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LE-37D

3.5 inch Motherboard

User's Manual

Edition 2.12
2025/02/14

Packing List:

Please check the package content before you starting using the board.

LE-37D 3.5 inch Miniboard x 1

**SATA Cable x 1
(OALSATA3-L)/(1040529)**

**1 to 3 power output cable x 1
(OAL4P-2)/ (1040051)**

**COM Port Cable x 1
(OALES-BKU1NB)/ (1040086)**

**DC Power Cable x 1
(OALDC-A)/ (1040433)**

**SATA Power Cable x 1
(OAL4P-S2)/ (1040054)**

**CRT cable without bracket x 1
(OALVGA-SNB-7)/ (1040557)**

**Audio Cable x 1
(OALPJ-HDUNB)/ (1040123)**

**USB2.0 Cable x 1
(OALUSBA-3)/ (1040173)**

**Cooler x 1
(OHSF-5) / (2181010016)
LE-37DJIP,   LE-37DJX2,
LE-37DEIP,   LE-37DEX2**

**Heat Sink x 1
(OHS-7) / (2181110009)
LE-37DNIP,   LE-37DNX2**

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Chapter 1 <Introduction>

1.1 <Product Overview>

The LE-37D motherboard is design based on Intel® Celeron® Processor J1900 / N2930 and Intel® Atom Processor E3845, delivering outstanding compute, graphical, and media performance while operating in an extended range of thermal conditions. The SoC bases on the Silvermont microarchitecture, utilizing Intel's industry-leading 22nm process technology with 3-D Tri-Gate transistors, which deliver significant improvements in computational performance and energy efficiency.

New features for Intel® Celeron® and Atom Processor

The Intel® Celeron® Processor J1900 / N2930 and Intel® Atom E3845 Processor supports graphics, media performance, flexibility and more enhanced security that is suitable for a variety of intelligent systems the ideal choice.

Outstanding integration of I/O interfaces

Supports display interfaces with graphics processing, camera interfaces with image processing, audio with digital signal processing, multiple storage types, and legacy embedded I/O. Provides interface expansion capabilities through industry-standard high-bandwidth interfaces such as PCI Express* Gen 2.0, Hi-speed USB 2.0, and USB 3.0 connectivity.

All in One multimedia solution

Based on Intel® J1900 / N2920 /E3845 SoC, the board provides high performance onboard graphics, CRT, 24-bit dual channel LVDS interface, Display Port, HDMI and 2 channels High Definition Audio, to meet the very requirement of the multimedia application.

Flexible Extension Interface

The board provides two PCIe mini slot and one SIM slot.

1.2 <Product Specification>

General Specification	
Form Factor	3.5 inch motherboard
CPU	Intel® Processor J1900/N2930/E3845, package type FCBGA1170
Memory	1 x DDR3L (support 1.35V) 1066/1333 SO-DIMM up to 8GB
Real Time Clock	Chipset integrated RTC with onboard lithium battery
Watchdog Timer	Generates a system reset with internal timer for 1min/s ~ 255min/s
Power Management	Supports ACPI 5.0 compliant
Serial ATA(SATA) Interface	1 x serial ATA interface with 300MB/s(3Gb/s) transfer rate
VGA Interface	Intel® Clear Video integrated HD Graphics Technology
HDMI Interface	Onboard HDMI connector. (HDMI and LVDS1 can't be enabled simultaneously)
Display port Interface	Onboard Display port connector. (Display port and LVDS2 can't be enabled simultaneously)
LVDS Interface	2 x Onboard 24-bit dual channel LVDS connector with +3.3V/+5V/+12V supply
Audio Interface	Realtek ALC262 High Definition Audio Codec
LAN Interface	2 x Intel® I210-AT Gigabit LAN
GPIO Interface	Onboard programmable 8-bit Digital I/O interface.
Extended Interface	2 x PCIE Mini card(1 x mSATA option), 1 x SIM socket, 1x CFast (CFast and mSATA can't be enabled simultaneously)
Internal I/O Port	1 x SATA2, 4 x RS232, 1 x RS232/422/485,2 x LVDS(optional), 2 x LCD inverter(optional), 1 x LPC, 4 x USB2.0, 1 x GPIO, 1 x CRT 1 x GPIO, 1 x Audio, 1 x PS/2, 1 x SMBus.
External I/O Port	1 x DisplayPort (optional), 1 x HDMI (optional), 1 x USB3.0, 1 x USB2.0, 2 x LAN, 1 x RS232.
Power Requirement	6~30V full range DC Input
Dimension	146mm x 101mm
Temperature	Operating within 0~60 centigrade(forLE-37DJ andLE-37DN serial) Storage within -20~85 centigrade. (forLE-37DJ andLE-37DN serial) Operating within -40~85 centigrade(for LE-37DE serial) Storage within -40~85 centigrade.(for LE-37DE serial)

1.3 <Mechanical Drawing>

1.4 <Block Diagram>

CRT —VGA—		SOC — System memory — 204-Pin SO-DIMM DDR3L 1333 MT/s
DVI / LVDS 1 —DDI1—		SATA — SATAII 3Gb/s (x 1)
DisplayPort / LVDS 2 —DDI2—	Intel® Celeron® J1900/ N2930 Processor	SATA — CFAST
		USB, PCIE — MiniCard (x 2)
USB 3.0 (x 1) —USB—		
USB 2.0 (x 5) —USB—	Intel Atom™ E3845 Processor	PCIE — Intel® I210-AT — 1GbE
SPI Flash —SPI—		PCIE — Intel® I210-AT — 1GbE
PS/2 / COM (x 6) — SuperIO —LPC—		SOC — Realtek® ALC262 — Speaker, MIC
DIO / SMBus		

Chapter 2 <Hardware Setup>

2.1 <Connector Location>

CN_CRT CN_PS/2

CN_AUDIO

JP1

CN_SMBUS

CPUFAN

SYSFAN

JVLCD

CN_INV2

JRTC

CN_INV1

JAT

CN_USB1 JMSATA CN_LVDS2 CN_LVDS1 SATA CN_DIO

CN_USB2

DC_IN

DC_OUT

CN_LPC

CN_COM5/6

JP2

CN_COM3/4

CSEL2

CN_COM2

FRNT

CSEL1

USB2.0

USB3.0 RJ45_2 RJ45_1 HDMI Display Port COM1

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2.2 <Jumper Location & Reference>

Jumper	Function
JRTC	CMOS Operating/Clear Setting
JVLCD	Panel Voltage Setting
JAT	Power mode select
JP1	Com1 Voltage Setting (For Pin 9)
JP2	Com2 Voltage Setting (For Pin 9)
JCSEL1	CN_COM2 RS-232 RS422 RS485 Setting
JCSEL2	CN_COM2 RS-232 RS422 RS485 Setting
JVUSB1	USB Voltage Setting
JMSATA	Mini Card1 mSATA Setting (Mini PCIe)

2.3 <Connector Reference>

2.3.1 <Internal Connectors>

Connector	Function
CPU	FCBGA 1170 CPU
SO-DIMM	204 -pin DDR3L SO-DIMM slot
SATA	7-pin Serial ATA2 connector
DC_IN	DC 6~30V input connector
DC_OUT	4-pin DC output connector
CN_AUDIO	5 x 2-pin audio connector
CN_DIO	6 x 2-pin digital I/O connector
CN_USB 2/3	5 x 2-pin USB2.0 connector
CN_CRT	8 x 2-pin CRT connector
CN_LVDS1/2	20 x 2-pin LVDS connector
CN_INV1/2	5-pin LCD inverter connector
CN_COM2	9-pin RS232/485/422 connector
CN_COM 3/4 5/6	19-pin RS232 connector
CN_LPC	6 x 2-pin LPC connector
CN_PS2	5 x 2-pin PS2 connector
CN_SMBUS	5-pin SMBUS connector
JFRNT	10-pin front panel switch/indicator connector
Mini-Card1/2	52-pin Mini-PCIe slot
SIMM	6-pin slot
CFAST	7+17-pin connector
CPUFAN	4-pin CPU cooler fan connector
SYSFAN	4-pin System cooler fan connector

2.3.2 <External Connectors>

Connector	Function
COM1	DB9 Serial port connector
DisplayPort	20-pin DisplayPort connector
HDMI	19-pin HDMI connector
USB	USB 2.0 and USB 3.0 connector
RJ45 1/2	RJ45 LAN connector

2.4 <Memory and CFAST Setup>

2.4.1 < Memory Setup >

The board provide 204-pin DDR3L SO-DIMM to support 1066/1333MHz up to 8GB.

Support Non-ECC, unbuffered memory only
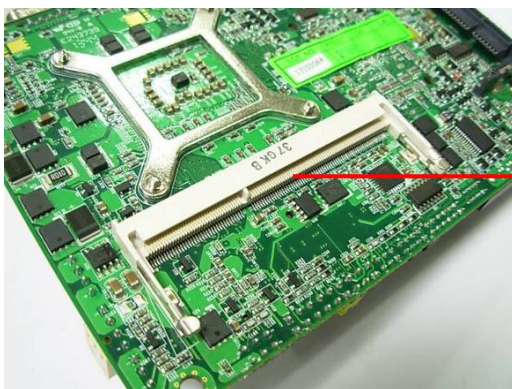
SO-DIMM

2.4.2 < CFAST Setup >

The board provide one CFAST slot which supports SATA2 interface.

The CFAST has the same size with CF card, but it shows higher efficiency and stability to transmit SATA signal.

CFAST plug closeup

Installing the CFAST in the back of the board.

Note that the slot direction and fool-proofing

Installation is complete

2.5 <CMOS & ATX Setup>

The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to

inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its

default values.

Jumper: JRTC
Type: Onboard 3-pin jumper

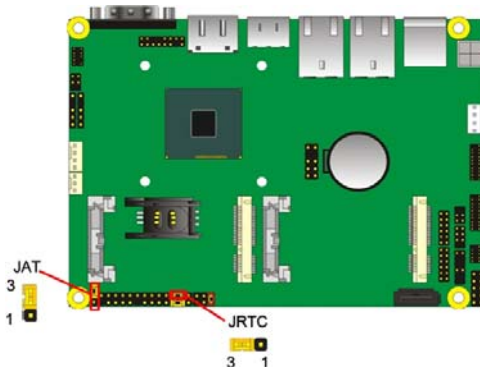| JRTC	Mode
1-2	Clear CMOS
2-3	Normal Operation

Default setting: 2-3

Jumper: JAT
Type: Onboard 3-pin jumper

JAT	Mode
1-2	AT Mode
2-3	ATX Mode

Default setting:2-3

2.6 <Serial ATA Interface>

LE-37D has one SATAII interface, the transfer rate of the SATAII can be up to 300MB/s.

2.7 <Ethernet Interface>

The board integrates with two **Intel® I210-AT** controllers, The Intel Gigabit Ethernet supports triple speed of 10/100/1000Base-T, with IEEE802.3 compliance.

2.8 <Onboard Display Interface>

Based on Intel CPU with built-in HD Graphic, the board provides one HDMI (onboard) and one DisplayPort, two 40-pin LVDS interface with 5-pin LCD backlight inverter connector and internal 16-pin CRT interface.

The board provides double display function with clone mode and extended desktop mode for HDMI, DisplayPort, CRT and LVDS.

2.8.1 <External Display>

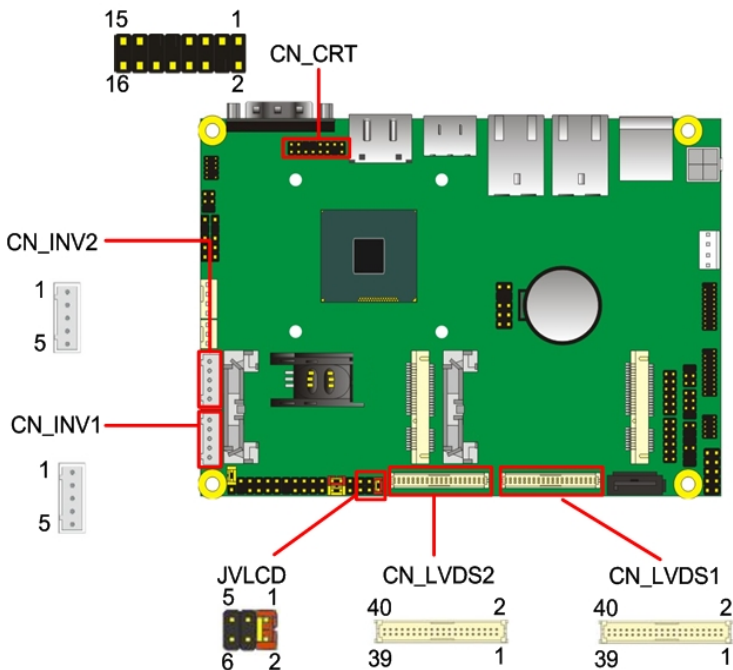Please connect your monitor which supports DisplayPort and HDMI to connect onboard rear I/O Port.

2.8.2 <Internal Display>

The board provides two 40-pin LVDS connector for 18/24-bit single/dual channel panels, supports up to 1920 x 1080 resolution, with one LCD backlight inverter connector and two jumper for panel voltage setting.

Please install LVDS cable before boot up.

Effective patterns of connection: 1-2 / 3-4 / 5-6

Warning: others cause damages

Connector: **JVLCD (LVDS1 voltage and LVDS2 voltage must be the same)**
Type: 6-pin Power select Header

Pin	Description
1-2	LCDVCC **(3.3V)**
3-4	LCDVCC **(5V)**
5-6	LCDVCC **(12V)**

Default: 1-2

Connector: **CN_INV**
Type: 5-pin LVDS Power Header

Pin	Description
1	+12V
2	PWM
3	GND
4	GND
5	ENABKL

Connector: **CN_LVDS**
Type: onboard 40-pin connector for LVDS connector
Connector model: **HIROSE DF13-40DP-1.25V or compatible**

Pin	Signal	Pin	Signal
2	LCDVCC	1	LCDVCC
4	LVDS Detect (Note)	3	GND
6	ATX0-	5	BTX0-
8	ATX0+	7	BTX0+
10	GND	9	GND
12	ATX1-	11	BTX1-
14	ATX1+	13	BTX1+
16	GND	15	GND
18	ATX2-	17	BTX2-
20	ATX2+	19	BTX2+
22	GND	21	GND
24	ACLK-	23	BTX3-
26	ACLK+	25	BTX3+
28	GND	27	GND
30	ATX3-	29	BCLK-
32	ATX3+	31	BCLK+
34	GND	33	GND
36	DDCPCLK	35	N/C
38	DDCPDATA	37	N/C
40	N/C	39	N/C

Note: The LVDS Detect Pin please contact to the Panel GND.

To setup the LCD, you need the component below:
1. A panel with LVDS interfaces.
2. An inverter for panel's backlight power.
3. A LCD cable and an inverter cable.

For the cables, please follow the pin assignment of the connector to make a cable, because

every panel has its own pin assignment, so we do not provide a standard cable; please find
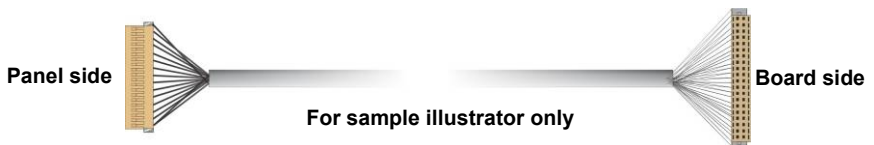
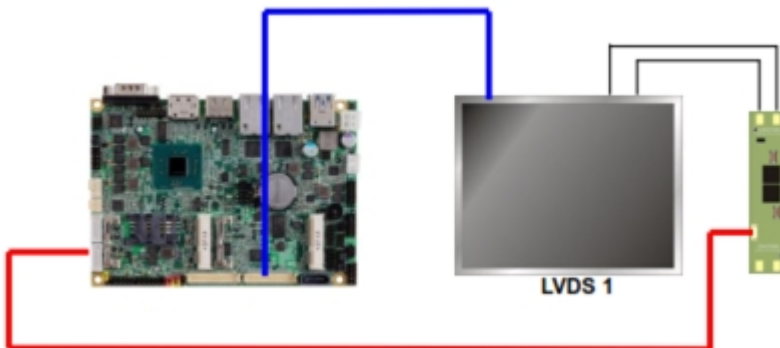**a local cable manufacture to make cables.**

LCD Installation Guide:

1. Preparing the **LE-37D**, **LCD panel** and the **backlight inverter**.

2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +12V or +5V or +3.3V.

3. You would need a LVDS type cable.

Panel side

Board side

For sample illustrator only

4. To connect all of the devices well.

LVDS 1

After setup the devices well, you need to select the LCD panel type in the BIOS.

The panel type mapping is list below:

BIOS panel type selection form (BIOS Version:1.0)				
Single / Dual channel			**Single / Dual channel**	
NO.	Output format	NO.	Output format	
1	640 x 480	9	1680 x 1050	
2	800 x 600	10	1920 x 1200	
3	1024 x 768	11	1440 x 900	
4	1280 x 1024	12	1600 x 900	
5	1400 x 1050	13	1024 x 768	
6	1400 x 1050	14	1280 x 800	
7	1680 x 1200	15	1920 x 1080	
8	1366 x 768			

Connector: **CN_CRT**
Connector type: 16-pin header connector (pitch = 2.00mm)

| Pin Number	Assignment	Pin Number	Assignment
1	BR	2	BG
3	BB	4	NC
5	-CRTATCH	6	IOGND1
7	IOGND1	8	IOGND1
9	NC	10	-CRTATCH
11	NC	12	5VCDA
13	5HSYNC	14	5VSYNC
15	5VCLK	16	NC

2.9 <Integrated Audio Interface>

The board provides the onboard high definition audio with Realtek ALC262

Connector: CN_AUDIO
Type: 10-pin (2 x 5) 1.27mm x 2.54mm-pitch header

Pin	Description	Pin	Description
1	MIC_L	2	Ground
3	MIC_R	4	N/C
5	Speaker_R	6	MIC Detect
7	SENSE	8	N/C
9	Speaker_L	10	Speaker Detect
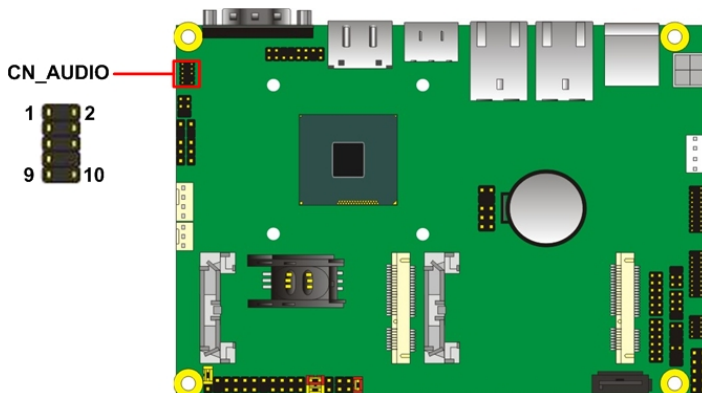
2.10 <USB Interface>

LE-37D integrates 5 x USB2.0 and 1 x USB3.0.

The specifications of USB3.0 are listed below:

| Interface	USB3.0
Controller	J1900 / N2930 / E3845
Transfer Rate	Up to 5Gb/s
Voltage	5V

The USB3.0 port need to **Install USB 3.0 eXtensible Host Controller Driver** and **enable xHCI Mode**.

### 2.10.1   USB 3.0 eXtensible Host Controller Driver install

Step1.   Copy the USB 3.0 driver from "Driver CD" to the local hard driver directory.

（ **Do not run this driver from a USB storage device)**

Step2.   Configure default BIOS, click Advanced > South Cluster Configuration > USB Configuration, disable "**EHCI Mode**".
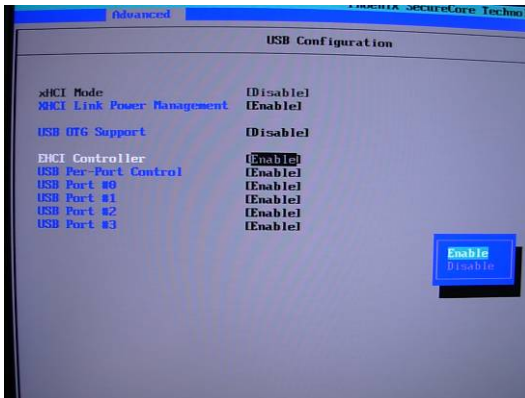
Step3. enable "**xHCI Mode"** and push "F10" to save configuration. Restart your computer.
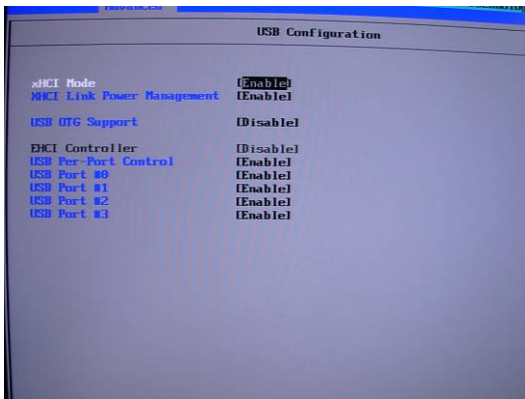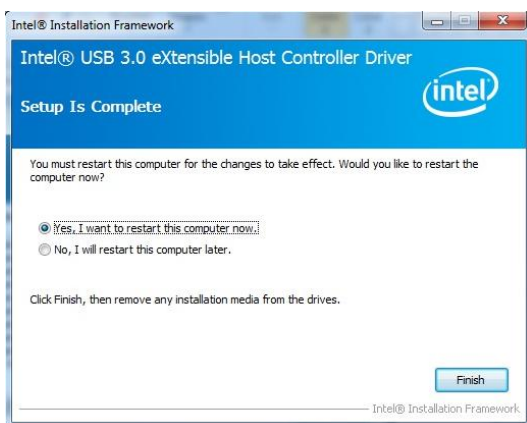

Step4. If you enable xHCI Mode , USB 2.0 and USB 3.0 ports can't use without drive. We recommend that you connect PS/2 mouse / keyboard installing USB 3.0 driver.

Step5. Double click the "Setup.exe" from the directory. Click "Next" to continue.
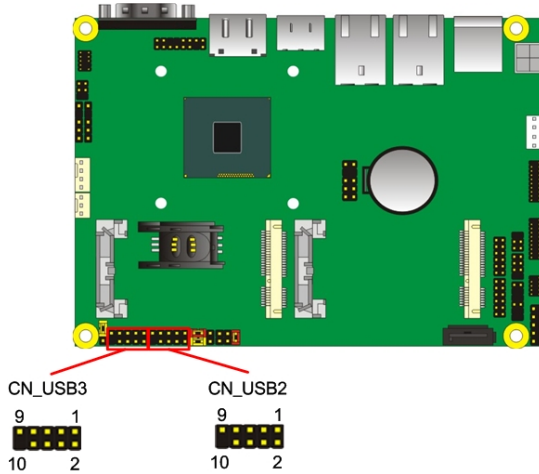
Step6. Lastly, the "Setup Complete" screen appears so click "Finish" to

restart your computer.

The specifications of USB2.0 are list

Interface	USB2.0
Controller	J1900 / N2930 / E3845
Transfer Rate	Up to 480Mb/s
Voltage	5V

CN_USB3   CN_USB2

9   1   9   1

10   2   10   2

Connector: **CN_USB 2/3**

Type: 10-pin (2 x 5) header (pitch = 2.54mm)

Pin	Description	Pin	Description
1	VCC	2	VCC
3	Data0-	4	Data1-
5	Data0+	6	Data1+
7	Ground	8	Ground
9	Ground	10	N/C

CN_USB2 need to enable xHCI Mode

2.11 <Serial Port>

The board supports one RS232 serial port and one jumper selectable RS232/422/485 serial ports. The jumper JCSEL1 & JCSEL2 can let you configure the communicating modes for COM2.

Connector: **COM1**

Type: 9-pin D-sub male connector on bracket for COM1

Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	Set by JP1	10	N/C

Connector: **COM2**
Type: 10-pin (5 x 2) 1.27mm x 2.54mm-pitch header for COM2

Pin	Signal	Pin	Signal
1	DCD/ 422TX-/ 485-	2	RXD/ 422TX+/ 485+
3	TXD/ 422RX+	4	DTR/ 422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	Set by JP2	10	Key

Note: Use JCSEL1 and JCSEL2 to select communication mode

Function	JCSEL2	JCSEL1
RS-422		
RS-485		
RS-232 (Default)		

Setting RS-232 & RS-422 & RS-485 for COM2

Connector: **COM3/4 COM5/6**

Type: 19-pin (2 x 10) header pitch = 2.54x1.27mm

Pin	Description	Pin	Description
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND1	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	N/C
11	DCD2	12	RX2
13	TX2	14	DTR2
15	Ground	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	N/C
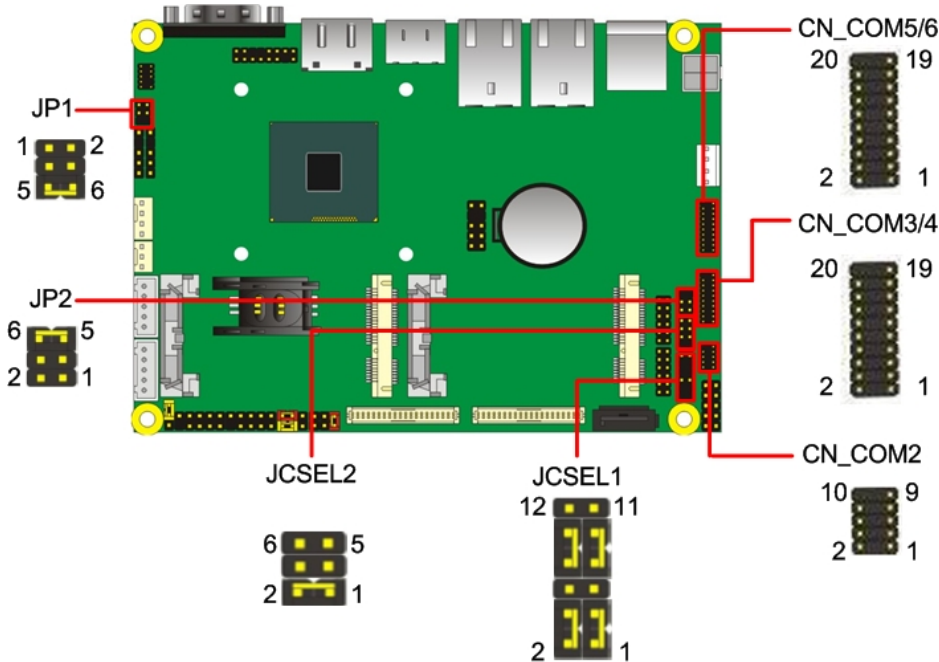
Power Mode	JP1/2
Pin 9 with 5V Power	1-2
Pin 9 with 12V Power	3-4
Standard COM port	5-6
Default setting (5-6)	

2.12 <PCIe Mini Card and SIM Interface>

The board provides two PCIe mini card slot and a SIM slot.

MINI_CARD1 is the first Mini-PCIe slot for long size Mini-PCIe cards.

MINI_CARD1 can selectively support mSATA.

MINI_CARD2 is the second Mini-PCIe slot for long size Mini-PCIe cards.

MINI_CARD USB Singal need to enable xHCI Mode

However, if you are trying to use 3G Mini-PCIe card with your SIM card, first, put your

SIM card into the slot, then put your 3G Mini-PCIe card into the MINI_CARD2.
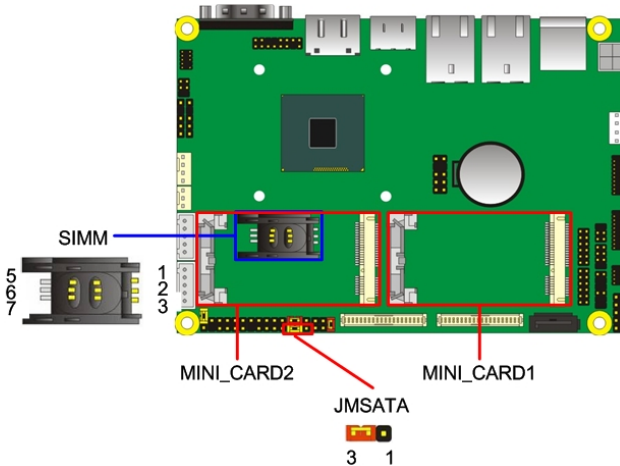
Connector: **SIMM** (3G MiniPcie Mode)

Type: 6-pin SIM slot

Pin	Description	Pin	Description
1	SIMVCC	2	SIMRST
3	SIMCLK	4	NC
5	GND	6	SIMVPP
7	SIMDATA		

Connector: **JMSATA**

Type: onboard 3-pin header

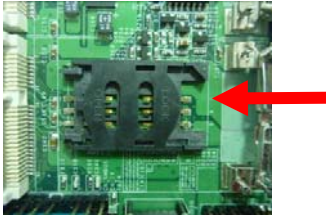| JMSATA	Mode
1-2	Support mSATA for MINI_CARD1
2-3	Support PCIe and USB

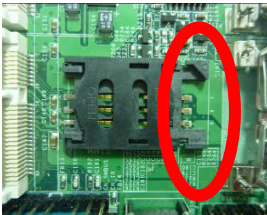Default setting: 2-3

2.12.1 <SIM Setup>

Step1.

SIM card holder is marked by circle.

Slide the cap toward OPEN direction.

Step 2.

Make sure that the cap is now at the OPEN position.

Step 3.

Flip the cap up for inserting a SIM card into.

Step 4.

Insert a SIM card as shown in the photo.

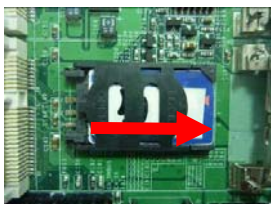Be sure that the corner cut is on top and the golden pads are up.

Step 5.

Now, flip down the cap as shown in the photo.

Step 6.

Press down and slide the cap to the CLOSE position.

Be sure that the cap is tightly held with the slot.

2.13 <GPIO and SMBUS Interface>

The board provides a programmable 8-bit digital I/O interface; you can use this general

purpose I/O port for system control like POS or KIOSK. The GPIO is an Open-drain

output and TTL-level input.

1.   Output：Open-drain, Most applications need use an external pull-up resistor.
2.   Input：TTL-level.
DC characteristics:

5V TTL-level Input Pin						
Parameter	Sym	Min	Typ	Max	Unit	Conditions
Input Low Threshold Voltage	V_{t-}	0.5	0.8	1.1	V	$V_{CC} = 3.3V$
Input High Threshold Voltage	V_{t+}	1.6	2.0	2.4	V	$V_{CC} = 3.3V$
Hystersis	V_{TH}	0.5	1.2		V	$V_{CC} = 3.3V$
Input High Leakage	I_{LIH}			+10	μA	$V_{IN} = 3.3V$
Input Low Leakage	I_{LIL}			-10	μA	$V_{IN} = 0V$
Open-drain output pin with 12-mA sink capability						
Output Low Voltage	V_{OL}			0.4	V	$I_{OL} = 12$ mA

Connector: **CN_DIO**
Type: 12-pin (6 x 2) header (pitch = 2.0mm)

Pin	Description	Pin	Description
1	Ground	2	Ground
3	GPIO0	4	GPIO4
5	GPIO1	6	GPIO5
7	GPIO2	8	GPIO6
9	GPIO3	10	GPIO7
11	5V	12	12V

Connector: **CN_SMBUS**
Type: 5-pin header for SMBUS Ports

Pin	Description
1	VCC
2	N/C
3	SMBDATA
4	SMBCLK
5	Ground
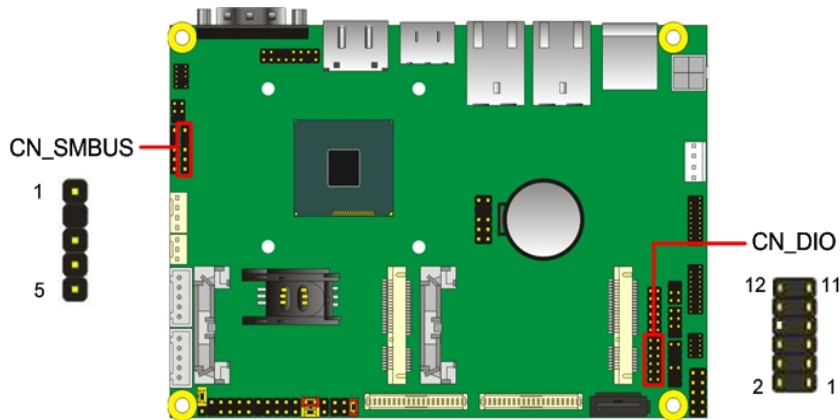
2.14 <Power Supply and Fan Interface >

2.14.1 <Power Input>

The board requires DC input with 4-pin header, the input voltage range is from 6V to 30V.

Connector: **DC_IN**

Type: 4-pin DC power connector

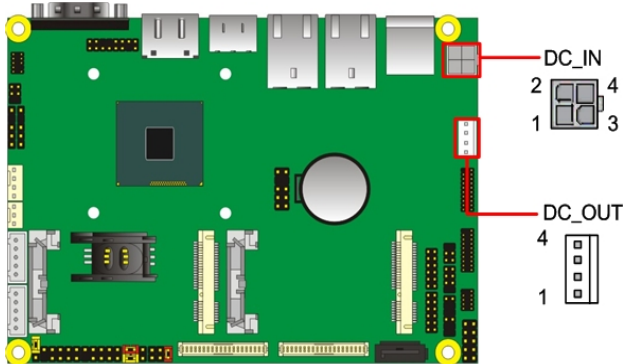| Pin	Description	Pin	Description
1	Ground	2	Ground
3	+6V~ +30V	4	+6V~ +30V

2.14.2 <Power Output>

Connector: **DC_OUT**

Type: 4-pin connector for +5V/+12V **output**

Pin	Description	Pin	Description	Pin	Description	Pin	Description
1	+12V	2	Ground	3	Ground	4	+5V

Note: Maximum output current 12V/3A, 5V/3A

2.14.3 <Fan connector>

The board provides one **4-pin** fan connectors supporting smart fan for CPU cooler and system cooler.
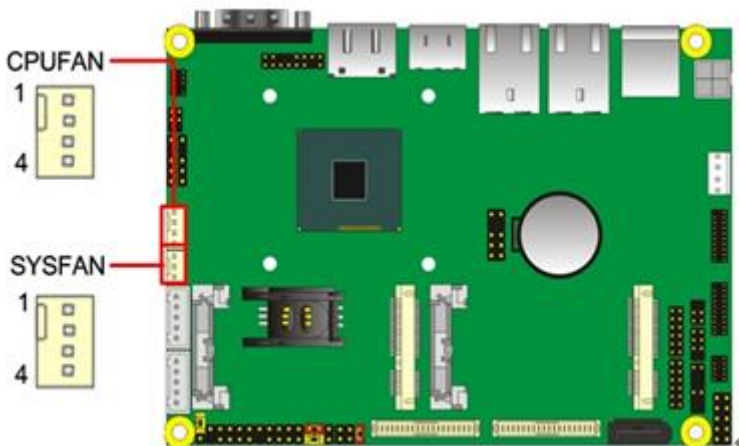
Connector: **CPUFAN**

Type: 4-pin fan wafer connector

Pin	Description	Pin	Description
1	Ground	2	+12V
3	Fan Speed Detection	4	Fan Control

Connector: **SYSFAN**

Type: 4-pin fan wafer connector

| Pin	Description	Pin	Description
1	Ground	2	+12V
3	Fan Speed Detection	4	Fan Control

2.15 <Switch and Indicator>

The **JFRNT** provides front control panel of the board, such as power button, reset and

beeper, etc. Please check well before you connecting the cables on the chassis.

Connector: **JFRNT**

Type: onboard 10-pin (2 x 5) 2.54-pitch header

| Function	Signal	PIN		Signal
Reset	Reset-	10	9	Reset**+**
Power LED	PWRLED+	8	7	PWRLED-
HDD LED	HDLED+	6	5	HDLED-
Speaker	SPK**+**	4	3	SPK-
Power	PWRBT**+**	2	1	PWRBT-
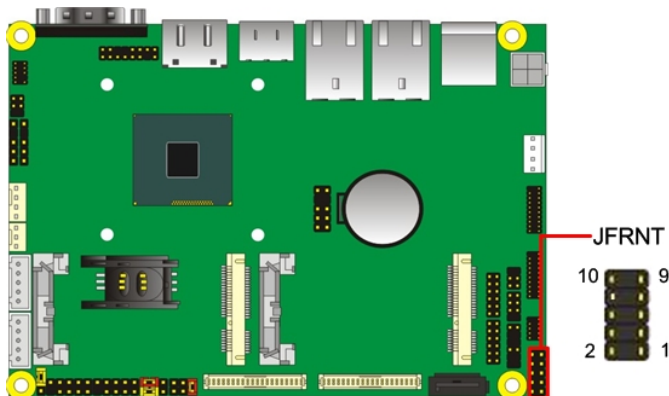
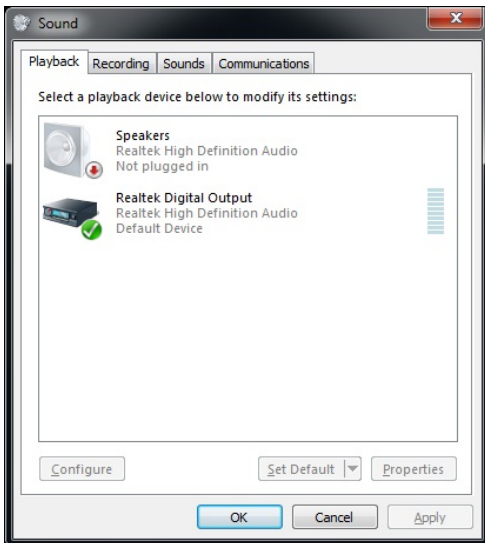# Chapter 3 <System Setup>
3.1 <Audio Configuration>

The board integrates REALTEK® ALC262 code. It can support 2-channel sound under
system configuration. Please follow the steps below to setup your sound system.

1. Install REALTEK HD Audio driver.
2. Lunch the control panel and Sound Effect Manager.
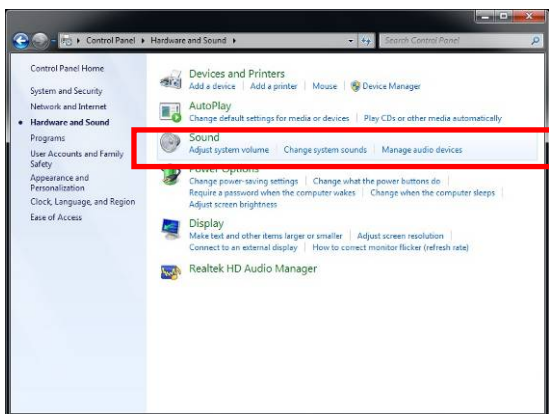
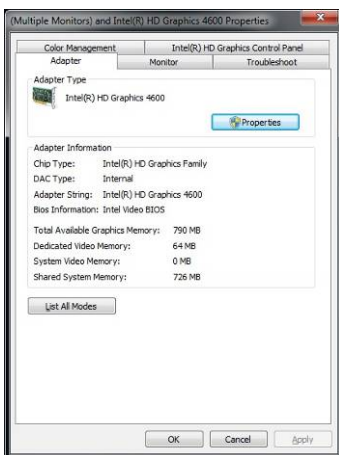3. Select Speaker Configuration

3.2 <Display Properties Setting>

Based on Intel **J1900/N2930/E3845** with HD Graphic, the board supports two DACs for

display device as different resolution and color bit.

Please install the Intel Graphic Driver before you starting setup display devices.

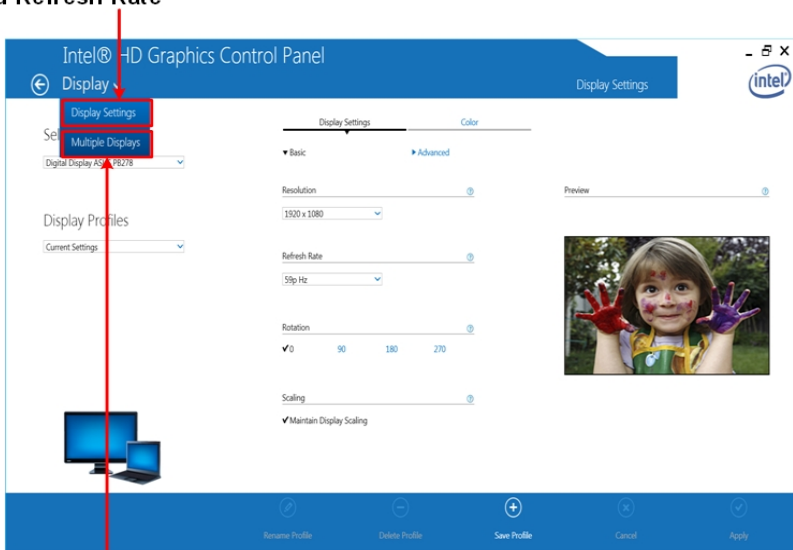1. Click right button on the desktop to lunch **Screen resolution > Advanced settings**

2. Click **Graphics Properties…** button for more specificity setup.
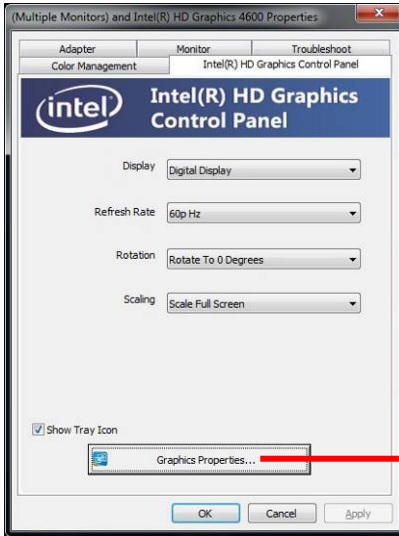
Click Graphics Properties... for advanced setup

3. This setup options can let you define each device settings.
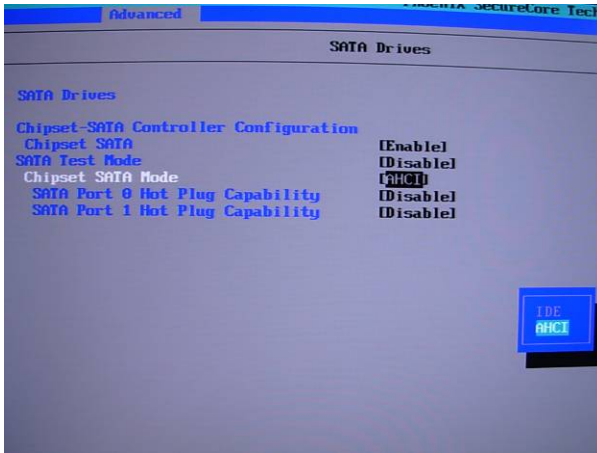
Click **Display Settings** to setup the CRT monitor for Resolution and Refresh Rate

Click **Multiple Displays** to setup the dual display mode as same screen

3.3 <SATA configuration>

Chipset SATA Mode:

This option can let you select whether the Serial ATA hard drives would work under

normal **IDE** mode or **AHCI** mode

Chapter 4 <BIOS Setup>

The motherboard uses the Phoenix BIOS for the system configuration. The Phoenix BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems.

The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting.

The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

To activate CMOS Setup program, press ＜DEL＞ key immediately after you turn on the system. The following message "Press DEL to enter SETUP" should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main

Menu will be displayed as **Figure 4-1**. You can use arrow keys to select your function, press ＜Enter＞ key to accept the selection and enter the sub-menu.
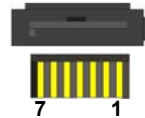
Figure 4-1 CMOS Setup Utility Main Screen
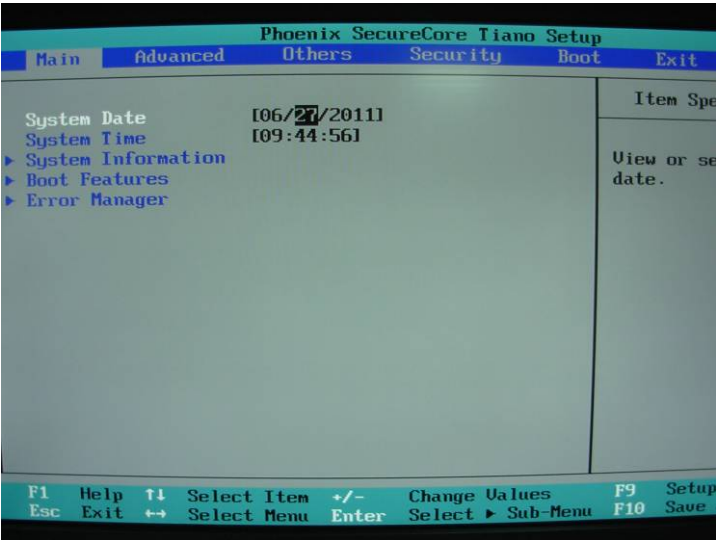
Appendix A <I/O Port Pin Assignment>

A.1 <Serial ATA Port>
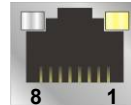
Connector: **SATAII**

Type: 7-pin wafer connector

1	2	3	4	5	6	7
GND	RSATA_TXP1	RSATA_TXN1	GND	RSATA_RXN1	RSATA_RXP1	GND

A.2 <LAN Port>

Connector: **RJ45**

Type: RJ45 connector with LED on bracket
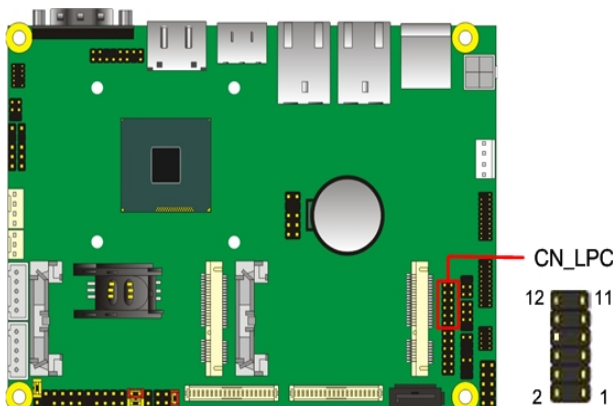
Pin	1	2	3	4	5	6	7	8
Description	MI0+	MI0-	MI1+	MI2+	MI2-	MI1-	MI3+	MI3-

A.3 <LPC Port>

Connector: **CN_LPC**

Type: 10-pin header for LPC Port

Pin	Description	Pin	Description
1	LPC_CLK	2	RESET-
3	-LFRAME	4	LAD3
5	LAD2	6	LAD1
7	LAD0	8	+3.3V
9	SERIRQ	10	Ground
11	+3.3V	12	N/C

Appendix B <Flash BIOS>

## B.1 <Flash Tool>

The board is based on Phoenix BIOS and can be updated easily by the BIOS auto flash tool. You can download the tool online at the address below:

http://www.commell.com.tw/Support/Product%20Technical%20Support/LE-37D.htm

The utility that can write the data into the BIOS flash ship and update the BIOS.

B.2 <Flash BIOS Procedure>

1. Extract the zip file(re-flash tool and BIOS file) to root of the USB flash drive.
2. Insert your USB flash drive in USB port of the board and power on the system.
3. Boot to EFI-Shell mode (**UEFI Boot Enable, Legacy Boot Disable**)
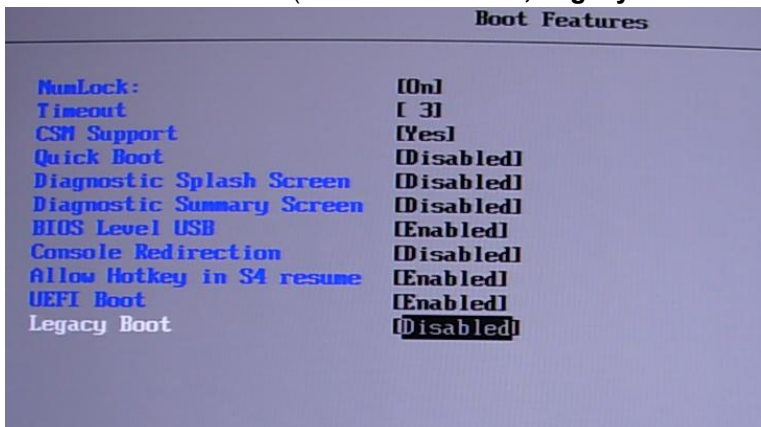
then input the **"fs0:"** command to switch to the root of the USB flash drive.
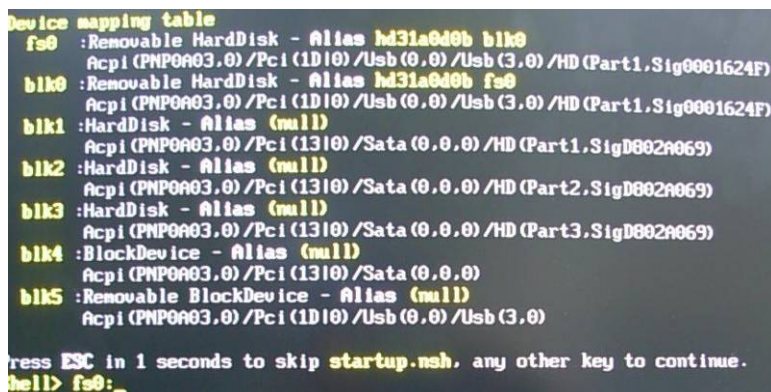
4. Type the " **fpt64.efi -y -f xxx.bin**" command to start flash BIOS
   processes. (xxx.bin means the BIOS file that you want to update)
5. When it finished all update processes, restart the system.

Any question about the BIOS re-flash please contact your distributors or visit the
web-site at below:

http://www.commell.com.tw/support/support.htm

Appendix C <Programming GPIO's>

The GPIO'can be programmed with the MSDOS debug program using
simple IN/OUT commands. The following lines show an example how to
do this. (The GPIO is open drain)

GPIO0…..GPIO7   bit0……bit7

-o 4E 87   ;enter configuration

-o 4E 87

-o 4E 07

-o 4F 07   ;enale GPIO function

-o 4E 30

-o 4F 10   ;enable GPIO configuration

-o 4E F0

-o 4F xx   ;set GPIO as input/output; set '1' for input,'0'for

output

-o 4E F1

-o 4F xx   ;if set GPIO's as output,in this register its value can

                                  be set

Optional :

-o 4E F2

-o 4F xx   ; Data inversion register ; '1' inverts the current valus
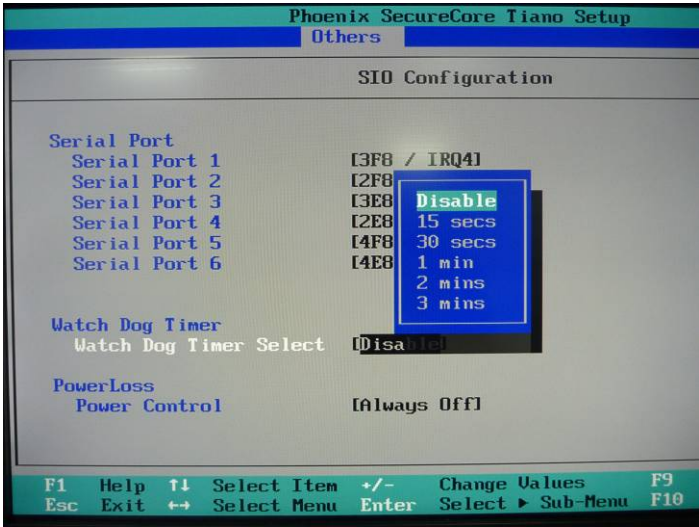
                                  of the bits ,'0' leaves them as they are

-o 4E 30

-o 4F 01   ; active GPIO's

For further information, please refer to NCT6106D datasheet.

Appendix D < Programming Watchdog Timer >

The watchdog timer makes the system auto-reset while it stops to work for a period.

The integrated watchdog timer can be setup as system reset mode by program.

Timeout Value Range

- 1 to 255
- Second or Minute

Program Sample

Watchdog timer setup as system reset with 5 second of timeout

4E, 87	
4E, 87	
4E, 07	
4F, 08	Logical Device 8
4E, 30	Activate
4F, 01	
4E, F0	
4F, 00	Set as Second* mode
4E, F1	
4F, 05	Set as 5

* Minute: bit 3 = 1; Second: bit 3 = 0

You can select Timer setting in the BIOS, after setting the time options, the system will reset according to the period of your selection.

Contact Information

Any advice or comment about our products and service, or anything we can help you please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

Taiwan Commate Computer Inc.

Address	19F., No.94, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22102, Taiwan
TEL	+886-2-26963909
FAX	+886-2-26963911
Website	http://www.commell.com.tw
E-Mail	info@commell.com.tw (General Information)
	tech@commell.com.tw (Technical Support)

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