HS-1760

Intel® Core™ 2 Duo/Mobile Celeron® processor
Mini ITX Board

• 1066/800MHz FSB • DDR3 • CompactFlash •
• PCIe x1 • PCIe x16 • Mini PCI • PCI •
• GPIO • DVI-I/CRT/LVDS • Dual GB LAN •
• HD Audio • 4 SATA • RS-232/422/485 • 4 COM •
• 6 USB2.0 • WDT • H/W Monitor •

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Edition 1.2, February 24, 2011

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Declaration of Conformity -- CE Mark

BOSER Technology hereby acknowledges that compliance testing in accordance with applicable standards of the EU's EMC Directive, 89/336/EEC, was successfully completed on a sample of the equipment identified below:

Equipment Class:	*Information Technology Equipment*	
Product Model Series:	***HS-1760***	
This Product Complies With:	*EN55022:*	*Class A for Radiated emissions*
	EN50082-2:	*Heavy Industrial EMC Immunity*

We, the undersigned, hereby declare that the equipment specified above conforms to the above directives and standards.

Manufacturer:
BOSER TECHNOLOGY CO., LTD.

Safety Instructions

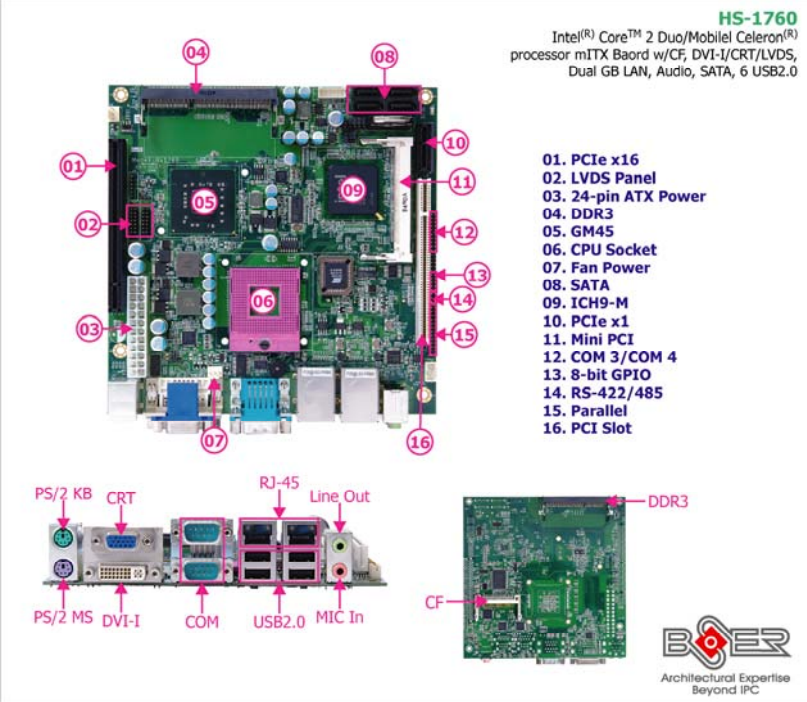
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components. Fasten the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please wear and connect the strap before handle the HS-1760 to ensure harmlessly discharge any static electricity through the strap.
- Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTIONS.*

Chapter 1

General Description



The HS-1760 is an Intel® GM45/ICH9-M chipset-based board designed, the board supports Intel® Mobile Dual-Core processor. The HS-1760 is an ideal all-in-one mini ITX board. Additional features include an enhanced I/O with CF, DVI-I/CRT/LVDS, dual GB LAN, HD audio, 4 SATA, 4 COM, and 6 USB2.0 interfaces.

The Intel® GM45 integrated Intel® Gen5.0 GMA 4500MHD Graphics shared system memory up to 352MB with DVMT5.0 supports CRT/Panel displays up to 2048 x 1536. It also supports 24-bit single/dual channel LVDS interface.

System memory is also sufficient with the two 204-pin SO-DIMM sockets DDR3 800/1066MHz up to 4GB.

Additional onboard connectors include six advanced USB2.0 ports providing faster data transmission. And two RJ-45 connectors for 10/100/1000 Based Ethernet uses. To ensure the reliability in an unmanned or standalone system, the watchdog timer (WDT) onboard HS-1760 is designed with software that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard WDT will automatically reset the CPU or generate an interrupt to resolve such condition.

1.1 Major Features

The HS-1760 comes with the following features:

- Socket P for Intel® Core™ 2 Duo/Mobile Celeron® processor, supports 1066/800/667MHz FSB
- 2 x SO-DIMMs up to 4GB DDR3 SDRAM
- Intel® GM45/ICH9-M system chipset
- Intel® GM45 integrated VGA for DVI-I, CRT & LVDS
- 2 x 10/100/1000 Mbps Ethernet
- High Definition audio codec
- Supports CF, 4 x SATA, 4 x COM, 6 x USB2.0, mini PCI slot, PCIe x1 slot, PCIe x16 slot, standard PCI slot
- Supports 24-bit LVDS, 8-bit GPIO, H/W Monitor function

1.2 Specifications

System

- **CPU:**
  Intel® Core™ 2 Duo and Mobile Celeron® processor
- **FSB:**
  1066/800/667MHz FSB
- **BIOS:**
  AMI PnP Flash BIOS
- **System Chipset:**
  Intel® GM45/ICH9-M
- **I/O Chipset:**
  Winbond W83627UHG
- **System Memory:**
  2 x 204-pin SO-DIMM sockets DDR3 800/1066MHz up to 4GB
- **Storage:**
  1 x Type II CF socket

- **Watchdog Timer:**
  Software programmable time-out intervals from 1~255 sec. or 1~255 min.
- **H/W Status Monitor:**
  Monitoring temperatures, voltages, and cooling fan status
- **Expansion Interface:**
  1 x PCIe x1 slot
  1 x PCIe x16 slot
  1 x Type III mini PCI slot
  1 x Standard PCI slot
- **Power Function:**
  ATX power
- **Operating Temperature:**
  0~60 degrees C
- **Operating Humidity:**
  0~95%, non-condensing
- **Size (L x W):**
  170 x 170 mm

I/O Interface

- **MIO:**
  3 x RS-232 (2 x external)
  1 x RS-232/422/485
  6 x USB2.0 (2 x internal, 4 x external)
  1 x Parallel
  4 x SATA
  1 x PS/2 for KB/MS
- **GPIO:**
  8-bit general purpose input/output port

Display

- **Chipset:**
  Intel® GM45 integrated Intel® GMA 4500 MHD
- **Display Memory:**
  352MB video memory
- **LVDS:**
  24-bit single/dual-channel
- **Resolution:**
  2048 x 1536
- **DVI chipset:**
  Intel® GM45 integrated Intel® GMA 4500 MHD

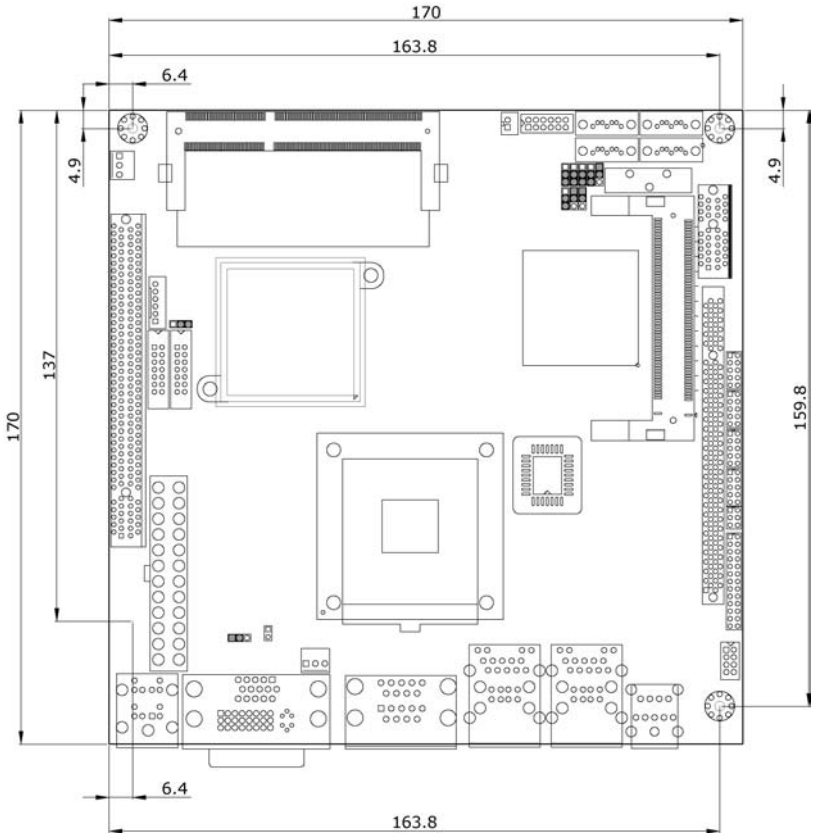
Audio

- **Chipset:**
  RealTek ALC262 High Definition audio codec
- **Audio Interface:**
  MIC In, Line Out

Ethernet

- **Chipset:**
  Dual RealTek RTL8111C 10/100/1000 Mbps LAN
- **Ethernet Interface:**
  2 x RJ-45

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-1760 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Examine all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip to ensure that they are firmly seated. The HS-1760 delivery package contains the following items:

- **HS-1760 Board x 1**
- **Utility CD Disk x 1, including User's Manual**
- **Cables (as following table)**
- **Jumper Bag x 1**

Cables Package		
NO.	**Description**	**QTY.**
1	SATA cable 50cm (w/Lock)	1
2	Print DB25-26P(2.0) cable	1
3	SATA power cable 15cm	1

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

Option Accessories	
NO.	**Description**
1	USB 1-to-2 cable
2	SATA cable 50cm (w/Lock)
3	COM DB9*2-10P(2.0) cable
4	H=23mm CPU Cooler

Chapter 3

Hardware Installation

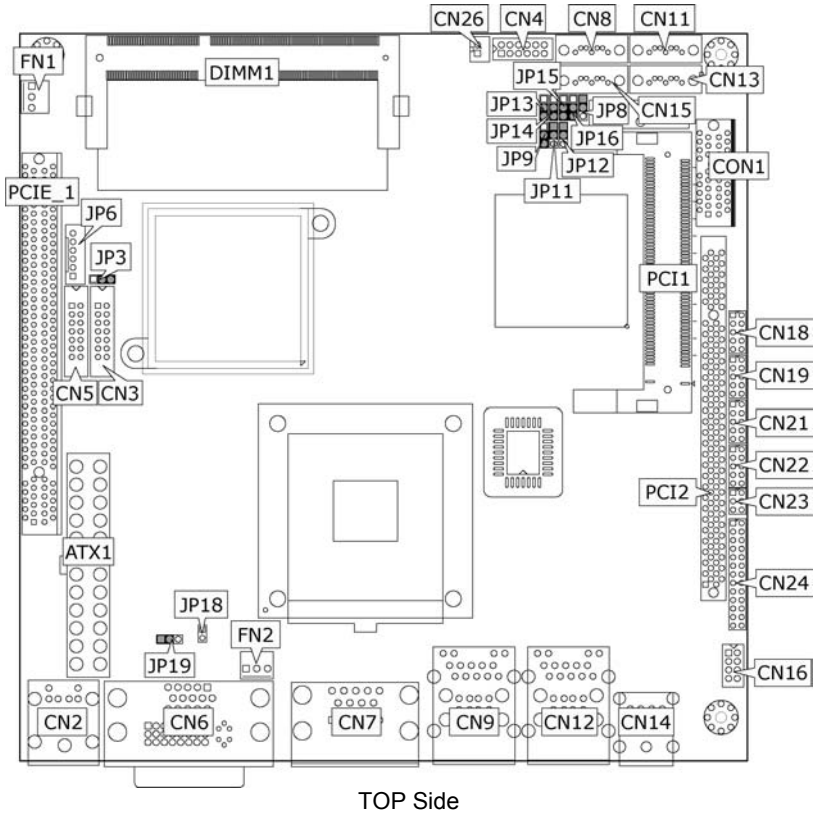
This chapter provides the information on how to install the hardware using the HS-1760. This chapter also contains information related to jumper settings of switch, and watchdog timer selection etc.

3.1 Before Installation

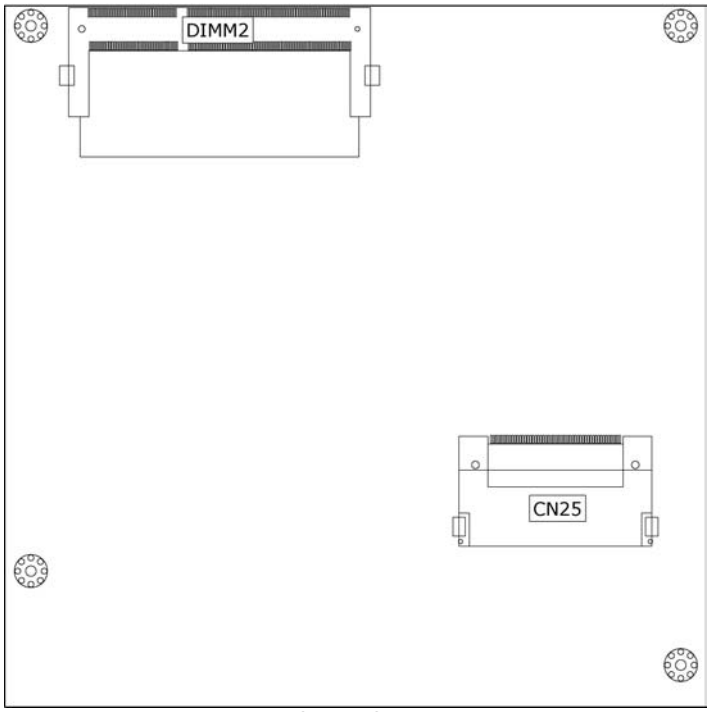
After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper. (JP8 short 1-2)
2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections on this chapter for the detailed information on the connectors.
3. Keep the driver CD in good condition for future reference and use.

3.2 Board Layout



TOP Side



Solder Side

3.3 Jumper List

Jumper	Default Setting	Setting	Page
JP3	Panel Voltage Select: *+3.3V*	Short 2-3	11
JP8	Clear CMOS: *Normal Operation*	Short 1-2	16
JP9	FSB Frequency Select: *CPU Driven*	Short 2-3	11
JP11		Short 1-2	
JP12		Short 1-2	
JP13	CF or SATA 3 Connector Select: *SATA*	Short 2-3	13/22
JP14		Short 2-3	
JP15		Short 2-3	
JP16		Short 2-3	
JP18	Onboard Display or External PCIe x16 Bus Select: *CRT Function*	Open	11
JP19		Short 1-2	
CN21	COM 2 Use RS-232 or RS-422/485 Select: *RS-232*	Open	14

3.4 Connector List

Connector	Definition	Page
ATX1	24-pin ATX Power Connector	18
CN2	PS/2 6-pin Mini DIN KB & MS Connector	19
CN3/CN5	LVDS Panel Connector	11
CN4	System Front Panel Connector	19
CN6	15-pin CRT/DVI-I Connector	11
CN7	COM 1/COM 2 Connector (DB9)	14
CN8/CN11/CN13/CN15	SATA 0~SATA 3 Connector	13
CN9/CN12	RJ-45 + External USB2.0 Ports	15/16
CN14	MIC In/Line Out Connector	22
CN16	Internal USB2.0 Ports	16
CN18/CN19	COM 3/COM 4 Connector (5x2 header)	14
CN22	8-bit GPIO	24
CN23	RS-422/485 Connector (3x2 header)	14
CN24	Parallel Port	17
CN25	CompactFlash Connector	22
CN26	External Reset Button	18
CON1	PCIe x1 Expansion Slot	----
DIMM1/DIMM2	DDR3 Socket	11
FN1/FN2	Fan Power Connector	18
JP6	Inverter Power Connector	11
PCI1	Mini PCI Expansion Slot	----
PCI2	PCI Expansion Slot	----
PCIE_1	PCIe x16 Expansion Slot	----

3.5 Configuring the CPU

The HS-1760 use Socket P for Intel® Core™ 2 Duo (Penryn 45nm) and Mobile Celeron® processor.

- **JP9/JP11/JP12: FSB Frequency Select**

Options	Settings		
	JP9	JP11	JP12
CPU Driven (default)	Short 2-3	Short 1-2	Short 1-2
1066MHz FSB	Short 2-3	Short 2-3	Open
800MHz FSB	Short 2-3	Open	Open
667MHz FSB	Short 2-3	Open	Short 2-3
	1 3	1 3	1 3

3.6 System Memory

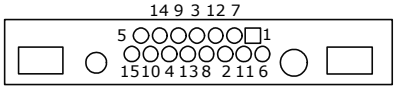
The HS-1760 provides two 204-pin SO-DIMM sockets at locations *DIMM1/DIMM2*. It supports DDR3 800/1066MHz up to 4GB.

3.7 VGA Controller

The HS-1760 provides three types of connection for display device. *CN6A* is a 15-pin CRT connector. *CN3/CN5* are the LVDS interface connectors onboard reserved for flat panel installation. HS-1760 also provides DVI-I connector at location *CN6B*.

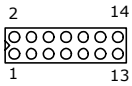
- **CN6A: 15-pin CRT Connector**

PIN	Description	PIN	Description
1	Red	2	Green
3	Blue	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDCDA
13	HSYNC	14	VSYNC
15	DDCCL		



- **CN3/CN5: LVDS Interface Connector**

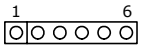
PIN	Description	PIN	Description
1	V_{LCD}	2	V_{LCD}
3	GND	4	GND
5	A0-/B0-	6	A0+/B0+
7	A1-/B1-	8	A1+/B1+
9	A2-/B2-	10	A2+/B2+
11	CLK1-/CLK2-	12	CLK1+/CLK2+
13	A3-/B3-	14	A3+/B3+



NOTE: *LVDS cable should be produced very carefully. A0- & A0+ have to be fabricated in twister pair (A1- & A1+, A2- & A2+ and so on) otherwise the signal won't be stable. Please set the proper voltage of your panel using JP6 before proceeding on installing it.*

- **JP6: Inverter Power Connector**

PIN	Description
1	+12V
2	+12V
3	VCC
4	BK_EN
5	LCD_EN
6	GND



NOTE: *If use CN3 only, it just supports 24-bit single channel LVDS panel; If you want to use 48-bit dual channel LVDS panel, please use CN3 and CN5 combined.*

The HS-1760 has an onboard jumper that selects the working voltage of the flat panel connected to the system. Jumper *JP3* offers two voltage settings for the user.

- **JP3: Panel Voltage Select**

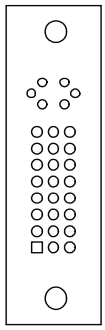
Options	Settings
+3.3V (default)	Short 2-3
+5V	Short 1-2

- **JP18/JP19: External PCIe x16 Slot Enabled/Disabled Select**

Options	Settings	
	JP18	JP19
Enabled	Short	Short 2-3
Disabled (default)	Open	Short 1-2

- **CN6B: DVI-I Connector**

PIN	Description	PIN	Description
1	- DATA2	2	DATA2
3	GND	4	-DATA4
5	DATA4	6	DDCCLK
7	DDCDATA	8	VSYNC
9	-DATA1	10	DATA1
11	GND	12	-DATA3
13	DATA3	14	VCC5
15	GND	16	HPDET
17	-DATA0	18	DATA0
19	GND	20	-DATA5
21	DATA5	22	GND
23	CLK	24	-CLK
25	RED	26	GREEN
27	BLUE	28	HSYNC
29	GND	30	GND

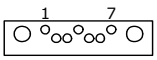


3.8 Serial ATA Connector

You can connect the Serial ATA device that provides you high speeds transfer rates (300MB/sec.).

- **CN8/CN11/CN13/CN15: SATA 0~SATA 3 Connector**

PIN	Description
1	GND
2	SATATXP
3	SATATXN
4	GND
5	SATARXN
6	SATARXP
7	GND



- **JP13/JP14/JP15/JP16: CF or SATA 3 Connector Select**

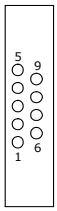
Options	Settings			
	JP13	JP14	JP15	JP16
SATA 3 (default)	Short 2-3			
CF	Short 1-2			

3.9 Serial Port Connectors

The HS-1760 offers 16C550 compatible UARTs with Send/ Receive 16-byte FIFO serial ports.

- **CN7: COM 1/COM 2 Connector (DB9)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND		



- **CN18/CN19: COM 3/COM 4 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	Don't Use

- **CN23: RS-422/485 Connector (3x2 Header, COM 2)**

PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	N/C

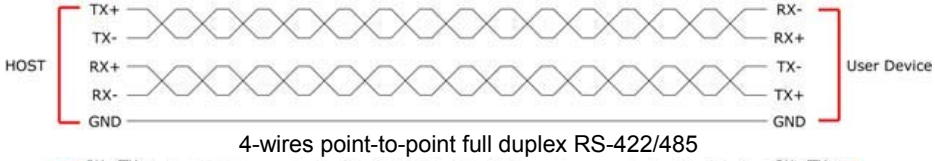
NOTE: *The terminal resistance of RX & TX is set at 180 Ω.*

- **CN21: COM 2 use RS-232 or RS-422/485 Select**

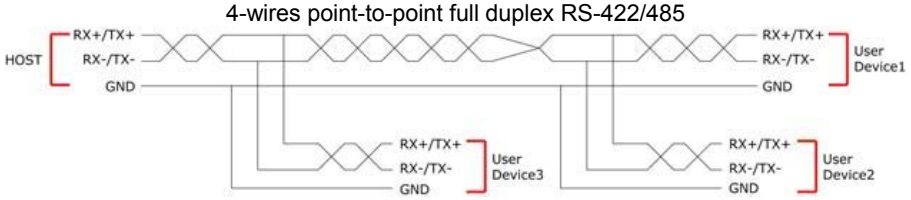
Options	Settings
RS-232 (default)	Open
RS-485 Transmit Only (*1)	Short 1-2, 3-4, 5-7, 8-10
RS-485 by –RTS (*-1)	Short 1-2, 3-4, 7-9, 8-10
RS-422/485 Full Duplex (*2)	Short 1-2, 3-4, 6-8

NOTE: **1: 2-wires RS-485 function*

**2: 4-wires point-to-point full duplex function*



4-wires point-to-point full duplex RS-422/485



Typical RS-485 2-wires Mutildrop Network

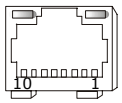
3.10 Ethernet Connector

The HS-1760 provides two RJ-45 connectors for 10/100/1000 Based LAN. Please refer to the following for its pin information.

When installs OS, this driver namely can automatically install. User does not need to renewal.

- **CN9/CN12: RJ-45 Connector**

PIN	Description	PIN	Description
1	N/C	2	MDIP0
3	MDIN0	4	MDIP1
5	MDIN1	6	MDIP2
7	MDIN2	8	MDIP3
9	MDIN3	10	N/C
11	LINK UP	12	220Ω pull 3.3V
13	LINK 100	14	LINK 1000
15	GND	16	GND

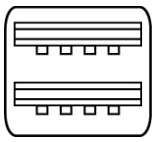


3.11 USB Port

The HS-1760 provides one 8-pin connectors, at location *CN16*, for two USB2.0 ports, and *CN9/CN12* are external USB2.0 ports, there are total six USB2.0 ports in HS-1760.

- **CN9/CN12: External USB2.0 Port**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD0-/USB2-	4	USBD1-/USB3-
5	USBD0+/USB2+	6	USBD1+/USB3+
7	GND	8	GND



- **CN16: Internal USB2.0 Ports**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD4-	4	USBD5-
5	USBD4+	6	USBD5+
7	GND	8	GND

3.12 CMOS Data Clear

The HS-1760 has a Clear CMOS jumper on *JP8.*

- **JP8: Clear CMOS**

Options	Settings
Normal Operation (default)	Short 1-2
Clear CMOS	Short 2-3

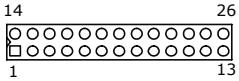
IMPORTANT: *Before turn on the power of system, please set JP8 to open for normal operation.*

3.13 Parallel Port

CN24 is a standard 26-pin flat cable connector designed to accommodate parallel port connection onboard the HS-1760.

- **CN24: Parallel Port**

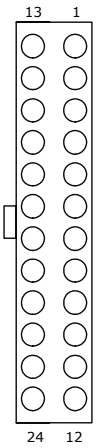
PIN	Description	PIN	Description
1	Strobe	14	Auto From Feed
2	DATA 0	15	ERROR#
3	DATA 1	16	Initialize
4	DATA 2	17	Printer Select LN#
5	DATA 3	18	GND
6	DATA 4	19	GND
7	DATA 5	20	GND
8	DATA 6	21	GND
9	DATA 7	22	GND
10	Acknowledge	23	GND
11	Busy	24	GND
12	Paper Empty	25	GND
13	Printer Select	26	GND



3.14 Power and Fan Connectors

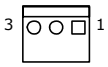
- **ATX1: 24-pin ATX Power Connector**

PIN	Description	PIN	Description
1	N/C	13	N/C
2	N/C	14	N/C
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power OK	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	N/C	24	GND



- **FN1/FN2: Fan Power Connector**

PIN	Description
1	GND
2	+12V
3	Fan In



- **CN26: External ATX Power Connector**

PIN	Description
1	ATX Power Button
2	GND

3.15 Keyboard/Mouse Connectors

The *CN2* is a PS/2 6-pin Mini DIN connector for HS-1760.

- **CN2: PS/2 6-pin Mini DIN Keyboard & Mouse Connector**

PIN	Description	PIN	Description
1	Keyboard Data	2	N/C
3	GND	4	+5V
5	Keyboard Clock	6	N/C
7	Mouse Data	8	N/C
9	GND	10	+5V
11	Mouse Clock	12	N/C
13	GND	14	GND
15	GND	16	GND

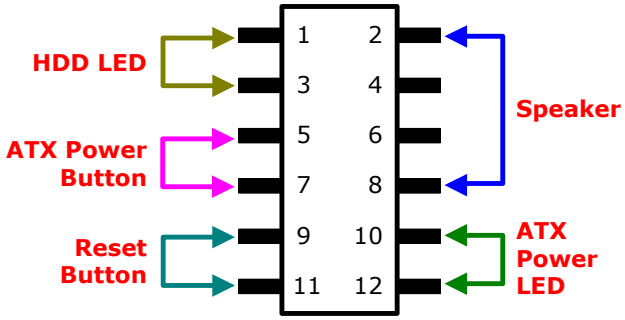
3.16 System Front Panel Control

The HS-1760 has front panel control at location *CN4*.

- **CN4: System Front Panel Control**

PIN	Description	PIN	Description
1	470Ω pull VCC	2	Speaker
3	HDD LED	4	N/C
5	ATX Power Button	6	GND
7	GND	8	33Ω pull VCC
9	Reset Switch	10	470Ω pull 5V
11	GND	12	GND

Connector CN4 Orientation



3.17 Watchdog Timer

Once the Enable cycle is active a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A reset system signal will restart when such error happens.

The HS-1760 custom WDT circuit is implemented using the internal IO of the Winbond Super I/O W83627UHG which is at 2Eh of LPC.

The following sample programs show how to enable, disable and refresh the watchdog timer:

Sample Code

C Language for Watchdog Timer under DOS.

```
#include<stdio.h>
#include<dos.h>
static unsigned int 83627UHG_Port = 0x2e;
{
Outportb(83627UHG_Port,0x87);
Outportb(83627UHG_Port,0x87);
}
void W83627UHG_WDT(unsigned int count_setup)
{
unsigned int Counting, Register_Setup;
outportb(83627UHG_Port, 0x07);
outportb(83627UHG_Port+1, 8); // set as Logical
Device 8
if(count_value >= 60)
{
outportb(83627UHG_Port, 0xf5);
Register_Setup = inportb(83627UHG_Port+1);
Register_Setup |= 0x08;
outportb(83627UHG_Port+1, Register_Setup); /
/ set as minute mode
counting = count_setup / 60;
if((count_value%60) > 30)
```

```
counting++;
if(counting > 255)
counting = 255;
printf("WDT timeout in %d minutes.\n",
counting);
}
else
{
outportb(83627UHG_Port, 0xf5);
Register_Setup = inportb(83627UHG_Port+1);
Register_Setup &= 0xf7;
outportb(83627UHG_Port+1, Register_Setup); /
/ set as second mode
Counting = count_setup;
printf("WDT timeout in %d seconds.\n",
counting);
}
If(counting)
{
outportb(83627UHG_Port, 0x30);
Register_Setup = inportb(83627UHG_Port+1);
Register_Setup |= 0x01;
outportb(83627UHG_Port+1, Register_Setup);// set WDTO#
active
outportb(83627UHG_Port, 0x07);
outportb(83627UHG_Port+1, 8); // set as Logical
Device 8
outportb(83627UHG_Port, 0xf6);
outportb(83627UHG_Port+1, counting); // set WDT
count value
};
```

3.18 Audio Connectors

The HS-1760 has an onboard RealTek ALC262 HD audio controller. *CN14(Green)* is Line Out, *CN14(PINK)* is MIC In.

3.19 CompactFlash™ Connector

The HS-1760 also offers a Type I/II CompactFlash™ connector is IDE interface located at the solder side of the board. The designated *CN25* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card.

Inserting a CompactFlash™ card into the adapter is not a difficult task. The socket and card are both keyed and there is only one direction for the card to be completely inserted. Refer to the diagram on the following page for the traditional way of inserting the card.

- **JP13/JP14/JP15/JP16: CF or SATA 3 Connector Select**

Options	Settings			
	JP13	JP14	JP15	JP16
SATA 3 (default)	Short 2-3			
CF	Short 1-2			

- **CN25: CompactFlash™ Connector**

PIN	Description	PIN	Description
1	GND	2	DATA3
3	DATA4	4	DATA5
5	DATA6	6	DATA7
7	SDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	VCC	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	DATA0	22	DATA1
23	DATA2	24	470Ω pull GND
25	N/C	26	N/C
27	DATA11	28	DATA12
29	DATA13	30	DATA14
31	DATA15	32	SDCS3#
33	N/C	34	UOR
35	IOW	36	EWE0
37	IRQ	38	VCC
39	CS	40	N/C
41	RESET	42	IORDY
43	DACK	44	REQ
45	IDE LED	46	PDIAG
47	DATA8	48	DATA9
49	DATA10	50	GND

NOTE: *When use CF card, SATA3 device function will be disabled.*

3.20 8-bit GPIO Function

The HS-1760 offers one 8-bit input/output port.

- **CN22: 8-bit GPIO**

PIN	Description	PIN	Description
1	VCC	2	GND
3	GD0	4	GD4
5	GD1	6	GD5
7	GD2	8	GD6
9	GD3	10	GD7

EX. Sample Code Using GPIO 5

```
#include <conio.h>
#include <stdio.h>
#include <io.h>
void main(void)
{
unsigned char byte_cr29;
outportb(0x2e, 0x87); // enter Super I/O configuration mode
outportb(0x2e, 0x87);
outportb(0x2e,0x29); // set CR29 bit 5
byte_cr29 = (inportb(0x2f) | 0x20); // to switch UARTA to GPIO5
outportb(0x2f, byte_cr29);
outportb(0x2e, 0x07); // locate logical device 8
outportb(0x2e, 0x08);
outportb(0x2e, 0x30); // set CR30 bit 1 (enable GPIO5)
outportb(0x2f, 0x02);
outportb(0x2e, 0xe0); // set GP54 ~ GP57
outportb(0x2f, 0x0F); // GP54 ~ GP57 as output pins
}
```

Chapter 4

AMI BIOS Setup

The HS-1760 uses AMI BIOS for the system configuration. The AMI BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options that could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1 Starting Setup

The AMI BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <F1> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press F1 to Run SETUP.

4.2 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

↑	Move to previous item
↓	Move to next item
←	Move to previous item
→	Move to previous item
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Move to top item
PgDn key	Move to bottom item
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General Help
F2 key	Change background color forward
F3 key	Change background color backward
F4 key	Reserved
F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes

4.3 Main Menu

Once you enter the AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to enter the sub-menu.

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

System Overview

AMIBIOS
Version : 08.00.15
Build Date : 06/09/10
ID : A1760001

Processor
Intel(R) Core(TM) 2 Duo CPU P8400 @ 2.2GHz
Speed : 2266MHz
Count : 1

System Memory
Size : 893MB

System Time [00:29:32]
System Date [Mon 07/12/2010]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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NOTE: *A brief description of the highlighted choice appears at the bottom of the screen.*

4.4 Advanced Settings

This section allows you to configure your system for the basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Advanced Settings

WARNING: Setting wrong values in below sections may cause system to malfunction.

- ► CPU Configuration
- ► IDE Configuration
- ► SuperIO Configuration
- ► Hardware Health Configuration
- ► ACPI Configuration
- ► APM Configuration
- ► USB Configuration
- ► AHCI Configuration

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Configure advanced CPU settings

Manufacturer : Intel
Intel(R) Core(TM) 2 Duo CPU P8400 @ 2.26GHz
Frequency : 2.26GHz
FSB Speed : 1066MHz
Cache L1 : 64 KB
Cache L2 : 3072 KB
Ratio Actual Value : 8.5

Max CPUID Value Limit [Disabled]
Intel(R) Virtualization Tech [Enabled]
Execute-Disabled Bit Capability [Enabled]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

IDE Configuration

	Configure SATA#1 as		[IDE]
►	SATA PORT0	:	[Not Detected]
►	SATA PORT1	:	[Not Detected]
►	SATA PORT2	:	[Not Detected]
►	SATA PORT3	:	[Not Detected]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Configure WIN627UHG Super IO Chipset

Serial Port1 Address	[3F8]
Serial Port2 Address	[2F8]
Serial Port2 Mode	[Normal]
Serial Port3 Address	[3E8]
Serial Port4 Address	[2E8]
Parallel Port Address	[378]
Parallel Port Mode	[Normal]

↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

Hardware Health Configuration

CPU Temperature	:
System Temperature	:
SYSFAN Speed	:
CPUFAN Speed	:
	:
Vcore	:
12V	:
3.3V	:
1.8V	:

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

ACPI Settings

Suspend mode	[Auto]		
		←	Select Screen
		↑ ↓	Select Item
		+ –	Change Field
		Tab	Select Field
		F1	General Help
		F10	Save and Exit
		ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

APM Configuration

Power Management/APM	[Enabled]		
Power Button Mode	[On/Off]		
Restore on AC Power Loss	[Last State]		
Video Power Down Mode	[Disabled]		
Hard Disk Power Down Mode	[Disabled]		
Standby Time Out	[Disabled]		
Suspend Time Out	[Disabled]		
Throttle Slow clock Ratio	[50%]	←	Select Screen
System Thermal	[Disabled]	↑ ↓	Select Item
		+ –	Change Field
Resume On PME#	[Disabled]	Tab	Select Field
Resume On RTC Alarm	[Disabled]	F1	General Help
		F10	Save and Exit
		ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

USB Configuration

Legacy USB Support	[Enabled]	←	Select Screen
USB 2.0 Controller Mode	[HiSpeed]	↑ ↓	Select Item
		+ –	Change Field
		Tab	Select Field
		F1	General Help
		F10	Save and Exit
		ESC	Exit

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BIOS SETUP UTILITY

Main	**Advanced**	PCIPnP	Boot	Security	Chipset	Exit

AHCI Settings

AHCI BIOS Support	[Enabled]	← Select Screen
► AHCI Port0	[Not Detected]	↑ ↓ Select Item
► AHCI Port1	[Not Detected]	+ - Change Field
► AHCI Port2	[Not Detected]	Tab Select Field
► AHCI Port3	[Not Detected]	F1 General Help
		F10 Save and Exit
		ESC Exit

4.5 Advanced PCI/PnP Settings

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system that allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced PCI/PnP Settings

WARNING: Setting wrong values in below sections may cause system to malfunction.

Clean NVRAM	[No]
Plug & Play O/S	[Yes]
HDA Controller	[Enabled]
Onboard Lan1 Controller	[Enabled]
Onboard Lan2 Controller	[Enabled]
Onboard Lan Boot ROM	[Disabled]
Watch Dog Timer Select	[Disabled]
Restore on AC Power Loss	[Last State]

←	Select Screen
↑ ↓	Select Item
+ -	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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4.6 Boot Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Boot Settings

► Boot Settings Configuration

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Boot Settings Configuration

Quick Boot	[Enabled]
Quiet Boot	[Disabled]
AddOn ROM Display Mode	[Force BIOS]
Bootup Num-Lock	[On]
PS/2 Mouse Support	[Auto]
Wait For 'F1' If Error	[Enabled]
Hit 'DEL' Message Display	[Enabled]
Interrupt 19 Capture	[Disabled]

←	Select Screen
↑ ↓	Select Item
+ –	Change Field
Tab	Select Field
F1	General Help
F10	Save and Exit
ESC	Exit

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4.7 Security Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Security Settings				
Supervisor Password	:	Not Installed		
User Password	:	Not Installed		
			←	Select Screen
Change Supervisor Password			↑ ↓	Select Item
Change User Password			+ -	Change Field
Boot Sector Virus Protection		[Disabled]	Tab	Select Field
			F1	General Help
			F10	Save and Exit
			ESC	Exit

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4.8 Advanced Chipset Settings

BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

Advanced Chipset Settings

WARNING: Setting wrong values in below sections may cause system to malfunction.

► North Bridge Configuration	←	Select Screen
► South Bridge Configuration	↑ ↓	Select Item
	+ -	Change Field
	Tab	Select Field
	F1	General Help
	F10	Save and Exit
	ESC	Exit

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BIOS SETUP UTILITY

Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit

North Bridge Chipset Configuration

Boots Graphic Adapter Priority	[PEG/PCI]		
Internal Graphics Mode Select	[Enabled, 128MB]		
PAVP Mode	[Lite]		
PEG Port Configuration		←	Select Screen
PEG Port	[Auto]	↑ ↓	Select Item
		+ -	Change Field
DVMT Mode Select	[DVMT Mode]	Tab	Select Field
DVMT/FIXED Memory	[256MB]	F1	General Help
Boot Display Device	[VBIOS-Default]	F10	Save and Exit
Flat Panel Type	[800 x 600 18-bit]	ESC	Exit

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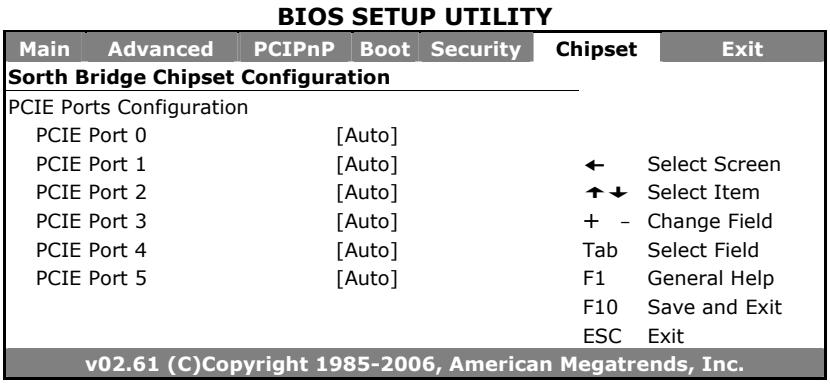
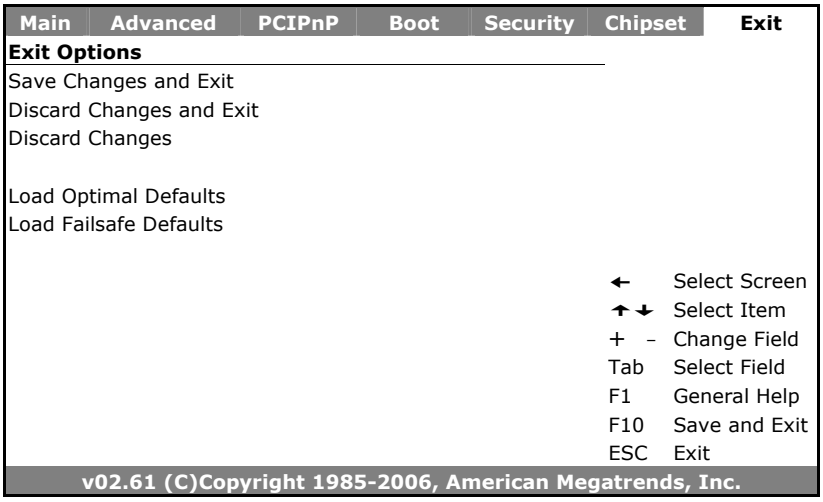
Flat Panel Type		
Type 1	640 x 480	18-bit Single Channel
Type 2	800 x 600	18-bit Single Channel
Type 3	1024 x 768	24-bit Single Channel
Type 4	1280 x 1024	24-bit Dual Channel
Type 5	1400 x 1050	24-bit Dual Channel
Type 6	1600 x 1200	24-bit Dual Channel



4.9 Exit Options



Chapter 5

Software Utilities

This chapter contains the detailed information about installation procedures of chipset, VGA, LAN, audio and other drivers. The utility CD disk that comes with the package contains an auto-run program that invokes the installation programs for the chipset, VGA, LAN and audio drivers. The following sections describe the installation procedures of each driver based on WinXP operating systems. Other operation system may be slightly different.

5.1 Chipset Driver Installation

1. Insert the CD that comes with the board into the CD-ROM drive. Click **CHIPSET** to install chipset driver.

2. Immediately after clicking the CHIPSET button in Step 1, the program launches the *Setup* that will assist you in the installation process. Click on the **Next >** button to proceed.

3. The *License Agreement* dialog box then appears on the screen. Choose **Yes** to proceed.

4. When the *Readme File Information* dialog box pops up, just clock on the **Next>** button to proceed.

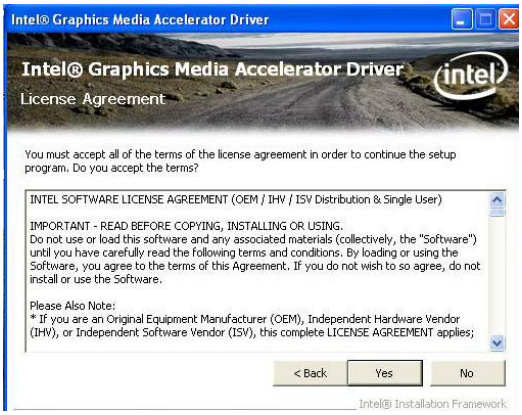
5. Click on the **Finish** to completed the installation.

5.2 VGA Driver Installation

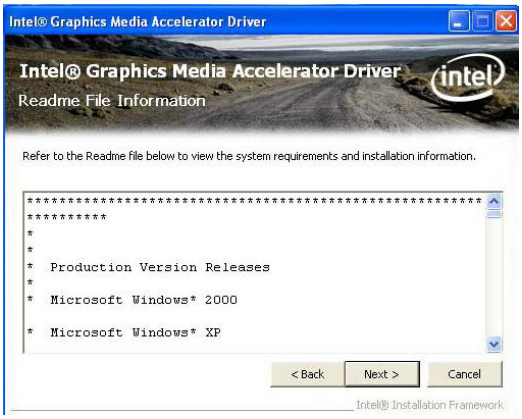
1. Insert the CD that comes with the board into the CD-ROM drive. Click **VGA** to install Intel® GM45 video driver.

2. The Welcome to the Setup program dialog box appears on the screen. Choose Next> to proceed.

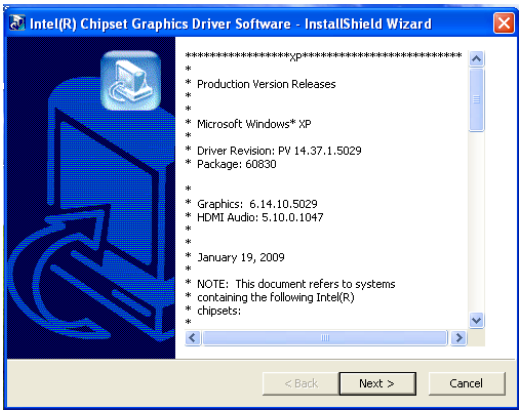
3. The *Intel® License Agreement* dialog box appears on the screen. Choose **Yes** to proceed.



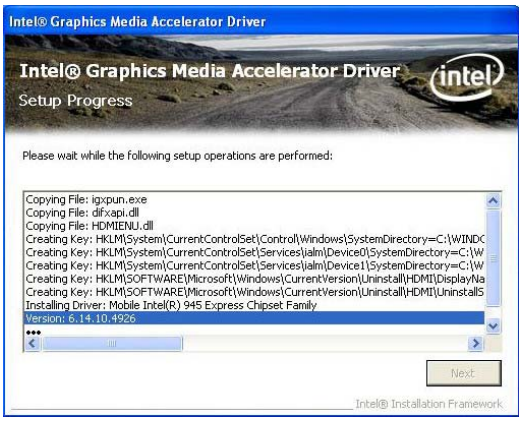
4. When the *Readme File Information* dialog box pops up, just click on the **Next>** button to proceed.



5. The *Installshield Wizard* dialog box appears on the screen. Click on **Next>** to proceed.



6. When *Setup Progress* finished, just click on **Next** button to proceed.

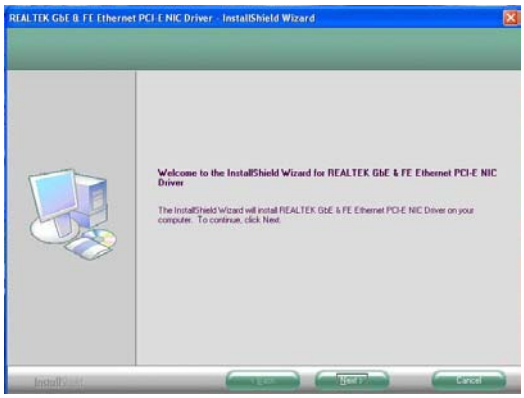


7. Please select **"Yes, I want to restart my computer now"** button then click **"Finish"** to reboot your system to take the effect once the installation is completed.

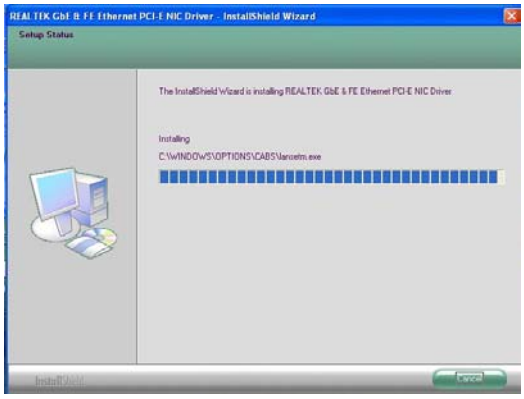
5.3 LAN Driver Installation

1. Insert the CD that comes with the board into the CD-ROM drive. Click **LAN** to install RTL8111 LAN driver.

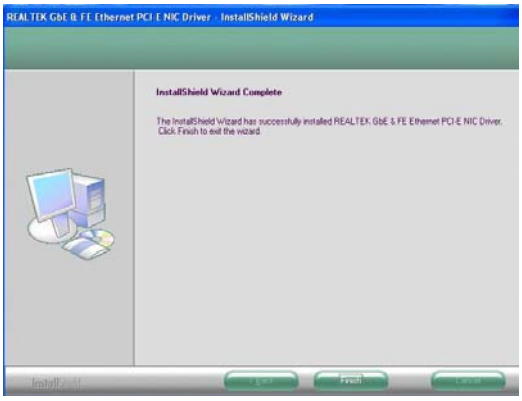
2. When the dialog box below appears, make sure you close all other Windows applications the click on the **Next>** button to proceed.



3. The *Setup Status* dialog box then appears on the screen.



4. When setup is finished, please reboot your computer to take the effect.

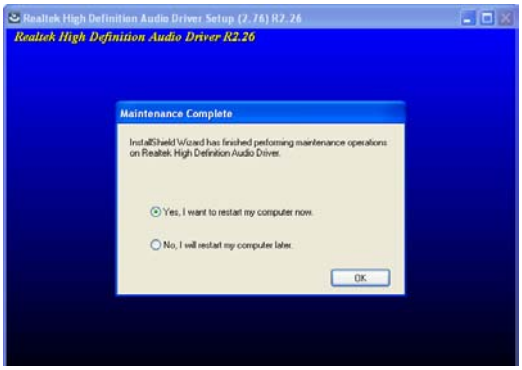


5.4 Audio Driver Installation

1. Insert the CD that comes with the board into the CD-ROM drive. Click **Audio** to install audio driver.

2. When the dialog box below appears, Click on **Yes** to proceed.

3. Please select **"Yes, I want to restart my computer now"** button then click **"Finish"** to reboot your system to take the effect once the installation is completed.



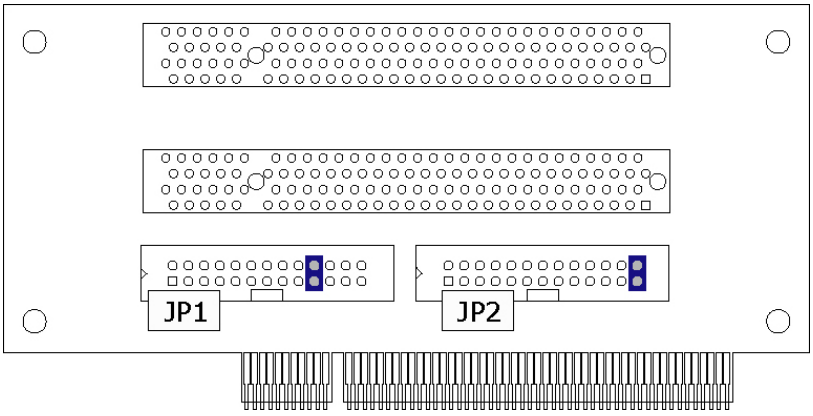
Appendix A

Riser Card Application

BOSER released PCI Riser Card A-1103 (option) to expend PCI interface card for HS-1760. A-1103 has two PCI slots and individual AD for user to select.

- **JP1/JP2: PCI1/PCI2 AD Select**

Options	Settings	
	JP1	JP2
AD28	Short 19-20	----
AD31	----	Short 25-26



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