

Vehicle Computing

Rugged Platforms for Vehicles and Railway Computing

R6S User Manual

Version: 2.6 Date of Release: 2023-10-13

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 and Technical Support

To obtain additional documentation resources and software updates for your system, please visit the <u>Lanner</u> <u>Download Center</u>. For certain categories of documents, please register for a Lanner Account at <u>Lanner's official</u> <u>website</u>, in order to access published documents and downloadable resources.

In addition to contacting your distributor or sales representative, you could visit our <u>Lanner Technical Support</u>, to fill in a support ticket to our technical support department.

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note

- 1. An unshielded-type power cord is required in order to meet FCC emission limits and also 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.

🗥 Important

- 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.

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.
- Leaving a battery in an extremely high temperature surrounding environment can result in an explosion or the leakage of flammable liquid or gas.
- A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

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).

Sé curité 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.

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 sé curité é lectrique

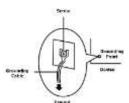
- Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- Pour désinstaller 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. Ali mentation
- Le câble doit 16 AWG



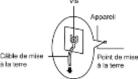


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CHAPTER 1 : PRODUCT OVERVIEW

Built for rolling stock settings, R6S has gone through extensive vibration and shock testing. The system is certified with EN 50155, EN 50121-3-2, EN 50121-4, EN 50125-3 and EN 45545 standard as a fan-less rolling stock computer. R6S not only features high-performance Intel Core i7-7600U CPU, but also boasts an abundance of I/O and internal expansion capabilities, including 10x M12 PoE ports, 1x Removable 2.5" drive bay for 2x storages, 2x COM ports, dual video ports (DVI-D/VGA), USB, and DIDO ports, making it perfect for rolling stock control and monitoring, infotainment, video surveillance and fleet management.

Main Features

- Intel[®] Core i7-7600U Processor
- Certified with EN 50155, EN 50121-3-2, EN 50121-4, EN 50125-3 and EN45545 standard
- 10x rugged PoE ports with M12 connectors
- Support full size mini-PCIe & M.2 sockets for LTE/Wi-Fi module card expansion
- Wide range operating temperature from -40 to 70°C
- Onboard GPS receiver module and G-sensor
- Removable 2.5" drive bay for 2x 2.5" storage (HDD/SSD is not included)
- CAN bus port, USB (2.0 or 3.0), COM, DIO, Audio, VGA, DVI-D ports, and built-in wall mount kit

Package Content

Your package contains the following items:

- 1x R6S Vehicle Computer
- 1x IR-RPB6SA1A DC to DC Converter

Ordering Information

SKU No.	Main Features
R6SA	Intel Core i7-7600U Processor, 2x miniPCIe socket with dual SIM, DC 32~96V power input
R6SB	Intel Core i7-7600U Processor, 1x miniPCIe socket, 4x M.2 with single SIM each, DC 24~36V power input
R6SC	Intel Core i7-7600U Processor, 1x miniPCIe socket, 4x M.2 with single SIM each, DC 72~110V power input

Optional Accessories

Model	Description
080W000891000	LAN Cable M12, 8P, RJ45, 8P8C, 30cm, 180° – 180° Prodaconn TM-18L-R-R6S-03 (LAN/PoE/Console) (For AVL Testing Only)

System Specifications

	CPU	Intel® Core™ i7-7600U CPU onboard					
	Frequency	2.8 GHz					
Processor System	BIOS	AMI SPI Flash BIOS					
	Chipset	SoC					
Fanless	Chipber	Yes					
	Technology	1x DDR4 2133 SO-DIMM Socket					
	Max. Capacity	Up to 16GB (Factory default: 16GB pre-installed)					
Memory	Socket	1x 260-pin SODIMM					
	Controller	4x Intel i210IT					
	Speed	10/100/1000 Mbps					
Ethernet	PoE	IEEE 802.3af					
	Interface	M12 X-coded					
Storage	Туре	2x 2.5" HDD/SSD drive removable bay (HDD/SSD not included)					
eter age	LAN Port	1x GbE RJ45					
		A SKU: 1x VGA, 1x resolution up to 2048x1536; 1x DVI-D,					
	Display Port	resolution up to 1920x1200					
	D. E. Dt.	B/C SKU: 2x HDMI, 1x resolution up to 3840x2160					
	PoE Port Audio	10x IEEE 802.3af standard PoE ports					
	Audio	Mic-in and Line-out with 2-watt by HD Audio A SKU: 2x RS-232/422/485 with RI/5V by DB9 (male)					
	Serial I/O Port	B/C SKU: 4x RS-232/422/485					
1/0	CDC	u-blox NEO-M8N; 3 GNSS (GPS, Galileo, GLONASS, BeiDou),					
1/0	GPS	default @ GPS+, GLONASS dual band					
	G-sensor	ADXL 345					
	CAN Port	1x CAN Bus J1939 / J1708 (Optional) 7x DI 12V TTL selectable, 7x DO 24V TTL, Max. 100mA					
	Digital I/O Port	2x IGN-DI of ignition control to MCU					
		A SKU: 3x USB 2.0 Type A, 2x USB 3.0 Type A					
	USB Port	B/C SKU: 2x USB 2.0 Type A, 2x USB 3.0 Type A					
	Antenna	A SKU: SMA antenna hole x6 (includes GPS+GLONASS x1); B/C SKU: SMA antenna hole x12 (includes GPS+GLONASS x1					
		A SKU: 2x Full-size Mini-PCIe with dual SIM card readers					
Expansion Interface	PCIe/USB	B/C SKU: 4x M.2 with 1x SIM on each for LTE; 1x Full-size Mini- PCIe for Wi-Fi					
	Processor	Passive CPU heatsink					
Cooling	System	Fanless design with corrugated aluminum					
	Connector	5-pin M12 K-coded (Ground, DC_IN, Ground, IGN, Chassis					
		Ground)					
Dowor	Input	A SKU: DC 32~96V B SKU: DC 24~36V					
Power	input	C SKU: DC 72~110V					
		A SKU: DC 12V/2A out; by M12 A-coded					
	Output	B/C SKU: N/A					
	Hardware	Fintek F81866AD-I integrated watchdog timer					
Miscellaneous	Internal RTC	Ver					
	with Li Battery	Yes					
	Operating Temp	-40~70°C / -40~158°F					
Environment	Storage Temp	-40~85°C / -40~185°F					
	Humidity	5%~95% @ 40°C / 104°F (Storage Level)					
		272.4 x 121.3 x 228 mm (10.72" x 4.77" x 8.97")					
Mechanical	Weight	20.8 kg					
	Mounting	Wall mount kit					

R6S User Manual

OS Support	Microsoft Windows	Win10 IoT Enterprise
OS Support	Linux	Redhat Enterprise 5, Fedora 14. Linux Kernel 2.6.18 or later
Certification	EMC	FCC/CE Class A, RoHS
	Safety	E-13 include ISO-7637-2
		IP rated 50, MIL-STD-810G, EN 50155, EN 50121-3-2, EN 50121- 4, EN 50125-3, and EN 45545

Front Panel (R6SA/B/C)



No.		Description
F1	System Status LED Indicator	System Power Status System Status HDD Status
F2	USB 3.0 Port	2x USB 3.0 Type A
F3	USB 2.0 Port	2x USB 2.0 Type A
F4	GbE Port	1x RJ45 port with LED indicators
F5	Storage Lock	Lock for removable 2.5" storage caddy
F6	SIM Cover	A SKU: 2x Dual SIM card socket B/C SKU: 5x Single SIM card socket
F7	Antenna Port	LTE Antenna
F8	Storage Bay	2x SATA interface storage bays to support removable 2.5" HDD/SSD drive
F9	SD Card	SD Card socket

Rear Panel (R6SA)



No.			Descript	ion		
	2 3	10x M12X-co	oded 8-pin PoE	Port		
R1	PoE Port 1 0 4 8 0 0 5 7 6	3 LA 5 LA	Signals NX*_MX0P NX*_MX1P NX*_MX3P NX*_MX2N	Pin 2 4 6 8	Signals LANx*_MX0N LANx*_MX1N LANx*_MX3N LANx*_MX2P	
	System / NVR DC Isolated Input M12 K-Code Male	PIN 1 PIN 2	Pin GND DC_IN	Signal DC Isc	Urce, DC 9~54V level Description I Ground Dated 52V Input (From DC m Power Good Status	to DC Converter)
R2	1 PE 4 3		MCU_PG IGN_IN CHASSIS GND below 44V withou above 45V enable	(witho Ignitic Chass ut PoE po	out isolated meets EMI solu on on Trigger Form DC to D is Ground ower support	,
R3	DC Output	Pin	ded 5-pin for D Signals 12V_Output SPEED GPS GND	C 12V p Pin 2 4	oower output Signals FORWARD 12V_GND	
R4	DVI-D Port	1x DVI-D Co	nnector			
R5	VGA Port	1x VGA DB1	5 Connector			
R6	COM Port	Pin1_down3_down5_down7_down9_down1_up	Connector for F Signals COM1_C_DCD_TN COM1_C_TXD_RP GND_COM COM1_C_RTS COM1_C_RTS COM1_C_RT COM2_C_DCD_TN COM2_C_TXD_RP GND_COM COM2_C_RTS COM2_C_RI	Pin 2_up 4_up 6_up 8_up 2_dow 4_dow 6_dow 8_dow	n Signals COM1_C_RXD_TP COM1_C_DTR_RN COM1_C_DSR COM1_C_DSR COM1_C_CS wn COM2_C_RXD_TP wn COM2_C_DTR_RN wn COM2_C_DSR	

		1x DB26 Female Connector for GPIO & CAN Bus					
		Pin	Signals	Pin	Signals	Pin	Signals
		1	CAN_H/J1939+_R	10	CAN_L/J1939R	19	DO_5
	19 26	2	DI_0	11	DGIN_0	20	12V_GND
		3	DI_1	12	J1850+/J1708+_R	21	12V_GND
R7	Multi-IO	4	DI_2	13	J1850-/J1708-R	22	DO_0
		5	DI_3	14	DO_6	23	DO_1
		6	12V_GND	15	DGIN_1	24	DO_2
		7	GND_CAN	16	DI_4	25	DO_3
		8	V_CAR BAT	17	GND_CAN	26	DO_4
		9	DI_COM	18	DI_6		
	Audio Port	Pin	nannels via 9-pin fe Signals MIC IN R		Pin Signal		
R8	5 1	1	MIC_IN_R X				
		5	AMPOUT R		4 GND_AU 6 MIC_IN		
		7	GND AUD		8 GND AL	_	
		9	AMPOUT L				
			B 2.0 Type A				
		Pin	Signals		Pin Signal	s	
R9	USB 2.0 Port	1					
		2	USB20_N7_L		4 GND	_	
R10	Antenna Port (GPS+GLONASS default)		NSS (GPS, Galileo, nsor no antenna ne		IASS, BeiDou) anteni	na,	

DC to DC Converter

For R6SA

Front





	No.	Description				
	DC Rated Voltage Input		Pin	Description		
	M12 K-Code Male	PIN 1	GND	Primary Ground		
	PE	PIN 2	DC_IN	DC Rated Voltage Input		
F1		PIN 3	GND	Primary Ground		
ΓI		PIN 4	IGN_IN	Power ON Trigger from car ignition ON		
		PIN 5 (PE)	CHASSIS_GND	Chassis Ground		
		Note: SKU A: RATED VOLTAGE at DC 32~96V				
	DC Isolated Output		Pin	Description		
	M12 K-Code Female	PIN 1	IGN_OUT	Adapter Ignition on Trigger Signal		
	PF	PIN 2	MCU_PG	MCU Power good detect pin (Isolated)		
R1		PIN 3	DC Output	DC Isolated 52V Output		
4		PIN 4	GND	Secondary Ground (S_G for NVR)		

Rear Panel (R6SB/C)



Grounding Point:

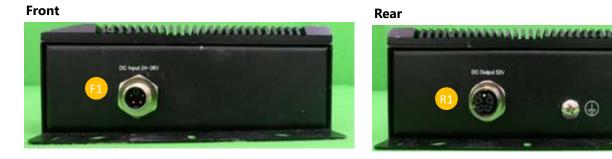
For safety measures to help prevent people from accidentally coming in contact with electrical hazards.

		Descri	ptio	n			
2 3	10x M12X-coded 8-pin PoE P						
PoE Port	Pin	Signals	Pin		Signals		
8 0 0 5	1 LA	ANx*_MX0P	2		LANx*_MX0N		
00		ANx*_MX1P	4		LANx*_MX1N		
7 6		-	6		LANx*_MX3N		
	7 LA	Nx*_MX2N	8		LANx*_MX2P		
	1x M12 K-co	ded 5-pin for p	ower	sourc	ce, DC 9~54V level		
,		Pin			Description		
DC Isolated Input	PIN 1	-	0				
M12 K-Code Male	PIN 2	DC_IN	_			to DC Converter)	
PE	PIN 3	MCU_PG	,	5			
	PIN 4	IGN_IN	lgr	Ignition on Trigger Form DC to DC Converter			
	PIN 5 (PE)	CHASSIS GND	Ch	Chassis Ground			
	Note: DC_in, below 44V without PoE power support				er support		
	DC_in,	above 45V enable	e PoE	power	⁻ support		
COM 1 Port (Console)	Pin	Signals	Pin	1	Signals		
	1 CO	M1_C_DCD_TN	2		COM1_C_RXD_TP		
	5		4		COM1_C_DTR_RN		
·			6				
			8		COM1_C_CTS	_	
	9	COM1_C_RI					
	Pin	Signals		Pin	Signals		
COM 2 Port	1 (COM2_C_DCD_TN		2	COM2_C_RXD_TP		
9 6	3 (COM2_C_TXD_RP		4	COM2_C_DTR_RN		
·	5	COM2_2_GND		6	COM2_C_DSR		
5 1	7	COM2_C_RTS		8	COM2_C_CTS		
	9	COM2_C_RI					
	PoE Port 1 8 9 6 5 5 7 6 5 5 5 7 6 5 5 5 5 7 6 5 5 5 5	PoE PortImage: Constraint of the second	PoE Port 10x M12X-coded 8-pin PoE Pin Signals 1 LANx*_MX0P 3 LANx*_MX1P 5 LANx*_MX3P 7 LANx*_MX2N System / NVR 1x M12 K-coded 5-pin for p DC Isolated Input PIN 1 M12 K-Code Male PIN 2 DC Isolated Input PIN 3 M12 K-Code Male PIN 4 ISS (PE) CLASSIS GND Note: DC_in, below 44V witho DC_in, above 45V enable COM 1 Port (Console) PIN Solution Signals COM 2 Port PIN Signals 1 Signals 1 COM 2 Port COM2_C_ND, P Signals 1 COM2_C_RTS 1	PoE Port 10x M12X-coded 8-pin PoE Port PoE Port 1 LANx*_MX0P 2 1 LANx*_MX0P 2 3 LANx*_MX1P 4 1 LANx*_MX1P 4 5 LANx*_MX2N 8 System / NVR DC Isolated Input 1 GND Sig M12 K-Code Male PIN 1 GND Sig PIN 3 MCU_PG System / NVR DC Isolated Input M12 K-coded S-pin for power PIN 3 MCU_PG Sig PIN 4 IGN_IN Igr PIN 5 (PE) CHASSIS GND Ch Note: DC_in, below 44V without Pol DC_in, above 45V enable Poe COM 1 Port (Console) I COM1_C_NTS S COM1_C_RIS 8 9 COM1_C_RIS 8 9 COM1_C_RIS 8 9 COM1_C_RIS 1 COM 2 Port Pin Signals 1 COM2_C_DCD_TN 3 3 COM2_C_RTS 5	PoE Port Pin Signals Pin 1 LANx*_MX0P 2 3 LANx*_MX1P 4 5 LANx*_MX3P 6 7 LANx*_MX2N 8 System / NVR DC Isolated Input PIN M12 K-Code Male PIN 1 GND PIN 2 DC_IN DC Isolat PIN 3 MCU_PG System F PIN 4 IGN_IN Ignition of PIN 5 (PE) CHASSIS GND Chassis C Note: DC_in, below 44V without POE power DC_in, above 45V enable PoE power COM 1 Port (Console) Pin Signals Pin 1 COM1_C_IXD_RP 4 5 COM1_C_RTS 8 9 COM1_C_RI Pin 2 3 COM2_C_DCD_TN 2 3 COM2_C_RTS 8 9 6 7	10x M12X-coded 8-pin PoE Port PoE Port 10x M12X-coded 8-pin PoE Port 10x M12X-coded 8-pin PoE Port 11 LANx*_MX0P 2 LANx*_MX0N 1 LANx*_MX1P 4 LANx*_MX1N 2 LANx*_MX2P 2 LANx*_MX1N 3 LANx*_MX2P 2 LANx*_MX3N 7 LANx*_MX2P 8 LANx*_MX2P System / NVR DC Isolated Input 11 GND Signal Ground PIN 1 GND Signal Ground PIN 1 Description DC Isolated Input PIN 2 DC_IN DC Isolated 52V Input (From DC 9 MCU_PG System Power Good Status Gwithout isolated meets EMI solu 9 MCU_PG System Power Support DC Isolated 52V Input (From DC to D 9 COM 1 Port (Console) PIN 3 MCU_PG Signals 1 COM1_C Console) Pin Signals Pin Signals 1 COM1_C Console) Pin Signals Pin Signals 1 COM1_C CND_RP 4 COM1_C CNS Pin	10x M12X-coded 8-pin PoE Port PoE Port 1 Signals Pin Signals 1 LANx*_MX0P 2 LANx*_MX0N 3 LANx*_MX1P 4 LANx*_MX1N 5 LANx*_MX3P 6 LANx*_MX3N 7 LANx*_MX2N 8 LANx*_MX2P System / NVR DC Isolated Input PIN GND Signal Ground PIN 2 DC_IN DC Isolated Stuss Pin PIN 2 DC_IN DC Isolated Stuss Pin N3 MCU_PG System Power Good Status (without isolated meets EMI solution) PIN 4 IGN_IN Ignition on Trigger Form DC to DC Converter PIN 5 CHASSIS GND Chassis Ground Note: DC_in, below 44V without P6 power support DC_in, above 45V enable P0E power support DC_in, above 45V enable P0E power support DC_in, coM1_C_CDD_TN 2 COM1_C_RTS 8 COM1_C_CTS 3 COM1_C_RTS 8 COM1_C_CTS 9 COM1_C_RTS 4 COM2_C_DTR_P 3 COM2_C_DCD_TN 2 COM2

	COM 4 Port	Pin	Signals		Pin Signa	ls	
	9 6	1 up	COM4_C_DCD_TN		up COM4_C_F		
R5	·	3_up	COM4_C_TXD_RP		up COM4_C_D	DTR_RN	
	5 1	5_up	COM4_2_GND	6	5_up COM4_C		
		7_up	COM4_C_RTS	8	_up COM4_C	_CTS	
		9_up	COM4_C_RI				
	COM 5 Port	Pin	Signals	Pin	Signals		
	9 6	1_up	COM5_C_DCD_TN	2_up	COM5_C_RXD_TP		
R6	· · · · · · · · · · · · · · · · · · ·	3_up 5_up	COM5_C_TXD_RP COM5_2_GND	4_up 6_up	COM5_C_DTR_RN COM5_C_DSR		
	5 1	7_up	COM5_2_GND	8_up	COM5_C_D3R		
		9_up	COM5 C RI	o_up	00005_0_010		
			<u>com5_c_m</u>	I			
R7	Display Port	2x HDM	l Ports				
		1x DB26	Female Connector f	or GPIC	0 & CAN Bus		
		Pin	Signals	Pin	Signals	Pin	Signals
		1	FORWARD_CONN	10	SPEED_CONN	19	DO_5
	Multi-IO	2	DI_0	11	DGIN_0	20	12V_GND
	9 6	3	DI_1	12	GND_GPS	21	12V_GND
R8		4	DI_2	13	Х	22	DO_0
110		5	DI_3	14	DO_6	23	DO_1
		6	DIO_GND	15	DGIN_1	24	DO_2
		7	Х	16	DI_4	25	DO_3
		8	Х	17	DI_5	26	DO_4
		9	DI_COMMON	18	DI_6		DO_5
			ek ALC886-GR, supp s via 9-pin Female Co			Mic-in/L	ine-out with L/R-
	Audio Port	Pin	Signals	Pin	Signals		
R9	19 26	1	MIC_IN_R	2	GND_AUD		
КЭ	10 O (*******) O 18	3		4	GND_AUD		
	1 9	5	AMPOUT_R GND AUD	6 8	MIC_IN_L GND_AUD		
		9	AMPOUT L	ð			
		9	AIVIPOUT_L				
R10	Antenna Port	6x LTE A	ntenna Port	_			
D 11	Antenna Port	1x 3 GN	SS (GPS, Galileo, GLC	DNASS,	BeiDou) antenna su	upport	
R11	(GPS+GLONASS default)		or has no antenna ne		,	11	
		(C 50115)		,cucu)			

DC to DC Converter

For R6SB



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R6S User Manual

No.			Description	
DC Rated Voltage Input		Pin	Description	
M12 K-Code Male	PIN 1	GND	Primary Ground	
PE	PIN 2	DC_IN	DC Rated Voltage Input	
F1 .	PIN 3	GND	Primary Ground	
	PIN 4	IGN_IN	Power ON Trigger from car ignition ON	
	PIN 5 (PE)	CHASSIS_GND	Chassis Ground	
	Note: SKU B: RATED VOLTAGE at DC 24~36V			
		D '		
DC Isolated Output		Pin	Description	
M12 K-Code Female	PIN 1	IGN_OUT	Adapter Ignition on Trigger Signal	
DE	PIN 2	MCU_PG	MCU Power good detect pin (Isolated)	
R1 💦 🦱	PIN 3	DC Output	DC Isolated 52V Output	
	PIN 4	GND	Secondary Ground (S_G for NVR)	
	PIN 5 (PE)	CHASSIS_GND	Chassis Ground	
		0		

For R6SC

Front

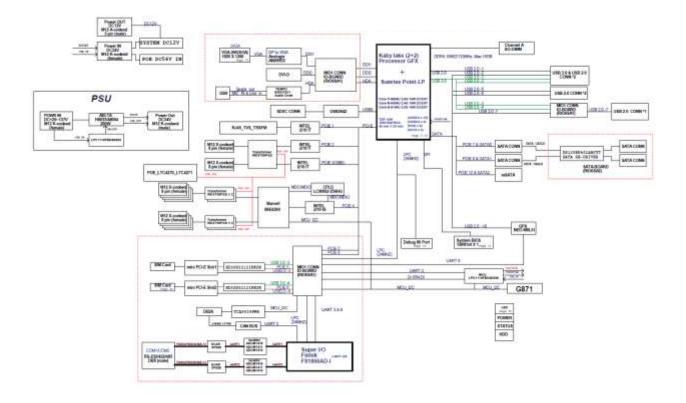


Rear

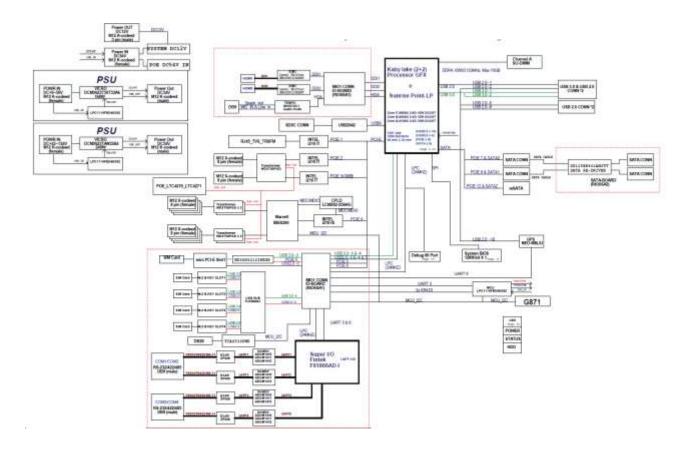


	No.		Description				
	DC Rated Voltage Input		Pin	Description			
	M12 K-Code Male	PIN 1	GND	Primary Ground			
		PIN 2	DC_IN	DC Rated Voltage Input			
	PE	PIN 3	GND	Primary Ground			
F1		PIN 4	IGN_IN	Power ON Trigger from car ignition ON			
		PIN 5 (PE)	CHASSIS GND	Chassis Ground			
	3 0 0 2						
		· · · · ·	RATED VOLTAGE at D	DC 72~110V			
		· · · · ·		DC 72~110V			
	DC Isolated Output	· · · · ·		DC 72~110V Description			
	DC Isolated Output	· · · · ·	RATED VOLTAGE at D				
	DC Isolated Output M12 K-Code Female	Note: SKU C	RATED VOLTAGE at D	Description			
R1	-	Note: SKU C	RATED VOLTAGE at D	Description Adapter Ignition on Trigger Signal			
R1	-	PIN 1 PIN 2	RATED VOLTAGE at D Pin IGN_OUT MCU_PG	Description Adapter Ignition on Trigger Signal MCU Power good detect pin (Isolated)			

Motherboard Information Block Diagram (A SKU)

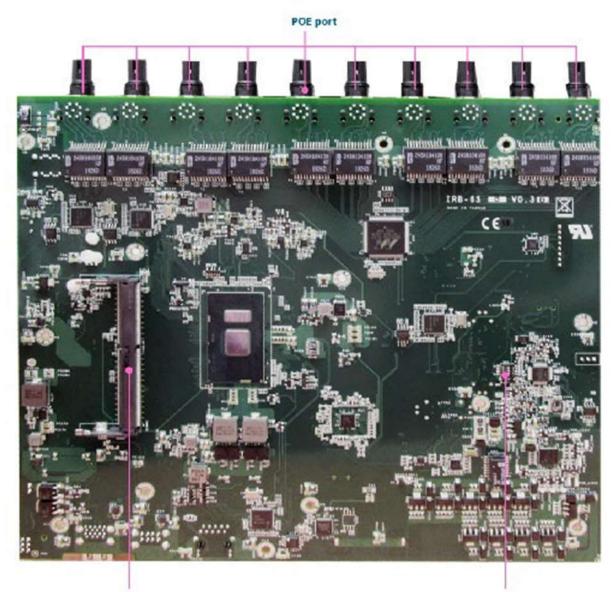


Block Diagram (B/C SKU)



Motherboard Layout

Front View

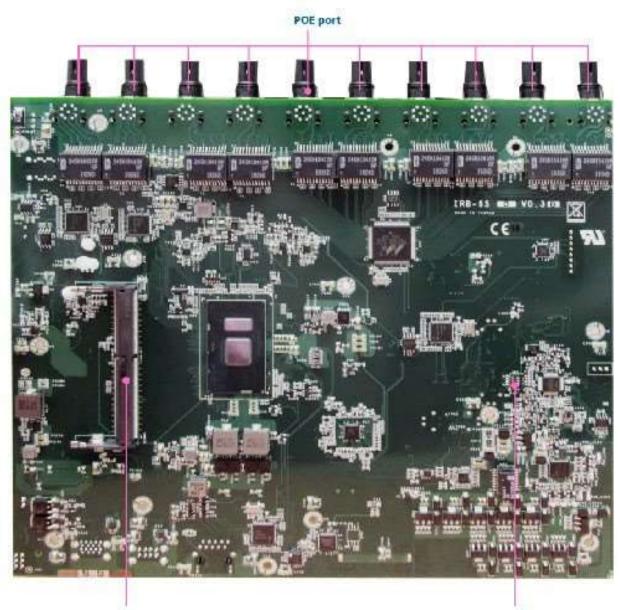


DIMM1

SW1

R6S User Manual

Rear View

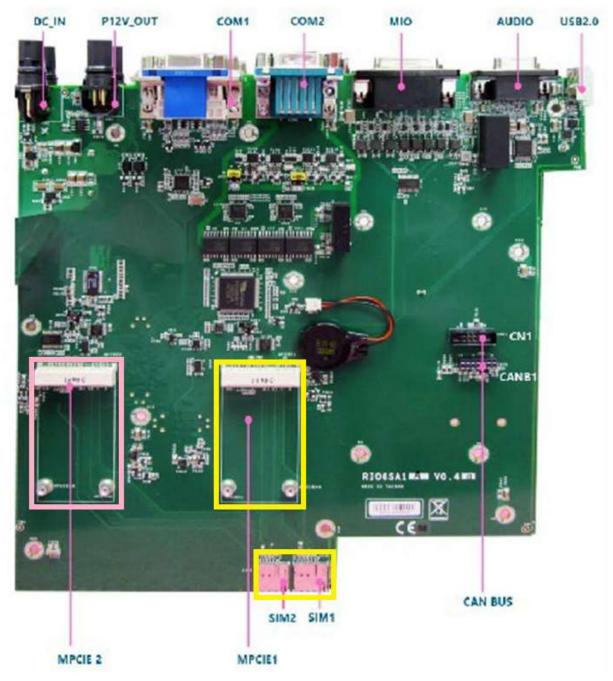


DIMM1

SW1

IO Board Layout (A SKU)

Front View

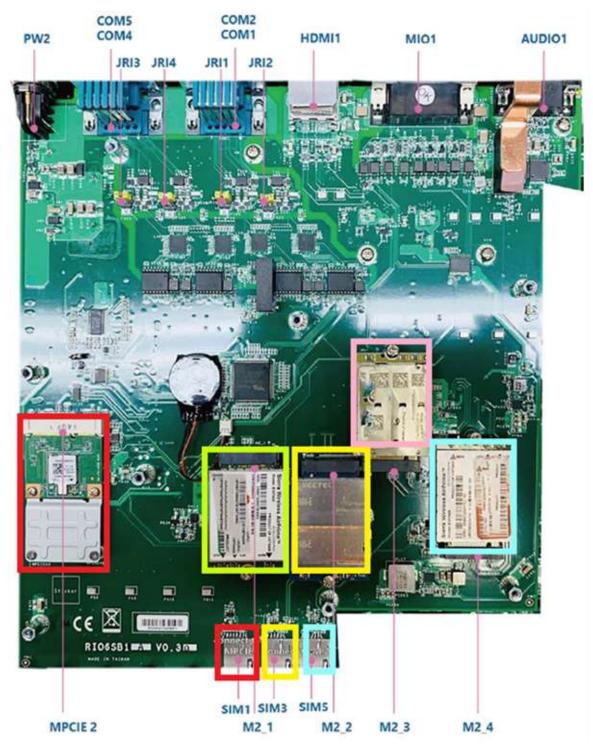


Rear View

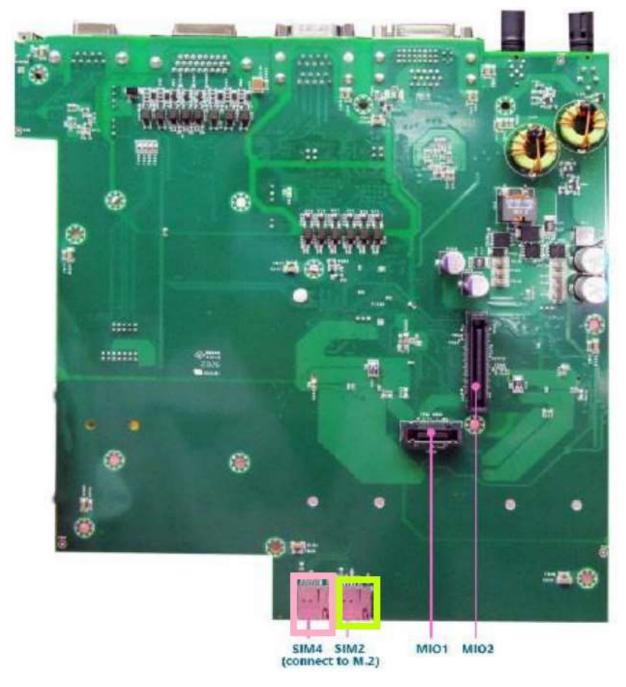


IO Board Layout (B/C SKU)

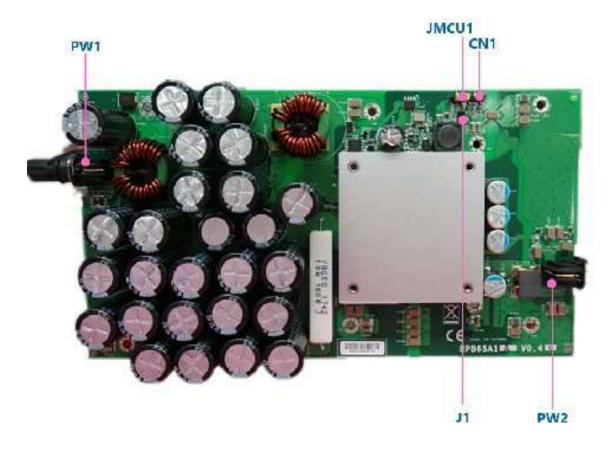
Front View



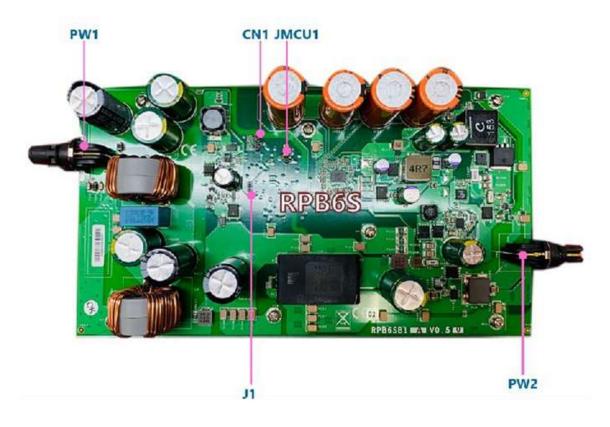
Rear View



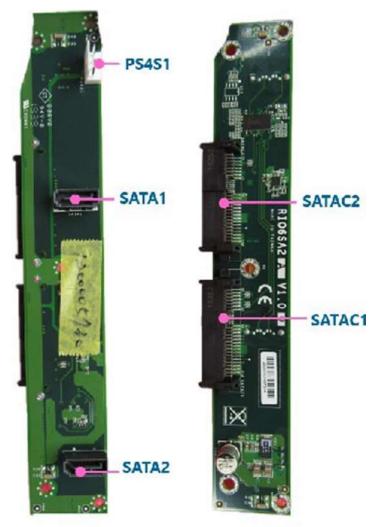
Power Board Layout (A SKU)



Power Board Layout (B/C SKU)



I/O Board Layout (A SKU)



Internal Jumper & Connectors (Motherboard)

21

20 40

1

MI01

Pin	Signals	Pin	Signals
1	GND	21	GND
2	P3V3	22	DC_IN
з	P3V3	23	DC_IN
4	PSV3	24	DCJN
5	FSV3	25	DC.IN
6	P3V3	26	DC_IN
7	P3V3	27	DC_IN
8	TP81	28	DCIN
9	PCH_PWROK	29	DC_IN
10	MCU_PG	30	TP79
11	GND	31	SIO_DGOUT_0
2	SMB_SD_CLK	32	TP80
3	SMB_SO_DAT	33	GND
4	P12V_S8_PG	34	P12V_VIN
15	IGNITION	35	P12V_VIN
16	IGNBV3_SB	36	P12V_58
17	GND	37	P12V_SB
1.8	GND	38	P12V_SB
19	P12V_SB	39	P12V_S8
20	P12V_58	40	P12V_58

MI02

Pin	Signals	Pin	Signals
1	PM_SUP_S3#	51	VCC_CORE
2	HDA_RST#_R	52	HDA SDI1
з	HDA BLK R	53	HDA_SDI0
4	HDA_SDO_R	54	SPEED
5	HDA SYNC R	55	FORWARD
6	GND	56	PLTRST
7	SIO_CLKIN	57	DDIT_DAT
8	SOUT6	58	DDH_CLK
9	SIN6	59	DDI2_CLK
10	LPC_LFRAME#	60	DDI2_HPD
11	LPC_SERIRQ	61	DDI1_HPD
12	LPC_LADO	62	DDI2_DAT
13	LPC_LAD1	63	GND
14	LPC_LAD3	64	USB20_N7
15	LPC_LAD2	65	US820_P7
16	SIO_CLK_24M	66	USB20_N6
17	SOUT3	67	US820_P6
18	SIN3	68	GND
19	PM_SUP_S4#	69	US820_N5
20	KBRST#	70	US820 P5
21	PIV2_VDDQ	71	US8_OC2#
22	TP78	72	GND
23	TP77	73	USB3_HTX_DRX_P4
24	RSMRST#	74	USB3_HTX_DRX_N4
25	CPU_PECI	75	USB3_HRX_DTX_N4
26	WDT	76	USB3 HRX DTX P4
27	PME	77	GND
28	MCU CLK	78	USB3_HTX_DRX_P3
29	DGIN 0 MCU	79	USB3_HTX_DRX_N3
30	EXT_PWR	80	USB3_HRX_DTX_NB
31	MCU DAT	81	USB3_HRX_DTX_P3
32	GND	82	GND
33	DDI2 TXP2	83	CLK PCIE P4 MIO
34	DDI2_TXN2	84	CLK POLE NA MIO
35	DDI2_TXP3	85	GND
36	DDI2_TXN3	86	PCIE HTX DRX NS
37	DOI2_TXN0	87	PCIE_HTX_DRX_PS
38	DDI2_TXP0	88	PCIE_HTX_DRX_P6
39	DDI2_TXP1	89	PCIE_HTX_DRX_NG
40	DDI2_TXN1	90	GND
41	GND	91	POIE_HRX_DTX_PS
42	DDH1_TXN0	92	PCIE HRX DTX NS
43	DDI1_TXP0	93	PCIE_HRX_DTX_P6
44	DDI1_TXN1	94	PCIE_HRX_DTX_N6
45	DDH_TXP1	95	GND
46	DDH1_TXP2	96	DDI2_AUX_N
47	DDI1_TXN2	97	DDI2_AUX_P
48	DDI1_TXP3	98	DDI1_AUX P
49	DDH_TXN3	99	DDI1_AUX_N
50	GND	100	GND

	12	51
	100	
	155	
	122	
	- 222	
	28	
	0.05	
	08	
	55	
	- 28	
	2.00	
	100	
	10.05	
	105	
	55	
	22	
	100	
	- 225	
	100	
	108	
	105	
	- 28	
	28	
	- 22 25	
	- 618	
	115	
	- 555	
	- 28	
	-28	
	-26	
	108	
	- 0.03	
	0.03	
	- 22	2
	- 28	
	-68	
	- 676	
	- 0.05	
	0.05	
	55	
	- 22	
0	2.76	10
9		10

Pin	Signals P	in S	ignals	1 .	100	-	-	10	
1	and the second second second	6	GND	1	22	문제	몃		
				2	-90		03	9	
2 3	the second se	7	GND			1000	63	8	
4	the second se	9	GND	5	0	. 6		7	
5	the second s	0	GND			6	_		
			1000			0			
SATA	1 010								
Pin	Signals	8	() ()						
1	GND			1.00.					
2	SATA_HTX_DR	х,ро		- 65					
3	SATA_HTX_DR	X_N0	1	05					
4	GND		-	- 22					
5	SATA HRX DT		-	122					
	SATA HROUDT	V.M		7					
7	GND		1	1.000					
SATA	2 (11)								
Pin	Signals			1.05					
1	GND		-	0					
2	SATA_HTX_DR		-	65					
3 4	SATA_HTX_DR	X_N1	+						
5	SATA HRX DT	X N1	t	- 22					
6	SATA HRX DT	-	1	7					
7	GND		t	1.980					
-	87549521		1						
-	TA1				_	1	6	0	2
Pin	Signals	Pin		ignals		1	8	0	2
1	Signals	2		P3V3		1	000	000	2
1.	Signals	2		P3V3 GND		1	0000	0000	2
1 3 5	Signals 1 1	2 4 6		P3V3 GND /S_MPCIE		1	00000	000000	2
1.	Signals	2		P3V3 GND		1	000000	000000	2
1 3 5 7	Signals 1 1 1 1	2 4 6 8		P3V3 GND /S_MPCIE x		1	0000000	00000000	2
1 3 5 7 9	Signals x x x x GND	2 4 6 8 10		P3V3 GND /S_MPCIE x x		1			2
1 3 5 7 9 11 13 15	Signals x x GND x GND x GND	2 4 6 8 10 12 14 16		P3V3 GND /S_MPCIE X X X X X X		1		00000000000	2
1 3 5 7 9 11 13 15 17	Signals x x x GND x a GND x	2 4 6 8 10 12 14 16 18		P3V3 GND S_MPCIE X X X X SND		1			2
1 3 5 7 9 11 13 15 17 19	Signals x x GND x GND x x y	2 4 6 8 10 12 14 16 18 20		P3V3 GND /S_MPCIE X X X X S GND X		1			2
1 3 5 7 9 11 13 15 17 19 21	Signals x x x GND x GND x x x x GND x x x	2 4 6 8 10 12 14 16 18 20 22	PIV	P3V3 GND S_MPCIE X X X X S GND X X		1			2
1 3 5 7 9 11 13 15 17 19	Signals x x GND x GND x x x SATA HRX, C, DTXP2	2 4 6 8 10 12 14 16 18 20	PIV	P3V3 GND /S_MPCIE X X X X S GND X		1			2
1 3 5 7 9 11 13 15 17 19 21	Signals x x GND x GND x GND x GND x GND SATA_HRX_C	2 4 6 8 10 12 14 16 18 20 22	PIV	P3V3 GND S_MPCIE X X X X S GND X X		1			2
1 3 5 7 9 11 13 15 17 19 21 23	Signals x x a GND x GND x GND SATA_HRX_C_ SATA_HRX_C	2 4 6 8 10 12 14 16 18 20 22 24	PIV	P3V3 GND 5_MPCIE x x x x GND x x y P3V3		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25	Signals x x GND x GND x GND X GND SATA HIX, C, DTXP2 SATA, HIX, C, DTXP2 GND GND GND	2 4 6 8 10 12 14 16 18 20 22 22 24 24 26	PIV	P3V3 GND 5_MPCIE x x x x gND x x P3V3 GND		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27	Signals x x GND x GND x GND x GND x GND SATA_HEX_C DTXP2 GND	2 4 6 8 10 12 14 16 18 20 22 24 24 26 28	PIV	P3V3 GND S_MPCIE X X X X GND X F3V3 GND S_MPCIE		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29	Signals x x GND x GND x x GND SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C	2 4 6 8 10 12 14 16 18 20 22 24 24 26 30	PIV	P3V3 GND S_MPCIE X X X X S GND X P3V3 GND S_MPCIE 8_S0_CK		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31	Signals x x GND x GND x x GND SATA, HRX, C, DTXP2 SATA, HRX, C, DTXP2 GND GND GND SATA, HTX, C, DTXP2 SATA, HTX, C, DTXP2	2 4 6 8 10 12 14 16 18 20 22 22 24 26 28 30 32	PIV	P3V3 GND 5_MPCIE x x x gND x y P3V3 GND 5_MPCIE 8_S0_CLK 8_S0_DAT GND		1		·····································	2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33	Signals x x GND x GND x x GND SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C DTXP2 SATA_HEX_C	2 4 6 8 10 12 14 16 18 20 22 24 24 26 28 30 32 34	PIV	P3V3 GND 5_MPCIE x x x x gND x y y y gND 5_MPCIE 8_50_CLK 8_50_CLK		1		*******************	2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35	Signals x x x GND x GND x X GND SATA_HRX_C, DTXN2 GND SATA_HRX_C, DTXN2 GND SATA_HTX_C, DTXN2 SATA_HTX_C, S	2 4 6 8 10 12 14 16 18 20 22 22 24 24 26 28 30 32 34 36	PIV	P3V3 GND 5_MPCIE x x x x x x x x x x x x x x x x x x x		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41	Signals x x GND x GND x GND x GND SATA_HRX_C, DTMP2 GND GND GND GND SATA_HTX_C, DTXN2 GND GND SATA_HTX_C, DTXN2 GND GND SATA_HTX_C, DTXN2 GND GND SATA_HTX_C, DTXN2 GND GND GND GND GND GND GND GND	2 4 6 8 10 12 14 16 8 20 22 22 24 26 28 30 32 32 34 34 36 38 40 42	PIV	P3V3 GND 5_MPCIE x x x x x x x x x x x x x x x F3V3 GND 5_MPCIE 8_50_CLK 8_50_CLK 8_50_DAT 6_ND x x		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43	Signals x x GND x GND x x GND X X GND SATA, HRX, C, DTXP2 GND GND GND GND GND GND GND GND	2 4 6 8 10 12 14 16 8 20 22 22 24 26 28 30 32 32 34 34 36 38 40 42 44	PIV	P3V3 GND 5_MPCIE x x x x x x x x x x x x x		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45	Signals x x x GND x GND x x GND SATA,HRX,C, DTXP2 GND GND SATA,HRX,C, DTXP2 GND GND SATA,HTX,C, DTXP2 SATA,HTX,C, SA	2 4 6 8 10 12 14 16 18 20 22 22 24 26 28 30 32 34 34 36 38 34 40 42 44 46	PIV	P3V3 GND 5_MPCIE x x x x gND x x p3V3 GND 5_MPCIE 8_S0_CUK 8_S0_CUK 8_S0_CUK 8_S0_CUK 6_ND x x x x x x x x x x x x x x x x x x x		1			2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47	Signals x x x GND x GND x GND x GND x GND SATA_HRX_C, DTNP2 GND GND GND GND SATA_HTX_C, DTNN2 GND GND SATA_HTX_C, DTNN2 GND GND F3V3 P3V3 x x x x x x x x x x x x x x x x x x	2 4 6 8 100 12 14 16 18 20 22 24 24 25 28 30 32 34 36 38 34 36 38 34 40 42 44 45 48	PIV	P3V3 GND 5_MPCIE x x x x x x x x x x F3V3 GND 5_MPCIE 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 5_MPCIE 5_X 5_MPCIE 8_50_CLK 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_X 5_X 5_X 5_X 5_X 5_X		1		·····································	2
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 33 33 33 41 43 45 447 49	Signals x x GND x GND x x GND x x GND SATA_HEX_C_ DTXP2 SATA_HEX_C_ DTXP2 GND GND GND GND SATA_HEX_C_ DTXP2 GND GND SATA_HEX_C_ DTXP2 SATA_HEX_C_ DTXP2 SATA_HEX_C_ DTXP2 SATA_HEX_C_ DTXP2 SATA_HEX_C_ TXP2 GND GND SATA_HEX_C_ TXP2 SATA_HEX_C_ SATA_HEX	2 4 6 8 100 12 14 16 18 20 22 22 24 26 28 30 32 32 34 36 38 34 40 42 44 50	Ptv	P3V3 GND 5_MPCIE x x x x x x x x x x gND x x F3V3 GND 5_MPCIE 8_S0_CLKK 8_S0_CLKK 8_S0_CLKK 8_S0_CLKK 8_S0_CLKK 8_S0_CLKK					
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47	Signals x x x GND x GND x GND x GND x GND SATA_HRX_C, DTNP2 GND GND GND GND SATA_HTX_C, DTNN2 GND GND SATA_HTX_C, DTNN2 GND GND F3V3 P3V3 x x x x x x x x x x x x x x x x x x	2 4 6 8 100 12 14 16 18 20 22 24 24 25 28 30 32 34 36 38 34 36 38 34 40 42 44 45 48	Ptv	P3V3 GND 5_MPCIE x x x x x x x x x x F3V3 GND 5_MPCIE 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 8_50_CLK 5_MPCIE 5_X 5_MPCIE 8_50_CLK 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_MPCIE 5_X 5_X 5_X 5_X 5_X 5_X 5_X 5_X		53		·····································	2

LAN14~LAN13

Signals	Pin	Signals	Pin
LANX_MX2P	8	LANK MOOP	1
LANX_MX2N	7	LANK MXDN	2
LANX_MX3P	6	LANK_MKIP	3
LANX_MX3P	5	LANK_MO(1P	4



Internal Jumper & Connectors (IO Board)

MPCIE1 & MPCIE2

Pin	Signals	Pin	Signals
1	E_WAKE1-	2	P3V3_WLAN1
з	×	4	GND
5	×	5	P1V5_MPCIEI
7	UIM1_RST2	В	UIM1_PWR
9	GND	10	UIM1_RST1
11	CLK_PCIE_N_MPCIE1_SW	12	UIM1_CLK1
13	CLK_POE_P_MPCIE1_SW	14	LIM1_DAT1
15	GND	16	UIM1_VPP1
17	UIM1_CLK2	18	GND
19	UIM1_DAT2	20	x
21	GND	22	x.
23	PCIE_HRX_R_DTX_P5	24	P3V3_WLAN1
25	PCIE_HRK_R_DTX_NS	26	GND
27	GND	28	P1V5_MPCIE1
29	GND	30	E_SCLK
31	PCIE_HTX_R_DRX_NS	32	E_SDTA
33	PCIE_HTX_R_DRX_PS	34	GND
35	GND	36	U5820_P5_R
37	GND	38	USB20_N5_R
39	P3V3_WLAN1	40	GND
41	P3V3_WLAN1	42	LED_WWAN1-
43	GND	44	LED_WLAN1-
45	×	46	x
47	x	48	PTV5_MPCIE1
49	x	50	GND
51	x	52	P3V3_WLAN1
53	GND	54	GND

CAN(CNI)

2

Pin	Signals	Fin	Signula
1	BAT_12V_24V	2	
3	DO	4	1.1
5	GND_CANS	6	GND_CANB
7	TP TP28	8	J1850+/J1708+
9	SINS	10	J1850-/31708-
11	SOUT5	12	CAN_H/J1939+
13	PSV	14	CAN_L/J1939-

1 0 2 0 0 0 13 0 14

CAN(CANBI)

Pin	Signals	Pin	Signals
1	J1850-/J1708-	2	J1850-/J1708-
3	GND	4	J1850+/J1708+
5	CAN_H/01939+	6	J1850+/J1708+
7	x	8	AT_12V_24V
9	CAN_L/J1939-	10	x



PW2 (pc_out)

1

2

3

4

5

54



Internal Jumper & Connectors (RIOSA2)





Signals	1.0
P12V	
GND	
GND	4 🗐
PSV	1.17
	P12V GND

SATAC2 (OUT)

^D in	Signals	S1
51	GND	
52	RD_SATA_HTX_DRX_P1	
53	RD_SATA_HTX_DRX_N1	
54	GND	
55	RD_SATA_HRX_DTX_N1	57
56	RD_SATA_HRX_DTX_P1	
57	GND	P1
Pt	TP2	
P2	TP2	
93	TP2	
P4	GND	
PS.	GND	
P6	GND	
P7	PSV	
F8	P5V	
9	P5V	
10	GND	
11	TP	
12	GND	
13	P12V	
14	P12V	P15
15	P12V	

Internal Jumper & Connectors (Power Board)

<u>RPB6S1</u>

PW1 (DC_IN)

Pin	Signals
1	GND
2	DC_IN
3	GND
4	IGN_IN
5	CHASSIS GND



PW2 (DC_OUT)

Pin	Signals	
1	IGN_OUT	
2	MCU_PG	
3	DC 54V Output	
4	GND	
5	CHASSIS GND	

<u>RPB6SB1</u>

CN1

Pin	Signals	
1	EXT_TXD_R	
2	GND_PSEDCIN_1	
3	EXT_RXD_R	

JMCU1

Pin	Signals	
1	IGN3V3_SB	
2	PIO_1	
3	GND_PSEDCIN_1	





CHAPTER 2 : HARDWARE SETUP

Hard Disk Installation

To install the hard disk,

- 1. Loosen the two hand screws that secure the hard disk tray.
- 2. Pull out the tray as shown in the picture below.

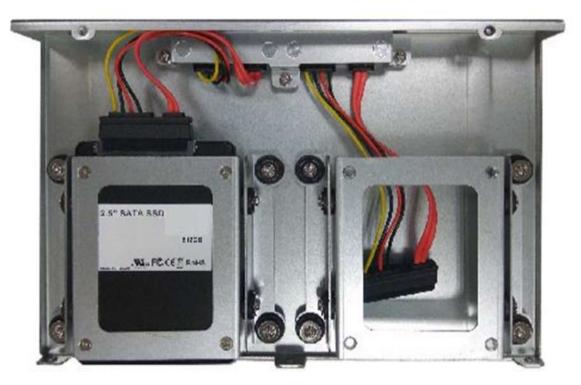


3. Remove the screws shown in the picture in order to open the tray.



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4. Install the disk onto the tray, and connect the SATA cable. Then, repeat the same steps to install the other disk.



5. Lock the disk tray into the system chassis.

CHAPTER 3 : SOFTWARE SETUP

BIOS Setup

BIOS is a firmware embedded on an exclusive chip on the system's motherboard. Lanner's BIOS firmware offering including market-proven technologies such as Secure Boot and Intel Boot Guard technology deliver solid commitments for the shield protection against malware, uncertified sequences and other named cyber threats. BIOS update for Lanner PCs are available for download <u>here</u>.

Entering Setup

To enter the BIOS setup utility, simply follow the steps below:

1. Boot up the system.

2. Pressing the <Tab> or key immediately allows you to enter the Setup utility, and then you will be directed to the BIOS main screen. The instructions for BIOS navigations are as below:

Control Keys	Description	
→ ←	select a setup screen, for instance, [Main], [Advanced], [IntelRCSetup], [Security],	
	[Boot], and [Save & Exit]	
$\wedge \downarrow$	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	5.12 0.47 ×64	elements.
Compliancy	UEFI 2.6; PI 1.4	
BIOS Version		
	07/02/2018 12:00:17	
Access Level	Administrator	
System Date	[Sun 01/01/2017]	
System Time	[00:00:40]	
		→+: Select Screen
		11; Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

AB

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

Main Advanced Chipset Security Boot Save	& Exit
 CPU Configuration Power & Performance PCH-FW Configuration Trusted Computing Super IO Configuration Hardware Monitor LTE WiFi Selector Setting Status LED Configuration Serial Port Console Redirection 	CPU Configuration Parameters
 Intel TXT Information PCI Subsystem Settings Network Stack Configuration CSM Configuration NVMe Configuration USB Configuration 	<pre> ++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit</pre>
Version 2.18.1263. Copyright (C) 2018 Amer	ESC: Exit

CPU Configuration

CPU Configuration		Enable/Disable Software Guard Extensions (SGX)
L1 Instruction Cache L2 Cache	Intel(R) Core(TM) 17-7600U CPU @ 2.806Hz 0x806E9 2900 MHz 32 KB x 2 32 KB x 2 32 KB x 2 256 KB x 2 4 MB	
L3 Cache L4 Cache Microcode Revision VMX SMX/TXT	N/A 8E Supported Supported	++: Select Screen ++: Select Item Enter: Select +/-: Change Opt. F1: General Help
SW Guard Extensions (SGX)	[Disable]	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18,1263). Copyright (C) 2018 Americ	
Aptio Setup Utilit Advanced	y – Copyright (C) 2018 Ame	can Megatrends, Inc. A rican Megatrends, Inc.
Aptio Setup Utilit Advanced CPU Flex Ratio Override CPU Flex Ratio		can Megatrends, Inc. A
Aptio Setup Utilit Advanced CPU Flex Ratio Override CPU Flex Ratio Settings Hardware Prefetcher Adjacent Cache Line	y – Copyright (C) 2018 Ame [Disable] 29	Can Megatrends, Inc. A rican Megatrends, Inc. AP threads Handoff to OS Manner from end of
Aptio Setup Utilit Advanced CPU Flex Ratio Override CPU Flex Ratio Settings Hardware Prefetcher Adjacent Cache Line Prefetch Intel (VMX) Virtualization	y – Copyright (C) 2018 Ame [Disable] 29 [Enabled]	Can Megatrends, Inc. A rican Megatrends, Inc. AP threads Handoff to OS Manner from end of
Aptio Setup Utilit Advanced CPU Flex Ratio Override CPU Flex Ratio Settings Hardware Prefetcher Adjacent Cache Line Prefetch Intel (VMX) Virtualization Technology Active Processor Cores	y - Copyright (C) 2018 Ame [Disable] 29 [Enabled] [Enabled] [Enabled] [A11]	AP threads Handoff to OS Manner from end of POST ++: Select Screen 14: Select Item
Aptio Setup Utilit Advanced CPU Flex Ratio Override CPU Flex Ratio Settings Hardware Prefetcher Adjacent Cache Line Prefetch	y - Copyright (C) 2018 Ame [Disable] 29 [Enabled] [Enabled] [Enabled]	AP threads Handoff to OS Manner from end of POST ++: Select Screen

Active Processor	[A11]	Reset TPM Aux content.
Cores		Txt may not functional
Hyper-Threading	[Enabled]	after AUX content gets
BIST	[Disable]	reseted.
AP threads Idle Manner	[MWAIT Loop]	
AP threads Handoff Manner	[MWAIT Loop]	
AES	[Enabled]	
MachineCheck	[Enabled]	
MonitorMWait	[Enabled]	++: Select Screen
Intel Trusted	[Disable]	↑↓ : Select Item
Execution Technology		Enter: Select
Alias Check Request	[Disable]	+/-: Change Opt.
DPR Memory Size (MB)	4	F1: General Help
Reset AUX Content	[no]	F2: Previous Values
		F3: Optimized Defaults
		▼ F4: Save & Exit
		ESC: Exit

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AB

Feature	Options	Description		
SW Guard Extensions Enabled		Frankla (Disable Caffmann Count Francisca (CC))		
(SGX)	Disabled	Enable/Disable Software Guard Extensions (SGX)		
CDU Elso Datia Occarrida	Disabled			
CPU Flex Ratio Override	Enabled	Enable/Disable CPU Flex Ratio Programming		
CPU Flex Ratio Settings	29	This value must be between Max Efficiency Ratio (LFM) and Maximum non-turbo ratio set by Hardware (HFM).		
Hardware Prefetcher	Disabled			
Hardware Prefetcher	Enabled	To turn on/off the MLC streamer prefetcher.		
Adjacent Cache Line	Disabled			
Prefetch	Enabled	To turn on/off prefetching of adjacent cache lines.		
Intel (VMX) Virtualization	Disabled	When enabled, a VMM can utilize the additional hardware		
Technology	Enabled	capabilities provided by Vanderpool Technology.		
	ALL			
Active Processor Cores	1	Number of cores to enable in each processor package.		
	Disabled	Enabled for Windows XP and Linux (OS optimized for		
Hyper-Threading	Enabled	Hyper-Threading Technology) and Disabled for other OS. (OS not optimized for Hyper-Threading Technology).		

BIST	Disabled Enabled	Enable/Disable BIST (Built-In Self Test) on reset.
AP Threads Idle Manner	HALT Loop MWAIT Loop	
	RUN Loop	AP threads Idle Manner for waiting signal to run.
AP Threads Handoff	HALT Loop	AP threads Handoff to OS Manner from end of POST
Manner	MWAIT Loop	
AES	Disabled	Enable/Disable AES (Advanced Encryption Standard)
	Enabled	Enable, Disable ALS (Auvanced Encryption Standard)
MachineCheck	Disabled	Enable/Disable Machine Check
Machinecheck	Enabled	
MonitorMWait	Disabled	Enable/Disable MonitorMWait
WONTONIVIVIAL	Enabled	
Intel Trusted Execution	Disabled	Enables utilization of additional hardware capabilities
Technology	Enabled	provided by Intel [®] Trusted Execution Technology. Changes require a full power cycle to take effect.
	Disabled	Enables Txt Alias Checking capability. Changes require full
Alias Check Request	Enabled	Txt capability before it will take effect. It is a one time only change, next reboot will be rest.
DPR Memory Size (MB)	4	Reserve DPR memory size (0-255) MB
Reset AUX Content	Yes	Reset TPM Aux content. Txt may not functional after AUX
Reset AUX Content	No	content gets reseted.

Power & Performance

Power & Performance	CPU – Power Management
- CPU – Power Management Control	Control Options
	++: Select Screen ↑↓: Select Item Enter: Select
	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

CPU - Power Management Control

Aptio Setup Utility Advanced	y – Copyright (C) 2018 Amer	ican Megatrends, Inc.
CPU – Power Management	Select the performance state that the BIOS	
Boot performance mode Intel(R) SpeedStep(tm) Race To Halt (RTH) Intel(R) Speed Shift Technology	Performance] [Disable] [Enabled]	will set starting from reset vector.
C states	[Disable]	<pre>++: Select Screen t4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

		а	
ы	c		

Feature	Options	Description
	Max Non-Turbo	Select the performance state that the BIOS will set starting
Boot Performance	Performance	from reset vector.
Mode	Max Battery Turbo	
	Performance	
Intol® SpeedStopIM	Disabled	Allows more than two frequency ranges to be supported
Intel® SpeedStep [™]	Enabled	
	Disabled	Enable/Disable Race To Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-State
Race To Halt (RTH)	Enabled	faster to reduce overall power. (RTH is controlled through
		MSR 1FC bit 20)
Intel [®] Speed Shift	Enabled	Enable/Disable Intel [®] Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for
Technology	Disabled	hardware-controlled P-states.
Catatas	Enabled	Enable/Disable CPU Power Management. Allows CPU to
C states	Disabled	go to C states when its not 100% utilized.

PCH-FW Configuration

Aptio Setup Utility Advanced	ı – Copyright (C) 2018 Amer	ican Megatrends, Inc.
ME Firmware Version ME Firmware Mode ME Firmware SKU ME File System Integrity Value ME Firmware Status 1 ME Firmware Status 2 NFC Support	Normal Mode Corporate SKU 2 0x90000255	When Disabled ME will be put into ME Temporarily Disabled Mode.
ME State ▶ Firmware Update Configu	[Enabled] ration	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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

Firmware Update Configuration

	Advanced						
Me FW I	mage Re-	Flash	[Disable]			Enable/Disable Image Re-Flash ++: Select Scree fl: Select Item Enter: Select +/-: Change Opt F1: General Hel F2: Previous Va F3: Optimized D F4: Save & Exit ESC: Exit	function een
Ve	rsion 2.	18.1263.	Copyright	(C) 2018 (American	Megatrends, Ir	ic.
Featu		Opti				Description	

reature		Description
Me FW Image	Disabled	Enable/Disable Me FW Image Re-Flash function.
Re-Flash	Enable	Enable/Disable Me FW Image Re-Flash function.

Super IO Configuration

Aptio Setup Utility – Copyright (C) 2018 An Advanced	merican Megatrends, Inc.
<pre>Super IO Configuration > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration > Serial Port 5 Configuration</pre>	Set Parameters of Serial Port 1 (COMA)
	<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.18.1263. Copyright (C) 2018 Amer	rican Megatrends, Inc. <mark>84</mark>

Serial Port 1 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2018 Ameri	ican Megatrends, Inc.
Serial Port 1 Configura	tion	Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
COM1 MODE COM1 Termination	[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>

Feature	Options	Description
Carriel Dant	Disabled	Frakla ar Disable Sarial Dart (COM)
Serial Port	Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 3F8h; IRQ = 4
COM1 Mode	RS232	COM RS-422/485 Support
	RS485	
	RS422	
	Disabled	COM DC 422/405 Dessiver Territoria
COM1 Termination	Enabled	COM RS-422/485 Receiver Termination

Serial Port 2 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2018 Ameri	can Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
COM2 MODE COM2 Termination	[RS232] [Disabled]	
		<pre>++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Feature	Options	Description
Carriel Dant	Disabled	Freeble or Dischle Seriel Part (COM)
Serial Port	Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 2F8h; IRQ = 3
COM2 Mode	RS232	
	RS485	COM RS-422/485 Support
	RS422	
	Disabled	COM DC 422/405 Desciver Territoria
COM2 Termination	Enabled	COM RS-422/485 Receiver Termination

Serial Port 3 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2018 Ameri	can Megatrends, Inc.
Serial Port 3 Configura	tion	Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=3E8h; IRQ=5;	
		<pre> ++: Select Screen f↓: 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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Β4

Feature	Options	Description
Carial Dart	Disabled	Frable or Disable Serial Part (COM)
Serial Port	Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 3E8h; IRQ = 5

Serial Port 4 Configuration

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc. Advanced		
Serial Port 4 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=11;	
COM3 MODE COM3 Termination	[RS232] [Disabled]	<pre> ++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
		F3: Optimized Defaults F4: Save & Exit ESC: Exit

Feature	Options	Description
Carriel Dant	Disabled	Frakla ar Disable Sarial Dart (COM)
Serial Port	Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 2E8h; IRQ = 11
COM4 Mode	RS232	COM RS-422/485 Support
	RS485	
	RS422	
	Disabled	COM DC 422/405 Dessiver Territoria
COM4 Termination	Enabled	COM RS-422/485 Receiver Termination

Serial Port 5 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2018 Americ	can Megatrends, Inc.
Serial Port 5 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2F0h; IRQ=7;	
COM4 MODE COM4 Termination	[RS232] [Disabled]	→+: Select Screen ↑↓: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Feature	Options	Description
Carriel Dant	Disabled	Freekla er Disekla Seriel Dert (COM)
Serial Port	Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 2FOh; IRQ = 7
	RS232	COM RS-422/485 Support
COM5 Mode	RS485	
	RS422	
COM5 Termination Disabled Enabled COM RS-422/485 Receiver Term	COM DC 422/405 Descriver Territortion	
	Enabled	COM RS-422/485 Receiver Termination

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Serial Port 6 Configuration

Feature	Options	Description
Serial Port	Disabled Enabled	Enable or Disable Serial Port (COM)
Device Settings	NA	IO = 2EOh; IRQ = 10

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Hardware Monitor

Pc Health Status		
and the second	: +13 C : +0.880 V : +1.216 V : +5.003 V : +3.323 V : +3.328 V	<pre>++: Select Screen 1↓: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

LTE Wi-Fi Selector Setting

LTE WiFi Selector Set	ting	Select which Slot would use
Slot1 Selector Slot2 Selector	(LTE) [LTE]	use.
		<pre>++: Select Screen ++: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Feature	Options	Description		
Clatt Calastan	Wi-Fi			
Slot1 Selector	LTE	Select Which Slot would be used		
Slot2 Selector	Wi-Fi	Salast Which Clat would be used		
SIGIZ Selector	LTE	Select Which Slot would be used		

Status LED Configuration



Feature	Options	Description
	Off	
Status LED	Green	Configuration Status LED
	Red	

Serial Port Console Redirection

COM1	Console Redirection Enable or Disable.
Console Redirection [Enabled]	cliable of Disable.
► Console Redirection Settings	
Legacy Console Redirection	
Legacy Console Redirection Settings	
	++: Select Screen
	↑↓: Select Item
	Enter: Select
	+/-: Change Opt.
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit ESC: Exit

Feature	Options	Description	
COM1 Console	Disabled	Console Redirection Enable or Disable	
Redirection	Enabled		

Console Redirection Settings

Aptio Setup Utili Advanced	ty – Copyright (C) 20	18 American Megatrends, Inc.
COM1 Console Redirection Settings		Emulation: ANSI: Extended ASCII char set. VT100: ASCII char
Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	[115200] [8] [None] [1] [None] [Enabled] [Disabled]	<pre>set: VT100: Hoolf end set: VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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Feature	Options	Description
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	VT100: ASCII char set VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes ANSI: Extended ASCII char set
Bits per second	9600 19200 38400 57600 115200	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	7 8	Data Bits
Parity	None Even Odd Mark Space	A parity bit can be sent with the data bits to detect some transmission errors.
Stop Bits	1 2	Indicates the end of a serial data packet.
Flow Control	None	Flow Control can prevent data loss from buffer overflow

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	Hardware RTS/CTS		
VT-UTF8 Combo	Disabled	Enables VT-UTF8 Combination Key Support for	
Key Support	Enabled	ANSI/VT100 terminals	
Recorder Mode	Disabled	With this mode enabled, only text will be sent. This is to	
Recorder Mode	Enabled	capture Terminal data.	
Resolution 100x31	Disabled	Enables or disables extended terminal resolution	
Resolution 100x31	Enabled		
	VT100		
	LINUX		
Dutty Kay Dad	XTERM86	Colorts Function Kay and Kay Dad on Dutty	
Putty KeyPad	SCO	Selects FunctionKey and KeyPad on Putty	
	ESCN		
	VT400		

Legacy Console Redirection Settings

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		Select a COM port to display redirection of
Redirection COM Port Resolution Redirect After POST	[80×24]	Legacy OS and Legacy OPROM Messages
		<pre> ++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
		F4: Save & Exit ESC: Exit

Feature	Options	Description
Redirection COM Port	COM1	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	<mark>80x24</mark> 80x25	On Legacy OS, the Number of Rows and Columns supported redirection.
Redirection After BIOS Post	<mark>Always Enable</mark> Bootloader	When Bootloader is selected, Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable .

Intel TXT Information

Intel TXT Informat	ion	
Chipset BiosAcm Chipset Txt Cpu Txt Error Code Class Code Major Code Minor Code	Production Fused Production Fused Supported None None None None	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

PCI Subsystem Settings

Aptio Setup Utility – Copyright (C) 2018 Amer Advanced	rican Megatrends, Inc.
AMI PCI Driver Version : A5.01.16	Globally Enables or Disables 64bit capable
PCI Settings Common for all Devices: Above 4G Decoding [Disabled]	Devices to be Decoded in Above 4G Address Space (Only if System
Change Settings of the Following PCI Devices:	Supports 64 bit PCI Decoding).
WARNING: Changing PCI Device(s) settings may have unwanted side effects! System may HANG! PROCEED WITH CAUTION.	
	++: Select Screen
	↑↓: Select Item Enter: Select
	+/-: Change Opt.
	F1: General Help F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit
	ESC: Exit

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Feature	Options	Description
Above 4G Decoding	Disabled Enabled	Globally Enables or Disables 64bit capable devices to be decoded in above 4G address space (only if System supports 64bit PCI decoding)

Network Stack Configuration

Network Stack [Disabled] Enable/Disable UEFI Network Stack ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Aptio Setup Util Advanced	ity – Copyright (C) 201	7 American Megatrends, Inc.
	Network Stack	[Disabled]	Network Stack ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
Nobelon 2 19 1969 Lobublant (P) 2017 Omobiesh Moastboode The	Vancian 0 10 10	(0 Copupight (0) 2017	

Feature	Options	Description
Network Stack	Disabled Enabled	Enables or disables UEFI Network Stack

CSM Configuration

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc. Advanced			
Compatibility Support M	Nodule Configuration	Enable/Disable CSM Support.	
CSM Support	[Enabled]		
CSM16 Module Version	07.81		
Option ROM execution			
Network Storage Video Other PCI devices	[Legacy] [Legacy] [Legacy] [Legacy]	<pre>++: Select Screen 1↓: 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
CSM Support	Disabled Enabled	Enables/Disables CSM Support
Network	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy PXE OpROM
Storage	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Storage OpROM
Video	Do Not Launch UEFI Legacy	Controls the execution of UEFI and Legacy Video OpROM
Other PCI Device	Do Not Launch UEFI <mark>Legacy</mark>	Determines OpROM execution policy for devices other than Network, Storage, or Video

NVMe Configuration

Aptio Setup Utility – Copyright (C) 2018 Am Advanced	erican Megatrends, Inc.
NVMe controller and Drive information	
No NVME Device Found	<pre>→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
	F4: Save & Exit ESC: Exit
Version 2.18.1263. Copyright (C) 2018 Amer	ican Megatrends, Inc.

USB Configuration

Aptio Setup Utilit Advanced	y – Copyright (C) 2018 Amer.	ican Megatrends, Inc.
USB Configuration		Enables Legacy USB support. AUTO option
USB Module Version	19	disables legacy support if no USB devices are
USB Controllers:		connected. DISABLE
1 XHCI		option will keep USB
USB Devices:		devices available only
2 Drives, 1 Keyb	oard, 3 Hubs	for EFI applications.
Legacy USB Support	[Enabled]	
USB Mass Storage	[Enabled]	↔: Select Screen
Driver Support		↑↓: Select Item
		Enter: Select
Mass Storage Devices:		+/-: Change Opt.
Generic Ultra	[Auto]	F1: General Help
HS-SD/MMC		F2: Previous Values
SRT USB 1100	[Auto]	F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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Feature	Options	Description
Legacy USB Support	Enabled Disabled Auto	Enables Legacy USB support Auto option disables legacy support if no USB devices are connected; Disabled option will keep USB devices available only for EFI applications
USB Mass Storage Driver Support	Disabled Enabled	Enables or disables USB Mass Storage Driver Support

Chipset

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

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc. Main Advanced Chipset Security Boot Save & Exit		
 System Agent (SA) Configuration PCH-IO Configuration 	System Agent (SA) Parameters **: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.18.1263. Copyright (C) 2018 America	n Megatrends, Inc.	

System Agent (SA) Configuration

Aptio Setup Utilit Chips	y – Copyright (C) 2018 Ameri et	can Megatrends, Inc.
System Agent (SA) Conf	iguration	Memory Configuration Parameters
SA PCIe Code Version VT–d	2.9.2.0 Supported	
 Memory Configuration VT-d Above 4GB MMIO BIOS assignment X2APIC Opt Out 		
X2HP1C Opt Out	[D1580180]	<pre> ++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Feature	Options	Description
VT-d	Disabled Enabled	VT-d capability
Above 4GB MMIO BIOS assignment	Disabled Enabled	Enable/Disable above 4GB MemoryMappedIO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB
Z2APIC Opt Out	Disabled Enabled	Enable/Disable X2APIC_OPT_OUT bit

Memory Configuration

Memory Configuration		Astinus Henory Frequency Selections in	Chaomei II Stot 0	Pumilated & Enabled	Maximum voice of TOLDD
Homory RC Version Homory Frequency Hemory Timings (tCL-TRCD-TRP-TRAC) Channel 0 Elot 0	2.9.2.0 2133 MHz 15-15-15-95 Proviated & Enabled	Mrz.	Channel & stor 0 Bise Nonder of Ranks Manufacturer Channel 0 Slot 1 Channel 1 Slot 1 Channel 1 Slot 1	16004 HB (DOMA) 2 Uninoun Not Populated / Disabled Not Populated / Disabled Not Populated / Disabled	example and the second
Size Manher nf Banks Manhattarse Channel 1 Siot 1 Channel 1 Siot 0 Channel 1 Siot 1		Enter: Select	Mareory ratio/reference cinck outions woved to Deerclock-iMemary-/Ca stam Frafile semu Makimum Memory Frequency reference		++: Select Doreso 14: Select Doreso Inter: Select +/-: Charge Dut. F1: General Help F2: Previous Values F3: Qotinized Defaults F4: Dava # Enit ESC: Fult

Feature	Options	Description
Maximum Memory Frequency	Auto 1067~3733	Maximum Memory Frequency Selections in MHz
Max TOLUD	Dynamic 1GB~ 3.5GB	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

PCH-IO Configuration

Aptio Setup Utility – Copyright (C) 2018 Ameri Chipset	can Megatrends, Inc.
PCH-IO Configuration	PCI Express Configuration settings
 PCI Express Configuration SATA And RST Configuration Security Configuration 	
Serial IRQ Mode [Continuous] Restore AC Power Loss [Power Off]	
	++: Select Screen ↑↓: Select Item
	Enter: Select +/-: Change Opt.
	F1: General Help
	F2: Previous Values F3: Optimized Defaults
	F4: Save & Exit ESC: Exit

Feature	Options	Description
Serial IRQ Mode	Quiet Continuous	Configure Serial IRQ mode
Restore AC Power Loss	Power ON Power OFF	Specify what state to go to when power is re-applied after a power failure (G3 state)

PCI Express Configuration

Aptio Setup Utility – Copyright (C) 2018 Ameri Chipset	can Megatrends, Inc.
 PCI Express Configuration PCI Express Root Port 1 PCI Express Root Port 2 PCI Express Root Port 3 PCI Express Root Port 4 	PCI Express Root Port 1 Settings.
 PCI Express Root Port 4 PCI Express Root Port 9 PCI Express Root Port 10 	→+: Select Screen
	↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
Version 2.18.1263. Copyright (C) 2018 America	F3: Optimized Defaults F4: Save & Exit ESC: Exit
	B4

PCI Express Root Port1

PCI Express Root Port 1	[Enabled]	Control the PCI Express Root Port.
ASPM	(Disable)	And a second
Advanced Error	(Enabled)	
Reporting		
PCIe Speed	[Auto]	
Detect Timeout	0	
		++: Select Screen
		11: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit

Feature	Options	Description
PCI Express Root	Disabled	Control the PCI Express Root Port
Port1	Enabled	
	Auto	
	L0sL1	
ASPM	L1	Set the ASPM Level: Force all links to 0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM
	LOs	
	Disabled	
Advanced Error	Disabled	Advenced Even Depending Events
Reporting	Enabled	Advanced Error Reporting Enable/Disable
	Auto	
PCIe Speed	Gen1	Configure PCIe Speed
PCIe Speed	Gen2	Configure PCIe speed
	Gen3	
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

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PCI Express Root Port2

Advanced Error [E Reporting	isable] nabled]
Reporting	nabled]
PCIe Speed [A	uto]
Detect Timeout 0	
	++: Select Screen
	14: Select Item
	Enter: Select
	+/-: Change Opt.
	F1: General Help
	F2: Previous Values

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Feature	Options	Description
PCI Express Root Port2	Disabled Enabled	Control the PCI Express Root Port
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port3

PCI Express Root Port 3	[Enabled]	Control the PCI Express Root Port.
ASPM	[Disable]	NOOT POINT.
Advanced Error Reporting	[Enabled]	
PCIe Speed	[Auto]	
Detect Timeout	0	
		↔: Select Screen 14: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit

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Feature	Options	Description
PCI Express Root	Disabled	Control the PCI Express Root Port
Port3	Enabled	Control the FCI Express Root Fort
	Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM
	LOsL1	
ASPM	L1	
	LOs	
	Disabled	
Advanced Error	Disabled	Advanced Error Reporting Enable/Disable
Reporting	Enabled	
	Auto	Configure PCIe Speed
PCIe Speed	Gen1	
	Gen2	
	Gen3	
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port4

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PCI Express Root Port 4 ASPM Advanced Error Reporting PCIe Speed Detect Timeout	[Enabled] [Disable] [Enabled] [Auto] 0	Control the PCI Express Root Port.	
		++: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	

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Feature	Options	Description
PCI Express Root	Disabled	Control the PCI Express Root Port
Port3	Enabled	
	Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM
	LOsL1	
ASPM	L1	
	LOs	
	Disabled	
Advanced Error	Disabled	Advanced Error Reporting Enable/Disable
Reporting	Enabled	
PCIe Speed	Auto	Configure PCIe Speed
	Gen1	
	Gen2	
	Gen3	
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port9

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc. Chipset		
PCI Express Root Port 9 ASPM Advanced Error Reporting PCIe Speed Detect Timeout	[Enabled] [Disable] [Enabled] [Auto] 0	Control the PCI Express Root Port. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Feature	Options	Description
PCI Express Root Port3	Disabled Enabled	Control the PCI Express Root Port
ASPM	Auto L0sL1 L1 L0s Disabled	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM
Advanced Error Reporting	Disabled Enabled	Advanced Error Reporting Enable/Disable
PCIe Speed	Auto Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

PCI Express Root Port10

Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc. Chipset		
PCI Express Root Port 10 ASPM Advanced Error Reporting	[Enabled] [Disable] [Enabled]	Control the PCI Express Root Port.
PCIe Speed Detect Timeout	[Auto] 0	
		<pre>++: Select Screen fl: 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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2**			
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Feature	Options	Description	
PCI Express Root	Disabled	Control the PCI Express Root Port	
Port3	Enabled	control the r ci express toot r ort	
	Auto		
	LOsL1		
ASPM	L1	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disabled ASPM	
	LOs		
	Disabled		
Advanced Error	Disabled	Advanced Freeze Descertises Freehle (Dischle	
Reporting	Enabled	Advanced Error Reporting Enable/Disable	
	Auto		
DCIa Spaad	Gen1	Configure PCIe Speed	
rcie speeu	PCIe Speed Configure PCIe Speed Gen2	Configure r Cle Speed	
	Gen3		
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.	

SATA and RST Configuration

Aptio Setup Utility Chipse	et	ander andere and the second
SATA And RST Configurat	tion	▲ Enable/Disable SATA Device.
SATA Controller(s) SATA Mode Selection	[Enabled] [AHCI]	
SATA-1 Software Preserve Port 0 Hot Plug Configured as eSATA	[Enabled] [Disable]	
Spin Up Device SATA Device Type SATA-2 Software Preserve	[Disable] [Hard Disk Drive] Empty Unknown	++: Select Screen t1: Select Item Enter: Select +/-: Change Opt.
Port 1 Hot Plug Configured as eSATA	A REAL PROPERTY OF A READ REAL PROPERTY OF A REAL P	F1: General Help F2: Previous Values F3: Optimized Defaults V F4: Save & Exit
Spin Up Device Version 2.18.1263.	(Disable) . Copyright (C) 2018 Amer	ESC: Exit
Version 2.18.1263.	. Copyright (C) 2018 Amer y - Copyright (C) 2018 Am	ESC: Exit
Version 2.18.1263. Aptio Setup Utility Chipse Hot Plug Configured as eSATA	Copyright (C) 2018 Amer (Copyright (C) 2018 Amer (Disable) Hot Plug supported [Disable] [Hard Disk Drive] Empty Unknown [Enabled] [Disable]	ESC: Exit

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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
Port 0/1/2	Disabled Enabled	Enable or Disable SATA Port
Hot Plug	Disabled Enabled	Designates this port as Hot Pluggable
Spin Up Device	Disabled Enabled	If enabled for any of ports Staggered Spin Up with be performed and only the drivees 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

Security Configuration

	ltility – Copyright (C) 20 Chipset	18 American Megatrends, Inc.
Security Configur	ation	Enable will lock bytes 38h–3Fh in the
RTC Lock	[Enabled]	lower/upper 128-byte
BIOS Lock	[Enabled]	bank of RTC RAM
		↔: Select Screen
		14: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

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Feature	Options	Description
RTC Lock	Disabled Enabled	Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.
BIOS Lock	Disabled Enabled	Enable/Disable the PCH BIOS Lock Enable feature. Required to enabled to ensure SMM protection of flash.

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 – Copyright (C) 2018 Amer Main Advanced Chipset Security Boot Save &	
Password Description	Set Administrator Password
If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights.	
The password length must be	++: Select Screen
in the following range: Minimum length 3	t↓: Select Item
Maximum length 20	Enter: Select +/-: Change Opt.
Administrator Password	F1: General Help
User Password	F2: Previous Values F3: Optimized Defaults
▶ Secure Boot	F4: Save & Exit ESC: Exit

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Feature	Options
Administrator Password	If ONLY the Administrator's password is set, it only limits access to Setup and is only asked for when entering Setup.
User Password	If ONLY the User's password is set, it serves as a power-on password and must be entered to boot or enter Setup. In Setup, the user will have Administrator rights.

Secure Boot

Aptio Setup Utili	ty – Copyright (C) 2018 Amer Security	ican Megatrends, Inc.
System Mode Vendor Keys	Setup Not Modified	Secure Boot activated when: Secure Boot is enabled
Secure Boot	[Disable] Not Active	Platform Key(PK) is enrolled, System mode is
Secure Boot Customization ▶ Restore Factory Keys ▶ Reset To Setup Mode	[Custom]	User/Deployed, and CSM is disabled
▶ Key Management		<pre>++: Select Screen f↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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	21	ę	4

Feature	Options	Description
Secure Boot	Disabled Enabled	Secure Boot is activated when Platform Key (PK) is enrolled, System mode is User/Deployed, and CSM function is disabled.
Secure Boot Customization	Standard Custom	Customizable Secure Boot mode: In custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

Key Management

Aptio Setup Utilit	and the second se	<mark>yrigh</mark> writy		American Megatrends, Inc.
Factory Key Provision Restore Factory Keys Reset To Setup Mode Export Secure Boot var Enroll Efi Image		ble]		Provision factory default keys on next re-boot only when System in Setup Mode
Device Guard Ready ▶ Remove 'UEFI CA' from ▶ Restore DB defaults		121		++: Select Screen
Secure Boot variable				↑↓: Select Item
Platform Key(PK)		22.20	No Keys	Enter: Select
Key Exchange Keys			No Keys	+/-: Change Opt.
Authorized Signatures	0	0	No Keys	F1: General Help
▶ Forbidden Signatures	0	0	No Keys	F2: Previous Values
Authorized TimeStamps	0	01	No Keys	F3: Optimized Defaults
▶ OsRecovery Signatures	0	0	No Keys	F4: Save & Exit ESC: Exit

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Feature	Options	Description
Factory Key Provision	Disabled Enabled	Provision factory default keys on next re-boot only when System in Setup Mode.
Restore Factory Keys	None	Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot keys.
Enroll Ffi Image	None	Allows the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db)
Restore DB defaults	None	Restore DB variable to factory defaults.

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.

	y <mark>– Copyright (C) 2018 Ame</mark> et Security <mark>Boot S</mark> ave &	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot Boot mode select	5 [On] [Disabled] [LEGACY]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
FIXED BOOT ORDER Prior Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 • USB Drive BBS Prioritie	[Hard Disk] [USB Device:SRT USB 1100] [CD/DVD] [Network]	<pre>++: Select Screen fl: 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
Setup Prompt Timeout	5	The number of seconds to wait for setup activation key. 65535 means indefinite waiting.
Bootup NumLock State	ON OFF	Select the keyboard NumLock state
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option
Boot mode select	LEGACY UEFI DUAL	Select boot mode for Legacy or UEFI

• 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 setup screen. Users can select any of the items in the left frame of the screen.

Aptio Setup Utility – Copyright (C) Main Advanced Chipset Security Boo	
Save Options Discard Changes and Exit Save Changes and Reset Default Options Restore Defaults Boot Override SRT USB 1100 Generic Ultra HS-SD/MMC	Exit system setup without saving any changes.
	<pre>++: Select Screen f↓: 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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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	t Saving —
Quit	without	t saving?
1	Yes	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.



Restore Defaults

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



PS: The items under Boot Override were not same with image. It should depend on devices connect on system.

APPENDIX A: LED INDICATOR EXPLANATIONS

Power / Status / Storage

The status explanations of LED indicators on front panel are as follows:

LED	COLOR	LED ACTION	DESCRIPTION
Derrer	Green	Steady	System is powered ON
Power	OFF	N/A	System is powered OFF
	Green	Steady	Control by GPIO
	Red	Steady	Control by GPIO
Status	055	N/A	Control by GPIO (Default)
	OFF		Or No Power ON/ Power OFF
	Note: Status bi-color LED controlled by GPIO		
C1	Amber	Blinking	Storage (HDD/SSD) Active
Storage	OFF	N/A	No Data Access

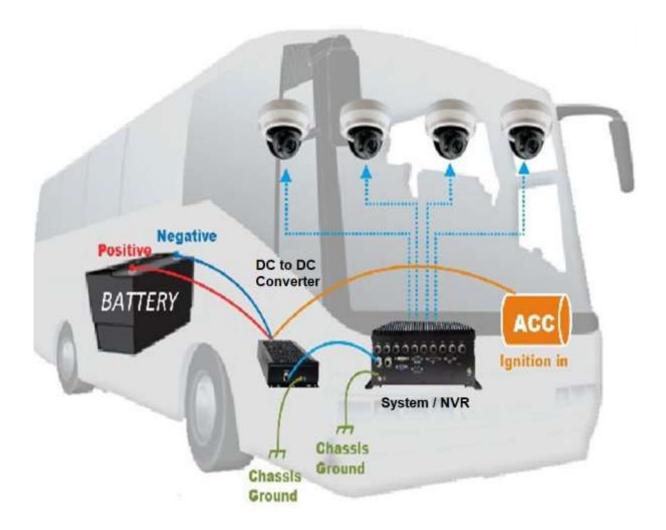
APPENDIX B: IGNITION CONTROL SETUP

Connecting the Devices

The system comes with a controller to ensure that the device is well-shielded against premature failure at the boot or shutdown phase. When installing:

- 1. Make sure both your vehicle and the system are turned off.
- Follow the wiring definition and illustration below to connect the vehicle battery and ignition (ACC) to the in-vehicle system through the 5-pin M12 male connector marked as "DC Input" on the system, through the right pin contact.

In a typical in-vehicle computing solution, this system usually acts as a PSE (Power Sourcing Equipment) to power up connected PoE devices, for which you should ensure a minimum of 48V DC power supply to the system with the use of a **DC to DC Adapter.**



DC to DC Converter Description, Front

DC Rated Voltage Input

M12 K-Code Male





PIN		Description		
PIN 1	GND	Primary Ground		
PIN 2	DC_IN	DC Rated Voltage Input		
PIN 3	GND	Primary Ground		
PIN 4	IGN_IN Power ON Trigger form car ignition ON			
PIN 5 (PE)	N 5 (PE) CHASSIS GND Chassis Ground			
Note: SKU A:	Note: SKU A: RATED VOLTAGE at DC 32~96V			
SKU B: RATED VOLTAGE at DC 24~36V				
SKU C:	RATED VOLTAGE at DO	C 72~110V		

DC to DC Converter Description, Rear

DC Isolated Output

M12 K-Code Female





	PIN	Description
PIN 1	IGN_OUT	Adapter Ignition on Trigger Signal
PIN 2	MCU_PG	MCU Power_good detect pin (Isolated)
PIN 3	DC Output	DC Isolated 52V Output
PIN 4	GND	Secondary Ground (S_G for NVR)
PIN 5 (PE)	CHASSIS GND	Chassis Ground
	PIN 2 PIN 3 PIN 4	PIN 1 IGN_OUT PIN 2 MCU_PG PIN 3 DC Output PIN 4 GND

System / NVR Description

DC Isolated Input M12 K-Code Male





	PIN	Description	
PIN 1	GND	Signal Ground	
PIN 2	DC_IN	DC Isolated 52V Input (from DC to DC Converter)	
PIN 3	MCU_PG	System Power Good Status (without isolated meets EMI solution)	
PIN 4	IGN_IN	Ignition on Trigger Form DC to DC Converter	
PIN 5 (PE)	CHASSIS GND	Chassis Ground	
Note: DC_in, below 44V without PoE power support			
DC_in, a	DC_in, above 45V enable PoE power support		

Power to System DC IN 54V Cable

M12	K-Code Male		M12 K	-Code Female
PIN 1	IGN_IN	PIN	1	GND
PIN 2	MCU_PG	PIN	2	DC_IN
PIN 3	DC_IN	PIN	3	MCU_PG
PIN 4	GND	PIN	4	IGN_IN
PIN 5 (PE)	Chassis GND	PIN	5 (PE)	Chassis GND
	PE .A			PE
1		Cable	4	

Correct Handling of Main and IGN Power Supplies when Starting and Ending Use of R6S: A SKU: RATED VOLTAGE at DC 32~96V B SKU: RATED VOLTAGE at DC 24~36V C SKU: RATED VOLTAGE at DC 72~110V

- It is secured to use the R6S, its OS (Windows or Linux) will boot up reliably every time the input voltage of both the main and the IGN power terminals of DC/DC converter will be changed from 0VDC to RATED VOLTAGE.
- It is secured a working R6S will safely shutdown OS (Windows or Linux) and BIOS without fail every time the input voltage of the IGN power terminal of DC/DC converter will be changed "at the same time" from RATED VOLTAGE to 0VDC.
- 3. It is secured the R6S will not fail or got any damage even if the voltage of the main power input terminal of the DC/DC converter is lowered to RATED VOLTAGE after its OS (Windows or Linux) and BIOS are safely shut down.

The above 1~3 items secured the **RATED VOLTAGE can only be turned off (the main power) after the completion of "safely ensure an OS shutdown".

Using the Ignition System Manager (ISM)

Command Format:

- 1. Host communication interface: COM#6 (RS-232)
- 2. Support buad rate: 57600/ 8N1
- 3. Communication protocol: ANSI terminal

GET VariableName

SET VariableName value

MCU Command	Wirte/Read (SET/GET)	VariableName	VariableName value	
	SET	STARTUP_VOLTAGE	0(default)	0mV
Startup Voltage(mV)	GET	STARTUP_VOLTAGE		
Shutdowm	SET	INPUT_VOLTAGE_MIN	8500(default)	8500mV
Voltage(mV)	GET	INPUT_VOLTAGE_MIN		
	SET	POWERON_DELAY	4(default)	4S
PowerOn Delay (Sec)	GET	POWERON_DELAY		
PowerOff Delay (Sec)	SET	SHUTDOWN_DELAY	4(default)	4S
PowerOn Delay (Sec)	GET	SHUTDOWN_DELAY		
Input Voltage	GET	INPUT_VOLTAGE		
Wakeup Dl1	SET	WAKEUP_ENABLE	7(default)	1:DI1 2:Reserved 4: Reserved
Device ID	GET	DEVICE_ID	R6S_N	
Firmware Version	GET	VERSION	0.06B	
Digital Out (LTE on/off)	SET	DIGITAL_OUT	31(default)	
Digial In	GET	DIGITAL_IN		
Ignition	GET	IGNITION		
	SET	DIGITAL_POE	1023(<mark>default</mark>)	0~1023
Digital POE	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).

Command	Response Message	-
SET STARTUP_VOLTAGE 6000.1	OK.	
GET STARTUP_VOLTAGE1	STARTUP_VOLTAGE = 6000.1	-

The delay time for POWERON_DELAY state,...

Setting: 4S.

Command	Response Message
SET POWERON_DELAY4.1	OK.
GET STARTUP_DELAY.1	POWERON_DELAY=4.1

3. Wakeup DI1 Enable,...

Setting: DI1 enable (001).

Command	Response Message
SET WAKEUP_ENABLE1.1	OK.1
GET WAKEUP_ENABLE	WAKEUP_ENABLE=1.1

4. Device ID.

Command	Response Message	
GET DEVICE_ID.1	DEVICE_ID=R6S_N.1]

5. Firmware Version

Command	Response Message	ŀ
GET VERSION.	VERSION=0.6B.1].

6. Write/Read Digital Out state...

Setting: LTE module ON/OFF.

Command	Response Message
SET DIGITAL_OUT3.1	OK.1
GET DIGITAL_OUT.1	DIGITAL_OUT=3.1

bit0 = LTE 1(MPCIE) - SIM Control.

1: Power ON.

0: Power OFF.

bit1 = LTE 2(M.2) - SIM Control.

1: Power ON.

0: Power OFF.

bit2 = LTE 3(M.2) - Power Control.

1: Power ON.

0: Power OFF.

bit3 = LTE 4(M.2) - Power Control.

1: Power ON.

0: Power OFF.

bit4 = LTE 5(M.2) - Power Control.

1: Power ON.

0: Power OFF.

7. Read Digital In state.

Command	Response Message	.1
GET DIGITAL_IN a	DIGITAL_IN=3.1	.1

8. Ignition state (only read).

Command	Response Message	л
GET IGNITION.	IGNITION=0.1	л
	(Orignitian OFF / 1: Ignition ON.)	

9. Control the ON/OFF of each PoE port.

Command	Response Message	л
SET DIGITAL_POE1.1	OK.	л
GET DIGITAL_POE.1	DIGITAL_PO€=1.₁	л
POE1/bit0 = 1.		
POF2/bit1 = 2		

POLZ/DICI = 2.1
POE3/bit2 = 4.1
POE4/bit3 = 8.
POE5/bit4 = 16.
POE6/bit5 = 32.
POE7/bit7 = 64.
POE8/bit7 = 128.
POE9/bit8 = 256.
POE10/bit9 = 512.

To achieve POE1~10 enable, please enter value setting at 1023. ..

.1

.1

10. Write/Read Digital DO state, ..

Setting: DO1, DO2, DO3, DO4, DO5, DO6, DO7,

n	\sim	•
v	J	o.i

Command	Response Message	л
SET DIGITAL_DO3.1	OK.	л
GET DIGITAL_DO.1	DIGITAL_DO=3.1	л
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 enter value

setting at 255.

12. Save setting.

Command a	Response Message	л
SAVE.1	OK FLASH UPDATED.1	.1

-1

-1

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		Reasons to Return: u Repair(Please include failure details) u Testing Purpose	
Compa	ny:	Contact Person:	
Phone	No.	Purchased Date:	
Fax No	.:	Applied Date:	
Return	Shipping Addr	ess:	
Dippir Dippir	ng by: Air Fre rs:	ight □ 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. 04: FDC Fail 05: HDC Fail 06: Bad Slot

07: BIOS Problem 08: Keyboard Controller Fail 09: Cache RMA Problem 03: CMOS Data Lost 10: Memory Socket Bad 11: Hang Up Software 12: Out Look Damage

13: SCSI 19: DIO 14: LPT Port 20: Buzzer 21: Shut Down 15: PS2 16: LAN 22: Panel Fail 17: COM Port 23: CRT Fail 18: Watchdog Timer 24: Others (Pls specify)

Request Party Confirmed By Supplier Authorized Signature / Date Authorized Signature / Date 92 www.lannerinc.com