cPCI-3640 Series

User's Manual

Low-Power 3U CompactPCI® Quad-Core Intel Atom® Processor Blade



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1.2	Switch and jumper settings updated	2026-07-15	AL

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Preface

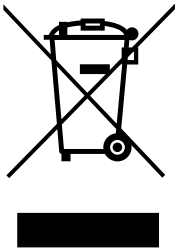
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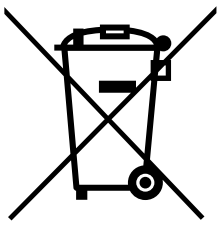
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Battery Labels (for products with battery)









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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE: Additional information, aids, and tips that help users perform tasks.



CAUTION: Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING: Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

1.1 Overview

The ADLINK cPCI-3640 Series is a 3U CompactPCI® 2.0 processor blade featuring the 64-bit Intel Atom® Processor X Series (formerly Elkhart Lake) and soldered DDR4-2400-3200 MHz IBECC memory, with up to 32GB. The cPCI-3640 comes in single-slot (4HP) width and dual-slot (8HP) width form factor. Faceplate I/O includes 1x USB 3.0 port, 2x RJ-45 2.5GbE ports, and 1x VGA port.

The Intel Atom® Processor X Series integrates the 10th generation Intel UHD graphics and provides excellent graphics, media, and display support. Storage options include a CFAST socket or an onboard 32GB SLC SSD (optional). Additionally, the SATA1 to layer 2 riser card is available, with a route to J2 option in the BIOS.

Rear I/O signals to J2 include 2x GbE, 4x GPIO pins (reserved), and PWROK/WDT/HDD/User LED (reserved). The cPCI-3640 is an ideal solution for transportation, factory automation, and other industrial applications that require optimal computing performance for data transfer with lower power consumption. The ADLINK cPCI-3640 provides high manageability and supports Satellite mode operation as a standalone blade in peripheral slots.

1.2 Features

- 3U CompactPCI R3.0 blade in 4HP and 8HP width form factor
- 64-bit quad-core Intel Atom® x6413E Processor (1.5-3.00 GHz, TDP 9W)
- Integrated Graphics and memory controllers
- Compatible with PICMG 2.0 CompactPCI R3.0, PICMG 2.1 Hot Swap R2.0
- Dual channel DDR4 2400-3200 soldered memory with IBECC up to 32GB
- 32-bit, 33MHz PCI interface
- Supports Satellite mode operation as a standalone blade in peripheral slots
- 1x USB 3.0 port
- 1x VGA port
- 2x RJ45 2.5GbE ports on front panel, switchable to rear J2 (in 1GbE mode)
- Optional 2.5” SATA device via riser car

1.3 Package Contents

The cPCI-3640 is packaged with the following components. If any of these items are missing or damaged, please retain the shipping carton and packing material and contact your dealer for inspection. Authorization must be obtained before returning any product to ADLINK.

Processor Blade

- The cPCI-3640 Processor Blade
- 2.5” SATA drive accessory pack

Rear Transition Module

- cPCI-R3610: 8HP width, 50mm depth Rear Transition Mod- ule with 2x COM, 1x USB 2.0, 2x GbE, 1x SATA, 1x VGA
- cPCI-R3610T: 8HP width, 80mm depth Rear Transition Module with 2x COM, 1x USB 2.0, 2x GbE, 1x SATA, 1x VGA

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NOTE:

The contents of non-standard cPCI-3640 configurations may vary depending on the customer’s requirements.



CAUTION:

This product must be protected from static discharge and physical shock. Never remove any of the components except at a static-free workstation. Use the anti-static bag shipped with the product when putting the board on a surface. Wear an anti-static wrist strap properly grounded on one of the system's ESD ground jacks when installing or servicing system components.

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2 Specifications

2.1 Product Specifications

2.1.1 cPCI-3640 Specifications

CompactPCI® Standards	• PICMG® 2.0 CompactPCI® Rev. 3.0 • PICMG® 2.1 Hot Swap Specification Rev. 2.0
Mechanical	• Standard 3U CompactPCI® • Board size: 100mm x 160mm Single slot (4HP, 20.32mm) Dual slot (8HP, 40.64mm)
Processor	• Quad-core Intel Atom® x6413E Processor, 1.50 GHz Base frequency, 3.00 GHz Burst frequency, 1.5MB L2 cache, TDP 9W
Memory	• Dual channel DDR4-2700-3200 IBECC soldered memory • Up to 32GB
CompactPCI Bus	• PCI 32-bit, 33MHz; 5V only • Supports operation in system slot as master or in peripheral slot as standalone blade without connectivity to CompactPCI bus (Satellite mode)
2.5 GbE Ethernet	• Two RJ45 on front faceplate via Intel® I225 Ethernet controllers (switchable to rear J2)
Graphics	• Integrated Intel UHD Graphics • Resolution up to 1920x1200 @60Hz • Single analog display
USB	• A single USB 3.0 port on the front faceplate
Faceplate I/O	**4HP cPCI-3640** • 1x USB 3.0 port • 2x 2.5G BASE-T Ethernet ports • 1x VGA port **8HP cPCI-3640T** • 1x USB 3.0 port • 2x 2.5G BASE-T Ethernet ports • 1x VGA port • 1x Serial ports • 2x 10/100/1000G BASE-T Ethernet ports
Storage Interfaces[1]	• Standard CFAST socket • Optional onboard 32GB SLC SSD (Other capacities available upon request) • Additional SATA devices via riser card
BIOS	• AMI UEFI BIOS, UEFI secure boot
OS Compatibility	• Microsoft Windows 10 IoT Enterprise 64-bit • Ubuntu 20.04/22.04 • VxWorks 6.9 (by request) • Other OS support by request

Environmental	• Operating Temperature: Standard: -25°C to 85°C (2 m/s airflow minimum)
	• Storage Temperature: -40°C to 85°C
	• Humidity: 5-95% non-condensing
	• Shock and vibration: Custom-designed to meet requirements
	  • Wayside design: equipment must meet EN-50125-3 standard
	  • Onboard design: equipment must meet CEI-61373 (1B category) standard

EMI	• EN50155 version 2017 OT5 class • CE/FCC Class A


NOTE:

ADLINK-certified thermal design. The thermal performance is dependent on the chassis cooling design. Sufficient forced airflow is required. Temperature limits of optional mass storage devices may also affect the thermal specification.

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2.1.2 cPCI-R3610(T) RTM Specifications

Mechanical	Board Size • cPCI-R3610: 100mm x 50mm single-slot ($HP, 20.32mm) • cPCI-R3610T: 100mm x 80mm Dual-slot (8HP, 40.64mm) (optional single-slot upon request)
Gigabit Ethernet	• Two GbE ports switched from cPCI-3640
Graphics	• VGA switched from cPCI-3640
Serial Ports	• Two serial ports on I/O panel from pin header
Storage Interfaces	• One 7-pin Serial ATA port, SATA1 signal switched from cPCI-3640 by BIOS
Faceplate I/O	• 1x USB 2.0 ports • 2x 10/100/1000BASE-T Ethernet ports • Analog DB-15 VGA port • 2x COM ports

NOTE:

Specifications are subject to change without prior notice.

2.2 Block Diagram

2.2.1 cPCI-3640 Blade

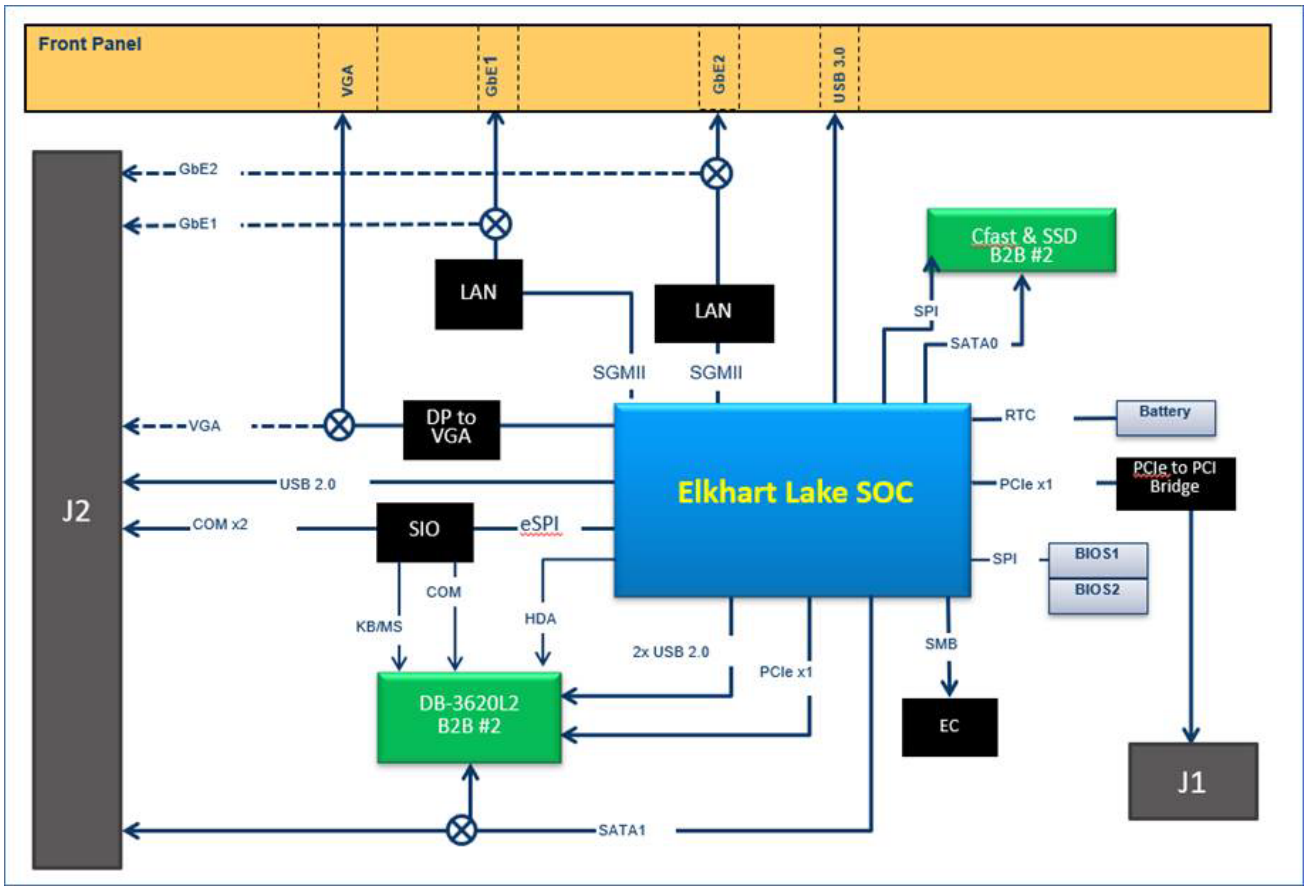


Figure 1: cPCI-3640 functional block diagram

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2.2.2 cPCI-3640D Daughterboard (DB-3610L2)

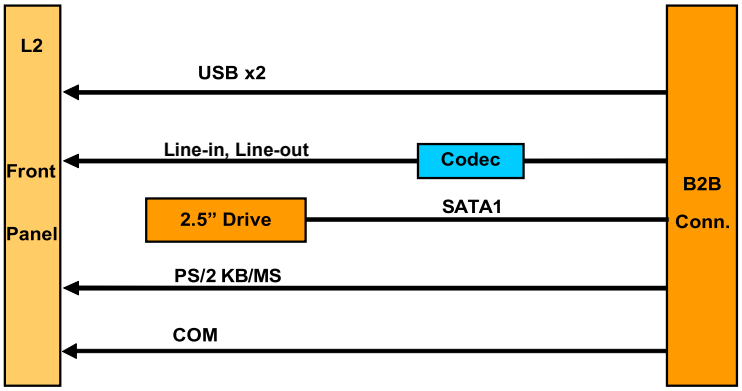


Figure 2: cPCI-3640D daughterboard functional block diagram

2.2.3 cPCI-3640T Daughterboard (DB-3620L2)

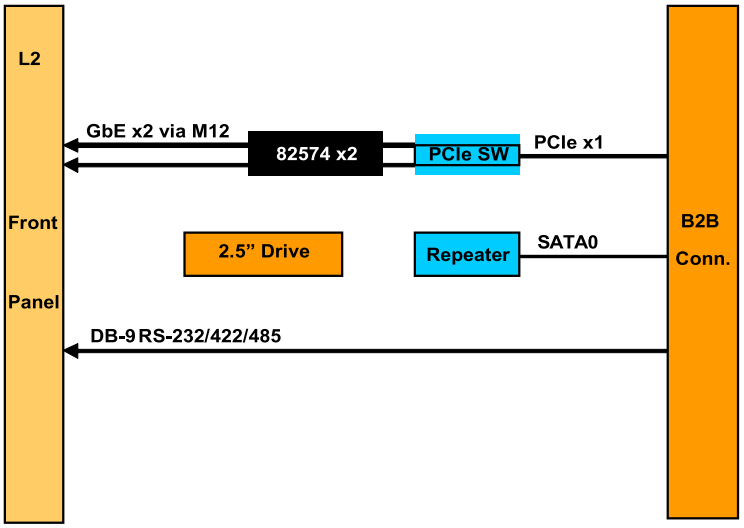


Figure 3: cPCI-3640T daughterboard functional block diagram

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2.2.4 cPCI-3610(T) RTM

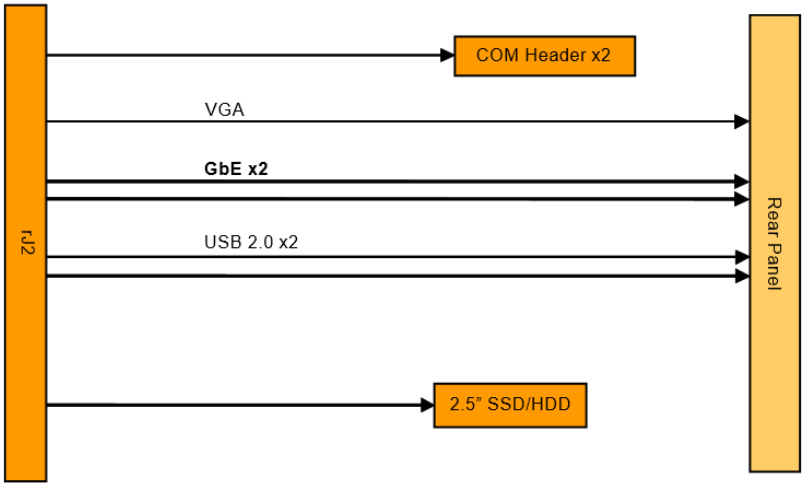


Figure 4: cPCI-3610 RTM functional block diagram

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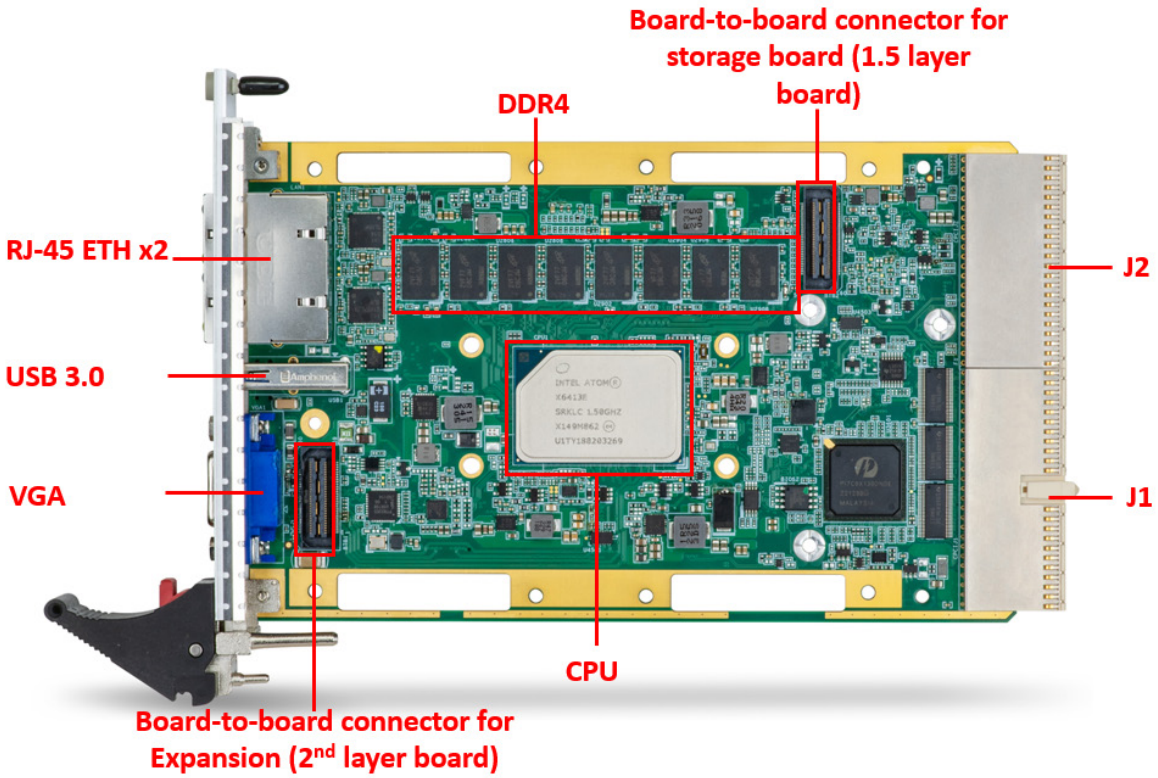
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3 Mechanical Layout

3.1 Connector and Switch Locations

This chapter illustrates the board layouts, connector pin assignments, and jumper settings.

3.1.1 cPCI-3640 Series Board Layout



CPU	Intel® Atom™ Processor
LAN	2x Ethernet RJ-45 connector
USB	USB 3.0 port
VGA	DB-15 female VGA connector
J1	CompactPCI connector J1
J2	CompactPCI connector J2

Figure 5: cPCI-3640 series board layout

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3.1.2 cPCI-3640 Series Faceplate

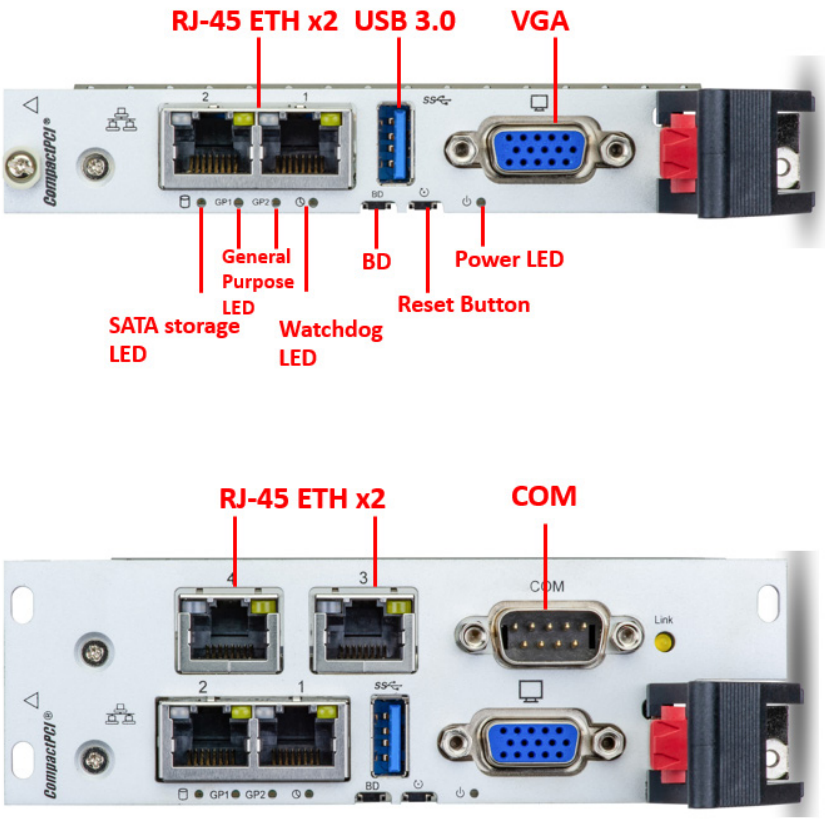


Figure 6: cPCI-3640 series faceplate

System LED Status

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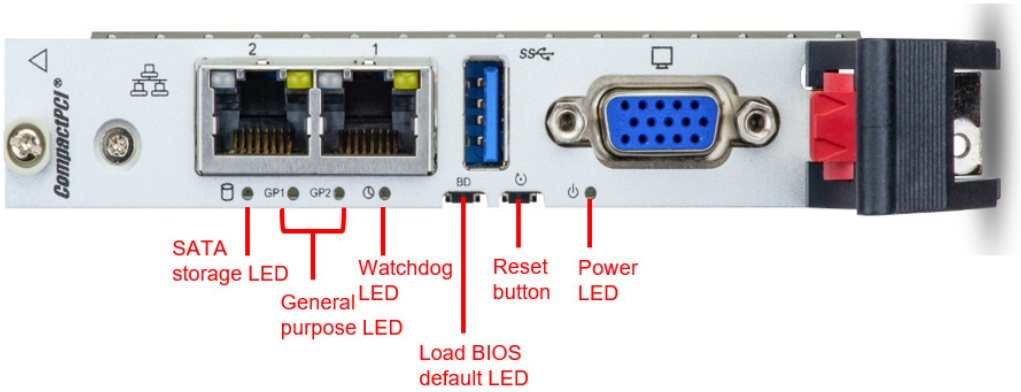


Table 1: System LED status

LED	Definition	Color	Condition	Indication
	SATA storage LED	Yellow	OFF	No SATA activity
			ON/Blinking	SATA transmission in 2.5" SATA, CFAST, SSD
GP1/GP2	General Purpose LED	Blue	OFF	User define
GP1/GP2			ON/Blinking	User define
	Watchdog LED	Red	OFF	No watchdog activity
			ON/Blinking	Watchdog event alert
BD	Load BIOS Default Button	NA	NA	Press on it to load BIOS default
	Reset Button	NA	NA	Press on it to warm reset the CPU
	Power LED	Green	OFF	System is of
			ON	All system power ready

1. SATA storage LED is controlled by PCH.
2. GP1/GP2 LED is controlled by PCH or EC (default BOM is PCH).
3. Watchdog LED is controlled by EC.
4. Power LED is controlled by EC.

3.1.3 cPCI-3610(T) RTM Board Layout

COM2	RS-232/422/485 port	**LAN1/2**	Dual Ethernet ports
COM3	RS-232/422/485 port	**VGA1**	VGA port
SATA1	SATA port switched from front by BIOS (SATA2 not connected)	**USB**	USB 2.0 port
rJ2	CompactPCI connector	**SW1-8**	Switches

(cPCI-R3610 is 50mm deep and cPCI-R3610T is 80mm deep)

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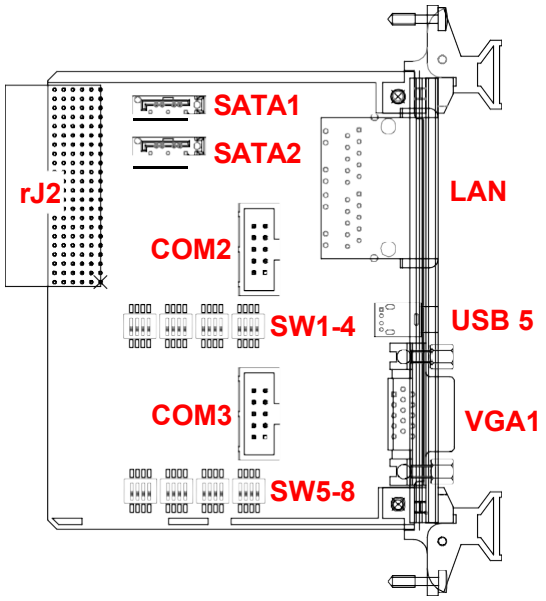


Figure 7: cPCI-3610(T) RTM board layout

3.1.4 cPCI-R3610(T) RTM Faceplate

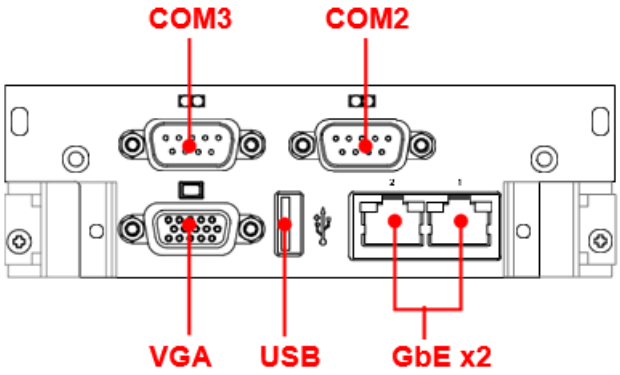


Figure 8: cPCI-R3610(T) RTM faceplate

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4 Getting Started

This chapter describes the following installation procedures for the cPCI-3640 and the rear transition module:

- CPU and Heatsink
- 2.5" SATA storage drive
- Processor blade installation to chassis
- RTM installation to chassis

4.1 CPU and Heatsink

The cPCI-3640 Series comes with the CPU and heatsink pre-installed. Removal of the heatsink/CPU by users is not recommended. Please contact your ADLINK service representative for assistance.

4.2 SATA Drive Installation

The 2-slot cPCI-3640D/G/M/T(R) versions provide space to install a slim-type 2.5" Serial ATA storage drive.

Installing a SATA Drive

1. A 2.5" SATA drive can be installed in the location marked below.



2. Prepare a 2.5" SATA drive and locate the brackets and screws in the accessory kit.



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3. Screw the brackets to the 2.5" SATA drive with the four M3 screws.



4. Align the drive assembly with the cPCI-3640D/T and insert it onto the onboard SATA connector until it is securely seated.



5. Secure the hard drive assembly to the cPCI-3640D/T with the four M2.5 screws provided.



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4.3 Installation of the cPCI-3640 to the Chassis

The cPCI-3640 may be installed in a system or peripheral slot of a 3U CompactPCI chassis. These instructions are for reference only. Please refer to the user guide that comes with the chassis for more information.

1. Be sure to select the correct slot depending on the operational purpose of the module. The system power may now be turned on or off.
2. Remove the blank faceplate from the selected slot, if necessary.
3. Press down on the release catches of the cPCI-3640 ejector handles.
4. **Remove the black plastic caps securing the mounting screws to the faceplate.**
5. Align the module's top and bottom edges with the chassis card guides, and then carefully slide the module into the chassis. A slight resistance may be felt when inserting the module. If the resistance is too strong, check for bent pins on the backplane or if the board's connector pins are not properly aligned with the connectors on the backplane. Then, push the board until it is completely flush with the chassis.
6. Push the ejector handles outwards to secure the module in place, and then fasten the screws on the module faceplate.
7. Connect the cables and peripherals to the board, and then turn the chassis on if necessary.

4.4 cPCI-R3610(T) RTM Installation

The installation and removal procedures for an RTM are the same as those for CompactPCI boards. Because RTMs are shorter than front boards, be sure to pay careful attention when inserting or removing them.

Refer to the previous section for peripheral connectivity of all I/O ports on the RTM. When installing the cPCI-3640 Series and related RTMs, ensure that the RTM is the correct matching model.



You must install the correct RTM to enable functions (I/O interfaces) on the rear panel. Installing non-compatible RTMs may damage the system board and/or other RTMs.

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5 Driver Installation

The cPCI-3640 drivers are available from the ADLINK website at https://www.adlinktech.com/Products/CompactPCI/3UCompactPCI2_0Blades/cPCI-3640_Series. ADLINK provides validated drivers for Windows 10. We recommend using these drivers to ensure compatibility.

5.1 cPCI-3640 Drivers

The following describes the cPCI-3640 driver installation procedures for Windows 10. Install the Windows operating system before installing any driver. Most standard I/O device drivers are installed during Windows installation.

1. Install the Chipset driver by extracting and running the program in **Intel_Chipset_Win10x64_v10.1.18634.8254_public.zip**.
2. Install the ME driver by extracting and running the program in **Intel_ME_Win10x64_v15.40.10.2252.zip.**
3. Install the Graphics driver and utilities by extracting and running the program in **Intel_Graphics_Win10x64_v27.20.100.9079.zip**.
4. Install the SerialIO driver by extracting and running the program in **Intel_SerialIO_Win10x64_v5.123.1.1021.zip.**
5. Install the LAN driver by extracting and running the program in **Intel_LAN_Win10x64_v27.6.zip.**
6. Install the HID driver by extracting and running the program in **Intel_HID_Win10x64_v2.2.1.383.zip.**
7. Install the PSE driver by extracting and running the program in **Intel_PSE_Win10x64_v5.4.1.4510.zip.**
8. Install the Audio driver and utilities by extracting and running the program in **Realtek_Audio_Win10x64_v6.0.1.8496**.

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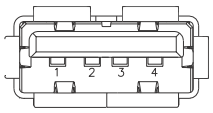
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6 Connector Pinouts and Jumper Settings

6.1 cPCI-3640 Blade Connector Pin Assignments

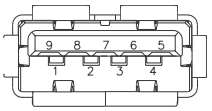
6.1.1 USB 2.0 Connectors

Pin #	Signal Name
1	Vcc
2	UV0-
3	UV0+
4	GND



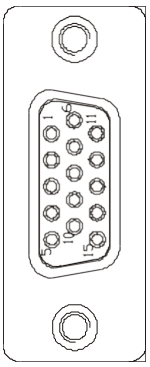
6.1.2 USB 3.0 Connectors

Pin #	Signal Name
1	USB3.0_P5VA
2	USB2_CMAN
3	USB2_CMAP
4	GND
5	USB3A_CMRXN
6	USB3A_CMRXP
7	GND
8	USB3A_CMTXN
9	USB3A_CMTXP



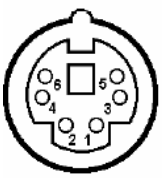
6.1.3 DB-15 VGA Connector

Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
+5V.	9	10	GND
N.C.	11	12	CRTDATA
HSYNC	13	14	VSYNC
CRTCLK	15		



6.1.4 PS/2 Keyboard/Mouse Connector

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	MSDATA	Mouse Data
3	GND	Ground
4	+5V	Power
5	KBCLK	Keyboard Clock
6	MSCLK	Mouse Clock



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6.1.5 RJ-45 Gigabit Ethernet Connectors

Pin #	10BASE-T/ 100BASE-TX	1000BASE-T
1	TX+	LAN_TX0+
2	TX-	LAN_TX0-
3	RX+	LAN_TX1+
4	—	LAN_TX2+
5	—	LAN_TX2-
6	RX-	LAN_TX1-
7	—	LAN_TX3+
8	—	LAN_TX3-

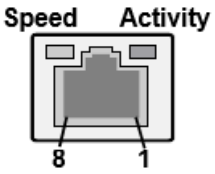
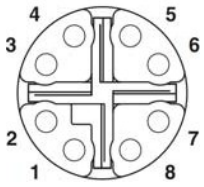


Table 2: LAN LED status definition

Status		Speed LED (Green/Amber)	Activity LED (Yellow)
Network link is not established or system powered off		Off	Off
10 Mbps	Link	Off	On
	Active	Off	Blinking
100 Mbps	Link	Green	On
	Active	Green	Blinking
1000 Mbps	Link	Orange	On
	Active	Orange	Blinking

6.1.6 M12 Gigabit Ethernet Connectors

Pin #	Signal
1	DN3
2	DP3
3	DN2
4	DP2
5	DN1
6	DP1
7	DN0
8	DP0

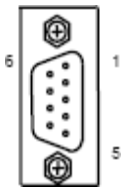


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6.1.7 cPCI-3640D/T(R) Serial Ports

COM1 connector (DB-9)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	—
4	DTR-L	RXD-	—
5	GND	GND	GND
6	DSR-L	—	—
7	RTS-L	—	—
8	CTS-L	—	—
9	RI-L	—	—

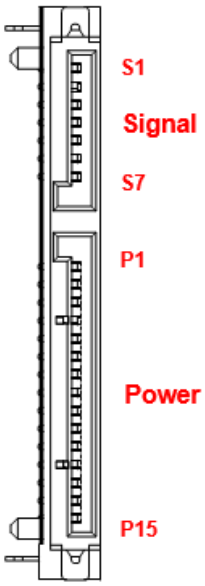


NOTE:

The COM mode setting for cPCI-3640D models is configured using SW1-SW4. See 5.3.1 cPCI-3640D COM1 Mode Selection Switches (SW1-SW4). The COM mode setting for cPCI-3640T(R) models is configured using SW1. 5.3.2 cPCI-3640T(R) COM1 Mode Selection Switch (SW1).

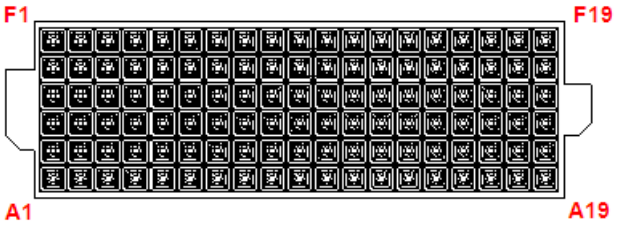
6.1.8 Serial ATA Connector on DB-3610L2

Pin #	Signal
S1	GND
S2	TX+
S3	TX-
S4	GND
S5	RX-
S6	RX+
S7	GND
P1	NC
P2	NC
P3	NC
P4	GND
P5	GND
P6	GND
P7	5V
P8	5V
P9	5V
P10	GND
P11	NC
P12	GND
P13~P15	NC



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6.1.9 XMC Connector on DB-3UMC (JN3)



Pin#	A	B	C	D	E	F
1	RXP	RXN	3.3V	NC	NC	VPWR
2	GND	GND	Not used	GND	GND	PCIE_RST-L
3	NC	NC	3.3V	NC	NC	VPWR
4	GND	GND	Not used	GND	GND	Not used
5	NC	NC	3.3V	NC	NC	VPWR
6	GND	GND	Not used	GND	GND	+12V
7	NC	NC	3.3V	NC	NC	VPWR
8	GND	GND	Not used	GND	GND	-12V
9	NC	NC	Not used	NC	NC	VPWR
10	GND	GND	Not used	GND	GND	GA0
11	TXP	TXN	Not used	NC	NC	VPWR
12	GND	GND	GA1	GND	GND	Not used
13	NC	NC	3.3V	NC	NC	VPWR
14	GND	GND	GA2	GND	GND	Not used
15	NC	NC	Not used	NC	NC	VPWR
16	GND	GND	Not used	GND	GND	Not used
17	NC	NC	Not used	NC	NC	NC
18	GND	GND	Not used	GND	GND	Not used
19	CK-P	CK-N	Not used	Not used	Not used	Not used

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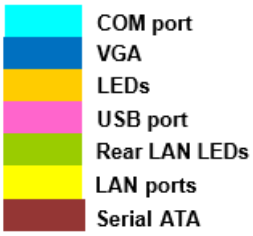
6.1.10 CompactPCI J1 Connector

Pin	Z	A	B	C	D	E	F
25	GND	P5V	P5V	CPCI_ENUM#	NC	P5V	GND
24	GND	CPCI_AD1	P5V	V(I/O)	CPCI_AD0	P5V	GND
23	GND	NC	CPCI_AD4	CPCI_AD3	P5V	CPCI_AD2	GND
22	GND	CPCI_AD7	GND	NC	CPCI_AD6	CPCI_AD5	GND
21	GND	NC	CPCI_AD9	CPCI_AD8	CPCI_M66E N	CPCI_CBE_L 0	GND
20	GND	CPCI_AD12	GND	VIO	CPCI_AD11	CPCI_AD10	GND
19	GND	NC	CPCI_AD15	CPCI_AD14	GND	CPCI_AD13	GND
18	GND	CPCI_SERR_L	GND	NC	CPCI_PAR	CPCI_CBE_L 1	GND
17	GND	NC	BMC_I2C_CLK	BMC_I2C_DAT A	GND	CPCI_PERR_ L	GND
16	GND	CPCI_DEVSEL_ L	GND	V(I/O)	CPCI_STOP_ L	CPCI_LOCK_ L	GND
15	GND	NC	CPCI_FRAME-L	CPCI_IRDY-L	CPCI_BDSEL #	CPCI_TRDY_ L	GND
12-14	Key						
11	GND	CPCI_AD18	CPCI_AD17	CPCI_AD16	GND	CPCI_CBE_L 2	GND
10	GND	CPCI_AD21	GND	NC	CPCI_AD20	CPCI_AD19	GND
9	GND	CPCI_CBE_L3	NC	CPCI_AD23	GND	CPCI_AD22	GND
8	GND	CPCI_AD26	GND	V(I/O)	CPCI_AD25	CPCI_AD24	GND
7	GND	CPCI_AD30	CPCI_AD29	CPCI_AD28	GND	CPCI_AD27	GND
6	GND	CPCI_REQ_L0	GND	NC	CPCI_CLK0	CPCI_AD31	GND
5	GND	NC	NC	CPCI_RESET_ L	GND	CPCI_GNT_L 0	GND
4	GND	NC	CPCI_HEALTHY_ L	V(I/O)	CPCI_INTP	NC	GND
3	GND	CPCI_INTA_L	CPCI_INTB_L	CPCI_INTC_L	P5V	CPCI_INTD_ L	GND
2	GND	NC	P5V	NC	NC	NC	GND
1	GND	P5V	N12V	NC	P12V	P5V	GND

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6.1.11 Compact PCI J2 Connector

Pin	Z	A	B	C	D	E	F
22	GND	BMC_GPI4	BMC_GPI3	BMC_GPI2	BMC_GPI1	BMC_GPI0	GND
21	GND	CPCI_CLK6	GND	LAN1_MDI_P0	LAN1_MDI_N0	USB5_P	GND
20	GND	CPCI_CLK5	GND	LAN1_MDI_P2	GND	R_LAN2_1000-L_USB5_N	GND
19	GND	GND	GND	LAN1_MDI_N2	LAN1_MDI_P1	LAN1_MDI_N1	GND
18	GND	R_LAN2_100-L	LAN1_MDI_P3	LAN1_MDI_N3	GND	P3V3	GND
17	GND	R_LAN2_LINK/ACT-L	GND	RST_BTN-L	CPCI_REQ_L6	CPCI_GNT_L6	GND
16	GND	GPIO0	R_LAN1_ 100-L	USB4_P_DEG	GND	R_LAN1_ 1000-L	GND
15	GND	VGA_BACK_B	R_LAN1_LINK/ACT-L	USB4_N_FAL	CPCI_REQ_L5	CPCI_GNT_L5	GND
14	GND	GPIO1	USB_P4_OC#	USB_P3_OC#	SATA_TXN_J2	COM3_RI-L	GND
13	GND	LAN2_MDI_P0	GND	SATA_TXP_J2	COM3_DTR-L	COM3_CTS-L	GND
12	GND	GPIO2_R	LAN2_MDI_N0	USB3_P	SATA_RXN_J2	COM3_SOUT	GND
11	GND	LAN2_MDI_P1	GND	SATA_RXP_J2	COM3_RTS-L	COM3_SIN	GND
10	GND	GPIO3_R	LAN2_MDI_N1	USB3_N	GND	COM3_DSR-L	GND
9	GND	VGA_BACK_VSY	GND	VGA+BACK+G	COM3_DCD-L	COM4_RI-L	GND
8	GND	VGA_BACK_HSY	LAN2_MDI_P2	LAN2_MDI_N2	GND	COM4_DTR-L	GND
7	GND	VGA_BACK_R	GND	P5V	COM4_CTS-L	COM4_SOUT	GND
6	GND	VGA_BACK_CLK	LAN2_MDI_P3	LAN2_MDI_N3	GND	CON4_RTS-L	GND
5	GND	VGA_BACK_DAT	GND	HDD_LED_SATATXN2	COM4_SIN	COM4_DSR-L	GND
4	GND	V(I/O)	PWR_LED_SATARXP2	WDT_LED_SATARXN2	GP_LED_SATATXP2	COM4_DCD-L	GND
3	GND	CPCI_CLK4	CPI_GND_L3	CPCI_GNT_L3	CPCI_REQ_L4	CPCI_GNT_L4	GND
2	GND	CPCI_CLK2	CPCI_CLK3	CPCI_SYSEN-L	CPCI_GNT_L2	CPCI_REQ_L3	GND
1	GND	CPCI_CLK1	GND	CPCI_REQ_L1	CPCI_GNT_L1	CPCI_REQ_L2	GND

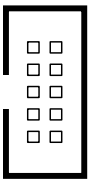


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6.2 cPCI-R3610(T) RTM Connector Pin Assignments

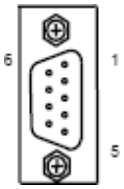
6.2.1 Serial Port Pin Headers (COM2/3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	DSR-L	—	—
3	RXD	TXD+	TXD+
4	RTS-L	—	—
5	TXD	RXD+	—
6	CTS-L	—	—
7	DTR-L	RXD-	—
8	RI-L	—	—
9	GND	GND	GND
10	—	—	—



6.2.2 Serial Port DB-9 Connectors (COM2/3)

Pin #	RS-232	RS-422	RS-485(+)
1	DCD-L	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD	RXD+	—
4	DTR-L	RXD-	—
5	GND	GND	GND
6	DSR-L	—	—
7	RTS-L	—	—
8	CTS-L	—	—
9	RI-L	—	—



NOTE:

See 5.3.3 cPCI-R3610(T) COM2 Mode Selection Switches (SW1-SW4) and 5.3.4 cPCI-R3610(T) COM3 Mode Selection Switches (SW5-SW8) for COM2/3 mode settings.

6.2.3 Serial ATA Connectors on RTM

Pin #	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

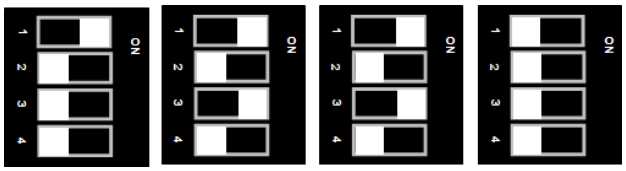


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6.3 Switch and Jumper Settings

6.3.1 cPCI-3640D COM1 Mode Selection Switches (SW1-SW4)

These switches set the cPCI-3640D COM1 to RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. Switches SW1-SW4 are located on the top edge of the DB-3610L2 board. RS-232 full modem is set by default.



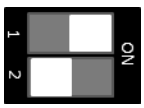
SW1 **SW2** **SW3** **SW4**

Mode	Pin	SW1	SW2	SW3	SW4
RS-232 (default)	1	ON	ON	ON	OFF
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	OFF	OFF	OFF	ON
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485	1	OFF	OFF	OFF	ON
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	ON

6.3.2 cPCI-3640T(R) COM1 Mode Selection Switch (SW1)

These switches set the cPCI-3640T(R) COM1 to RS-232 full modem, RS-422, or RS-485. Switch SW1 is located next to the COM1 connector on the DB-3640L2 board. RS-232 full modem is set as the default.

SW1

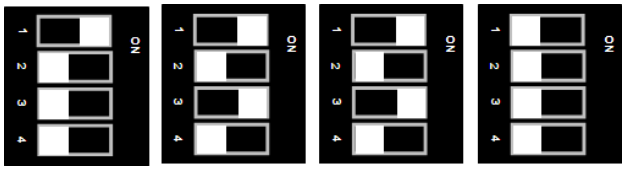


Mode	Pin	SW1
RS-232	1	ON
	2	OFF
RS-422	1	ON
	2	ON
RS-485	1	OFF
	2	ON

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6.3.3 cPCI-R3610(T) COM2 Mode Selection Switches (SW1-SW4)

These switches on the RTM select COM2 to be RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode. RS-232 full modem is set by default. See **3.1.4 cPCI-R3610(T) RTM Board Layout** for switch locations.



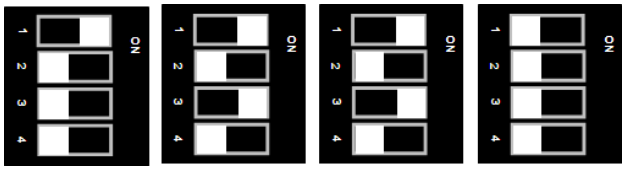
SW1 SW2 SW3 SW4

Mode	Pin	SW1	SW2	SW3	SW4
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

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6.3.4 cPCI-R3610(T)COM3 Mode Selection Switches (SW5-SW8)

These switches on the RTM select COM3 to be in RS-232 full modem, RS-422, RS-485, or RS-485+ half-duplex mode, with RS-232 full modem set as the default. See **3.1.4 cPCI-R3610(T) RTM Board Layout** for switch locations.



SW5 **SW6** **SW7** **SW8**

Mode	Pin	SW5	SW6	SW7	SW8
RS-232	1	OFF	ON	ON	ON
	2	OFF	OFF	OFF	OFF
	3	OFF	ON	ON	OFF
	4	OFF	OFF	OFF	OFF
RS-422	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	ON
	3	ON	OFF	OFF	OFF
	4	OFF	ON	ON	OFF
RS-485	1	ON	OFF	OFF	OFF
	2	OFF	ON	ON	OFF
	3	ON	OFF	OFF	ON
	4	OFF	ON	ON	OFF
RS-485+	1	OFF	OFF	OFF	OFF
	2	ON	ON	ON	OFF
	3	OFF	OFF	OFF	ON
	4	ON	ON	ON	OFF

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7 BIOS Settings

The BIOS can be configured via a setup utility that is invoked during the BIOS boot phase. The BIOS configuration is stored in NVRAM, which is the same hardware component where the BIOS itself is stored. All settings are retained even after the system is powered off. In this section, the BIOS setup menu will be described.

7.1 BIOS Setup Menu

The BIOS setup utility is invoked by pressing the <ESC> or <DEL> key. The user can change BIOS settings while the setup utility is running. A system reset is required for the new settings to take effect.

In the BIOS setup utility, several hotkeys are designed for specific purposes. The hotkeys are listed below.

- <F1>: General help in setup menu
- <F8>: Load previous BIOS values
- <F9>: Load BIOS default in setup utility
- <F10>: Save & Exit setup utility

7.1.1 Menu Selection Bar

The Menu Selection Bar is located at the top of the screen. It displays the top-level available menus to the user:

- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

7.1.2 Menu Conventions

The appearance of the setup menu shown in this chapter is a sample used to describe the item list. It is displayed on a VT100 terminal via a serial console. The following are the menu conventions:

Using Color

- Mandatory BIOS setup fields are shown in black.
- BIOS setup fields that are currently not used are shown in grey.
- Display-only strings are also shown in black.

Using Brackets

- Editable menu options are marked with square brackets ‘[’ and ‘]’ to distinguish them from display-only fields that cannot be modified.

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7.2 Main Menu

The Main Menu provides read-only information about the system and allows you to set the system's date and time. Refer to the tables below for a screenshot of the Main Menu, along with details of its submenus and settings

Main Advanced Chipset Security Boot Save & Exit

BIOS Information		Set the Date. Use Tab
BIOS Vendor	American Megatrends	to switch between Date
BIOS Version	0.03.10	elements.
Build Date	02/02/2023	
MRC Version	0.0.4.104	
GOP Version	18.0.1031	
ME FW Version	15.40.16.2485	
BIOS Boot Source	Primary BIOS	
System Information		
Project Name	cPCI-3640	
CPU Board Version	A1	
CPU Brand String	Intel Atom(R) x6413E	
	Processor @1.50GHz	>: Select Screen
CPU Frequency	1500 MHz	^v: Select Item
Total Memory	32768 MB (DDR4)	Enter: Select
Memory Frequency	3200 MHz	+/-: Change Opt.
PCH SKU	MCC SKU 0	F1: General Help
		F8: Previous Values
> Board Information		F9: Optimized Default
		F10: Save & Exit
System Date	[Wed 12/07/2022]	ESC: Exit
System Time	[16:28:59]	
Access Level	Administrator	

7.2.1 BIOS Information

BIOS Item	Options	Description
BIOS Vendor	**Info-only.** American Megatrends	Display vendor name of system BIOS.
BIOS Version	**Info-only.** x.yy.zz	Display version of booting BIOS.
Build Date	**Info-only.** MM/DD/YYYY	It shows the date that BIOS was built.
MRC Version	**Info-only.** w.x.y.z	Display the revision of MRC code which is implemented in BIOS.
GOP Version	**Info-only.** x.y.zzzz	*GOP Version:* When video option ROM is set to "UEFI Only", it will show up.

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ME FW Version	**Info-only.** ww.x.yy.zzzz	Display the version of Intel manageability firmware which is implemented in BIOS.
BIOS Boot Source	**Info-only.** Primary BIOS/Backup BIOS	It shows which BIOS flash boots the system. *Primary BIOS:* usually means that boots from SPI0 *Backup BIOS:* usually means that boots from SPI1

7.2.2 System Information

BIOS Item	Options	Description
Project Name	**Info-only.**	It shows the project name.
CPU Board Version	**Info-only.** A1/A2/A3/…	It shows the CPU board HW version.
CPU Brand String	**Info-only.** Intel(R) Core, …	It shows what CPU is booting the system.
CPU Frequency	**Info-only.** XXXX MHz	It shows CPU's frequency.
Total Memory	**Info-only.** XXXX MB (DDRx)	It shows total memory size used on the motherboard and memory type.
Memory Frequency	**Info-only.** XXXX MHz	It shows memory's frequency.
PCH SKU	**Info-only.** QMxx	It shows what PCH SKU is designed on motherboard.

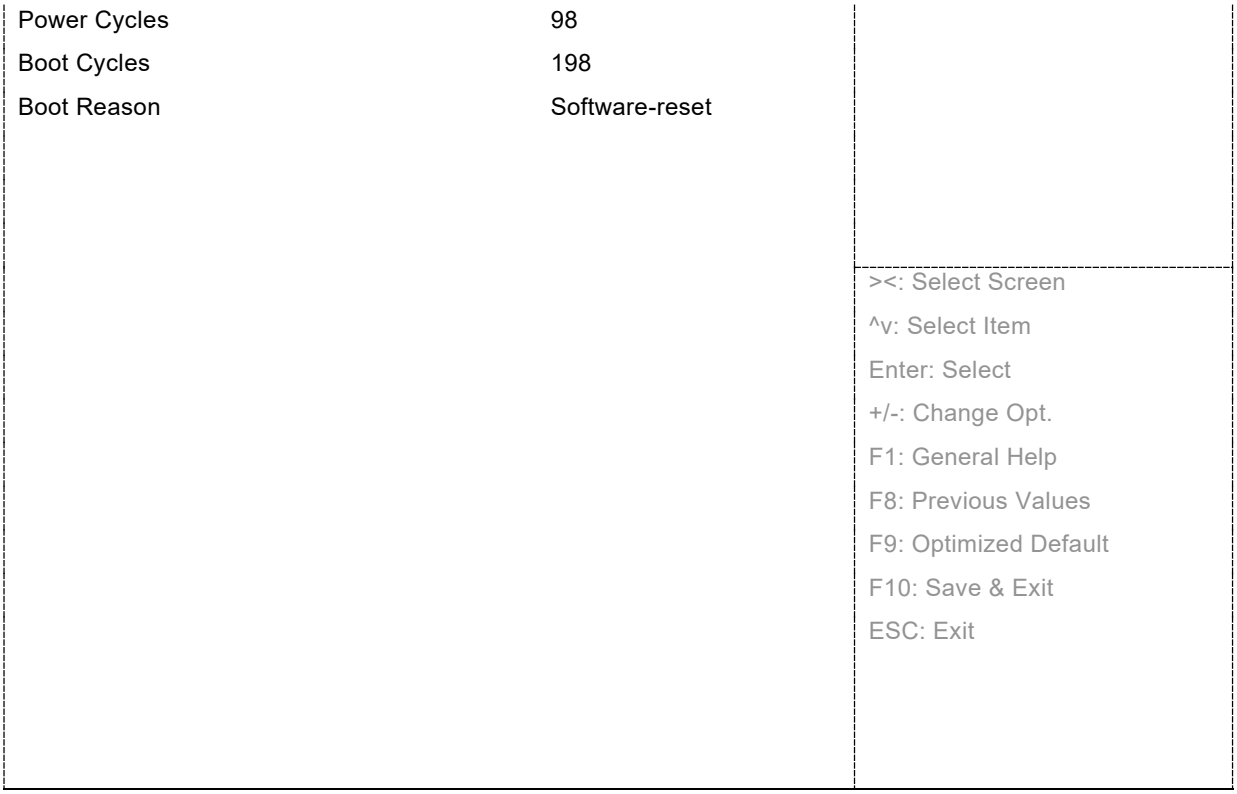
BIOS Item	Options	Description
System Date	MM/DD/YYYY	For configuring/showing system date. When setting the Date, use <Tab> key to switch between Date elements.
System Time	HH:MM:SS	For configuring/showing system time. When setting the Time, use <Tab> key to switch between Time elements.
Access Level	**Info-only.** Administrator/User	It shows what access level is used to enter BIOS setup menu.

7.2.2.1 Board Information

Main

Board Information		
Serial Number		
Manufacturing Date		
Last Repair Date		
MAC ID		
Total Runtime	12h 51m	
Current Runtime	0h 01m 29s	

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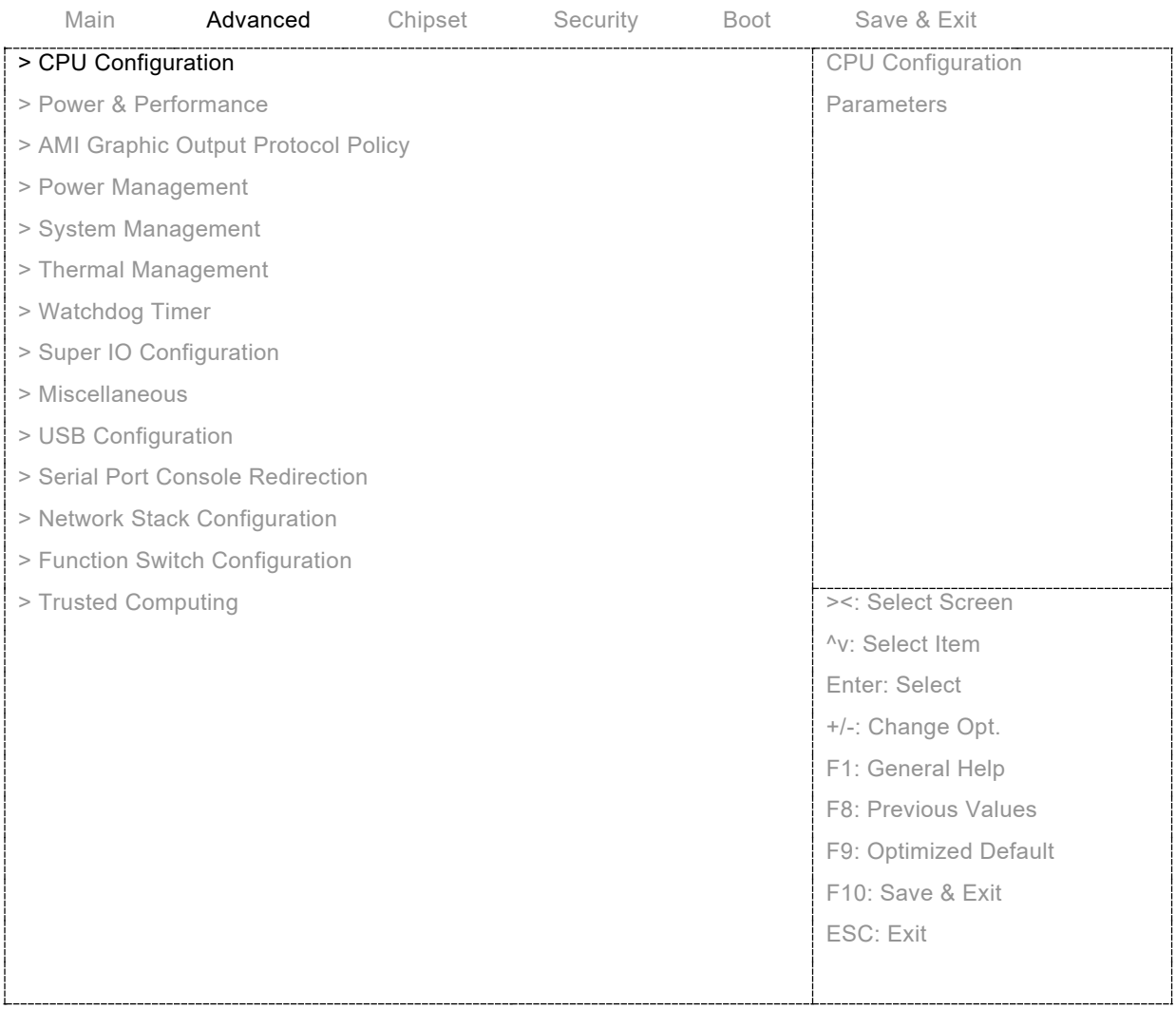


BIOS Item	Options	Description
Serial Number	**Info-only.**	Display board's serial number.
Manufacturing Date	**Info-only.**	Display manufacturing date.
Last Repair Date	**Info-only.**	Display Last Repair Date.
MAC ID	**Info-only.**	Shows onboard Ethernet's MAC ID.
Total Runtime	**Info-only.**	The returned value specifies the total time in minutes the system is running in S0 state.
Current Runtime	**Info-only.**	The returned value specifies the time in seconds the system is running in S0 state. This counter is cleared when the system is removed from the external power supply.
Power Cycle	**Info-only.**	The returned value specifies the number of times the external power supply has been shut down.
Boot Cycles	**Info-only.**	The boot cycle is increased after a HW or SW reset or after a successful power-up.
Boot Reason	**Info-only.**	The boot reason is the event which causes the reboot of the system.

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7.3 Advanced Menu

This menu contains the settings for most of the user interfaces in the system.



BIOS Item	Options	Description
CPU Configuration	**Submenu**	For configuring CPU features/functions.
Power & Performance	**Submenu**	For Power & Performance Options
AMI Graphic Output Protocol Policy	**Submenu**	User Select Monitor Output by Graphic Output Protocol
Power Management	**Submenu**	For Power Management
System Management	**Submenu**	ADLINK SEMA Information
Thermal Management	**Submenu**	For Thermal Management
Watchdog Timer	**Submenu**	For configuring Watchdog Timer parameter
Super IO Configuration	**Submenu**	Set Parameters of Super IO device.
Miscellaneous	**Submenu**	For Miscellaneous Device
USB Configuration	**Submenu**	For USB Configuration setting.
Serial Port Console Redirection	**Submenu**	Set Parameters of Serial Console Redirection.
Network Stack Configuration	**Submenu**	Enabled/Disable Network Stack
Function Switch Configuration	**Submenu**	For SW control VGA/LAN/SATA1/SATA2/COM1/COM2

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		output path or settings
Trusted Computing	**Submenu**	For TPM related settings

7.3.1 CPU Configuration

Advanced

CPU Configuration		
Type	Intel Atom(R) x6413E Processor @ 1.50GHz	
ID	0x90661	
Speed	1500 MHz	
Stepping	B0	
L1 Data Cache	32 KB x 4	
L1 Instruction Cache	32 KB x 4	
L2 Cache	1536 KB x 4	
L3 Cache	4 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Not Supported	>: Select Screen
		^v: Select Item
Intel (VMX) Virtualization Technology	[Enabled]	Enter: Select
Active Processor Cores	[All]	+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Intel (VMX) Virtualization Technology	**Enabled** Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	**All** 1 2 3	Number of cores to enable in each processor package.

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7.3.2 Power & Performance

Advanced

> CPU - Power Management Control > GT - Power Management Control	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
CPU - Power Management Control	**Submenu**	CPU - Power Management Control Options
GT - Power Management Control	**Submenu**	GT - Power Management Control Options

7.3.2.1 Power & Performance > CPU – Power Management Control

Advanced

CPU – Power Management Control		
P0 Fused Max Core Ration	N/A	
P1 Fused Max Core Ration	N/A	
P2 Fused Max Core Ration	N/A	
P3 Fused Max Core Ration	N/A	
Boot performance mode	[Max Non-Turbo Performance]	
Intel® SpeedStep™	[Enabled]	

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Race to Halt(RTH)	[Enabled]	
Intel® Speed Shift Technology	[Enabled]	
HwP Atuonomous EPP Grouping	[Enabled]	
EPB override over PECI	[Disabled]	
HwP Fast MSR Support	[Enabled]	
HDC Control	[Enabled]	
Turbo Mode	[Enabled]	
> View/Configure Turbo Options		
> CPU VR settings		><: Select Screen
Platform PL1 Enable	[Disabled]	^v: Select Item
Platform PL2 Enable	[Disabled]	Enter: Select
Power Limit 4 Override	[Disabled]	+/-: Change Opt.
C states	[Enabled]	F1: General Help
Enhanced C-states	[Enabled]	F8: Previous Values
C-State Auto Demotion	[C1]	F9: Optimized Default
C-state Un-demotion	[C1]	F10: Save & Exit
Package C-state Demotion	[Enabled]	ESC: Exit
Package C-state Un-demotion	[Enabled]	
CState Pre-Wake	[Enabled]	
IO MWAIT Redirection	[Disabled]	
Package C State Limit	[Auto]	
C6/C7 Short Latency Control(MSR 0x60B)		
Time Unit	[1024 ns]	
Latency	0	
C6/C7 Short Latency Control(MSR 0x60C)		
Time Unit	[1024 ns]	
Latency	0	
C8 Short Latency Control(MSR 0x633)		
Time Unit	[1024 ns]	
Latency	0	
C9 Short Latency Control(MSR 0x634)		
Time Unit	[1024 ns]	
Latency	0	
C10 Short Latency Control(MSR 0x635)		
Time Unit	[1024 ns]	
Latency	0	
Thermal Monitor	[Enabled]	
Interrupt Redirection Mode Selection	[Fixed Priority]	
Timed MWAIT	[Disabled]	
> Custom P-state Table		
EC Turbo Control Mode	[Disabled]	
Energy Performance Gain	[Disabled]	
EPG DIMM Idd3N	26	

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EPG DIMM Idd3P > Power Limit 3 Settings > CPU Lock Configuration	11	

BIOS Item	Options	Description
P0 Fused Max Core Ration	**Info-only**	
P1 Fused Max Core Ration	**Info-only**	
P2 Fused Max Core Ration	**Info-only**	
P3 Fused Max Core Ration	**Info-only**	
Boot performance mode	Max Battery **Max Non-Turbo Performance** Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.
Intel® SpeedStep™	Disabled **Enabled**	Allows more than two frequency ranges to be supported.
Race to Halt(RTH)	Disabled **Enabled**	Enable/Disable Race To Halt feature. RTH will dynamically increase CPU frequency in order to enter pkg C-state faster to reduce overall power. (RTH is controlled through MSR 1FV bit 20)
Intel® Speed Shift Technology	Disabled **Enabled**	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPCv2 interface to allow for hardware controlled P-states.
HwP Atuonomous EPP Grouping	Disabled **Enabled**	Enable EPP grouping (default Bit 29=0, command x11) Autonomous will request the same values for all cores with same EPP. Disable EPP grouping (Bit 29 = 1, command 0x11) autonomous will not necessarily request same values for all cores with same EPP.
EPB override over PECI	**Disabled** Enabled	Enable/Disable EPB override over PECI. Enable by sending pcode command 0x2b, subcommand 0x3 to 1. This will allow OOB EPB PECI override control.
HwP Fast MSR Support	Disabled **Enabled**	Enable/Disable HwP Fast MSR Support for IA32_HWP_REQUEST MSR.
HDC Control	Disabled **Enabled**	This option allows HDC configuration. Disabled: Disable HDC Enabled: Can be enabled by OS if OS native support is available.
Turbo Mode	Disabled **Enabled**	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
>View/Configure Turbo Options	**Submenu**	
> CPU VR settings	**Submenu**	
Platform PL1 Enable	**Disabled** Enabled	Enable/Disable Platform Power Limit 1 programming. If this option is enabled, it activates the PL1 value to be used by the processor to limit the average power of given time window.

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Platform PL2 Enable	**Disabled** Enabled	Enable/Disable Platform Power Limit 2 programming. If this option is disabled, BIOS will program the default values for Platform Power Limit 2.
Power Limit 4 Override	**Disabled** Enabled	Enable/Disable Power Limit 4 override. If this option is disabled, BIOS will leave the default values for Power Limit 4.
C states	Disabled **Enabled**	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled **Enabled**	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State
C-State Auto Demotion	Disabled **C1**	Configure C-State Auto Demotion
C-state Un-demotion	Disabled **C1**	Configure C-State Un-demotion
Package C-state Demotion	Disabled **Enabled**	Package C-State Demotion
Package C-state Un-demotion	Disabled **Enabled**	Package C-State Un-demotion
CState Pre-Wake	Disabled **Enabled**	Disable – Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the Cstate Pre-Wake
IO MWAIT Redirection	**Disabled** Enabled	When set, will map IO_read instructions sent to IO refisters PMG_IO_BASE_ADDRBASE+offset to MWAIT(offset)
Package C State Limit	C0/C1 C2 C3 C6 C7 C7S C8 C9 C10 Cpu Default **Auto**	Maximum Package C state Limit Setting. Cpu Default: Leaves to Factory default value. Auto: Initializes to deepest available package C State Limit.
C6/C7 Short Latency Control(MSR 0x60B)	**Info-only**	
Time Unit	1 ns 32 ns **1024 ns** 32768 ns 1048576 ns 33554432 ns	Unit of measurement for IRTL value – bits [12:10]
Latency	**0**	Interrupt Response Time Limit value – bits [9:0], Enter 0-1023

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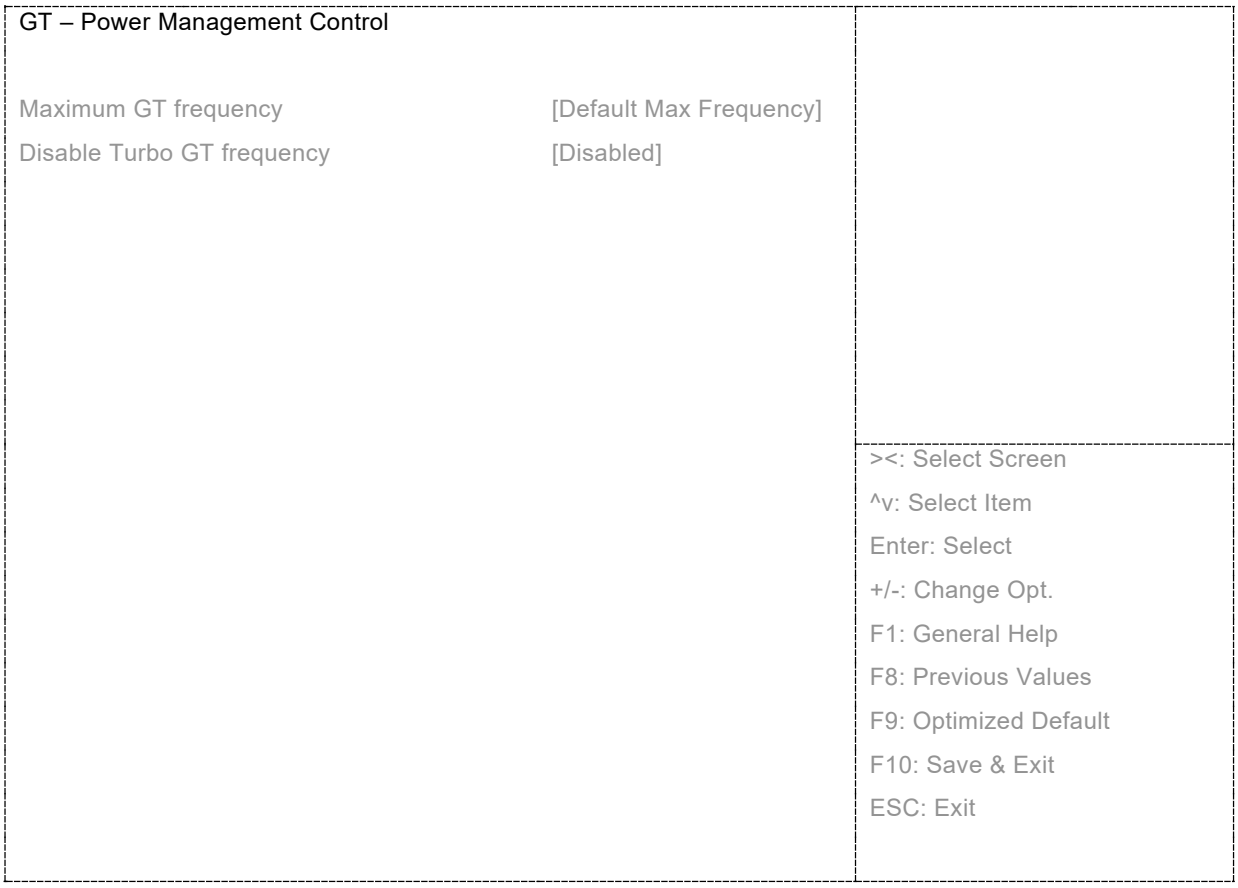
C6/C7 Short Latency Control(MSR 0x60C)	**Info-only**	
Time Unit	1 ns 32 ns **1024 ns** 32768 ns 1048576 ns 33554432 ns	Unit of measurement for IRTL value – bits [12:10]
Latency	**0**	Interrupt Response Time Limit value – bits [9:0], Enter 0-1023
C8 Short Latency Control(MSR 0x633)	**Info-only**	
Time Unit	1 ns 32 ns **1024 ns** 32768 ns 1048576 ns 33554432 ns	Unit of measurement for IRTL value – bits [12:10]
Latency	**0**	Interrupt Response Time Limit value – bits [9:0], Enter 0-1023
C9 Short Latency Control(MSR 0x634)	**Info-only**	
Time Unit	1 ns 32 ns **1024 ns** 32768 ns 1048576 ns 33554432 ns	Unit of measurement for IRTL value – bits [12:10]
Latency	**0**	Interrupt Response Time Limit value – bits [9:0], Enter 0-1023
C10 Short Latency Control(MSR 0x635)	**Info-only**	
Time Unit	1 ns 32 ns **1024 ns** 32768 ns 1048576 ns 33554432 ns	Unit of measurement for IRTL value – bits [12:10]
Latency	**0**	Interrupt Response Time Limit value – bits [9:0], Enter 0-1023
Thermal Monitor	Disabled **Enabled**	Enable/Disable Thermal Monitor
Interrupt Redirection Mode Selection	**Fixed Priority** Round robin Hash Vector No Change	Interrupt Redirection Mode Select for Logical Interrupts

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Timed MWAIT	**Disabled** Enabled	Enable/Disable Timed MWAIT Support
> Custom P-state Table	**Submenu**	
EC Turbo Control Mode	**Disabled** Enabled	Enable/Disable EC Turbo Control mode
Energy Performance Gain	**Disabled** Enabled	Enable/Disable Energy Performance Gain.
EPG DIMM Idd3N	**Info-only**	
EPG DIMM Idd3P	**Info-only**	
> Power Limit 3 Settings	**Info-only**	
> CPU Lock Configuration	**Submenu**	

7.3.2.2 Power & Performance > GT – Power Management Control

Advanced



BIOS Item	Options	Description
Maximum GT frequency	**Default Max Frequency** 100Mhz 150Mhz ……. 1150Mhz 1200Mhz	Maximum GT frequency limited by the user. Choose between 200Mhz (RPN) and 750Mhz (RP0). Value beyond the range will be clipped to min/max supported by SKU.

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Disable Turbo GT frequency	Enabled **Disabled**	Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited.

7.3.3 AMI Graphic Output Protocol Policy

Advanced

Intel® Graphics Controller Intel® GOP Driver [18.0.1031] Output Select [DP1[ACTIVE]]	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Intel® Graphics Controller	**Info-only**	
Output Select	**[DP1[ACTIVE]]**	Output Interface

7.3.4 Power Management

Advanced

Power Management Enable ACPI Auto Configuration [Disabled] > Power Consumption	><: Select Screen

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	^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Enable ACPI Auto Configuration	**Disabled** Enabled	Enable/disable BIOS ACPI auto configuration function.
Power Consumption	**Submenu**	

7.3.4.1 Power Management > Power Consumption

Advanced

Power Consumption		
Current Input Current	XXX	
Current Input Power	XXX	
RTC	XXX	
5VSB	XXX	
VIN	XXX	
3.3V	XXX	
VMEM	XXX	
3.3VSB	XXX	
VCORE	XXX	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

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BIOS Item	Options	Description
Power Consumption	**Info-only**	Indicate this is the page to show power consumption on system.
Current Input Current	**Read only**	Display current input current.
Current Input Power	**Read only**	Display current input power.
RTC	**Read only**	Display RTC voltage.
5VSB	**Read only**	Display 5VSB voltage.
VIN	**Read only**	Display VIN voltage.
3.3V	**Read only**	Display 3.3V voltage.
VMEM	**Read only**	Display VMEM voltage.
3.3VSB	**Read only**	Display 3.3VSB voltage.
VCORE	**Read only**	Display VCORE voltage.

7.3.5 System Management

Advanced

System Management	
SEMA Firmware Version ADLINK XXX	
> Flags	
SEMA Supported Features	
Uptime & Power Cycles Counter	
System Restart Event	
4096 Bytes User-Flash	
Runtime Watchdog	
Temperatures	
Voltage Monitor	
Power-UP Watchdog	
Power Monitor (Current Sense)	><: Select Screen
Dual-BIOS	^v: Select Item
I2C Bus 1	Enter: Select
I2C Bus 2	+/-: Change Opt.
I2C Bus 3	F1: General Help
ACPI Thermal Trigger	F8: Previous Values
Other BMC	F9: Optimized Default
Error Log	F10: Save & Exit
Wake-By-BMC	ESC: Exit
Parameter Memory	

BIOS Item	Options	Description
System Management	**Info-only**	

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SEMA Firmware Version	**Info-only**	Display EC version
Flags	**Submenu**	
SEMA Supported Features	**Info-only**	SEMA provides many features for selection. Following reported feature is to indicate that the feature is implemented on system
Uptime & Power Cycles Counter	**Info-only**	If this item is shown, it means SEMA supports “Uptime & Power Cycles counter”.
System Restart Event	**Info-only**	If this item is shown, it means SEMA supports “System Reset Event”.
4096 Bytes User-Flash	**Info-only**	If this item is shown, it means SEMA supports “4096 Bytes User-Flash”.
Runtime Watchdog	**Info-only**	If this item is shown, it means SEMA supports “Runtime Watchdog”.
Temperatures	**Info-only**	If this item is shown, it means SEMA supports “Temperature”.
Voltage Monitor	**Info-only**	If this item is shown, it means SEMA supports “Voltage Monitor”.
Power-UP Watchdog	**Info-only**	If this item is shown, it means SEMA supports “Power-up Watchdog”.
Power Monitor (Current Sense)	**Info-only**	If this item is shown, it means SEMA supports “Power Monitor (current sense)”.
Dual-BIOS	**Info-only**	If this item is shown, it means SEMA supports “Dual-BIOS”.
I2C Bus 1	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 1”.
I2C Bus 2	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 2”.
I2C Bus 3	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 3”.
ACPI Thermal Trigger	**Info-only**	If this item is shown, it means SEMA supports “ACPI Thermal Trigger”.
Power-up to Last State	**Info-only**	If this item is shown, it means SEMA supports “Power-up to last state”.
Other BMC	**Info-only**	If this item is shown, it means SEMA supports “Other BMC”.
Error Log	**Info-only**	If this item is shown, it means SEMA supports “Error Log”.
Wake-by-BMC	**Info-only**	If this item is shown, it means SEMA supports “Wake-by-BMC”.
Parameter Memory	**Info-only**	If this item is shown, it means SEMA supports “Parameter Memory”.

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7.3.5.1 System Management > SEMA Features

Advanced

SEMA Supported Features	
Uptime & Power Cycles Counter	
System Restart Event	
512 Bytes User-Flash/1024 Bytes User-Flash	
Watchdog	
Temperatures	
Voltage Monitor	
Storage of failure reason	
Bootloader timeout programmable	
Display Backlight control	
Power-Up Watchdog	
Power monitor (current sense)	
Boot Counter	
5V Input-Voltage / 12V Input-Voltage / 3V Input-Voltage	><: Select Screen
8mR Rsense for Input-Voltage/4mR Rsense for Input-Voltage	^v: Select Item
Dual-BIOS	Enter: Select
I2C bus 1	+/-: Change Opt.
I2C bus 2	F1: General Help
Programmable CPU fan	F8: Previous Values
Programmable System fan	F9: Optimized Default
AT/ATX mode	F10: Save & Exit
ACPI Thermal Trigger	ESC: Exit
Power-Up to last state	
Backlight restore	
DTS register available	
DTS offset registers programmable	

BIOS Item	Options	Description
SEMA Supported Features	**Info-only**	SEMA provides many features for selection. Following reported feature is to indicate that the feature is implemented on system.
Uptime & Power Cycles Counter	**Info-only**	If this item is shown, it means SEMA supports “Uptime & Power Cycles counter”.
System Reset Event	**Info-only**	If this item is shown, it means SEMA supports “System Reset Event”.
User-Flash size	**Info-only**	It will show 512 bytes or 1024 bytes depends on the design.
Watchdog	**Info-only**	If this item is shown, it means SEMA supports “Watchdog”.
Temperatures	**Info-only**	If this item is shown, it means SEMA supports “Temperature”.
Voltage Monitor	**Info-only**	If this item is shown, it means SEMA supports “Voltage Monitor”.

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Storage of failure reason	**Info-only**	If this item is shown, it means SEMA supports “Storage of failure reason”.
Bootloader timeout programmable	**Info-only**	If this item is shown, it means SEMA supports “Bootloader timeout programmable”.
Display Backlight control	**Info-only**	If this item is shown, it means SEMA supports “Display Backlight control”.
Power-up Watchdog	**Info-only**	If this item is shown, it means SEMA supports “Power-up Watchdog”.
Power Monitor (current sense)	**Info-only**	If this item is shown, it means SEMA supports “Power Monitor (current sense)”.
Boot Counter	**Info-only**	If this item is shown, it means SEMA supports “Boot Counter”.
Input Voltage	**Info-only**	It will show 5V, 12V or 3V depends on the design.
Rsense of Power Monitor	**Info-only**	It will show 8mR or 4mR depends on the design.
Dual BIOS	**Info-only**	If this item is shown, it means SEMA supports “dual BIOS”.
I2C bus 1	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 1”.
I2C bus 2	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 2”.
AT/ATX mode	**Info-only**	If this item is shown, it means SEMA supports “AT/ATX mode”.
ACPI Thermal Trigger	**Info-only**	If this item is shown, it means SEMA supports “ACPI Thermal Trigger”.
Power-up to last state	**Info-only**	If this item is shown, it means SEMA supports “Power-up to last state”.
Backlight restore	**Info-only**	If this item is shown, it means SEMA supports “Backlight restore”.
DTS register	**Info-only**	If this item is shown, it means SEMA supports “DTS register”.
DTS offset registers	**Info-only**	If this item is shown, it means SEMA supports “DTS offset registers”.
GPIO	**Info-only**	If this item is shown, it means SEMA supports “GPIO”.
I2C bus 3	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 3”.
I2C bus 4	**Info-only**	If this item is shown, it means SEMA supports “I2C bus 4”.

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7.3.5.2 System Management > Flags

Advanced

Flags		
BMC Flags	0x00	
BIOS Select	Standard BIOS	
ATX/AT-Mode	AT Mode	
		><: Select Screen
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Flags	**Info-only**	
Flags	**Read only**	Show current BMC settings.
BIOS Select	**Read only**	Display current boot BIOS ROM chip.
ATX/AT-Mode	**Read only**	Display current power mode setting, AT or ATX mode.

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7.3.6 Thermal Management

Advanced

Temperature and Fan Speed		
Critical Trip Point	[Disabled]	
Passive Cooling Trip Point	[Disabled]	
Active Cooling Trip Point	[Refer to BMC]	
Watch ACPI Event Shutdown	[Disabled]	
> Temperatures and Fan Speed		
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Thermal Management	**Info-only**	
Critical Trip Point	**Disabled** 80 C 90 C 95 C	This value is the temperature threshold of the critical trip point.
Passive Cooling Trip Point	**Disabled** 70 C 80 C 90 C	This value is the temperature threshold of the passive cooling trip point.
Active Cooling Trip Point	40 C 50 C 60 C 70 C **Refer to BMC**	This value is the temperature threshold of the active cooling trip point.
Watch ACPI Event Shutdown	**Disabled** Enabled	Watchdog ACPI Event Shutdown Enabled/Disabled
Temperatures and Fan Speed	**Submenu**	Temperatures and Fan Speed

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7.3.6.1 Submenu: Thermal Management > Temperatures and Fan Speed

Advanced

Smart Fan		
CPU Temperature		
Current	37C	
Startup	35C	
Min	24C	
Max	61C	
Board Temperatures		
Current	30C	
Startup	22C	
Min	22C	
Max	46C	
CPU Fan Speed	0RPM	><: Select Screen
		^v: Select Item
> Smart Fan		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Temperatures and Fan Speed	**Info-only**	
CPU Temperatures	**Info-only**	
Current	**Read only**	Show current CPU temperature gotten from sensor.
Startup	**Read only**	Show the CPU temperature at system power up.
Min	**Read only**	Show the minimum CPU temperature after system boot.
Max	**Read only**	Show the maximum CPU temperature after system boot.
Board Temperatures	**Info-only**	
Current	**Read only**	Show current board temperature gotten from sensor.
Startup	**Read only**	Show the board temperature at system power up.
Min	**Read only**	Show the minimum board temperature after system boot.
Max	**Read only**	Show the maximum board temperature after system boot.
CPU Fan Speed	**Read only**	Show CPU fan operating speed (RPM).

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Smart Fan	**Submenu**	

7.3.7 Watchdog Timer

Advanced

Watchdog Timer Power-Up Watchdog [Disabled] ATTENTION: Pressing F12 during start up disables the Power Up Watchdog. Runtime Watchdog [Disabled]	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Watchdog Timer	**Info-only**	
Power-Up Watchdog	Enabled **Disabled**	The Power-Up Watchdog resets the system after a certain amount of time after power-up. Pressing F12 key during startup will disable the power-up watchdog timer.
RunTime Watchdog	Enabled **Disabled**	The RunTime Watchdog resets the system after a certain amount of time after power up.

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7.3.8 Super IO Configuration

Advanced

Super IO Configuration > Nct6126dSec Super IO Configuration	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

7.3.8.1 Super IO Configuration > Nct6126dSec Super IO Configuration

Advanced

Nct6126dSec Super IO Configuration Super IO Chip Nct6126dSec > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration	
	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

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7.3.8.1.1 Super IO Configuration > Nct6126dSec Super IO Configuration > Serial Port 1 Configuration

Advanced

Serial Port 1 Configuration		
Serial Port 1	[Enabled]	><: Select Screen
Device Settings	IO=240h; IRQ=4;	^v: Select Item
Change Settings	[Auto]	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Serial Port 1	Disabled **Enabled**	Enable or disable serial port (COM).
Device Setting	**Info-only**	It will show current resource assignment of serial port (COM).
Change Settings	**Auto** IO=240;IRQ=4; IO=240;IRQ=3,4,5,6,7,10,11,12 IO=248;IRQ=3,4,5,6,7,10,11,12 IO=250;IRQ=3,4,5,6,7,10,11,12 IO=258;IRQ=3,4,5,6,7,10,11,12	Select an optimal setting for Super IO device.

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7.3.8.1.2 Super IO Configuration > Nct6126dSec Super IO Configuration > Serial Port 2 Configuration

Advanced

Serial Port 2 Configuration		
Serial Port 2	[Enabled]	
Device Settings	IO=250h; IRQ=5;	
Change Settings	[Auto]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Serial Port 2	Disabled **Enabled**	Enable or disable serial port (COM).
Device Setting	**Info-only**	It will show current resource assignment of serial port (COM).
Change Settings	**Auto** IO=250;IRQ=5; IO=240;IRQ=3,4,5,6,7,10,11,12 IO=248;IRQ=3,4,5,6,7,10,11,12 IO=250;IRQ=3,4,5,6,7,10,11,12 IO=258;IRQ=3,4,5,6,7,10,11,12	Select an optimal setting for Super IO device.

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7.3.8.1.3 Super IO Configuration > Nct6126dSec Super IO Configuration > Serial Port 3 Configuration

Advanced

Serial Port 3 Configuration		
Serial Port 3	[Enabled]	><: Select Screen
Device Settings	IO=258h; IRQ=7;	^v: Select Item
Change Settings	[Auto]	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

BIOS Item	Options	Description
Serial Port 3	Disabled **Enabled**	Enable or disable serial port (COM).
Device Setting	**Info-only**	It will show current resource assignment of serial port (COM).
Change Settings	**Auto** IO=258;IRQ=7; IO=240;IRQ=3,4,5,6,7,10,11,12 IO=248;IRQ=3,4,5,6,7,10,11,12 IO=250;IRQ=3,4,5,6,7,10,11,12 IO=258;IRQ=3,4,5,6,7,10,11,12	Select an optimal setting for Super IO device.

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7.3.9 Miscellaneous

Advanced

Miscellaneous		
Power Supply Unit	[ATX Mode]	
I2C Speed Control	[100 Kbps]	
Smart Battery Function	[Disabled]	
SD Card/GPIO Mode	[GPIO]	
SMBUS Select	[From PCH]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Power Supply Unit	Emulate AT mode **ATX Mode**	Select Emulation AT or ATX function. If this option set to [Emulation AT], BIOS will report no suspend functions (S3 & S4) to ACPI OS. In windows XP, it will make OS show shutdown message during system shutdown. ATX: OS will turn off system power when shutdown.
I2C Speed Control	**100 Kbps** 400 Kbps	I2C Speed Control
Smart Battery Function	**Disabled** Enabled Auto	Enable/Disable Smart Battery function. Auto: disable Smart Battery function if charger IC not be detected.
SD Card/GPIO Mode	**GPIO** SD Card	Select SD Card or GPIO
SMBUS Select	**From PCH**	Select SMBUS Routine

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	From EC	

7.3.10 USB Configuration

Advanced

USB Configuration		
USB module version	25	
USB Controllers:		
1 XHCI		
USB Devices:		
1 Keyboard		
Legacy USB Support	[Enabled]	
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		
USB transfer time-out	[20 sec]	
Device reset time-out	[20 sec]	
Device power-up delay	[Auto]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
USB module version	**Info-only**	
USB Controllers	**Info-only**	
USB Devices	**Info-only**	
Legacy USB Support	**Enabled** Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	**Enabled** Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

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USB Mass Storage Driver Support	Disabled **Enabled**	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec **20 sec**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec **20 sec** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	**Auto** Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken form Hub descriptor.

7.3.11 Serial Console Redirection

Advanced

Serial Console Redirection		
COM0		
Console Redirection	[Enabled]	
> Console Redirection Settings		
COM1		
Console Redirection	[Disabled]	
> Console Redirection Settings		
COM2		
Console Redirection	[Disabled]	
> Console Redirection Settings		
COM3 (Disabled)		><: Select Screen
Console Redirection	Port is Disabled	^v: Select Item
> Console Redirection Settings		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

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BIOS Item	Options	Description
Console Redirection	**Disabled** Enabled	To enable or disable console redirection of COMx.
Console Redirection Settings	**Submenu**	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

7.3.11.1 Serial Console Redirection > Console Redirection Settings

Advanced

COMx		Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more
Console Redirection Settings		
Terminal Type	[ANSI]	
Bits per second	[115200]	
Data Bits	[8]	
Parity	[None]	
Stop Bits	[1]	
Flow Control	[None]	
VT-UTF8 Combo Key Support	[Enabled]	
Recorder Mode	[Disabled]	
Resolution 100x31	[Disabled]	
Putty KeyPad	[VT100]	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Terminal Type	**VT100** VT100+ VT-UTF8 ANSI	Configure the type of console emulation. Emulation: **ANSI:** Extended ASCII char set. **VT100:** ASCII char set. **VT100+:** Extends VT100 to support color, function keys, etc. **VT-UTF8:** Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	9600 19200 38400	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speed.

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	57600 **115200**	
Data Bits	7 **8**	Configure the number of data bits in each transmitted or received serial character for both serial ports.
Parity	**None** Even Odd	Configures if parity bit is generated (transmit data) or checked. A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	**1** 2	Configures the number of stop bits transmitted and received in each serial character for both serial ports. Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	**None** Hardware Software	Configures flow control for console redirection. Hardware flow control uses RTC/CTS. Software flow control uses XON/XOFF.
VT-UTF8 Combo Key Support	Disabled **Enabled**	Enable VT-UTF8 combination key support for ANSI/VT100 terminals.
Recorder Mode	**Disabled** Enabled	With this mode enabled only text will be sent. This is to capture terminal data.
Resolution 100x31	**Disabled** Enabled	Enables or disables extended terminal resolution.
Putty KeyPad	**VT100** LINUX XTERMR6 SCO ESCN VT400	Select Function Keys and Key Pad on Putty.

7.3.12 Network Stack Configuration

Advanced

Network Stack	[Disabled]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt.

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	F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
Network Stack	**Disabled** Enabled	Enable/Disable UEFI Network Stack

7.3.13 Function Switch Configuration

Advanced

VGA Switch Controller	[FRONT]	
LAN Switch Controller	[FRONT]	
SATA1 Switch Controller	[B2B1]	
SATA2 Switch Controller	[B2B2]	
COM1 Switch Controller	[RS232]	
COM2 Switch Controller	[RS232]	
COM3 Switch Controller	[RS232]	
		><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

BIOS Item	Options	Description
VGA Switch Controller	[RTM] **[FRONT]**	Select which VGA port to output the image.
LAN Switch Controller	**[FRONT]** [RTM]	Select which LAN port to use.
SATA1 Switch Controller	**[B2B]** [MSATA]	Select which function for SATA1 port.

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SATA2 Switch Controller	**[B2B]** [RTM]	Select which function for SATA2 port.
COM1 Switch Controller	**[RS232]** [RS485] [RS422]	Select which function for COM1 port.
COM2 Switch Controller	**[RS232]** [RS485] [RS422]	Select which function for COM2 port.
COM3 Switch Controller	**[RS232]** [RS485] [RS422]	Select which function for COM3 port.

7.3.14 Trusted Computing

Advanced

TPM 2.0 Device Found		
Firmware Version:	13.11	
Vendor:	IFX	
Security Device Support	[Enable]	
Active PCR banks	SHA256	
Available PCR banks	SHA256	
SHA256 PCR Bank	[Enabled]	
Pending operation	[None]	
Platform Hierarchy	[Enabled]	
Storage Hierarchy	[Enabled]	
Endorsement Hierarchy	[Enabled]	><: Select Screen
Physical Presence Spec Version	[1.3]	^v: Select Item
TPM 2.0 InterfaceType	[TIS]	Enter: Select
Device Select	[Auto]	+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

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

7.4 Security Menu

This menu contains the settings for security in the system.

Main Advanced Chipset **Security** Boot Save & Exit

Password Description

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

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	><: Select Screen
Administrator Password	^v: Select Item
User Password	Enter: Select
	+/-: Change Opt.
	F1: General Help
	F8: Previous Values
HDD Security Configuration	F9: Optimized Default
	F10: Save & Exit
> Secure Boot menu	ESC: Exit

BIOS Item	Options	Description
Administrator Password	**Enter to set password**	Configure/Clear Administrator Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
User Password	**Enter to set password**	Configure/Clear User Password. When pressing enter, a menu will be popped up for creating new password. When password installed, press enter without inputting password, it will clear password.
Secure Boot menu	**Submenu**	

When selecting a hard drive (HDD) to configure passwords, the BIOS will display a new setup page similar to the one shown below. The method of configuring an HDD password is the same as for BIOS passwords. Once a password is set, the status will be reflected on the screen, such as the change to ‘INSTALLED’ under ‘HDD User Pwd Status’.

If no HDD user password is installed, you can change the master password at any time without needing to confirm the previous password. However, once an HDD user password is installed, the master password can no longer be changed.

Security

HDD Password Description	
Allows Access to Set, Modify and Clear HardDisk User and Master Passwords. User Password need to be installed for Enabling Security. Master Password can be Modified only when successfully unlocked with Master Password in POST	
HDD PASSWORD CONFIGURATION	

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Security Supported	Yes	
Security Enabled	No	
Security Locked	No	
Security Frozen	No	><: Select Screen
HDD User Pwd Status	NOT INSTALLED	^v: Select Item
HDD Master Pwd Status	INSTALLED	Enter: Select
		+/-: Change Opt.
Set User Password		F1: General Help
Set Master Password		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

7.4.1 Secure Boot

Security

Secure Boot		
System Mode	User	
Secure Boot	[Disabled]	
	Not Active	
Secure Boot Control	[Standard]	
		><: Select Screen
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit
		ESC: Exit

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BIOS Item	Options	Description
System Mode	**Info-only**	
Secure Boot	**Disabled** Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in user mode. The mode change requires platform reset.
Secure Boot Control	**Standard** Custom	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

7.5 Boot Menu

This menu contains the settings for bootable devices in the system.

Main Advanced Chipset **Boot** Security Save & Exit

Boot Configuration		
Setup Prompt Timeout	1	
Bootup NumLock State	[On]	
Quiet Boot	[Enabled]	
Fast Boot	[Enabled]	
SATA Support	[Last Boot SATA Devices Only]	
NVMe Support	[Enabled]	
VGA Support	[EFI Driver]	
USB Support	[Full Initial]	
PS2 Devices Support	[Enabled]	
Network Stack Driver Support	[Disabled]	
Redirection Support	[Disabled]	
Boot Configuration		
Boot Option #1	[Hard Disk]	
Boot Option #2	[CD/DVD]	
Boot Option #3	[USB Hard Disk]	
Boot Option #4	[USB CD/DVD]	
Boot Option #5	[USB Key]	
Boot Option #6	[USB Floppy]	><: Select Screen
Boot Option #7	[USB Lan]	^v: Select Item
Boot Option #8	[Network]	Enter: Select
		+/-: Change Opt.
> Hard Disk Drive BBS Priorities		F1: General Help
> USB Key Drive BBS Priorities		F8: Previous Values
		F9: Optimized Default
		F10: Save & Exit

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ESC: Exit

BIOS Item	Options	Description
Setup Prompt Timeout	**1**	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	On **Off**	Select the keyboard NumLock state after system boot.
Quiet Boot	Disabled **Enabled**	**Enabled:** will show splash screen during POST. **Disabled:** will show boot message during POST.
Fast Boot	Disabled **Enabled**	Enable or disabled Fast boot feature. Most probes are skipped to reduce time cost during boot.
SATA Support	**Last Boot SATA Devices Only** All SATA Devices	If Last Boot SATA Devices Only, Only last boot SATA device will be available in Post. If All SATA Devices, All SATA devices will be available in OS and Post.
NVMe Support	Disabled **Enabled**	If Disabled, NVMe device will be skipped.
VGA Support	**Info-only**	
USB Support	Disabled **Full Initial** Partial Initial	If Disabled, all USB devices will NOT be available until after OS boot. If Partial Initial, USB Mass Storage and specific USB port/device will NOT be available before OS boot. If Enabled, all USB devices will be available in OS and Post.
PS2 Devices Suppot	Disabled **Enabled**	If Disabled, PS2 devices will be skipped.
Network Stack Driver Support	**Disabled** Enabled	If Disabled, Network Stack Driver will be skipped.
Redirection Support	**Disabled** Enabled	If disable, Redirection function will be disabled.
Boot Option #1~#11	Hard Disk NVMe UEFI AP:UEFI:Built-in EFI Shell CD/DVD SD USB Hard Disk USB CD/DVD USB Key USB Floppy UAB Lan Network	Set system boot order.

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7.6 Save & Exit Menu

Main Advanced Chipset Boot Security Save & Exit

Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Default Options Restore Defaults Save as User Defaults Restore User Defaults	Exit system setup after saving the changes.
Boot Override Launch EFI Shell from filesystem device	><: Select Screen ^v: Select Item Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Default F10: Save & Exit ESC: Exit

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BIOS Item	Options	Description
Save Changes and Exit	**Enter**	Save changed settings and exit BIOS setup utility.
Discard Changes and Exit	**Enter**	Skip changed setting and exit BIOS setup utility.
Save Changes and Reset	**Enter**	Save all changed settings and let system do reset to boot system.
Discard Changes and Reset	**Enter**	Discard all changed settings and let system do reset to boot system.
Save Changes	**Enter**	Save all changed settings.
Discard Changes	**Enter**	Discard changes done so far to any of the setup options.
Restore Default	**Enter**	Load the default made when BIOS was built.
Save as User Default	**Enter**	Save all changed done so far as User Defaults.
Restore User Default	**Enter**	Load the default that user save as user defaults.
Boot Override	**Info-only**	

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Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User‘s Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources.
  - Keep equipment away from high heat or high humidity.
  - Keep equipment properly ventilated (do not block or cover ventilation openings).
  - Make sure to use recommended voltage and power source settings.
  - Always install and operate equipment near an easily accessible electrical socket-outlet.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

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