integration with integrity

User's Manual

Mini ITX Motherboard 2801300

Version 1.0

Copyrights

Trademarks

Table of Contents

Chapter 1

Introduction

1.1 Copyright Notice

1.2 About this User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

1.3 Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system

1.4 Replacing the lithium battery

Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.
Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local requlations concerning special waste.

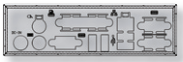
1.5 Technical Support

If you have any questions please call Global American at (800) 833-8999 or click on the link below for Technical Support:

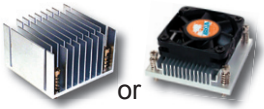
Global American Technical Support

1.7 Packing List

1x 2801300 Mini ITX Industrial MB



1x I/O Bracket



1x CPU Heat Sink or Cooler

1x CD-ROM (For Driver used)

1x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

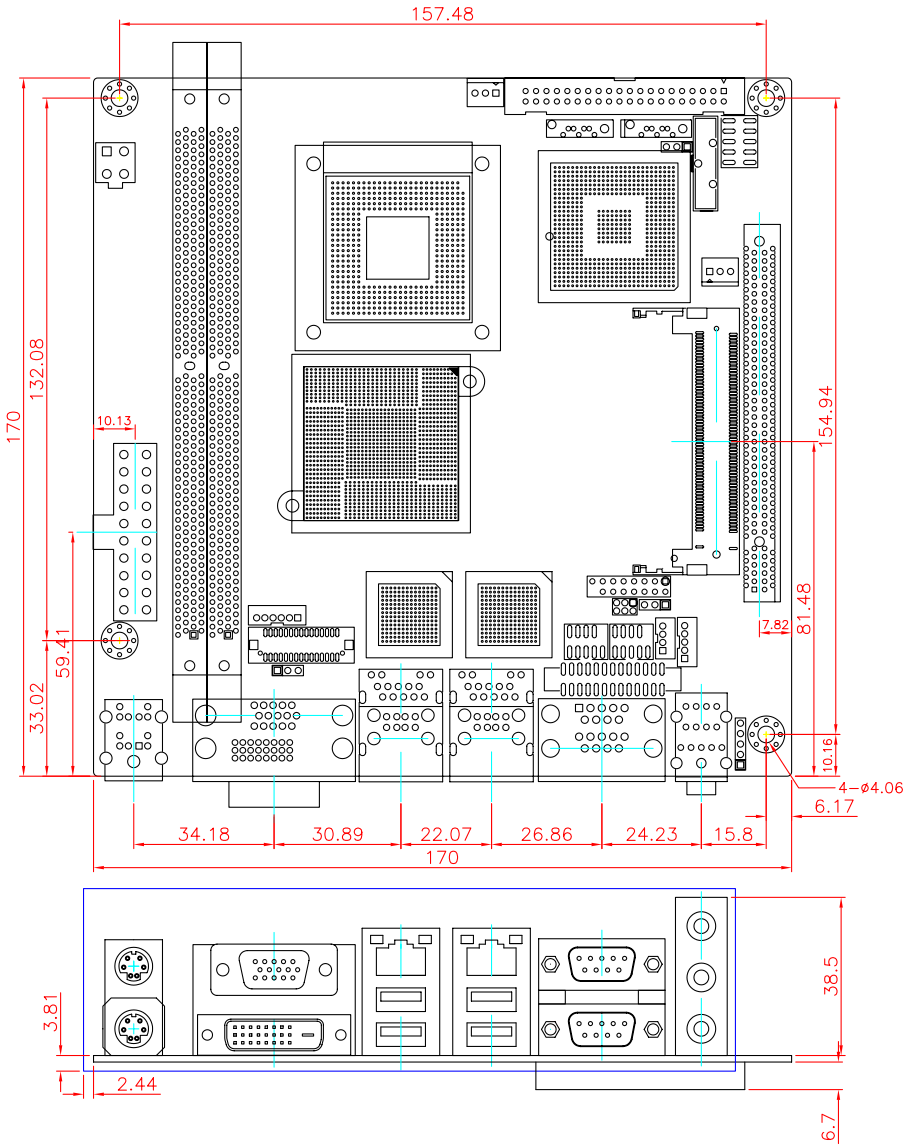
1.8 Ordering Information

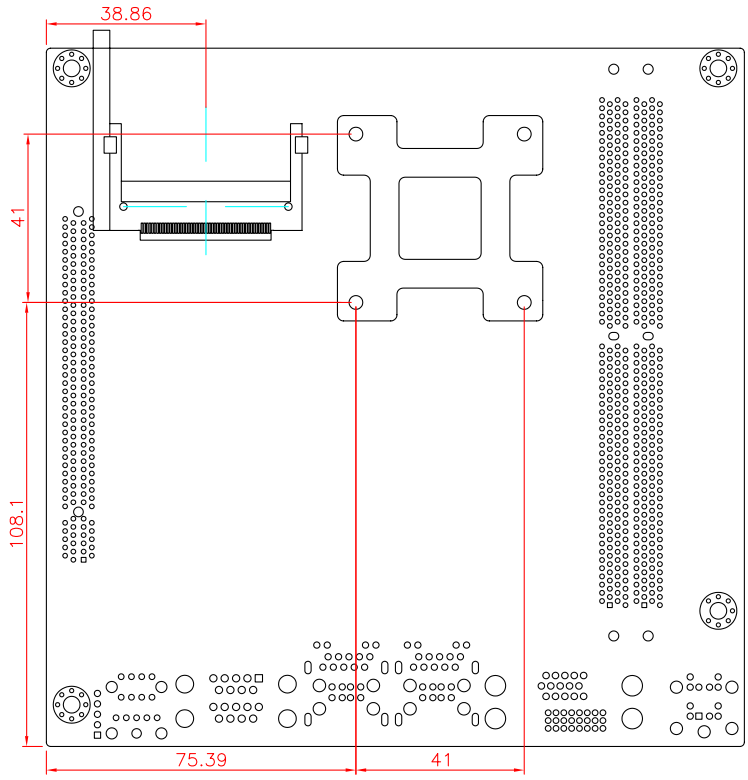
2801300	Intel Core 2 Duo/ Core Duo CPU processor (FSB 667MHz) Industrial Mini-ITX Motherboard with CRT/LCD, Dual Gigabit LAN, SATA II, PCI-Express X16 slot
1207734	Cable Kit

1.9 Specification

Form Factor	Mini ITX Industrial MB
Processor	µFC-PGA478 Intel Core 2 Duo/ Core Duo CPU processor (FSB 667MHz)
Chipset	Intel 945GM/GME + ICH7M
System Memory	♦ 2 x 240-pin DIMM socket up to 2GB ♦ Dual Channel DDR2 533/400MHz SDRAM, supports Non-ECC memory only
VGA/ LCD Controller	Intel® Graphics Media Accelerator (GMA) 950 graphics core w/ CRT, DVI and 18/36bit LVDS (Dual independent display)
Ethernet	2 x 82573V 100/1000 base-T PCI-Express Gigabit LAN
I/O Chips	WINBOND W83627HG
BIOS	Phoenix-Award BIOS
Audio	ALC655 AC'97 Codec, MIC-in/Line-in/Line-out
Serial ATA	2 x Serial ATA II with 300MB/s
IDE Interface	1 x Ultra DMA 100, support 2 IDE drives
Flash Disk	1 x Type II CompactFlash (Share IDE resource)
Serial Port	2 x COM port (COM 1: RS-232, COM2: RS-232/422/485)
Parallel Port/ FDD	1 x SPP/EPP/ECP mode (Shared with FDD)
KBMS	Standard PS/2 KBMS
Universal Serial Bus	8 x USB 2.0 (4 ports by pin header.)
DIO	8 bit programmable Digital I/O
Expansion Interface	1 x PCI Express x16, 1 x MiniPCI, 1 x CF II
Hardware Monitor Chip	Integrated in W83627HG
RTC	Real Time Clock
Power Input Connector	♦ 20pin ATX & 4pin +12V ATX Power connector ♦ Make sure that connecting with the 20pin ATX and the 4pin 12V ATX power connector before booting the system
Operation Temp.	0ºC - 60ºC
Watchdog Timer	255-level Reset
Dimension (L x W)	170 x 170 mm (6.7" x 6.7")

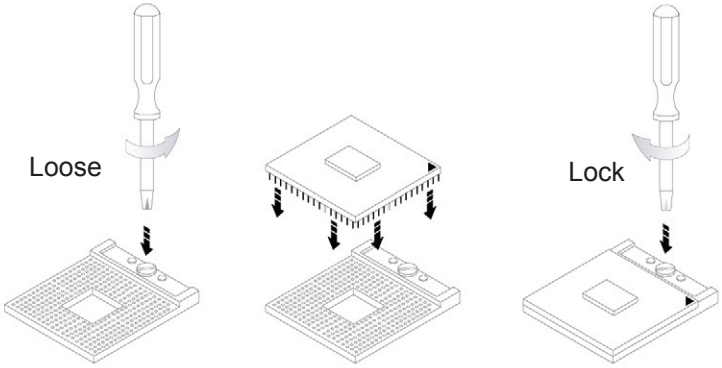
1.10 Board Dimensions




38.86
41
108.1
75.39
41

1.11 Installing the CPU

The processor socket comes with a screw to secure the CPU. As showing in the picture as below, loose the screw first before inserting the CPU.
Place the CPU into the socket by making sure the notch on the corner of the CPU corresponding with the notch on the inside of the socket. Once the CPU has slide into the socket, lock the screw.

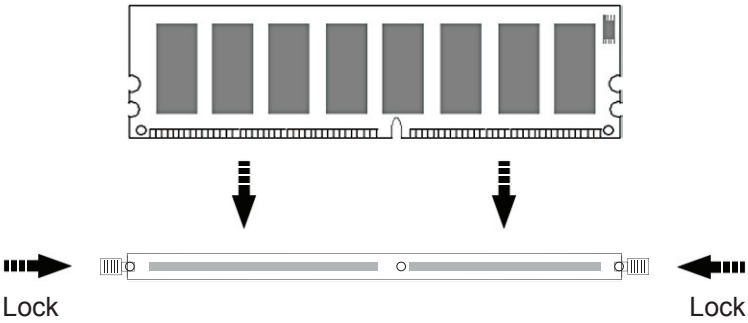


Make sure that heat sink of the CPU top surface is in complete contact to avoid the CPU overheating problem.
If not, it would cause your system or CPU to be hanged, unstable, damaged.

1.12 Installing the Memory

To install the Memory module, locate the Memory DIMM slot on the board and perform as below:

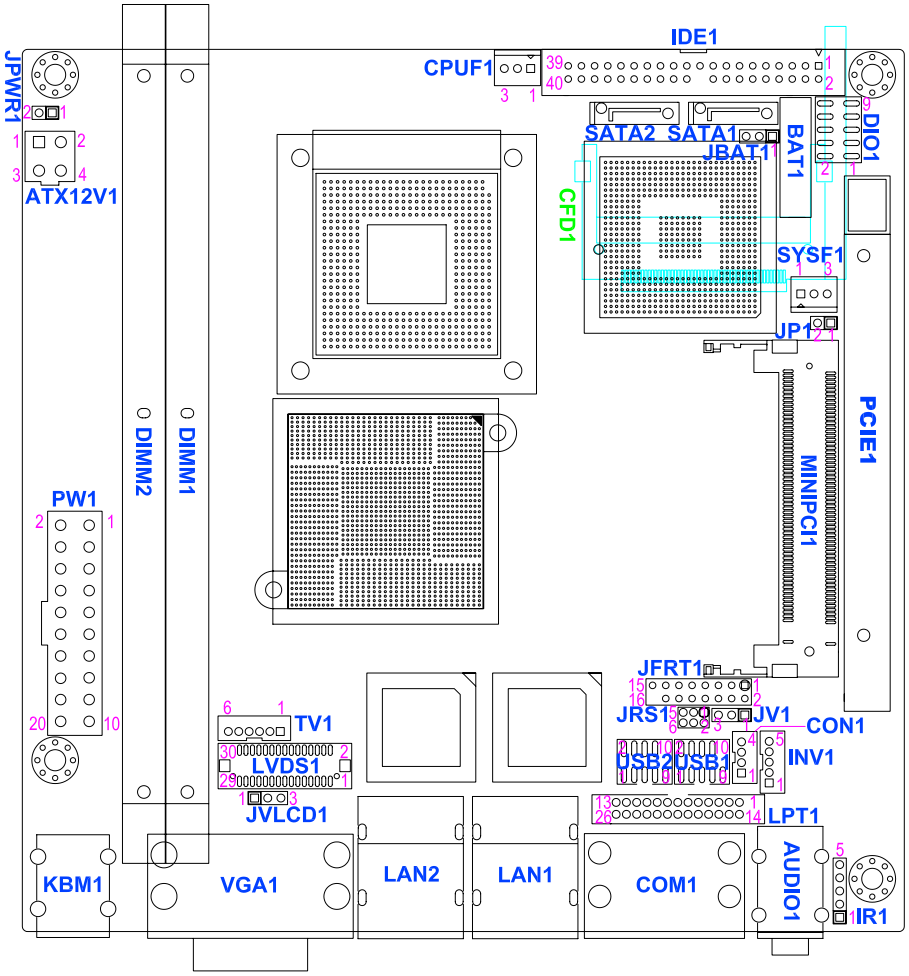
1. Hold the Memory module so that the key of the Memory module align with those on the Memory DIMM slot.
2. Gently push the Memory module in an upright position and a right way until the clips of the DIMM slot close to lock the Memory module in place, when the Memory module touches the bottom of the DIMM slot.
3. To remove the Memory module, just pressing the clips of DIMM slot with both hands.



Chapter 2

Installation

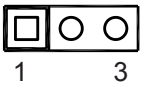
2.1 Jumpers and Connectors



Jumpers

2.2 JBAT1: CMOS Setup

Pin	Mode
1-2	Keep CMOS (Default)
2-3	Clear CMOS

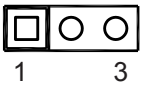


2.3 JP1: CompactFlash Master/ Slave Select

Pin	Master	Slave
1-2	Short	Open (Default)

2.4 JV1: COM1 Power Source Special Support

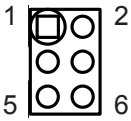
Pin	Mode
1-2	POS: 5V on Pin1
2-3	Standard (Default)



2.5 JRS1: COM 2 RS-232/422/485 Select

It can be configured COM 2 to operate in RS-232, RS-422 or RS-485 mode

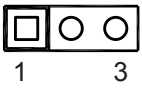
Pin	Mode
1-2 (Short)	RS-232 (Default)
3-4 (Short)	RS-422
5-6 (Short)	RS-485



2.6 JVLCD1: LCD Panel Voltage Select

The voltage of LCD panel could be selected by JVLCD1 in 5V or 3.3V.

Pin	Voltage
1-2	5V
2-3	3.3V (Default)

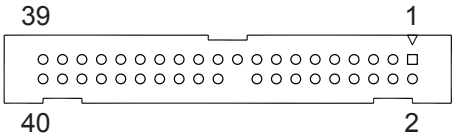


2.7 JPWR1: AT/ATX Power Mode Select

Pin	AT mode	ATX mode
1-2	Short	Open (Default)

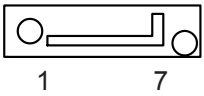
Connectors

2.8 IDE1: Primary 40-pin IDE Connector



2.9 SATA1/ SATA2: Serial ATA 1, 2 Connector

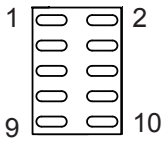
High speed transfer rates (300MB/sec)



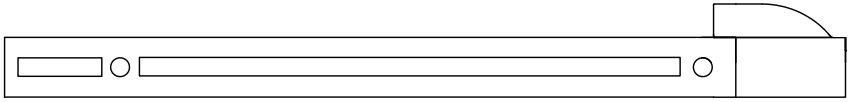
2.10 DIO1: Digital I/O Connector

DIO1 is a 8 bit GPIO connector w/ Onboard10-pin 2.0mm BOX header connector, supports 4 bit In/ 4 bit Out

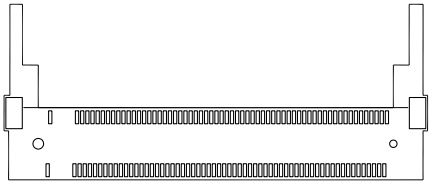
Pin	Description	Pin	Description
1	DIO0	2	DIO1
3	DIO2	4	DIO3
5	DIO4	6	DIO5
7	DIO6	8	DIO7
9	+5V	10	GND



2.11 PCIE1: PCI Express x16 Interface Slot



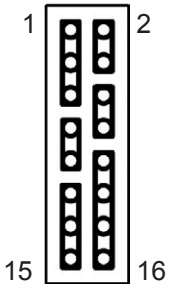
2.12 MINIPCI1: MiniPCI slot



2.13 JFRT1: Switches and Indicators

It provides connectors for system indicators that provides light indication of the computer activities and switches to change the computer status.

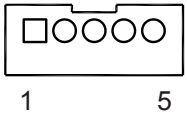
Pin	Description	Pin	Description
1	Power LED+	2	PWRBTN+
3	GND	4	PWRBTN-
5	GND	6	RESET+
7	HDD LED+	8	RESET-
9	HDD LED-	10	SPEAKER+
11	SMBCLK	12	SPEAKER+
13	SMBDATA	14	SPEAKER-
15	GND	16	SPEAKER-



2.14 INV1: LCD Inverter Connector

Onboard 5-pin mini boxheader

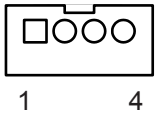
Pin	Description
1	+12V
2	GND
3	Backlight on/off
4	Brightness control
5	GND



2.15 CON1: RS-422/ 485 Connector

2.0 mm 4-pin wafer connector

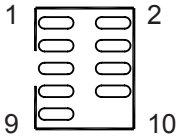
Pin	RS-422	RS-485
1	TX+	Data+
2	TX-	Data-
3	RX+	N/C
4	RX-	N/C



2.16 USB1/ USB2: USB 2.0 Connector

USB1/ USB2 supports two USB 2.0 w/ 480MB/s by pin header

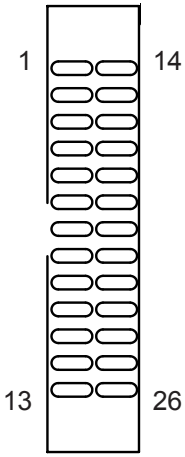
Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD-	4	USBD-
5	USBD+	6	USBD+
7	GND	8	GND
9	GND	10	N/C



2.17 LPT1: Parallel Port or FDD Connector

It can be selected by LPT or FDD mode via BIOS

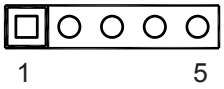
Pin	Description	Pin	Description
1	STROBE	14	AFD
2	PTD0	15	ERROR
3	PTD1	16	INIT
4	PTD2	17	SLIN
5	PTD3	18	GND
6	PTD4	19	GND
7	PTD5	20	GND
8	PTD6	21	GND
9	PTD7	22	GND
10	ACK	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT	26	N/C



2.18 IR1: Infrared Connector

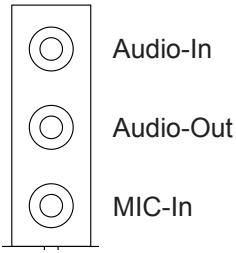
Onboard 2.54mm 5-pin header

Pin	Description
1	+5v
2	N/C
3	IRRX
4	GND
5	IRTX



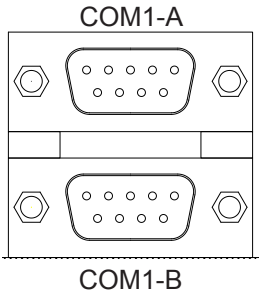
2.19 AUDIO1: Audio Interface Port

AUDIO1, ALC655 AC'97 Codec, is composed of Line in, Line out and Microphone jacks.



2.20 COM1: Two D-SUB 9 Connector

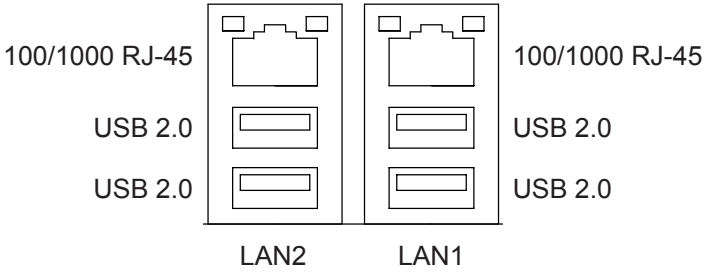
Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		



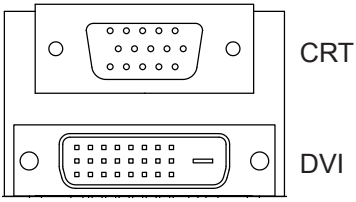
2.21 LAN1/ LAN2: 2 x 100/1000 RJ-45 + 4 x USB 2.0

LAN1/ LAN2 each one supports one 100/1000 Mbps Gigabit Fast Ethernet and two USB 2.0 connectors w/ 480MB/s.

LAN1: 1 x 100/1000 RJ-45 + 2 x USB 2.0
LAN2: 1 x 100/1000 RJ-45 + 2 x USB 2.0

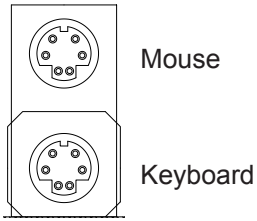


2.22 VGA1: CRT/DVI Connector



2.23 KBM1: PS/2 Keyboard & Mouse

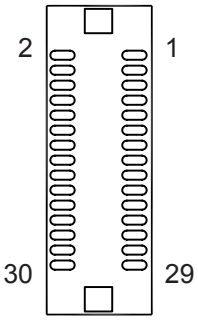
Standard Mini-Din PS/2 Keyboard & Mouse connector



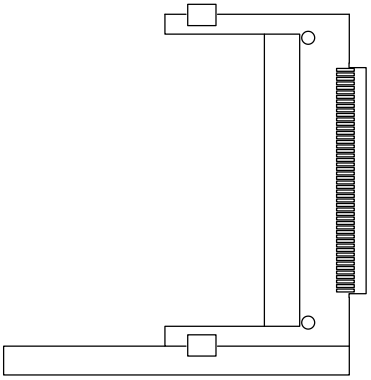
2.24 LVDS1: LVDS LCD Connector

The LVDS connector on board DF-13 30-pin header and supports 18-bit or 36-bit.

Pin	Description	Pin	Description
2	VDD	1	VDD
4	TX2CLK+	3	TX1CLK+
6	TX2CLK-	5	TX1CLK-
8	GND	7	GND
10	TX2D0+	9	TX1D0+
12	TX2D0-	11	TX1D0-
14	GND	13	GND
16	TX2D1+	15	TX1D1+
18	TX2D1-	17	TX1D1-
20	GND	19	GND
22	TX2D2+	21	TX1D2+
24	TX2D2-	23	TX1D2-
26	GND	25	GND
28	N/C	27	N/C
30	N/C	29	N/C

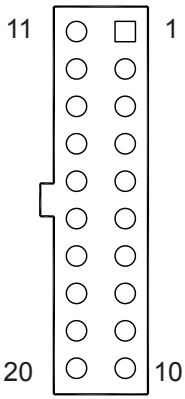


2.25 CFD1: CompactFlash II Socket



2.26 PW1: ATX Power Supply Connector

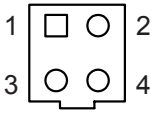
Pin	Description	Pin	Description
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PS-ON	4	5V
15	GND	5	GND
16	GND	6	5V
17	GND	7	GND
18	-5V	8	PW-OK
19	5V	9	5VSB
20	5V	10	+12V



2.27 ATX12V1: 4pin 12V ATX Power Connector

Make sure that connecting with the 20pin ATX and the 4pin 12V ATX power connector before booting the system.

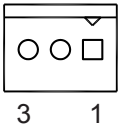
Pin	Description
1	GND
2	GND
3	+12V
4	+12V



2.28 CPUF1: CPU Fan Power Connector

CPUF1 is a 3-pin header for the CPU fan. The fan must be a 12V fan.

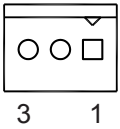
Pin	Description
1	GND
2	+12V
3	FAN_CTL



2.29 SYSF1: System Fan Power Connector

SYSF1 is a 3-pin header for the system fan. The fan must be a 12V fan.

Pin	Description
1	GND
2	+12V
3	FAN_CTL



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Chapter 4

Appendix

4.1 I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device.
The following table lists the I/O port addresses used.

Address	Device Description
00000000 - 00000CF7	PCI bus
00000000 - FFFFFFFF	ISAPNP Read Data Port
00000060 - 00000060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
00000064 - 00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
00000070 - 00000073	System CMOS/real time clock
00000170 - 00000177	Secondary IDE Channel
000001F0 - 000001F7	Primary IDE Channel
00000274 - 00000277	ISAPNP Read Data Port
00000279 - 00000279	ISAPNP Read Data Port
000002F8 - 000002FF	Communications Port
00000376 - 00000376	Secondary IDE Channel
00000378 - 0000037F	Printer Port
000003B0 - 000003BB	Mobile Intel(R) 945GM Express Chipset Family
000003C0 - 000003DF	Mobile Intel(R) 945GM Express Chipset Family
000003F0 - 000003F5	Standard floppy disk controller
000003F6 - 000003F6	Primary IDE Channel
000003F7 - 000003F7	Standard floppy disk controller
000003F8 - 000003FF	Communications Port
00000778 - 0000077B	Printer Port
00000D00 - 0000FFFF	PCI bus
0000B000 - 0000BFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
0000BF00 - 0000BF1F	Intel(R) PRO/1000 PM Network Connection

0000C000 - 0000CFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
0000CF00 - 0000CF1F	Intel(R) PRO/1000 PM Network Connection
0000F000 - 0000F0FF	Realtek AC'97 Audio
0000F800 - 0000F80F	Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
0000FA00 - 0000FA3F	Realtek AC'97 Audio
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) 945GM Express Chipset Family
D0000000 - DFFFFFFF	Mobile Intel(R) 945GM Express Chipset Family
FD800000 - FD8FFFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
FD900000 - FD9FFFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
FD9E0000 - FD9FFFFF	Intel(R) PRO/1000 PM Network Connection
FDA00000 - FDAFFFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
FDD00000 - FDDFFFFF	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
FDDE0000 - FDDFFFFF	Intel(R) PRO/1000 PM Network Connection
FDE80000 - FDEFFFFF	Mobile Intel(R) 945GM Express Chipset Family
FDF00000 - FDF7FFFF	Mobile Intel(R) 945GM Express Chipset Family
FDF80000 - FDFBFFFF	Mobile Intel(R) 945GM Express Chipset Family
FDFFD000 - FDFFD0FF	Realtek AC'97 Audio
FDFFE000 - FDFFE1FF	Realtek AC'97 Audio

FDFFF000 - FDFFF3FF	Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
000A0000 - 000BFFFF	PCI bus
000A0000 - 000BFFFF	Mobile Intel(R) 945GM Express Chipset Family
000C0000 - 000DFFFF	PCI bus
0F700000 - FEBFFFFF	PCI bus

4.2 Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 01	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
IRQ 03	Communications Port
IRQ 04	Communications Port
IRQ 06	Standard floppy disk controller
IRQ 08	System CMOS/real time clock
IRQ 09	Microsoft ACPI-Compliant System
IRQ 12	PS/2 Compatible Mouse
IRQ 14	Primary IDE Channel
IRQ 15	Secondary IDE Channel
IRQ 16	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
IRQ 16	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
IRQ 16	Mobile Intel(R) 945GM Express Chipset Family
IRQ 16	Intel(R) PRO/1000 PM Network Connection
IRQ 17	Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
IRQ 17	Realtek AC'97 Audio
IRQ 17	Intel(R) PRO/1000 PM Network Connection
IRQ 18	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
IRQ 19	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
IRQ 23	Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
IRQ 23	Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC

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

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