CPC-3813CLD3N

3U CompactPCI 主板

3U CompactPCI Motherboard

Version: C00

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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.

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Chapter 1 Product Introduction

Overview

The board contains Intel® Calpella + ECC platform i7-620LE 2.0GHz high performance and low power consumption processor and QM57 Express Chipset. The Core™ i7-620LE processor adopts 32nm work craft, dual core four thread processing mechanism; the processing performance can be improved by Intel® Turbo Boost technology. The i7 processor integrates DDR3 800MHz memory controller and graphics controller.

The product provides on-board CPU and 2GB DDR3 ECC SDRAM 800MHz memory; supports SATA2.0 storage: 2-channel SATA signals connect with J2 while 1-channel SATA connects with 22-pin SATA connector, which cans support 2.5″ hard disk and provides 8GB SSD storage disk on-board. When data is being transmitted on SATA/SSD, the hard disk indicator will blink. 2-channel USB2.0 signals connect with J2 while the other 2-channel USB2.0 signals are brought to the front panel. 2-channel Gigabit LANs connect with J2 while 1-channel LAN is brought to the RJ45 connector on the front panel. 2-channel COM signals connect with J2 while 1-channel COM signal connects with the DB9 connector on the front panel. In addition, the front panel also provides one DVI-D, one Mini PS2 keyboard and mouse connector, one VGA, one system reset button and a set of indicators for power/HDD/hot swap/watchdog.

As for the graphics processing performances, it adopts Core™i7-620LE processor integrated Intel™ HD Graphics controller; the maximum resolution supported by VGA is 2048x1536@75Hz while that supported by DVI-D is 1920x1200@60HZ.

As for the network configuration, two independent 10/100/1000Mbps Ethernet signals connect with J2 with transmission indicators. One-channel 10/100/1000Mbps Ethernet signal connects with the RJ45 connector on the front panel.

As for the serial port function, the maximum speed of the serial port shall be no less than 115200bps.

As for the bus expandability, it supports 3U 32bit, 33MHz Compact PCI bus standard and complies with PICMG2.0 and PICMG2.1 standards.

The board is a high-end 3U CompactPCI board with various connectors, which can meet different requirements for connectors. It is mainly applied in the high-end CPCI application fields such as information communication, network storage, network audio processing, network graphic processing, industrial control, military and aerospace, etc.

The whole set board is composed of CPC-3813CLD3N-1 + CPC-3813CLD3N-2.

Mechanical Dimensions, Weight and Environment

- Dimensions: 174.3mm (L) x 128.6mm (W) x 40.4mm (H);
- Net Weight: 0.49Kg;
- Operating Environment:

  Temperature: -20°C ~ 55°C;

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

  Temperature: -55°C ~ 85°C;

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

Typical Consumption

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

CPU: Intel® Core i7-620LE 2.0GHz

Memory: DDR3 800 ECC K4B2G0846D-HCH9 2GB

Operating System: Windows XP, Windows2000 and VxWorks

Hard Disk: SSD Micron MT29F64G08AJABAWP 8GB on-board

- +5V@3.03A；+5%/-3%；
- +3.3V@1.41A；+5%/-3%。

Microprocessor

Intel® Core™ i7-620LE CPU on-board, DMI: 2.5GT/S, adopting 32nm work craft and dual core four thread processing mechanism, main frequency: 2.0GHZ and rated power consumption: 25W.

Chipset

Mobile Intel® QM57 Express Chipset

System Memory

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

Display Function

- Adopts Core™ i7-620LE processor integrated Intel® HD Graphics chip;
- Supports VGA output on front and rear panel, 32bit color depth; the maximum resolution and refresh rate supported is up to 2048x1536@75Hz.
- Supports DVI-D output with maximum resolution: 1920x1200@60HZ.

Network Function

Provides two independent 10/100/1000Mbps Ethernet signals to connect with J2; one channel connects with the RJ45 connector on front panel with transmission indicator.

Power Feature

Adopts CPCI power, supporting S0 and S1.

Expansion Bus

Seven 32-bit CPCI slots, complying with CompactPCI standard;

Watchdog Function

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

Operating System

- Supported OSs: Windows XP, Windows2000, VxWorks.

Note: when installing Windows XP on external hard disk, please partition and format the on-board SSD card first if unsuccessful installation occurs and then install the operating system normally.

On-board I/O

- Three serial ports: two channels serial ports signals are brought to the J2 connector, one-channel is brought to the front panel supporting RS-232.
- Three SATA connectors: two channels SATA signals are brought to the J2 connector, one-channel connects with the 22-pin SATA connector to connect with 2.5″ hard disk.
- Four USB2.0 ports: two channels USB2.0 signals are brought to the J2 connector, the other two-channel connects with the USB connector on the front panel.
- One Mini PS/2 keyboard/mouse connector.

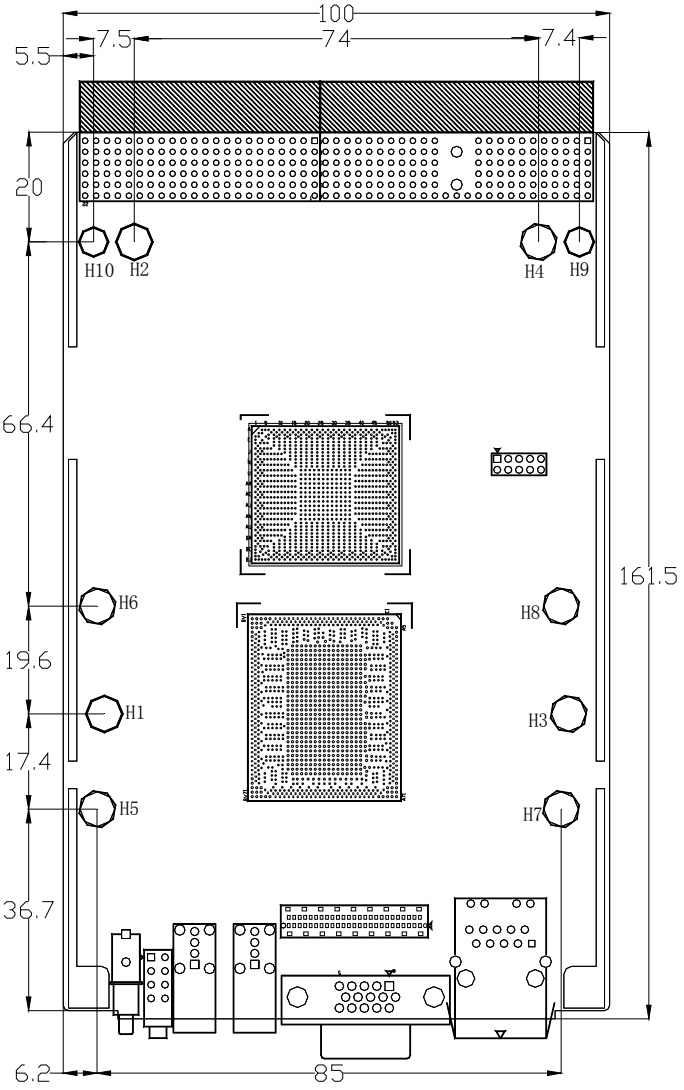
Tips: how to identify the alarms

1. Long “beep” indicates system memory error;

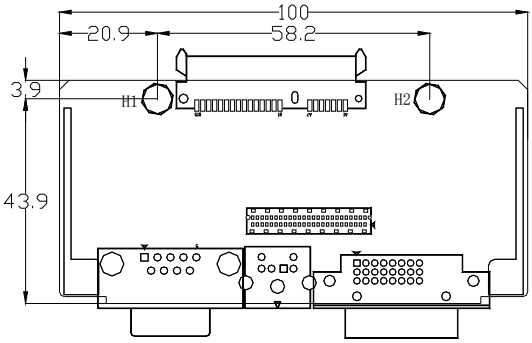
2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

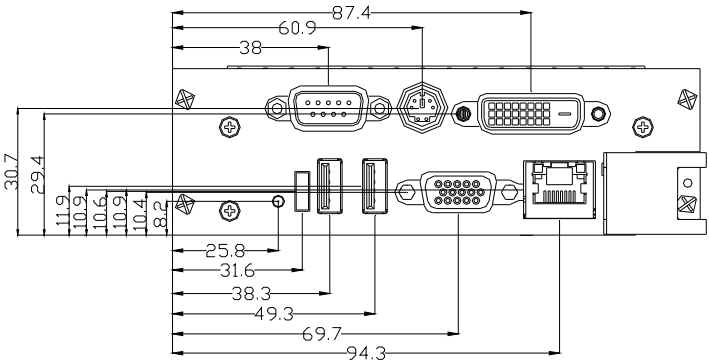
Product Outline



CPC-3813CLD3N-1



CPC-3813CLD3N-2



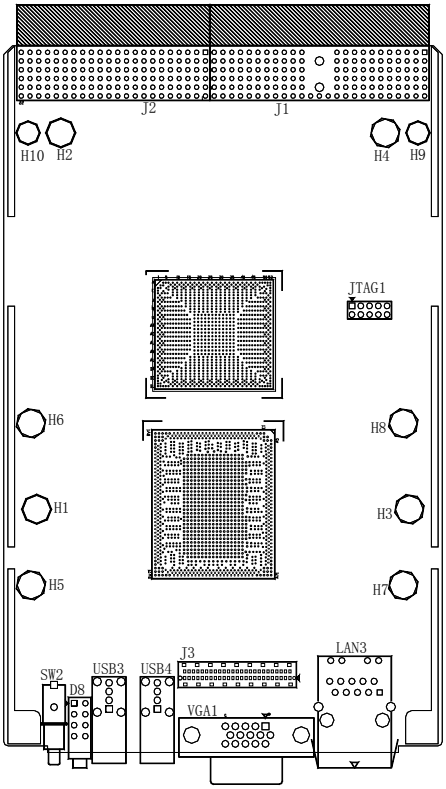
Front Dimension Drawing for External IOs on
CPC-3813CLD3N-1 & CPC-3813CLD3N-2

Unit: mm

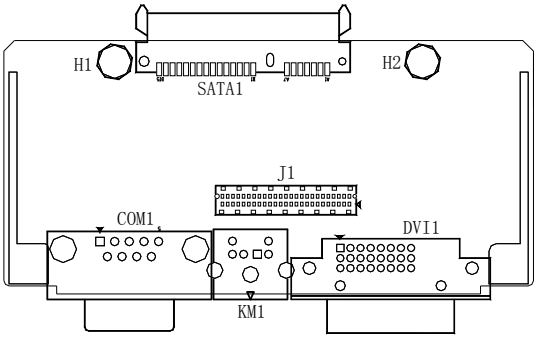
Warning!

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 pan head M3x5/GB-T818-1985/ screws at H1 ~ H8.

Locations of Connectors

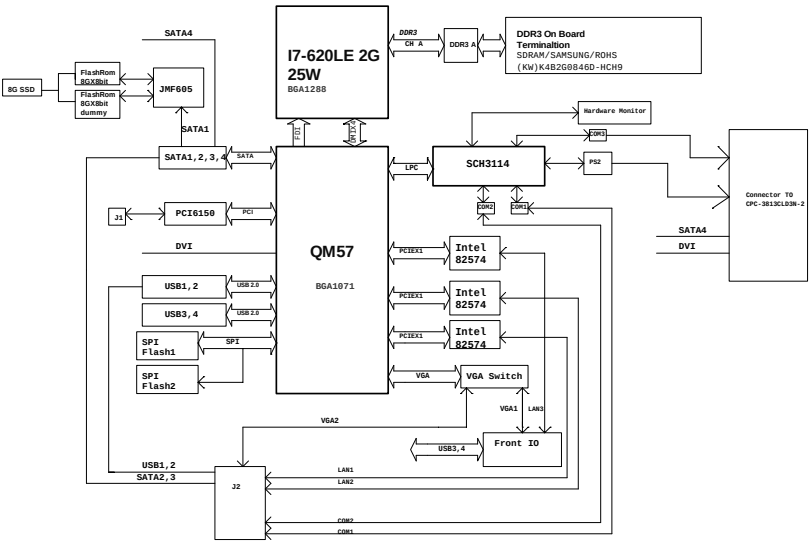


CPC-3813CLD3N-1



CPC-3813CLD3N-2

Structure



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

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

Connector Instructions for CPC-3813CLD3N-1

Reset Button

The board provides one trigger mode reset button, SW2, to realize Reset function.

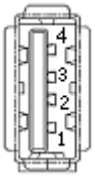
Indicators

D8

Indicator	Status	Description
WDT	OFF	Watchdog is not operating
	ON	Watchdog is operating
HS	OFF	Normal operation status
	ON	Under hot swap status
HDD	OFF	HDD is idle
	ON	HDD is operating
PWR	OFF	Power failure
	ON	Power normal

USB Port

The board provides two standard USB ports.

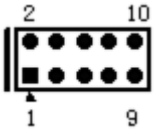


USB3/USB4

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

JTAG Connector

Burn record the data required by CPLD by JTAG1 (在板背面，Pitch: 2.0mm) on-board.



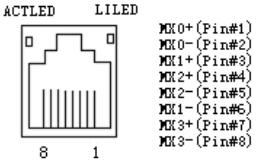
JTAG1

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

LAN Port

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

MX0, MX0-: positive/negative data channel 0	MX1, MX1-: positive/negative data channel 1
MX2, MX2-: positive/negative data channel 2	MX3, MX3-: positive/negative data channel 3
ACTLED: LAN Activity Status Indicator	LILED: LAN Linked Status Indicator



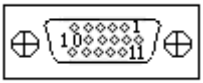
LAN3

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

Note: Wake-on-LAN function is unsupported.

Display Connector

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



VGA1

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

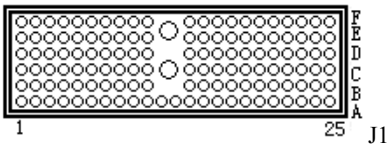
Board Connector

Board connector (J3 on CPC-3813CLD3N-1 while J1 on CPC-3813CLD3N-2).

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	VCC5	A2	VCC5	A3	VCC5
A4	VCC5	A5	VCC5	A6	VCC3
A7	VCC3	A8	GND	A9	COM3_DCD-
A10	COM3_DSR-	A11	COM3_RXD	A12	COM3_RTS-
A13	COM3_TXD	A14	COM3_CTS-	A15	COM3_DTR-
A16	COM3_RI-	A17	GND	A18	SATA4_TXN
A19	SATA4_TXP	A20	GND	A21	SATA4_RXN
A22	SATA4_RXP	A23	GND	A24	GND
A25	VCC5_KM	B1	GDN	B2	TMDSB_DATA0P
B3	TMDSB_DATA0N	B4	GND	B5	TMDSB_DATA1P
B6	TMDSB_DATA1N	B7	GND	B8	TMDSB_DATA2P
B9	TMDSB_DATA2N	B10	GND	B11	TMDSB_CLKP
B12	TMDSB_CLKN	B13	GND	B14	DVI_CTRL_CLK_B
B15	DVI_CTRL_DAT_B	B16	GND	B17	DDPB_HPD
B18	GND	B19	KB_DAT_CN	B20	KB_CLK_CN
B21	GND	B22	MS_DAT_CN	B23	MS_CLK_CN
B24	GND	B25	VCC5_KM	G1	GND
G2	GND	G3	GND	G4	GND
G5	GND	G6	GND	G7	GND
G8	GND	G9	GND	G10	GND
G11	GND	G12	GND	G13	GND
G14	GND	G15	GND	G16	GND
G17	GND	G18	GND		

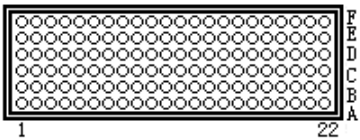
CompactPCI Connector

Pin Definitions for J1



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

Pin Definitions for J2



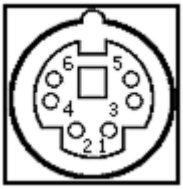
J2

Pin	Signal Name					
	A	B	C	D	E	F
22	GA4	GA3	GA2	GA1	GA0	GND
21	CLK6	GND	USB1P	USB2P	VCC5_USB1	GND
20	CLK5	GND	USB1N	USB2N	VCC5_USB2	GND
19	GND	GND	PWR_BTN-	SLPS3-	RIO_3.3V	GND
18	COM1_RXD	COM1_DCD-	COM1_DTR-	COM2_CTS-	COM1_CTS-	GND
17	COM1_TXD	COM2_RXD	PRST-	REQ6-	GNT6-	GND
16	COM1_DSR-	COM1_RTS-	DEG-	GND	COM1_RI-	GND
15	PWR_5VSB	NC	FAL-	REQ5-	GNT5-	GND
14	LAN1_TX0+	LAN1_TX0-	COM2_RTS-	LAN1_TX2+	LAN1_TX2-	GND
13	LAN1_TX1+	LAN1_TX1-	COM2_RI-_	LAN1_TX3+	LAN1_TX3-	GND
12	LAN2_TX0+	LAN2_TX0-	RIO_1V2	LAN2_TX2+	LAN2_TX2-	GND
11	LAN2_TX1+	LAN2_TX1-	COM2_DCD-	LAN2_TX3+	LAN2_TX3-	GND
10	NC	COM2_TXD	VGA_RED	COM2_DTR-	LAN2_LINK_1000-	GND
9	SATA1_TXP	GND	VGA_HSYNC	LAN2_LINK_ACK-	SATA2_TXP	GND
8	SATA1_TXN	NC	VGA_BLUE	GND	SATA2_TXN	GND
7	HDD_LED-	COM2_DSR-	VGA_12C_DAT	NC	LAN2_LINK_100-	GND
6	SATA1_RXP	LAN1_LINK_100-	VGA_GREEN	GND	SATA2_RXP	GND
5	SATA1_RXN	GND	VGA_VSYNC	VCC5_USB1	SATA2_RXN	GND
4	VI/O	CPCI_RIO_5V	VGA_12C_CLK	LAN1_LINK_ACK-	PM_SYSRST-	GND
3	CLK4	GND	GNT3-	REQ4-	GNT4-	GND
2	CLK2	CLK3	SYSEN-	GNT2-	REQ3-	GND
1	CLK1	GND	REQ1-	GNT1-	REQ2-	GND

Connector Instructions for CPC-3813CLD3N-2

Keyboard and Mouse Connector

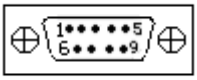
It can bring out one standard PS/2 keyboard connector and one standard PS/2 mouse connector.



KM1

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

Standard DB9 COM Port



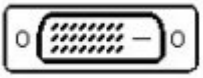
COM1

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

Note: wake-up function is unsupported by serial port. It is recommended to use the COM socket 1151-009-100-132 and the corresponding terminal model is 1165-109-001-000.

Display Connector

DVI-D connector.

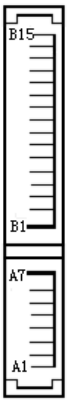


DVI1

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-

SATA Connector

The board provides one 7+15Pin serial ATA connector.



SATA1

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

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	
CPC-3813CLD3N BIOS Name X905100B BIOS Version C00 Build Date 12/12/2011 10:10:10 **Memory Information** Total Memory 1024 MB (DDR3 800) System Date [Mon 12/12/2011] System Time [00:47:55] Access Level Administrator	Set the Date. Use'Tab' to switch between Date elements. →←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.00.1201. Copyright (C) 2009,American Megatrends, Inc.	

◆ **Main**

➢ **System Time**

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

➢ **System Time**

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

◆ **Advanced**

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

- **Launch PXE OpROM**

  This option is the switch to enable network function.

➢ **CPU Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Advanced	
CPU Configuration Intel(R) Core(TM) i7 CPU L 620 @ 2.00GHz EMT64 Supported Processor Speed 1995MHz Processor Stepping 20655 Microcode Revision 2 Processor Cores 2 Intel HT Technology Supported Hyper-threading [Enabled] Active Processor Cores [All] Hardware Prefetcher [Enabled] Adjacent Cache Line Prefetch [Enabled] 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 2.00.1201. 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.

- **Active Processor Cores**

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

- **Hardware Prefetcher**

  Enable or disable MLC Streamer Prefetcher.

- **Adjacent Cache Line Prefetch**

  Enable or disable Prefetching of adjacent cache lines.

- **Intel Virtualization Technology**

  Switch for the Intel Virtualization Technology.

➢ **SATA Configuration**

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

- **Serial-ATA Controller 0**

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

- **Serial-ATA Controller 1**

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

➢ **USB Configuration**

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

- **Legacy USB Support**

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

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

➢ **Super IO Configuration**

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

- **Serial Port 0 ~ 2 Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.		
Advanced		
Serial Port 0 ~ 2 Configuration		→←: Select Screen ↑↓: Select Item
Serial Port	[Enabled]	Enter: Select
Device Settings	IO=3F8h; IRQ=4;	+/-: 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 Port0 ~ 2**

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) 2009 American Megatrends, Inc.	
Advanced	
PC Health Status	→←: Select Screen
	↑↓: Select Item
CPU Temperature : +38°C	Enter: Select
System Temperature : +36°C	+/-: Change Opt
	F1: General Help
Vcore : +0.95 V	F2: Previous Values
V3.3 : +3.296 V	F3: Optimized Defaults
V5.0 : +5.007 V	F4: Save
V12.0 : +12.091 V	ESC: Exit
Vbat : +3.21 V	
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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.

- **Vcore**

  CPU core voltage.

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

  Turn on/off the power to output voltage.

- **Vbat**

  CMOS battery voltage.

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced **Chipset** Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ▶ 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.	

➢ **South Bridge Configuration**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Chipset	
SB Chipset Configuration VGA Switch Configuration VGA Port Switch [RearIO Panel] ▶ USB Configuration	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
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* VGA Port Switch

This option is used to set front panel VGA display or rear panel VGA display; when it is set to "RearIO Panel", it indicates rear panel VGA display; when it is set to "Front Panel", it indicates front panel VGA display.

- **USB Configuration**

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

Switch for USB Port 1 ~ 4.)

◆ **Boot**

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

➢ **Quiet Boot**

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

- **Bootup Numlock State**

  Switch for the Numlock.

- **Boot Option Priorities**

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

- **Hard Drive BBS Priorities**

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

◆ **Security**

Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.	
Main Advanced Chipset Boot **Security** Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. Administrator Password	→←: 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.	

- **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;
If ONLY the User's password is set, then this must be entered to boot the computer. When entering Setup, the User will have Administrator privileges;
When both Administrator's password and User's password are set, Administrator's password or User's password is required when booting. If Administrator's password is adopted, the User will have Administrator's privileges when entering Setup; if User's password is adopted, the User will have User's privileges when entering Setup.

◆ **Save & Exit**

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

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

- **Discard Changes and Exit**

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

- **Save Changes and Reset**

  The option is used to save changes and reset.

- **Discard Changes and Reset**

  The option is used to discard changes and reset.

- **Save Changes**

  Save changes.

- **Discard Changes**

  Discard changes.

- **Restore Defaults**

  Restore default values.

- **Save as User Defaults**

  Save user defaults.

- **Restore User Defaults**

  Restore user defaults.

- **Boot Override**

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

System Resource Managed by UEFI under x86 Platform

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

◆ **DMA**

Level	Function
DMA0	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#1
040h - 043h	System Timer#1
061h – 061h	System Speaker
070h - 071h	System CMOS/Real Time Clock
081h - 083h	DMA Controller#2
087h – 087h	DMA Controller#3
089h – 08Bh	DMA Controller#4
08Fh – 08Fh	DMA Controller#5
0A0h – 0A1h	Programmable Interrupt Controller#2
0C0h – 0DFh	DMA Controller#6
0F0h – 0FFh	Numeric data processor
170h – 177h	Secondary IDE Channel
1F0h – 1F7h	Primary IDE Channel
274h – 277h	ISAPNP Read Data Port
279h – 279h	ISAPNP Read Data Port
2F8h – 2FFh	COM2
3B0h – 3BBh	Intel(R) Graphic Media Accelerator HD
3C0h – 3DFh	Intel(R) Graphic Media Accelerator
376h – 376h	Secondary IDE Channel
3F6h – 3F6h	Primary IDE Channel
3F8h – 3FFh	COM1
A79h – A79h	ISAPNP Read Data Port

◆ **IRQ Assignment Table**

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be 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	Reserved
IRQ2	Reserved
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Standard floppy disk controller
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI-Compliant System
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Reserved

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 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.