ECO-1815V2NAR

ATX 单板

ATX Motherboard

Version: C01

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or send an email to the Technical Support Mailbox support@evoc.com (International) or support@evoc.cn (Domestic) for consultation.

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.

Contents

Chapter 1 Product Introduction

Overview

EC0-1815V2NAR is an ATX single board computer, developed based on Intel® Q77 chipset. It complies with Ivy Bridge/Sandy Bridge LGA1155 dual core/quad core processor; supports 1600/1333/1066MHz DDR3 memory up to 16GB; six SATA high speed connectors, supporting RAID0/1/5/10; various display connectors supporting triple display function; two gigabit LAN ports; six RS232 ports (two support RS232/485); four USB3.0 ports and four USB2.0 ports; PCIe x16, PCIe x4(EC0-1815V2NAR-01 is not supported)and PCI bus expansion.

EC0-1815V2NAR mainly targets such application fields as railway transportation, financing and telecom terminals, etc. Its high-end performance and abundant functions will play an important role in various application fields.

Mechanical Dimensions, Weight and Environment

- Dimensions: 304.8mm (L) x 190.5mm (W) x 80mm (H);
- Net Weight: 0.56Kg;
- Operating Environment:

  Temperature: -5°C ~ 60°C;

  Humidity: 10% ~ 90% (non-condensing);
- Storage Environment:

  Temperature: -20°C ~ 80°C;

  Humidity: 10% ~ 90% (non-condensing);

Typical Consumption

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

CPU: Ivy Bridge-I7@2.20G;

Memory: Kingston DDR3 1066 4GB*2 ;

Operating System: Windows XP;

- +5V@0.69A；+5%/-3%；
- +3.3V@0.40A；+5%/-3%；
- +12V@0.32A；+5%/-3%；

Microprocessor

Intel® Core™ Ivy Bridge/Sandy Bridge CPU of LGA1155 package.

Note: different CPUs may have different requirements for memory and functions of the motherboard.

Chipset

Intel® Q77

System Memory

Provides two 240Pin DDR3 memory slots, supporting Un-buffered Non-ECC/Un-buffered ECC (requiring support from CPU) memory and dual-channel function. The maximum memory capacity supported by a single bank is up to 4GB while the total memory capacity is up to 16GB.

Display Function

- Supports DVI, VGA and DP display: DVI and DP support hot swap function as well as independent display, dual display clone mode, dual display expansion mode, triple display clone mode or triple display expansion mode output;
- VGA supports 2048x1536@75HZ, 32bit color depth in maximum, DVI supports 1920x1200@60HZ in maximum, while DP supports 2560x1600@60HZ in maximum.

Note: triple display function only supports two DisplayPorts with VGA or DVI mode.

Network Function

Provides two 10/100/1000Mbps LAN ports; LAN1 supports Wake-on-LAN, LAN booting and AMT8.0 functions.

Audio Function

Adopts HDA standard, supporting rear panel MIC-IN/LINE-IN/LINE-OUT (default), SPDIF (optional), 5.1 sound track (optional) or dual channel power amplifier function (optional, power consumption for single channel is 2W).

Power Feature

Adopts standard ATX power supply; the board supports the status of S0, S1, S4 and S5.

Expansion Bus

Provides four 32-bit PCI slots, complying with PCI Rev2.3 standard; one PCI Express x16 slot, complying with PCI Express 1.0, 2.0 and 3.0 standards; one PCI Express x4 slot（EC0-1815V2NAR-01 is not supported), complying with PCI Express 1.0 and 2.0 standards.

Watchdog Function

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

Operating System

Supported Oss: Windows xp, Windows 7, linux;

Note: it is recommended to use Windows 7 operating system, the driver program of USB 3.0 only supports Windows 7.

On-board I/O

- Six serial ports: COM1/COM2 supports RS-232/RS-485 mode selection while COM3/COM4 supports Pin9 12V/5V/RI selection;
- Six SATA connectors (SATA1 and SATA2 support SATA3.0 standard) support hot swap function (Please set the function in BIOS) and RAID0, 1, 5 and 10;
- Four USB2.0 ports; the rear panel provides four USB3.0 ports (complying with USB2.0);
- One PS/2 keyboard/mouse connector;
- One TPM connector;
- One 16-channel digital I/O connector;

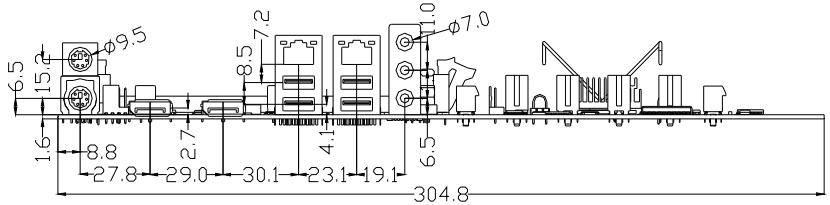
Tips: how to identify the alarms

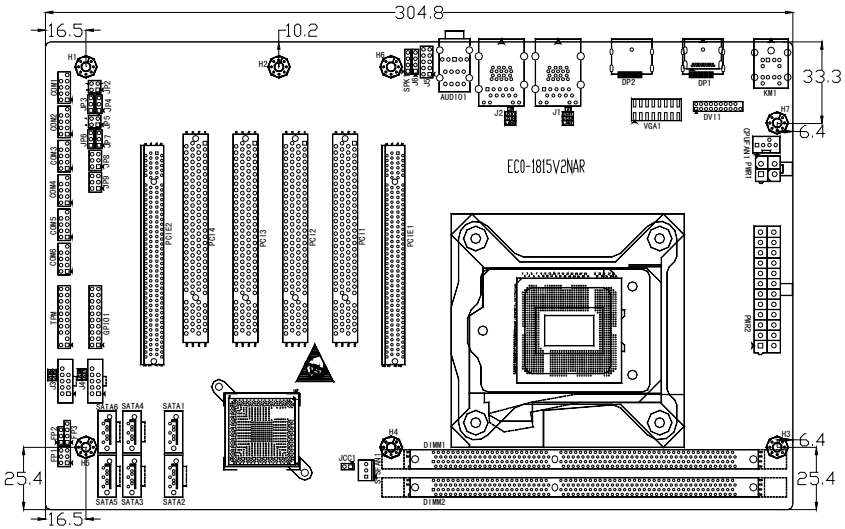
1. Long “beep” indicates system memory error;

2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

Product Outline



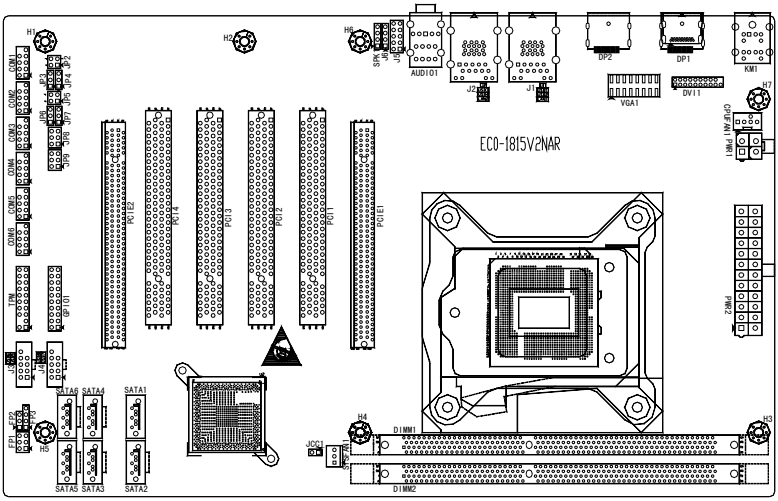


Unit: mm

Warning!

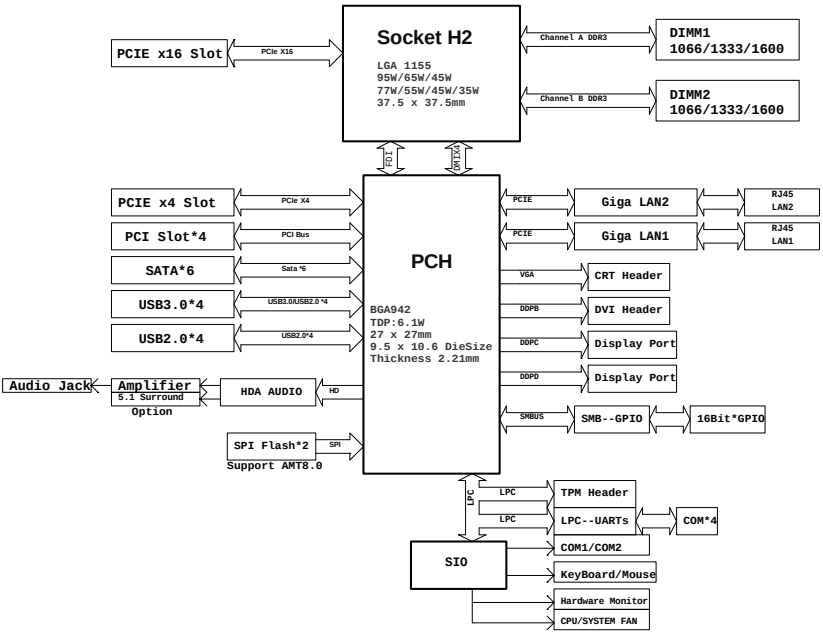
Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use M3x6 GB9074.4-88 screws at H1 ~ H7.

Locations of Connectors



Structure

EC0-1815 Function block diagram



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. 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, load optimized defaults; (5) Save and exit. Please set as follows:

JCC1

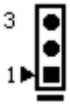
(Pitch: 2.54mm)

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. Serial Port Configuration

Please set the mode for COM1/COM2 by JP2 ~ JP7 (Pitch: 2.54mm):

JP2/JP5



JP3/JP4/JP6/JP7

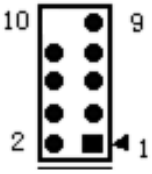
Pin	Signal Name	
	RS-232 (Default)	RS-485
JP2	1-2	3-4
JP3	1-2	2-3
JP4	1-2	2-3
JP5	1-2	3-4
JP6	1-2	2-3
JP7	1-2	2-3

Please set the mode of Pin9 on COM3/COM4 by JP8 and JP9 (Pitch: 2.54mm):

JP8/JP9

Definitions for Pin9	Pin
RI	1-2 (Default)
5V	3-4
12V	5-6

Serial Port



COM1/COM2

Pitch: 2.54mm

Pin	Signal Name	
	RS-232 COM1 ~ COM6	RS-485 COM1/COM2
1	DCD#	Data-
2	RXD	Data+
3	TXD	NC
4	DTR#	NC
5	GND	GND
6	DSR#	NC
7	RTS#	NC
8	CTS#	NC
9	RI#	NC
10	NA	NA

Note: 1. The data transmission direction is controlled automatically under RS485 mode; 2. The pin definitions for Pin9 on COM3 and COM4 include RI#/5V/12V.

Status Indicating and Control Connector

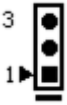
ATX Power Switch and Hard Disk Indicator Connector

FP1

(Pitch: 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	PWRBTN#	2	GND
3	GND	4	RESET#
5	HDD_LED-	6	HDD_LED+

Power Indicator Connector



FP2 (Pitch: 2.54mm)

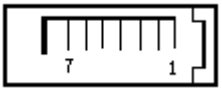
Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

Loudspeaker Output Connector

FP3 (Pitch: 2.54mm)

Pin	Signal Name
1	SPEAKER
2	NC
3	GND
4	+5V

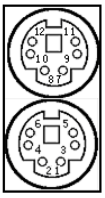
7pin SATA Connector



SATA1 ~ SATA6

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

KB/MS Connector



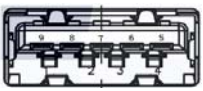
KM1

Pin	Signal Name	Pin	Signal Name
1	KB_DATA	7	MS_DATA
2	NC	8	NC
3	GND	9	GND
4	+5V	10	+5V
5	KB_CLK	11	MS_CLK
6	NC	12	NC

USB Port

The board provides four USB 3.0 ports, brought out by rear panel; the other two USB 2.0 ports are brought out by 2x5Pin headers (Pitch: 2.54mm).

1. USB3.0 Port:

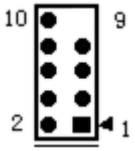


J1(USB1/USB2)

J2(USB3/USB4)

Pin	Signal Name
1	+5V
2	USB_Data-
3	USB_Data+
4	GND
5	USB_SSRX-
6	USB_SSRX+
7	GND
8	USB_SSTX-
9	USB_SSTX+

2. USB2.0 Port:

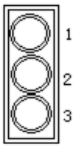


J3(USB5/USB6)
J4(USB7/USB8)
(Pitch: 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NA	10	GND

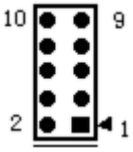
Audio Connector

The board provides AUDIO JACK function (Default), 5.1 track output, SPDIF and dual channel power amplify output (optional).



AUDIO1

Pin	Signal Name
1	LINE_IN
2	LINE_OUT
3	MIC_IN



J5
(5.1 track output)
(Pitch: 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	FRONT_R	2	FRONT_L
3	GND_AUDIO	4	GND_AUDIO
5	SURR_R	6	SURR_L
7	GND_AUDIO	8	GND_AUDIO
9	CENTER_OUT	10	LFE_OUT

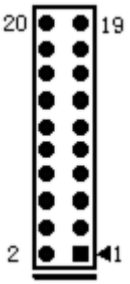
J6 (Pitch: 2.54mm)

Pin	Signal Name
1	+5V
2	NC
3	SPDIF_OUT
4	GND

SPK1
(Pitch: 2.54mm)

Pin	Signal Name	Note
1	SPEAKOUT_LEFT+	Positive Pole of the Left Loudspeaker
2	SPEAKOUT_LEFT-	Negative Pole of the Left Loudspeaker (Ungrounded)
3	SPEAKOUT_RIGHT-	Negative Pole of the Right Loudspeaker (Ungrounded)
4	SPEAKOUT_RIGHT+	Positive Pole of the Right Loudspeaker

GPIO Connector



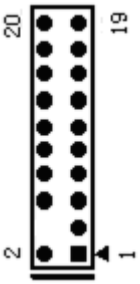
GPIO1
(Pitch: 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	GPIO1	2	GPIO5
3	GPIO2	4	GPIO6
5	GPIO3	6	GPIO7
7	GPIO4	8	GPIO8
9	GPIO9	10	GPIO13
11	GPIO10	12	GPIO14
13	GPIO11	14	GPIO15
15	GPIO12	16	GPIO16
17	+5V	18	+5V
19	GND	20	GND

Note: the factory default value of GPIO is TTL input and the voltage range for input/output signal is 0-5V.

TPM Connector

The board provides one 2x10 TPM pin header (PIN4 is NA, Pitch: 2.54mm).

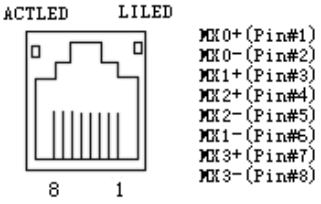


TPM

Pin	Signal Name	Pin	Signal Name
1	CLOCK	2	GND
3	LPC_FRAME-	4	NA
5	PLT_RST-	6	VCC5
7	AD3	8	AD2
9	VCC3.3	10	AD1
11	AD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	VCC3SB	16	SERIRQ
17	GND	18	CLKRUN
19	SUS_SATA-	20	DRQ-

LAN Port

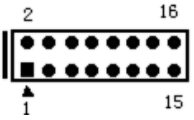
The board provides two 10/100/1000Mbps LAN ports, J1 (LAN1) and J2 (LAN2). LAN1 supports Wake-on-LAN, and AMT8.0 functions. ACTLED and LILED are the green and dual color LED indicators on both sides of the Ethernet port, which respectively indicates the activity status and the speed of LAN. Please refer to the status description for each LED:



LAN1/LAN2

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

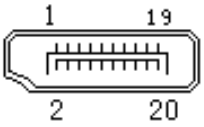
2x8 Pin VGA Connector



VGA1

Pin	Signal Name	Pin	Signal Name
1	Red	2	GND
3	NC	4	Green
5	GND	6	DDCDATA
7	Blue	8	GND
9	HSYNC	10	NC
11	NC	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	Shield_gnd

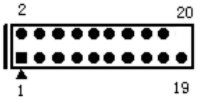
Display Port



DP1/DP2

Pin	Signal Name	Pin	Signal Name
1	LANE0P	2	GND
3	LANE0N	4	LANE1P
5	GND	6	LANE1N
7	LANE2P	8	GND
9	LANE2N	10	LANE3P
11	GND	12	LANE3N
13	GND	14	GND
15	AUXCHP	16	GND
17	AUXCHN	18	HPD
19	RETURN	20	DP_PWR

DVI Connector



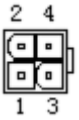
DVI1

(Pitch: 2.0mm)

Pin	Signal	Pin	Signal Name
1	DATA2-	2	DATA2+
3	GND	4	GND
5	DATA1-	6	DATA1+
7	GND	8	GND
9	DATA0-	10	DATA0+
11	GND	12	GND
13	CLK+	14	CLK-
15	+5V	16	HPDET
17	DDCDATA	18	DDCCLK
19	GND	20	NA

Motherboard Power Supply Connector

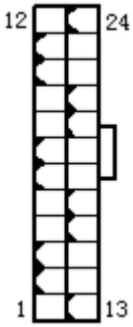
1. 4pin CPU Power Connector (Pitch: 4.2mm)



PWR1

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

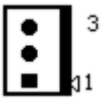
2. 24pin ATX Power Connector (Pitch: 4.2mm)



PWR2

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

3-pin System Fan Connector



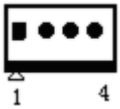
SYSFAN1

Pitch: 2.54mm

Pin	Signal Name
1	GND
2	+12V
3	FAN_IO

Note: FAN_IO: fan speed impulse output.

4-pin CPU Fan Connector



CPUFAN1

Pitch: 2.54mm

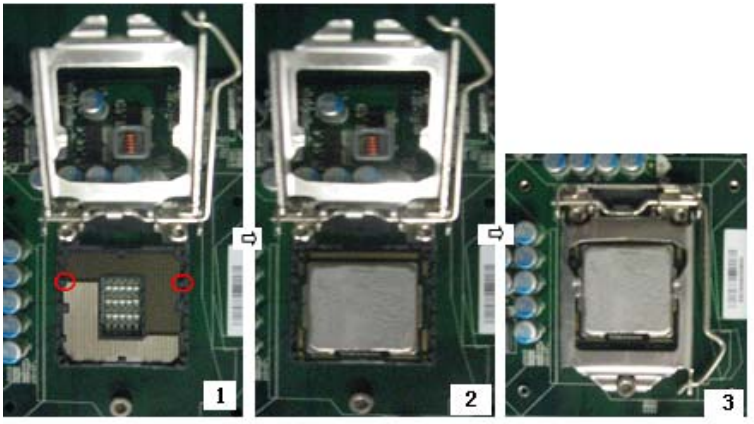
Pin	Signal Name
1	GND
2	+12V
3	FAN_IO
4	FAN_PWM

Note: FAN_I: fan speed impulse output; FAN_PWM: fan speed PWM control.

Installing the CPU

Please install the CPU as follows (refer to the figure below):

- Align the notches on the CPU with tabs on the CPU socket and put the CPU into the socket.
- When the CPU is fully seated in the socket, close the upper cover on CPU socket and then lock the CPU into place by the clip.



Installing the CPU Fan

Please install the CPU fan as follows: (refer to the figure below):

- Assemble the bracket of the cooling fin with the fixing holes on the rear of the CPU card. Note: the T-shaped gap shall correspond with the bracket of the CPU socket;

Warning: please use the bracket of the metal cooling fin with care, so as to prevent the short circuit of the pins within the red circle on the back of the CPU!

- Connect the front side of cooling fin with the bracket and fix them; ensure well contact between CPU surface and cooling fin;
- Fix the cooling fin with two screws on the cross (do not tighten it) and then the other two screws; then tighten the four screws;
- Lastly, connect the fan power cable with the fan socket on the CPU card.

Note! It is recommended to use cooling fan authenticated by Intel; before installing the fan, smear the heat sink compound on the surface between CPU and the fan cooling fin to improve the heat dissipation performance.

PCI Connector

The board provides four standard PCI connectors, PCI1 ~ PCI4 (Version 2.3); the pin definitions are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	TRST#	A31	PCI_AD18	B1	-12V	B31	+3.3V
A2	+12V	A32	PCI_AD16	B2	TCK	B32	PCI_AD17
A3	TMS	A33	+3.3V	B3	GND	B33	PCI_C/BE#2
A4	TDI	A34	PCI_FRAME#	B4	TDO	B34	GND
A5	+5V	A35	GND	B5	+5V	B35	PCI_IRDY#
A6	INTA#	A36	PCI_TRDY#	B6	+5V	B36	+3.3V
A7	INTC#	A37	GND	B7	INTB#	B37	PCI_DEVSEL#
A8	+5V	A38	PCI_STOP#	B8	INTD#	B38	GND
A9	Reserved	A39	+3.3V	B9	PRSNT1#	B39	PCI_LOCK#
A10	+5V	A40	SMBCLK	B10	Reserved	B40	PCI_PERR#
A11	Reserved	A41	SMBDATA	B11	PRSNT2#	B41	+3.3V
A12	GND	A42	GND	B12	GND	B42	PCI_SERR#
A13	GND	A43	PCI_PAR	B13	GND	B43	+3.3V
A14	3.3Vaux	A44	PCI_AD15	B14	Reserved	B44	PCI_C/BE#1
A15	PCI_RST#	A45	+3.3V	B15	GND	B45	PCI_AD14
A16	+5V	A46	PCI_AD13	B16	PCI_CLK	B46	GND
A17	PCI_GNT#	A47	PCI_AD11	B17	GND	B47	PCI_AD12
A18	GND	A48	GND	B18	PCI_REQ#	B48	PCI_AD10
A19	PCI_PME#	A49	PCI_AD9	B19	+5V	B49	GND
A20	PCI_AD30	A50	PCI_C/BE#0	B20	PCI_AD31	B50	PCI_AD8
A21	+3.3V	A51	+3.3V	B21	PCI_AD29	B51	PCI_AD7
A22	PCI_AD28	A52	PCI_AD6	B22	GND	B52	+3.3V
A23	PCI_AD26	A53	PCI_AD4	B23	PCI_AD27	B53	PCI_AD5
A24	GND	A54	GND	B24	PCI_AD25	B54	PCI_AD3
A25	PCI_AD24	A55	PCI_AD2	B25	+3.3V	B55	GND
A26	PCI_IDSEL	A56	PCI_AD0	B26	PCI_C/BE#3	B56	PCI_AD1
A27	+3.3V	A57	+5V	B27	PCI_AD23	B57	+5V
A28	PCI_AD22	A58	PCI_REQ64#	B28	GND	B58	PCI_ACK64#
A29	PCI_AD20	A59	+5V	B29	PCI_AD21	B59	+5V
A30	GND	A60	+5V	B30	PCI_AD19	B60	+5V

PCIe x16 Connector

The board provides one PCIE x16 slot (PCIE1); the pin definitions are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	RSVD	B4	GND
A5	TCK	A6	TDI	B5	SMCLK	B6	SMDATA
A7	TDO	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	TRST#	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	RSVD
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	PRSNT2#	B18	GND
A19	RSVD	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	RSVD
A31	GND	A32	RSVD	B31	PRSNT2#A	B32	GND
A33	RSVD	A34	GND	B33	PETp4	B34	PETn4
A35	PERp4	A36	PERn4	B35	GND	B36	GND
A37	GND	A38	GND	B37	PETp5	B38	PETn5
A39	PERp5	A40	PERn5	B39	GND	B40	GND
A41	GND	A42	GND	B41	PETp6	B42	PETn6
A43	PERp6	A44	PERn6	B43	GND	B44	GND
A45	GND	A46	GND	B45	PETp7	B46	PETn7
A47	PERp7	A48	PERn7	B47	GND	B48	PRSNT2#B
A49	GND	A50	RSVD	B49	GND	B50	PETp8
A51	GND	A52	PERp8	B51	PETn8	B52	GND
A53	PERn8	A54	GND	B53	GND	B54	PETp9
A55	GND	A56	PERp9	B55	PETn9	B56	GND
A57	PERn9	A58	GND	B57	GND	B58	PETp10
A59	GND	A60	PERp10	B59	PETn10	B60	GND
A61	PERn10	A62	GND	B61	GND	B62	PETp11

A63	GND	A64	PERp11	B63	PETn11	B64	GND
A65	PERn11	A66	GND	B65	GND	B66	PETp12
A67	GND	A68	PERp12	B67	PETn12	B68	GND
A69	PERn12	A70	GND	B69	GND	B70	PETp13
A71	GND	A72	PERp13	B71	PETn13	B72	GND
A73	PERn13	A74	GND	B73	GND	B74	PETp14
A75	GND	A76	PERp14	B75	PETn14	B76	GND
A77	PERn14	A78	GND	B77	GND	B78	PETp15
A79	GND	A80	PERp15	B79	PETn15	B80	GND
A81	PERn15	A82	GND	B81	PRSNT2#C	B82	RSVD

PCIe x4 Connector

The board provides one PCIE x16 slot (PCIE2), supporting PCIE x4 signals (EC0-1815V2NAR-01 not support this interface). The pin definitions are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	RSVD	B4	GND
A5	TCK	A6	TDI	B5	SMCLK	B6	SMDATA
A7	TDO	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	TRST#	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	RSVD
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	PRSNT2#	B18	GND
A19	RSVD	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	NC
A31	GND	A32	NC	B31	NC	B32	GND
A33	NC	A34	GND	B33	NC	B34	NC
A35	NC	A36	NC	B35	GND	B36	GND

A37	GND	A38	GND	B37	NC	B38	NC
A39	NC	A40	NC	B39	GND	B40	GND
A41	GND	A42	GND	B41	NC	B42	NC
A43	NC	A44	NC	B43	GND	B44	GND
A45	GND	A46	GND	B45	NC	B46	NC
A47	NC	A48	NC	B47	GND	B48	NC
A49	GND	A50	NC	B49	GND	B50	NC
A51	GND	A52	NC	B51	NC	B52	GND
A53	NC	A54	GND	B53	GND	B54	NC
A55	GND	A56	NC	B55	NC	B56	GND
A57	NC	A58	GND	B57	GND	B58	NC
A59	GND	A60	NC	B59	NC	B60	GND
A61	NC	A62	GND	B61	GND	B62	NC
A63	GND	A64	NC	B63	NC	B64	GND
A65	NC	A66	GND	B65	GND	B66	NC
A67	GND	A68	NC	B67	NC	B68	GND
A69	NC	A70	GND	B69	GND	B70	NC
A71	GND	A72	NC	B71	NC	B72	GND
A73	NC	A74	GND	B73	GND	B74	NC
A75	GND	A76	NC	B75	NC	B76	GND
A77	NC	A78	GND	B77	GND	B78	NC
A79	GND	A80	NC	B79	NC	B80	GND
A81	NC	A82	GND	B81	NC	B82	NC

Hot-swap of SATA Hard Disk

Notes for hot-swap of SATA hard disk:

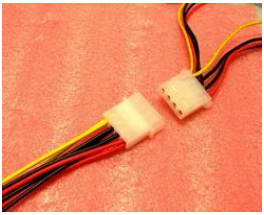
1. The hard disk shall support SATA 2.0 and use 15-pin SATA hard disk power connector.
2. The SATA hard disk only supports hot swap function when operating under AHCI mode and the hot swap option is enabled.
3. The driver of chipset shall support the hot-swap of SATA hard disk.
4. Hot-swap of SATA hard disk with the operating system is forbidden when system is powered-on.

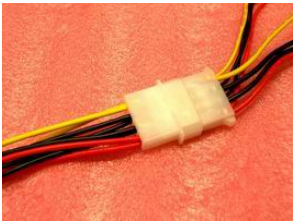
SATA Data Cable

SATA Power Cable

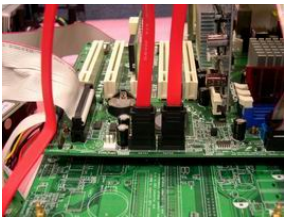
Please carry out hot plugging as follows. Improper operation may destroy the hard disk or result in data loss.

Hot Plug





Step 1: Please plug the 1 x 4 pin SATA power connector (white) into the power adapter.



Step 2: Please connect the SATA data cable to the SATA connector on board.

Step 3: Please connect the 15-pin SATA power connector (black) to the SATA hard disk.

Step 4: Please connect the SATA data cable to the SATA hard disk.

Hot Unplug

Step 1: Uninstall the hard disk from the device manager.

Step 2: Unplug the data cable from the SATA hard disk.

Step 3: Unplug the SATA 15-pin power connector (black) from the SATA hard disk.

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 UEFI 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) 2011 American Megatrends, Inc. will appear:

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc. Copyright (C)	
Main Advanced Chipset Boot Security Save & Exit	
BIOS Information	Set the Date. Use 'Tab' to switch between Date elements.
Project Name EC0-1815V2NAR	
BIOS Name J5044000	
BIOS Version A00	→←: Select Screen
Build Date and Time 12/09/2011 11:09:23	↑↓: Select Item
	Enter: Select
Total Memory 2048 MB (DDR3)	+/-: Change Opt
Memory Frequency 1067 Mhz	F1: General Help
ME FW Version 8.0.0.1351	F2: Previous Values
ME Firmware SKU 5MB	F3: Optimized Defaults
	F4: Save ESC: Exit
System Date [Thu 10/06/2011]	
System Time [09:41:55]	
Access Level Administrator	
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

◆ **Main**

➢ **System Date**

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) 2011 American Megatrends, Inc.	
Main **Advanced** Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ Trusted Computing ▶ CPU Configuration ▶ SATA Configuration ▶ Intel TXT(LT) Configuration ▶ AMT Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor ▶ CPU PPM Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

➢ **Trusted Computing**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Configuration TPM SUPPORT [Disabled] Current Status Information NO Security Device Found	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

- **TPM SUPPORT**

  Enable TPM function.

➢ **CPU Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
CPU Configuration Genuine Intel® CPU @ 2.20GHz CPU Signature 306a4 Microcode Patch 7 Max CPU Speed 2200 MHz Min CPU Speed 1600 MHz CPU Speed 2200 MHz Processor Cores 4 Intel HT Technology Not Supported Intel VT-x Technology Supported Intel SMX Technology Supported 64-bit Supported L1 Data Cache 32 kB x 4 L1 Code Cache 32 kB x 4 L2 Cache 256 kB x 4 L3 Cache 8192 kB Active Processor Cores [All] Intel Virtualization Technology [Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

Display the relevant information of CPU. Note: the relevant information of the CPU are related to the CPU installed in the platform; different series of CPUs will display different information.

- **Active Processor Cores**

  Active CPU core number, only available for multi-core CPU.

- **Intel Virtualization Technology**

  Switch for the Intel Virtualization Technology.

➢ **SATA Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
SATA Controller(s)	[Enabled]	→←: Select Screen
SATA Mode Selection	[IDE]	↑↓: Select Item
		Enter: Select
Serial ATA Port 1	Empty	+/-: Change Opt
Serial ATA Port 2	Empty	F1: General Help
Serial ATA Port 3	Empty	F2: Previous Values
Serial ATA Port 4	Empty	F3: Optimized Defaults
Serial ATA Port 5	Empty	F4: Save
Serial ATA Port 6	Empty	ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.		

- **SATA Controller(s)**

  Switch for the SATA Controller(s).

- **SATA Mode Selection**

  SATA controller type selection, corresponding with three options: IDE, RAID and AHCI.

  Note: when choosing AHCI or RAID Mode to implement system installation, the relevant drivers of the Floppy device and specified chipset are required.

- **Serial ATA Port 1 ~ 6**

  Serial ATA Port1 ~ 6 dynamically detect whether there are SATA devices on motherboard. If devices are connected with the corresponding ports, then it will display the SATA device type. Otherwise, it will display “Empty”.

➢ **Intel TXT(LT) Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Intel Trusted Execution Technology Configuration Intel TXT support only can be enabled/disabled if SMX is enabled. VT and VT-d support must also be enabled prior to TXT. Secure Mode Extensions(SMX) Enabled Intel TXT(LT) Support [Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

- **Intel TXT(LT) Support**

  Enable Intel TXT function.

➢ **AMT Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Intel AMT [Enabled] Un-configure ME [Disabled] Disable ME [Disabled]	→←: 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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- **Intel AMT**

  Control switch for AMT function.

- **Un-configure ME**

  Switch for reconfiguring ME without password. When this option is Enabled, it will load ME default value without requiring the password during POST period.

- **Disable ME**

  Enable ME function control switch.

➢ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
USB Configuration	→←: Select Screen
	↑↓: Select Item
USB Devices:	Enter: Select
1 Keyboard, 1 Mouse, 2 Hubs	+/-: Change Opt
	F1: General Help
Legacy USB Support [Enabled]	F2: Previous Values
	F3: Optimized Defaults
Mass Storage Devices:	F4: Save
Netac [Auto]	ESC: Exit
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- **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) 2011 American Megatrends, Inc.	
Advanced	
Super IO Configuration ►Serial Port 1 Configuration ►Serial Port 2 Configuration ►Serial Port 3 Configuration ►Serial Port 4 Configuration ►Serial Port 5 Configuration ►Serial Port 6 Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

● **Serial Port 1 ~ 6 Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Serial Port 1 ~ 6 Configuration Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	→←: 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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*** Serial Port**

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

*** Device Settings**

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

➢ **H/W Monitor**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
PC Health Status		→←: Select Screen
		↑↓: Select Item
System Temperature	: +29 C	Enter: Select
CPU Temperature	: +30 C	+/-: Change Opt
SYSFAN1	: 3068 RPM	F1: General Help
CPUFAN1	: 2086 RPM	F2: Previous Values
Vcore	: +0.992 V	F3: Optimized Defaults
V3.3	: +3.296 V	F4: Save
V5.0	: +5.007 V	ESC: Exit
V12.0	: +12.091 V	
VBAT	: +3.232 V	
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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.

- **SYSFAN1/CPUFAN1**

  Monitor the speed of the current system fan and the CPU fan.

- **Vcore**

  CPU core voltage.

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

  Turn on/off the power to output voltage.

- **VBAT**

  CMOS battery voltage.

➢ **CPU PPM Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
CPU PPM Configuration EIST [Enabled] Turbo Mode [Enabled] CPU C3 Report [Enabled] CPU C6 Report [Enabled] CPU C7 Report [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

Display the information relevant to CPU. Note: the displayed CPU information is relevant to the CPU installed within the platform; different series CPU may have different display information.

- **EIST**

  Enable the SpeedStep function of CPU.

- **Turbo Mode**

  Enable the Turbo Mode function.

- **CPU C3 ~ C7 Report**

  Enable the power saving function of CPU.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced **Chipset** Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ PCH-IO Configuration ▶ System Agent (SA) Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

➢ **PCH-IO Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
▶ USB Configuration		→←: Select Screen
		↑↓: Select Item
LAN1 Controller	[Enabled]	Enter: Select
LAN2 Controller	[Enabled]	+/-: Change Opt
Audio Controller	[Auto]	F1: General Help
Restore AC Power Loss	[Last State]	F2: Previous Values
Audio Internal Codec	[Enabled]	F3: Optimized Defaults
Audio codec Port DP1	[Enabled]	F4: Save
Audio codec Port DP2	[Enabled]	ESC: Exit
PCIe Speed	[Auto]	
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.		

- **LAN1 Controller**

  Enable LAN1 controller switch.

- **LAN2 Controller**

  Enable LAN2 controller switch.

- **Audio Controller**

  Enable audio card controller switch.

- **Restore AC Power Loss**

  This option could set the system status when the computer is re-electrified after powered off under AC. “Power Off” is to make the system at power off status; “Power On” is to power on the system automatically; “Last State” is to recover the status before powering off.

- **Audio Internal Codec**

  Enable the control switch of audio internal codec.

- **Audio codec Port DP1**

Enable the control switch of audio codec port DP1.

- **Audio codec Port DP2**

  Enable the control switch of audio codec port DP2.

- **PCIe Speed**

  Speed control switch for PCIE2.

- **USB Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
USB Configuration		
		→←: Select Screen
XHCI Mode	[Smart Auto]	↑↓: Select Item
HS Port #1 Switchable	[Enabled]	Enter: Select
HS Port #2 Switchable	[Enabled]	+/-: Change Opt
HS Port #3 Switchable	[Enabled]	F1: General Help
HS Port #4 Switchable	[Enabled]	F2: Previous Values
		F3: Optimized Defaults
EHCI1	[Enabled]	F4: Save
EHCI2	[Enabled]	ESC: Exit
USB Ports Per-Port Disable Control	[Disabled]	
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.		

* XHCI Mode

  Enable xhci mode control.

* HS Port #1~4 Switchable

  Enable xhci and ehci switch function.

* **EHCI 1**

  Switch for EHCI controller 1.

* **EHCI 2**

  Switch for EHCI controller 2.

* USB Ports Per-Port Disable Control

General control switch for the USB Port.

* USB 1~8 Disable

Switches for USB Port 1 ~ 8.

➢ **System Agent (SA) Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
VT-d Capability	Supported	→←: Select Screen
		↑↓: Select Item
VT-d	[Enabled]	Enter: Select
PEG0 – Gen X	[Auto]	+/-: Change Opt
De-emphasis Control	[-3.5 dB]	F1: General Help
		F2: Previous Values
▶ Graphics Configuration		F3: Optimized Defaults
▶ Memory Configuration		F4: Save
		ESC: Exit
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- **VT-d**

  Switch for the Intel virtualization technology.

- **PEG0 – Gen X**

  Speed control switch for PCIE1.

- **De-emphasis Control**

  De-emphasis control switch for PCIE1.

➢ **Graphics Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Graphics Configuration	→←: Select Screen ↑↓: Select Item
Primary IGFX Boot Display [CRT]	Enter: Select
Secondary IGFX Boot Display [Disabled]	+/-: Change Opt
Primary Display [Auto]	F1: General Help
DVMT Pre-Allocated [64M]	F2: Previous Values
DVMT Total Gfx Mem [256M]	F3: Optimized Defaults
	F4: Save
	ESC: Exit
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- **Primary IGFX Boot Display**

  Set the primary IGFX boot display device.

- **Secondary IGFX Boot Display**

  Set the secondary IGFX boot display device.

- **Primary Display**

  This option is used to specify the display device type with boot priority.

- **DVMT Pre-Allocated**

  Select the memory size pre-allocated by DVMT.

- **DVMT Total Gfx Mem**

  Select the DVMT total Gfx memory size.

➢ **Memory Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Memory Information Memory Frequency 1067 Mhz Total Memory 2048 MB (DDR3) DIMM1 Not Present DIMM2 2048 MB (DDR3) CAS Latency(tCL) 7 Minimum delay time CAS to RAS (tRCDmin) 7 Row Precharge (tRPmin) 7 Active to Rrecharge (tRASmin) 20 XMP Profile 1 Not Supported XMP Profile 2 Not Supported Memory Remap [Enabled]	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

- **Memory Remap**

  This option is used on the platform supporting North Bridge above 4G (such as 64GB); it will map the addresses occupied by the traditional devices less than 4G, such as BIOS, APIC, PCIE and PCI MEMORY, etc. to the memory above 4G. Therefore, when plenty of the physical memories are adopted, the OS can make full use of the physical memories.

◆ **Boot**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset **Boot** Security Save & Exit	
Boot Configuration Quiet Boot [Disabled] **Boot Option Priorities** Boot Option #1 [Netac] Boot Option #2 [UEFI: Netac] **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 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

➢ **Quiet Boot**

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

➢ **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) 2011 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. The password length must be in the following range: Minimum length 3 Maximum length 20 Administrator Password	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

➢ **Administrator Password**

This option is used to set administrator password.

◆ **Save & Exit**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset Boot Security **Save & Exit**	
Save Changes and Reset Discard Changes and Reset Boot Override Netac UEFI: Netac	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.14.1219. Copyright (C) 2011,American Megatrends, Inc.	

- **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.

- **Boot Override**

  This option is used to select the boot device.

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	Unassigned
DMA1	Unassigned
DMA2	Unassigned
DMA3	Unassigned
DMA4	Used for DMAC cascade
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.

◆ **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 - 01Fh	DMA Controller
00h – CF7h	PCI bus
010h - 01Fh	Motherboard Resource
020h - 021h	Programmable Interrupt Controller
022h - 03Fh	Motherboard Resource
024h - 025h	Programmable Interrupt Controller
028h - 029h	Programmable Interrupt Controller
02Ch – 02Dh	Programmable Interrupt Controller
02Eh - 02Fh	Motherboard Resource
02Eh - 02Fh	Motherboard Resource
030h - 031h	Programmable Interrupt Controller
034h - 035h	Programmable Interrupt Controller
038h – 039h	Programmable Interrupt Controller
03Ch – 03Dh	Programmable Interrupt Controller
040h - 043h	System Timer
044h - 05Fh	Motherboard Resource
04Eh - 04Fh	Motherboard Resource
050h - 053h	System Timer
060h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
061h	Motherboard Resource

062h – 063h	Motherboard Resource
063h	Motherboard Resource
064h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
065h	Motherboard Resource
065h - 06Fh	Motherboard Resource
067h	Motherboard Resource
070h	Motherboard Resource
070h - 077h	Real Time Clock, NMI
072h – 07Fh	Motherboard Resource
080h	Motherboard Resource
080h	Motherboard Resource
081h - 091h	DMA Controller
084h - 086h	Motherboard Resource
088h	Motherboard Resource
08Ch – 08Eh	Motherboard Resource
090h - 09Fh	Motherboard Resource
092h	Motherboard Resource
093h – 09Fh	DMA Controller
0A0h - 0A1h	Programmable Interrupt Controller
0A2h – 0BFh	Motherboard Resource
0A4h - 0A5h	Programmable Interrupt Controller
0A8h - 0A9h	Programmable Interrupt Controller
0ACh - 0ADh	Programmable Interrupt Controller
0B0h – 0B1h	Programmable Interrupt Controller
0B2h – 0B3h	Motherboard Resource
0B4h – 0B5h	Programmable Interrupt Controller

0B8h – 0B9h	Programmable Interrupt Controller
0BCh – 0BDh	Programmable Interrupt Controller
0C0h – 0DFh	DMA Controller
0E0h - 0EFh	Motherboard Resource
0F0h - 0FFh	Numeric data processor
210h - 217h	COM3
218h - 21Fh	COM 4
220h - 227h	COM 5
228h - 22Fh	COM 6
274h – 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2F8h - 2FFh	COM 2
3B0h – 3BBh	Intel(R) HD Graphics
3C0h – 3DFh	Intel(R) HD Graphics
3F8h - 3FFh	COM1
400h - 453h	Motherboard Resource
454h –457h	Motherboard Resource
458h –47Fh	Motherboard Resource
4D0h – 4D1h	Motherboard Resource
4D0h – 4D1h	Programmable Interrupt Controller
500h - 57Fh	Motherboard Resource
680h - 69Fh	Motherboard Resource
A00h – A0Fh	Motherboard Resource
A30h – A3Fh	Motherboard Resource
A79h	ISAPNP Read Data Port
0D00h-FFFFh	PCI bus

◆ **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 assigned to other devices. ISA device requests exclusive use of its interrupt. Only the plug and play ISA devices can be assigned by the UEFI or the OS. And several PCI devices share one interrupt, which is assigned by UEFI or OS. Interrupt assignment of some devices of X86 platform is shown in the table below, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	PS2 Keyboard
IRQ2	Programmable Interrupt Controller
IRQ3	COM2
IRQ4	COM1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI-Compliant System
IRQ10	Reserved
IRQ11	COM3/4/5/6
IRQ12	Mouse
IRQ13	Numeric data processor
IRQ14	Master IDE Channel
IRQ15	Slave IDE Channel

Chapter 4 Installing the Drivers

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

Appendix

BPI Overview

EVOC BPI (BIOS Programming Interface) is a cross-platform, easy-to-maintain software interface specification, which supports access to hardware under the Protected Mode of the operating system. The function of the product is to provide a unified standard interface for the application software or driver; therefore, when the hardware of the motherboard is upgraded, there is no need to modify the application software or driver and the former software can operate on the new platform normally. It has greatly sped up the product development and reduced the maintenance cost. Currently, BPI supports the configuration of WDT and GPIO as well as H/W monitor function. As for the test program and function library, please refer to the relevant documents in the enclosed CD.

Features of the BPI include:

1、 Platform Irrelevant

The software developed by BPI function library can operate on a new platform, supporting BPI function, normally without making any modification.

2、 Security and High Reliability

The BPI function library accessing the hardware is programmed by the motherboard developer and is strictly tested; therefore, it can avoid system malfunction caused by improper operation of the system hardware.

3、 Flexible Configuration

Take GPIO configuration as an example, users may conveniently configure an arbitrary GPIO function by BPI function library or test program.

4、 Easy Maintenance

Traditional WDT and GPIO programming are closely related to the hardware

with complicated test and debug process and software of different platforms; however, the software developed by BPI only requires one set of the maintenance software.

5、 Low Cost

Developing the applications by BPI will not result in additional hardware and software cost, but it will reduce the development difficulty, development cycle and time-to-market for the system integrator.

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	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.

	and cannot enter system; even when the former memory is re-installed, the system cannot be booted as well.	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.