

Lanner

Industrial Communication Platforms

Energy Management and Industrial Cyber Security Solutions

LEC-6032C User Manual

Version: 2.1

Date of Release: 2023-06-19

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.

The latest version of this document can be found on Lanner's official website, available either through the product page or through the [Lanner Download Center](#) page with a login account and password.

Conventions & Icons

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

Icon	Usage
 Note or Information	This mark indicates that there is something you should pay special attention to while using the product.
 Warning or Important	This mark indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

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

Technical Support

In addition to contacting your distributor or sales representative, you could submit a request at our [Lanner Technical Support](#) and fill in a support ticket to our technical support department.

Documentation Feedback

Your feedback is valuable to us, as it will help us continue to provide you with more accurate and relevant documentation. To provide any feedback, comments or to report an error, please email contact@lannerinc.com. Thank you for your time.

Contact Information

Taiwan Corporate Headquarters

Lanner Electronics Inc.

7F, No.173, Sec.2, Datong Rd.
Xizhi District, New Taipei City 22184,
Taiwan

立端科技股份有限公司

221 新北市汐止區
大同路二段 173 號 7 樓
T: +886-2-8692-6060
F: +886-2-8692-6101
E: contact@lannerinc.com

USA

Lanner Electronics Inc.

47790 Westinghouse Drive
Fremont, CA 94539
T: +1-855-852-6637
F: +1-510-979-0689
E: sales_us@lannerinc.com

Europe

Lanner Europe B.V.

Wilhelmina van Pruisenweg 104
2595 AN The Hague
The Netherlands
T: +31 70 701 3256
E: sales_eu@lannerinc.com

China

Beijing L&S Lancom Platform Tech. Co., Ltd.

Guodong LOFT 9 Layer No. 9 Huinan Road,
Huilongguan Town, Changping District,
Beijing
102208 China
T: +86 010-82795600
F: +86 010-62963250
E: service@ls-china.com.cn

Canada

Lanner Electronics Canada Ltd

3160A Orlando Drive
Mississauga, ON
L4V 1R5 Canada
T: +1 877-813-2132
F: +1 905-362-2369
E: sales_ca@lannerinc.com

Copyright and Trademarks

This document is copyrighted © 2023 by Lanner Electronics Inc. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties that may result from such use.

Acknowledgment

Intel® and Intel® Atom® are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp. All other product names or trademarks are properties of their respective owners.

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



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).

Sécurité de fonctionnement

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

Mounting Installation Precaution

- ▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ▶ 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 (T_{ma}) specified by the manufacturer.
- ▶ Installation of the equipment (especially in a rack) should consider the ventilation of the system's intake (for taking chilled air) and exhaust (for emitting hot air) openings so that the amount of airflow required for safe operation of the equipment is not compromised.
- ▶ To avoid a hazardous load condition, be sure the mechanical loading is even when mounting.
- ▶ 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 over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- ▶ Reliable earthing 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 EMBLEMES À ACCÈS RESTREINT.

Warning

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

"Product shall be used with Class 1 laser device modules."

Avertissement

Équipement de classe I. Ce matériel doit être relié à la terre. La fiche d'alimentation doit être raccordée à une prise de terre correctement câblée. Une prise de courant mal câblée pourrait induire des tensions dangereuses sur des parties métalliques accessibles.

"Le produit doit être utilisé avec des modules de dispositifs laser de classe 1."



Electrical Safety Instructions

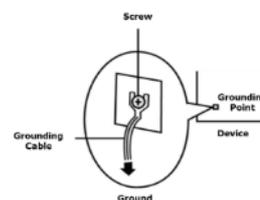
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect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

Consignes de sécurité électrique

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

Grounding Procedure for Power Source

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



Procédure de mise à la terre pour source d'alimentation

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

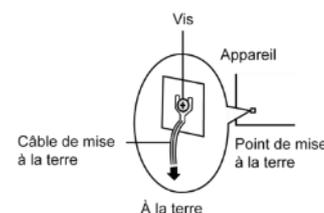


Table of Contents

CHAPTER 1: INTRODUCTION.....	9
Ordering Information	9
Specifications	10
CHAPTER 2: SYSTEM OVERVIEW.....	11
Mechanical Drawing.....	11
Block Diagram	12
Front I/Os	13
Side I/Os.....	14
Rear I/Os	14
CHAPTER 3: BOARD LAYOUT	15
Jumpers & Connectors Locations on the Motherboard	15
Jumper Settings & Connector Pinout	18
CHAPTER 4: HARDWARE SETUP	24
Installing SO-DIMM Memory	26
Installing a Disk Drive	27
Mounting LEC-6032 by DIN Rail	29
CHAPTER 5: BIOS SETUP.....	31
Main	32
Advanced	33
Chipset	55
Security	59
Boot.....	60
Save & Exit.....	62
APPENDIX A: PROGRAMMING WATCHDOG TIMER.....	67
APPENDIX B: GEN 3 BYPASS	68
APPENDIX C: P-FAIL RELAY FOR DUAL POWER SUPPLY	69
APPENDIX D: LED INDICATOR EXPLANATIONS	71

CHAPTER 1: INTRODUCTION

Thank you for choosing LEC-6032 series. This industrial embedded Box PC is designed for networking capability for industrial environments. LEC-6032 is built with Intel Atom E3845 CPU inside for low processing power consumption. The system provides 5 LAN ports for network connections and 2 additional SFP ports for model type-C. To fit in harsh industrial environment, LEC-6032 can be mounted by DIN Rail and supports wide temperature operations. LEC-6032 is definitely the compact and robust embedded Box PC for industrial communications.

Product Features:

- Fanless and compact design
- Intel(R) Atom™ E3845 1.91GHz SoC CPU
- Wide Temperature Support : -40~70°C
- With 2x GbE SFP Fiber
- ESD/Surge protection on serial COM ports for harsh environments
- 5x GbE LAN with 1 pair Gen.3 LAN bypass
- 1x USB 3.0, and 1x USB 2.0 port plus internal USB pin-header
- DIN rail or wall mounting options

Ordering Information

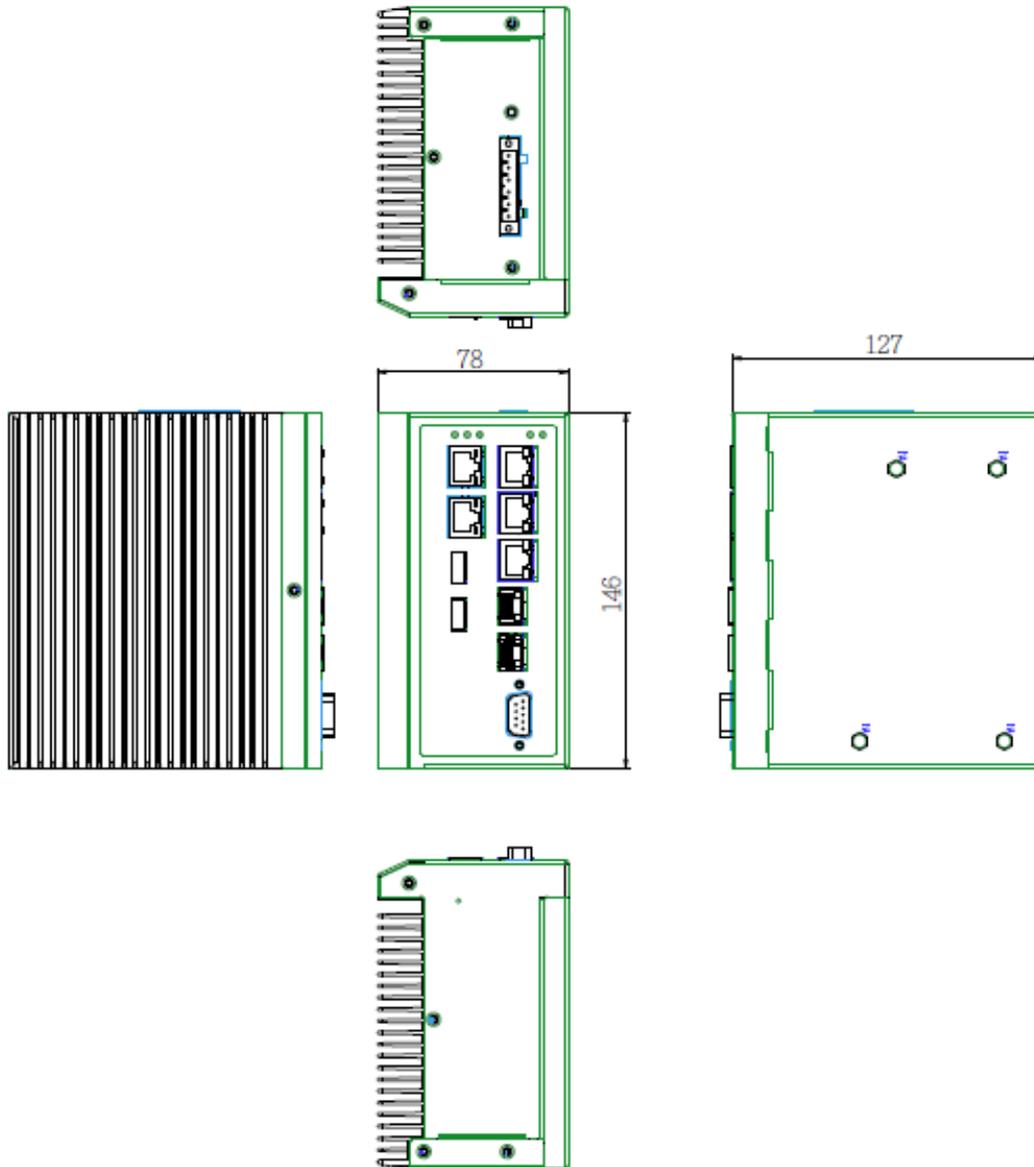
LEC-6032C	Wide Temperature DIN rail Fanless Box PC with Intel Atom E3845 processor, 5x GbE RJ45 with 1 pair Gen 3 bypass, 2x GbE SFP, 1x USB 3.0 host, 1x USB 2.0 host, 1x DB9 RS232
------------------	--

Specifications

Processor	Intel® Atom™ Processor E3845 (4 Cores, 1.91GHz)	
Memory	1x 204-pin SO-DIMM DDR3L, 1333MHz, up to 8GB	
BIOS	AMI SPI Flash BIOS	
Serial Port	1x DB9 RS-232 w/ 1.5KV ESD Protection	
USB Port	1x USB 3.0 Type-A Port 1x USB 2.0 Type-A Port	
Graphic	Intel® HD Graphics, 1x Internal VGA Pin-Header	
Storage	1x SATA 2.5" HDD/SSD Drive Bay	
Network	Controller	Intel® i210-IT
	Ports	5x RJ45 10/100/1000Mbps Ports w/ 1 pair Gen 3 Bypass; 2x GbE SFP Ports
	Protection	1.5KV built-in
LEDS	HDD/RUN/PWR/SFP/LAN, pls refer to Appendix D.	
Mechanical	Dimensions	78 x 146 x 127mm
	Housing	Aluminum + SGCC
	Mounting	DIN Rail or Wall mount
Power	Voltage	12~36 Vdc
	Connector	Phoenix Contact 6-pin Connector w/ Lock
	Power Consumption (Idle)	9~10W
	Power Consumption (Full Load)	15~16W
	Dual Power Inputs	Yes
Watchdog Timer	Yes, 256 Level Time Interval System Reset, Software Programmable	
Environment	Operating Temperature	-40~75°C
	Storage Temperature	-40~85°C
	Humidity	5% to 95% (non-condensing)
Driver Support	Microsoft Windows	Windows 7, Windows 7 Embedded
	Linux	Kernal 3.X
Standards & Regulations	Green	RoHS
	EMC	CE, FCC Class A

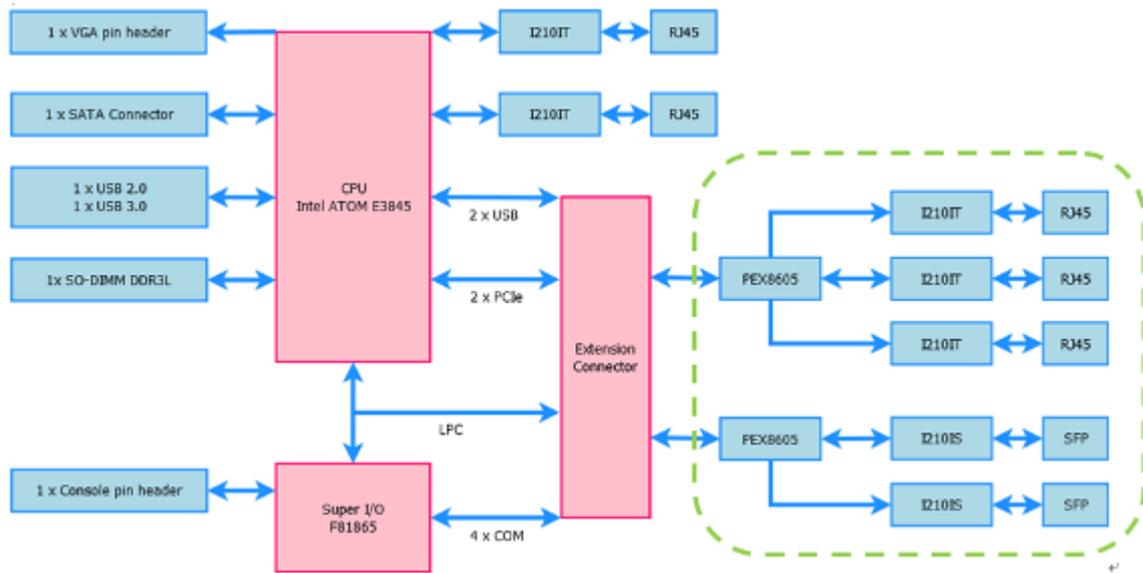
CHAPTER 2: SYSTEM OVERVIEW

Mechanical Drawing

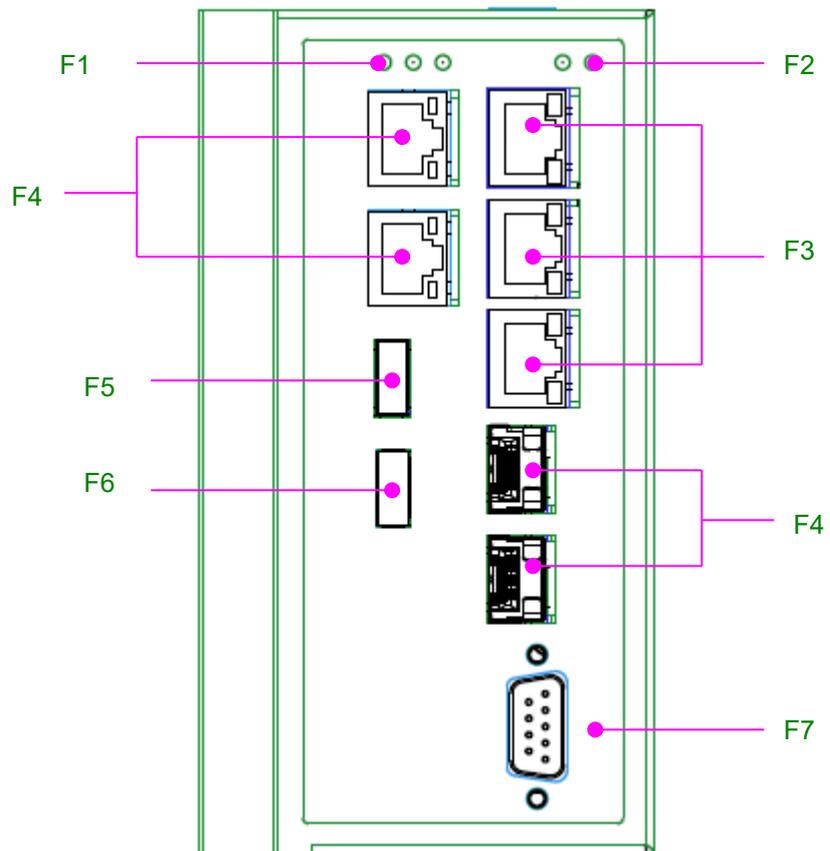


Unit: mm

Block Diagram

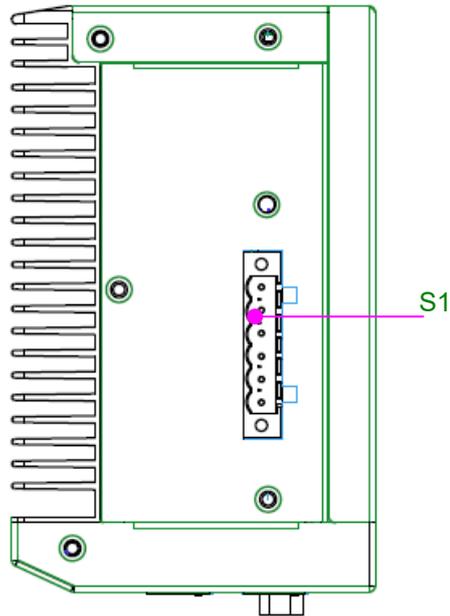


Front I/Os



F1 PWR/RUN/HDD LED	1 x PWR/RUN/HDD LED set for power, device and storage activity status
F2 SFP LED	Blinking indicates Active, and Yellow indicates link for fiber status
F3 LAN	5 x 10/100/1000 mbps RJ-45 LAN ports
F4 SFP	2 x SFP GbE ports
F5 USB 2.0	1 x USB2.0 Type-A port
F6 USB 3.0	1 x USB3.0 Type-A port
F7 DB9 COM	1 x DB9 COM port with RS-232 (enabled by connecting the required cable to the internal pin header)

Side I/Os

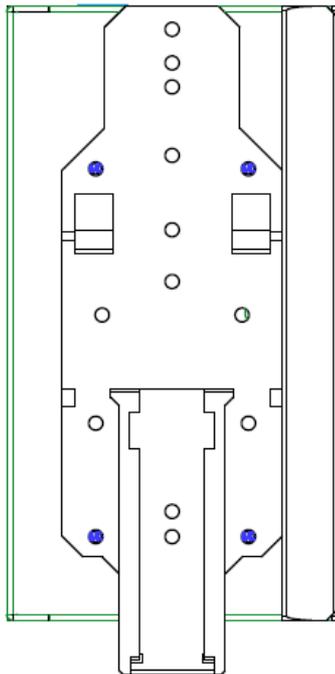


S1 Power Input

12 - 36Vdc power input via 6-pin Phoenix Contact connector

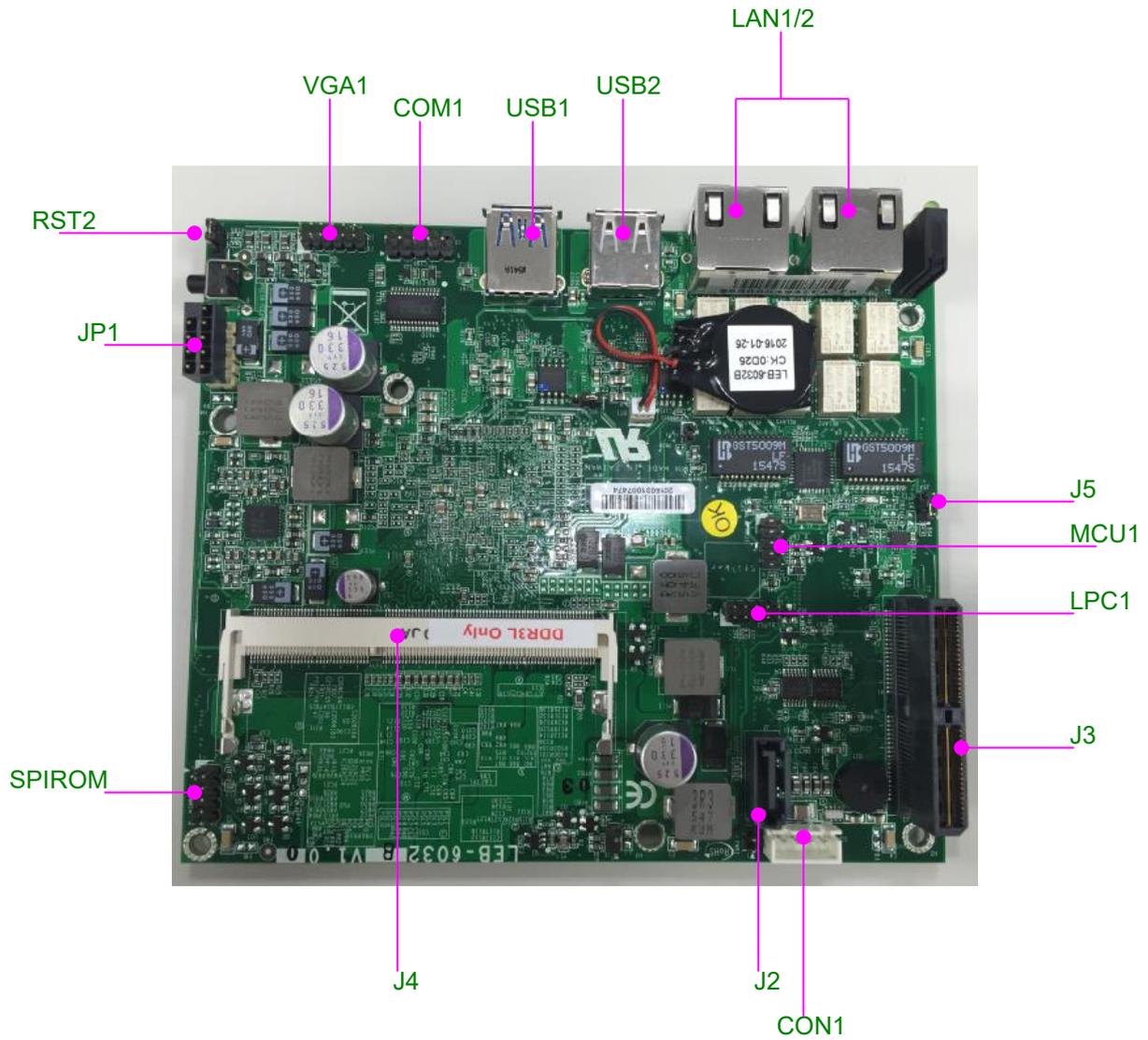
Rear I/Os

The bracket on the rear is designed for DIN Rail mounting purpose.

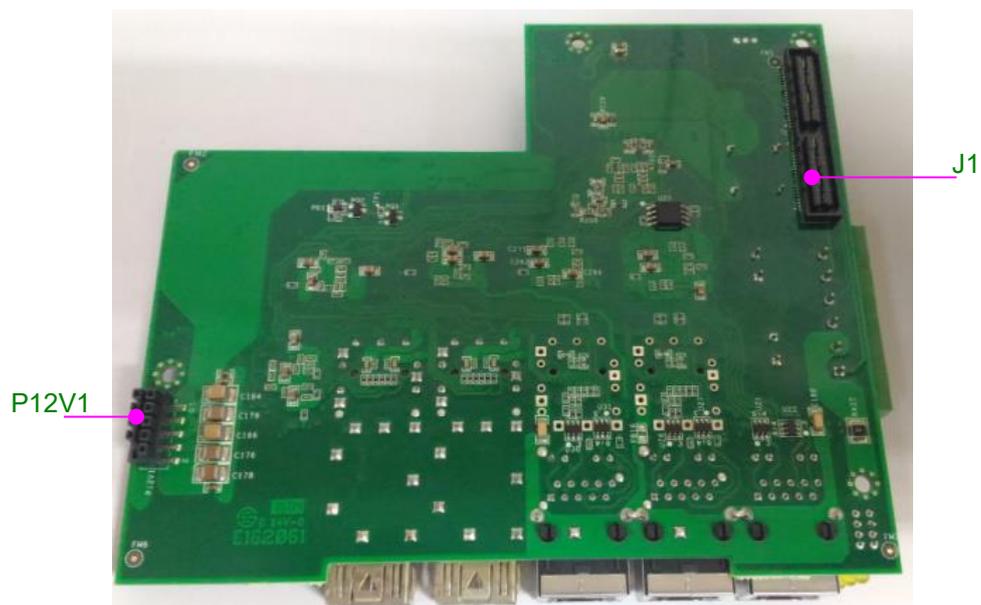
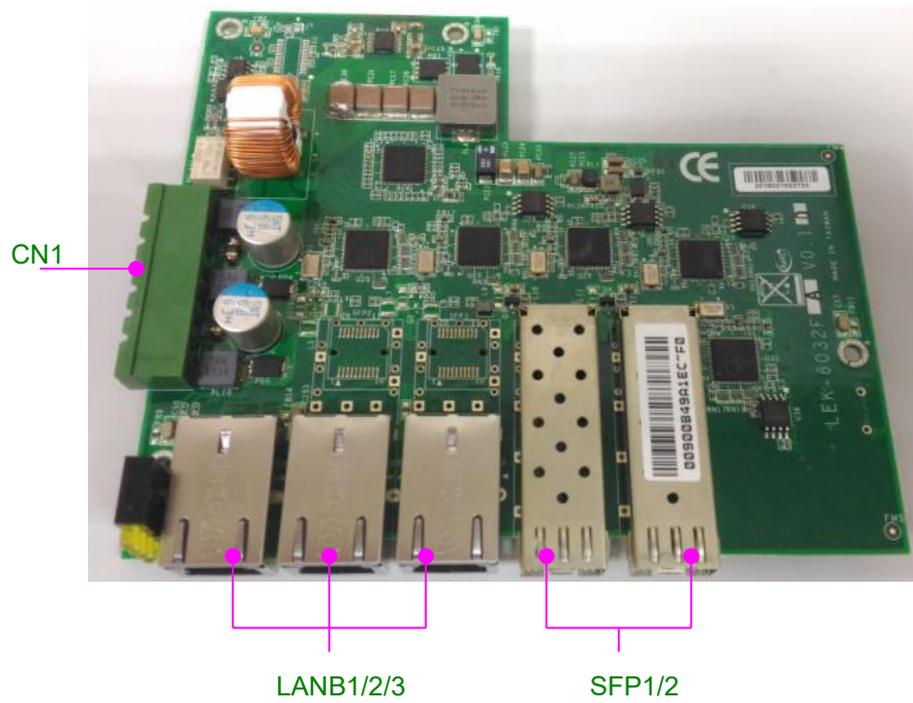


CHAPTER 3: BOARD LAYOUT

Jumpers & Connectors Locations on the Motherboard



Jumpers & Connectors Locations for I/O Card



The Motherboard

Label	Description
LAN1/2	2 x RJ-45 LAN ports
USB1	1 x USB3.0 Type-A port
USB2	1 x USB2.0 Type-A port
COM1	RS-232 internal pin header
VGA1	Internal VGA pin header
RST2	Jumper setting for hardware/software reset
JP1	Board-to-board power connector
SPIROM1	For debug purpose
J4	DIMM
J2	SATA 7-pin signal connector
CON1	SATA 4-pin power connector
J3	2x40pin board-to-board connector
LPC1	For debug purpose
MCU1	LPC1114 burn connector
J5	Clear CMOS

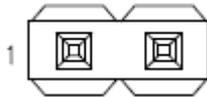
I/O Card

Label	Description
CN1	6-pin power input
LANB1/2/3	3 x GbE LAN ports
P12V1	Board-to-board power connector
J1	Board-to-board connector
SFP1/2	2 x SFP LAN ports

Jumper Settings & Connector Pinout (Motherboard)

PWR1: Power On/Off

Jumper	Description
1-2	Power ON/OFF system
NC (Default)	Normal



CLR1 : Clear CMOS

Jumper	Description
1-2	Clear CMOS RAM
NC (Default)	Normal



J1: AT mode select

Jumper	Description
1-2	AT mode
NC (Default)	Normal



RST2: Hardware/Software select

Jumper	Description
1-2	Software reset
2-3 (Default)	Hardware reset



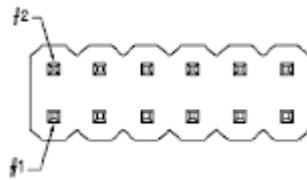
J5: LPC1114 Burn Select

Jumper	Description
2-3	Burn mode
NC (Default)	Normal



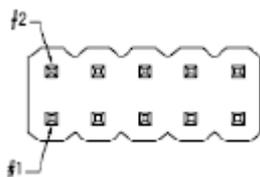
Connector Pin Assignment

VGA1: VGA pin header



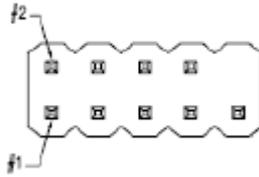
Pin	Description
1	VGA_R
2	GND
3	VGA_G
4	GND
5	VGA_B
6	GND
7	VGA_HSYNC
8	GND
9	VGA_VSYNC
10	Ground
11	DD_DATA
12	DD_CLK

LPC1: LPC pin header (For debug purpose)



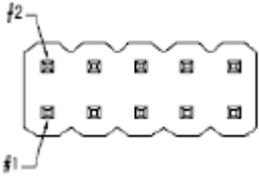
Pin No.	Description	Pin No.	Description
1	LPC_CLK_1	2	LPC_AD1
3	PLTRST_P80_N	4	LPC_AD0
5	LPC_FRAME_N	6	P3V3
7	LPC_AD3	8	GND
9	LPC_AD2	10	GND

COM1: serial COM pin header with RS-232 signal



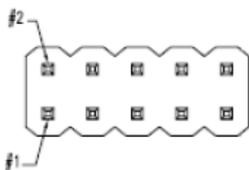
Pin No.	Description	Pin No.	Description
1	NC	2	NC
3	COM1_RXD	4	NC
5	COM1_TXD	6	NC
7	NC	8	NC
9	COM1_GND		

SPIROM1: SPI ROM Connector (For debug purpose)



Pin	Description	Pin	Description
1	SPI_HD1_N	2	PCH_SPI_CS1_N
3	PCH_SPI_CS0_N	4	V_3P3_SPI_R
5	PCH_SPI_MISO	6	SPI_HD0_N
7	NC	8	PCH_SPI_CLK
9	GND	10	PCH_SPI_MOSI

MCU1: LPC1114 Burn Connector



Pin	Description	Pin	Description
1	NC	2	NC
3	PIO1_6_RXD	4	PIO1_5_RTS_N
5	PIO1_7_TXD	6	PIO0_7_CTS_N
7	NC	8	NC
9	GND	10	P3V3SB

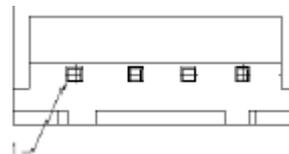
J2: SATA connector for SATA 2.5" HDD/SSD

Pin	Pin signal
1	GND
2	SATA_TX1_C_DP
3	SATA_TX1_C_DN
4	GND
5	SATA_RX1_C_DN
6	SATA_RX1_C_CP
7	GND



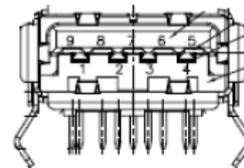
CON1: SATA power connector supplying the power needed for a storage drive

Pin	Pin signal
1	P12V
2	GND
3	GND
4	P5V



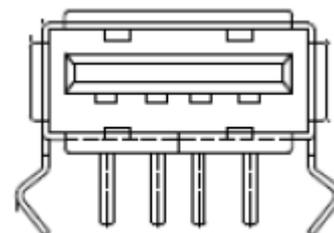
USB1: USB 3.0 Connector

Pin	Description	Pin	Description
1	P5V_USB_L	5	USB3_SS_RX_DN
2	USB_P1_L_DN	6	USB3_SS_RX_DP
3	USB_P1_L_DP	7	GND
4	GND	8	USB3_SS_TX_DN
		9	USB3_SS_TX_DP



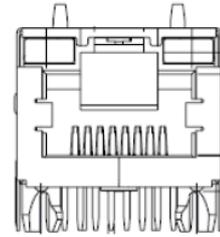
USB:2 USB 2.0 Connector

Pin	Description
1	P5V_USB0_L
2	USB_P1_L_DN
3	USB_P1_L_DP
4	GND



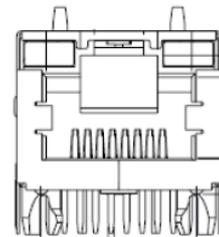
LAN1: LAN1 RJ-45 Connector

Pin	Description	Pin	Description
1	P1_MDXP0	7	P1_MDXP3
2	P1_MDXN0	8	P1_MDXN3
3	P1_MDXP1	9	P3V3S
4	P1_MDXP2	10	P1_LED_LINK_N
5	P1_MDXN2	11	P1_LINK1000
6	P1_MDXN1	12	P1_LINK100



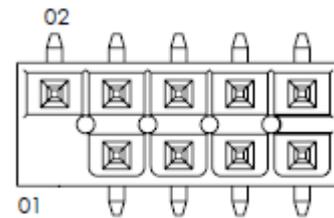
LAN2: LAN2 RJ-45 Connector

Pin	Description	Pin	Description
1	P2_MDXP0	7	P2_MDXP3
2	P2_MDXN0	8	P2_MDXN3
3	P2_MDXP1	9	P3V3S
4	P2_MDXP2	10	P2_LED_LINK_N
5	P2_MDXN2	11	P2_LINK1000
6	P2_MDXN1	12	P2_LINK100

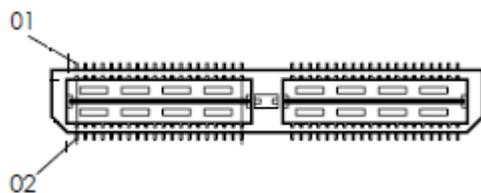


JP1: Board to Board Power Connector

Pin	Description	Pin	Description
1	NC	2	P12V
3	GND	4	P12V
5	GND	6	P12V
7	GND	8	P12V
9	GND	10	P12V



J3: Board to Board Connector 2x40-Pin



PIN	Description	PIN	Description	PIN	Description	PIN	Description
1	GND	41	L_AD0	2	GND	42	PLTRST_BUF_N
3	USB_P2_DN	43	L_FRAME_N	4	PCIE_RX2_DN	44	WAKE_N
5	USB_P2_DP	45	SER_IRQ	6	PCIE_RX2_DP	46	SIO_GP00
7	GND	47	P5VS	8	GND	48	SIO_GP01

9	USB_P3_DN	49	P5VS	10	PCIE_TX2_C_DN	50	COM2_RTS#
11	USB_P3_DP	51	P5VS	12	PCIE_TX2_C_DP	52	COM2_TXD#
13	GND	53	P5VS	14	GND	54	P1_RT_1
15	LATCH_EN_GPH	55	P5VS	16	PCIE_RX3_DN	56	COM2_RXD#
17	LATCH_DIS_GPL	57	WDTO_OUT#	18	PCIE_RX3_DP	58	COM3_RTS#
19	GND	59	P3V3S	20	GND	60	COM3_TXD#
21	SMB_CLK_RESUME _IO	61	P3V3S	22	PCIE_TX3_C_DN	62	P1_S0_1
23	SMB_DATA_RESU ME_IO	63	P3V3S	24	PCIE_TX3_C_DP	64	COM3_RXD#
25	GND	65	P3V3S	26	GND	66	COM4_RTS#
27	USB_OC_N23	67	P3V3S	28	CLK_MULTI_IO_DN	68	COM4_TXD#
29	GPIO_BYPASS_EN	69	P3V3S	30	CLK_MULTI_IO_DP	70	P1_S0_2
31	GND	71	SIO_GP54	32	GND	72	COM4_RXD#
33	CLK_33M_TPM	73	P1V5	34	CLK_MINIPCIE_DN	74	COM5_RTS#
35	L_AD3	75	P1V5	36	CLK_MINIPCIE_DP	76	COM5_TXD#
37	L_AD2	77	P1V5	38	GND	78	LAN34GND
39	L_AD1	79	P1V5	40	GND	80	COM5_RXD#

CHAPTER 4: HARDWARE SETUP

Preparing the Hardware Installation

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

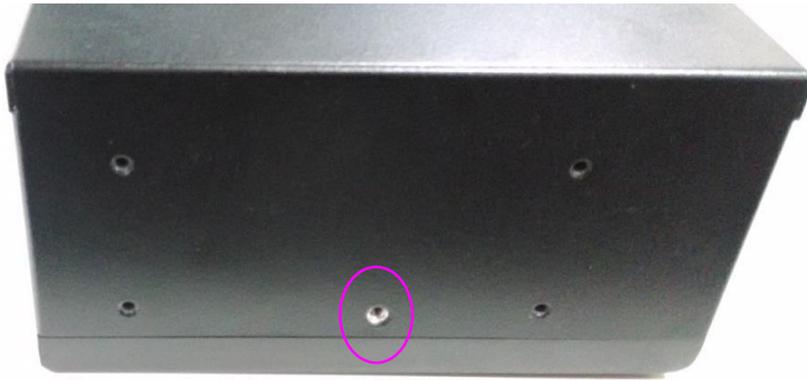
WARNING:

- To reduce the risk of personal injury, electric shock, or damage to the equipment, please remove all power sources.
- Please wear ESD protected gloves before conducting the following steps.
- Do NOT pile items on top of the system to prevent damages due to this improper use. Lanner is not liable for damages caused by improper use of the product.

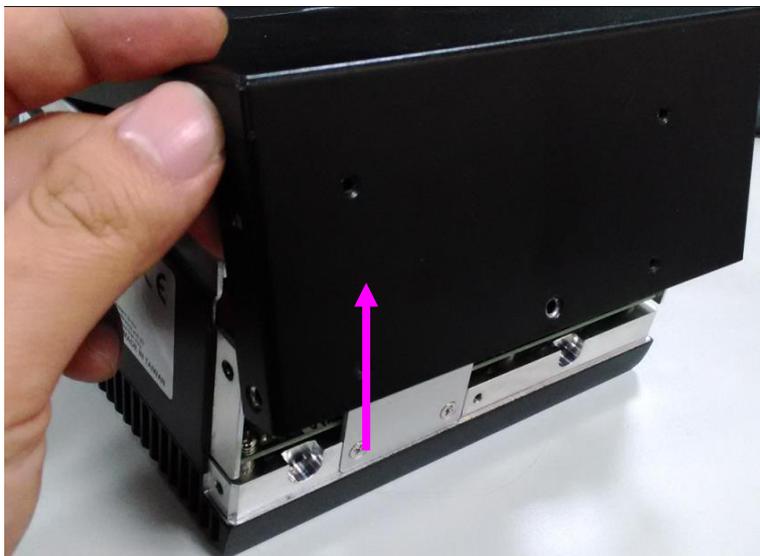
1. Power off LEC-6032 and remove the power cord.
2. Remove the screws from the sides and the rear, as circled in the image below.

Notes: you have to remove the DIN Rail mounting bracket first if it is pre-installed on the system.





3. Open the bottom and the side compartments as shown below.



Installing SO-DIMM Memory

The system is designed with a SO-DIMM socket supporting up to 4GB DDR3L SDRAM. Please follow the steps below for proper installations.

1. Locate the SO-DIMM socket on the motherboard.
2. Remove the heat sink by removing the two screws circled in the image below.



3. Align the memory module's key with the SO-DIMM socket's key.
4. Insert the SO-DIMM module.



5. Press the module down until it is locked by the two clips at each side.



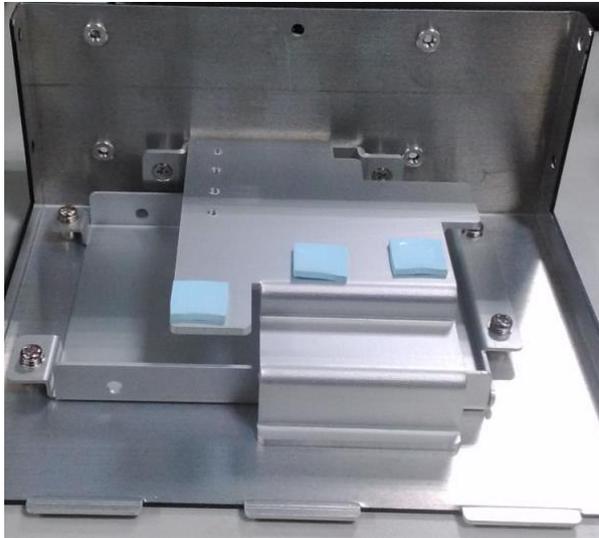
6. Place the heat sink back on and apply two screws.



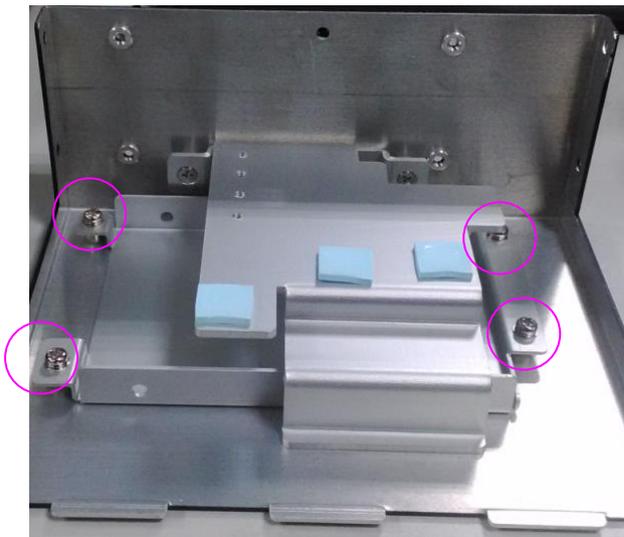
Installing a Disk Drive

The system can accommodate one 2.5" SATA disk drive. Please follow the steps below.

1. Locate the SATA drive tray on the inner side of the bottom compartment.



2. Take the 2.5" drive tray out by removing the 4 screws that fix the tray.

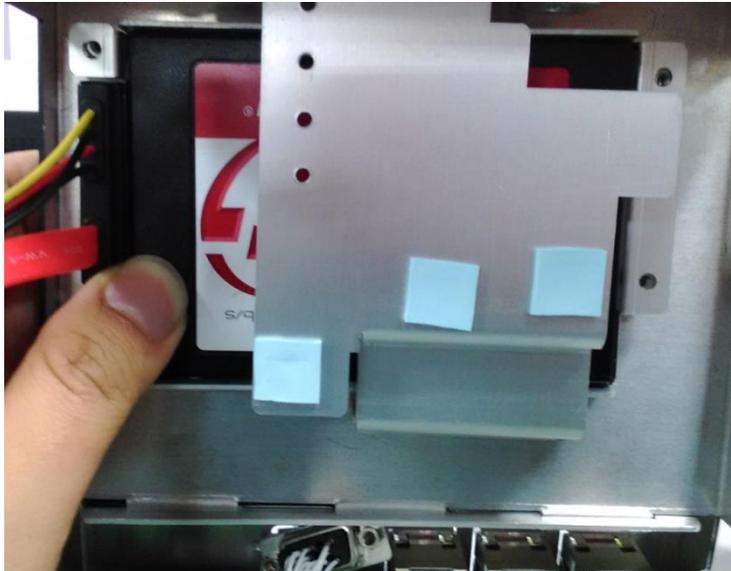


3. Place the SATA disk drive and apply 4 screws as circled below.

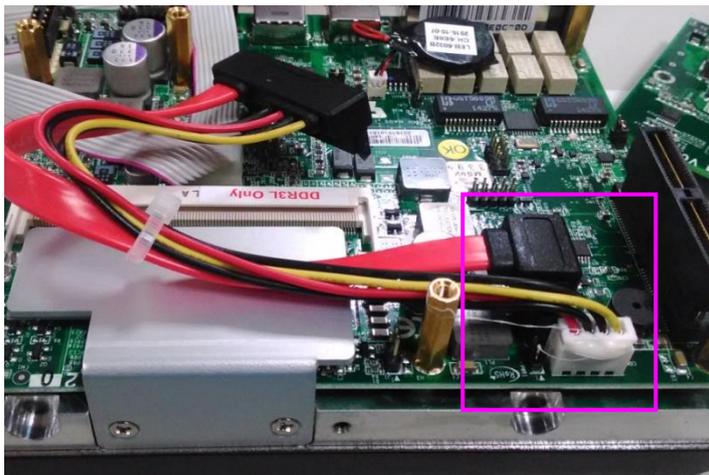


4. Place the disk drive tray back to its original place and fix it with 4 screws.

5. Connect the supplied SATA cable. Plug the 7-pin and the 4-pin SATA signal and power pair into its corresponding SATA signal and power connectors on the motherboard.



Notes: you have to remove the add-on card first to conveniently access the SATA connectors.

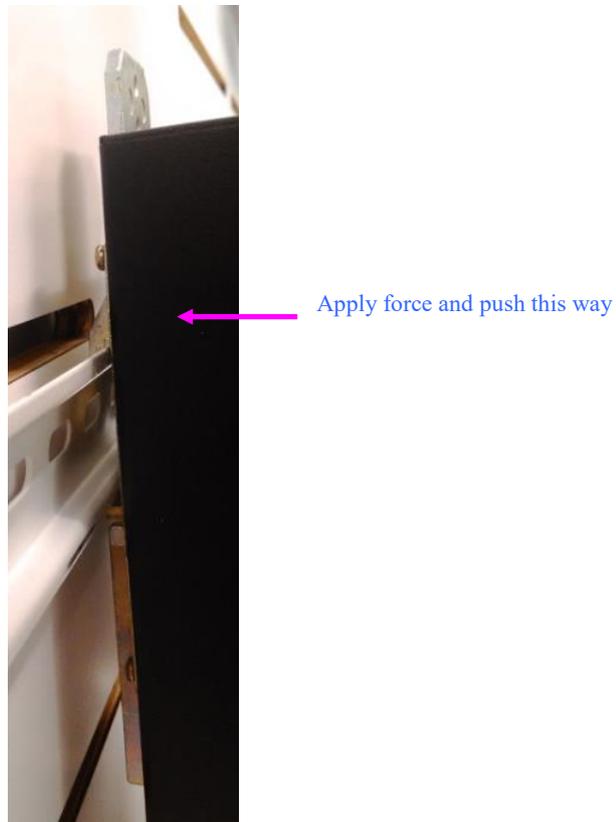


Mounting LEC-6032 by DIN Rail

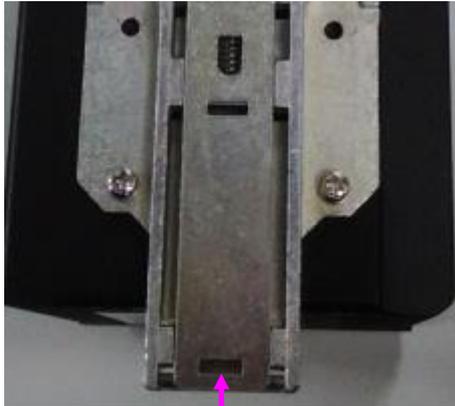
All models of the LEC-6032 series are designed with a DIN Rail mounting bracket at the rear of the product.



Hang the device onto a rail and push inwards until it firmly attaches.



To remove the system from the DIN Rail, simply use a flathead screwdriver to poke the hole circled in the mounting clip image below.



Apply force and poke this hole

Main

The [Main] is the first setup screen when you enter BIOS. The [Main] displays general system and BIOS information and you may configure "System Date", and "System Time".

BIOS Information

BIOS Vendor

Core Version

Compliance

Project Version: displays version information

Build Date and Time: displays the date and time the BIOS was built.

Press "Enter" if you want to configure "System Language", "System Date", and "System Time".

System Language

System Date: Day/Month/Year

System time: Hour/Minutes/Seconds

Access Level: Administrator by default

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----+-----
BIOS Information          |Choose the system
BIOS Vendor               |default language
American Megatrends
Core Version              |
5.010
Compliance               |
UEFI 2.4; PI 1.3
Project Version          |
0ACCT 0.18 x64
Build Date and Time     |
06/24/2016 13:47:09

System Language          |
[English]

System Date              |-----+-----
[Sun 10/20/2013]
System Time              |><: Select Screen
[22:04:04]
Access Level             |^v: Select Item
Administrator           |Enter: Select
                          |+/-: Change Opt.
                          |F1: General Help
                          |F2: Previous Values
                          |F3: Optimized Defaults
                          |F4: Save & Exit
                          |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

Advanced

Use [←] / [→] to select [Advanced] setup screen. Under this screen, you may use [↑] [↓] to select an item you wish to configure.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
-----
|> F81865 Super IO Configuration          |System Super IO Chip
|> Hardware Monitor                      |Parameters.
|> Serial Port Console Redirection
|> CPU Configuration
|> IDE Configuration
|> USB Configuration
|> LAN Boot Configuration
|
|
|
|
|-----
|>: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
|
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

F81865 Super IO Configuration

Press "Enter" to access configuration sub-menu for super IO chip parameters. You may access settings for Serial Port1.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Advanced
-----
|F81865 Super IO Configuration          |Set Parameters of
|                                     |Serial Port 1 (COMA)
|Super IO Chip          F81865
|> Serial Port 1 Configuration
|
|
|
|
|-----
|>: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
|
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```



```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| Pc Health Status                                     |
| Cpu temperature      : +31 C                       |
| System temperature  : +32 C                       |
| Vcore                : +0.856 V                    |
| 5V                   : +5.003 V                    |
| DCIN                 : +9.240 V                    |
| VCC3V               : +3.312 V                    |
| VSB3V               : +3.312 V                    |
| VBAT                : +3.216 V                    |
|-----+-----|
|><: Select Screen                                     |
|^v: Select Item                                       |
|Enter: Select                                        |
|+/-: Change Opt.                                    |
|F1: General Help                                    |
|F2: Previous Values                                 |
|F3: Optimized Defaults                             |
|F4: Save & Exit                                     |
|ESC: Exit                                           |
|-----+-----|
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

Serial Port Console Redirection

This option allows you to configure parameters about serial port console redirection. Press "Enter" to access the submenu.

Console Redirection: select "Enabled" or "Disable" for an available COM port to set up the console redirection. Then you may use [↑] [↓] to enter "Console Redirection Settings". Notably, the "Console Redirection Settings" is only available for COM0.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Main  Advanced  Chipset  Security  Boot  Save & Exit
-----+-----
|> F81865 Super IO Configuration                     |Serial Port Console |
|> Hardware Monitor                                 |Redirection         |
|> Serial Port Console Redirection                  |                    |
|> CPU Configuration                               |                    |
|> IDE Configuration                               |                    |
|> USB Configuration                               |                    |
|> LAN Boot Configuration                          |                    |
|-----+-----|
|><: Select Screen                                     |
|^v: Select Item                                       |
|Enter: Select                                        |
|+/-: Change Opt.                                    |
|F1: General Help                                    |
|F2: Previous Values                                 |
|F3: Optimized Defaults                             |
|F4: Save & Exit                                     |
|ESC: Exit                                           |
|-----+-----|
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```



```

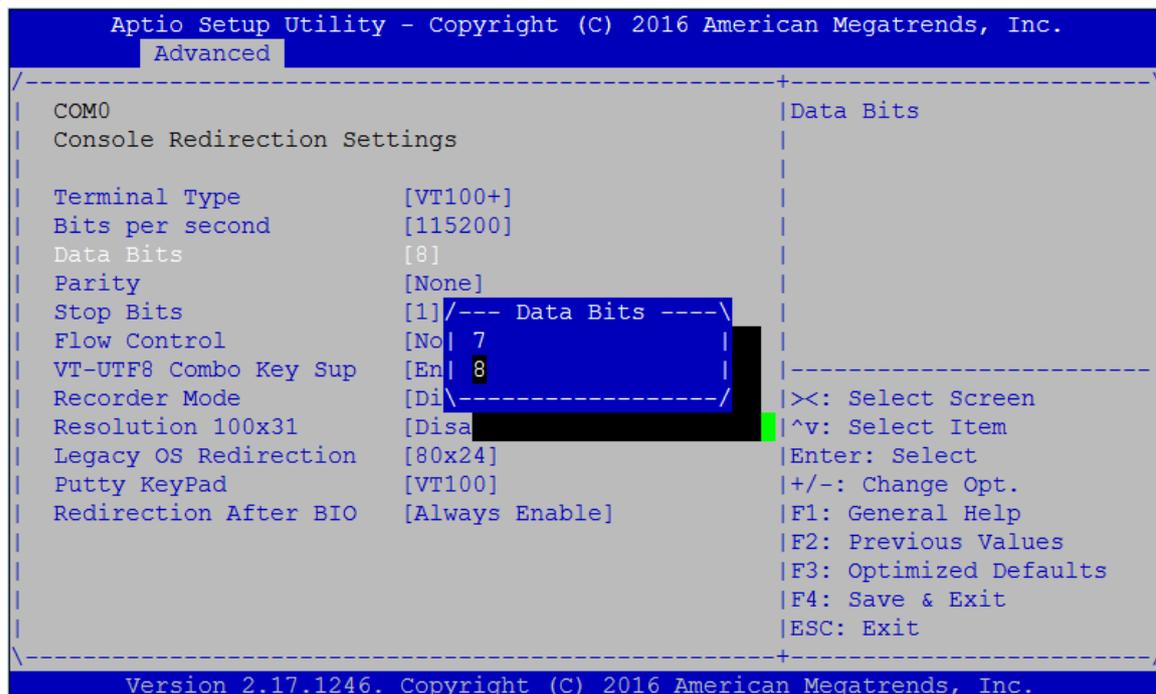
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |Emulation: ANSI:
Console Redirection Settings            |Extended ASCII char
                                         |set. VT100: ASCII char
Terminal Type                           |set. VT100+: Extends
Bits per second                         |VT100 to support color,
Data Bits                               |function keys, etc.
Parity                                  |VT-UTF8: Uses UTF8
Stop Bits                               |encoding to map Unicode
Flow Control                            |chars onto 1 or more
VT-UTF8 Combo Key Sup                  |-----
Recorder Mode                          |><: Select Screen
Resolution 100x31                      |^v: Select Item
Legacy OS Redirection                  |Enter: Select
Putty KeyPad                           |+/-: Change Opt.
Redirection After BIO                  |F1: General Help
                                         |F2: Previous Values
                                         |F3: Optimized Defaults
                                         |F4: Save & Exit
                                         |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Bits per second: select "9600", "19200", "38400", "57600", or "115200" for bits per second. The Bps will determine serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds

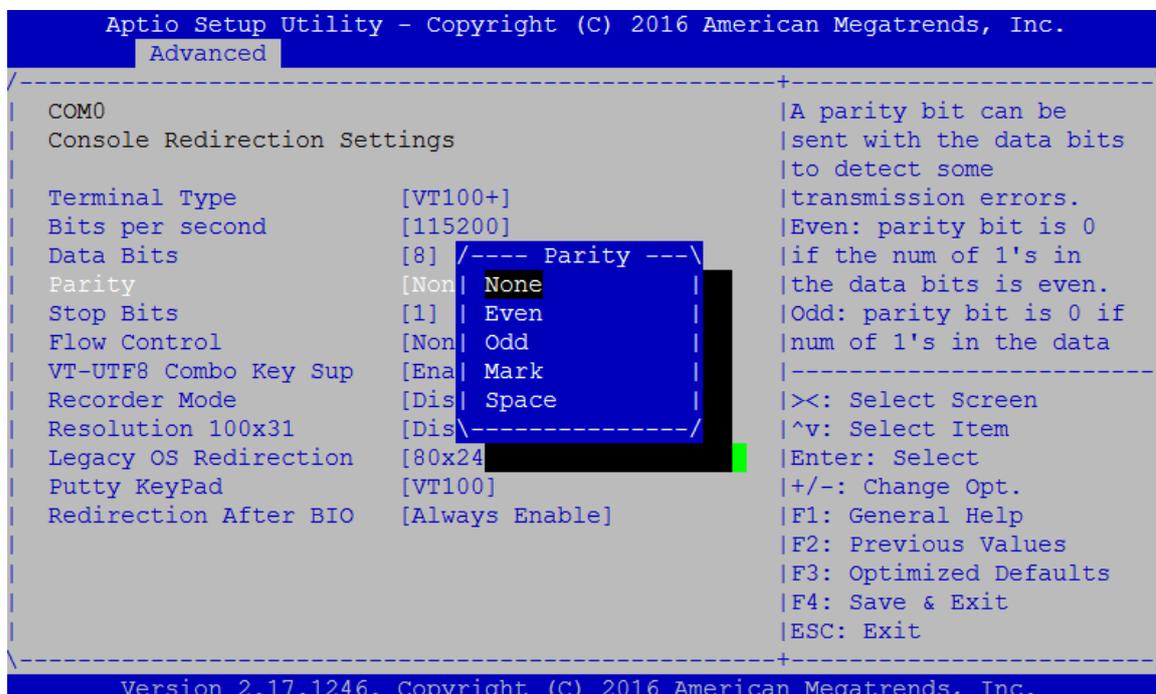
```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |Selects serial port
Console Redirection Settings            |transmission speed. The
                                         |speed must be matched
Terminal Type                           |on the other side. Long
Bits per second                         |or noisy lines may
Data Bits                               |require lower speeds.
Parity                                  |-----
Stop Bits                               |<: Select Screen
Flow Control                            |v: Select Item
VT-UTF8 Combo Key Sup                  |Enter: Select
Recorder Mode                          |+/-: Change Opt.
Resolution 100x31                      |F1: General Help
Legacy OS Redirection                  |F2: Previous Values
Putty KeyPad                           |F3: Optimized Defaults
Redirection After BIO                  |F4: Save & Exit
                                         |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Data Bits: select the value for data bits. In this case, "7" or "8".



Parity Bits: a parity bit can be sent with the data bits to detect some transmission errors. Select "None", "Even", "Odd", "Mark" or "Space".



Stop Bits: stop bits indicate the end of a serial data packet. The standard is 1 stop bit.

Communication with slow devices may require more than

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| COM0                                     | Stop bits indicate the
| Console Redirection Settings            | end of a serial data
|                                         | packet. (A start bit
| Terminal Type [VT100+]                  | indicates the
| Bits per second [115200]                | beginning). The
| Data Bits [8]                           | standard setting is 1
| Parity [None]                           | stop bit. Communication
| Stop Bits [1] /--- Stop Bits ---\      | with slow devices may
| Flow Control [None] 1                   | require more than 1
| VT-UTF8 Combo Key Sup [En] 2           |
| Recorder Mode [Di] /-----\          |
| Resolution 100x31 [Disa]                | >: Select Screen
| Legacy OS Redirection [80x24]          | ^v: Select Item
| Putty KeyPad [VT100]                   | Enter: Select
| Redirection After BIO [Always Enable]   | +/-: Change Opt.
|                                         | F1: General Help
|                                         | F2: Previous Values
|                                         | F3: Optimized Defaults
|                                         | F4: Save & Exit
|                                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Flow Control: flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. You may select "None" or "Hardware RTS/CTS", depending on the circumstances.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| COM0                                     | Flow control can
| Console Redirection Settings            | prevent data loss from
|                                         | buffer overflow. When
| Terminal Type [VT100+]                  | sending data, if the
| Bits per second [115200]                | receiving buffers are
| Data Bits [8]                           | full, a 'stop' signal
| Parity [None]                           | can be sent to stop the
| Stop Bits [1] /--- Flow Control ---\    | data flow. Once the
| Flow Control [None]                     | buffers are empty, a
| VT-UTF8 Combo Key Sup [En] Hardware RTS/CTS |
| Recorder Mode [Di] /-----\          |
| Resolution 100x31 [Disa]                | >: Select Screen
| Legacy OS Redirection [80x24]          | ^v: Select Item
| Putty KeyPad [VT100]                   | Enter: Select
| Redirection After BIO [Always Enable]   | +/-: Change Opt.
|                                         | F1: General Help
|                                         | F2: Previous Values
|                                         | F3: Optimized Defaults
|                                         | F4: Save & Exit
|                                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

VT-UTF8 Combo Key Support: this option enables/disables VT-UTF8 combination key support for ANSI/VT100 terminals.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |Enable VT-UTF8
Console Redirection Settings            |Combination Key Support
                                         |for ANSI/VT100 terminals
Terminal Type                           | [VT100+]
Bits per second                         | [115200]
Data Bits                               | [8]
Parity                                  | [None]
Stop Bits                               | /--- VT-UTF8 Combo Key Support ---\
Flow Control                            | | Disabled
VT-UTF8 Combo Key Support                | | Enabled
Recorder Mode                           | \-----/
Resolution 100x31                       | [Di]
Legacy OS Redirection                   | [80x24]
Putty KeyPad                            | [VT100]
Redirection After BIO                   | [Always Enable]
                                         |>>: Select Screen
                                         |<v: Select Item
                                         |Enter: Select
                                         |+/-: Change Opt.
                                         |F1: General Help
                                         |F2: Previous Values
                                         |F3: Optimized Defaults
                                         |F4: Save & Exit
                                         |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Recorder Mode: on this mode, when "Enabled", only text will be sent. This is to capture terminal data.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |With this mode enabled
Console Redirection Settings            |only text will be sent.
                                         |This is to capture
                                         |Terminal data.
Terminal Type                           | [VT100+]
Bits per second                         | [115200]
Data Bits                               | [8]
Parity                                  | [None]
Stop Bits                               | /--- Recorder Mode ---\
Flow Control                            | | Disabled
VT-UTF8 Combo Key Support                | | Enabled
Recorder Mode                           | \-----/
Resolution 100x31                       | [Di]
Legacy OS Redirection                   | [80x24]
Putty KeyPad                            | [VT100]
Redirection After BIO                   | [Always Enable]
                                         |>>: Select Screen
                                         |<v: Select Item
                                         |Enter: Select
                                         |+/-: Change Opt.
                                         |F1: General Help
                                         |F2: Previous Values
                                         |F3: Optimized Defaults
                                         |F4: Save & Exit
                                         |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Resolution 100 x 31: select "Enabled" or "Disabled" for extended terminal resolution.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| COM0                                     | Enables or disables
| Console Redirection Settings            | extended terminal
|                                         | resolution
| Terminal Type                          | [VT100+]
| Bits per second                        | [115200]
| Data Bits                              | [8]
| Parity                                 | [None]
| Stop Bits                             | /---- Resolution 100x31 ----\
| Flow Control                          | Disabled
| VT-UTF8 Combo Key Sup                  | Enabled
| Recorder Mode                          | -----+-----
| Resolution 100x31                      | : Select Screen
| Legacy OS Redirection                  | [80x24] | Enter: Select
| Putty KeyPad                          | [VT100] | +/-: Change Opt.
| Redirection After BIO                  | [Always Enable] | F1: General Help
|                                         | F2: Previous Values
|                                         | F3: Optimized Defaults
|                                         | F4: Save & Exit
|                                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Legacy OS Redirection Resolution: select "80x24" or "80x25". The default for this case is "80x24".

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| COM0                                     | On Legacy OS, the
| Console Redirection Settings            | Number of Rows and
|                                         | Columns supported
|                                         | redirection
| Terminal Type                          | [VT100+]
| Bits per second                        | [115200]
| Data Bits                              | [8]
| Parity                                 | [None]
| Stop Bits                             | /---- Legacy OS Redirection Resolution ----\
| Flow Control                          | 80x24
| VT-UTF8 Combo Key                      | 80x25
| Recorder Mode                          | -----+-----
| Resolution 100x31                      | : Select Screen
| Legacy OS Redirection                  | [80x24] | Enter: Select
| Putty KeyPad                          | [VT100] | +/-: Change Opt.
| Redirection After BIO                  | [Always Enable] | F1: General Help
|                                         | F2: Previous Values
|                                         | F3: Optimized Defaults
|                                         | F4: Save & Exit
|                                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
  
```

Putty KeyPad: select Function Key and Key Pad on Putty. You may select "VT100", "LINUX", "XTERMR6", "SCO", "ESCN", or VT400".

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |Select FunctionKey and
Console Redirection Settings            |KeyPad on Putty.
Terminal Type                           | [VT100+]
Bits per second                         | [115200]
Data Bits                               | [ /---- Putty KeyPad ---- \
Parity                                  | | VT100
Stop Bits                               | | LINUX
Flow Control                            | | XTERMR6
VT-UTF8 Combo Key Sup                   | | SCO
Recorder Mode                           | | ESCN
Resolution 100x31                       | | VT400
Legacy OS Redirection                   | | \-----/
Putty KeyPad                            | [VT
Redirection After BIO                   | [Always Enable]
-----+-----
|>: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

Redirection After BIOS POST: The settings specify if BootLoader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is "Always Enable" which means Legacy OS console redirection is always enabled after BIOS.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
COM0                                     |The Settings specify if
Console Redirection Settings            |BootLoader is selected
Terminal Type                           | then Legacy Console
Bits per second                         |Redirection is disabled
Data Bits                               | before booting to
Parity                                  | Legacy OS. Default
Stop Bits                               | [8]
Flow Control                            | [None]
VT-UTF8 Combo Key                       | value is Always Enable
Recorder Mode                           | means Legacy
Resolution 100x31                       | Redirection is
Legacy OS Redirection                   | \-----/
Putty KeyPad                            | | Always Enable
Redirection After BIO                   | | BootLoader
-----+-----
|>: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

CPU Configurations

This option allows you to configure CPU parameters.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
-----
|> F81865 Super IO Configuration          |CPU Configuration
|> Hardware Monitor                      |Parameters
|> Serial Port Console Redirection       |
|> CPU Configuration                     |
|> IDE Configuration                    |
|> USB Configuration                     |
|> LAN Boot Configuration                |
|                                         |
|                                         |-----
|                                         |><: Select Screen
|                                         |^v: Select Item
|                                         |Enter: Select
|                                         |+/-: Change Opt.
|                                         |F1: General Help
|                                         |F2: Previous Values
|                                         |F3: Optimized Defaults
|                                         |F4: Save & Exit
|                                         |ESC: Exit
|                                         |
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

Socket 0 CPU Information: enter to check socket specific CPU info.

Limit CPUID Maximum: When "Enabled", the CPU will limit its maximum CPUID input value to 3 when the processor is queried. When "Disabled", the CPU will function with its actual maximum CPUID values. For this case, leave it as "Disabled".

Execute Disable Bit: an Intel hardware-based protection against malicious code. It will detect the memory in which a code can be executed or not. When enabled, it will prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS. When disabled, it forces the XD feature flag to always return 0.

Intel Virtualization: Enables or disables Intel Virtualization Technology. On a server or firewall/UTM/IPS operating mode, it is recommended to enable this feature so that multiple operating systems and applications will run in independent.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| CPU Configuration | Socket specific CPU |
|                   | Information         |
|> Socket 0 CPU Information |
| CPU Speed          | 1918 MHz           |
| 64-bit             | Supported           |
|                   |                     |
| Limit CPUID Maximum | [Disabled]         |
| Execute Disable Bit | [Enabled]           |
| Intel Virtualization | [Enabled]           |
|                   |                     |
|><: Select Screen   |
|^v: Select Item     |
|Enter: Select       |
|+/-: Change Opt.   |
|F1: General Help   |
|F2: Previous Values |
|F3: Optimized Defaults |
|F4: Save & Exit    |
|ESC: Exit           |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| Socket 0 CPU Information |
| Intel(R) Atom(TM) CPU E3845 @ 1.91GHz |
| CPU Signature           | 30679               |
| Microcode Patch        | 901                 |
| Max CPU Speed           | 1910 MHz            |
| Min CPU Speed           | 500 MHz              |
| Processor Cores         | 4                   |
| Intel HT Technology      | Not Supported        |
| Intel VT-x Technology    | Supported            |
|                   |                     |
|><: Select Screen   |
|^v: Select Item     |
|Enter: Select       |
|+/-: Change Opt.   |
|F1: General Help   |
|F2: Previous Values |
|F3: Optimized Defaults |
|F4: Save & Exit    |
|ESC: Exit           |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| CPU Configuration                                     |Disabled for Windows XP| | |
|> Socket 0 CPU Information                             |                        |
| CPU Speed           1918 MHz                         |                        |
| 64-bit              Supported                        |                        |
| Limit CPUID Maximum /--- Limit CPUID Maximum ---\   |                        |
| Execute Disable Bit | Disabled                    | |                        |
| Intel Virtualization| Enabled                     | |                        |
|                                                              |Select Screen          |
|                                                              |Select Item            |
|                                                              |Enter: Select          |
|                                                              |+/-: Change Opt.      |
|                                                              |F1: General Help      |
|                                                              |F2: Previous Values   |
|                                                              |F3: Optimized Defaults|
|                                                              |F4: Save & Exit       |
|                                                              |ESC: Exit              |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| CPU Configuration                                     |When enabled, a VMM can|
|> Socket 0 CPU Information                             |utilize the additional |
| CPU Speed           1918 MHz                         |hardware capabilities  |
| 64-bit              Supported                        |provided by Vanderpool |
|                                                              |Technology              |
| Limit CPUID Maxi/--- Intel Virtualization Technology ---\ |
| Execute Disable  | Disabled                    | |                        |
| Intel Virtualiza | Enabled                     | |                        |
|                                                              |t Screen                |
|                                                              |Item                    |
|                                                              |Enter: Select          |
|                                                              |+/-: Change Opt.      |
|                                                              |F1: General Help      |
|                                                              |F2: Previous Values   |
|                                                              |F3: Optimized Defaults|
|                                                              |F4: Save & Exit       |
|                                                              |ESC: Exit              |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

IDE Configuration

Press Enter to access items for SATA devices and settings.

Serial-ATA (SATA): enable or disable SATA function

SATA Speed Support: select SATA speed based on the generations defined by SATA specifications.

SATA Mode: the selection to determine the SATA mode for your storage devices. You may select "IDE" or "AHCI" mode.

Serial-ATA Port 0/1: enable or disable the SATA0/1 port

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
-----+-----
|> F81865 Super IO Configuration          | IDE Devices
|> Hardware Monitor                      | Configuration
|> Serial Port Console Redirection       |
|> CPU Configuration                    |
|> IDE Configuration                    |
|> USB Configuration                    |
|> LAN Boot Configuration                |
|                                         |
|                                         |
|                                         |
|                                         |
|                                         |
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Advanced
-----+-----
| IDE Configuration                      | Enable / Disable Serial
| Serial-ATA (SATA) [Enabled]            | ATA
| SATA Speed Support [Gen2]              |
| SATA Mode [AHCI Mode]                  |
| Serial-ATA Port 0 [Enabled]             |
| Serial-ATA Port 1 [Enabled]             |
|                                         |
| SATA Port0                             |
| Not Present                            |
|                                         |
| SATA Port1                             |
| Not Present                            |
|                                         |
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| IDE Configuration                | Enable / Disable Serial |
|                                 | ATA                      |
| Serial-ATA (SATA)                | [Enabled]                |
| SATA Speed Support               | [Gen2]                  |
| SATA Mode                        | [AHCI Mode]             |
| Serial-ATA Port 0                | /--- Serial-ATA (SATA) ---\
|                                 | Enabled                  |
| Serial-ATA Port 1                | Disabled                 |
| SATA Port0                       |                           |
| Not Present                      | : Select Screen         |
|                                 | : Select Item           |
| SATA Port1                       | Enter: Select           |
| Not Present                      | +/-: Change Opt.       |
|                                 | F1: General Help        |
|                                 | F2: Previous Values     |
|                                 | F3: Optimized Defaults  |
|                                 | F4: Save & Exit         |
|                                 | ESC: Exit               |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| IDE Configuration                | SATA Speed Support Gen1 |
|                                 | or Gen2                 |
| Serial-ATA (SATA)                | [Enabled]                |
| SATA Speed Support               | [Gen2]                  |
| SATA Mode                        | [AHCI Mode]             |
| Serial-ATA Port 0                | [Enabled]                |
| Serial-ATA Port 1                | [Enabled]                |
| SATA Port0                       |                           |
| Not Present                      | >=: Select Screen       |
|                                 | ^v: Select Item         |
|                                 | Enter: Select           |
|                                 | +/-: Change Opt.       |
| SATA Port1                       | F1: General Help        |
| Not Present                      | F2: Previous Values     |
|                                 | F3: Optimized Defaults  |
|                                 | F4: Save & Exit         |
|                                 | ESC: Exit               |
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```



```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| IDE Configuration                               | Enable / Disable Serial |
|                                                  | ATA Port 0              |
| Serial-ATA (SATA)      [Enabled]                |                         |
| SATA Speed Support     [Gen2]                  |                         |
| SATA Mode               [AHCI Mode]            |                         |
| Serial-ATA Port 0      /--- Serial-ATA Port 0 ---\ |
| | Enabled                                                       |
| | Disabled                                                      |
| Serial-ATA Port 1      \-----+-----          |
| SATA Port0              |                         | : Select Screen
| Not Present             |                         | : Select Item
|                         |                         | Enter: Select
| SATA Port1              |                         | +/-: Change Opt.
| Not Present             |                         | F1: General Help
|                         |                         | F2: Previous Values
|                         |                         | F3: Optimized Defaults
|                         |                         | F4: Save & Exit
|                         |                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| IDE Configuration                               | Enable / Disable Serial |
|                                                  | ATA Port 1              |
| Serial-ATA (SATA)      [Enabled]                |                         |
| SATA Speed Support     [Gen2]                  |                         |
| SATA Mode               [AHCI Mode]            |                         |
| Serial-ATA Port 0      /--- Serial-ATA Port 1 ---\ |
| | Enabled                                                       |
| | Disabled                                                      |
| Serial-ATA Port 1      \-----+-----          |
| SATA Port0              |                         | : Select Screen
| Not Present             |                         | : Select Item
|                         |                         | Enter: Select
| SATA Port1              |                         | +/-: Change Opt.
| Not Present             |                         | F1: General Help
|                         |                         | F2: Previous Values
|                         |                         | F3: Optimized Defaults
|                         |                         | F4: Save & Exit
|                         |                         | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

USB Configuration

This option allows you to configure USB device Settings.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
-----
|> F81865 Super IO Configuration          |USB Configuration
|> Hardware Monitor                      |Parameters
|> Serial Port Console Redirection       |
|> CPU Configuration                    |
|> IDE Configuration                    |
|> USB Configuration                    |
|> LAN Boot Configuration                |
|                                         |
|                                         |
|                                         |
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

USB Module Version: displays information about USB module version

USB Devices: displays USB devices

Legacy USB Support: this function enables or disables legacy USB support. Auto option disables legacy support if no USB devices are connected. Disable option will keep USB devices available only for EFI applications. You may select “Enabled”, “Disabled” or “Auto”.

EHCI Hand-off: enables or disables EHCI Hand-off function. This is a workaround for operating systems without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB Mass Storage Driv: this option allows you to enable or disable USB mass storage driver. The default is “Enabled”.

USB transfer time-out: set USB time-out value (1, 5, 10 or 20 seconds) for Control, Bulk and Interrupt transfers.

Device reset time-out: set USB mass storage device Start Unit command time-out (10, 20, 30 or 40 seconds).

Device power-up delay: set the maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value. For example, it is 100ms as a root port.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
USB Configuration                               | Enables Legacy USB
                                                | support. AUTO option
USB Module Version      8.11.02                 | disables legacy support
                                                | if no USB devices are
USB Devices:                                     | connected. DISABLE
  1 Keyboard, 1 Hub                               | option will keep USB
                                                | devices available only
Legacy USB Support                               | for EFI applications.
  Enabled
EHCI Hand-off                                     |
  Disabled
USB Mass Storage Driver                         |
  Auto
-----+-----
USB delays time:                               |
USB transfer time-out   [20 sec]                | Enter: Select
Device reset time-out   [20 sec]                | +/-: Change Opt.
Device power-up delay   [Auto]                  | F1: General Help
                                                | F2: Previous Values
                                                | F3: Optimized Defaults
                                                | F4: Save & Exit
                                                | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
USB Configuration                               | Enable/Disable USB Mass
                                                | Storage Driver Support.
USB Module Version      8.11.02
USB Devices:
  1 Keyboard, 1 Hub
Legacy USB Support                               |
  Disabled
USB Mass Storage Driver                         |
  Enabled
-----+-----
USB delays time:                               |
USB transfer time-out   [20 sec]                | Enter: Select
Device reset time-out   [20 sec]                | +/-: Change Opt.
Device power-up delay   [Auto]                  | F1: General Help
                                                | F2: Previous Values
                                                | F3: Optimized Defaults
                                                | F4: Save & Exit
                                                | ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
USB Configuration                               |The time-out value for
USB Module Version      8.11.02                 |Control, Bulk, and
                                                |Interrupt transfers.
USB Devices:
  1 Keyboard, 1 Hub
Legacy USB Support                               |
EHCI Hand-off                                   |
USB Mass Storage Drive 10 sec                   |
  20 sec                                        |-----+-----
USB delays time:                               |
USB transfer time-out [20 sec]                  |r: Select
Device reset time-out [20 sec]                 |+/-: Change Opt.
Device power-up delay [Auto]                   |F1: General Help
                                                |F2: Previous Values
                                                |F3: Optimized Defaults
                                                |F4: Save & Exit
                                                |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
USB Configuration                               |USB mass storage device
USB Module Version      8.11.02                 |Start Unit command
                                                |time-out.
USB Devices:
  1 Keyboard, 1 Hub
Legacy USB Support                               |
EHCI Hand-off                                   |
USB Mass Storage Drive 30 sec                   |
  40 sec                                        |-----+-----
USB delays time:                               |
USB transfer time-out [20 sec]                  |r: Select
Device reset time-out [20 sec]                 |+/-: Change Opt.
Device power-up delay [Auto]                   |F1: General Help
                                                |F2: Previous Values
                                                |F3: Optimized Defaults
                                                |F4: Save & Exit
                                                |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
  Advanced
-----+-----
| USB Configuration                                     |Maximum time the device |
|                                                       |will take before it    |
| USB Module Version      8.11.02                     |properly reports itself|
|                                                       |to the Host Controller.|
| USB Devices:                                         |'Auto' uses default   |
|   1 Keyboard, 1 Hub                                  |value: for a Root port|
|                                                       |it is 100 ms, for a Hub|
| Legacy USB Support  /--- Device power-up delay ---\rt the delay is taken  |
| EHCI Hand-off       | Auto                               | Hub descriptor.      |
| USB Mass Storage Drive Manual                       |                       |
|                                                       |-----|
| USB delays time:                                     |Select Screen        |
| USB transfer time-out [20 sec]                       |Select Item          |
| Device reset time-out [20 sec]                       |Enter: Select        |
| Device power-up delay [Auto]                         |+/-: Change Opt.     |
|                                                       |F1: General Help     |
|                                                       |F2: Previous Values  |
|                                                       |F3: Optimized Defaults|
|                                                       |F4: Save & Exit      |
|                                                       |ESC: Exit            |
|-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

LAN Boot Configuration

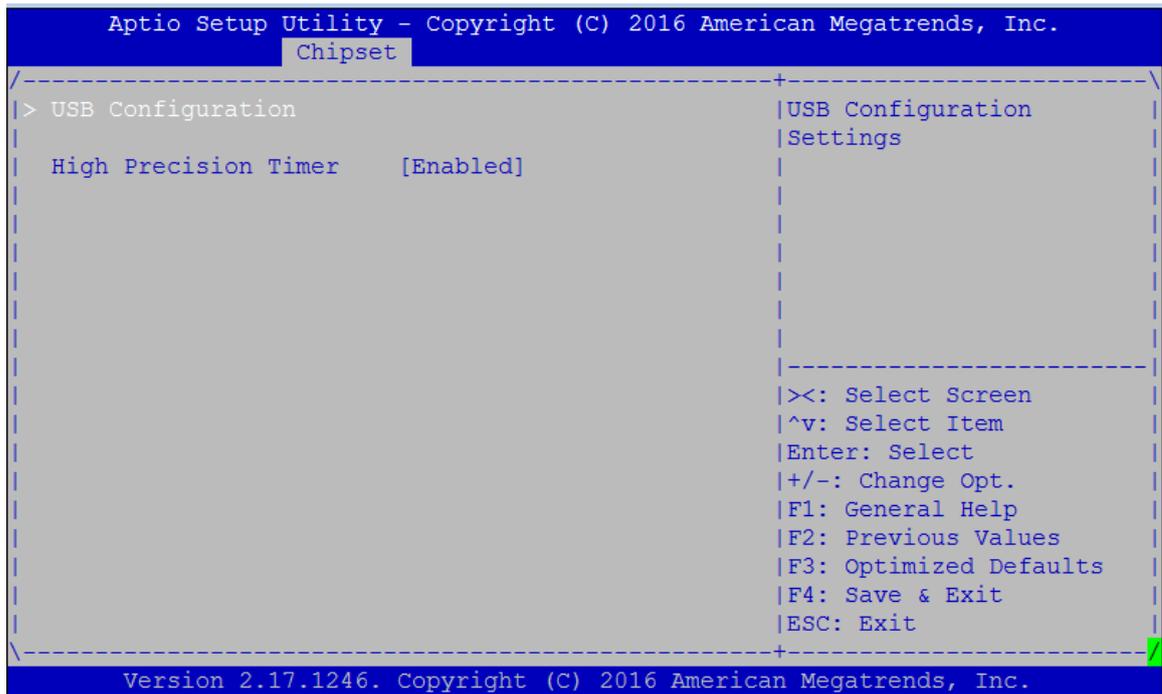
Select onboard LAN for enabled PXE Boot.

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----
> F81865 Super IO Configuration |Select one of on board
> Hardware Monitor             |lan to enabled PXE boot
> Serial Port Console Redirection
> CPU Configuration
> IDE Configuration
> USB Configuration
> LAN Boot Configuration
-----
|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

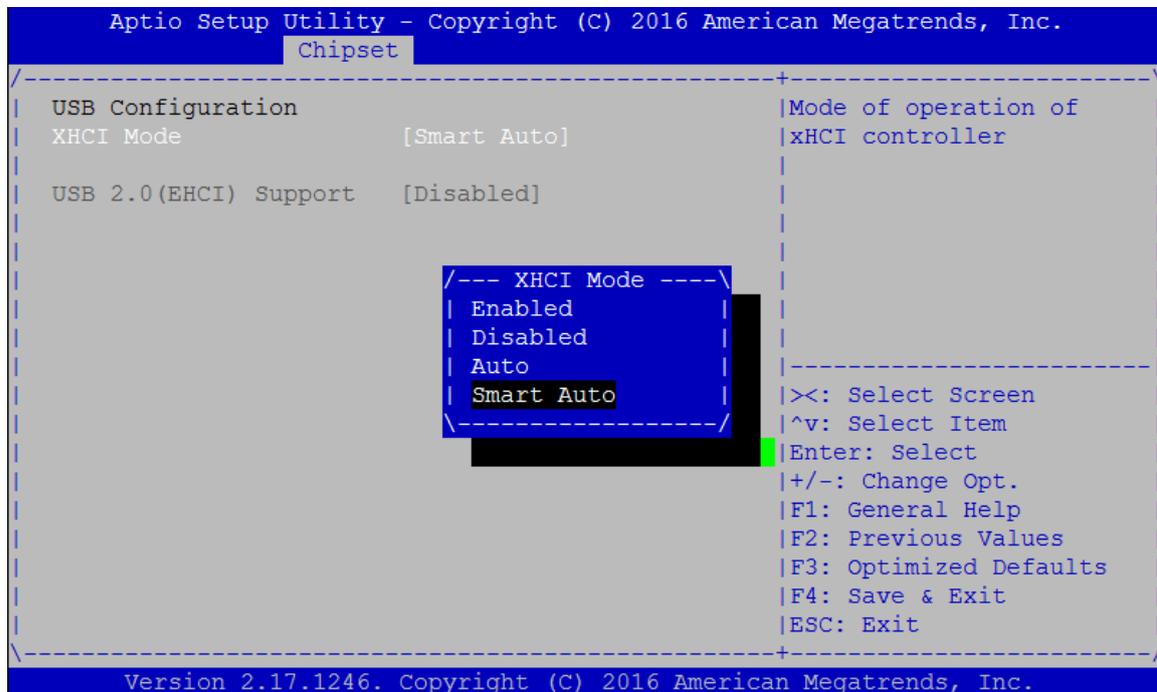
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Advanced
-----
LAN Boot Configuration |Select On Board LAN for
LAN Boot Configuratio |enabled PXE Boot
LAN Boot Configuratio [Disabled]
-----
/---- LAN Boot Configuration ----\
| Disabled
| LAN1
| LAN2
\-----/
-----
|Select Screen
|Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

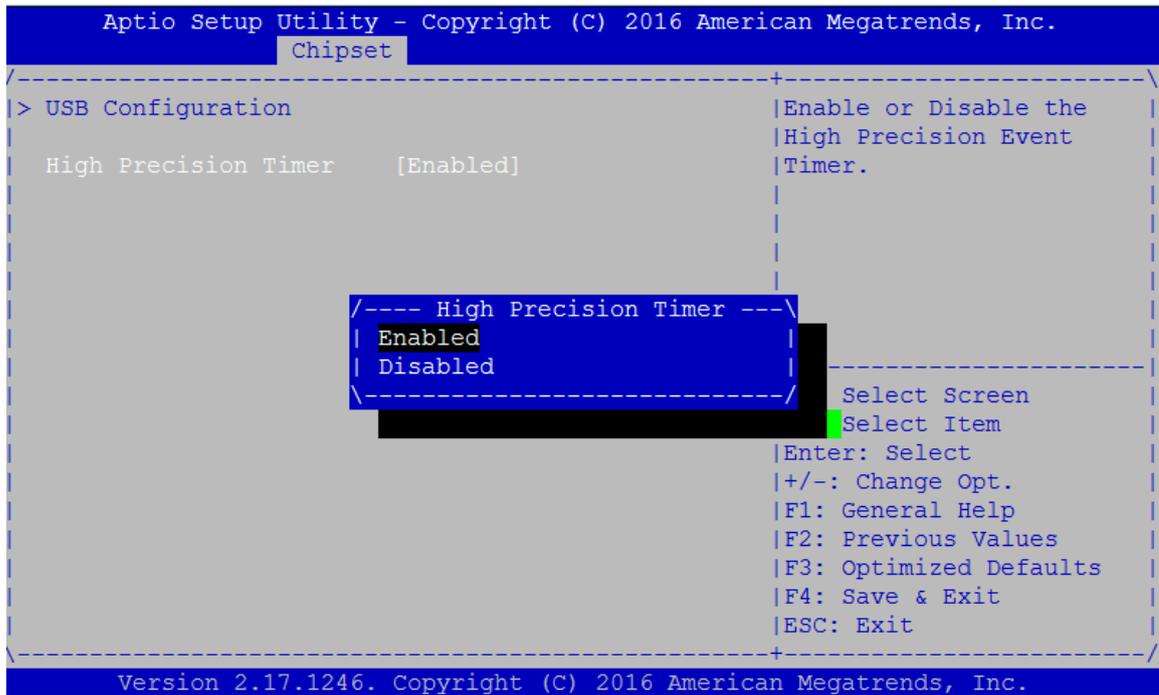



USB Configuration

XHCI Mode: select the mode of XHCI controller.

USB 2.0 (EHCI) Support: control the USB EHCI (USB2.0) functions. One EHCI controller must always be enabled.





Security

Use [←] / [→] to select [Security] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

Administrator Password: set administrator password. Once set, then this only limits access to Setup and is only asked for when entering Setup.

Notes: please make sure the password range follow this BIOS definition. For instance, the minimum length of a password is "3", while the maximum length is "20".

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----+-----
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
in the following range:
Minimum length      3
Maximum length     20

Administrator Password

|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----+-----
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 S/ Create New Password -\
have Administrator rights
The password length must
in the following range:
Minimum length      3
Maximum length     20

Administrator Password

|><: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

Boot

Use [←] / [→] to select [Boot] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

Setup Prompt Timeout: set the number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State: select "On/Off" for the keyboard NumLock state.

Quiet Boot: enable or disable "Quiet Boot" option.

Boot Option #1: determine the device to be the device boot priority

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit

-----+-----
| Boot Configuration                                     |
| Setup Prompt Timeout      1                          |
| Bootup NumLock State     [On]                        |
| Quiet Boot                [Disabled]                 |
|                                                                     |
| Boot Option Priorities                                     |
|                                                                     |
|-----+-----|
|>: Select Screen                                       |
|^v: Select Item                                        |
|Enter: Select                                          |
|+/-: Change Opt.                                      |
|F1: General Help                                      |
|F2: Previous Values                                   |
|F3: Optimized Defaults                               |
|F4: Save & Exit                                       |
|ESC: Exit                                             |
|-----+-----|
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----
Boot Configuration                               |Select the keyboard
Setup Prompt Timeout      1                     |NumLock state
Bootup NumLock State      [On]
Quiet Boot                [Disabled]

Boot Option Priorities /----- Bootup NumLock State ----\
| On                                                                |
| Off                                                                |
\-----\
Select Screen
Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----
Boot Configuration                               |Enables or disables
Setup Prompt Timeout      1                     |Quiet Boot option
Bootup NumLock State      [On]
Quiet Boot                [Disabled]

Boot Option Priorities /----- Quiet Boot ----\
| Disabled                                                            |
| Enabled                                                            |
\-----\
|>: Select Screen
|^v: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

Save & Exit

Use [←] / [→] to select [Save & Exit] setup screen. Under this screen, you may use [↑] [↓] to select an item you want to configure.

Save Changes and Exit: exit system setup after saving the configuration changes

Discard Changes and Exit: exit system setup without saving the configuration changes

Restore Defaults: restore to factory default setting

Save Changes and Exit: exit system setup after saving the configuration changes

Discard Changes and Exit: exit system setup without saving the configuration changes

Restore Defaults: restore/load factory default setting for all setup parameters.

Save as User Defaults: save changes as user default

Restore User Defaults: restore the existing user default

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main  Advanced  Chipset  Security  Boot  Save & Exit
-----
Save Changes and Exit          |Exit system setup after
Discard Changes and Exit      |saving the changes.
Save Changes and Reset
Discard Changes and Reset

Save Options
Save Changes
Discard Changes

Restore Defaults
Save as User Defaults
Restore User Defaults

Boot Override

Launch EFI Shell from filesystem device

|<: Select Screen
|^v: Select Item
|Enter: Select
|+/-: Change Opt.
|F1: General Help
|F2: Previous Values
|F3: Optimized Defaults
|F4: Save & Exit
|ESC: Exit
-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----+-----
Save Changes and Exit      |Exit system setup after
Discard Changes and Exit   |saving the changes.
Save Changes and Reset
Discard Changes and Reset

Save Options               |/----- Save & Exit Setup -----\
Save Changes               | Save configuration and exit? |
Discard Changes            |
Restore Defaults           |-----+-----|
Save as User Defaults      |      Yes      No      |
Restore User Defaults      |-----+-----|

Boot Override              |+/-: Change Opt.
Launch EFI Shell from filesystem device |F1: General Help
                               |F2: Previous Values
                               |F3: Optimized Defaults
                               |F4: Save & Exit
                               |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
-----+-----
Save Changes and Exit      |Exit system setup
Discard Changes and Exit   |without saving any
Save Changes and Reset     |changes.
Discard Changes and Reset

Save Options               |/ Exit Without Saving -\
Save Changes               | Quit without saving? |
Discard Changes            |
Restore Defaults           |-----+-----|
Save as User Defaults      |      Yes      No      |
Restore User Defaults      |-----+-----|

Boot Override              |+/-: Change Opt.
Launch EFI Shell from filesystem device |F1: General Help
                               |F2: Previous Values
                               |F3: Optimized Defaults
                               |F4: Save & Exit
                               |ESC: Exit
-----+-----
Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.

```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit

Save Changes and Exit |Reset system setup
Discard Changes and Exit |without saving any
Save Changes and Reset |changes.
Discard Changes and Reset

Save Options          |/- Reset Without Saving \
Save Changes         | | Reset without saving? |
Discard Changes      | |                         |

Restore Defaults     |-----|
Save as User Defaults | | Yes   No |
Restore User Defaults |-----|

Boot Override       |+/-: Change Opt.
                    |F1: General Help
                    |F2: Previous Values
                    |F3: Optimized Defaults
                    |F4: Save & Exit
                    |ESC: Exit

Launch EFI Shell from filesystem device

Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit

Save Changes and Exit |Save Changes done so
Discard Changes and Exit |far to any of the setup
Save Changes and Reset |options.
Discard Changes and Reset

Save Options          |/- Save Setup Values -\
Save Changes         | | Save configuration? |
Discard Changes      | |                         |

Restore Defaults     |-----|
Save as User Defaults | | Yes   No |
Restore User Defaults |-----|

Boot Override       |+/-: Change Opt.
                    |F1: General Help
                    |F2: Previous Values
                    |F3: Optimized Defaults
                    |F4: Save & Exit
                    |ESC: Exit

Launch EFI Shell from filesystem device

Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit

Save Changes and Exit | Discard Changes done so
Discard Changes and Exit | far to any of the setup
Save Changes and Reset | options.
Discard Changes and Reset |

Save Options          | /- Load Previous Values \
Save Changes          | |
Discard Changes       | | Load Previous Values? |
                      | |
Restore Defaults      | -----
Save as User Defaults | | Yes No |
Restore User Defaults | |
                      | -----

Boot Override        | +/-: Change Opt.
Launch EFI Shell from filesystem device | F1: General Help
                                                | F2: Previous Values
                                                | F3: Optimized Defaults
                                                | F4: Save & Exit
                                                | ESC: Exit

Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```

```

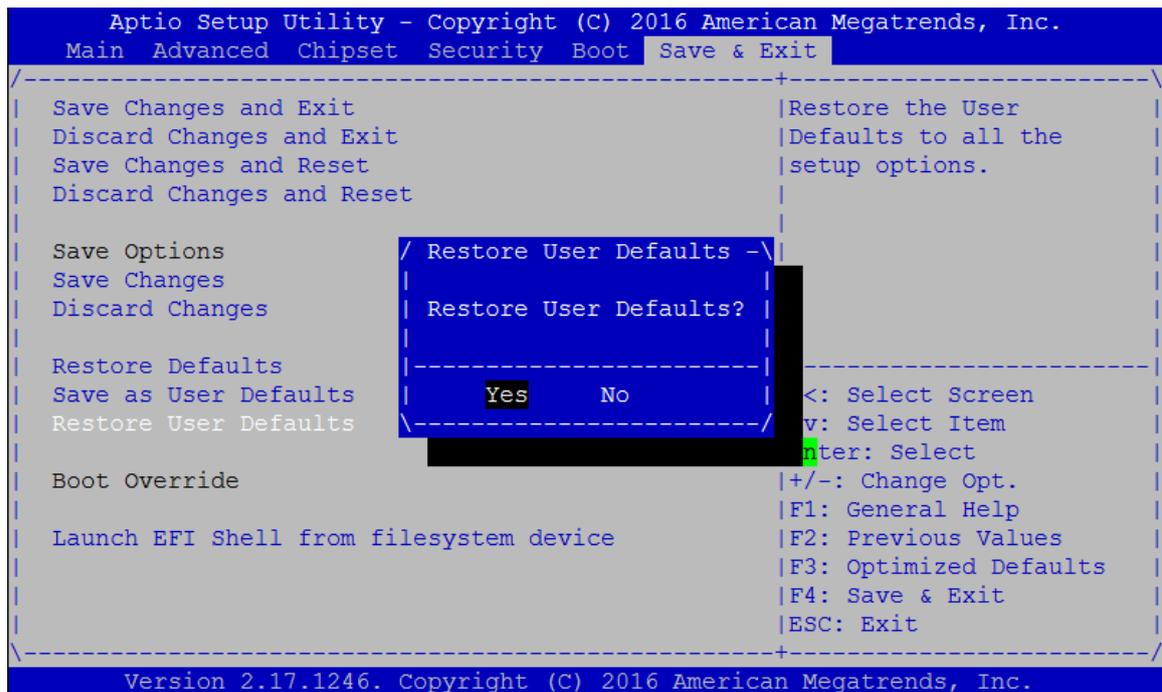
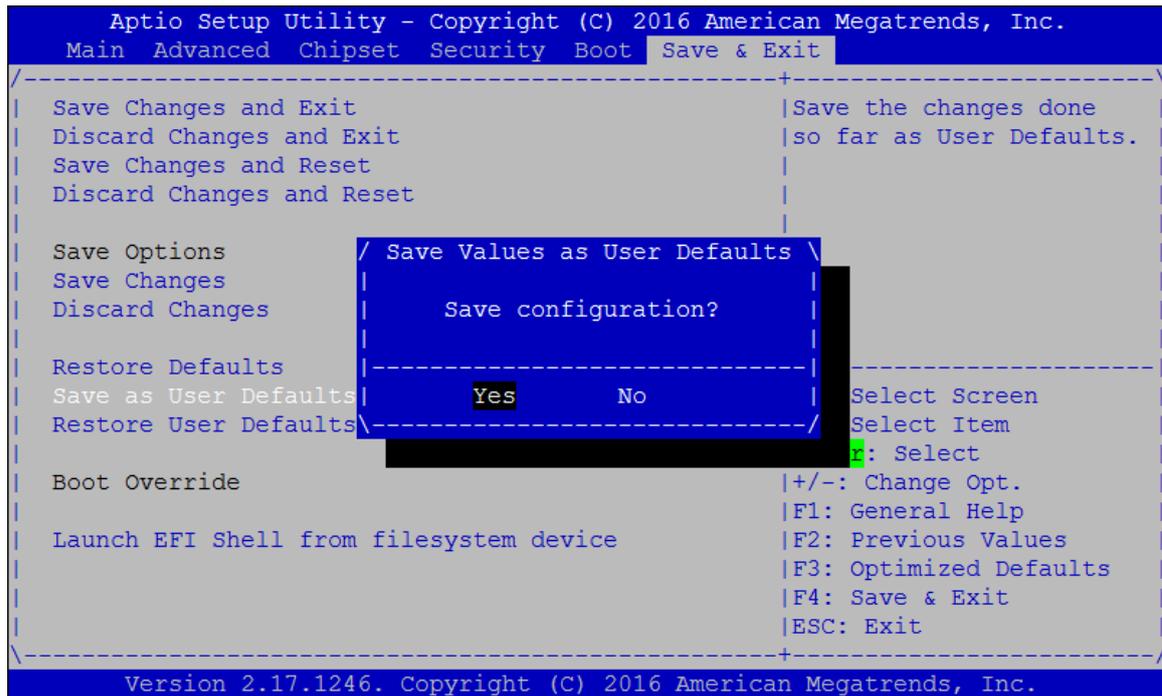
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit

Save Changes and Exit | Restore/Load Default
Discard Changes and Exit | values for all the
Save Changes and Reset | setup options.
Discard Changes and Reset |

Save Options          | / Load Optimized Defaults -\
Save Changes          | |
Discard Changes       | | Load Optimized Defaults? |
                      | |
Restore Defaults      | -----
Save as User Defaults | | Yes No |
Restore User Defaults | |
                      | -----

Boot Override        | +/-: Change Opt.
Launch EFI Shell from filesystem device | F1: General Help
                                                | F2: Previous Values
                                                | F3: Optimized Defaults
                                                | F4: Save & Exit
                                                | ESC: Exit

Version 2.17.1246. Copyright (C) 2016 American Megatrends, Inc.
    
```



APPENDIX A: PROGRAMMING WATCHDOG TIMER

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the processor in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

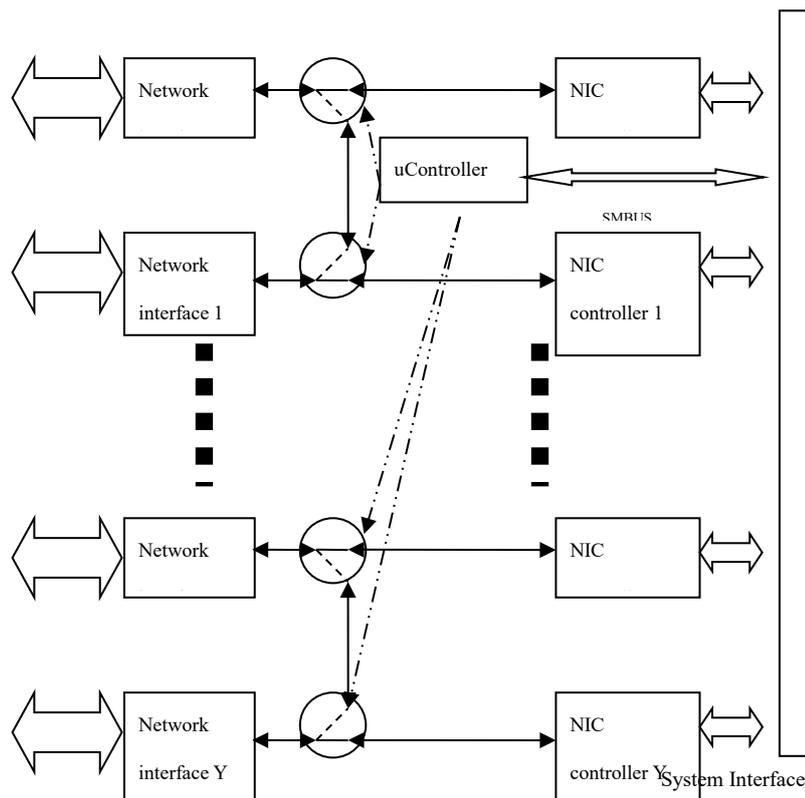
For sample watchdog code, see *watchdog* folder on the *Driver and Manual CD*



APPENDIX B: GEN 3 BYPASS

Lanner Bypass has evolved to Generation 3 which has much advancement over the previous two generations. It offers more flexibility and richer configuration of bypass setting by adopting the uController. With the uController and its onboard Non-volatile random-access memory (NVRAM), it can store the configuration of the bypass settings as well as manage the bypass status accurately regardless of the system's operating state. It also eliminates the brief moment in which the bypassed cannot be managed during the instance of power-on (Just-on state), which could possibly result in packet loss happened in Generation 2. Moreover, up to 3 dedicated watchdogs for controlling bypass status of different pairs is designed to accommodate the versatility of LAN configuration in your network environment. For instance, you might have two connections for differentiated services like VOIP or media streaming, and using the dedicated watchdog timer for different pairs of bypassed ports can help manage the bypass function differently on port basis.

The following diagram depicts the role and function of the uControllers in Generation 3 Bypass. The interface between the system and uController is SMBUS (I2C). The uController can control up to 4* pairs of bypass.



¹ The number of bypass pairs varies depending on the models of the system.

APPENDIX C: P-FAIL RELAY FOR DUAL POWER SUPPLY

A **Dual Power Supply** is the supply of direct current to a device from two outlets, which means if either supply fails, the device will keep operating as usual, and hence guarantees a constant power source for the system. To ensure your power solution fulfills conditions where uninterrupted power is critical, the P-fail relay allows you to take precautions against potential power failures.

The P-Fail, Port Failure or Power Failure, is a relay that detects the abnormal status of a power source. Connected to an alarm device such as a buzzer or an LED indicator, its relay circuit can be triggered as **Closed** or **Open** whenever the power fails. Upon being notified by the alarm, you can immediately address the power issue before it eventually cripples your system.

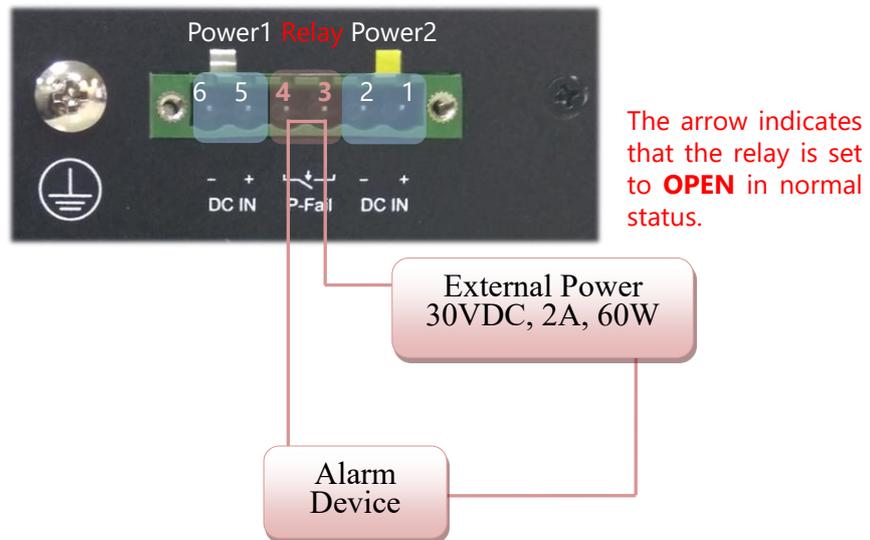


As LEC-6032C comes with dual power and P-fail relay features, the P-Fail relay will have the signaling device triggered as the power supply fails. LEC-6032C's relay circuit is set to be **Open** by default and **Closed** when either or neither of the powers is detected; the **Closed** (or **Short**) circuit then allows the Alarm Device to be activated.

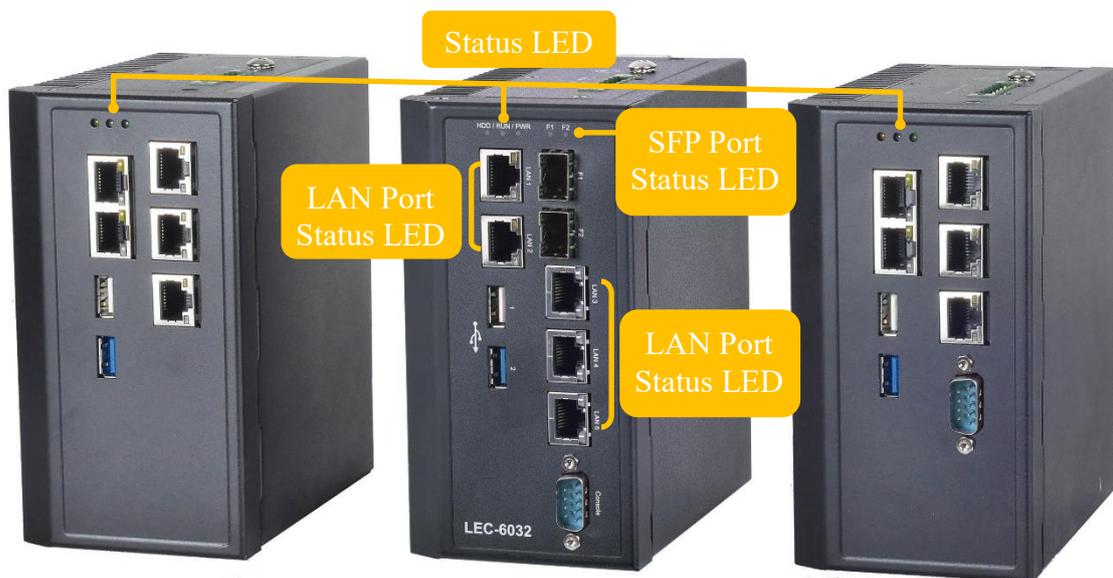
PWR1	PWR2	Circuit Status	Alarm Device
Detected	Detected	Open (Normal)	Off
Not Detected	Detected	Closed	Activated
Detected	Not Detected	Closed	Activated
Not Detected	Not Detected	Closed	Activated

Connecting the Alarm Device

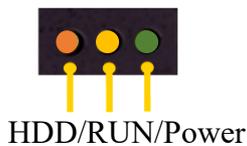
Connect the device to the system through **Pin3** and **Pin4** on the 6-pin terminal block and make sure the voltage rating of the external power supply that energizes the signaling device is compatible with the relay output. For details on this relay ([AXICOM IM02GR](#))'s specifications, please visit the manufacturer's official website for latest documentation. For the pin assignment information of this power connector (**CN1: Power Connector**).



APPENDIX D: LED INDICATOR EXPLANATIONS



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



HDD Activity Status

Blinking Amber	Data access activities
OFF	No data access activities

RUN (System Status)

This LED indicator is programmable. You could program it to display the operating status with the behaviors described below. By default, this LED is inactive since its behavior has not yet defined by software.

Solid Green	Controlled by GPIO
Blinking Green	Controlled by GPIO
Solid Red	Controlled by GPIO
Blinking Red	Controlled by GPIO
OFF	Controlled by GPIO

System Power

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

SFP Port Status



F1/F2

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

LAN Port Status (LAN1~LAN5)



Speed/Link

Speed

Solid Yellow	Operating as a Gigabit connection (1000 Mbps)
Solid Green	Operating as a 100-Mbps connection
OFF	No link has been established

Link Activity

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