CPC-1817CLD5NA

6U Compact PCI 海军标标准主板

6U Compact PCI Board Compliant with Navy Standard

Version: C01

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Customer Service Hotline: 4008809666

Safety Instructions

1. Please read this manual carefully before using the product;

2. Leave the board or card in the antistatic bag until you are ready to use it;

3. Touch a grounded metal object (e.g. for 10 seconds) before removing the board or card from the anti-static bag;

4. Before installing or removing a board, wear the ESD gloves or ESD wrist strap; handle the board by its edges only;

5. Before inserting, removing or re-configuring motherboards or expansion cards, first disconnect the computer and peripherals from their power sources to prevent electric shock to human bodies or damage to the product;

6. Remember to disconnect the AC power cord from the socket before removing the board or moving the PC;

7. For PC products, remember to disconnect the computer and peripherals from the power sources before inserting or removing a board;

8. Before connecting or disconnecting any terminal, peripheral or any device, be sure the system is powered off and all the power sources are disconnected;

9. After turning off the computer, wait at least 30 seconds before turning it back on

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Chapter 1 Product Introduction

Overview

CPC-1817CLD5NA adopts Intel® Calpella + ECC platform with i7-610E/620LE 2.53GHz/2GHz high-performance processor and QM57 Express Chipset on-board. The Core™i7-610E/620LE processor adopts 32nm craft and dual core four threads processing mechanism; the performance can be improved via Intel® Turbo Boost technology; with 4MB SmartCache and 35W/25W rated power consumption.

Storage function: CPC-1817CLD5NA supports 4GB DDR3 ECC SDRAM 800/1066MHz memory on-board, one SATA hard disk and one CF Card TypeII card (the SATA hard disk/CF card are alternative in structure). Two SATA channels are rear wired to the rear IO board; an HDD indicator (shared) is provided on the front panel and another one on the rear IO board. When data are transmitted on the SATA/CF/SSD, the HDD indicators are on. It also provides two USB2.0 ports on-board and the other four USB2.0 ports are rear wired to the rear IO board. It supports 8GB SSD onboard.

Graphics processing function: it adopts the Intel® HD Graphics integrated by the Core™i7-610E/620LE processor with the maximum dynamic frequency up to 766MHz. The maximum resolution supported by the VGA on front panel is up to 2048x1536 (75Hz refresh frequency). The rear I/O board supports “DVI-I”+“DVI-D” dual screens extendable display mode, VGA and LVDS. The maximum resolution for DVI is 1920×1200 @60Hz, that for VGA is 2048x1536 (75Hz refresh frequency) and that for LVDS (36bit) is 1600x1200. The VGA connectors on the front panel and the rear panel are alternative, so are the LVDS and DVI-D connectors.

Audio function: it provides HD audio decoder on-board, Line-in/Line-out/MIC-in, which is rear wired to the I/O board. It supports stereo Audio.

CPC-1817CLD5NA is a high-end 6U CompactPCI motherboard, which can meet customers' different requirements for connectors. The product is mainly applied in the high-end CPCI products in the fields of information communication, network storage, network audio processing, network graphics processing, industrial control and military, etc.

Note: This series of motherboards can only be inserted into the system slot (with a triangular sign) of backplane. If they need to be inserted into other peripheral slots, please consult customer service of our company.

Mechanical Dimensions, Weight and Environment

- Dimensions: 233.4mm (L) x 162mm (W) x 20.3mm (H);
- Net Weight: 0.71Kg;
- Operating Environment:

  Temperature: -20°C ~ 55°C;

  Humidity: 10% ~ 95% (non-condensing);
- Storage Environment:

  Temperature: -55°C ~ 85°C;

  Humidity: 10% ~ 95% (non-condensing);

Typical Consumption

The typical consumption is based on the following idle status values.

CPU: Intel® Core i7 610E 2.53GHz on-board

Memory: Samsung DDRIII 800 K4B1G0846E-HCH9 4GB on-board

Operating System: Windows XP SP3

Hard Disk: ADATA S391 128GB SATA 3GB/S SSD

- +5V@3.426A; +5%/-3%;
- +3.3V@1.75A; +5%/-3%;
- +12V@0.046A; +5%/-3%;

Microprocessor

CPC-1817CLD5NA contains Intel® Core™ i7620LE CPU of BGA1288 package on-board, DMI: 2.5GT/S, 32nm craft, dual core four threads processing mechanism with 2GHz main frequency, which can be improved to 2.8GHz Intel® Turbo Boost technology; with 4MB SmartCache and 25W TDP.

CPC-1817CLD5NA-H contains Intel® Core™ i7610E CPU of BGA1288 package on-board, DMI: 2.5GT/S, 32nm craft, dual core four threads processing mechanism with 2.53GHz main frequency, which can be improved to 3.2GHz Intel® Turbo Boost technology; with 4MB SmartCache and 35W TDP.

Chipset

Mobile Intel® QM57 Express Chipset;

System Memory

Provides DDR3 ECC SDRAM 800/1066MHz memory IC on-board, supporting Un-buffered ECC and dual-channel function. The maximum memory capacity supported by a single memory bank is up to 2GB and 4GB in all.

Display Function

- Adopts the Intel® HD Graphics chip integrated via Core™i7-610E/620LE processor;
- Supports independent dual display CRT+LVDS, “DVI-I”+LVDS, CRT+“DVI-D” and “DVI-I”+“DVI-D” with hot-swap function, all of which are synchronous output; (Note: 1. LVDS and DVI-D share pins on CPCI connector; therefore, the LVDS and DVI-D cannot be supported simultaneously. Users may choose to support LVDS version or DVI-D version according to their requirements. 2. When realizing DVI-I-to-VGA display, the DVI-I connector on

the rear IO board can be displayed only when the DDC switch in BIOS setting is disabled. When realizing VGA display on front panel, it can be displayed when the DDC switch in BIOS setting is enabled.)

- The maximum resolution and refresh frequency supported by VGA is up to 2048x1536 @75Hz, that supported by DVI is up to 1920x1200 @60Hz; the maximum resolution for LVDS (36bit) is up to 1600x1200.

Network Function

Provides five 10/100/1000Mbps LAN port: LAN3 and LAN4 shall be switched before using and cannot be used synchronously; it provides one Gigabit Ethernet port on-board, two independent 10/100/1000M Ethernet ports are brought to the rear IO board (with data transmission indicator) and the other two redundant Gigabit Ethernet ports provide PICMG2.16 function to the backplane. None of the LAN ports support Wake-on-LAN function, however, LAN PXE boot is supported.

Audio Function

Supporting HDA and MIC-in/Line-in/Line-out function.

Power Feature

Adopts CPCI power, supporting S0 and S5.

Expansion Bus

- Five 64-bit CPCI slots, complying with CompactPCIe standard;
- Two 32bit 33MHz PMC slots, complying with PCI2.3 standard;
- One PCI-E x8 XMC slot, complying with PCIE2.0 standard.

Watchdog Function

- 255 levels, programmable by minute or second;
- Supports watchdog timeout interrupt or reset system.

Operating System

- Supported OSs: Windows XP and Vxwork;
- Unsupported OSs: Windows 2000.

On-board I/O

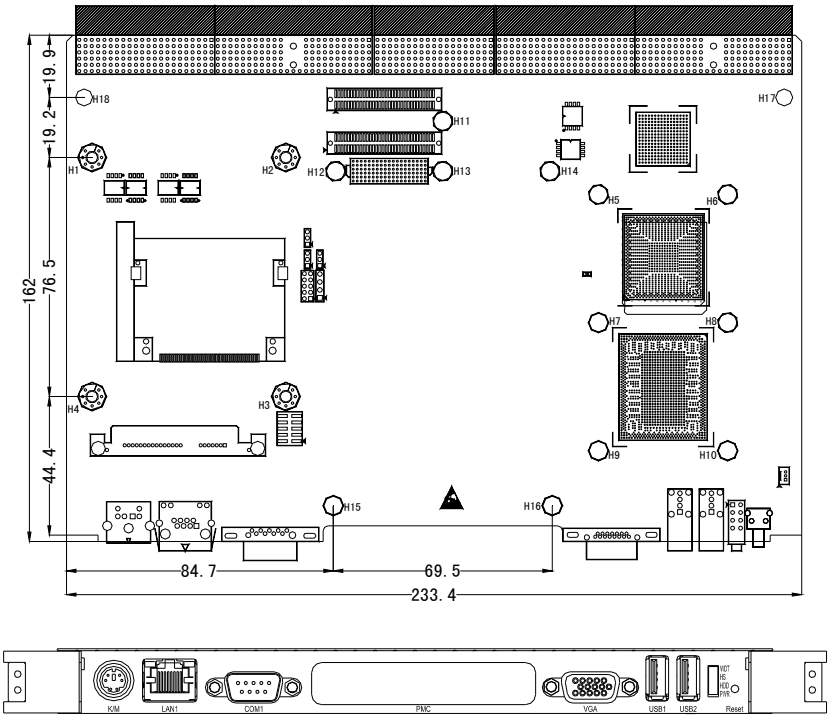
- Three serial ports: one serial port on-board supports RS-232 mode while the other two serial ports are rear wired to the rear I/O board and support RS-232/RS-422/RS-485 mode selection;
- Three SATA connectors: one is the SATA hard disk connector on-board while the other two SATA connectors are rear wired to the rear I/O board;
- One CF card connector (the CF card connector and the SATA hard disk connector are alternative);
- Six USB2.0 ports: two are USB2.0 ports on-board while the other four USB2.0 ports are rear wired to the rear I/O board;
- Two PS/2 keyboard/mouse connectors: one is on-board and the other is rear wired to the rear I/O board (the two connectors are alternative).

Tips: how to identify the alarms

1. Long “beep” indicates system memory error;
2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

Product Outline

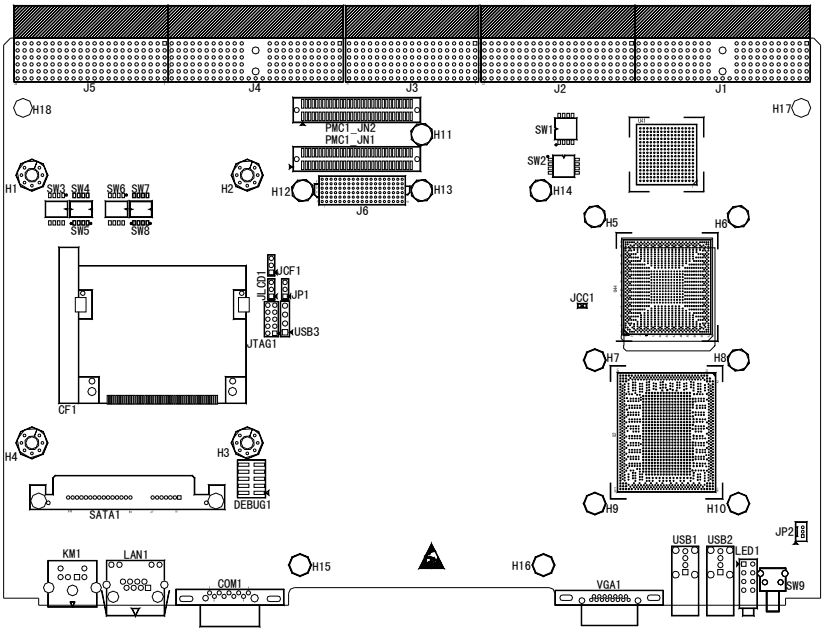


Unit: mm

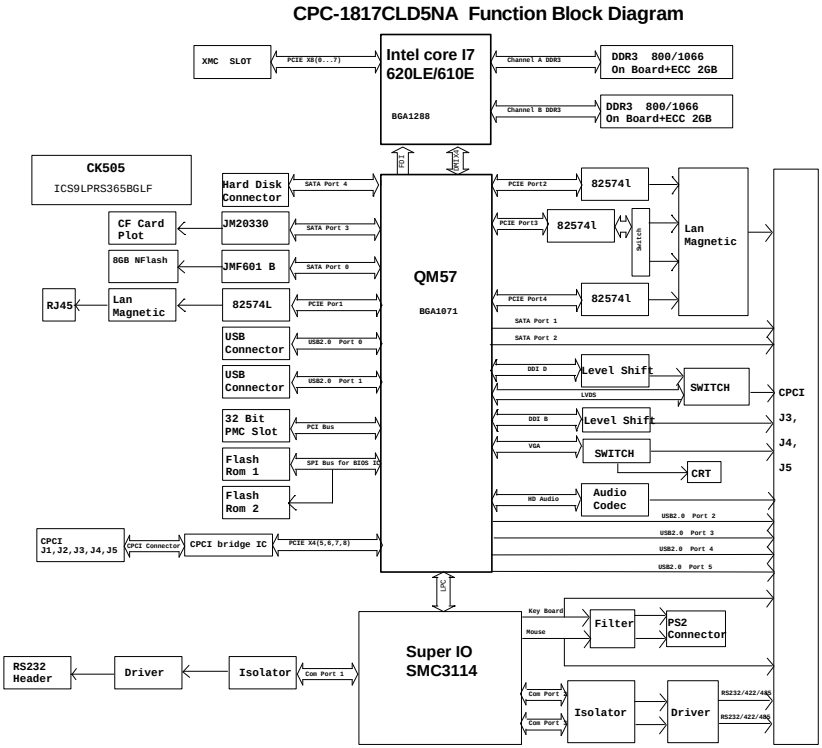
Warning!

Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use M3x6 GB9074.4-88 screws at H1 ~ H4 and M2.5x5 GB9074.1-88 screws at H5 ~ H18.

Locations of Connectors



Structure



Tip: How to identify the first pin of the jumpers and connectors

1. Observe the letter beside the socket: the first pin is usually marked with “1” or bold lines or triangular symbols;
2. Observe the solder pad on the back; the square pad is the first pin.

Jumper Setting

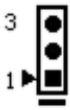
1. JCC1: Clear/Keep CMOS Setting

CMOS is powered by the button battery on board. Clearing CMOS will restore original settings (factory default). The steps are listed as follows: (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the prompt on screen to enter BIOS setup when booting the computer, reload optimized defaults; (5) Save and exit. Please set as follows:

JCC1

Setup	Function
1-2 Open	Normal (Default)
1-2 Short	Clear the contents of CMOS and all BIOS settings will restore to factory default values.

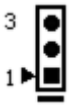
2. JLCD1: Select LCD Operating Voltage (Pitch: 2.0mm)



JLCD1

Setup	Function
1-2 Short	+3.3V (Default)
2-3 Short	+5V

3. JCF1: Select CF Card Voltage (Pitch: 2.0mm)



JCF1

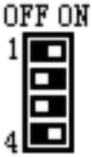
Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V (Default)

4. SW1 and SW2: Set CompactPCI Bridge Mode

SW1 and SW2 are used to set mode for CompactPCI bridge; please set as follows:

SW1

SW1 Switch	System Status	
	ON=0	OFF=1
1	Non-NT(Default)	NT
2	Used to adjust the operating frequency of the bridge chip. When the default value is adopted, the peripheral card can select between 66MHz and 33MHz automatically; if the peripheral card doesn't support automatic selection, then the operating frequency is 33MHz when 4=ON; otherwise the operating frequency is 66MHz. (Default: 2=ON; 3=OFF; 4= ON)	
3		
4		

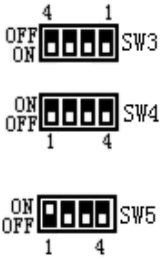


SW2

SW2 Switch	System Status	
	ON=0	OFF=1
1	Forward (Default)	Backward
2	EEPROM Configuration	SMBUS Configuration (Default)
3	Disable CLKOUT	Output CLKOUT(Default)
4	Internal Arbitrator (Default)	External Arbitrator

5. SW3, SW4 and SW5: Select Mode for COM2 (COM2 locates on the IO board, CPC-RP807)

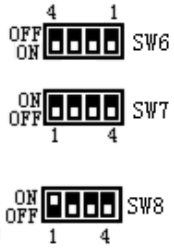
SW3, SW4 and SW5 (on the rear of the board) are used to select RS-232/RS-422/RS-485 mode for COM2; please set as follows:



Switch	Pin	Mode		
		RS-232 (Default)	RS-422	RS-485
SW3	1	ON	OFF	OFF
	2	ON	OFF	OFF
	3	ON	OFF	OFF
	4	ON	OFF	OFF
SW4	1	OFF	ON	ON
	2	OFF	ON	ON
	3	OFF	ON	ON
	4	OFF	ON	ON
SW5	1	ON	OFF	OFF
	2	OFF	ON	OFF
	3	OFF	OFF	ON
	4	Reserved		

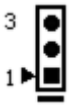
6. SW6, SW7 and SW8: Select Mode for COM3 (COM3 locates on the IO board, CPC-RP807)

SW6, SW7 and SW8 (on the rear of the board) are used to select RS-232/RS-422/RS-485 mode for COM3; please set as follows:



Switch	Pin	Mode		
		RS-232 (Default)	RS-422	RS-485
SW6	1	ON	OFF	OFF
	2	ON	OFF	OFF
	3	ON	OFF	OFF
	4	ON	OFF	OFF
SW7	1	OFF	ON	ON
	2	OFF	ON	ON
	3	OFF	ON	ON
	4	OFF	ON	ON
SW8	1	ON	OFF	OFF
	2	OFF	ON	OFF
	3	OFF	OFF	ON
	4	Reserved		

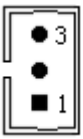
7. JP1: CompactPCI Bridge Reset Setting (Pitch: 2.0mm)



JP1

Setup	Function
1-2 Short	Reset Output (Default)
2-3 Short	Reset Input

CPCI Hot-swappable Micro-switch

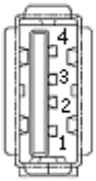


JP2
Pitch: 1.25mm

Pin	Signal Name
1	VCC3
2	GND
3	EJECT

USB Port

The board provides two standard USB ports.

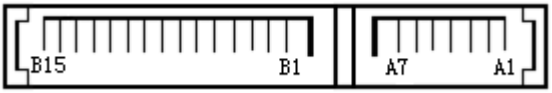


USB1/USB2

Pin	Signal Name
1	+5V
2	USB_Data-
3	USB_Data+
4	GND

SATA Connector

The board provides one 7+15Pin SATA connector.

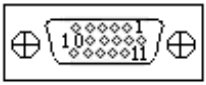


SATA1

Pin	Signal Name	Pin	Signal Name
A1	GND	B5	GND
A2	TX+	B6	GND
A3	TX-	B7	+5VL
A4	GND	B8	+5V
A5	RX-	B9	+5V
A6	RX+	B10	GND
A7	GND	B11	GND
B1	+3.3V	B12	GND
B2	+3.3V	B13	+12VL
B3	+3.3VL	B14	+12V
B4	GND	B15	+12V

Display Connector

The board provides one 15-pin D-sub VGA connector.



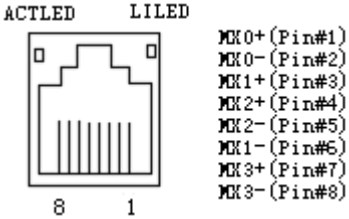
VGA1

Pin	Signal Name	Pin	Signal Name
1	Red	2	Green
3	Blue	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DDCDATA
13	HSYNC	14	VSYNC
15	DDCCLK		

LAN Port

The board provides one 10/100/1000Mbps LAN port. ACTLED and LILED are the LEDs beside the Ethernet port, which respectively indicates the activity status and transmission status of LAN. Please refer to the status description for each LED:

MX0, MX0-: positive/negative data channel 0	MX1, MX1-: positive/negative data channel 1
MX2, MX2-: positive/negative data channel 2	MX3, MX3-: positive/negative data channel 3
ACTLED: LAN activity status indicator	LILED: LAN linked status indicator

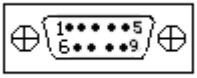


LAN1

ACTLED (Green)	LAN Activity Status Indicator		LILED (Dual-Color: O/G)	LAN Speed Indicator
			Green	1000Mbps
Blink	Data Transmitting		Orange	100Mbps
Off	No Data to Transmit		Off	10Mbps

Serial Port

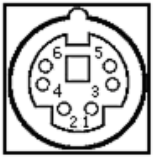
The board provides one DB9 serial port.



COM1

Pin	Signal Name
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

Mini 1-2 PS/2 Connector

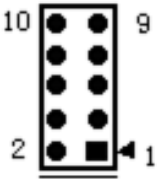


KM1

Pin	Signal Name
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

JTAG Connector

Record the data required by CPLD via JTAG1 on-board (Pitch: 2.0mm).



JTAG1

Pin	Signal Name
1	TCK
2	GND
3	TDO
4	VCC
5	TMS
6	NC
7	NC
8	NC
9	TDI
10	GND

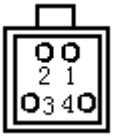
Burning Connector

As for USB3 (Pitch: 2.54mm) on CPC-1817CLD5NA, it is only used to burn the SSD card enabling software.

USB3

Pin	Signal Name
1	+5V
2	Data0-
3	Data0+
4	GND

Reset Button



SW9

Pin	Signal Name	Pin	Signal Name
1	RESET#	2	GND
3	GND_CHASSIS	4	GND_CHASSIS

Indicator

LED1

LED	Status	Description
WDT	OFF	Watchdog unoperated
	ON	Watchdog is operating
HS	OFF	Normal operating status
	ON	Under hot-swapping status
HDD	OFF	Hard disk is idle
	ON	Hard disk is operating
PWR	OFF	Power failure
	ON	Power normal

CF Card Connector

The CF card is at Master status in system. The pin definitions of the CompactFlash slot are as follows (Marked as CF1 in figure).

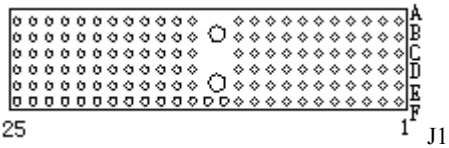
Pin	Signal Name	Pin	Signal Name
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ
13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66 DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

Note:

1. During system installation process via CF card, please partition the on-board SSD as well as the CF card when implementing hard disk partition. If only the CF card is partitioned, the system will prompt that the installation cannot continue;
2. During system installation process via CF card, the system installation is completed and rebooted under DOS; however instead of entering Windows system to continue installation, it returns to the DOS installation interface. At that time, please reboot the system under DOS again and then it will enter the Windows interface to continue installation.

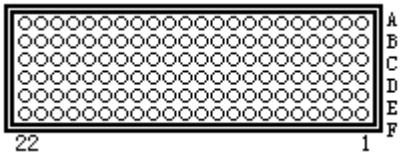
CompactPCI Connector

The pin definitions for J1



Pin	Signal Name					
	A	B	C	D	E	F
1	+5V	-12V	TRST#	+12V	+5V	GND
2	TCK	+5V	TMS#	NC	TDI	GND
3	INTA#	INTB#	INTC#	5V_LONG	INTD#	GND
4	IPMB_PWR	HEALTHY#	VIO_L1	INTP	INTS	GND
5	NC	NC	PCI_RST#	GND	GNT0#	GND
6	REQ0#	GND	3V_LONG	CLK0	AD31	GND
7	AD30	AD29	AD28	NC	AD27	GND
8	AD26	GND	V(I/O)	AD25	AD24	GND
9	C/BE3#	SIDSEL	AD23	GND	AD22	GND
10	AD21	GND	+3.3V	AD20	AD19	GND
11	AD18	AD17	AD16	GND	C/BE2#	GND
12	KEY AREA					
13						
14						
15	+3.3V	FRAME#	IRDY#	BD_SEL#	TRDY#	GND
16	DEVSEL#	PCIXCAP	V(I/O)	STOP#	LOCK#	GND
17	+3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND
18	SERR#	GND	+3.3V	PAR	C/BE1#	GND
19	+3.3V	AD15	AD14	GND	AD13	GND
20	AD12	GND	V(I/O)	AD11	AD10	GND
21	+3.3V	AD9	AD8	M66EN	C/BE0#	GND
22	AD7	GND	3V_LONG	AD6	AD5	GND
23	+3.3V	AD4	AD3	5V_LONG	AD2	GND
24	AD1	+5V	VIO_L2	AD0	ACK64#	GND
25	+5V	REQ64#	ENUM#	+3.3V	+5V	GND

The pin definitions for J2



J2

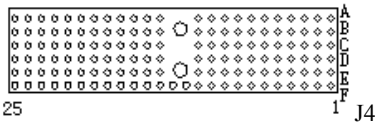
Pin	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	NC	NC	NC	GND
20	CLK5	GND	NC	GND	NC	GND
19	GND	GND	NC	NC	VCC3_3SB	GND
18	NC	NC	NC	GND	NC	GND
17	NC	GND	CPCI_PRST-	REQ6#	GNT6#	GND
16	NC	NC	VIO_PCI	GND	NC	GND
15	NC	GND	VIO_PCI	REQ5#	GNT5#	GND
14	AD35	AD34	AD33	GND	AD32	GND
13	AD38	GND	V(I/O)	AD37	AD36	GND
12	AD42	AD41	AD40	GND	AD39	GND
11	AD45	GND	V(I/O)	AD44	AD43	GND
10	AD49	AD48	AD47	GND	AD46	GND
9	AD52	GND	V(I/O)	AD51	AD50	GND
8	AD56	AD55	AD54	GND	AD53	GND
7	AD59	GND	V(I/O)	AD58	AD57	GND
6	AD63	AD62	AD61	GND	AD60	GND
5	CBE5#	64EN-	V(I/O)	CBE4#	PAR64	GND
4	VIO_PCI	NC	CBE7#	GND	CBE6#	GND
3	CLK4	GND	GNT3#	REQ4#	GNT4#	GND
2	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

The pin definitions for J3

J3

Pin	A	B	C	D	E	F
19	I/O	I/O	I/O	I/O	I/O	GND
18	LAN2_TX0+	LAN2_TX0-	GND	LAN2_TX2+	LAN2_TX2-	GND
17	LAN2_TX1+	LAN2_TX1-	GND	LAN2_TX3+	LAN2_TX3-	GND
16	LAN3_TX0+	LAN3_TX0-	GND	LAN3_TX2+	LAN3_TX2-	GND
15	LAN3_TX1+	LAN3_TX1-	GND	LAN3_TX3+	LAN3_TX3-	GND
14	LAN2_LINK_ACT-	LAN2_LINK_100-	I/O	I/O	I/O	GND
13	I/O	LAN2_LINK_1000-	I/O	I/O	I/O	GND
12	I/O	I/O	I/O	I/O	I/O	GND
11	I/O	I/O	I/O	I/O	I/O	GND
10	I/O	I/O	I/O	I/O	I/O	GND
9	I/O	I/O	I/O	I/O	I/O	GND
8	I/O	I/O	I/O	I/O	I/O	GND
7	I/O	I/O	I/O	I/O	I/O	GND
6	I/O	I/O	I/O	I/O	I/O	GND
5	I/O	I/O	I/O	I/O	I/O	GND
4	I/O	I/O	I/O	I/O	I/O	GND
3	I/O	I/O	I/O	I/O	I/O	GND
2	I/O	I/O	I/O	I/O	I/O	GND
1	I/O	I/O	I/O	I/O	I/O	GND

The pin definitions for J4



Pin	Signal Name					
	A	B	C	D	E	F
1	USB4P_CN	LIN_R_CN	GND	I/O	I/O	GND
2	USB4N_CN	LIN_L_CN	GA_LAN5_ MDI0+	I/O	I/O	GND
3	USB5P_CN	MIC_L_CN	GA_LAN5_ MDI0-	I/O	I/O	GND
4	USB5N_CN	CD_RIGHT	GA_LAN5_ MDI1+	I/O	I/O	GND
5	GND	CD_LEFT	GA_LAN5_ MDI1-	I/O	I/O	GND
6	VCC5_USB45_ F	CD_GND	GA_LAN5_ MDI2+	I/O	I/O	GND
7	I/O	LOUT_R_CN	GA_LAN5_ MDI2-	I/O	I/O	GND
8	I/O	LOUT_L_CN	GA_LAN5_ MDI3+	I/O	I/O	GND
9	LVDSVCC (PANEL_VDD)	I/O	GA_LAN5_ MDI3-	HD_IOCS16-	I/O	GND
10	LVDSVCC (PANEL_VDD)	TMDS_B_CLK+	LAN5_LINK _ACT-	I/O	I/O	GND
11	LA_BKLT_EN RL	TMDS_B_CLK-	LAN5_LINK _100-	I/O	I/O	GND
12	KEY AREA					
13						
14						
15	I/O	DVI2_HPD	LAN5_LINK _1000-	GND	I/O	GND
16	I/O	DVI2_CTRL_DAT A	VCC5	SATA_TXP2	I/O	GND
17	LA_DATAP2	DVI2_CTRL_CLK	SATA_TXP1	SATA_TXN2	I/O	GND
18	LA_DATAN2	DVI/LVDS2+ 1_D2+	SATA_TXN1	I/O	I/O	GND

19	LA_DATAP1	DVI/LVDS2-	SATA_RXP1	SATA_RXP2	I/O	GND
20	LA_DATAN1	DVI/LVDS1+	SATA_RXN1	SATA_RXN2	GND	GND
21	LA_DATAP0	DVI/LVDS1-	RTC_RST#	I/O	I/O	GND
22	LA_DATAN0	DVI/LVDS0+	I/O	I/O	I/O	GND
23	LB_CLKP	DVI/LVDS0-	DVI1_HPD0	LAN4_LINK _1000-	SATALED-	GND
24	GND	DVI/LVDS_CLK+	DVI1_CTRL _CLK	GA_LAN4_ MDI2+	I/O	GND
25	LB_CLKN	DVI/LVDS_CLK-	DVI1_CTRL _DATA	GA_LAN4_ MDI2-	GA_LAN4 _MDI0+	GND

The pin definitions for J5

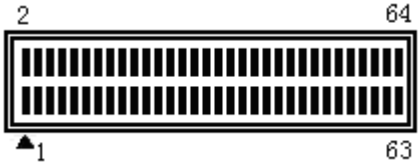
The board provides a socket, J5; the pin arrangements are the same as that of J2; the pin definitions are as follows:

Pin	A	B	C	D	E	F
1	TMDS_B_D ATA0P	TMDS_B_ DATA0N	LAN4_LIN K_100-	LAN4_LINK_ ACT-	GA_LAN4_M DI0-	GND
2	TMDS_B_D ATA1P	TMDS_B_ DATA1N	CRT_DDC_ CLK	GA_LAN4_M DI3+	GA_LAN4_M DI1+	GND
3	TMDS_B_D ATA2P	TMDS_B_ DATA2N	CRT_DDC_ DATA	GA_LAN4_M DI3-	GA_LAN4_M DI1-	GND
4	CRT_VSYN C	CRT_HSY NC	I/O	GND	I/O	GND
5	VGA2_BLU E_CN	VGA2_GR EEN_CN	I/O	I/O	I/O	GND
6	VGA2_RED_ CN	GND	I/O	I/O	I/O	GND
7	GND	I/O	I/O	I/O	I/O	GND
8	I/O	I/O	I/O	I/O	GND	GND
9	I/O	I/O	I/O	I/O	I/O	GND
10	I/O	I/O	I/O	I/O	I/O	GND
11	GND	I/O	I/O	I/O	I/O	GND
12	I/O	I/O	I/O	I/O	I/O	GND
13	I/O	I/O	I/O	GND_IL3	COM3_RI#	GND
14	I/O	I/O	I/O	COM3_DTR#	COM3_CTS#	GND
15	I/O	I/O	I/O	COM3_TXD	COM3_RTS#	GND
16	VCC5	VCC5	+5V	COM3_RXD	COM3_DSR#	GND
17	GND	GND	GND	COM3_DCD#	GND_IL2	GND

18	USB2P_CN	USB3P_CN	KB_DATA	COM2_DTR#	COM2_RI#	GND
19	USB2N_CN	USB3N_CN	KB_CLK	COM2_TXD	COM2_CTS#	GND
20	SPEAKER	VCC5	MS_DATA	COM2_RXD	COM2_RTS#	GND
21	WDT_OUT-	GND	MS_CLK	COM2_DSR#	COM2_DCD#	GND
22	RST_BUT-	VCC5_USB23_F	HSC_PWRGD	RTCBAT	NC	GND

PMC Connector

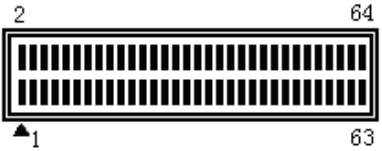
PMC1_JN1 and PMC1_JN2 are PCI expansion slots, Pitch: 1.0mm. The pin definitions are as follows:



PMC1_JN1

Pin	Signal Name	Pin	Signal Name
1	TCK	33	FRAME#
2	-12V	34	GND
3	GND	35	GND
4	PIRQA#	36	IRDY#
5	PIRQB#	37	DEVSEL#
6	PIRQC#	38	+5V
7	BM1	39	GND
8	+5V	40	PLOCK#
9	PIRQD#	41	NC

10	NC	42	NC
11	GND	43	PAR
12	+3.3V	44	GND
13	CLK1	45	VIO
14	GND	46	AD15
15	GND	47	AD12
16	GNT0#	48	AD11
17	REQ0#	49	AD9
18	+5V	50	+5V
19	VIO	51	GND
20	AD31	52	C/BE0#
21	AD28	53	AD6
22	AD27	54	AD5
23	AD25	55	AD4
24	GND	56	GND
25	GND	57	VIO
26	C/BE3#	58	AD3
27	AD22	59	AD2
28	AD21	60	AD1
29	AD19	61	AD0
30	+5V	62	+5V
31	VIO	63	GND
32	AD17	64	REQ64#

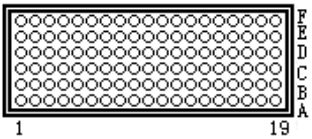


PMC1_JN2

Pin	Signal Name	Pin	Signal Name
1	+12V	33	GND
2	TRST#(3)	34	IDSL_B(1)
3	TMS(2)	35	TRDY#
4	TDO(1)	36	+3.3V
5	TDI(2)	37	GND
6	GND	38	STOP#
7	GND	39	PERR#
8	NC	40	GND
9	NC	41	+3.3V
10	NC	42	SERR#
11	BM2	43	C/BE1#
12	+3.3V	44	GND
13	RST#	45	AD14
14	BM3	46	AD13
15	+3.3V	47	M66EN
16	BM4	48	AD10
17	PME#	49	AD8
18	GND	50	+3.3V
19	AD30	51	AD7
20	AD29	52	REQ_B(1)
21	GND	53	+3.3V
22	AD26	54	GNT_B#(1)
23	AD24	55	NC
24	+3.3V	56	GND
25	IDSEL	57	NC
26	AD23	58	EREADY(1)
27	+3.3V	59	GND
28	AD20	60	RSTOUT#(1)
29	AD18	61	ACK64#
30	GND	62	+3.3V
31	AD16	63	GND
32	C/BE2#	64	Monarch#(1)

XMC Connector

J6 is the XMC expansion slot; the pin definitions for J6 are as follows:



Pin	A	B	C	D	E	F
1	DP00+	DP00-	3.3V	DP01+	DP01-	VPWR
2	GND	GND	TRST#	GND	GND	MRSTI#
3	DP02+	DP02-	3.3V	DP03+	DP03-	VPWR
4	GND	GND	TCK	GND	GND	MRSTO#
5	DP04+	DP04-	3.3V	DP05+	DP05-	VPWR
6	GND	GND	TMS	GND	GND	+12V
7	DP06+	DP06-	3.3V	DP07+	DP07-	VPWR
8	GND	GND	TDI	GND	GND	-12V
9	DP08+	DP08-	RPS	DP09+	DP09-	VPWR
10	GND	GND	TDO	GND	GND	GA0
11	DP10+	DP10-	MBIST#	DP11+	DP11-	VPWR
12	GND	GND	GA1	GND	GND	MPRESENT#
13	DP12+	DP12-	3.3V AUX	DP13+	DP13-	VPWR
14	GND	GND	GA2	GND	GND	MSDA
15	DP14+	DP14-	RPS	DP15+	DP15-	VPWR
16	GND	GND	MVMRO	GND	GND	MSCL
17	DP16+	DP16-	RFU	DP17+	DP17-	RFU
18	GND	GND	RPS	GND	GND	RPS
19	DP18+	DP18-	RPS	DP19+	DP19-	RPS

Chapter 3 BIOS Setup

UEFI Overview

UEFI (Unified Extensible Firmware Interface) is the latest computer firmware to replace traditional BIOS. UEFI is solidified in the flash memory on the CPU board. Its main functions include: initialize system hardware, set the operating status of the system components, adjust the operating parameters of the system components, diagnose the functions of the system components and report failures, provide hardware operating and controlling interface for the upper level software system, guide operating system and so on. UEFI provides users with a human-computer interface in menu style to facilitate the configuration of system parameters for users, control power management mode and adjust the resource distribution of system device, etc.

Setting the parameters of the UEFI correctly could enable the system operating stably and reliably; it could also improve the overall performance of the system at the same time. Inadequate even incorrect UEFI parameter setting will decrease the system operating capability and make the system operating unstably even unable to operate normally.

UEFI Parameter Setup

Prompt message for BIOS setting may appear once powering on the system. At that time (invalid at other time), press the key specified in the prompt message (usually <Del> or <F2>) to enter UEFI setting.

All the setup values modified by UEFI (excluding data and time) are saved in the flash storage in system; the contents will not be lost even if powered down or remove the battery of the board. The data and time are saved in CMOS storage, which is powered by battery; unless clearing CMOS is executed, its contents would not be lost even if powered off.

Note! UEFI setting will influence the computer performance directly. Setting parameter improperly will cause damage to the computer; it may even be unable to power on. Please use the internal default value of UEFI to restore the system.

Our company is constantly researching and updating UEFI, its setup interface may be a bit different. The figure below is for reference only; it may be different from your UEFI setting in use.

Basic Function Setting for UEFI

After starting SETUP program, the main interface of Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc. will appear:

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc. 2009	
Main Advanced Chipset Boot Security Save & Exit	
CPC-1817CLD5NA BIOS Name Y9087000 BIOS Version A00 Build Date 12/14/2010 11:10:40 **Memory Information** Total Memory 4096 MB (DDR3 800) System Date [Mon 11/01/2009] System Time [00:47:55] Access Level Administrator	Set the Date. Use 'Tab' to switch between Date elements. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

◆ **Main**

➢ **System Time**

Choose this option and set the current date by < + > / < - >, which is displayed in format of month/date/year. Reasonable range for each option is: Month (1-12), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

➢ **System Time**

Choose this option and set the current time by < + > / < - >, which is displayed in format of hour/minute/second. Reasonable range for each option is: Hour (00-23), Minute (00-59), Second (00-59).

◆ Advanced

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main **Advanced** Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ CPU Configuration ▶ SATA Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ CPU Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
CPU Configuration Processor Type Intel(R) Core(TM) i7 CPU EMT64 Supported Processor Speed 2527MHz Processor Stepping 20652 Microcode Revision 9 Processor Cores 2 Intel HT Technology Supported Hyper-threading [Enabled] Active Processor Cores [All] Limit CPUID Maximum [Disabled] Hardware Prefetcher [Enabled] Adjacent Cache Line Prefetch [Enabled] Intel Virtualization Technology [Disabled] Power Technology [Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

Display the relevant information of CPU. Note: the Type, Speed, Core and HT of the CPU are related to the CPU installed in the platform; different series of CPUs will display different information.

- **Hyper Threading Technology**

  Control switch of the Hyper Threading Technology function.
- **Active Processor Cores**

  Active CPU core number, only available for multi-core CPU.
- **Limit CPUID Maximum**

  Disabled for Windows XP.
- **Hyper-Threading**

  Control switch for Hyper Threading Technology function.
- **Active Processor Cores**

  Active CPU core numbers, which is only available for the CPU with multi-core.
- **Hardware Prefetcher**

  Enable or disable the MLC Streamer Prefetcher
- **Adjacent Cache Line Prefetch**

  Enable or disable the prefetching of adjacent cache lines
- **Intel Virtualization Technology**

  Switch of the Intel virtualization technology.
- **Power Technology**

  Enable or disable the CPU power management function.

➢ **SATA Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
SATA Configuration		→←: Select Screen
SATA Port0	EVOC (7.8GB)	↑↓: Select Item
SATA Port1	Not Present	Enter: Select
SATA Port2	Not Present	+/-: Change Opt
SATA Port3	Not Present	F1: General Help
SATA Port4	Not Present	F2: Previous Values
SATA Port5	Not Present	F3: Optimized Defaults
Serial-ATA Controller 0 [Compatible]		F4: Save
Serial-ATA Controller 1 [Enhanced]		ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

SATA Port0 ~ 5 dynamically detect whether there are SATA devices connected with the motherboard. If devices are connected with the corresponding ports, then it will display the SATA device type. Otherwise, it will display “Not Present”.

- **Serial-ATA Controller 0**

  Switch for Serial-ATA Controller 0, sets the mode for Serial-ATA Controller 0.

- **Serial-ATA Controller 1**

  Switch for Serial-ATA Controller 1, sets the mode for Serial-ATA Controller 1.

➢ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
USB Configuration USB Devices: 1 Keyboard, 1 Mouse, 2 Hubs Legacy USB Support [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

- **Legacy USB Support**

  This option is used to support legacy USB devices (keyboard, mouse, storage device, etc). When it is set to Enabled, the USB devices can be used in the OS that does not support USB, such as DOS. When it is set to Disabled, the legacy devices cannot be used in the OS that does not support USB.

  Note: USB can be used in EFI application, such as in Shell.

➢ **Super IO Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Super IO Configuration Super IO Chip SMSC SCH3114 ►Floppy Disk Controller Configuration ►Serial Port 0 Configuration ►Serial Port 1 Configuration ►Serial Port 2 Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

● **Serial Port 0 ~ 2 Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Serial Port 0 ~ 2 Configuration Serial Port [Enabled] Device Settings IO=3F8h; IRQ=4; Change Settings [Auto] Device Mode [Normal]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

*** Serial Port 0 ~ 2**

This option is used to enable or disable the current serial port.

*** Device Settings**

This option is used to display the current resource configuration of the serial port.

*** Change Settings**

This option is used to configure the resource adopted by the serial port (IO and IRQ).

*** Device Mode**

This option is used to configure the operating speed of the serial port.

➢ **H/W Monitor**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
PC Health Status	→←: Select Screen
	↑↓: Select Item
CPU Temperature : +57 C	Enter: Select
SYS Temperature : +26 C	+/-: Change Opt
	F1: General Help
Vcore : +0.95 V	F2: Previous Values
V3.3 : +3.296 V	F3: Optimized Defaults
V5.0 : +5.007 V	F4: Save
V12.0 : +12.091 V	ESC: Exit
Vbat : +3.21 V	
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

Display the currently detected hardware monitoring information, such as voltage, temperature, fan speed, etc.

- **System Temperature**

  Current system temperature, monitored by the thermal resistor on motherboard.

- **CPU Temperature**

  Current CPU temperature, monitored by the temperature sensor on motherboard.

- **Vcore**

  CPU core voltage.

- **V3.3/ V5.0/V12.0**

  Turn on/off the power to output voltage.

- **VBAT**

  CMOS battery voltage.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced **Chipset** Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ North Bridge ▶ South Bridge ▶ Intel IGD SWSCI OpRegion	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ **North Bridge**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Chipset		
NB Chipset Configuration		→←: Select Screen ↑↓: Select Item
Low MMIO Align	[64M]	Enter: Select +/-: Change Opt
Graphic Turbo IMON Current	31	F1: General Help F2: Previous Values
VT-d	[Disabled]	F3: Optimized Defaults
IGD Memory	[32M]	F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

- **Low MMIO Align**

  Low MMIO resource alignment.

- **Graphics Turbo IMON Current**

  Currently supported Graphics turbo value.

- **VT-d**

Switch for the Intel virtualization technology.

- **IGD Memory**

  System memory size shared by IGD.

➢ **South Bridge Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
SB Chipset Configuration Audio Configuration Azalia HD Audio [Enabled] Lan Switch Configuration Lan Switch [Enabled] DDC Switch Configuration DDC Switch [Enabled] Spread Spectrum [Disabled] ▶ USB Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
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- **Azalia HD Audio**

  Switch for the audio card controller, which is set to "Enable" in standard configuration.

- **LAN Switch**

  This option is used to switch the LAN port between CPCI2.16 function and LAN port. When it is set to Enabled, it is set to LAN port function; when it is set to Disabled, it is set to CPCI2.16 function.

- **DDC Switch**

  This option is used to switch the DDC between DVI and VGA. When it is set to Enabled, it is set to DVI-I; when it is set to Disabled, it is set to VGA.

- **Spread Spectrum**

It is used to set the spread spectrum function of the clock chip; it is set to disabled in default configuration.

- **USB Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
USB Configuration	
USB Port 0 [Enabled]	→←: Select Screen
USB Port 1 [Enabled]	↑↓: Select Item
USB Port 2 [Enabled]	Enter: Select
USB Port 3 [Enabled]	+/-: Change Opt
USB Port 4 [Enabled]	F1: General Help
USB Port 5 [Enabled]	F2: Previous Values
	F3: Optimized Defaults
	F4: Save
	ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

*** USB Port 0 ~ 5**

Switch for USB Port 0 ~ 5.

- **Intel IGD SWSCI OpRegion**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
Intel IGD SWSCI OpRegion Configuration	
DVMT/FIXED Memory [256MB]	→←: Select Screen
IGD – Boot Type [CRT + DVI-D]	↑↓: Select Item
LCD Panel Type [800x600 LVDS]	Enter: Select
Active LFP [No LVDS]	+/-: Change Opt
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save
	ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

*** DVMT/FIXED Memory**

Set the memory size occupied by video card under DVMT/FIXED mode.

*** IGD – Boot Type**

Set the primary display device booted by IGD.

*** LCD Panel Type**

This option is used choose the resolution for the Flat Panel.

***Active LFP**

This option is used to enable the LVDS function. When LVDS display is required, please set this option to Int-LVDS.

◆ **Boot**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset **Boot** Security Save & Exit	
Boot Configuration Quiet Boot [Disabled] Boot Numlock State [On] **Boot Option Priorities** Boot Option #1 [Built-in EFI Shell] **Hard Drive BBS Priorities**	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ **Quiet Boot**

Boot mode selection switch, which is used to enable or disable Quiet Boot function.

➢ **Bootup Numlock State**

Switch for the Numlock.

➢ **Boot Option Priorities**

This option is used to configure the system booting priorities. #1 represents the highest priorities while #n represents the lowest priorities.

➢ **Hard Drive BBS Priorities**

This option is used to configure the priorities of the legacy devices in BBS. #1 represents the highest priorities while #n represents the lowest priorities.

◆ **Security**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot **Security** 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. Administrator Password User Password	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ **Setup Administrator Password**

This option is used to set administrator password.

➢ **User Password**

This option is used to set user password.

Note: If ONLY the Administrator's password is set, then this is only asked for when entering Setup;

If ONLY the User's password is set, then this must be entered to boot the computer. When entering Setup, the User will have Administrator privileges;

When both Administrator's password and User's password are set, Administrator's password or User's password is required when booting. If Administrator's password is adopted, the User will have Administrator's privileges when entering Setup; while if User's password is adopted, the User will have User's privileges when entering Setup.

◆ **Save & Exit**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security **Save & Exit**	
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset **Save Options** Save Changes Discard Changes Restore Defaults Save as User Defaults Restore User Defaults Boot Override Built-in UEFI Shell	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ **Save Changes and Exit**

This option is used to save changes and exit Setup program. If the changes are effective after rebooting, then it will reboot automatically.

- **Discard Changes and Exit**

  This option is used to discard changes and exit Setup program.

- **Save Changes and Reset**

  The option is used to save changes and reset.

- **Discard Changes and Reset**

  The option is used to discard changes and reset.

- **Save Changes**

  Save changes.

- **Discard Changes**

  Discard changes.

- **Restore Defaults**

  Restore default values.

- **Save as User Defaults**

  Save user defaults.

- **Restore User Defaults**

  Restore user defaults.

- **Boot Override**

  This option lists all the booting options; users may choose one of the options and press <Enter>, then you may boot according to the option.

System Resource Managed by UEFI under X86 Platform

We define three kinds of system resources here: I/O port address, IRQ interrupt number and DMA number.

◆ **DMA**

Level	Function
DMA0	COM2
DMA1	Unassigned
DMA2	FDD Controller
DMA3	Unassigned
DMA4	Cascade used by DMAC
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ **APIC**

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; while some others can have up to 28 interrupt sources, such as motherboard supporting PCI-X. However, relevant OS are required to enable that function, and currently, only the OS above Windows 2000 could support that function.

◆ **IO Port Address**

Only 16 IO address lines are designed for X86, from 0 ~ 0FFFFh; there is 64K for the system I/O address space. In traditional ISA connector, only the foregoing 1024 (0000 ~ 03FFh) are adopted while the ports above 0400h are adopted by PCI and EISA connectors. Each peripheral will occupy portion of the space. The table below shows parts of the I/O connectors used in X86 platform.

Address	Device Description
000h - 000Fh	DMA Controller #1
020h - 021h	Programmable Interrupt Controller #1

040h - 043h	System Timer#1
061h – 061h	System Speaker
070h - 071h	System CMOS/Real Time Clock
081h - 083h	DMA Controller #2
087h – 087h	DMA Controller #3
089h – 08Bh	DMA Controller #4
08Fh – 08Fh	DMA Controller #5
0A0h – 0A1h	Programmable Interrupt Controller #2
0C0h – 0DFh	DMA Controller #6
0F0h – 0FFh	Numeric data processor
170h – 177h	Secondary IDE Channel
1F0h – 1F7h	Primary IDE Channel
274h – 277h	ISAPNP Read Data Port
279h – 279h	ISAPNP Read Data Port
2F8h – 2FFh	COM2
3B0h – 3BBh	Intel(R) Graphic Media Accelerator HD
3C0h – 3DFh	Intel(R) Graphic Media Accelerator
376h – 376h	Secondary IDE Channel
3E8h – 3EFh	COM3
3F0h – 3F5h	Standard floppy disk controller
3F6h – 3F6h	Primary IDE Channel
3F8h – 3FFh	COM1
400h – 47Fh	Motherboard Resource
4D0h – 4D1h	Motherboard Resource
500h – 57Fh	Motherboard Resource
600h – 67Fh	Motherboard Resource
A79h – A79h	ISAPNP Read Data Port

◆ IRQ Assignment Table

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be distributed. The ISA devices claim to engross the interrupt. Only the plug and play ISA devices can be distributed by the BIOS or the OS. And several PCI devices share one interrupt through the distribution of BIOS or OS. The diagram below shows parts of the interrupt distribution under X86 platform, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	PS2 Keyboard
IRQ2	Reserved
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Standard floppy disk controller
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI-Compliant System
IRQ10	Reserved
IRQ11	COM#3
IRQ12	Mouse
IRQ13	Numeric data processor
IRQ14	Primary IDE Channel
IRQ15	Secondary IDE Channel

Chapter 4 Install the Drivers

Regarding the driver program of this product, please refer to the enclosed CD.

Appendix

Watchdog Programming Guide

The board provides a programmable watchdog timer (WDT) up to 255 levels and timed by minute or second. Watchdog timeout event can be programmed to reset system or generate maskable interrupts.

The available IRQ numbers for this board are: 3, 4, 5, 7, 9, 10 and 11.

The following describes WDT program in C language. The steps to program WDT are listed as follows:

- Enter WDT programming mode;
- Set WDT operating mode, enable WDT/disable WDT.

(1) Enter WDT Programming Mode

```
/*
    Description: the function, PreInitWDT, is used to initialize the registers relevant
    to WDT; please invoke the function before configuring and using WDT.
    Input: none
    Output: none
Note: the function will modify the value of the variable pm_base, which will be
quoted by the function SetWDT.
*/

        #define     INDEX_PORT   0x4E
        #define     DATA_PORT            0x4F
        unsigned    int tmp_reg;
        unsigned int pm_base;

VOID PreInitWDT()
{
        outportb(INDEX_PORT, 0x55);
        outportb(INDEX_PORT, 0x07);
```

```
        outportb(DATA_PORT, 0x0A);
        outportb(INDEX_PORT, 0x30);
        outportb(DATA_PORT, 0x01);
        outportb(INDEX_PORT, 0x60);
        tmp_reg = inportb(DATA_PORT);
        pm_base = tmp_reg;
        outportb(INDEX_PORT, 0x61);
        tmp_reg = inportb(DATA_PORT);
        pm_base = pmbase<<8+tmp_reg; /*Get the variable pm_base for later
        use*/
}
```

(2) Configure the WDT operating mode to enable or disable WDT

/*

Description: the function, SetWDT, is used to configure the parameter required when configuring WDT to enable or disable WDT.

Input: Wmode: 0 - Configure WDT to reset mode

IRQ_NO - Configure WDT to interrupt mode. Please replace the constant IRQ_NO with the interrupt number need to be used. The available range of the interrupt number has been listed in the beginning of this chapter

Wtime: 0 - Configure WDT to time by minute

1 - Configure WDT to time by second

Timeout: 0 - disable WDT

TIME_OUT_VALUE - Enable WDT. Please replace the constant TIME_OUT_VALUE with the unit number of timeout value (0x01 ~ 0xFF)

Note: the instructions for the interrupt mode are only suitable for the OS with both ACPI and APIC enabled.

*/

```
SetWDT(unsigned int Wmode, unsignedint Wtime, unsigned int Timeout)
```

```
{
        unsigned    int irq;

        If (Wmode == 0)
                outportb(pm_base+0x47, 0x0C);
        else
                {
                unsigned int irq;
                irq = Wmode;
                irq = irq<<4;
                outportb(pm_base+0x47, 0x80);
                outportb(pm_base+0x67, irq);
                }

                If (Wtime == 0)
                        outportb(pm_base+0x65, 0x00);
                else
                        outportb(pm_base+0x65, 0x80);

                outportb(pm_base+0x65, Timeout);

}
```

Troubleshooting and Solutions

NO.	Phenomenon	Troubleshooting and Solution
1	BIOS setting cannot be saved	Analysis: it could be the problem of the CMOS battery.
		Solution: measure the CMOS battery with a multi-meter; if the voltage is insufficient, replace the battery; re-set the BIOS and save again.
2	The computer can only be powered-on occasionally	Analysis: it may be caused by poor connection. Remove the power plug from power socket on motherboard, you may find that certain pin of the motherboard power has been collapsed to one side after some forceful insertion.
		Solution: power off the computer and remove the power plug; erect the bended power pin with tweezers and re-insert in the power socket. Reboot the computer and test for several times until the problem no longer exits.
3	When connecting with a USB flash drive, the system prompts that a high-speed device has been connected with a low-speed connector.	Analysis: A USB flash drive is a high-speed USB2.0; when connecting with the computer, it prompts that a high-speed device has been connected with a low-speed connector, which indicates that the connector on motherboard is regarded as a USB1.1 port.
		Solution: enable the USB high-speed transmission mode on the motherboard. Different motherboards may have different settings. Change the FULLSPEED option to HISPEED in USB device option.
4	The screen has no display after replacing with a new memory and cannot enter system; even when the former memory is re-installed, the system cannot be booted as well.	Analysis: it could result from improper operation when inserting or removing the memory and cause abnormal operation of the components on the motherboard. Focus on the circuit related to the memory on the motherboard.
		Solution: check the hardware such as memory, video card first; if it shows that the hardware are all OK, then check the circuit around the memory slot on motherboard carefully; you may find that the two pins connected with the gold finger in the first memory slot are shorted while the second memory slot is normal, then you may know that there is short circuit in the first memory slot. Remove the two pins to their original location with tweezers carefully, insert the memory, reboot the system and the system will be booted smoothly.

5	The system cannot be booted after replacing a CD-ROM.	Analysis: the data cable of the hard disk may get knocked when installing the CD-ROM, which leads to poor connection of the hard disk data cable, or the master and slave jumpers on hard disk and CD-ROM are wrongly set.
		Solution: check the data cable of the hard disk and the IDE connectors on hard disk and motherboard first; if there are no problems, then check the master and slave jumper setting. You may find that the hard disk and CD-ROM are connected with different data cables while their jumpers are all set to master; thus, the hard disk cannot be booted. Set the CD-ROM jumper to slave and then re-install it.
6	No PCI card can be detected after entering the system.	Analysis: make sure the PCI card functions normally; re-insert the PCI card or insert it into another PCI slot to see whether it is normal; find out the power type in use (AT or ATX); find out users' requirement for the PCI card voltage.
		Solution: if the PCI card functions abnormally, replace it with a new one; if it functions normally when re-inserted or inserted in another PCI slot, then there is something wrong between the PCI card and the slot. If AT power is adopted and the PCI card requires 3.3V voltage, then the AT power shall be replaced with ATX power because AT power cannot provide 3.3V voltage. (Suggestion: when purchasing power supplies, please check whether the PCI card in use requires 3.3V voltage or not).
7	No peripheral devices can be detected.	Analysis: devices are not connected; no drivers are loaded; devices are broken.
		Solution: check whether the cable between the device and the motherboard is normal; if it is normal, replace it with a new cable to make sure the connection is OK. Re-install the device driver and check whether it can be recognized; check whether the device is normal; if the device is normal, then check whether the device is compatible with the motherboard.