Custom Embedded Solutions

Network Appliance

PL-80610

User's Manual

www.win-ent.com

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Version 1.0

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Contents

Chapter 1. General Information

1.1 Description

The PL-80610 is a 1U rackmounted hardware platform designed for network service applications.

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Supporting the next generation Intel® Atom™ Processor C2000 product family (formerly codenamed Rangeley) with 8/4/2 Cores; the new platform comes fully packed with Intel® AES New Instructions (Intel® AES-NI), Intel® Quick Assist Technology and Intel® Streaming SIMD Extension (Intel® SSE) for hardware accelerated data encryption and decryption.

The platform supports one DDR3/L 1333/1600MHz unbuffered ECC or non-ECC DIMM sockets up to 8GB of memory and offers powerful storage interface supporting 2.5"/3.5" SATA 3.0 6Gbps hard drives and CompactFlash™, thus granting the best network performance and maximum utilization. In order to enhance network security performance, the PL-80610 offers optional Intel Quick Assist technology that provides hardware level cryptographic acceleration, hence reallocating abundant CPU computing power for higher layer packet processing.

This platform offers 8 GbE to 14 GbE Ethernet ports via PCI-E on the front-panel. To prevent network problems during unexpected shut down, PL-80610 supports two segments of LAN bypass function through WDT and GPIO pin definitions. For local system management, maintenance and diagnostics; the front panel is equipped with dual USB 2.0 ports, one RJ-45 console port and LED indicators that monitor power and storage device activities. Additionally the PL-80610 supports one PCI-E x8 slot for add-on Ethernet module.

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1.2 Specifications

Processor System	CPU	Supports Intel® Atom C2000 processors, FCBGA (codenamed Rangeley)
	Chipset	Intel® Atom SOC
	BIOS	AMI® UEFI BIOS
Memory	Technology	un-buffered and ECC/Non-ECC DDR3/L 1333/1600MHz memory
	Capacity	Up to 8 GB
Expansion	Expansion Slots	one optional PCI-E socket (PCI-E x4 signal)
Ethernet	GbE Ethernet	8x RJ45 GbE ports, Intel i211 , PCI-E x1
	LAN bypass	2 pairs bypass
Storage	SATA HDD	One internal SATA connector and One 4-pin power connector for HDD
	Compact Flash Socket	one CompactFlash™ Type II
I/O	USB	Two external USB ports One internal 5x2 pin header
	Serial	One RJ45 Console port (COM1) One internal 5x2 pin header (COM2)
	PS/2 KB/Mouse	Yes, pinheader
Power Supply	Watt	60W power supply
Mechanical and Environment	Form Factor	1U Rackmount
	LED	Power LED HDD LED Bypass LED 8 pairs ACTIVE/Link LED
	Dimension (W x D x H)	432mm (W) x 270mm (D) x 44mm (H) (17" W x 10.6" D x 1.7" H)
	Operating Temperature	Operating: 0 ~ 40°C (32 ~ 104°F)
	Storage Temperature	-20 ~ 75°C (-4 ~ 167°F)

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	Humidity	10 ~ 85% relative humidity, non-operating, non-condensing
	Certifications	CE/FCC

1.3 Order Information

We offer some accessories for PL-80610 appliance for customer need.

PL-8061A	Desktop Intel® Atom C2558 Network System, DDR3, 8 RJ45 GbE, LAN bypass, SATA, CF
PL-8061B	Desktop Intel® Atom C2518 Network System, DDR3, 6 RJ45 GbE, LAN bypass, SATA, CF, PCI-E socket
PL-8061C	Desktop Intel® Atom C2358 Network System, DDR3, 8 RJ45 GbE, LAN bypass, SATA, CF
DK002	Cable development kit: **CB** -CO5204-00 Cross over 2M CB -DB9200-01 Null modem cable 2M CB -EC5200-00 Ethernet cat.5 cable 2M CB -IPS200-00 KBMS cable, 15CM CB -IUSB2B-00 USB cable, 25CM CB -IVGA01-00 VGA cable, 20CM CB -RJDB91-00 RJ-45 to DB-9 cable 2M

1.4 Packaging

Please make sure that the following items have been included in the package before installation.

1. PL-80610 Appliance
2. Quick Installation Guide (Optional)
3. Cables (Optional)

If any item of above is missing or damaged, please contact your dealer or retailer from whom you purchased the PL-80610. Keep the box and carton for possible shipment or storage of the PL-80610 in near future. After you unpack the goods, inspect and make sure the packaging is intact. Do not plug the power adapter to the appliance of PL-80610 if it is perceived to be damaged.

Note: Keep the PL-80610 in the original packaging until you start installation.

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1.5 Precautions

Please make sure you properly ground yourself before handling the PL-80610 appliance or other system components. Electrostatic discharge can be easily damage the PL-80610 appliance.

Do not remove the anti-static packing until you are ready to install the PL-80610 appliance.

Ground yourself before removing any system component from it protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

Handle the PL-80610 appliance by its edges and avoid touching the components on it.

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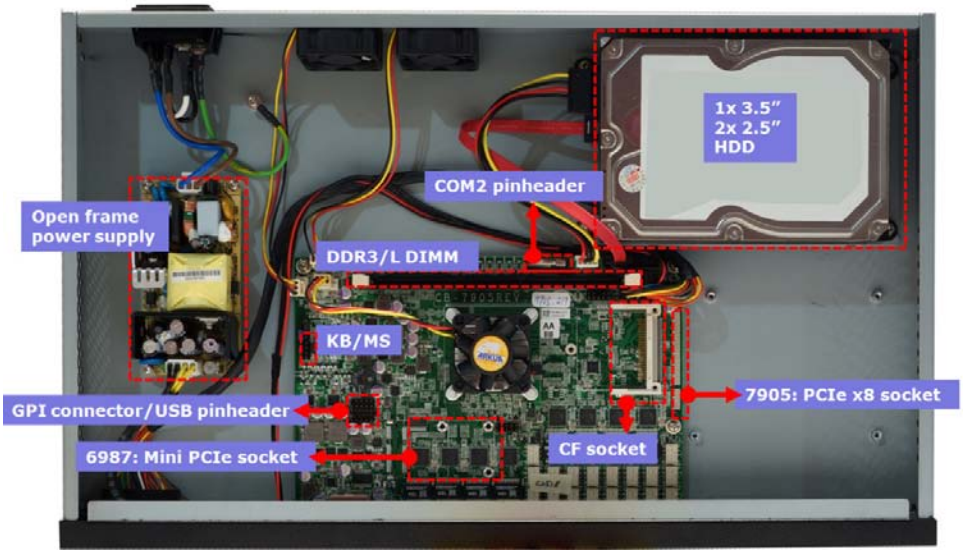
1.6 System Layout

PL-80610 Front Side Layout

PL-80610 Rear Side Layout



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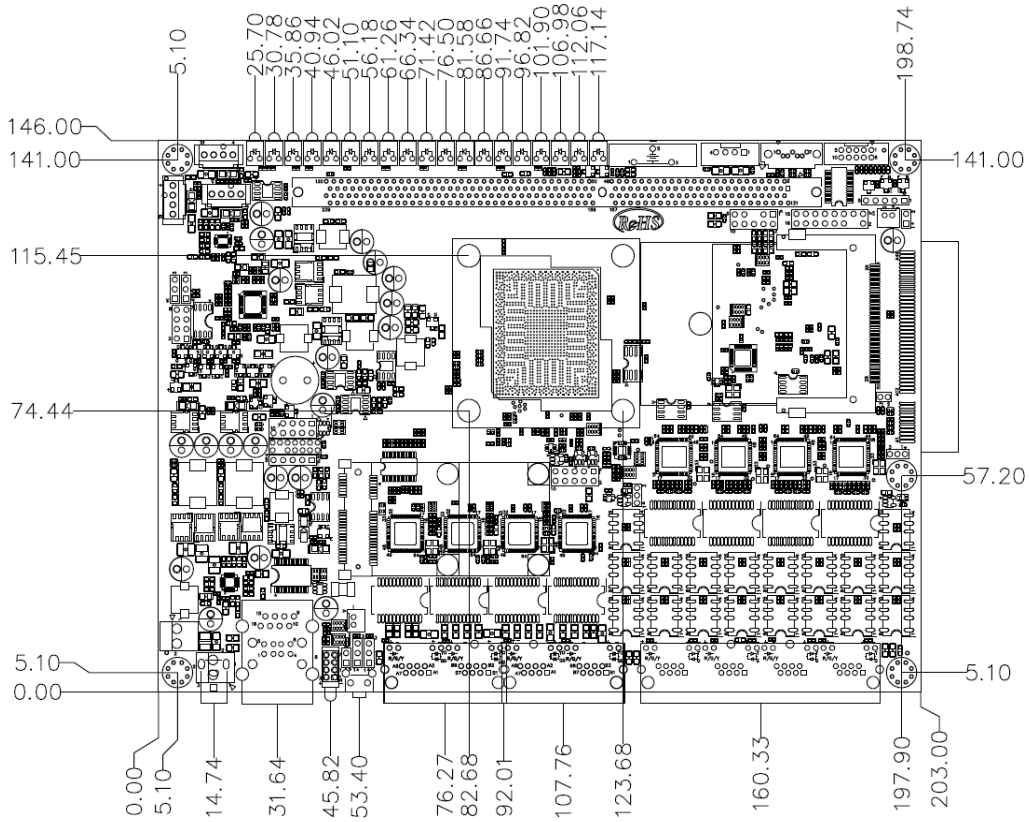
1.7 Board Dimensions



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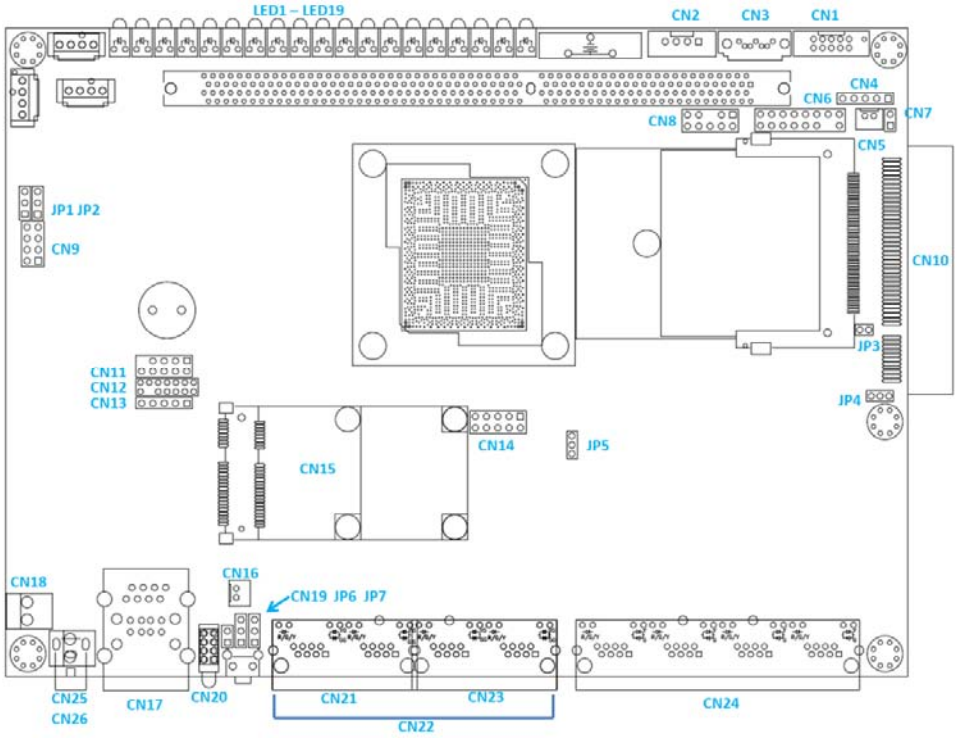
Chapter 2. Connector/Jumper Configuration

2.1 Connector/Jumper Location and Definition



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MB-80610 Connector and Jumper:

Connector List			
Connector	**Description**	**Connector**	**Description**
CN1	COM2 Connector	JP1	Clear CMOS
CN2	SATA Power connector	JP2	DDR 1.5V 1.35V select
CN3	SATA Connector	JP3	External 5V for PCIE slot
CN4	Keypad connector	JP4	LAN3 & LAN4 bypass select
CN6	LCM connector	JP5	LAN1 & LAN2 bypass select
CN7	Power on/off GPIO Connector	JP6	GPI or reset select
CN8	KB/MS Connector	JP7	WDT & LAN bypass select
CN9	SPI Connector		
CN10	PCI-E x8 Slot (OPTIONAL)		
CN11	USB Connector (Header)		
CN12	LPC Connector		
CN13	GPI connector		
CN15	Mini-PCIE Connector (For CB-6987)		
CN19	Reset Connector		
CN21/CN22	LAN1, LAN2 Connector		
CN23/CN22	LAN3, LAN4 Connector		
CN24	LAN5~LAN8 Connector		
CN25	2-pin Power Connector		
CN26	DC Jack		

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2.2 Connector and Jumper Settings

CN1: COM2 connector

Pin	Signal
1	DCD#
2	RXD#
3	TXD#
4	DTR#
5	Ground
6	DSR#
7	RTS#
8	CTS#
9	RI#2
10	N/A

CN2: SATA Power

Pin	Signal
1	+12V
2	GND
3	GND
4	+5V

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CN7: SATA Connector

Pin	Signal
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

CN7: GPIO Connector

Pin	Define	Pin	Define
1	3.3V	2	GND
3	GPIO30	4	GPIO31
5	GPIO32	6	GPIO33
7	GPIO34	8	GPIO35
9	GPIO36	10	GPIO37

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CN6: KB/MS Pin Headers

Pin	Define	Pin	Defined
1	KCLK	2	MCLK
3	KDAT	4	MDAT
5	N/A	6	N/A
7	PS2_GND	8	PS2_GND
9	PS2_VCC	10	PS2_VCC

CN11: USB Connector

Pin	Define	Pin	Defined
1	+3.3V	2	AD0
3	AD1+	4	AD2
5	AD3	6	Frame#
7	PCIRST#	8	+5V
9	CLOCK	10	N/A
11	GND	12	GND

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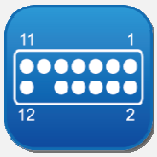
CN12: LPC Connector



Pin	Define	Pin	Defined
1	+3.3V	2	AD0
3	AD1+	4	AD2
5	AD3	6	Frame#
7	PCIRST#	8	+5V
9	CLOCK	10	N/A
11	GND	12	GND

CN13: GPI Connector

Pin	Define	Pin	Defined
1	GPI0	2	GPI1
3	GPI2	4	GPI3
5	GND		

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CN15: Mini-PCIE Connector

Pin	Define	Pin	Defined
1	WAKE#	2	3.3V
3	Reserved	4	GND
5	Reserved	6	1.5V
7	CLKREQ#	8	Reserved
9	GND	10	Reserved
11	REFCLK-	12	Reserved
13	REFCLK+	14	Reserved
15	GND	16	Reserved
17	Reserved	18	GND
19	Reserved	20	Reserved
21	GND	22	PERST#
23	PERN0	24	+3.3VAUX
25	PERP0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETN0	32	SMB_DATA
33	PETP0	34	GND
35	GND	36	USB_D-
37	Reserved	38	USB_D+
39	Reserved	40	GND
41	Reserved	42	LED_WWAN#
43	Reserved	44	LED_WLAN#
45	Reserved	46	LED_WPAN#
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3V

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CN17: USB + RJ45 Connector

Pin	Define	Pin	Defined
1	+5V	2	DATA0-
3	DATA0+	4	GND
5	+5V	6	DATA1-
7	DATA1+	8	GND

RJ45 (Console COM1)	
Pin	**Defined**
1	CTS#
2	DTR#
3	TXD#
4	GND
5	GND
6	RXD#
7	DSR#
8	RTS#

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CN19: Reset Connector

Pin	Defined
1	Ground
2	Reset#

CN21~CN24: LAN1 ~ LAN8 Connector

Pin	Defined
1	MDI0+
2	MDI0-
3	MDI1+
4	MDI2-
5	MDI2-
6	MDI1-
7	MDI3+
8	MDI3-

D2:	Link/Activity LED
Link	Green
Activity	Blinking
D1:	**Bi-Color Speed LED**
10Mbps	Off
100Mbps	Green

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1000Mbps	Yellow

CN25: 2-Pin Power Connector

Pin	Define	Pin	Defined
1	+12V	2	GND

CN26: DC Jack

Pin	Define	Pin	Defined
1	+12V	2	GND

Jumper Setting

JP1: Clear CMOS

Pin	Setting

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	1-2	Normal Operation (Default)
	2-3	Clear CMOS

Jumper Setting

JP2: DDR power select (1.5V/1.35V)

Pin		Setting
	1-2	DDR Power 1.5V (Default)
	2-3	DDR Power 1.35V

Jumper Setting

JP4: LAN3 & LAN4 Bypass

Pin	Setting

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	1-2	Bypass mode
	2-3	Disable mode (Default)

Jumper Setting

JP5: LAN1 & LAN2 Bypass

Pin		Setting
	1-2	Bypass mode
	2-3	Disable mode (Default)

Jumper Setting

JP6: GPI or Reset select

Pin	Setting

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	1-2	GPI Input
	2-3	Reset (Default)

Jumper Setting

JP7: WDT & LAN bypass select

Pin		Setting
	1-2	WDT (Default)
	2-3	LAN bypass

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2.3 CompactFlash™ Card Socket Pin Definitions

CompactFlash™ card is a small removable mass storage device. It can provide complete PCMCIA-ATA functionality and compatibility plus True IDE functionality compatible with ATA/ATAPI-4.

CompactFlash™ storage products are solid state form factor, it means they contain no moving parts. Thus, it provides users with much greater protection of the data than conventional magnetic disk device.

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Ground	11	Ground	21	D00	31	D15	41	RESET
2	D03	12	Ground	22	D01	32	CS	42	ORDY
3	D04	13	VCC	23	D02	33	NC	43	DREG
4	D05	14	Ground	24	WP	34	IOR	44	DACK
5	D06	15	Ground	25	NC	35	IOW	45	LED
6	D07	16	Ground	26	NC	36	WE	46	BVD
7	CS	17	Ground	27	D11	37	RDY/BSY	47	D08
8	Ground	18	A02	28	D12	38	VCC	48	D09
9	Ground	19	A01	29	D13	39	SCSE	49	D10
10	Ground	20	A00	30	D14	40	NC	50	Ground

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Chapter 3. BIOS Setup

The ROM chip of your PL-80610 board is configured with a customized Basic Input/Output System (BIOS) from AMI BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of the programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that checks the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required. CMOS RAM stores information for:

- Date and time
- Memory capacity of the appliance
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by a battery installed on the PL-80610 board. By using the battery, all memory in CMOS can be retained when the system power is switched off. The system BIOS also supports an easy way to reload the CMOS data when you replace the battery or when the battery power is lost.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Exit" ➔ "Load Optimal Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Main" & "Advanced" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.

In the main menu, press F10 ("Save Changes and Exit") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

Use the CMOS Setup program to modify the system parameters to reflect the options installed in

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your system and to customize your system. For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the AMI Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

Enter the CMOS Setup program's main menu as follows:

1. Turn on or reboot the system. After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program. The main menu appears:

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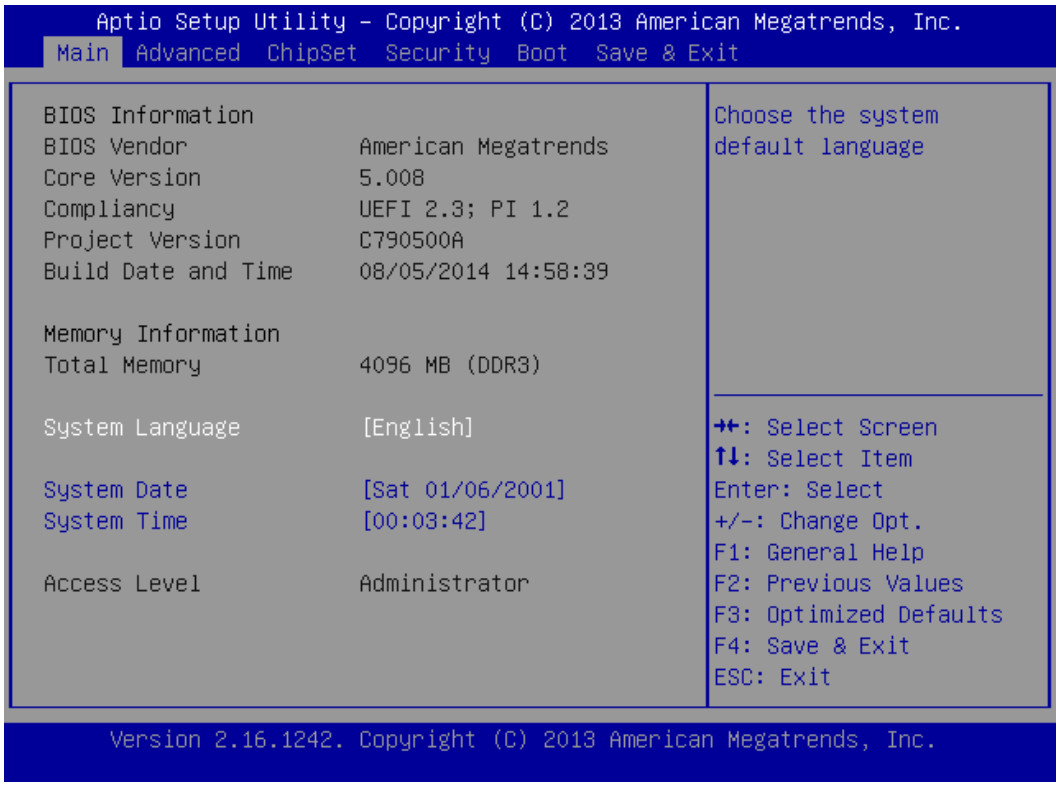

3. Select a setup option using the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

AMI BIOS: Displays the auto-detected BIOS information.

Processor: Displays the auto-detected CPU specification.

System Memory: Displays the auto-detected system memory.

SystemTime: [hour:min:sec]:
This item allows you to set the system time.

System Date [Day mm/dd/yyyy]:
This item allows you to set the system date.

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In the main menu, press F10 ("Save Changes and Exit") to save your changes and reboot the system. Choosing "Discard Changes and Exit" ignores your changes and exits the program. Pressing <ESC> anywhere in the program returns you to the main menu.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following and the following sections of this chapter.

Main: For changing the basic system configurations.

Advanced: For changing the advanced system settings.

Chipset: For changing the chipset settings.

Boot: For changing the system boot configurations.

Security: Use this menu to set User and Supervisor Passwords.

Save & Exit: For selecting the exit options and loading default settings.

3.4 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

Use the Advanced Setup option as follows:

1. Choose "Advanced" from the main menu. The following screen appears:

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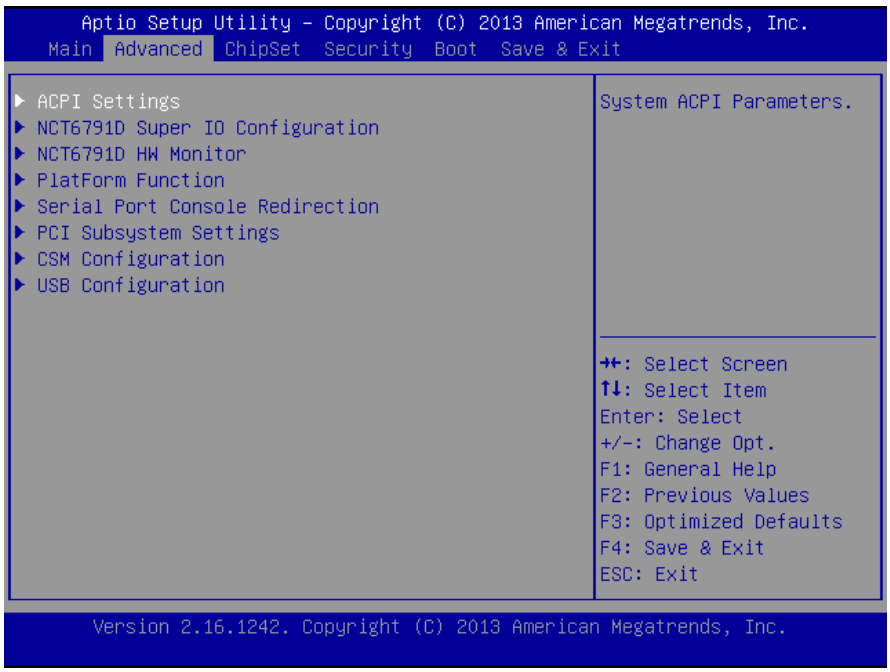
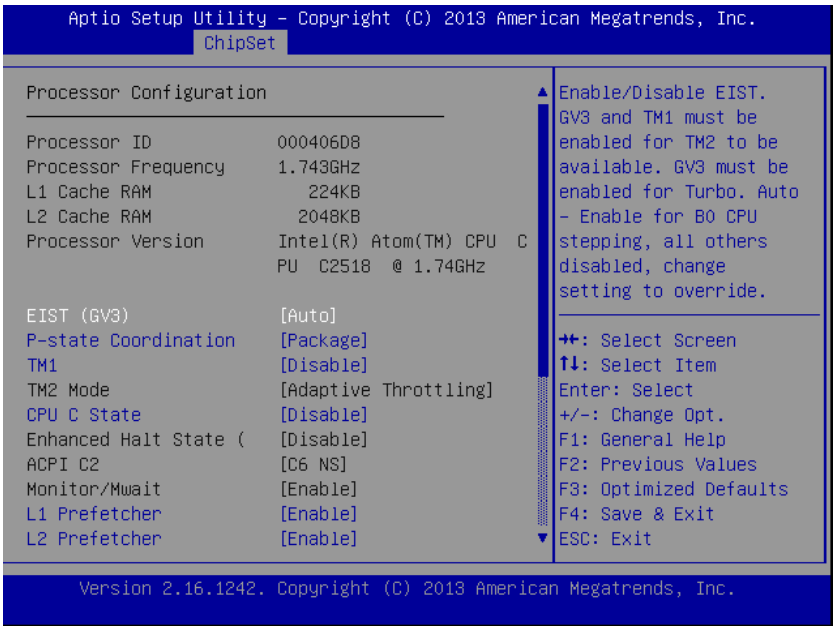


2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDN/+/- keys. Some fields let you enter numeric values directly.

3. After you have finished with the Advanced setup, press the <ESC> key to return to the main menu.

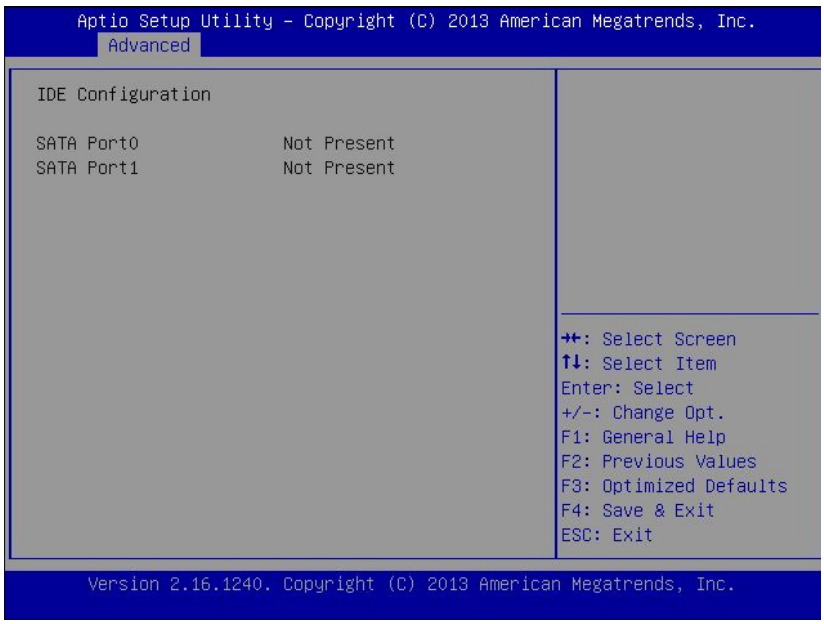
3.4.1 CPU Configuration

This sub menu shows the CPU-related information which is automatically detected by BIOS.



3.4.2 IDE Configuration

This sub-menu allow you to set or change the configurations for the IDE devices installed in the system.



3.4.3 USB Configuration

This sub-menu allows you to change the USB-related features.

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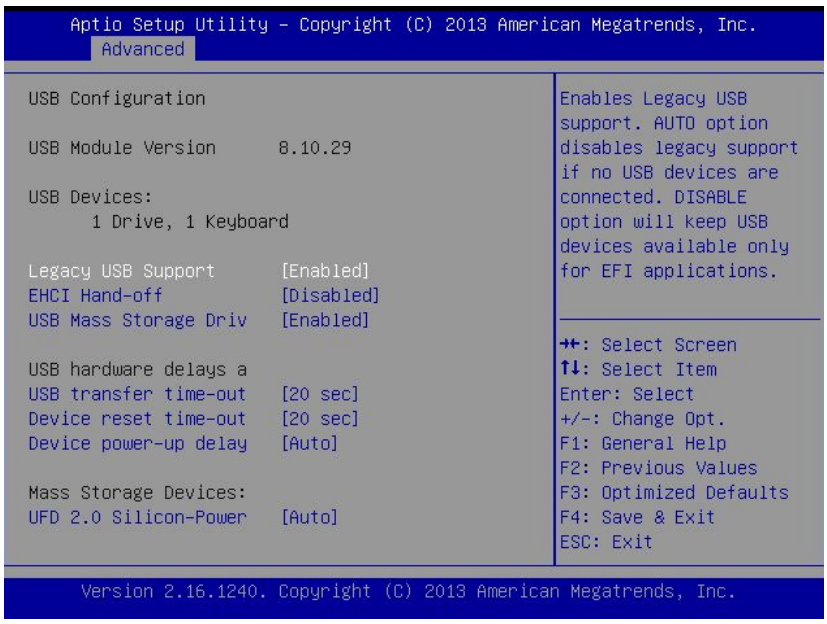
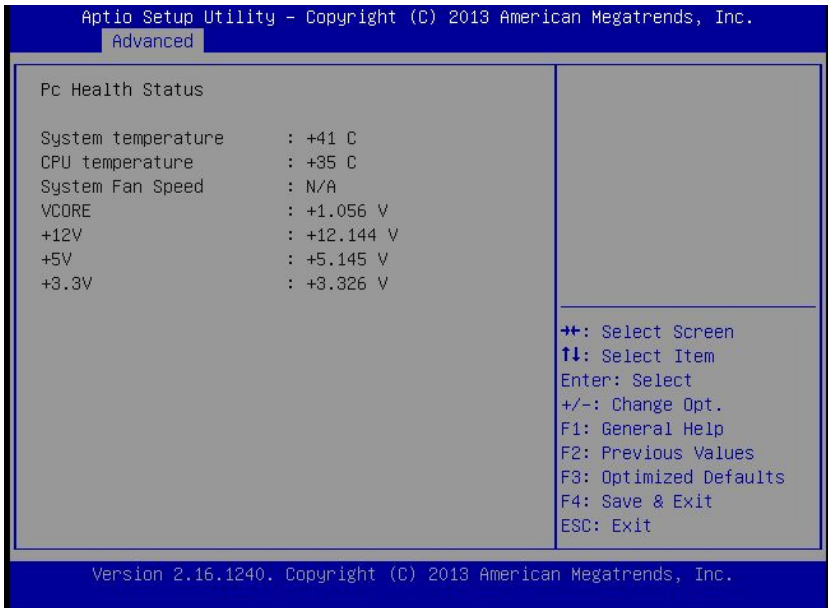


3.4.4 Hardware Health Configuration

This screen shows you the CPU core voltage, System voltage, System temperature and CPU temperature.



System Temperature

Show you the current system temperature.

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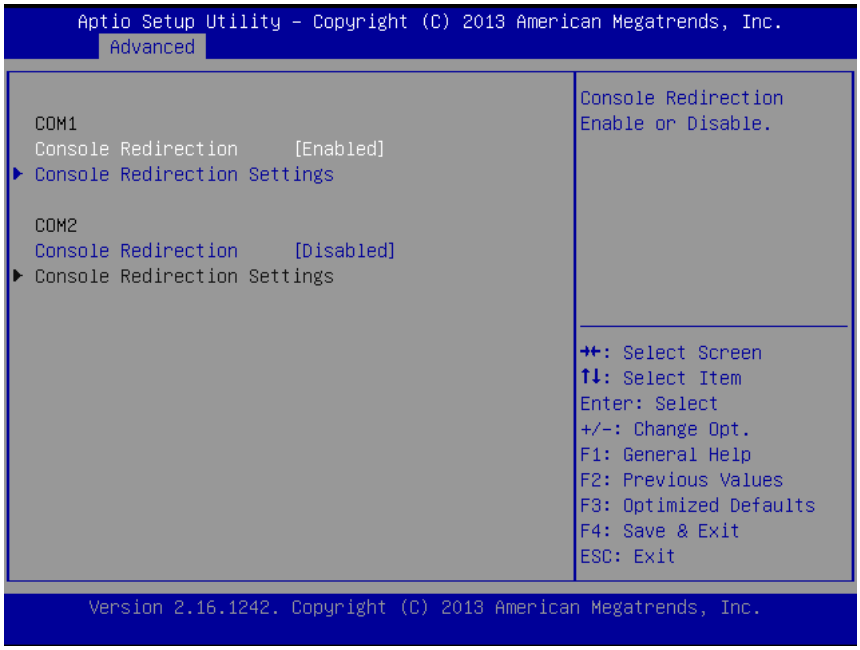
CPU Temperature

These read-only fields show the functions of the hardware thermal sensor by CPU thermal diode that monitors the chip blocks to ensure a stable system.

Vcore 12V / 5V / 3.3V

Show you the voltage of 12V / 5V / 3.3V and etc.

3.4.5 Console Redirection



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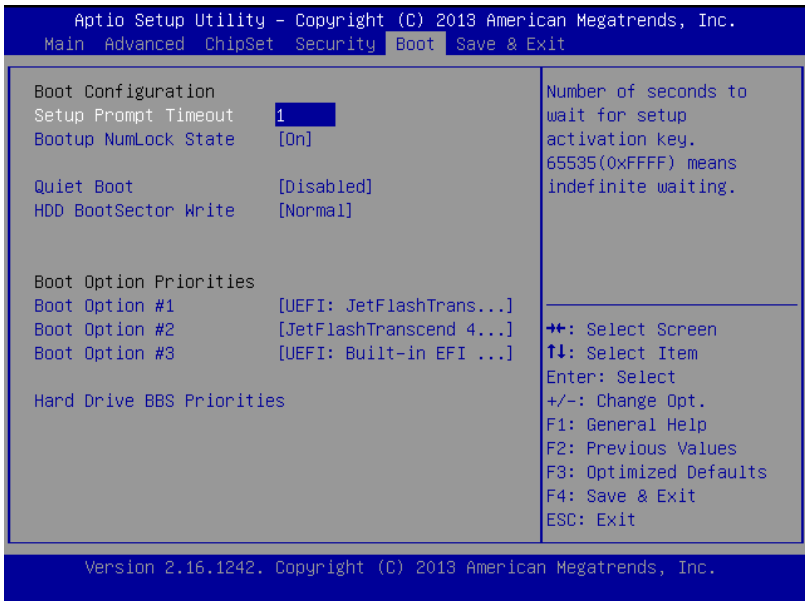
3.5 Boot Menu

Use the Boot Setup option as follows:

1. Choose "Boot" from the main menu. The following screen appears:



2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN Keys. For information on the various options, press <F1> key.

3. After you have finished with the Boot setup, press the <ESC> key to return to the main menu.

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

Bootup NumLock State
Use this item to select the power-on state for the NumLock.

Quiet Boot
Enable or disable quiet boot option.

Boot Option Priorities
Set the system boot priority order.

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3.6 Security Menu

⬇Use the Security Setup option as follows:

1. Choose "Security" from the main menu. The following screen appears:

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Please press the <F1> key for information on the various options.

After you have finished with the Security setup, press the <ESC> key to return to the main menu.

Supervisor Password

This item indicates whether an administrator password has been set (installed or uninstalled).

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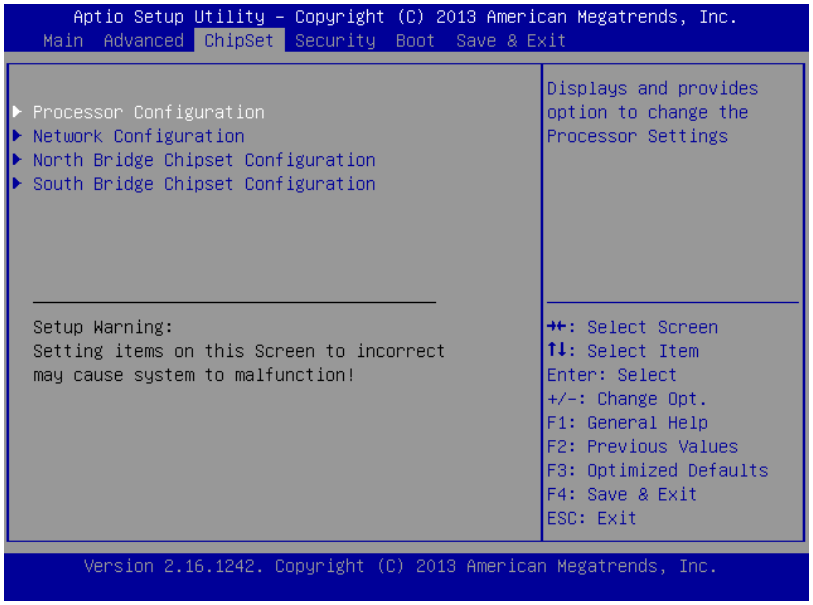
3.7 Chipset Menu

Use the Chipset Setup option as follows:

1. Choose "Chipset Configuration" from the Advanced menu. The following screen appears.



2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

After you have finished with the Chipset Setup, press the <ESC> key to return to the main menu.

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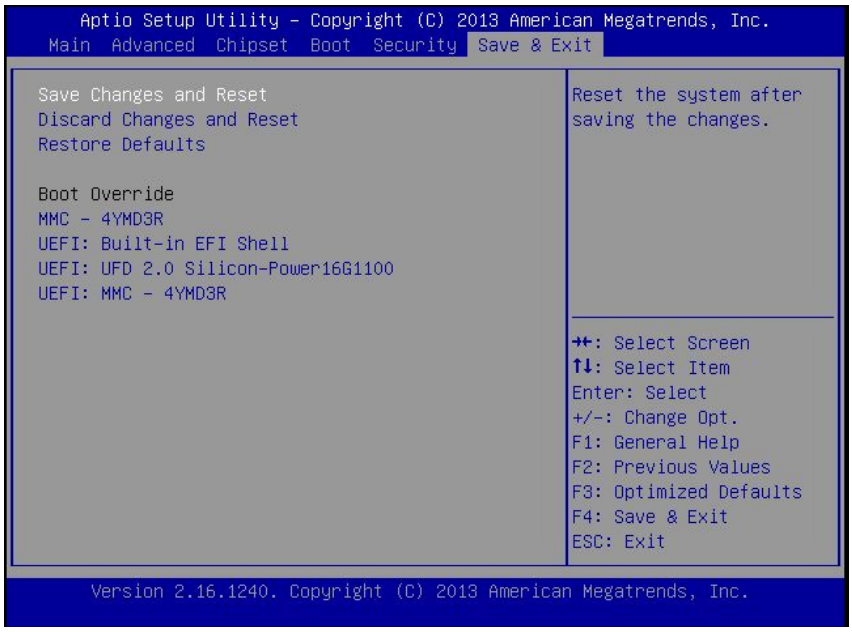
3.8 Exit Menu

The item allows you to save or discard your changes to the BIOS items, and load the optimal defaults or failsafe defaults for the BIOS items.

Use the Exit option as follows:

1. Choose "Exit" from the main menu, the following screen appears.



2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

3. Please press the <ESC> key to return the main menu after finishing with the Exit Options.

Save Changes and Exit:

Save changes of values to CMOS and exit the CMOS setup program. F10 key can be used for this operation.

Discard Changes and Exit:

Discard all CMOS changes and exit the CMOS setup program. ESC key can be used for this operation.

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Chapter 4. Utility & Driver Installation

Please install all modules properly before you install the OS, driver or other software.

4.1 Operation System Supporting

PL-80610 can support Windows® and Linux® operation system as follows. Before installation, please check your OS version. If your OS is not in the following list, please upgrade your OS version.

OS	Version
DOS	DOS 6.22
Windows®	Windows 7 Ultimate SP1x64
Linux®	Red Hat Enterprose Linux 6.4 x86_64 / Ubuntu 14.04

4.2 Sample Code and lm-sensor

Sample Code	Availability
BYPASS	Yes
FAN	Yes
GPIO	Yes
KEYPAD	Yes
LED	Yes
MDIO	Yes
TEMP	Yes
VOLTAGE	Yes
WDT	Yes
LCM_BL	Yes

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Appendix A: Cable Development Kit

The PL-80610 offers various cables for development use.

DK002

Item & Description	Part No.	Qty
Ethernet Cat.5 Cable 2M/ RoHS	CB -EC5200-00	1
Cross Over 2M Color/ RoHS	CB -CO5202/4-00	1
RJ45 to DB9 2M Cable/ RoHS	CB -RJDB91-00	1
Null modem cable 2M	CB -DB9200-01	1
KB/MS cable, 15CM	CB -IPS200-00	1
USB cable, 25CM	CB IUSB2B-00	1
VGA CABLE (2mm) 15CM/ RoHS	CB -IVGA01-00	1

CB-EC5200-00

CB-CO5202/4-00

CB-RJDB91-00

CB-IPS200-00

CB-DB9200-00

CB-IVGA01-00

CB-IUSB2B-00

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