LE-575

5.25 inch Embedded Miniboard

User's Manual

Edition 1.2

2010/8/4

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Packing List

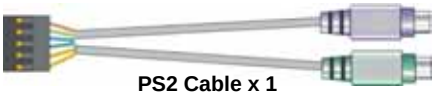
Please check the package before you starting setup the system

Hardware:

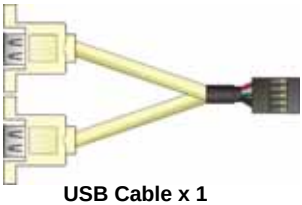
LE-575 series motherboard x 1

Cable Kit:

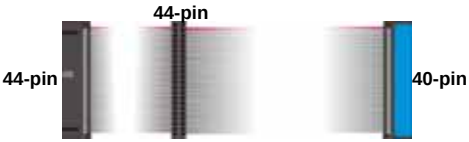
Serial ATA Ribbon Cable x 1
(OALSATA-L)



PS2 Cable x 1
(OALPS2/KM)



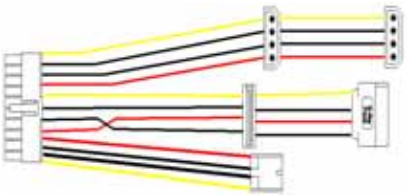
USB Cable x 1
(OALUSBA-3)



IDE Cable x 1
(OALUDMA33-8)

COM port Cable x 1
(OAL1SNB)

Audio Cable x 1
(OALPJ-HD-NB)



Power Output Cable x 1
(OALATX-P3S2)

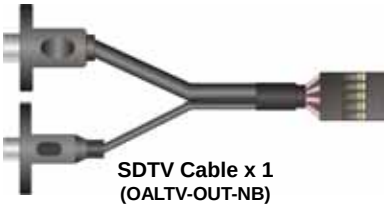
DVI module with DVI Cable x 1
(Only LE-575XD)
(BADPDVI_A + OALDVI-P)

Printed Matters:

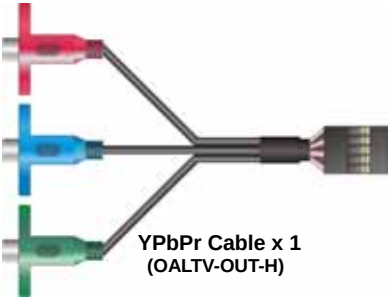
Driver CD x 1 (Including User's Manual)

Optional Cable Kit:

26-pin Slim Type Floppy Cable x 1
(OALFD/NB)

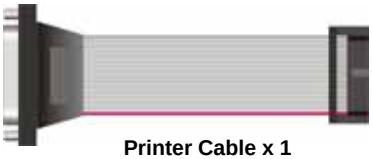


SDTV Cable x 1
(OALTV-OUT-NB)



YPbPr Cable x 1
(OALTV-OUT-H)

Dual COM PORT cable
(OALES-BKU2NB)



Printer Cable x 1
(OALBKU-0)

Index

Chapter 1 <Introduction>.....8

1.1 <Product Overview> 8

1.2 <Product Specification> 9

1.3 <Mechanical Drawing> 11

1.4 <Block Diagram> 12

Chapter 2 <Hardware Setup> 13

2.1 <Connector Location>.....13

2.2 <Jumper Reference> 15

2.3 <Connector Reference>.....16

2.3.1 <Internal Connectors> 16

2.3.2 <External Connectors>.....16

2.4 <System and Memory Setup>.....17

2.5 <CMOS & ATX Setup> 18

2.6 <Enhanced IDE & CF Interface>.....19

2.7 <Serial ATA Interface>.....20

2.8 <Floppy Port> 21

2.9 <Network Interface>.....22

2.10 <Onboard Display Interface> 23

2.10.1 <Analog VGA Interface>.....23

2.10.2 <LVDS interface> 24

2.10.3 <Second LVDS Interface> LE-575X2 only 25

2.10.4 <DVI Interface> LE-575XD only 29

2.10.5 <HDTV Interface>.....30

2.11 <Onboard Audio Interface>.....31

2.12 <USB2.0 Interface> 33

2.13 <GPIO Interface>.....35

2.14 <Serial Port Jumper Setting >.....36

2.15 <Power and Fan Connector>.....37

2.15.1 <Power Input> 37
2.15.2 <Power Output> 38
2.15.3 <Fan Connector> 39
2.16 <Indicator and Switch> 40
Chapter 3 <System Configuration> 42
3.1 <Audio Configuration> 42
3.2 <Display Configuration> 43
Chapter 4 <BIOS Setup> 46
Appendix A <I/O Port Pin Assignment> 48
A.1 <Serial ATA Port> 48
A.2 <IDE Port> 48
A.3 <Floppy Port> 49
A.4 < LPT Port > 49
A.5 < Serial Port 3,4,5,6 > 50
A.6 <IrDA Port> 50
A.7 <SMBUS Port> 50
A.8 <Serial Port 1> 51
A.9 <VGA Port> 51
A.10 <LAN Port> 51
Appendix B <Flash BIOS> 53
B.1 <Flash Tool> 53
B.2 <Flash BIOS Procedure> 53
Appendix C <System Resources> 55
C.1 <I/O Port Address Map> 55
C.2 <Memory Address Map> 57
C.3 < IRQ Resources> 58
Appendix D <Programming GPIO's> 59
Appendix E <Programming Watchdog Timer > 60
Contact Information 61

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Chapter 1 <Introduction>

1.1 <Product Overview>

LE-575 is the 5.25" Miniboard, with Intel® Atom N270 processor for 533 MHz front side bus, Intel® 945GSE and ICH7M chipset, integrated GMA950 graphics, DDR2 SO-DIMM memory, Realtek HD Audio, Serial ATA and four Intel® 82574L Gigabit LAN.

Intel Atom Processor

The Intel® Atom N270 single core processor is with 533 MHz front side bus, 512KB L2 cache. It's built on 45nm process technology support Hyper-Threading Technology; Enhanced Intel SpeedStep® Technology reduces average system power consumption.

Mobile Intel® 945GSE chipset

The board integrates Intel® 945GSE and ICH7M chipset. The chipset features power-efficient graphics with an integrated 32-bit 3D graphics engine based on Intel® Graphics Media Accelerator 950 architecture with LVDS, CRT, and
TV-Out display ports. It provides I/O capabilities and flexibility via high-bandwidth interfaces such as PCI, Serial ATA and Hi-Speed USB 2.0 connectivity. It also includes a single channel for 400/533 MHz DDR2 system memory (SODIMM).

All in One multimedia solution

Based on Intel 945GSE and ICH7M chipset, the board provides high performance onboard graphics, 18-bit Dual channel LVDS interface, HDTV and HD Audio, to meet the every requirement of the multimedia application.

Flexible Extension Interface

The board also provides Compact Flash Type II socket, PCI and two Mini-PCI slots.

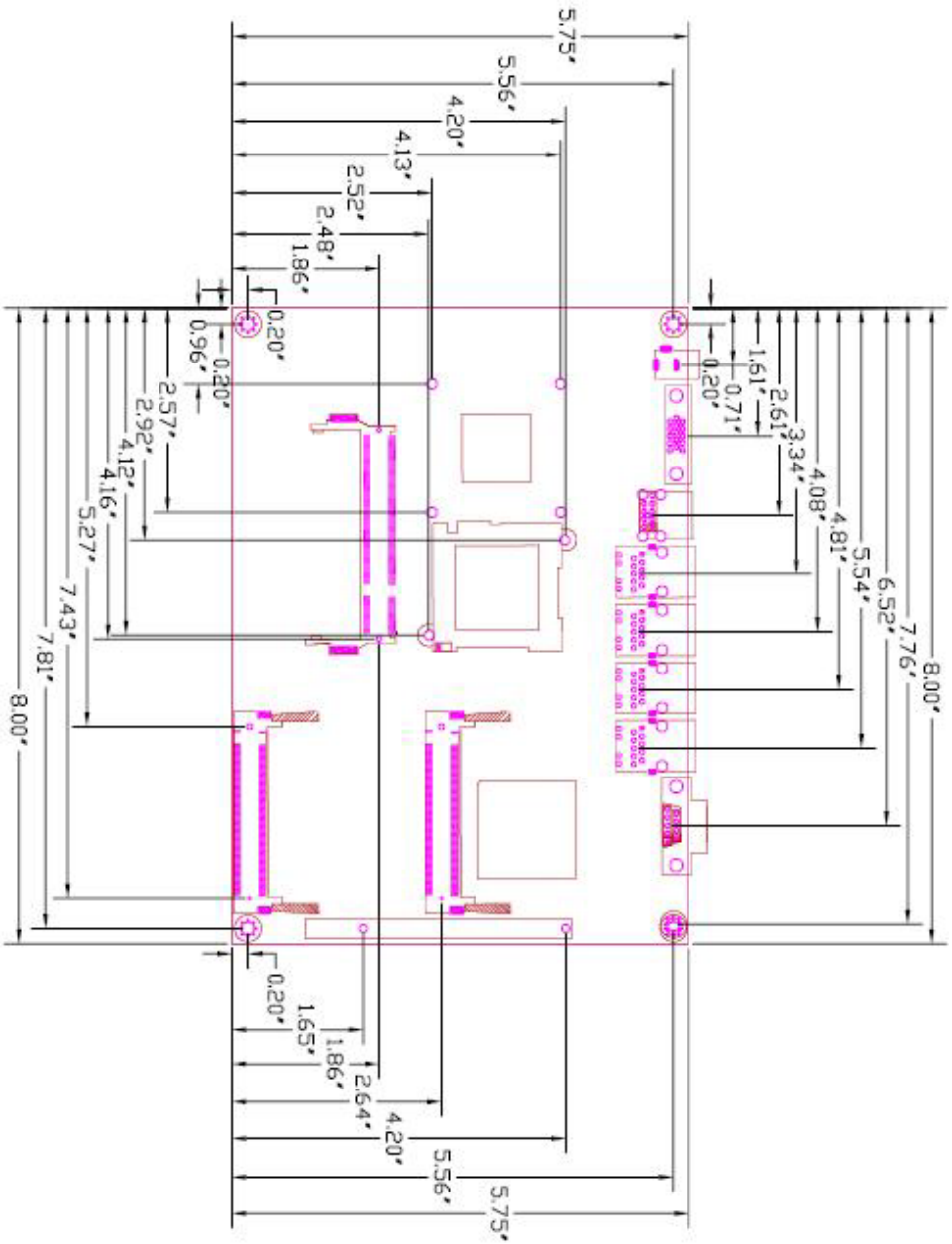
1.2 <Product Specification>

General Specification	
Form Factor	5.25" Embedded Miniboard
CPU	Intel® Atom N270 processor Package type: FCBGA8 Front side bus: 533MHz
Memory	1 x 200-pin DDR2 SO-DIMM SDRAM up to 2GB Unbufferred, none-ECC memory supported only
Chipset	Intel® 945GSE and ICH7M
BIOS	Phoenix-Award v6.00PG 8Mb SPI flash BIOS
Green Function	Power saving mode includes doze, standby and suspend modes. ACPI version 1.0 and APM version 1.2 compliant
Watchdog Timer	System reset programmable watchdog timer with 1 ~ 255 sec./min. of timeout value
Real Time Clock	Intel® ICH7M built-in RTC with lithium battery
Enhanced IDE	UltraDMA33 IDE interface supports up to 2 ATAPI devices One 44-pin IDE port onboard One CompactFlash Type II socket
Serial ATA	Intel® ICH7M integrates 2 Serial ATA interfaces (No RAID Function) Up to 150MB/s of transfer rate
Multi-I/O Port	
Chipset	Intel® ICH7M with Winbond® W83627THG controller
Serial Port	One RS-232/422/485 serial port and Five RS-232
USB Port	Two external & six internal Hi-Speed USB 2.0 ports with 480Mbps of transfer rate
IrDA Port	One IrDA compliant Infrared interface supports SIR
K/B & Mouse	One 10-pin header for PS/2 keyboard and mouse ports
GPIO	One 12-pin Digital I/O connector with 8-bit programmable I/O interface
Smart Fan	One CPU fan connectors for fan speed controllable
Floppy Port	One slim type Floppy port
VGA Display Interface	
Chipset	Intel® 945GSE GMCH (Graphic Memory Controller Hub)
Frame Buffer	Up to 224MB shared with system memory
Display Type	CRT/ LCD monitor with analog display, LVDS1, HDTV, **LVDS2 (LE-575X2 only) or DVI (LE-575XD only)**

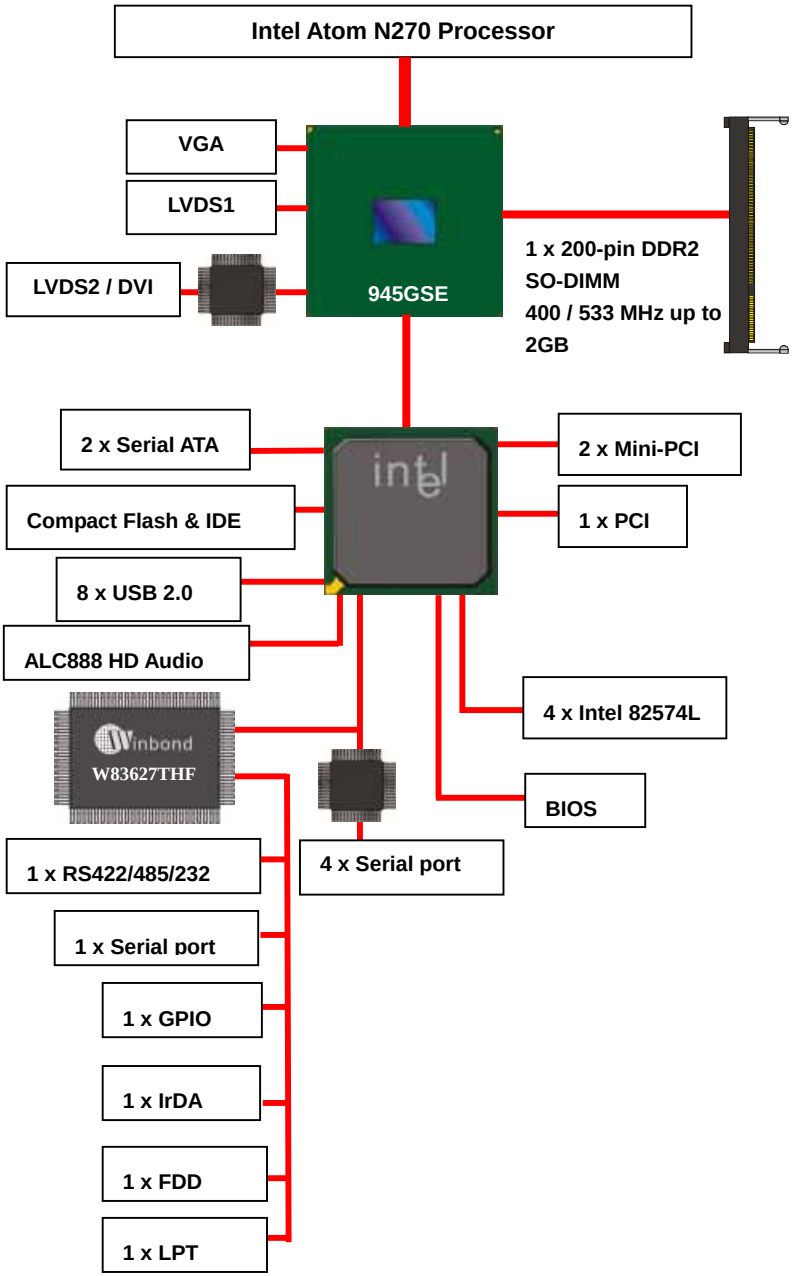
Connector	External DB15 female connector on rear I/O panel On board 40-pin LVDS1 connector On board 10-pin TV-out connector **On board 40-pin LVDS2 connector (LE-575X2 only)** **On board 26-pin DVI connector (LE-575XD only)**
Ethernet Interface	
Controller	4 x Intel 82574L Gigabit Ethernet controller
Type	Support 10/100/1000Base-T auto-switching Fast Ethernet Full duplex, IEEE802.3U compliant
Connector	Four External RJ45 connector with LED indicator
Audio Interface	
Chipset	Intel integrated with Realtek ALC888 HD Audio Intel High Definition Audio compliance
Interface	Analog 2 channels sound output, Stereo MIC-in/Line-in. Digital S/PDIF out.
Connector	Internal 10-pin header for Line-out, MIC-in 4-pin CD-IN and 5-pin S/PDIF connector
Expansive Interface	
PCI	PCI slot (32-bit, 33MHz) Power supply: +3.3V, +5V, 3VSB +12V, -12V
Mini PCI	Two Mini-PCI socket **TYPE III A** (32-bit, 33MHz) Power supply: +3.3V, +5V, 3VSB
Power and Environment	
Power Requirement	Standard 24-pin ATX power supply (20-pin is compatible) or 9~24V DC input
Dimension	146 (L) x 203 (H) mm
Temperature	Operating within 0 ~ 60℃ Storage within -20 ~ 85℃
Ordering Code	
LE-575X	Intel Atom processor with onboard VGA, Mini PCI, Audio, SATA, GLAN, USB2.0, CF, GPIO, LVDS for 18-bits
LE-575XD	Same as above and with DVI
LE-575X2	Same as above and with secondary LVDS for 18/24-bits

The specifications may be different as the actual production.
For further product information please visit the website at http://www.commell.com.tw

1.3 <Mechanical Drawing>

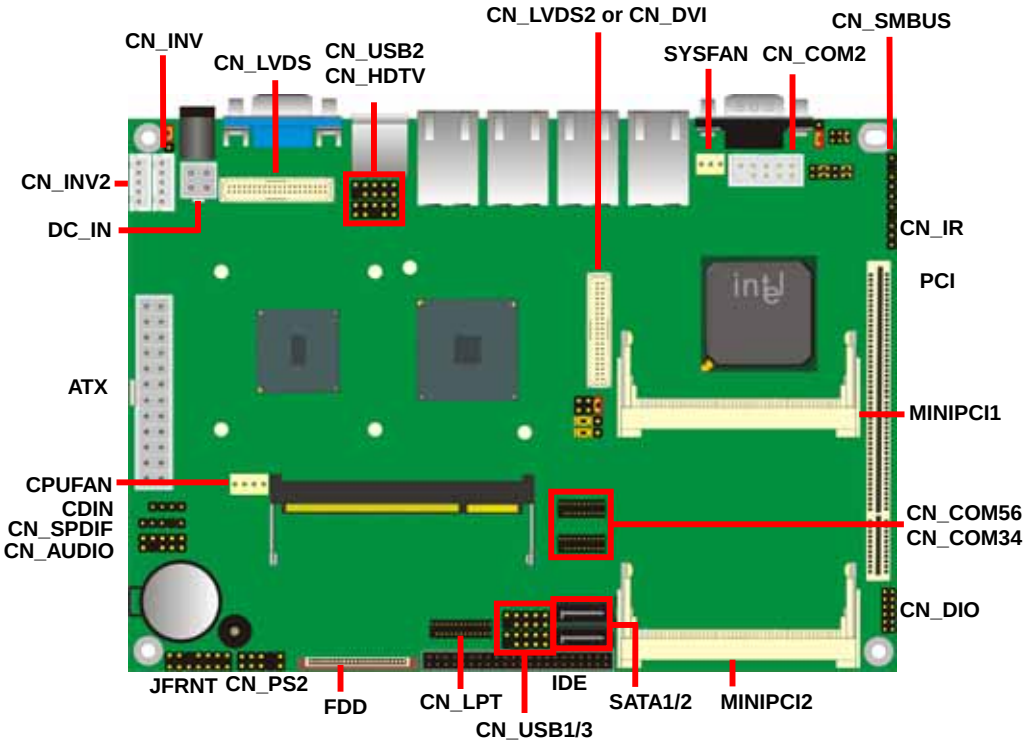


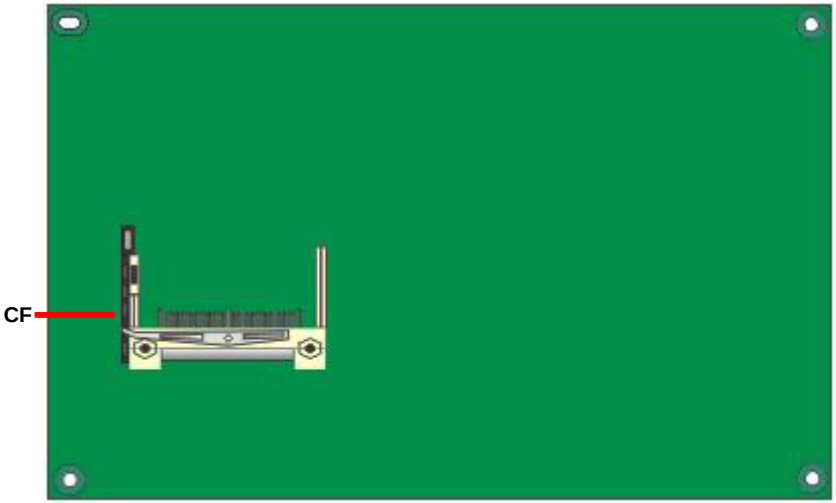
1.4 <Block Diagram>

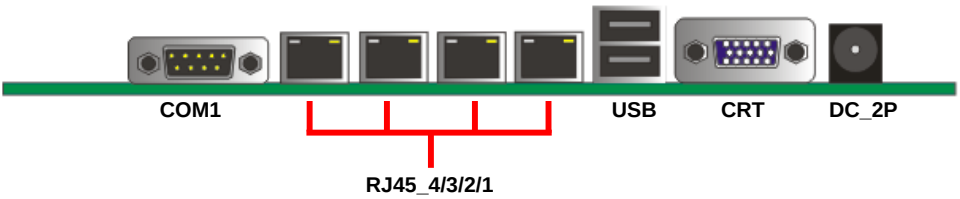


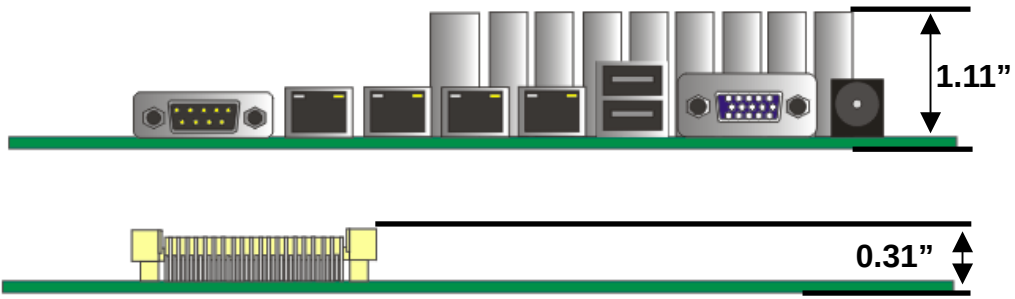
Chapter 2 <Hardware Setup>

2.1 <Connector Location>



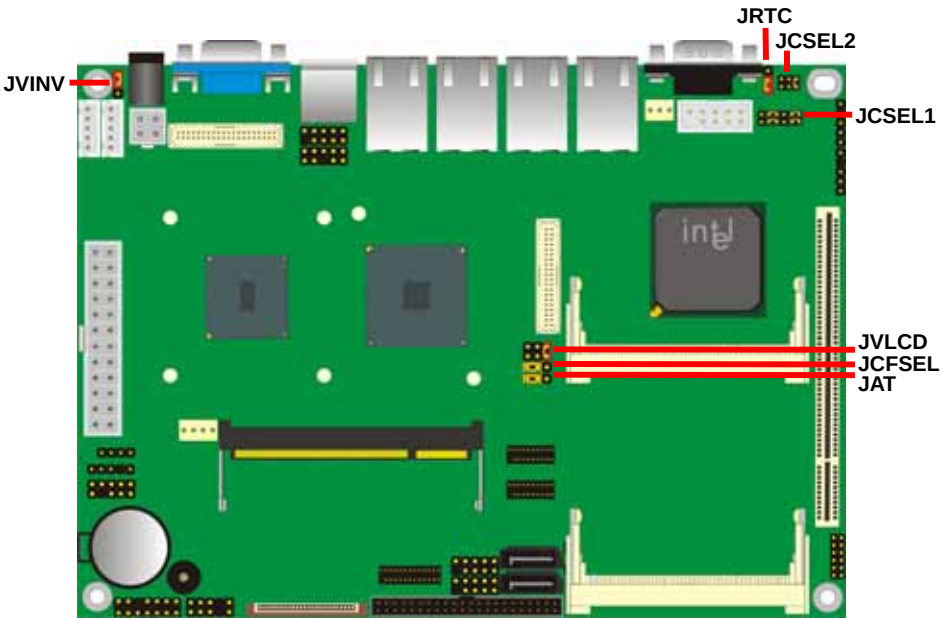

CF


COM1
USB
CRT
DC_2P
RJ45_4/3/2/1


1.11”
0.31”

2.2 <Jumper Reference>

Jumper	Function
JRTC	CMOS Operating/Clear Setting
JAT	AT/ATX mode setting
JVLCD	LCD Panel Voltage Setting
JVINV	Inverter Voltage setting
JCFSEL	Compact Flash address mode setting
JCSEL1/2	COM2 RS232/422/485 mode setting



2.3 <Connector Reference>

2.3.1 <Internal Connectors>

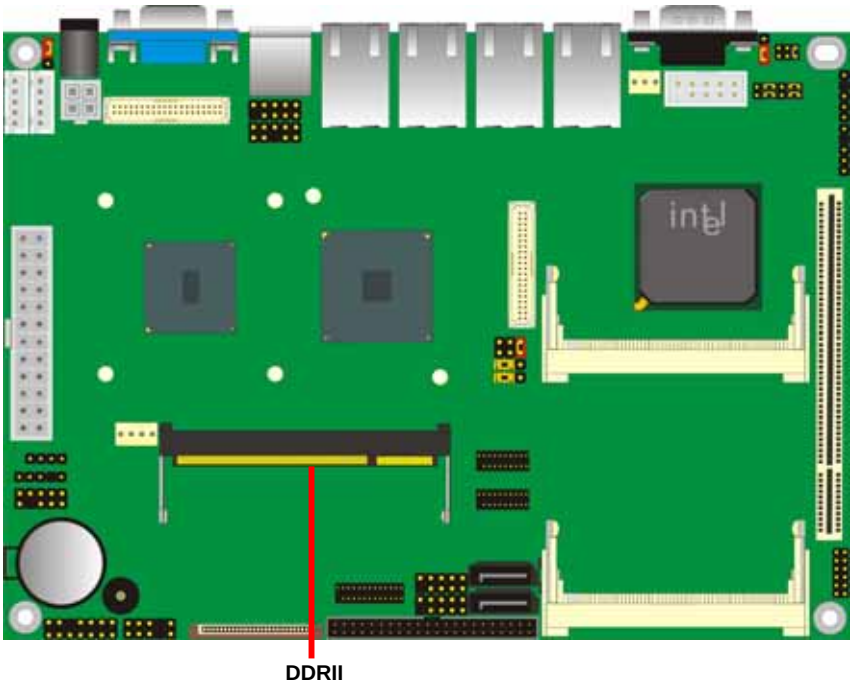
Connector	Function	Remark
DDRIIA/B	200 -pin DDR2 SO-DIMM SDRAM slot	Standard
IDE	44-pin primary IDE connector	Slim
FDD	26-pin slim type floppy connector	Slim
SATA1/2	7-pin Serial ATA connector	Standard
PCI	32bit PCI slot	Slim
MINIPCI1/2	Mini-PCI socket	Standard
CF	Compact Flash Type II socket	Standard
CN_DVI	13 x 2-pin DVI interface	Standard
CN_HDTV	5 x 2-pin HDTV interface	Standard
CN_LVDS/2	20 x 2-pin LVDS connector	Standard
CN_INV/2	5-pin LCD inverter connector	Standard
CN_COM2	5 x 2-pin RS422/485/232	Standard
CN_COM34/56	10 x 2-pin 2xRS232	Standard
CN_LPT	13 x 2-pin printer connector	Standard
CN_IR	5-pin IrDA connector	Standard
CN_DIO	6 x 2-pin digital I/O connector	Standard
CN_PS2	5 x 2-pin PS2 connector	Standard
CN_AUDIO	5 x 2-pin audio connector	Standard
CN_SPDIF	5-pin SPDIF connector	Standard
CDIN	4-pin CD-ROM audio input connector	Standard
CN_USB1/2/3	5 x 2-pin USB connector	Standard
CPUFAN	4-pin CPU cooler fan connector	Standard
SYSFAN	3-pin system cooler fan connector	Standard
JFRNT	14-pin switch/indicator connector	Standard
DC_IN	4-pin DC power input connector	Standard
ATX	24-pin power supply connector	Standard

2.3.2 <External Connectors>

Connector	Function	Remark
COM1	DB9 Serial port connector	
RJ45_1/2/3/4	Four RJ45 LAN connector	
USB	Dual port USB connector	
CRT	DB15 VGA connector	
DC_2P	DC power jack	

2.4 <System and Memory Setup>

The board provides one 200-pin DDR2 SO-DIMM to support DDR2 533 memory modules up to 2GB of capacity. Non-ECC, unbuffered memory is supported only.



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

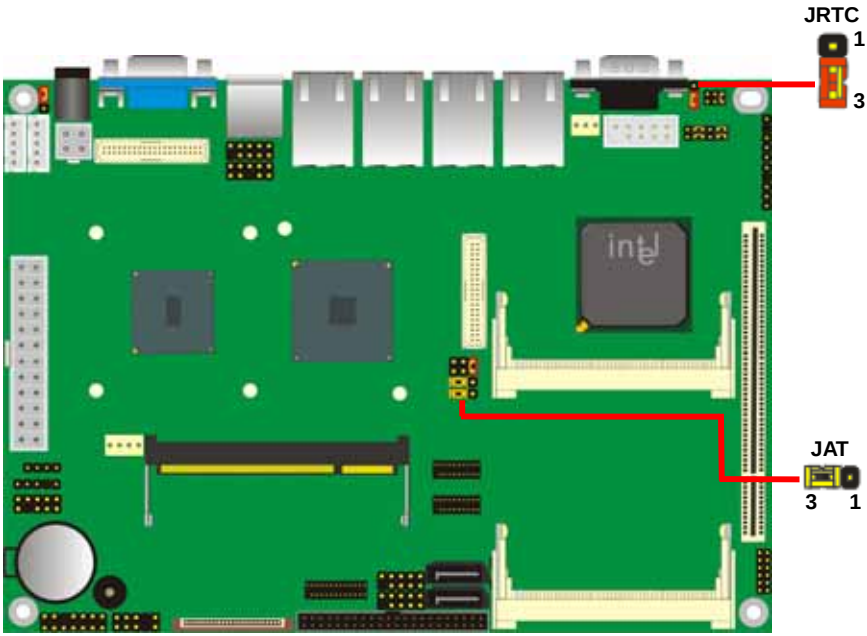
JRTC	Mode
1-2	Clear CMOS
2-3	Normal Operation
Default setting	

The board has a jumper to switch AT power mode (automatic power on) or standard ATX mode (manual power on).

Jumper: JAT

Type: Onboard 3-pin jumper

JAT	Mode
1-2	AT mode
2-3	ATX mode
Default setting	



2.6 <Enhanced IDE & CF Interface>

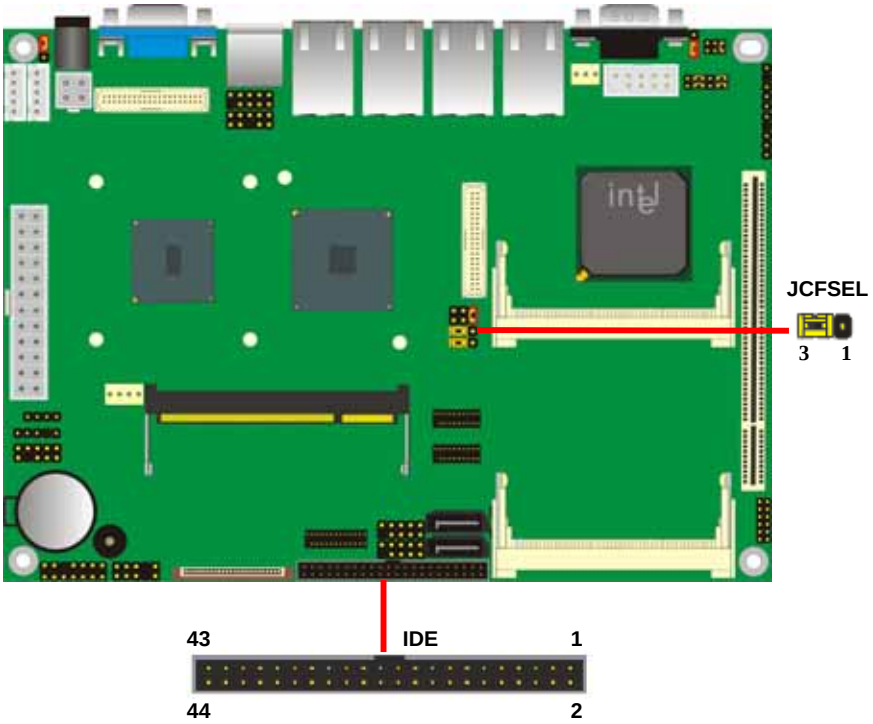
The board supports one enhanced IDE interface for 2 ATAPI devices with ATA33. Based on embedded application, the board has one 44-pin IDE connector +5V supported for disk on module.

The board also provides a Compact Flash Type II socket with jumper (**JCFSEL**) selectable Master/Slave mode on IDE channel.

Jumper: **JCFSEL**
Type: onboard 3-pin header

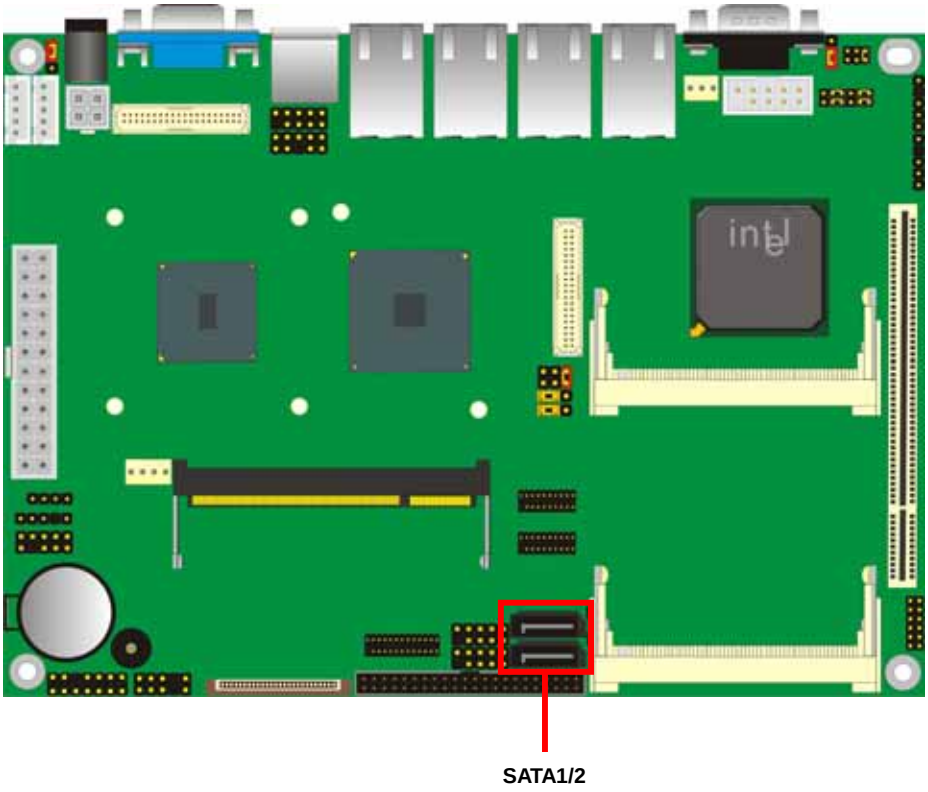
JCFSEL	Mode
1-2	Master
2-3	Slave

Default setting



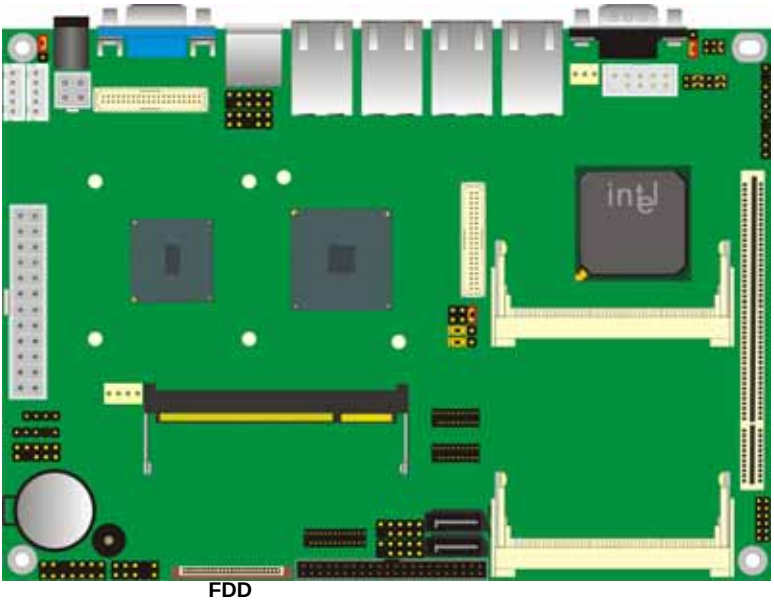
2.7 <Serial ATA Interface>

Based on Intel ICH7-M, the board provides two Serial ATA interfaces with up to 150MB/s of transfer rate.

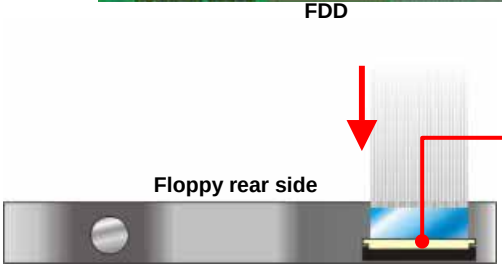


2.8 <Floppy Port>

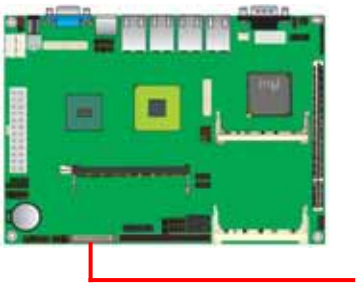
The board provides a slim type floppy port; please use the 26-pin ribbon cable in the package to connect the floppy device.



FDD



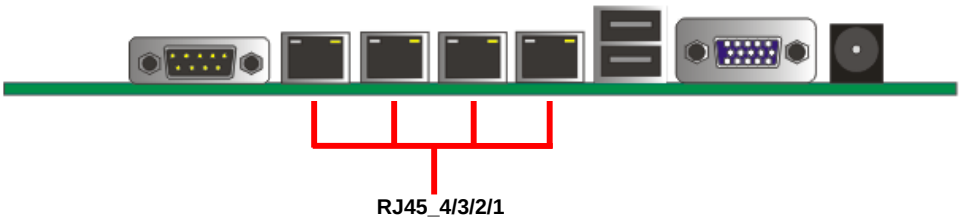
4. Lift up this plastic bar
5. Slot the cable in (Blue paste for outside)
6. Press back the plastic bar



1. Lift up the brown plastic bar
2. Slot the cable in (Blue paste for brown bar side)
3. Press back the plastic bar

2.9 <Network Interface>

The board integrates with four Intel 82574L Gigabit Ethernet controllers. The Intel Gigabit Ethernet supports speed of 10/100/1000Base-T, with IEEE802.3 compliance and Wake-On-LAN supported.



2.10 <Onboard Display Interface>

Based on Intel 945GSE chipset with built-in GMA (Graphic Media Accelerator) 950 graphics, the board provides one DB15 connector on real external I/O port, and one 40-pin LVDS interface with 5-pin LCD backlight inverter connector. The board provides dual display function with clone mode and extended desktop mode for CRT, LCD and HDTV.

2.10.1 <Analog VGA Interface>

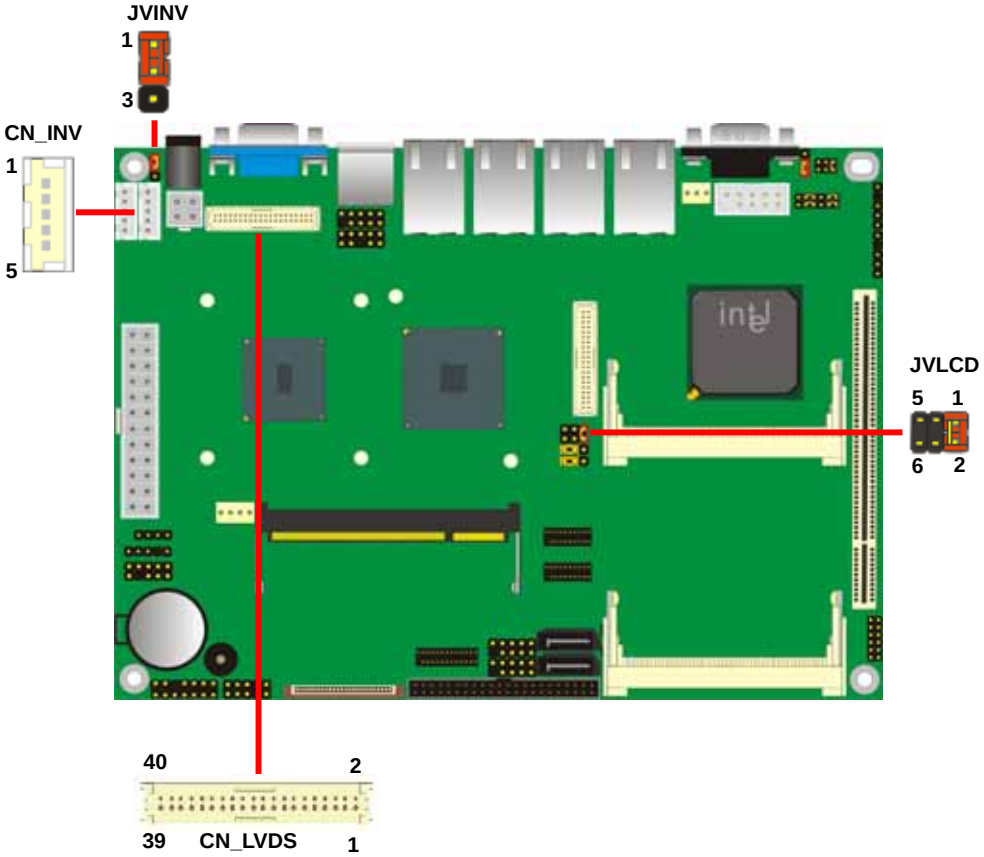
Please connect your CRT or LCD monitor with DB15 male connector to the onboard DB15 female connector on rear I/O port.

The board supports up to 2048 x 1536 (QXGA) of resolution.

CRT

2.10.2 <LVDS interface>

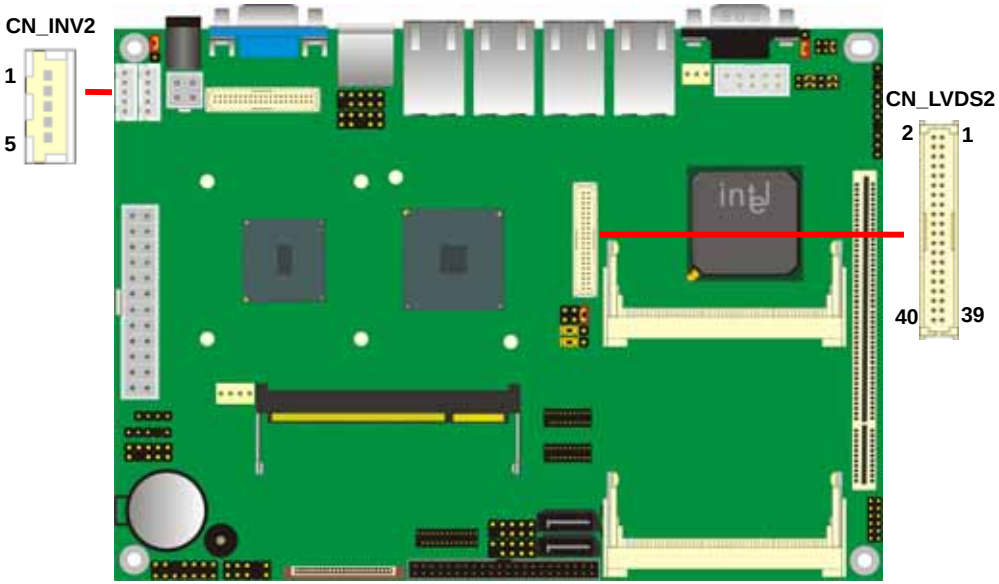
The board provides one 40-pin LVDS connector for 18-bit single/dual channel panels, supports up to 1600 x 1200 (UXGA) of resolution, with one LCD backlight inverter connector and jumpers for panel and inverter voltage setting



2.10.3 <Second LVDS Interface> LE-575X2 only

The board provides another 40-pin LVDS connector for 18/24bit dual channel panels, supports up to 1600 x 1200 (UXGA) of resolution, with CN_INV2 LCD backlight inverter connector (LE-575X2 only).

The panel & inverter voltage setting shared with JVLCD & JVINV.



Jumper: **JVINV**
Type: 3-pin Power select Jumper

Pin	Description
1-2	INV_V(12V)
2-3	INV_V(5V)

Default:1-2

Jumper: **JVLCD**
Type: 6-pin Power select Jumper

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

Default:1-2

Connector: **CN_INV/CN_INV_2**
Type: 5-pin Inverter power connector
Connector model: **JST B5B-XH-A**

Pin	Description
1	INV_V
2	GND
3	GND
4	GND
5	ENABKL

Connector: **CN_LVDS/2**
Type: onboard 40-pin connector for LVDS connector
Connector model: **HIROSE DF13-40DP-1.25V**

Pin	Signal	Pin	Signal
2	LCDVCC	1	LCDVCC
4	GND	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- (LE-575X2)
26	ACLK+	25	BTX3+(LE-575X2)
28	GND	27	GND
30	ATX3- (LE-575X2)	29	BCLK-
32	ATX3+(LE-575X2)	31	BCLK+
34	GND	33	GND
36	N/C	35	N/C
38	N/C	37	N/C
40	N/C	39	N/C

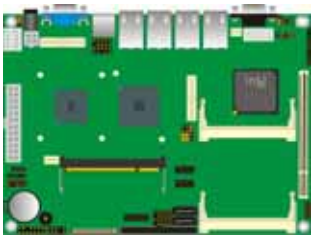
To setup the LCD, you need the component below:

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.

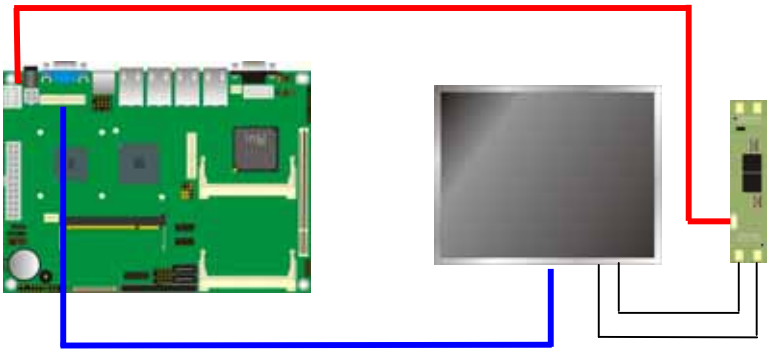
LCD Installation Guide:

1. Preparing the **LE-575X/2**, **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, +5V or +3.3V.
3. You would need a LVDS type cable.

4. To connect all of the devices well.



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			
On board 18 bit LVDS			
Single Channel		Dual Channel	
NO.	Output format	NO.	Output format
1	640 x 480	9	1280 x 768
2	800 x 480		
3	800 x 600		
4	1024 x 600		
5	1024 x 768		
6	1280 x 600		
7	1280 x 768		
8	1280 x 800		

External 24bit LVDS <LE-575X2 only>			
Single Channel		Dual Channel	
NO.	Output format	NO.	Output format
1	640 x 480	4	1280 x 1024
2	800 x 480		
3	1024 x 768		

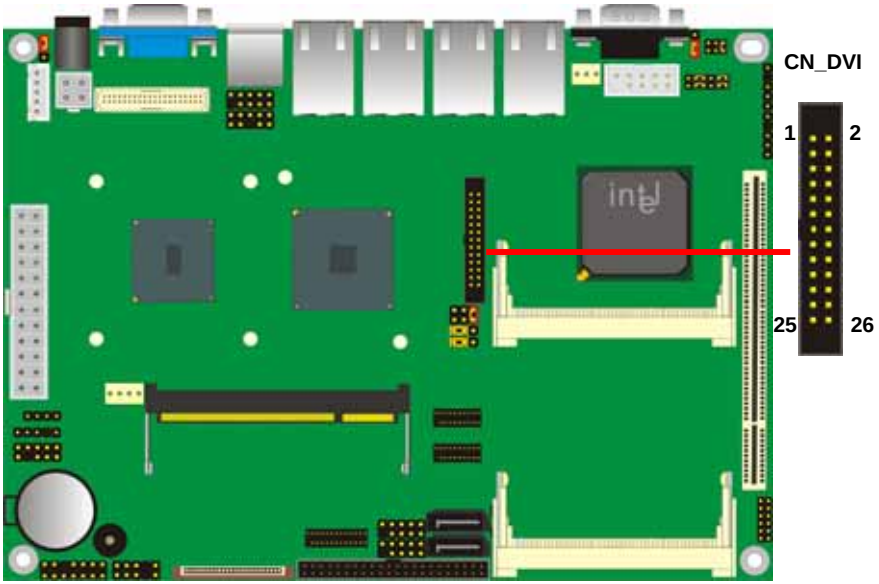
2.10.4 <DVI Interface> LE-575XD only

The board also comes with a DVI interface with Chrontel CH7307C for digital video interface. Supports up to 1600 x 1200 (UXGA) of resolution. (LE-575XD only)

Connector: **CN_DVI**

Connector type: 26-pin header (pitch = 2.00mm)

Pin Number	Assignment	Pin Number	Assignment
1	TX1+	2	TX1-
3	Ground	4	Ground
5	TXC+	6	TXC-
7	Ground	8	PVDD
9	N/C	10	N/C
11	TX2+	12	TX2-
13	Ground	14	Ground
15	TX0+	16	TX0-
17	N/C	18	HPDET
19	DDCDATA	20	DDCCLK
21	GND	22	N/C
23	N/C	24	N/C
25	N/C	26	N/C

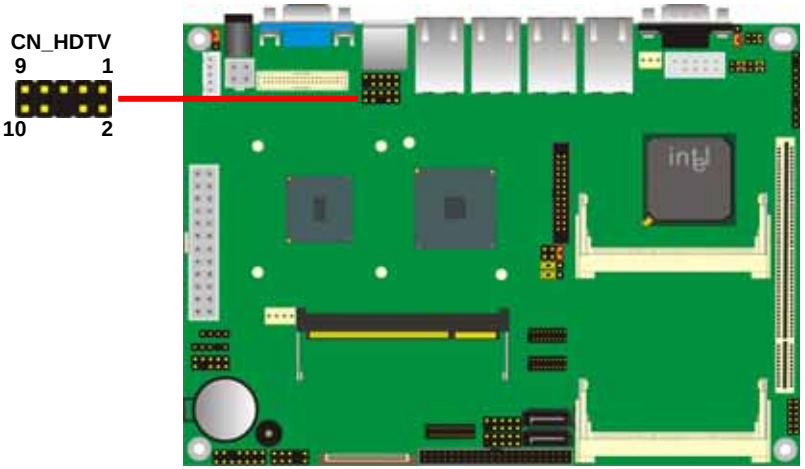


2.10.5 <HDTV Interface>

The board provides an HDTV interface with Intel 945GSE, supports Composite and S-Video with PAL and NTSC of TV system, Component with 480p/720p/1080i of HDTV support, and display (clone or extended desktop) function with VGA, LVDS, DVI.

Connector: **CN_HDTV**
Connector type: 10-pin header HDTV connector (pitch = 2.54mm)

Pin Number	Assignment	Pin Number	Assignment
1	GND	2	DACB_L
3	DACC_L	4	GND
5	GND	6	N/C
7	DACA_L	8	GND
9	N/C	10	N/C



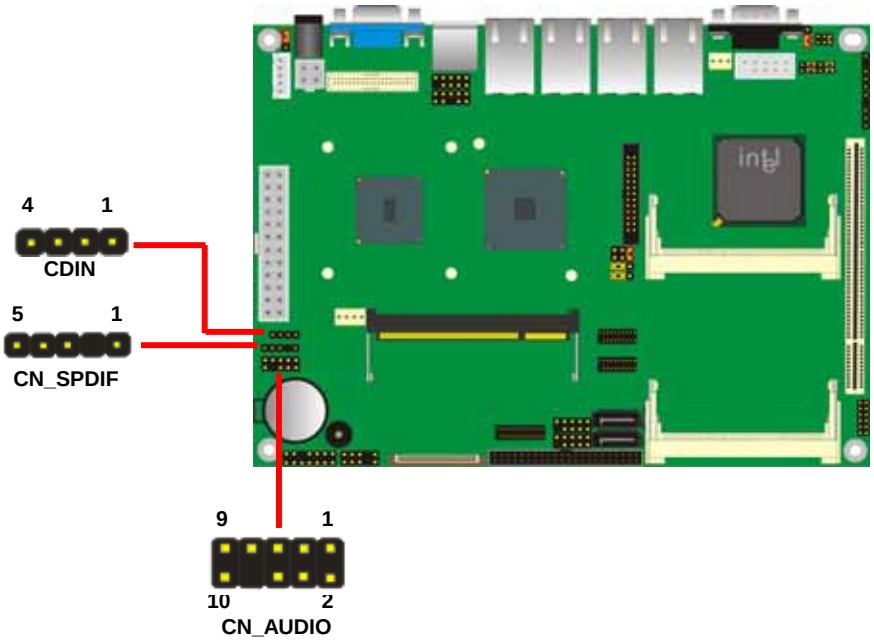
2.11 <Onboard Audio Interface>

The board integrates onboard audio interface with REALTEK ALC88 codec, with INTEL High Definition Audio bus, it offers more vivid sound and other advantages than former HD audio compliance.

The main specifications of ALC888 are:

- **High-performance DACs with 97dB S/N ratio**
- **Compatible with HD**
- **Meets Microsoft WHQL/WLP 2.0 audio requirements**

The board provides speaker out, Line-in/MIC-in, CDIN, SPDIF through audio cable.



Connector: CN_AUDIO

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

Pin	Description	Pin	Description
1	MIC_L	2	Ground
3	MIC_R	4	Reserver
5	Speaker_R	6	MIC Detect
7	SENSE	8	N/C
9	Speaker_L	10	Speaker_Detect

Connector: CDIN

Type: 4-pin header (pitch = 2.54mm)

Pin	Description
1	CD – Left
2	Ground
3	Ground
4	CD – Right

Connector: CN_SPDIF

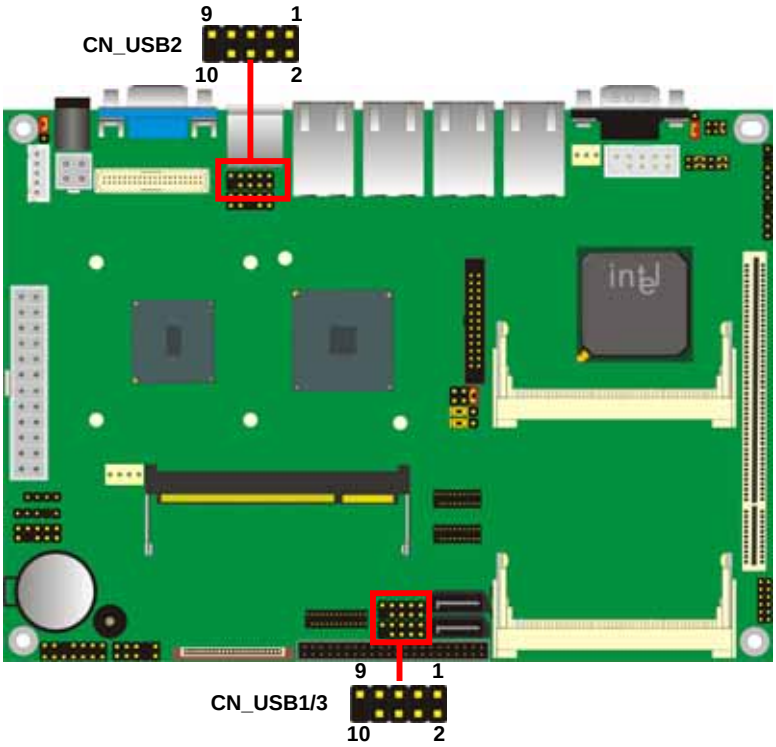
Type: 5-pin header (pitch = 2.54mm)

Pin	Description
1	VCC
2	N/C
3	SPDIF OUT
4	Ground
5	Reserved

2.12 <USB2.0 Interface>

Based on Intel ICH7M, the board provides 8 USB2.0 ports. The USB2.0 interface provides up to 480Mbps of transferring rate.

Interface	USB2.0
Controller	ICH7M
Transfer Rate	Up to 480Mb/s
Output Current	500mA



Connector: **CN_USB**

Type: 10-pin (5 x 2) header for USB1/2/3 Ports

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

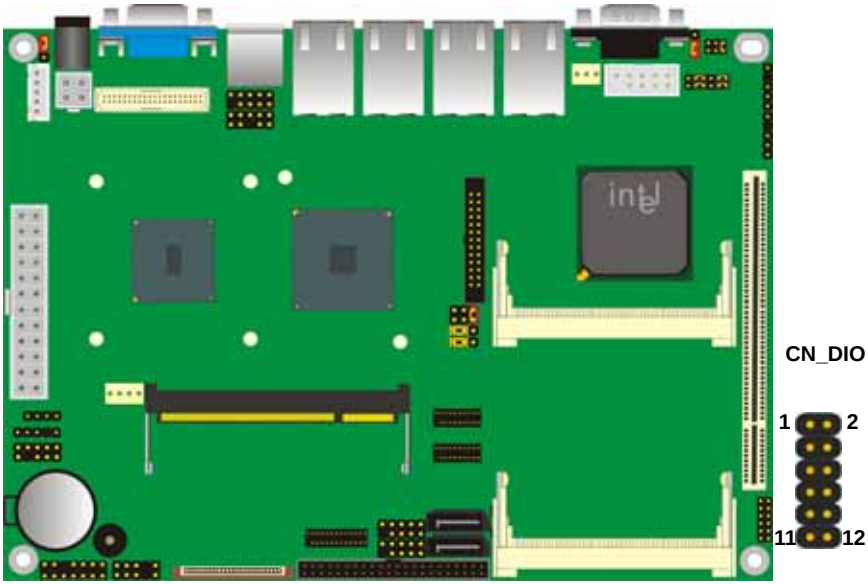
PS: The USB2.0 will be only active when you connecting with the USB2.0 devices, if you insert an USB1.1 device, the port will be changed to USB1.1 protocol automatically. The transferring rate of USB2.0 as 480Mbps is depending on device capacity, exact transferring rate may not be up to 480Mbps.

2.13 <GPIO 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.

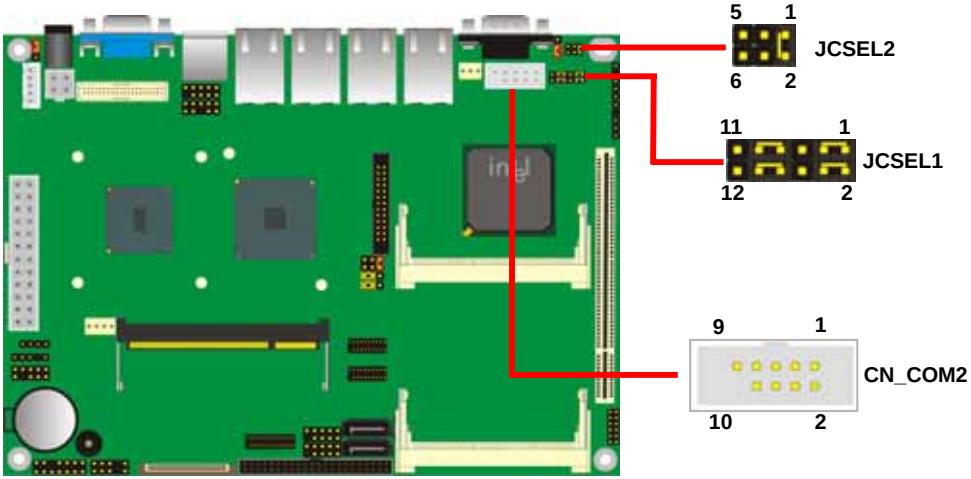
Connector: **CN_DIO**
Type: onboard 2 x 6-pin header, pitch=2.0mm

Pin	Description	Pin	Description
1	Ground	2	Ground
3	GP0	4	GP4
5	GP1	6	GP5
7	GP2	8	GP6
9	GP3	10	GP7
11	+5V	12	+12V



2.14 <Serial Port Jumper Setting >

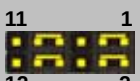
The board provides six RS232 serial ports, with jumper selectable RS422/485 for COM2.



Connector: **CN_COM2**
Type: 10-pin (5 x 2) header

Pin	Description	Pin	Description
1	DCD/422TX-/485-	2	RXD/422TX+/485+
3	TXD/422RX+	4	DTR/422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N/C

Jumper: **JCSEL1/2**
Type: onboard 12-pin and 6-pin header

	RS232	RS485	RS422
JCSEL1			
JCSEL2			

Default setting

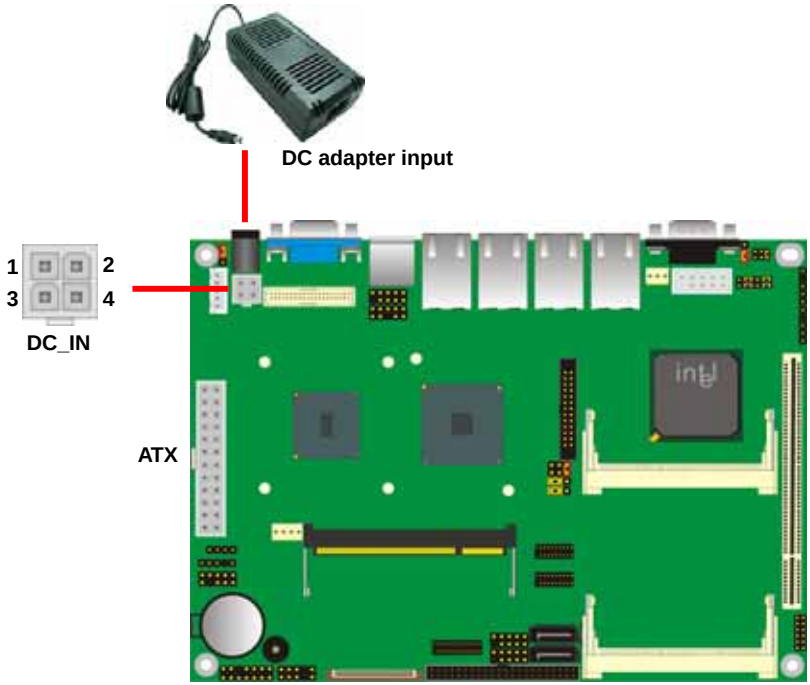
2.15 <Power and Fan Connector>

The board comes with a 2-pin DC-Jack & 4-pin P4 additional power connector for DC input, it also has 24-pin ATX power connector for internal power supply, you can choose one pf them to meet your plication.

2.15.1 <Power Input>

Connector: **DC_IN**
Type: 4-pin DC power connector

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

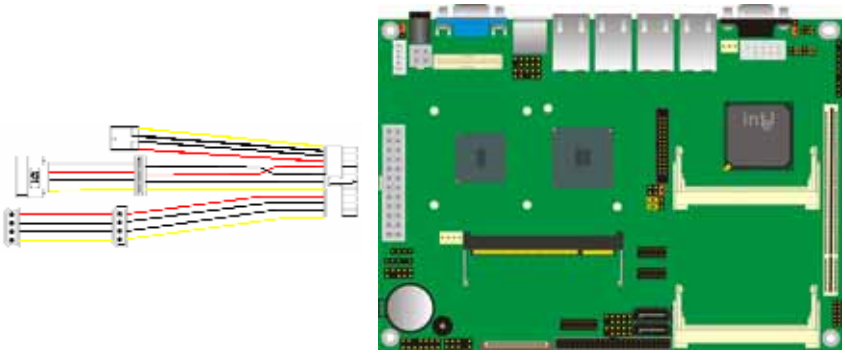


2.15.2 <Power Output>

The board provides one 24-pin ATX connector for +5V/+12V output for powering your HDD, CDROM or other devices when DC-input mode has been used.

Attention: When DC-IN had power supplied, the ATX become output!

Avoid DC-IN and ATX power supply input at the same time!



Connector: **ATX Output** *(When DC-IN be used)*
Type: 24-pin ATX connector for +5V/+12V

PIN	Assignment	PIN	Assignment
1	*	13	*
2	*	14	*
3	*	15	*
4	5V	16	*
5	GND	17	*
6	*	18	GND
7	GND	19	GND
8	*	20	*
9	*	21	*
10	12V	22	5V
11	*	23	*
12	*	24	*

Note: Maximum output voltage: ***12V/2A & 5V/3A***

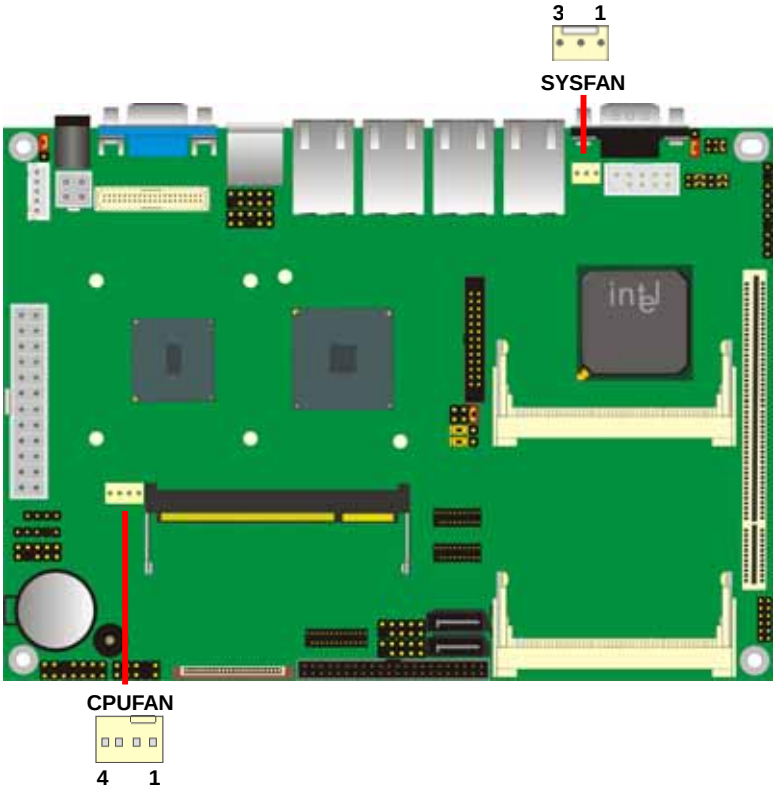
2.15.3 <Fan Connector>

Connector: **SYSFAN**
Type: 3-pin fan wafer connector

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

Connector: **CPUFAN**
Type: 4-pin fan wafer connector

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

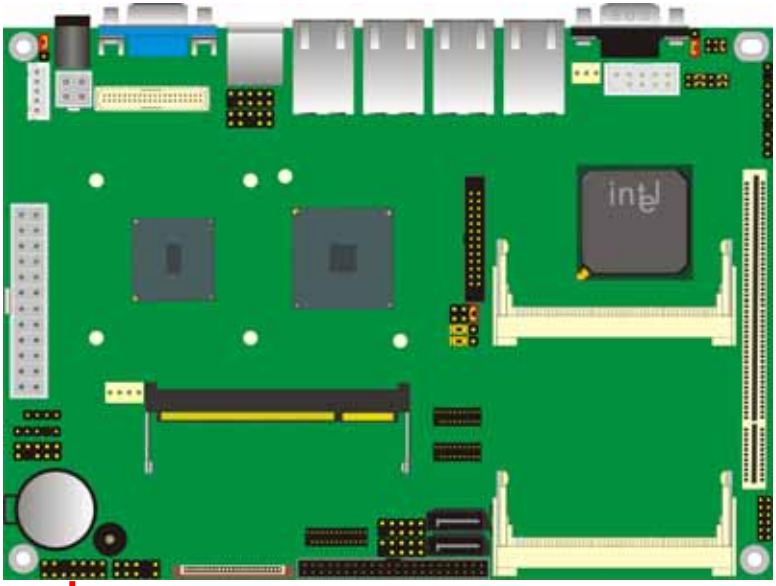


2.16 <Indicator and Switch>

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 14-pin (2 x 7) 2.54-pitch header

Function	Signal	PIN		Signal	Function
IDE LED	HDLED+	1	2	PWRLED+	**Power LED**
	HDLED-	3	4	N/C	
Reset	Reset+	5	6	PWRLED-	
	Reset-	7	8	SPK+	**Speaker**
	N/C	9	10	N/C	
Power Button	PWRBT+	11	12	N/C	
	PWRBT-	13	14	SPK-	



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Chapter 3 <System Configuration>

3.1 <Audio Configuration>

The board integrates Intel® ICH9M with REALTEK® ALC888 codec. It can support 2 channels 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 Configuration>

Based on Intel 945GSE GMCH with GMA 950(Graphic Media Accelerator), 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 **display properties**

2. Click **Advanced** button for more specificity setup.

3. This setup options can let you define each device settings.

Note: Dual LVDS display supports Extended Desktop only.

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Chapter 4 <BIOS Setup>

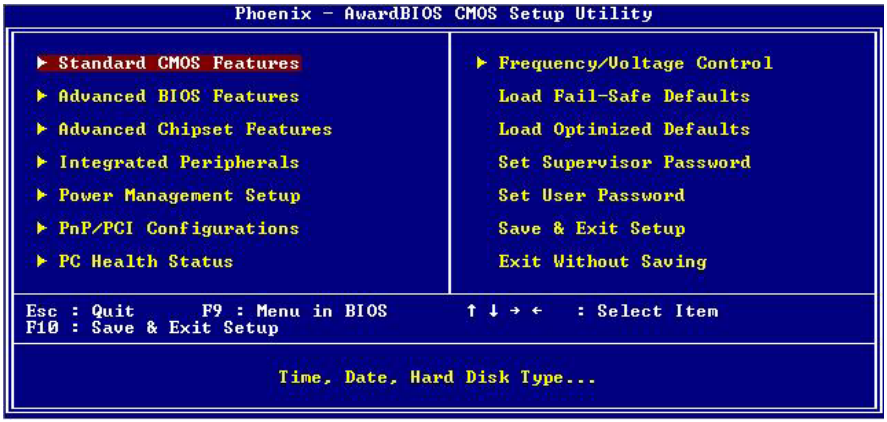
The motherboard uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides 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



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Appendix A <I/O Port Pin Assignment>

A.1 <Serial ATA Port>

Connector: **SATA1/2**

Type: 7-pin wafer connector

1	2	3	4	5	6	7
GND	RSATA_TXP	RSATA_TXN	GND	RSATA_RXN	RSATA_RXP	GND

A.2 <IDE Port>

Connector: **IDE**

Type: 44-pin (22 x 2) box header

Pin	Description	Pin	Description
1	Reset	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground
27	IORDY/DDMARDY	28	Ground
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34	SD
35	A0	36	A2
37	CS1	38	CS3
39	ASP1	40	Ground
41	Vcc	42	Vcc
43	Ground	44	Ground

A.3 <Floppy Port>

Connector: **FDD**
Type: 26-pin connector

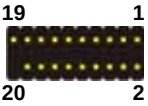
Pin	Description	Pin	Description
1	VCC	2	INDEX
3	VCC	4	DRV0
5	VCC	6	DSKCHG
7	DRV1	8	N/C
9	MTR1	10	MTR0
11	RPM	12	DIR
13	N/C	14	STEP
15	Ground	16	WRITE DATA
17	Ground	18	WRITE GATE
19	N/C	20	TRACK 0
21	N/C	22	WRPTR
23	Ground	24	RDATA-
25	Ground	26	SEL

A.4 < LPT Port >

Connector: **CN_LPT**
Type: 26-pin (13 x 2) header for LPT Ports

Pin	Description	Pin	Description
1	STB-	14	AFD-
2	PD0	15	ERR-
3	PD1	16	INIT-
4	PD2	17	SLIN-
5	PD3	18	Ground
6	PD4	19	Ground
7	PD5	20	Ground
8	PD6	21	Ground
9	PD7	22	Ground
10	ACK-	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	N/C

A.5 < Serial Port 3,4,5,6 >



Connector: **CN_COM3_4/5_6**
Type: 20-pin (10 x 2) header for dual Serial Ports

Pin	Description	Pin	Description
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	N/C
11	DCD2	12	RXD2
13	TXD2	14	DTR2
15	GND	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	N/C

A.6 <IrDA Port>

Connector: **CN_IR**
Type: 5-pin header for SIR Ports

Pin	Description
1	5VSB
2	N/C
3	IRRX
4	Ground
5	IRTX

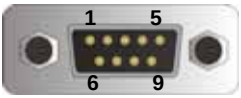
A.7 <SMBUS Port>

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

Pin	Description
1	VCC
2	N/C
3	SMB_DATA
4	SMB_CLK
5	Ground

A.8 <Serial Port 1>

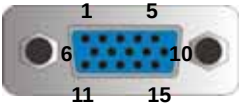
Connector: **COM1**
Type: 9-pin D-sub male connector on rear I/O.



Pin	Description	Pin	Description
1	DCD-	6	DSR
2	SIN-	7	RTS
3	SO-	8	CTS
4	DTR-	9	RI
5	Ground		

A.9 <VGA Port>

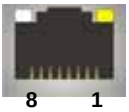
Connector: **CRT**
Type: 15-pin D-sub female connector on rear I/O



Pin	Description	Pin	Description	Pin	Description
1	RED	6	Ground	11	N/C
2	GREEN	7	Ground	12	DDCDA
3	BLUE	8	Ground	13	HSYNC
4	N/C	9	N/C	14	VSYNC
5	Ground	10	Ground	15	DDCCLK

A.10 <LAN Port>

Connector: **RJ45**
Type: RJ45 connector with LED on rear I/O



Pin	1	2	3	4	5	6	7	8
Description	MI0+	MI0-	MI1+	MI2+	MI2-	MI1-	MI3+	MI3-

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Appendix B <Flash BIOS>

B.1 <Flash Tool>

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

http://www.phoenix.com/en/home/
http://www.commell.com.tw/Support/Support_SBC.htm

File name of the tool is "awdflash.exe", it's the utility that can write the data into the BIOS flash ship and update the BIOS.

B.2 <Flash BIOS Procedure>

1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy awardflash.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/ awardflash XXX.bin)
5. 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

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Appendix C <System Resources>

C.1 <I/O Port Address Map>

[00000000 - 0000000F] Direct memory access controller
[00000000 - 00000CF7] PCI bus
[00000010 - 0000001F] Motherboard resources
[00000020 - 00000021] Programmable interrupt controller
[00000022 - 0000003F] Motherboard resources
[00000040 - 00000043] System timer
[00000044 - 0000005F] Motherboard resources
[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061] System speaker
[00000062 - 00000063] Motherboard resources
[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F] Motherboard resources
[00000070 - 00000073] System CMOS/real time clock
[00000074 - 0000007F] Motherboard resources
[00000080 - 00000090] Direct memory access controller
[00000091 - 00000093] Motherboard resources
[00000094 - 0000009F] Direct memory access controller
[000000A0 - 000000A1] Programmable interrupt controller
[000000A2 - 000000BF] Motherboard resources
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000170 - 00000177] Secondary IDE Channel
[000001F0 - 000001F7] Primary IDE Channel
[00000200 - 00000200] Standard Game Port
[00000201 - 00000207] Standard Game Port
[00000274 - 00000277] ISAPNP Read Data Port
[00000279 - 00000279] ISAPNP Read Data Port
[000002E8 - 000002EF] Communications Port (COM4)
[000002F8 - 000002FF] Communications Port (COM2)
[00000376 - 00000376] Secondary IDE Channel
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Mobile Intel(R) 945 Express Chipset Family
[000003C0 - 000003DF] Mobile Intel(R) 945 Express Chipset Family
[000003E8 - 000003EF] Communications Port (COM3)
[000003F0 - 000003F5] Standard floppy disk controller
[000003F6 - 000003F6] Primary IDE Channel
[000003F7 - 000003F7] Standard floppy disk controller
[000003F8 - 000003FF] Communications Port (COM1)

[00000400 - 000004BF] Motherboard resources
[000004D0 - 000004D1] Motherboard resources
[000004E8 - 000004EF] Communications Port (COM5)
[000004F8 - 000004FF] Communications Port (COM6)
[00000500 - 0000051F] Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
[00000778 - 0000077B] Printer Port (LPT1)
[00000880 - 0000088F] Motherboard resources
[00000A79 - 00000A79] ISAPNP Read Data Port
[00000D00 - 0000FFFF] PCI bus
[0000A000 - 0000AFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[0000AF00 - 0000AF1F] Intel(R) 82574L Gigabit Network Connection #3
[0000B000 - 0000BFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[0000BF00 - 0000BF1F] Intel(R) 82574L Gigabit Network Connection #4
[0000D000 - 0000DFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
[0000DF00 - 0000DF1F] Intel(R) 82574L Gigabit Network Connection #2
[0000E000 - 0000EFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
[0000EF00 - 0000EF1F] Intel(R) 82574L Gigabit Network Connection
[0000FA00 - 0000FA0F] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
[0000FB00 - 0000FB1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
[0000FC00 - 0000FC1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
[0000FD00 - 0000FD1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
[0000FE00 - 0000FE1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
[0000FF00 - 0000FF07] Mobile Intel(R) 945 Express Chipset Family

C.2 <Memory Address Map>

[00000000 - 0009FFFF] System board
[000A0000 - 000BFFFF] Mobile Intel(R) 945 Express Chipset Family
[000A0000 - 000BFFFF] PCI bus
[000C0000 - 000DFFFF] PCI bus
[000E0000 - 000EFFFF] System board
[000F0000 - 000FFFFF] System board
[00100000 - 7F6DFFFF] System board
[7F6E0000 - 7F6FFFFF] System board
[7F750000 - FEBFFFFF] PCI bus
[D0000000 - DFFFFFFF] Mobile Intel(R) 945 Express Chipset Family
[E0000000 - EFFFFFFF] Motherboard resources
[FD400000 - FD4FFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[FD700000 - FD7FFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
[FD7C0000 - FD7DFFFF] Intel(R) 82574L Gigabit Network Connection #4
[FD7FC000 - FD7FFFFF] Intel(R) 82574L Gigabit Network Connection #4
[FD800000 - FD8FFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
[FD900000 - FD9FFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
[FD9C0000 - FD9DFFFF] Intel(R) 82574L Gigabit Network Connection #2
[FD9FC000 - FD9FFFFF] Intel(R) 82574L Gigabit Network Connection #2
[FDA00000 - FDAFFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
[FDB00000 - FDBFFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
[FDBC0000 - FDBDFFFF] Intel(R) 82574L Gigabit Network Connection
[FDBFC000 - FDBFFFFF] Intel(R) 82574L Gigabit Network Connection
[FDC00000 - FDCFFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[FDD00000 - FDDFFFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
[FDDC0000 - FDDDFFFF] Intel(R) 82574L Gigabit Network Connection #3
[FDDFC000 - FDDFFFFF] Intel(R) 82574L Gigabit Network Connection #3
[FDE80000 - FDEFFFFF] Mobile Intel(R) 945 Express Chipset Family
[FDF80000 - FDFBFFFF] Mobile Intel(R) 945 Express Chipset Family
[FDFF8000 - FDFFBFFF] Microsoft UAA Bus Driver for High Definition Audio
[FDFFF000 - FDFFF3FF] Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
[FEB80000 - FEBFFFFF] Mobile Intel(R) 945 Express Chipset Family
[FEC00000 - FEC00FFF] System board
[FED13000 - FED1DFFF] System board
[FED20000 - FED8FFFF] System board
[FEE00000 - FEE00FFF] System board
[FFB00000 - FFB7FFFF] System board
[FFB80000 - FFBFFFFF] Intel(r) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF] System board

C.3 < IRQ Resources>

(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 5	Communications Port (COM3)
(ISA) 5	Communications Port (COM4)
(ISA) 5	Communications Port (COM5)
(ISA) 5	Communications Port (COM6)
(ISA) 6	Standard floppy disk controller
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 12	PS/2 Compatible Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 11	Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
(PCI) 16	Intel(R) 82574L Gigabit Network Connection #4
(PCI) 16	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
(PCI) 16	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
(PCI) 16	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 16	Mobile Intel(R) 945 Express Chipset Family
(PCI) 17	Intel(R) 82574L Gigabit Network Connection #3
(PCI) 17	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
(PCI) 18	Intel(R) 82574L Gigabit Network Connection
(PCI) 18	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
(PCI) 18	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
(PCI) 19	Intel(R) 82574L Gigabit Network Connection #2
(PCI) 19	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
(PCI) 19	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
(PCI) 23	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
(PCI) 23	Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC

Appendix D <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.

GPIO0…..GPIO7 bit0……bit7

-o 2E 87 ;enter configuration

-o 2E 87

-o 2E 29

-o 2F 40 ;enable GPIO function

-o 2E 07

-o 2F 07 Select Logic Device 7

-o 2E F0

-o 2F xx ;set GPIO as input/output; set '1' for input,'0'for output

-o 2E F1

-o 2F xx ;if set GPIO's as output,in this register its value can be set

Optional :

-o 2E F2

-o 2F xx ; Data inversion register ; '1' inverts the current valus of the bits ,'0' leaves them as they are

-o 2E 30

-o 2F 01 ; active GPIO's

For further information, please refer to Winbond W83627THF datasheet.

Appendix E <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

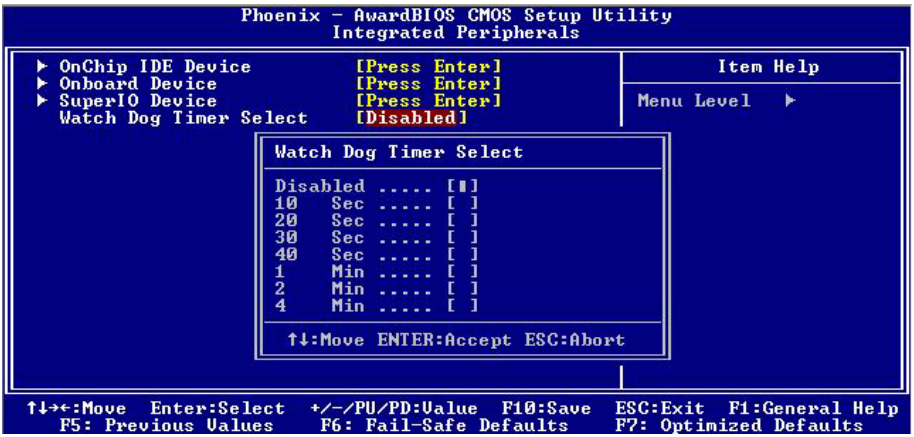
Program Sample

Watchdog timer setup as system reset with 5 second of timeout

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	
2F, 01	Activate
2E, F5	
2F, 00	Set as Second*
2E, F6	
2F, 05	Set as 5

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

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.

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