EC7-1818CLD2NA

MINI-ITX 带 VGA/LVDS/HDMI/DVI/2LAN/6COM

MINI-ITX with VGA /LVDS /HDMI /DVI /2LAN /6COM

Version: C05

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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

The board contains Intel® Atom™ D2700/D2550/N2600 + NM10 chipset (EC7-1818CLD2NA contains Intel® Atom™ D2700/D2550 + NM10 chipset while EC7-1818CLD2NA-V contains Intel® Atom™ N2600 + NM10 chipset). It supports one DDR3 SODIMM memory module: EC7-1818CLD2NA supports one 1066MHz memory up to 4GB while EC7-1818CLD2NA-V supports one 800MHz memory up to 2GB. It provides two 10/100/1000Mbps LAN ports on-board and VGA, DVI, LVDS and HDMI display in single display or dual display of arbitrary combination.

EC7-1818CLD2NA supports various peripheral connectors, including two SATA connectors(Optional), one CFAST(Optional), eight USB 2.0 ports, six serial ports (COM2/COM3 supports RS-232/RS-422/RS-485 while the Pin9 of COM4/COM5 supports RI#/+5V/+12V optional), one standard MIC-IN/LINE-OUT audio connector and one PCI slot.

Mechanical Dimensions, Weight and Environment

- Dimensions: 170.6mm (L) x 170.3mm (W) x 41.3mm (H);
- Net Weight: 0.41Kg;
- Operating Environment:

  EC7-1818CLD2NA supports:

  Temperature: -10°C ~ 60°C;

  Humidity: 5% ~ 95% (non-condensing);

  EC7-1818CLD2NA-V supports:

  Temperature: -10°C ~ 70°C;

  Humidity: 5% ~ 95% (non-condensing);
- Storage Environment:

  Temperature: -20°C ~ 80°C;

Humidity: 5% ~ 95% (non-condensing);

Typical Consumption

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

Configuration 1:

CPU: Intel Atom D2700/D2550 1.86GHz on-board;

Memory: DDR3 1066 2GB Samsung;

Operating System: Windows 7;

- +5V@0.24A; +5%/-3%;
- +3.3V@0.25A; +5%/-3%;
- +12V@0.59A; +5%/-3%;

Configuration 2:

CPU: Intel Atom N2600 1.60GHz on-board;

Memory: DDR3 1066 2GB Apace;

Operating System: Windows 7;

- +12V@0.53A; +5%/-3%;

Microprocessor

Intel® Atom™ D2700/D2550 (Dual Core) /N2600 (Dual Core) processor with Micro-FCBGA11 package on-board;

Chipset

Intel® ATOM™ D2700/D2550/N2600 + NM10;

System Memory

Provides one 204 Pin DDR3 SODIMM memory slot, supporting Un-buffered non-ECC memory. The memory slot of EC7-1818CLD2NA supports 1066MHz memory up to 4GB while that of EC7-1818CLD2NA-V supports 800MHz memory

up to 2GB.

Display Function

- Supports VGA, LVDS, HDMI and DVI display; EC7-1818CLD2NA supports 24-bit single channel while EC7-1818CLD2NA-V supports 18-bit LVDS single channel. VGA supports hot-swap function.

  All the display functions are synchronous output;
- The maximum resolution and refresh frequency supported by VGA is 1920x1200@60Hz; the maximum resolution and refresh frequency supported by the LVDS of EC7-1818CLD2NA is 1440x900@60Hz while that supported by the LVDS of EC7-1818CLD2NA-V is 1366x768@60Hz; the maximum resolution and refresh frequency supported by HDMI/DVI is 1920x1200@60Hz.

Note: If WINDOWS XP system is used, HDMI sound output is not currently supported, the Beta version driver can only support LVDS screens with two types of resolution (18-bit 1024×768 and 24-bit 1366×768), and other types of resolution need to be customized according to user requirements.

Network Function

Provides two 10/100/1000Mbps LAN ports, LAN1 supports Wake-on-LAN.

Audio Function

Adopts HDA standard, supporting MIC-IN/LINE-OUT.

Power Feature

EC7-1818CLD2NA adopts ATX power, supporting ACPI function and S0, S1, S4 and S5; EC7-1818CLD2NA-V adopts single 12V power supply.

Expansion Bus

Provides one PCI slot, complying with PCI2.3 standard;

Watchdog Function

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

Operating System

- Supported OSs: Windows XP/7/XPE/LINUX;

On-board I/O

- Six serial ports: COM2/COM3 supports RS-232/RS-422/RS-485 mode selection;
- One CFAST connector（Optional）;
- Two SATA2.0 connectors（Optional）, supporting hot-swap function;
- Eight USB2.0 ports;
- Twp PS/2 keyboard/mouse connector;
- One 8-chanenl digital I/O connector.

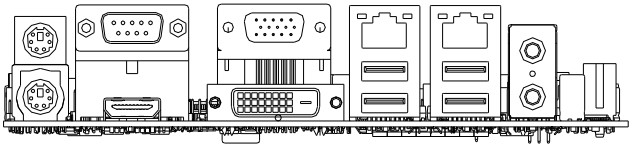
Tips: how to identify the alarms

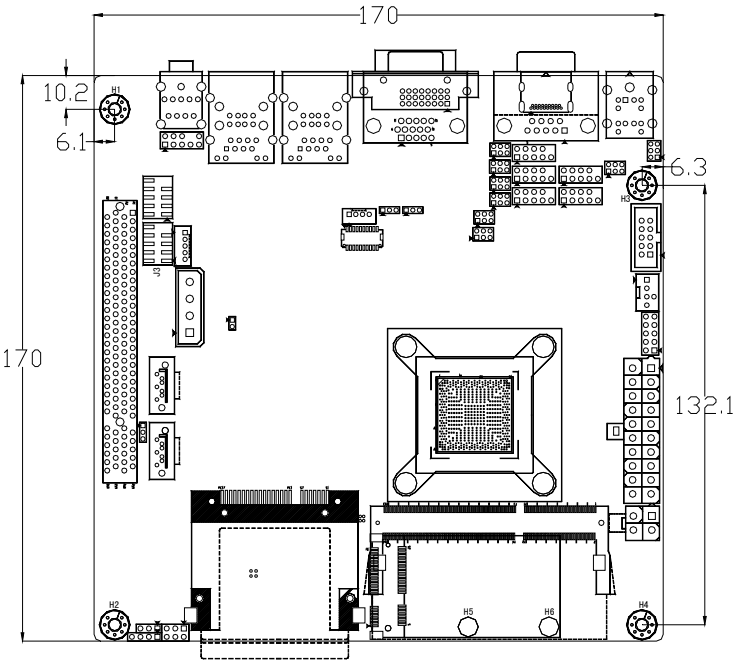
1. Long “beep” indicates system memory error;

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

Chapter 2 Installation

Product Outline



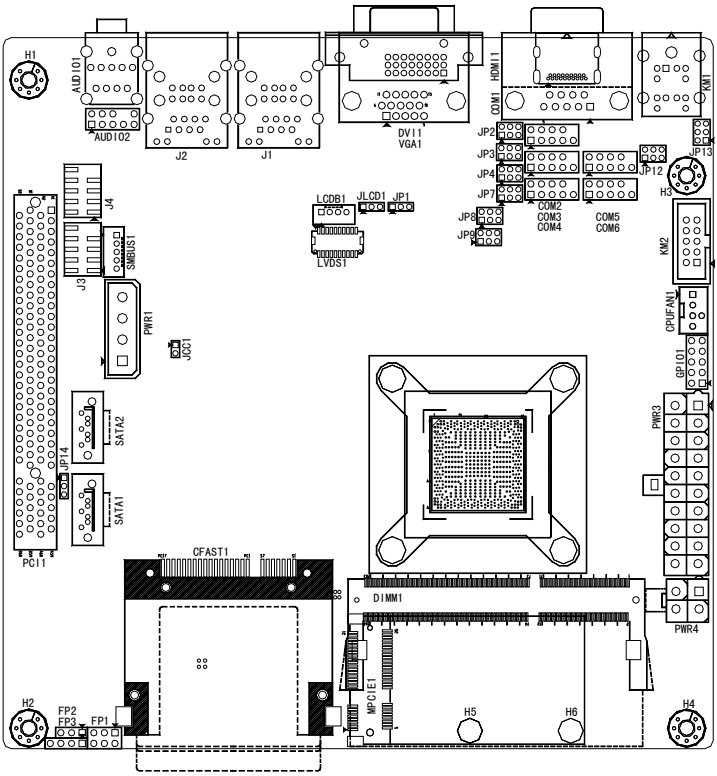


Unit: mm

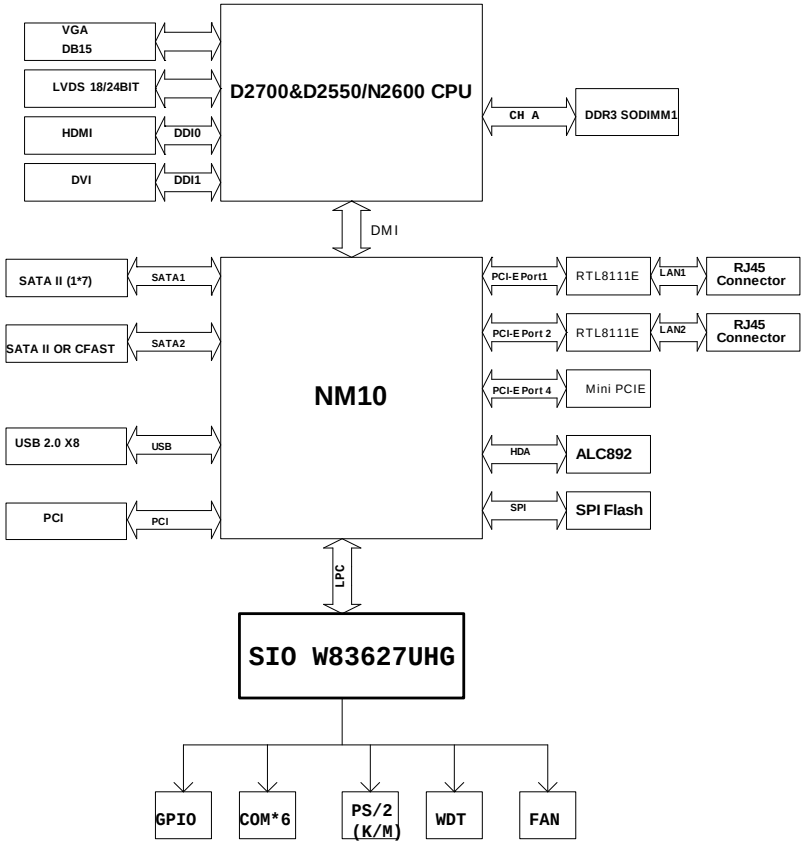
Warning!

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 ~ H4.

Locations of Connectors



Structure


VGA
DB15
LVDS 18/24BIT
HDMI
DVI
DDI0
DDI1
D2700&D2550/N2600 CPU
CH A
DDR3 SODIMM1
DMI
SATA II (1*7)
SATA II OR CFAST
USB 2.0 X8
PCI
SATA1
SATA2
USB
PCI
NM10
PCI-E Port1
PCI-E Port 2
PCI-E Port 4
HDA
SPI
RTL8111E
RTL8111E
Mini PCIE
ALC892
SPI Flash
LAN1
LAN2
RJ45 Connector
RJ45 Connector
LPC
SIO W83627UHG
GPIO
COM*6
PS/2 (K/M)
WDT
FAN

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 (Pitch: 2.0mm)

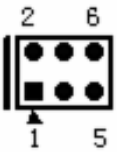
CMOS is powered by the button battery on board. Clearing CMOS will restore original settings (factory default). The steps are listed as follows: (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the prompt on screen to enter BIOS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

JCC1

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. JP2 ~ JP4: RS-232/RS-422/RS-485 Mode Selection for COM2 (Pitch: 2.0mm)

COM2 supports the operating modes of RS-232/RS-422/RS-485, which can be set by JP2 ~ JP4.

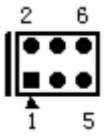


JP2 ~ JP4

Pin Setting	Mode Selection		
	RS-232 (Default)	RS-422	RS-485
JP2	1-2	5-6	3-4
JP3	1-3	3-5	3-5
JP3	2-4	4-6	4-6
JP4	1-3	3-5	3-5
JP4	2-4	4-6	4-6

3. JP7 ~ JP9: RS-232/RS-422/RS-485 Mode Selection for COM3 (Pitch: 2.0mm)

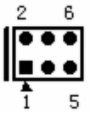
COM3 supports the operating modes of RS-232/RS-422/RS-485, which can be set by JP7 ~ JP9.



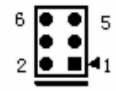
JP7 ~ JP9

Pin Setting	Mode Selection		
	RS-232 (Default)	RS-422	RS-485
JP7	1-2	5-6	3-4
JP8	1-3	3-5	3-5
JP8	2-4	4-6	4-6
JP9	1-3	3-5	3-5
JP9	2-4	4-6	4-6

4. Optional Connector, Pin9 of COM4/5 supports RI#/5V/12V. Please set as follows:



JP12

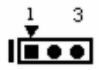


JP13

Setting	Function Selection for Pin9 of COM4/5		
	RI#(Default)	5V	12V
JP12	1-2	3-4	5-6
JP13	1-2	3-4	5-6

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

Different LCD screens have different voltages; the board provides two voltage options, 3.3V and 5V. Only when the selected LCD voltage is in accord with the LCD screen operating voltage in use, can the LCD screen operate normally. Please set as follows:



JLCD1

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

6. JP14: Mode Selection for Pin7 of SATA1 (Pitch: 2.0mm)

JP14

Setup	Function
1-2 Short	Pin7 is GND (Default)
2-3 Short	Pin7 is +5V

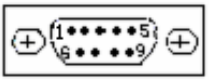
Installing the System Memory

The board provides one 204Pin DDR3 SODIMM memory slot, DIMM1. Please pay attention to the following issues when installing the memory modules:

- When installing, align the notch of the memory module with that of the memory slot and gently insert the module into the slot;
- The 1.5V 800/1066MHz DDR3 SO-DIMM memory supported by Intel® Chipset can be used;
- It is recommended to use the DDR3 memory module with SPD to ensure stable operation.

Serial Port

1、 The board provides six serial ports; COM1 is a standard DB9 socket. The pin definitions are as follows:

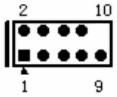


J5(COM1)

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

Note: it is recommended to use the corresponding terminal of YANDA 1165-109-001-000 or the D-SUB 9-pin female terminal from other manufacturer.

2、 The board provides five 2x5Pin serial ports (Pitch: 2.54mm). COM2/COM3 supports RS-232/RS-422/RS-485 mode. The pin definitions are as follows:



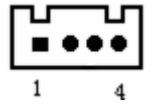
COM2 ~ COM6

Pin Setting	Signal Name		
	RS-232 (COM2 ~ COM6)	RS-422 (COM2/COM3)	RS-485 (COM2/COM3)
1	DCD#	TXD-	Data-
2	RXD	TXD+	Data+
3	TXD	RXD+	NC
4	DTR#	RXD-	NC
5	GND	GND	GND
6	DSR#	NC	NC
7	RTS#	NC	NC
8	CTS#	NC	NC
9	RI#	NC	NC
10	NA	NA	NA

Note: the data transmission direction is controlled automatically under RS485 mode. The Pin9 of COM4/5 supports RI# (default)/5V/12V.

LCD Backlight Control Connector

The board provides one 1x4Pin wafer LCD backlight control connector (Pitch: 2.0mm); the pin definitions are as follows:



LCDB1

Pin	Signal Name
1	VCC_LCDBKLT
2	LCD_BKLTCTL
3	LCD_BKLTEN
4	GND

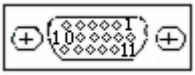
Note: VCC_LCDBKLT -------+12VBacklight Power (The current is limited below 1A);

LCD_BKLTCTL---Backlight Control (The signal is output as PWM signal via CPU directly; the voltage amplitude is 0V-3.3V while the duty cycle is between 0% ~ 100%);

LCD_BKLTEN ---Backlight Enable, Active High. (The signal is output as CMOS output via CPU directly; the voltage amplitude is 0V-3.3V).

Display Connector

1、 The board provides one standard DB15 VGA connector; the pin definitions are as follows:

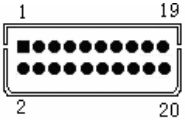


VGA1

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		

2、 LVDS Connector

The board provides one single channel 18bit/24bit LVDS connector (Pitch: 1.0 mm).



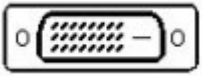
LVDS1

Pin	Signal Name	Pin	Signal Name
1	LVDS_D0+	2	LVDS_D0-
3	GND	4	GND
5	LVDS_D1+	6	LVDS_D1-
7	GND	8	GND
9	LVDS_D2+	10	LVDS_D2-
11	GND	12	GND
13	CLK+	14	CLK-
15	GND	16	GND
17	LVDS_D3+	18	LVDS_D3-
19	VDD	20	VDD

Note: 1. It is recommended to use the corresponding terminal DF20A-20DF-1C.

2. EC7-1818CLD2NA supports 24-bit LVDS single channel while EC7-1818CLD2NA-V supports 18-bit LVDS single channel.

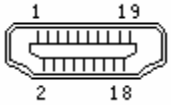
3、 DVI-D Connector



DVI1

Pin	Signal Name	Pin	Signal Name
1	DATA2-	13	NC
2	DATA2+	14	+5V
3	GND_DVI	15	GND
4	NC	16	HOTPLUG
5	NC	17	DATA0-
6	DDCCLK	18	DATA0+
7	DDCDATA	19	GND_DVI
8	NC	20	NC
9	DATA1-	21	NC
10	DATA1+	22	GND_DVI
11	GND_DVI	23	CLK+
12	NC	24	CLK-

4、 HDMI Connector

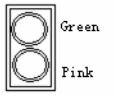


HDMI1

Pin	Signal Name	Pin	Signal Name
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock-
13	CEC	14	Reserved (NC on device)
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5V
19	Hot Plug Detect		

Audio Connector

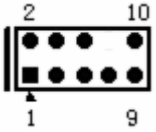
1、 The board provides two AUDIO connectors: AUDIO1 is the audio card rear panel output connector; the pin definitions are as follows:



AUDIO1

Pin	Signal Name
1	LINE_OUT
2	MIC_IN

2、 AUDIO2 is a front-accessible 2x5Pin audio pin header (Pitch: 2.54mm). When the front-accessible audio connector, AUDIO2, is needed, please connect MIC input with PIN1, MIC BIAS with PIN3 (if no MIC_BIAS is provided, please neglect it), LINE_OUT_R with PIN5, LINE_OUT_L with PIN9 and AGND with PIN2. The pin definitions for AUDIO2 are as follows:



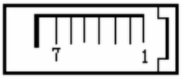
AUDIO2

Pin	Signal Name	Pin	Signal Name
1	MIC	2	AGND
3	MIC_BIAS	4	VCC
5	LINE_OUT_R	6	LINE_OUT_OR
7	AGND	8	NA
9	LINE_OUT_L	10	LINE_OUT_OL

Note: if the users want to select between the front audio and the rear audio by jumper cap, please short PIN5 with PIN6 on AUDIO 2 and PIN9 with PIN10 on AUDIO1; at that time, the rear audio shares the same channel with the front audio. If PIN5 and PIN6 on AUDIO 2 and PIN9 and PIN10 on AUDIO1 are open, then the rear audio adopts different channel with the front audio.

SATA Connector

The board provides two SATA connectors; SATA2 is optional.



SATA1/SATA2

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

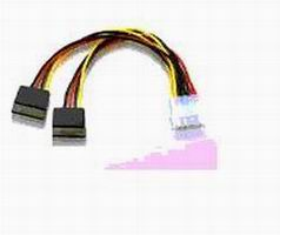
Note: PIN7 of SATA1 is optional between +5V and GND (default).

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 driver of chipset shall support the hot-swap of SATA hard disk.
3. Hot-swap of SATA hard disk with the operating system is forbidden when system is powered-on.

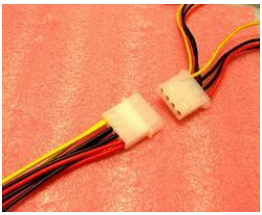
SATA Data Cable

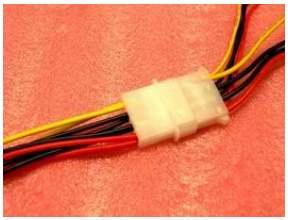


SATA Power Cable

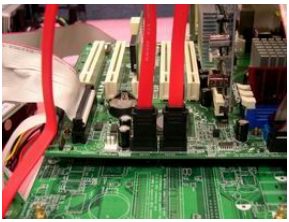
Please carry out hot plugging as follows. Improper operation may destroy the hard disk or result in data loss.

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

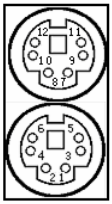
Step 1: Uninstall the hard disk from the device manager.


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.

Keyboard and Mouse Connector

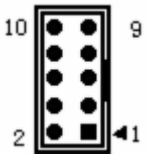
1. The board provides one keyboard and mouse combo connector, KM1.



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

2. It also provides one built-in keyboard and mouse connector, KM2 (Pitch: 2.54mm).



KM2

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

Note: when the external keyboard and mouse, KM1, is adopted, please short circuit Pin3 and Pin5, Pin4 and Pin6, Pin7 and Pin9, Pin8 and Pin10 on KM2 with jumper cap respectively. When the built-in keyboard and mouse, KM2, is adopted, please connect Pin1, 2, 3, 4, 7 and 8 with keyboard and mouse patch cable.

SMBUS1 Connector

SMBUS1

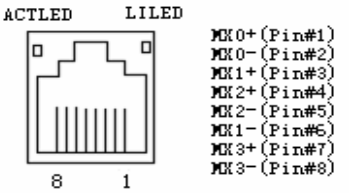
Pin	Signal Name
1	3.3V
2	SMB_DATA
3	SMB_CLK
4	GND
5	5V

LAN Port and USB Port

The board provides two 10/100/1000Mbps LAN ports and eight USB ports, among which one LAN port and two USB ports share a set of socket (i.e. J1/2 includes one LAN port and two USB ports). J1 (LAN1) supports Wake-on-LAN function. It also provides two sets of 2x5 USB pin headers, J3/J4 (USB5 ~ USB8, Pitch: 2.54mm).

(1) LAN Port

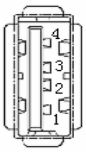
CTLED and LILED are the green and dual color LED indicators on both sides of the Ethernet port, which respectively indicates the activity status and the speed of LAN. Please refer to the status description for each LED:



J1 (LAN1)/J2 (LAN2)

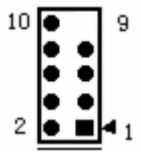
ACTLED (Green)	LAN Activity Status Indicator		LILED (Dual-Color: O/G)	LAN Speed Indicator
			Green	1000Mbps
Blink	Data being transmitted		Orange	100Mbps
Off	No data being transmitted		Off	10Mbps

(2) USB Port



J1 (USB1/USB2)
J2 (USB3/USB4)

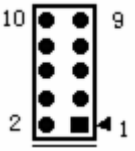
Pin	Signal Name
1	+5V
2	USB_Data-
3	USB_Data+
4	GND



J3/J4
(USB5 ~ 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

GPIO Connector



GPIO1

(Pitch: 2.54mm)

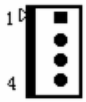
Pin	Signal Name	Pin	Signal Name
1	GPIO1	2	GPIO5
3	GPIO2	4	GPIO6
5	GPIO3	6	GPIO7
7	GPIO4	8	GPIO8
9	GND	10	NC

Note: By the factory default values, pin 1, 3, 5 and 7 are for TTL input while pin 2, 4, 6 and 8 are for CMOS output. The factory default state is high level and the voltage range for input/output signal is 0-5V.

Fan Connector

The board provides one 1x4Pin CPU fan connector (CPUFAN1, Pitch: 2.54mm) .Pay attention to the following three issues when using the fan socket:

- The current for fan shall not exceed 500mA (12V);
- Please confirm that the fan cable complies with the socket cable. Power cable (usually red) is in the middle position. In addition, please confirm the earth cable (usually black) and fan speed output impulse signal cable (other colors). Some fans have no speed detection while the output of the cable is up to 12V, so using these substandard connections will destroy the CPU card. It is recommended to use a fan with speed detection.
- Adjust the fan's airflow to the direction of heat venting.



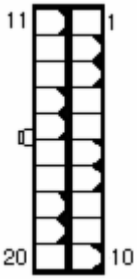
CPUFAN1

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

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

Power Connector

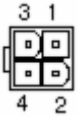
1. ATX power connector, adopting 20pin connector (Pitch: 4.2mm).



PWR3

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

2. AT power connector, single 12V power connector (Pitch: 4.2mm).

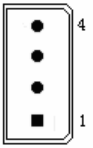


PWR4

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

Note: the connector is configured on EC7-1818CLD2NA-V.

3. SATA power conversion connector (Pitch: 5.08mm).



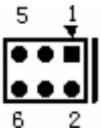
PWR1

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

Note: the connector is configured on EC7-1818CLD2NA-V.

Status Indicating and Control Connector

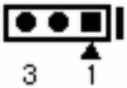
1. ATX power switch and HDD indicator connector (Pitch: 2.54mm)



FP1

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

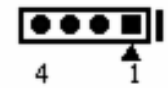
2. Power indicator connector (Pitch: 2.54mm)



FP2

Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

3. Loudspeaker output connector (Pitch: 2.54mm)

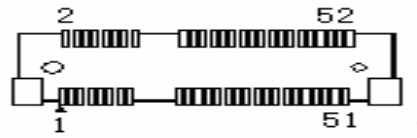


FP3

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

Mini-PCIe Connector

The board provides one Mini-PCIe slot, which supports WiFi WLAN card.This port only supports MPCIE devices based on PCIE bus.

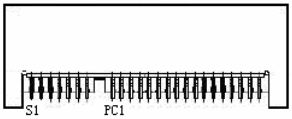


MPCIE1 (on the rear of the board)

Pin	Signal Name	Pin	Signal Name
1	WAKE#	2	+3.3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK-	12	NC
13	REFCLK+	14	NC
15	GND	16	NC
17	Reserved	18	GND
19	Reserved	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND

35	GND	36	NC
37	GND	38	NC
39	+3.3V	40	GND
41	+3.3V	42	NC
43	GND	44	NC
45	Reserved	46	NC
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3VSB

CFAST Connector

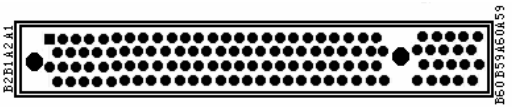


CFAST1(Optional**)**

管脚	信号名称	管脚	信号名称
S1	GND	PC6	NC
S2	TX+	PC7	GND
S3	TX-	PC8	NC
S4	GND	PC9	NC
S5	RX-	PC10	NC
S6	RX+	PC11	NC
S7	GND	PC12	NC
PC1	CDI	PC13	+3.3V
PC2	GND	PC14	+3.3V
PC5	NC	PC17	CDO

PCI Slot

PCI1 is the standard PCI connector (Version 2.3); the pin definitions are as follows:



PCI1

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	Null	A39	+3.3V	B9	PRSNT1#	B39	PCI_LOCK#
A10	+5V	A40	SMCLK	B10	Null	B40	PCI_PERR#
A11	Null	A41	SMDATA	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	Null	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

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) 2009 American Megatrends, Inc. will appear:

Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc. copyright (C)	
Main Advanced Chipset Boot Security Save & Exit	
Motherboard Information	Set the Date. Use 'Tab' to switch between Date elements.
Project Name EC7-1818CLD2NA	
BIOS Name P9134001	
BIOS Version B00	
Build Date 01/04/2012 10:10:10	→←: Select Screen
	↑↓: Select Item
System Language [English	Enter: Select
	+/-: Change Opt
System Date [Mon 11/01/2009]	F1: General Help
System Time [00:47:55]	F2: Previous Values
	F3: Optimized Defaults
Access Level Administrator	F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,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) 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 ► Clock Generator Configuration ► IDE Configuration ► USB Configuration ► Second Super IO Configuration ► Super IO Configuration ► H/W Monitor ► PPM Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

➢ **CPU Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
CPU Configuration Processor Type Intel(R) Atom(TM) i5 CPU EMT64 Supported Processor Speed 1600 MHz System Bus Speed 400 MHz Ratio Status 16 Actual Ratio 16 System Bus Speed 400 MHz Processor Stepping 30661 Microcode Revision 266 L1 Cache RAM 2x56 k L2 Cache RAM 2x512 k Processor Core Dual Hyper-Threading Supported Hyper-threading [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.	

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**

  Control switch of the Hyper Threading Technology function.

➢ **Clock Generator Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Clock Generator Configuration	→←: Select Screen
	↑↓: Select Item
Spread Spectrum [Disabled]	Enter: Select
Auto PCI Clock [Disabled]	+/-: 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.	

- **Spread Spectrum**

  This option is used to control the spread spectrum function of the clock signal.

- **Auto PCI Clock**

  This option is used to detect the devices on PCI slot automatically. If there are no devices in the slot, please disable the clock signal on that slot.

➢ **IDE Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
SATA Port0	Not Present	→←: Select Screen
SATA Port1	Not Present	↑↓: Select Item
		Enter: Select
SATA Controller(S)	[Enabled]	+/-: Change Opt
Configure SATA as	[IDE]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save
		ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

SATA Port0 ~ 5 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 "Not Present".

- **SATA Controller(S)**

  The SATA controller is used to enable or disable the device on SATA Port.

- **Configure SATA as**

  Configure the SATA device type: IDE or AHCI.

➢ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2009 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
		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.

➢ **Second Super IO Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
Second Super IO Configuration ►Serial Port 1 Configuration ►Serial Port 2 Configuration ►Serial Port 3 Configuration ►Serial Port 4 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 1～4 Configuration

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Serial Port 1～4 Configuration		→←: Select Screen ↑ ↓: Select Item
Serial Port	[Enabled]	Enter: Select
Device Settings	IO=210h; IRQ=4;	+/-: Change Opt F1: General Help
Change Settings	[Auto]	F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

*** Serial Port1～4**

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

*** Device Settings**

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

*** Change Settings**

This option is used to configure the resources of the serial port (IO and IRQ).

- **Super IO Configuration**

Aptio Setup Utility – Copyright (C) 2009 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 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

- **Serial Port 1 ~ 6 Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Serial Port 1 ~ 6 Configuration		→←: Select Screen ↑↓: Select Item
Serial Port	[Enabled]	Enter: Select
Device Settings	IO=3F8h; IRQ=4;	+/-: Change Opt F1: General Help
Change Settings	[Auto]	F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

*** Serial Port1 ~ 6**

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.

*** Change Settings**

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

- **H/W Monitor**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
PC Health Status		→←: Select Screen ↑↓: Select Item
System Temperature	: +26 C	Enter: Select
CPU Temperature	: +57 C	+/-: Change Opt
SysFan Speed	: N/A	F1: General Help
CpuFan Speed	: N/A	F2: Previous Values
Vcore	: +1.152 V	F3: Optimized Defaults
V3.3	: +3.328 V	F4: Save
V5.0	: +5.058 V	ESC: Exit
V12.0	: +12.091 V	
VBAT	: +3.296 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.

- **SysFan Speed**

  Current system fan speed.

- **CpuFan Speed**

  Current CPU fan speed.

- **Vcore**

  CPU core voltage.

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

  Turn on/off the power to output voltage.

- **VBAT**

  CMOS battery voltage.

➢ **PPM Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
PPM Configuration EIST [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) 2008,American Megatrends, Inc.	

- **EIST**

  It is the CPU frequency adjustable function of Intel.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced **Chipset** Boot Security Save & Exit	
▶ Host Bridge ▶ South Bridge	→←: 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.	

➢ **Host Bridge**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
▶ Intel IGD Configuration ******* Memory Information ********** Memory Frequency 800 MHz(DDR3) Total Memory 1024 MB DIMM#0 Not Present DIMM#1 1024 MB	→←: 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) 2008,American Megatrends, Inc.	

➢ **Intel IGD Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
Intel IGD Configuration IGFX – Boot Type [CRT + LVDS] LCD Panel Type [800x600 LVDS] Panel Color Depth [18 Bit] Active LFP [Int-LVDS] Fixed Graphics Memory Size [128MB]	→←: 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) 2008,American Megatrends, Inc.	

- **IGFX – Boot Type Low**

  Set the primary display device booted by IGD.

- **LCD Panel Type**

  This option is used to choose the resolution of the Flat Panel.

- **Panel Color Depth**

  This option is used to set the color depth of the LVDS Panel.

- **Active LFP**

  Set whether to display LVDS.

- **Fixed Graphics Memory Size**

  Set the graphics memory size.

➢ **South Bridge**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
► TPT Devices ► PCI Express Root Port 0 ► PCI Express Root Port 1 ► PCI Express Root Port 2 ► PCI Express Root Port 3 Restore AC Power Loss [Last State]	→←: 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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- **Restore AC Power Loss**

  "Restore on AC Power Loss" option controls how the PC will behave once power is restored following a power outage.

  * Power Off

    S5 status, power on manually after restoring AC power.

  * Power On

    S0 status, automatically power on after restoring AC power.

  * Last State

    The "Last State" option returns the PC to the state in effect at the time the power outage or shutdown occurred. If the computer is powered-on (S0 status) when the power outage or shutdown occurred, then the computer will automatically power on after restoring AC power; if the computer is powered off (S5 status) when the power outage or shutdown occurred, then the computer will not automatically power on after restoring AC power (remaining S5 status).

- **TPT Devices**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Chipset		
Azalia Controller	[HD Audio]	→←: Select Screen
Select USB Mode	[By Controllers]	↑↓: Select Item
UHCI #1 (ports 0 and 1)	[Enabled]	Enter: Select
UHCI #2 (ports 2 and 3)	[Enabled]	+/-: Change Opt
UHCI #3 (ports 4 and 5)	[Enabled]	F1: General Help
UHCI #4 (ports 6 and 7)	[Enabled]	F2: Previous Values
USB 2.0(EHCI) Support	[Enabled]	F3: Optimized Defaults
		F4: Save
		ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.		

* Azalia Controller

  This option is used to enable or disable the audio card controller.

* Select USB Mode

  This option is used to select the USB controlling mode.

* UHCI #X (ports X and X)

  This option is used to enable or disable in the controller mode.

* USB 2.0(EHCI) Support

  This option is used to enable USB2.0.

➢ **PCI Express Root Port X**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Chipset		
PCI Express Port X	[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) 2008,American Megatrends, Inc.		

- **PCI Express Port X**

  This option is used to enable or disable the PCIE0-3 ports.

◆ **Boot**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset **Boot** Security Save & Exit	
Boot Configuration Quiet Boot [Disabled] **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.

➢ **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	→←: 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.

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

◆ **Save & Exit**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot Security **Save & Exit**	
Save Changes and Reset Discard Changes and Reset	→←: 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 Reset**

The option is used to save changes and reset.

➢ **Discard Changes and Reset**

The option is used to discard changes and reset.

System Resource Managed by BIOS 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 the I/O connectors used in X86 platform.

Address	Device Description
000h - 000Fh	DMA Controller#1
020h - 021h	Programmable Interrupt Controller
024h - 025h	Programmable Interrupt Controller
028h - 029h	Programmable Interrupt Controller
02Ch – 02Dh	Programmable Interrupt Controller
030h - 031h	Programmable Interrupt Controller
034h - 035h	Programmable Interrupt Controller
038h - 039h	Programmable Interrupt Controller
03Ch – 03Dh	Programmable Interrupt Controller
040h - 043h	System Timer
050h - 053h	System Timer
060h - 060h	Standard PS/2 Keyboard
064h – 064h	Standard PS/2 Keyboard
070h - 071h	System CMOS/Real Time Clock
081h - 091h	DMA Controller
093h – 09Fh	DMA Controller
0A0h – 0A1h	Programmable Interrupt Controller
0A4h – 0A5h	Programmable Interrupt Controller
0A8h – 0A9h	Programmable Interrupt Controller
0ACh – 0ADh	Programmable Interrupt Controller
0B0h – 0B1h	Programmable Interrupt Controller
0B4h – 0B5h	Programmable Interrupt Controller
0B8h – 0B9h	Programmable Interrupt Controller
0BCh – 0BDh	Programmable Interrupt Controller
0C0h – 0DFh	DMA Controller
0F0h – 0FFh	Numeric data processor
2E0h – 2E7h	COM5
2E8h – 2EFh	COM4
2F0h – 2F7h	COM6
2F8h – 2FFh	COM2
3B0h – 3BBh	Intel(R) Graphic Media Accelerator

3C0h – 3DFh	Intel(R) Graphic Media Accelerator
3E8h – 3EFh	COM3
3F8h – 3FFh	COM1
4D0h – 4D1h	Programmable Interrupt Controller
D00h – 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	Standard 101/102 Key o Microsoft Keyboard
IRQ2	Reserved
IRQ3	COM 2
IRQ4	COM 1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	COM 3 4
IRQ8	System CMOS/Real Time Clock
IRQ9	Reserved
IRQ10	COM 5 6
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Reserved

Chapter 4 Installing the Drivers

EMGD Driver Operating Instructions

Under Windows XP system, EC7-1818CLD2NA motherboard has no graphics card driver provided by Intel. Therefore, EMGD tool must be used to generate graphics card driver, which is stored in the driver CD.

1. Under the Utilities file in the driver CD, click SETUP.exe to install EMGD graphics driver;
2. After installation of EMGD graphics driver is finished, reboot the system;
3. After the driver is installed, the system default is CRT+LVDS extended display mode;
4. The steps to enter into Display Configuration interface: Right click on the desktop--→click 'Property'---→select 'Configuration'---→Select 'Advanced', and three options will appear under the 'Advanced'window: 'Driver Info', 'Display Config', 'Color Correction'.
5. Under the 'Display Config' option, users can set up mode, resolution and other parameters according to actual needs.

Note: If IEGD driver is installed, a slight double shadow may occur to the system in dual display mode. This is related to the IEGD driver provided by Intel. If the IGFX-BOOT TYPE option in BIOS is configured to default setting【VBIOS Default】or【VGA】 single display, the system will deliver normal display.

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	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

	low-speed connector.	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.