC_OPT_OUT bit

Memory Configuration

Aptio Setup Utility	- Copyright (C) 2023	American Megatrends, Inc.
/		^ Maximum Memory * Frequency Selections in
Memory RC Version Memory Frequency Memory Timings (tCL-tRCD-tRP-tRAS) Channel 0 Slot 0 Size	0.7.1.113 2133 MHz 15-15-15-35 Populated & Enabled 32768 MB (DDR4)	* Mhz. Valid values * should match the * refclk, i.e. divide by * 133 or 100 * * *
Number of Ranks Manufacturer Channel 0 Slot 1 Channel 1 Slot 0 Size Number of Ranks	2 UnKnown Not Populated / Disabled Populated & Enabled 32768 MB (DDR4) 2	<pre>* * ><: Select Screen * ^v: Select Item * Enter: Select + +/-: Change Opt. + F1: General Help + F2: Previous Values </pre>
Version 2.20.1275.	Copyright (C) 2023 An	v F4: Save & Exit ESC: Exit merican Megatrends, Inc.
Aptio Setup Utility Chipset	- Copyright (C) 2023	American Megatrends, Inc.
Channel 0 Slot 0 Size Number of Ranks Manufacturer Channel 0 Slot 1 Channel 1 Slot 0 Size Number of Ranks Manufacturer Channel 1 Slot 1	Populated & Enabled 32768 MB (DDR4) 2 UnKnown Not Populated / Disabled Populated & Enabled 32768 MB (DDR4) 2 UnKnown Not Populated / Disabled	<pre>^ Enable/Disable fast + path thru the MRC + + + + + * * * * * * * * * *</pre>
 Maximum Memory Frequency Max TOLUD Fast Boot \	[Auto] [Dynamic] [Enabled]	<pre>* +/-: Change Opt. * F1: General Help * F2: Previous Values * F3: Optimized Defaults v F4: Save & Exit ESC: Exit </pre>

Feature	Options	Description
Maximum Memory Frequency	Auto 1067 ~ 6200	Maximum Memory Frequency Selections in Mhz. Valid values should match the refclk, i.e. divide by 133 or 100
Max TOLUD	Dynamic 1 GB ~ 3.5GB	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
Fast Boot	Disabled Enabled	Enable/Disable fast path thru the MRC

Graphics Configuration

Aptio Setup Utilit Chips	y - Copyright (C) 2022 Amer et	rican Megatrends, Inc.
/ Graphics Configuration Primary Display Select PCIE Card > External Gfx Card Prim Internal Graphics GTT Size Aperture Size > LCD Control	[Auto] [Auto] mary Display Configuration [Auto] [8MB] [256MB]	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
 		<pre>><: Select Screen ^v: 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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Feature	Options	Description
Primary Display	Auto IGFX PEG PCI SG	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Select PCIE Card	Auto Elk Creek 4 PEG Eval	Select the card used on the platform Auto: Skip GPIO based Power Enable to dGPU Elk Creek 4: DGPU Power Enable = ActiveLow PEG Eval: DGPU Power Enable = ActiveHigh
Internal Graphics	Auto Disabled Enabled	Keep IGFX enabled based on the setup options.
GTT Size	2M 4M 8M	Select the GTT Size
Aperture Size	128MB 256MB 512MB 1024MB 2048MB	Select the Aperture Size Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

Aptio	Setup Ut	tility - Copyright (C) 2023 Thipset	American Megatrends, Inc.
External	Gfx Card	Primary Display Configurati	.on Select PEG0/PEG1/PEG2/PEG3
Primary	PEG	[Auto]	Graphics device should
Primary	PCIE	[Auto]	be Primary PEG.
			i
			<pre> ><: Select Screen</pre>
			^v: Select Item
			Enter: Select
			+/-: Change Opt.
			Fl: General Help
			F2: Previous Values
			F3: Optimized Defaults
			F4: Save & Exit
			ESC: Exit
			+

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Feature	Options	Description
	Auto	
Primary PEG	PEG11	Select PEG0/PEG1/PEG2/PEG3 Graphics device should be Primary PEG.
	PEG12	
Auto		Select Auto/PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6/PCIE7 of
		D28:F0/F1/F2/F3/F4/F5/F6/F7,
Primary PCIE	PCIET	PCIE8/PCIE9/PCIE10/PCIE11/PCIE12/PCIE13/PCIE14/PCIE15 of
	D29:F0/F1/F2/F3/F4/F5/F6/F7, PCIE16/PCIE17/PCIE18/PCIE19 of D27:F0/F1/F2/F3,	
PCIET9		Graphics device should be Primary PCIE.

LCD Control		Select the Video Device
Primary IGFX Boot	[VBIOS Default]	during POST.
Display		This has no effect if
		[external graphics
		present.
		Secondary boot display
		selection will appear
		><: Select Screen
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		IESC: Exit

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Feature	Options	Description
	VBIOS Default	
	EFP	Select the Video Device which will be activated during POST. This has no
Primary IGFX	LFP	effect if external graphics present. Secondary boot display selection will
Boot Display	EFP3	appear based on your selection. VGA modes will be supported only on
	EFP2	primary display
	EFP4	

DMI/OPI Configuration

Aptio Setup Utility Chipse	- Copyright (C) 2023	American Megatrends, Inc.
/		,
DMI/OPI Configuration		^ Set DMI Speed
L		* Gen1/Gen2/Gen3
DMI	X4 Gen3	*1
E		*1
DMI Max Link Speed		*1
DMI Gen3 Eq Phase 2	[Auto]	*1
DMI Gen3 Eq Phase 3	[Auto]	*1
Method		*1
Program Static Phasel	[Enabled]	*1
Eq		*
> Gen3 Root Port Preset value for each Lane		* ><: Select Screen
> Gen3 Endpoint Preset v	alue for each Lane	* ^v: Select Item
<pre> > Gen3 Endpoint Hint val</pre>	ue for each Lane	* Enter: Select
> Gen3 RxCTLE Control		* +/-: Change Opt.
DMI Link ASPM Control	[Disabled]	* Fl: General Help
DMI Extended Sync	[Disabled]	* F2: Previous Values
Control		+ F3: Optimized Defaults
E		v F4: Save & Exit
E		ESC: Exit
\		+
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Control various DMI functions. Please keep at default setting.

PEG Port Configuration

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Chipset		
PEG Port Configuration		^ Enable or Disable the
		* Root Port
PEG 0:1:0	x16 Gen3	
May Link Speed	[Enabled]	21 *1
Max Link Width	[Auto]	*
Power Down Unused	[Auto]	*
Lanes		+1
Gen3 Eq Phase 2	[Auto]	+1
Gen3 Eq Phase 3	[Auto]	+
Method	(Dischlard)	+ ><: Select Screen
De-emphasis Control	[Disabled]	+ V: Select Item + Enter: Select
OBFF	[Enabled]	+1+/-: Change Opt.
LTR	[Enabled]	+ F1: General Help
PEGO Slot Power	75	+ F2: Previous Values
Limit Value		+ F3: Optimized Defaults
		v F4: Save & Exit
		ESC: Exit
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Antio Sotur Utilitu	Converient (C)	2022 American Magatranda Tha
Aptio Setup Utility .	- Copyright (C)	2023 American Megatrends, Inc.
PEG0 Slot Power	[1.0x]	^[Set the physical slot
Limit Scale		+ number attached to this
PEG0 Physical Slot	1	+ Port. The number has to
Number		+ be globally unique
PEGO Hotplug	[Enabled]	+ within the chassis.
Extra Bus Reserved	10	+ values 0-8191
Reserved I/O	4	*1
PEG 0:1:1	Not Present	*
Enable Root Port	[Auto]	*j
Max Link Speed	[Auto]	* ><: Select Screen
PEG1 Slot Power	75	* ^v: Select Item
Limit Value	F1 0m1	* Enter: Select
Limit Scale	[1.0x]	+ +/-: Change Opt.
PEG1 Physical Slot	2	+ F2: Previous Values
		+ F3: Optimized Defaults
PEG 0:1:2	Not Present	v F4: Save & Exit
		[ESC: Exit
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Aptio Setup Utility	- Copyright (C)	2023 American Megatrends, Inc.
Chipset		
Max Link Speed	[Auto]	^ PEG Port Feature
PEG1 Slot Power	75	+ Configuration
Limit Value		+1
PEG1 Slot Power	[1.0x]	+1
Limit Scale		+1
PEGI Physical Slot	2	+1
PEG 0:1:2	Not Present	+1
Enable Root Port	[Auto]	+1
Max Link Speed	[Auto]	+1
PEG2 Slot Power	75	+ ><: Select Screen
Limit Value	10.000	* ^v: Select Item
PEG2 Slot Power	[1.0x]	* Enter: Select
PEG2 Physical Slot	3	* F : General Help
Number		* F2: Previous Values
		* F3: Optimized Defaults
> PEG Port Feature Configu	ration	v F4: Save & Exit
		[ESC: Exit

Feature	Options	Description
Enable Root Port	Disabled <mark>Enabled</mark> Auto	Enable or Disable the Root Port
Max Link Speed	Auto Gen1 Gen2 Gen3	Configure PEG 0:1:0 Max Speed
Max Link Width	Auto Force X1 Force X2 Force X4 Force X8	Force PEG link to retrain to X1/2/4/8
Power Down Unused Lanes	Disabled <mark>Auto</mark>	Power Down Unused Lanes. Disabled: No power saving Auto: Bios will power down unused lanes based on the max possible link width
Gen3 Eq Phase 2	Disabled Enabled <mark>Auto</mark>	Perform Gen3 Equalization Phase 2
Gen3 Eq Phase 3 Method	Auto Adaptive Hardware Equalization Adaptive Software Equalization Static Equalization Disabled	Select Method for Gen3 Equalization Phase 3
ASPM	Disabled Auto ASPM LOs ASPM L1 ASPM L0sL1	Control ASPM support for the PEG 0. This has no effect if PEG is not the currently active device.
De-emphasis Control	-6 dB -3.5 dB	PEG0: Configure the De-emphasis control on PEG
OBFF	Disabled Enabled	CPU PEG0 (0,1,0) OBFF Enable/Disable
LTR	Disabled Enabled	CPU PEG0 (0,1,0) Latency Reporting Enable/Disable

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PEG# Slot Power Limit Value	75	Sets the upper limit on power supplied by slot. Power limit (in Watts) is calculated by multiplying this value by the Slot Power Limit Scale. Values 0-255
PEG# Slot Power Limit Scale	1.0x 0.1x 0.01x 0.001x	Select the scale used for the Slot Power Limit Value.
PEG# Physical Slot Number	1	Set the physical slot number attached to this Port. The number has to be globally unique within the chassis. Values 0-8191
PEG0 Hotplug	Disabled Enabled	PCI Express Hot Plug Enable/Disable
Extra Bus Reserved	0	Extra Bus Reserved (0-7) for bridges behind this Root Bridge.
Reseved Memory	10	Reserved Memory for this Root Bridge (1-4096) MB
Reserved I/O	4	Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

PEG Port Feature Configuration

Aptio Setup	Chipset	pyright (C) 2023 American Megatrends, Inc.
PEG Port Featur	re Configuratio	on Detect Non-Compliance PCI Express Device in
Detect Non-Com Device	oliance [Ena	abled] PEG
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Feature	Options	Description
Detect Non-Compliance Device	Disabled Enabled	Detect Non-Compliance PCI Express Device in PEG

PCH-IO Configuration

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PCH-IO Configuration	PCI Express Configuration settings
<pre> > PCI Express Configuration > SATA And RST Configuration > USB Configuration > Security Configuration</pre>	
Serial IRQ Mode [Continuous]	<pre>><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. Fl: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Manajan 2 20 1275 Converight (C) 2022 America	an Magatranda Tha

Feature	Options	Description	
	Quiet	Configure Serial IRQ Mode.	
Serial IRQ Mode	Continuous		

PCI Express Configuration

Aptio Setu	p Utility -	- Copyright	(C) 2023 Am	erican Megatrends, Inc.
	Chipset			
/				+'
PCI Express Co	nfiguration	1		PCI Express Root Port
1				Settings.
> PCI Express Ro	ot Port 5			
> PCI Express Ro	ot Port 6			i i i i i i i i i i i i i i i i i i i
> PCI Express Ro	ot Port 7			i i i i i i i i i i i i i i i i i i i
> PCI Express Ro	ot Port 8			1 I I I I I I I I I I I I I I I I I I I
I> PCT Express Ro	ot Port 9			
I> PCT Express Ro	ot Port 10			
I> PCT Express Ro	ot Port 11			
IN DCT Express Po	ot Port 12			
IN DCT Express Do	ot Port 17			INC: Salact Screen
IN DOL ENDICES NO	ot Port 19			Art Salact Itam
IN DOI EMPIESS RO	ot Port 10			France Calent
> PCI Express Ro	ot Port 19			ILICE Change Ont
> PCI Express Ro	ot Port 20			1+/-: Change Opt.
<pre>> PCI Express Ro</pre>	ot Port 21			F1: General Help
> PCI Express Ro	ot Port 22			F2: Previous Values
<pre>> PCI Express Ro</pre>	ot Port 23			F3: Optimized Defaults
<pre>> PCI Express Ro</pre>	ot Port 24			F4: Save & Exit
1				ESC: Exit
\				+,
Version 2	.20.1275. 0	Copyright (C)) 2023 Amer	ican Megatrends, Inc.
Aptio Setu	p Utility -	Copyright	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setup	Chipset	Copyright	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setup	Chipset	Copyright	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setup / PCI Express Ro(Chipset	Copyright [Enabled]	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setu / PCI Express Roo 5	Chipset	Copyright [Enabled]	(C) 2023 Am	Control the PCI Express
Aptio Setup / PCI Express Roo 5 ASPM 4	Chipset	[Enabled]	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setur / PCI Express Rod 5 ASPM 4 Advanced Erro	Chipset Chipset	Copyright [Enabled] [Disabled] [Enabled]	(C) 2023 Am	Perican Megatrends, Inc.
Aptio Setu / PCI Express Rod 5 ASPM 4 Advanced Erro Reporting	Chipset Chipset of Port	Copyright [Enabled] [Disabled] [Enabled]	(C) 2023 Am	erican Megatrends, Inc. Control the PCI Express Root Port.
Aptio Setu / PCI Express Rod 5 ASPM 4 Advanced Erro Reporting PCIe Speed	Chipset Chipset of Port	Copyright [Enabled] [Disabled] [Enabled] [Auto]	(C) 2023 Am	erican Megatrends, Inc. Control the PCI Express Root Port.
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Aptio Setu PCI Express Rod S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	erican Megatrends, Inc. Control the PCI Express Root Port.
Aptio Setu PCI Express Rod S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	erican Megatrends, Inc.
Aptio Setu PCI Express Rod S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	erican Megatrends, Inc. Control the PCI Express Root Port. I I I I I I I I I I I I I
Aptio Setu PCI Express Rod S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. I I I I I I I I I I I I I I I I I I</pre>
Aptio Setu PCI Express Roo ASPM 4 Advanced Erro Reporting PCIE Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. I I I I I I I I I I I I I I I I I I</pre>
Aptio Setu PCI Express Rod S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. I I I I I I I I I I I I I I I I I I</pre>
Aptio Setu PCI Express Roo ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. I I I I I I I I I I I I I I I I I I</pre>
Aptio Setup PCI Express Roo S ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. </pre>
Aptio Setup PCI Express Roo ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	o Utility - Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. </pre>
Aptio Setup PCI Express Roo ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc. Control the PCI Express Root Port. </pre>
Aptio Setup PCI Express Roo ASPM 4 Advanced Erro Reporting PCIe Speed Detect Timeout	Chipset Chipset	Copyright [Enabled] [Enabled] [Auto] 0	(C) 2023 Am	<pre>erican Megatrends, Inc.</pre>

Feature	Options	Description	
PCI Express	Disabled		
Root Port #	Enabled	Control the PCI Express Root Port.	
	Disabled		
	LOs	Set the ASPM Level: Force L0s - Force all links to L0s State	
ASPM #-1	L1	AUTO - BIOS auto configure	
	L0sL1	DISABLE - Disables ASPM	
	Auto		

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Advanced Error	Disabled	Advanced Error Reporting Enable/Disable.	
Reporting	Enabled		
	Auto	Configure PCIe Speed	
	Gen1		
PCIe Speed	Gen2		
	Gen3		
		The number of milliseconds reference code will wait for link to	
Detect Timeout	0	exit Detect state for enabled ports before assuming there is no	
		device and potentially disabling the port.	

SATA And RST Configuration

Chipse	5	
SATA And RST Configurat.	ion	^ Enable/Disable SATA
		* Device.
		*1
SATA Mode Selection	[AHCI]	*1
Aggressive LPM Support	[Disabled]	*1
		*
Serial ATA Port 0	LANSSE128GTLE9	T
	(128.0GB)	I. I.
Software Preserve	SUPPORTED	1
Port 0	[Enabled]	
Hot Plug	[Disabled]	T. Contraction of the second se
Configured as eSATA	Hot Plug supported	1
External	[Disabled]	T. Contraction of the second se
Spin Up Device	[Disabled]	I. I.
SATA Device Type	[Hard Disk Drive]	T Contraction of the second seco
SATA Port 0 DevSlp	[Disabled]	1
DITO Configuration	[Disabled]	I. I.
DITO Value	625	1

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Feature	Options	Description
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI Intel RST	Determines how SATA controller(s) operate.
Aggressive LPM Support	Enabled Disabled	Enable PCH to aggressively enter link power state.
Port #	Enabled Disabled	Enable or Disable SATA Port
Hot Plug	Enabled Disabled	Designates this port as Hot Pluggable.
External	Enabled Disabled	Marks this port as external.
Spin Up Device	Enabled Disabled	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Device Type	Hard Disk Drive Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
SATA Port # DevSlp	Disabled Enabled	Enable/Disable SATA Port # DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen.
DITO Configuration	Disabled Enabled	Enable/Disable DITO Configuration

USB Configuration

Chipse	t	
USB Configuration		Option to enable Compliance Mode.
XHCI Compliance Mode		Default is to disable
xDCI Support	[Disabled]	Compliance Mode. Change
USB2 PHY Sus Well	[Enabled]	to enabled for
Power Gating		Compliance Mode testing
USB Overcurrent	[Enabled]	
USB Overcurrent Lock	[Enabled]	1
USB Port Disable	[Disabled]	><: Select Screen
Override		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		IRCC. Ruis

Feature	Options	Description
XHCI Compliance Mode	Disabled Enabled	Option to enable Compliance Mode. Default is to disable Compliance Mode. Change to enabled for Compliance Mode testing
xDCI Support	Disabled Enabled	Enable/Disable xDCI (USB OTG Device).
USB2 PHY Sus Well	Disabled	Select 'Enabled' to enable SUS Well PG for USB2 PHY. This
Power Gating	Enabled	option has no effect on PCH-H
USB Overcurrent	Disabled Enabled	Select 'Disabled' for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.
USB Overcurrent Lock	Disabled Enabled	Select 'Enabled' if Overcurrent functionality is used. Enabling this will make xHCI controller consume the Overcurrent mapping data
USB Port Disable	Disabled	Selectively Enable/Disable the corresponding USB port from
Override	Select Per-Pin	reporting a Device Connection to the controller.

Security Configuration

Security Configuration		Enable will lock bytes
		38h-3Fh in the
RTC Memory Lock	[Enabled]	lower/upper 128-byte
BIOS Lock	[Enabled]	bank of RTC RAM
Force unlock on all GPIO pads	[Disabled]	
		 ><: Select Screen
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		Fl: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		IESC: Exit

Feature	Options	Description
DTC Momony Look	Disabled	Enable will lock bytes 38h-3Fh in the lower/upper 128-byte
RTC Memory Lock	Enabled	bank of RTC RAM
DIOC Look	Disabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to
BIOS LOCK	Enabled	be enabled to ensure SMM protection of flash.
Force unlock on	Disabled	
all GPIO pads	Enabled	If Enabled BIOS will force all GPIO pads to be in unlocked state

RAID 0/1 Setup

RAID, the abbreviation of Redundant Array of Independent Disks, is a technological combination of multiple physical disk drives to appear as one single logical storage unit on the operating system layer. RAID-0 requires at least two physical disk drives and the total capacity is the sum of all available storage devices. RAID-1 requires two or more physical disk drives to operate. Current BIOS default setting is to disable RAID FW function, please follow setup steps below to enable RAID 0 features.

1. Select the **Chipset** menu item from the BIOS setup screen, and select **PCH-IO Configuration.**

System Agent (SA) Configuration PCH-IO Configuration	PCH Parameters
	<pre> ><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

2. Select SATA And RST Configuration.

PCH-IO Configuration		SATA Device Options
PCI Express Configuratio	n	
SATA And RST Configurati		i i i i i i i i i i i i i i i i i i i
USB Configuration		i i
Security Configuration		Î.
		1
Serial IRQ Mode	[Continuous]	1
		1
		>: Select Screen
		v: Select Item
		Inter: Select
		1+/-: Change Opt.
		FI: General Help
		12: Frevious values
		FA: Come & Emit
		IF4: Save & LXIC
		ESC: EXIT

3. Select SATA Mode Selection.

nabled] HCI) isabled] NSSE128GTLE9	<pre>*!controller(s) operate. *! *! *! *!</pre>
nabled] HCI) isabled] NSSE128GTLE9	*1 *1 *1 *1
HCI] isabled] NSSE128GTLE9	*1
isabled] NSSE128GTLE9	* *
NSSE128GTLE9	*
NSSE128GTLE9	41
28.0GB)	+
PPORTED	+1
nabled]	+
isabled]	+ ><: Select Screen
t Plug supported	+ ^v: Select Item
isabled]	+ Enter: Select
isabled]	+ +/-: Change Opt.
ard Disk Drive]	+ F1: General Help
isabled]	+ F2: Previous Values
isabled]	+ F3: Optimized Defaults
5	v F4: Save & Exit
	PPORTED habled] .sabled] .sabled] .sabled] .sabled] .sabled] .sabled] .sabled] .sabled] .sabled]

4. Select Intel RST Premium With Intel Optane System Acceleration.



5. Then Select Save & Exit Menu item and select **Yes** to **Save configuration and reset**. RAID 0 function has been enabled.



RAID-0 Setup

1. Select <CTRL-I> to enter Configuration Utility...

Copyri	ight (C) Intel Corp	ooration. All right	s reserved.	
RAII None	Volumes: defined.			
Phys	sical Devices:			
ID	Device Model	Serial #	Size	Type/Status(Vol ID)
0	LANSSE128GTLE9-S	07081B2C00017862	119.2GB	
1	TS32GSSD370I	C181550006	29.8GB	
2	TS32GSSD370	036BB80778570000	29.8GB	
Press	<ctrl-i> to enter</ctrl-i>	Configuration Utili	ty	

2. On the MAIN MENU, select 1. Create RAID Volume.

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*****	*************	********** [MAIN	MENU]*****	*****	********	******	******
	1. Create RA	ID Volume		overy	Volume Op		
	2. Delete RA	ID Volume	5. Acc	elerat	tion Optio		
	3. Reset Disl	ks to Non-RAID	6. Exi	t			
*****	*************	****[DISK/VOLUME	INFORMATION]****	********	******	******
RAIL	Volumes:						
None	defined.						
Phys	sical Devices:						
ID	Device Model	Serial #		Size	Type/Stat	us (Vol	ID) *
0	LANSSE128GTLE9-S	07081B2C00017862	11	9.2GB			
1	TS32GSSD370I	C181550006					
2	TS32GSSD370	036BB80778570000					
****	*******	*******	**********	*****	*******	******	******
	[**]-Select	[ESC]-Exi	t	[ENTER	RI-Select	Menu	

3. In the **CREATE VOLUME MENU**, select the disk to use in creating the volume.

			Nama	Volume1			
		DATE	Name:	PAIDO (String)			
		KAIL	Level:	KAIDO (SCHIPE)		*********	*****
				SELECT DISKS]			
	ID	Drive Model		Serial #	Size	Status	
		LANSSE128GTI	E9-5B2-2	07081B2C00017862	119.2GB	Non-RAID I)isk *
**	1	TS32GSSD3701		C181550006	29.8GB	Non-RAID I)isk *
**	2	TS32GSSD370		036BB80778570000	29.8GB	Non-RAID I	lisk *
**							***
**							***
							*
							*
		Select 2	to 6 di	sks to use in crea	ting the v	olume.	*
					Donotettet	********	*****
* * *	**[**]	-Prev/Next	SPACE]-Se	electDisk [ENTER]-	Done		
* * *	**[**]	-Prev/Next ([SPACE]-S	electDisk [ENTER]-	DOILE		
* * *	** [**]	-Prev/Next	[SPACE]-S	electDisk [ENTER]-)	DOILE		
* * *	**[**]	-Prev/Next	[SPACE]-S	electDisk [ENTER]-)	DOME		

4. Insert Strip Size values.

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********	*******	******[CI	REATE VO	DLUME MENU]*****	**********	**********
¥							
π.		Name:	Volume1	L			
×	RAI	D Level:	RAIDO (S	Stripe)			
R		Disks:	Select	Disks			
×	Str	ip Size:	64KB				
*	C	apacity:	59.6	GB			
×		Sync:	N/A				
ŧ			Create	Volume			
*							
*********	*********	*******	*******	********	******	*********	***********
*********	*********	********	****[HE	CLP]*****	******	**********	**********
×							
*							
*		The foll	owing an	re typical	values	:	
*							
*		1	RAIDO -	- 128KB			
*		1	RAID10 -	- 64KB			
*			RAID5 -	- 64KB			*
*							*
×							
******	*******	*******	******	********	******	*********	********
[*	*]Change	[TAB]-Next	t [ESC]	-Previous	Menu	[ENTER]-Sele	ect

5. Insert **Capacity** values.

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***********	REATE VOLUME MENU]************************************
π.	
* Name:	Volume1
<pre>* RAID Level:</pre>	RAIDO(Stripe)
* Disks:	Select Disks
* Strip Size:	64KB
* Capacity:	59.6 GB
* Sync:	N/A
π.	Create Volume
÷	
**********************	***************************************
**************	****[HELP]************************************
÷	
*	
*	
* The default value indicat	es the maximum capacity using the selected
 disks. Entering a lower 	capacity allows you to create a second
* vol	ume on these disks.
*	
*	
÷	
****************	************************************
[**]Change [TAB]-Nex	t [ESC]-Previous Menu [ENTER]-Select

6. Select **Y** to create this volume.

Copyright (C) Intel Corporation. All rights reserved.	
*********************************** [CREATE VOLUME MENU]***********************	*********
*	
* Name: Volume1	
* RAID Level: RAID0(Stripe)	
* Disks: Select Disks	
* Strip Size: 64KB	
* Capacity: 59.6 GB	
* Sync: N/A	
******************	***
* WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.	
*****	* ********
********* Are you sure you want to create this yolume? (Y/N):	********
* * * * * * * * * * * * * * * * * * * *	***
*	*
*	
*	
* Press ENTER to create the specified volume.	
*	
*	
*	
*	
**************	**********
[##]Change [TAB]_Next [FSC]_Previous Menu [FNTFR]_Seld	et

7. Select **Y** to exit.

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**	*****	******	********	********** [MAI	N MENU]*	***************	*********
×			Create RAI	ID Volume		Recovery Volume Op	
×		2.	Delete RAI	ID Volume		Acceleration Optio	
×		з.	Reset Disl	ks to Non-RAID	6.	Exit	
**	*****	******	*******	****[DISK/VOLUM	E INFORMA	TION]************	*********
×	RAID	Volume	s:				
×	ID	Name		Level	Strip	Size Status	Bootable*
×				RAIDO (Stripe)	64KB		
×		***	*******	******** [CONFI	RM EXIT]	***************	***
×	Physi	ical*					
×	ID	Dev*	A	re you sure you	want to e	xit? (Y/N):	*Vol ID) *
×		lan*					*k *_
*		TS3***	********	************	*******	******	****0) *
×		TS32GS	SD370	036BB8077857000		29.8GB Member Di	
×							
×							*
×							*
×							*
*							*
*							*
×							*
**	*****	******	********	************	********	***************	**********
		[**]-Select	[ESC]-Ex	it	[ENTER]-Select	Menu

RAID-1 Setup

1. Select <CTRL-I> to enter Configuration Utility...



2. On the MAIN MENU, select 1. Create RAID Volume.

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*****	*******	********** [MAIN	MENU]******	*********	*******	******
	1. Create RAI	ID Volume	4. Reco	overy Volume	Options	*
	2. Delete RAI	ID Volume	5. Acce	eleration Opt	ions	*
	3. Reset Disk	s to Non-RAID	6. Exit	t		
*****	*************	*** [DISK/VOLUME	INFORMATION]*********	*******	******
RAID	Volumes:					+
	defined.					
Physi	ical Devices:					
ID	Device Model	Serial #		Size Type/St	atus (Vol	ID) *
	LANSSE128GTLE9-S	07081B2C00017862	119			
	T532G55D370I	C181550006	29	9.8GB Non-RAI		
	TS32GS5D370	036BB80778570000	29	9.8GB Non-RAI		*
						*
*****	*******	*******	*********	*********	*******	******
	[**1-Select	[ESC]-Exit		[ENTER1-Selec	t Menu	
	L J DELEGO	[LUC] LAI		[milling bered	o manu	

3. In the **CREATE VOLUME MENU**, Select **Name**.

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******	****************************	CREATE VOLUME MENU]************************************	*****
×			•
*	Name:	Volume1	,
ĸ	RAID Level:	RAIDO(Stripe)	,
×	Disks:	Select Disks	
ŧ.	Strip Size:	128KB	
ŧ.	Capacity:	0.0 GB	
×	Sync:	N/A	
×		Create Volume	
×			
******	********	***************************************	*****
******	*******	*****[HELP]************************************	*****
*			
ŧ.			
×			
×	Enter a unique volume na	ame that has no special characters and is	
*	16	characters or less.	
×			
×			
×			
×			
******	*********************	************	*****
	[**1Change [TAB]-Nex	xt [ESC]-Previous Menu [ENTER]-Select	
	i januarije (inis) nei	(interior interior interior interior	

4. Enter **RAID Level** value.

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******	***** [CREATE V	OLUME MENU]*****	******
×			
*	Name: Volume	1	
* RAID	Level: RAID1	Mirror)	
*	Disks: Select	Disks	
* Stri	p Size: N/A		
* Ca	pacity: 0.0	GB	
*	Sync: N/A		
*	Create	Volume	
*			
******************	************	***********	**************
*****************	**********	ELP]**********	***************
×			
×			
*			
*			*
* R	AID 1: Mirrors	data (redundancy)	. *
*			*
÷			
*			*
×			
*****************	************	*******	********

5. Select the Disks to use in creating the volume.

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******	*******[CF	EATE VOLUME MENU]*******	*********	******
					*
	Name:	Volume1			*
* RA	ID Level:	RAID1 (Mirror)			×
*	Disks:	Select Disks			*
* St	rip Size:	N/A			*
*	Capacity:	0.0 GB			*
*	Sync:	N/A			*
*		Create Volume			*
*					
***************	*********	**************	********	*********	******
*******	********	****[HELP]******	********	**********	******
÷					×
*					*
*					*
*					*
* Press	ENTER to se	elect the physical	disks to	use.	*
*					×
*					*
*					*
*					*
*******	*********	**************	********	**********	******
[**]Change	[TAB]-Next	: [ESC]-Previous	Menu [EN	[ER]-Select	
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Copyright * * * * * * * * * * * * * * * * * * *	(C) Intel *******[CF Name: ID Level:	Corporation. All MEATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]**	rights re]	served. ************************************	*****
Copyright * * * * * * * * * * * * * * * * * * *	: (C) Intel ********[CF Name: MID Level:	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial #	rights re]	served.	*****
Copyright ** * * * * * * * * * * * * * * * * *	C) Intel	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862	<pre>rights re</pre>	served.	****
Copyright ** * * * * * * * * * * * * * * * * *	: (C) Intel Name: ID Level: 	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN	Size 119.2GB 74.5GB	served.	
Copyright ************************************	: (C) Intel ******* [CF Name: ID Level: ************************************	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	size 119.2GB 74.5GB	served.	
Copyright Copyright RA Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright Copyright C	: (C) Intel *******[CF Name: ID Level: ************************************	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	size 119.2GB 74.5GB	served.	
Copyright	(C) Intel Name: Name: ID Level: ID Level: ITLE9-SB2-2 C2BB080G4 C2BB080G4	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	size 119.2GB 74.5GB 74.5GB	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright Copyright RA TO Drive Mode * 0 LANSSE128G **1 INTEL SSDS ***2 INTEL SSDS *********************************	(C) Intel Name: Name: ID Level: ID Level: ID Evel: C2BB08064 C2BB08064	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	size 119.2GB 74.5GB	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>(C) Intel</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	size 119.2GB 74.5GB	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	Size 119.2GB 74.5GB 74.5GB	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel ****** [CF Name: ID Level: ************************************</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN	Size 119.2GB 74.5GB 74.5GB	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright Copyright RA Copyright RA RA Copyright RA RA RA Copyright RA RA RA RA RA RA RA RA RA R	<pre>: (C) Intel Name: Name: ID Level: TLE9-SB2-2 C2BB080G4 C2BB080G4 : 2 disks to : [SPACE]-Se</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN WL411400P1080KGN	Size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>(C) Intel Name: Name: IID Level: ************************************</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN WL411400P1080KGN	size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel *******[CF Name: IID Level: ************************************</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN 0 use in creating electDisk [ENTER]-	Size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel *******[CF Name: ID Level: ************************************</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN 0 use in creating electDisk [ENTER]-	size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN WL411400P1080KGN	size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	
Copyright	<pre>: (C) Intel</pre>	Corporation. All EATE VOLUME MENU Volume1 RAID1(Mirror) SELECT DISKS]** Serial # 07081B2C00017862 WL41140154080KGN WL411400P1080KGN WL411400P1080KGN UL411400P1080KGN	size Size 119.2GB 74.5GB 74.5GB the volume	served. Status Non-RAID Disk Non-RAID Disk Non-RAID Disk	

6. Enter Capacity value.

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****************************	REATE VOLUME MENU 1************************************	****
*		
* Name:	Volume1	
* PATD Level	BAID1 (Mirror)	
* Dieke	Select Disks	
* Strip Size.	N/A	
* Capacitur	N/A CP	
* Capacity:	12:5 GD	
- Sync:	N/A Create Velume	
<u></u>	create volume	
~		
*	Incle Jacobson and a second se	
* The default value indicat	tes the maximum capacity using the selected	
 disks. Entering a lower 	capacity allows you to create a second	
* vol	ume on these disks.	
*		
*		
*		*
**********************	***************************************	****
[**]Change [TAB]-Nex	tt [ESC]-Previous Menu [ENTER]-Select	

7. Select **Create Volume**. Select **Y** to create this volume.

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*******	********************* [C	REATE VOLUME MENU]***************	******
*			*
*	Name:	Volume1	*
*	RAID Level:	RAID1 (Mirror)	
÷	Disks:	Select Disks	*
*	Strip Size:	N/A	*
*	Capacity:	74.5 GB	*
Ť	Sync:	N/A	*
Ŕ		Create Volume	*
¥			*
*********	*************	***********	*********
**********	******	****[HELP]************************	**********
*			*
π.			*
*			*
*			×
*	Press ENTER t	o create the specified volume.	*
÷			ž
*			*
*			×
*			*
*********	******	************	**********
[**]Change [TAB]-Nex	t [ESC]-Previous Menu [ENTER]-Se	lect
	Commission ICS Total		
	copyright (C) intel	l Corporation. All rights reserve	d.
*********	copyright (C) intel	l Corporation. All rights reserve CREATE VOLUME MENU]**************	d. ***********
************	copyright (c) intel	l Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
************	Name:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. **************** *
* * * * * * * * * * * * * * * * * * *	Name: RAID Level:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
**************************************	Name: RAID Level: Disks:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
************ * * *	Name: RAID Level: Disks: Strip Size:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
**********	Name: RAID Level: Disks: Strip Size: Capacity:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
**************************************	Name: RAID Level: Disks: Strip Size: Capacity: Sync:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
*********	Name: RAID Level: Disks: Strip Size: Capacity: Sync:	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
*********	Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
*********	Copyright (C) Intes Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
*********	Copyright (C) Intes Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
*********	Copyright (C) Intel Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
*********	Copyright (C) Intel Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
*********	Vare you sure you	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
********	Copyright (C) Inter Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d. ************************************
	Copyright (C) Intes Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER t	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
*********	Copyright (C) Intel Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER to	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
********	Copyright (C) Intel Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER t	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
	Copyright (C) Intel Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER t	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
********	Vame: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER t	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.
	Copyright (c) Inter Name: RAID Level: Disks: Strip Size: Capacity: Sync: WARNING: ALL DATA Are you sure you Press ENTER t	Corporation. All rights reserve CREATE VOLUME MENU]************************************	d.

7. Back in the **MAIN MENU**, Select **6. Exit**. Select **Y** to exit.

		(Copyrigh	t (C)	Intel Corpo	oration. A	ll right	s reserved	
* *	*****	******	******	*****	******** [M	AIN MENU]*	*******	********	**********
×			Create	RAID	Volume		Recover	y Volume O	ptions
×		2.	Delete	RAID	Volume		Acceler	ation Opti	ons
×		з.	Reset D	isks	to Non-RAID	6.	Exit		
**	****	******	*******	*****	*[DISK/VOLU	JME INFORMA	TION]**	********	**********
÷	RAID	Volumes	3:						
×	ID	Name		L	evel	Strip) Si	ze Status	Bootable
×		Volumei			AIDO (Stripe)	64KB			Yes
×		***	*******	*****	***** [CONH	FIRM EXIT]	*******	********	****
×	Physi	cal*							*
×	ID	Dev*		Are	you sure you	want to e	xit? (Y/	N):	*Vol ID)
Ħ		LAN*							*ic •
×		TS3***	*******	*****	**********	*********	*******	********	****0)
×		TS32GS5	5D370	03	6BB807785700		29.80		
×									
×									
×									
×									
×									
×									
×									
**	*****	******	*******	*****	**********	*********	*******	********	**********
		[**]	-Select		[ESC]-E	Exit	[ENT	ER]-Select	Menu

Reset RAID Disk

1. Select **<CTRL-I> to enter Configuration Utility...**

Copyri	ght (C) Intel Corp	ooration. All rights	reserved.	
RAID	Volumes:			
None	defined.			
Phys	ical Devices:			
ID	Device Model	Serial #	Size	Type/Status(Vol ID)
0	LANSSE128GTLE9-S	07081B2C00017862	119.2GB	Non-RAID Disk
1	TS32GSSD370I	C181550006	29.8GB	Non-RAID Disk
2	TS32GSSD370	036BB80778570000	29.8GB	Non-RAID Disk
Press	<ctrl-i> to enter</ctrl-i>	Configuration Utility	¥	

2. In the MAIN MENU, select 3. Reset Disks to Non-RAID.

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*****	******	********** [MAIN	MENU]**	*********	********	******
	1. Create RA	ID Volume		Recovery Volu	me Options	×
	Delete RA:	ID Volume		Acceleration	Options	*
	3. Reset Disk	ks to Non-RAID	6.	Exit		*
*****	******	****[DISK/VOLUME	INFORMAT	[ION]*******	********	******
RAID	Volumes:					*
ID	Name	Level	Strip	Size Sta	tus Boo	stable*
0	Volume1	RAIDO(Stripe)	64KB	59.6GB Nor		les *
¢.						*
Physi	ical Devices:					*
ID	Device Model	Serial #		Size Type	/Status (Vol	ID) *
0	LANSSE128GTLE9-S	07081B2C00017862		119.2GB Non-	RAID Disk	×
1	T532G55D370I	C181550006		29.8GB Memb		*
2	TS32G55D370	036BB80778570000		29.8GB Memb		*
						*
0						*
						*
ĺ.						*
ĺ.						*
	[##1_Soloat	(FCC) Fast		(ENTED) Co	logt Monu	
	[]-Select	[ESC]-EXIL		[ENTER]-Se	rect menu	

3. Select the disks that should be reset. Select Y to reset RAID data.



Security

Select the Security menu item from the BIOS setup screen to enter the Security Setup screen. Users can select any of the items in the left frame of the screen.

Aptio Setup Utility - Main Advanced Chipset	Copyright (C) 2023 American Megatrends, Inc. Security Boot Save & Exit	
Password Description If ONLY the Administrator' then this only limits acce only asked for when enteri If ONLY the User's passwor is a power on password and boot or enter Setup. In Se have Administrator rights. The password length must b in the following range: Minimum length 3 Maximum length 2 Administrator Password User Password	<pre>^ Set Administrator * Password s password is set, * ss to Setup and is ng Setup. i is set, then this must be entered to tup the User will * * * * </pre>	
Version 2.20.1275. Co	oyright (C) 2023 American Megatrends, Inc.	
Feature	Description	
Administrator Password t	If ONLY the Administrator's password is set, it only limits act to Setup and is only asked for when entering Setup.	
User Password password and must be entered to boot or enter Set the User will have Administrator rights		

Secure Boot

Aptio Setup Utility	y - Copyright Security	(C) 2023 American Megatrends, Inc.
/		\
System Mode	Setup	Secure Boot feature is Active if Secure Boot
Secure Boot	[Disabled]	is Enabled,
	Not Active	Platform Key(PK) is enrolled and the System
Secure Boot Mode	[Custom]	is in User mode.
> Restore Factory Keys		The mode change
> Reset To Setup Mode		requires platform reset
> Key Management		
		><: Select Screen
		^v: Select Item
		Enter: Select
É.		+/-: Change Opt.
E.		Fl: General Help
17		F2: Previous Values
l .		F3: Optimized Defaults
		F4: Save & Exit
E .		ESC: Exit
/		/
Version 2 20 1275	Convright (C	2023 American Megatrends Inc

Feature	Options	Description
Secure Boot Enable	Disabled Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard Custom	Customizable Secure Boot mode: In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	None	Force System to User Mode. Install factory default Secure Boot key databases
Reset To Setup Mode	None	Delete all Secure Boot key databases from NVRAM

Key Management

Aptio Setup Utility	- Copyrigh Security	nt (C) 2023 A	merican Megatrends, Inc.
/			+,
Vendor Keys	Modified		^ Install factory default
I			* Secure Boot keys after
Factory Key Provision		1]	* the platform reset and
> Restore Factory Keys			* while the System is in
> Reset To Setup Mode			* Setup mode
> Export Secure Boot vari	ables		*
<pre>> Enroll Efi Image</pre>			*1
1			*1
Device Guard Ready			*
> Remove 'UEFI CA' from D	В		*
> Restore DB defaults			* ><: Select Screen
I			* ^v: Select Item
Secure Boot variable	Size Keys	Key Source	* Enter: Select
<pre> > Platform Key(PK) </pre>	0 0	No Keys	* +/-: Change Opt.
<pre> > Key Exchange Keys </pre>	0 0	No Keys	* Fl: General Help
<pre>> Authorized Signatures </pre>	0 0	No Keys	* F2: Previous Values
<pre> > Forbidden Signatures </pre>	0 0	No Keys	+ F3: Optimized Defaults
<pre>> Authorized TimeStamps </pre>	0 0	No Keys	v F4: Save & Exit
I. Contraction of the second se			ESC: Exit
\			+,
Version 2.20.1275.	Copyright	(C) 2023 Ame	rican Megatrends, Inc.

Feature	Options	Description
Factory Key	Disabled	Install factory default Secure Boot keys after the platform
Provision	Enabled	reset and while the System is in Setup mode
Restore Factory	Nama	Force System to User Mode.
keys	None	Install factory default Secure Boot key databases
Reset To Setup	News	
Mode	None	Delete all Secure Boot key databases from NVRAM
Export Secure	Nama	Copy NVRAM content of Secure Boot variables to files in a
Boot variables	None	root folder on a file system device
		Allows the image to run in Secure Boot mode. Enroll
Enroll Efi Image	None	SHA256 hash of the binary into Authorized Signature
		Database (db)
Remove 'UEFI CA'	None	Device Guard ready system must not list 'Microsoft UEFI CA'
from DB		Certificate in Authorized Signature database (db)

Boot Menu

Select the Boot menu item from the BIOS setup screen to enter the Boot Setup screen. Users can select any of the items in the left frame of the screen.

Aptio Setup Main Advanced	Utility - Copyright Chipset Security	<pre>(C) 2023 American Megatrends, Inc. Boot Save & Exit</pre>
Boot Configurati Setup Prompt Tin Bootup NumLock S Quiet Boot Boot mode select FIXED BOOT ORDER Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4	ion meout 5 State [Off] [Disabled] t [UEFI] R Priorities [UEFI Hard Disk:ubuntu SSB01TBTLEU [UEFI USB 1 [UEFI CD/DU [UEFI Netwo	<pre>Number of seconds to Number of seconds to Numb</pre>
> UEFI Hard Disk I 	Drive BBS Priorities	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit /
Feature	Options	Description
Setup Prompt Timeout	5	Number of seconds to wait for setup activation ke 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State Off Select the keyboard NumLock state		Select the keyboard NumLock state

Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.
	LEGACY (*1)	Select boot mode for LEGACY or UEFI.
Boot mode select	UEFI (*2)	(*1) LEB-2291C SKU default setting
	DUAL	(*2) LEB-2291B SKU default setting

- Choose boot priority from boot option group.
- Choose specifies boot device priority sequence from available Group device.

Save and Exit Menu

Select the Save and Exit menu item from the BIOS setup screen to enter the Save and Exit Setup screen. Users can select any of the items in the left frame of the screen.

Aptio Setup Utility - Copyright (C) 2023 Amer Main Advanced Chipset Security Boot Save &	ican Megatrends, Inc. Exit Exit
Save Options Discard Changes and Exit Save Changes and Reset Default Options Restore Defaults Boot Override ubuntu (P2: SSB01TBTLEW-SD2)	Exit system setup without saving any changes.
ubuntu (P0: LANSSE128GTLE9-5B2-2) Launch EFI Shell from filesystem device	<pre>><: Select Screen ><: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2023 Americ	an Megatrends, Inc.

Discard Changes and Exit

Select this option to quit Setup without saving any modifications to the system configuration. The following window will appear after the "**Discard Changes and Exit**" option is selected. Select "**Yes**" to Discard changes and Exit Setup.

Exit	Without	Saving —
Quit	without	saving?
5	/es I	No

Save Changes and Reset

When Users have completed the system configuration changes, select this option to save the changes and reset from BIOS Setup in order for the new system configuration parameters to take effect. The following window will appear after selecting the "**Save Changes and Reset**" option is selected. Select "**Yes**" to Save Changes and reset.

/	Sar	ve & reset\
I.		I
Save	config	uration and reset?
1		
I		I
I	Yes	No I
\		/

Restore Defaults

Restore default values for all setup options. Select "Yes" to load Optimized defaults.



PS: The items under Boot Override may not be the same as the image above as it should depend on the actual devices connected to the system.

APPENDIX A: LED INDICATOR EXPLANATIONS

The status explanations of LED indicators on the Front Panel are as follows:



Status LED

System Power

Solid Green	The system is powered on
Off	The system is powered off

HDD Activity

-	
Blinking Green	Data access activity
Off	No data access activity

GbE Port LED

Link Activity

Blinking Amber	Link has been established and there is activity on this port
Solid Amber	Link has been established and there is no activity on this port
Off	No link is established

Speed

Solid Amber	Operating as a Gigabit connection (1000 Mbps)
Solid Green	Operating as a 100-Mbps connection
Off	Operating as a 10-Mbps connection

PoE Port LED

Link Activity

Blinking Amber	Link has been established and there is activity on this port
Solid Amber	Link has been established and there is no activity on this port
Off	No link has been established
_	

Speed

Off	Operating as a 10-Mbps connection
Solid Green	Operating as a 100-Mbps connection

APPENDIX B: CONNECT TO DC POWER

- 1. Make sure your system is turned off.
- 2. Follow the wiring definition and illustration below to connect the power source to the system through the 4-pin terminal block connector as DC Input. Connect the two Power Wires to the Terminal Block (supplied along with the system) by respectively inserting the red wire to the Positive contact, the other wire to the Negative contact, and then secure them onto the terminal block.



3. Follow the wiring definition and illustration below to connect the power source to the PCIe card through the 4-pin terminal block connector as DC Input. Connect the two Power Wires to the Terminal Block (supplied along with the system) by respectively inserting the red wire to the Positive contact, the other wire to the Negative contact, and then secure them onto the terminal block.



- 4. System with nVidia Graphic Card Burn-in Verification:
 - LEC-2290 + graphic card N1050TI-L9FX (75W) with fan; operating temperature @ 0°C~55°C (35W CPU)
 / 0°C~45°C (65W CPU)
 - LEC-2290 + graphic card N206S-V9FX (120W) with fan; operating temperature @ 0°C~50°C (35W CPU)
 / 0°C~40°C (65W CPU)
 - LEC-2290 + graphic card N1660TI-Q9FX (175W) with fan; operating temperature @ 0°C~40°C (35W CPU) / 0°C~30°C (65W CPU)

p.s. 0P0W000060000 240W 12V 20A C14 ATX 10P 9NA2700500 FSP 80CM 180

Space of PCIe Card:



APPENDIX C: TERMS AND CONDITIONS

Warranty Policy

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

RMA Service

Requesting an RMA#

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



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

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

RMA No: Company:		Reasons to Return	Reasons to Return: Repair(Please include failure details) Contact Person:	
		Contact Person:		
Phone No.		Purchased Date:		
Fax No.:		Applied Date:		
Returr Shippi 🗆 Othe	n Shipping Addr ing by: 🗆 Air Fre ers:	ess: eight □ Sea □ Express		
Item	Model Name	Serial Number	Configuration	

Item	Problem Code	Failure Status

*Problem Code: 01:D.O.A. 02: Second Time R.M.A. 03: CMOS Data Lost 04: FDC Fail 05: HDC Fail 06: Bad Slot

07: BIOS Problem 08: Keyboard Controller Fail

- 09: Cache RMA Problem
- 10: Memory Socket Bad
- 11: Hang Up Software
- 12: Out Look Damage
- 13: SCSI 14: LPT Port 15: PS2 16: LAN 17: COM Port 18: Watchdog Timer
- 19: DIO 20: Buzzer 21: Shut Down 22: Panel Fail 23: CRT Fail 24: Others (Pls specify)

Request	Party
---------	-------

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date

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