



integration with integrity

User's Manual

Mini-ITX Motherboard 2807780

Version 1.0

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Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by service personnel:
 - † The power cord or plug is damaged.
 - † Liquid has penetrated into the equipment.
 - † The equipment has been exposed to moisture.
 - † The equipment does not work well or you can not get it work according to User's Manual.
 - † The equipment has dropped and damaged.
 - † The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.



CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.



警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。



廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part



15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

- † Reorient or relocate the receiving antenna.
- † Increase the separation between the equipment and receiver.
- † Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- † Consult the dealer or an experienced radio/television technician for help.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICED'INSTALLATION AVANT DE RACCORDER AU RESEAU.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and*
- (2) this device must accept any interference received, including interference that may cause undesired operation.*

Chapter 1

Product Overview

Thank you for choosing the 2807780 Mini ITX mainboard from Global American, Inc.

Based on the innovative Intel® GM965/GME 965 & ICH8M controllers for optimal system efficiency, the 2807780 accommodates the latest Intel® Core 2 Duo/ Core Duo/Celeron M processors in Socket P and supports two 240-pin 533/667MHz DDR2 DIMM slots to provide the maximum of 4GB memory capacity.

In the entry-level and mid-range market segment, the 2807780 can provide a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

Processor
<ul style="list-style-type: none">- Intel Core 2 Duo/Core Duo/Celeron M CPU in Socket P- Supports 3-pin CPU fan pin-header with Fan Speed Control- Supports Intel Dual Core Technology to 533/667/800MHz and up
Supported FSB
<ul style="list-style-type: none">- 533/667/800MHz
Chipset
<ul style="list-style-type: none">- North Bridge: Intel GM965/GME965 chipset- South Bridge: Intel ICH8M chipset
Memory
<ul style="list-style-type: none">- DDR2 533/667 SDRAM (4GB Max)- 2 DDR2 DIMM slots (240pin / 1.8V)
LAN
<ul style="list-style-type: none">- Supports 2 Gb Ethernet by Intel 82573L & 82566 DC
Audio
<ul style="list-style-type: none">- HDA Codec by Realtek ALC888 7.1 channel- Compliant with Azalia 1.0 specs- 6 watt amplifier
IDE
<ul style="list-style-type: none">- 1 IDE port by ICH8M- Supports Ultra DMA 66/100 mode- Supports PIO, Bus Master operation mode
SATA
<ul style="list-style-type: none">- SATA II ports by ICH8M- Supports two SATA II devices- Supports storage and data transfers at up to 300MB/s
Connectors
<ul style="list-style-type: none">● Back Panel<ul style="list-style-type: none">- 2 RJ-45 LAN jacks- 4 USB 2.0 ports- 1 D-Sub VGA connector- 1 serial port

- 1 PS2 keyboard/mouse port
- 6 audio jacks

● **Onboard Connectors**

- 2 USB 2.0 connectors (4 ports)
- 1 parallel port connector
- 1 SPDIF connector
- 1 LVDS connector
- 1 TV-out connector
- 1 digital I/O connector (16GPIO)
- 1 serial port connector
- 1 front panel connector
- 1 amplifier connector (4-pin)

Slots

- 1 PCI Express x16 slot
- 1 Mini PCI-E slot
- 1 PCI 32-bit/33MHz slot
- 1 CF socket

Form Factor

- Mini ITX: 170mm x 170mm

Mounting

- 4 mounting holes

Environmental

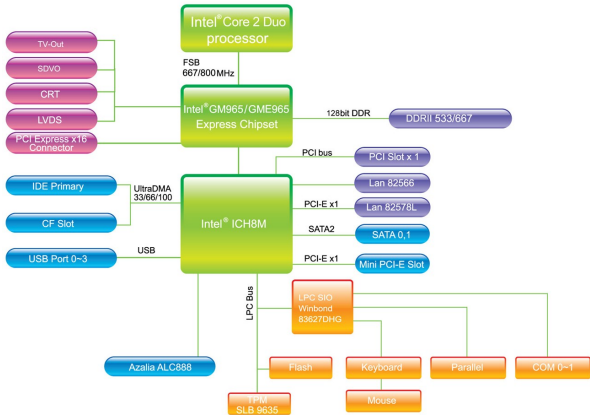
● **Storage Temperature**

- Temperature: -20°C ~ 80°C
- Humidity: 0% RH ~ 95% RH

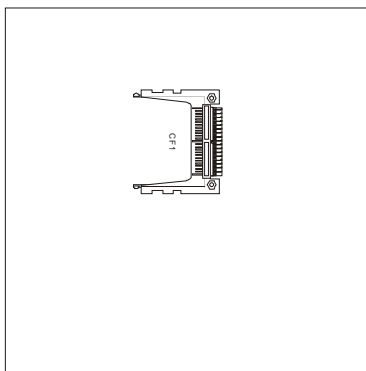
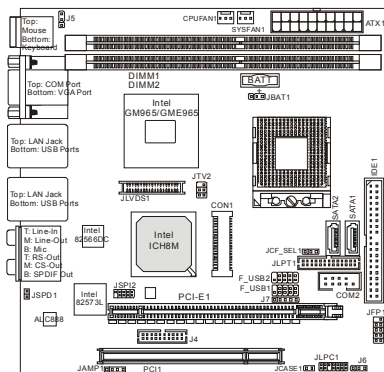
● **Operation Temperature**

- Temperature: 0°C ~ 55°C
- Humidity: 0% RH ~ 85% RH

Block Diagram

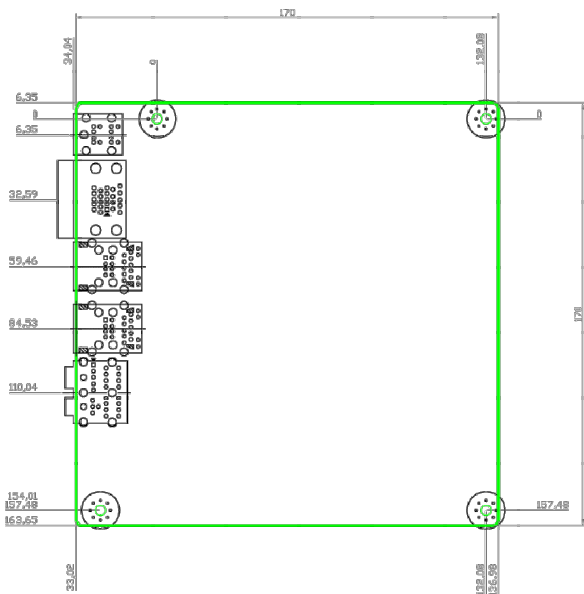


Mainboard Layout



(2807780 v1.X) Mini ITX Mainboard

Board Dimension



Power Consumption

Component	Description
CPU	Intel Core 2 Duo T7100 processor
Memory	Kingston 2G DDR2-667 x2
Add-On VGA	Nvidia FX1400 PCI-Express VGA Card x1
Hard Disk	Seagate 500G SATA2 7200rpm HDD x1
Operating system	Microsoft® Windows XP® Professional SP2

2807780	3.3V	5V	12V Main Connector	5V Standby	(-)12V
	Current(A)	Current(A)	Current(A)	Current(A)	Current(A)
Enter DOS(Stable)	2.45	2.75	2.97	0	0.05
Enter BIOS(Stable)	2.42	2.74	2.97	0	0.05
Idle	1.64	2.37	1.92	0	0.05
CPU Stress 100%	1.66	2.7	3.5	0	0.05
Windows stress(3dMARK2006)	1.66	3.22	4.5	0	0.05
Windows Desktop Standby S1 with/without two LANs connected (stable)	1.08/1.07	1.78/1.76	1.58/1.56	0	0.08/0.08
Windows Desktop Standby S3 with/without two LANs connected (stable)	0	0	0	0	0.45/0.44
Windows Desktop Hibernate S4 with/without two LANs connected (stable)	0	0	0	0	0.25/0.24
Windows Desktop Soft Off S5 with/without two LANs connected (stable)	0	0	0	0	0.25/0.24

Safety Compliance & MTBF

Certification	Standard number		Title of standard
CE	RFI	EN 55022:1998+A1:2000+A2:2003 Class B	Product family standard
		EN 6100-3-2:2000 Class D	Limits for harmonic current emission
		EN 6100-3-3:1995+A1:2001	Limitation of voltage fluctuation and flicker in low-voltage supply system
	Immunity	EN 55024:1998+A1:2001+A2:2003	Product family standard
BSMI	CNS 13438 乙類(1997年版)		
C-Tick	AS/NZS CISPR 22:2004		
FCC	FCC CFR Title 47 Part 15 Subpart B: 2005 Class B		
	CISPR 22: 2005		
VCCI	VCCI V-3:2004, Class B		
	VCCI V-4:2004, Class B		

MTBF - Reliability Prediction

Calculation Model	Operation temperature (°C)	Operating Environment	Duty Cycle	MTBF (hr.)
Telcordia Issue 1	35	GF, GU - Ground Fixed, Uncontrolled	10,867.351095	92,019
MIL-HDBK-217 FN2	55	GF, GU - Ground Fixed, Uncontrolled	117.312341	8,524

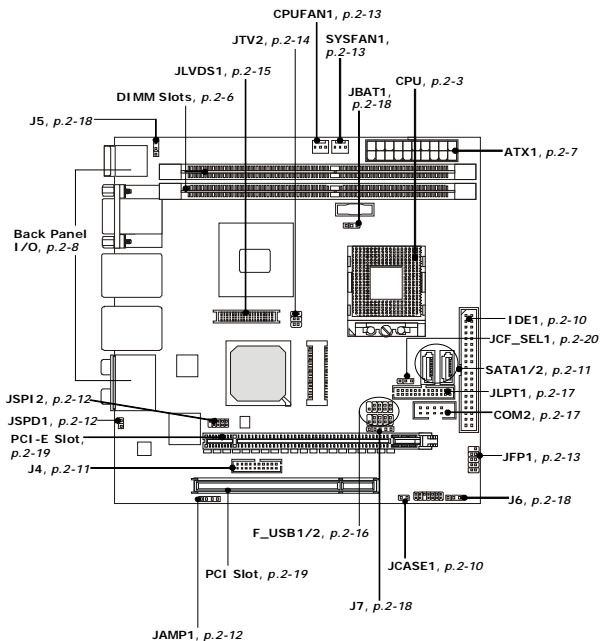
Chapter 2

Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Quick Components Guide



CPU (Central Processing Unit)

The mainboard supports Intel® Core 2 Duo/Core Duo/Celeron M processors in Socket P. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

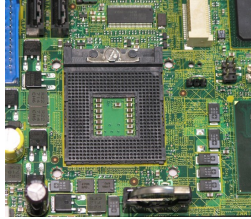


Important

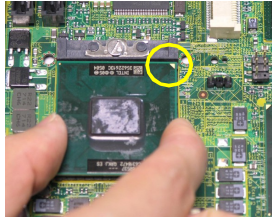
1. *Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.*
2. *Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
3. *While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.*

CPU & Cooler Installation for Socket P

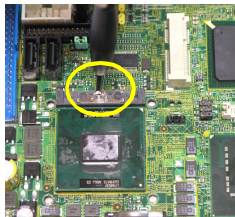
1. Locate the CPU socket on the mainboard.



2. Place the CPU on top of the socket. Make sure to align the gold arrow on the CPU with the arrow key on the socket.
3. Push the CPU down until its pins securely fit into the socket.



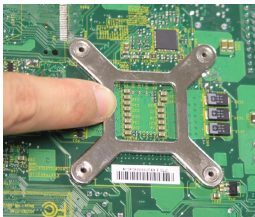
4. On the front end of the CPU socket is a locking mechanism designed into the form of a screw head. Make sure that you actuate or deactivate this mechanism with a screwdriver before and after installing the CPU.



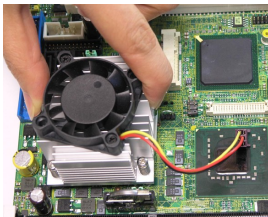
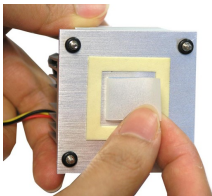
5. Flip over the mainboard and locate the position of the CPU socket.
6. Install the backplate to the back of the CPU socket with holes aligned.



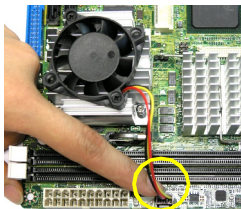
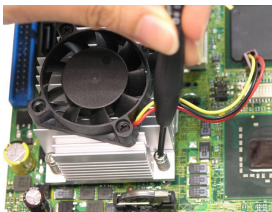
CPU cooler backplate



7. The heatsink paste helps to enhance heat dissipation of the CPU. Before installing the cooler set (fan & heatsink bundled), make sure that you detach the shield of the heatsink paste under the cooler set.
8. Locate the four screw holes around the CPU socket where the CPU cooler backplate was installed. Align the cooler set with the screw holes and mount it on top of the CPU.



9. Screw to secure the cooler set to the mainboard.
10. Connect the fan power cable to the CPUFAN1 connector on the mainboard.



Memory

The DIMM slots are intended for system memory modules.



Installing DDR2 Modules

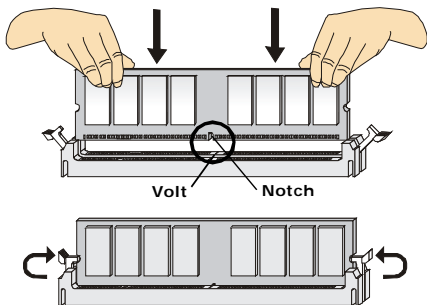
1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.



Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

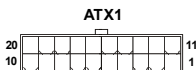
3. The plastic clip at each side of the DIMM slot will automatically close.



Power Supply

ATX 20-Pin System Power Connector: ATX1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



ATX1 Pin Definition

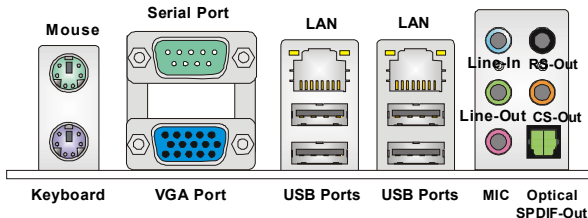
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V



Important

Power supply of **350watts** (and above) is highly recommended for system stability.

Back Panel



► Mouse/Keyboard

The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

► Serial Port

The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

► VGA Port

The DB15-pin female connector is provided for monitor.

► USB Port

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

► LAN

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
		On	1000 Mbit/sec data rate is selected.

► Audio Ports

These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

- **Line-In (Blue)** - Line In / Side-Surround Out in 7.1 channel mode, is used for external CD player, tapeplayer or other audio devices.
- **Line-Out (Green)** - Line Out, is a connector for speakers or headphones.
- **Mic (Pink)** - Mic, is a connector for microphones.
- **RS-Out (Black)** - Rear-Surround Out in 4/ 5.1/ 7.1 channel mode.
- **CS-Out (Orange)** - Center/ Subwoofer Out in 5.1/ 7.1 channel mode.

► Optical S/PDIF-Out

This SPDIF (Sony & Philips Digital Interconnect Format) connector is provided for digital audio transmission to external speakers through an optical fiber cable.

Connector

Chassis Intrusion Connector: JCASE1

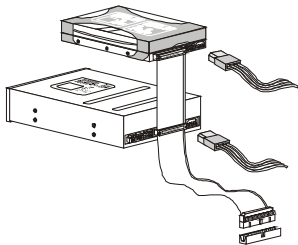
This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



IDE Connector: IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

IDE1

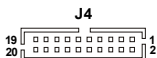


Important

If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

Digital IO Connector: J4

The J4 is designed to connect the General-Purpose Input/Output (GPIO) peripheral module.



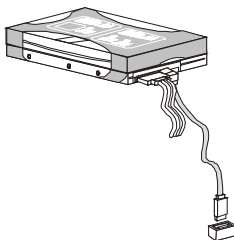
Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC3	2	VCC5
3	N_GPIO10	4	N_GPIO20
5	N_GPIO11	6	N_GPIO21
7	N_GPIO12	8	N_GPIO22
9	N_GPIO13	10	N_GPIO23
11	N_GPIO14	12	N_GPIO24
13	N_GPIO15	14	N_GPIO25
15	N_GPIO16	16	N_GPIO26
17	N_GPIO17	18	N_GPIO27
19	GND	20	NC

Serial ATA II Connector: SATA1, SATA2

This connector is a high-speed Serial ATA II interface port. Each connector can connect to one Serial ATA II device.

SATA2 SATA1



Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Audio Amplifier Connector: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.

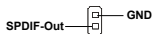
JAMP1
1 

Pin Definition

PIN	SIGNAL
1	AMP_L-
2	AMP_L+
3	AMP_R-
4	AMP_R+

S/PDIF-Out Connector: JSPD1 (Optional, for HDMI graphics card only)

This connector is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission to the HDMI graphics card.



JSPD1

SPI Flash ROM Connector: JSPI2

This connector is used to flash SPI flash ROM.

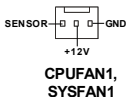
JSPI2
9  1
10

Pin Definition

Pin	Description	Pin	Description
1	VCC3_SB	2	VCC3_SB
3	SPI_MISO_F	4	SPI_MOSI_F
5	SPI_CS0_F#	6	SPI_CLK_F
7	GND	8	GND
9	SPI_HOLD#	10	NC

Fan Power Connectors: CPUFAN1, SYSFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

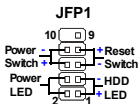


Important

Please refer to the recommended CPU fans at Intel® official website or consult the vendors for proper CPU cooling fan.

Front Panel Connector: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FPPWR/SLP	MSG LED pull-up
5	RST_SW -	Reset Switch low reference pull-down to GND
6	PWR_SW +	Power Switch high reference pull-up
7	RST_SW +	Reset Switch high reference pull-up
8	PWR_SW -	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

TV-Out Connector: JTV2 (Optional)

This connector is for you to attach an optional TV-Out bracket that offers two types of TV-Out connectors: S-Video and RCA Composite connectors. Select the appropriate one to connect the standard television or the HDTV (High-Definition TeleVision).

Display Matrix

	CRT	LVDS	TV-OUT	SDVO	PCI-E x16 port
CRT		V	V	V	X
LVDS	V		V	V	X
TV-OUT	V	V		V	X
SDVO	V	V	V		X
PCI-E x16 port	X	X	X	X	

V : Support X : No Support

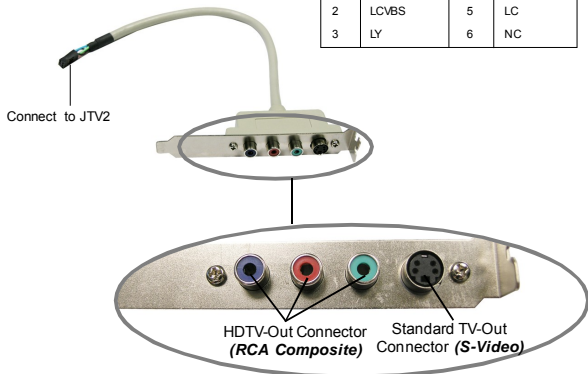


JTV2

Pin Definition

Pin	Description	Pin	Description
1	GND	4	GND
2	LCVBS	5	LC
3	LY	6	NC

TV-Out Bracket (Optional)

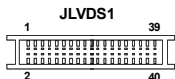


Important

Please note that the TV-Out bracket can connect to one TV only. Users have to choose either the RCA Composite or the S-Video to connect. Simultaneously connecting two TVs to this bracket is prohibited and may lead to the malfunction of the TVs.

LVDS Flat Panel Connector: JLVDS1

The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels. After connecting an LVDS interfaced flat panel to the JLVDS1, be sure to check the panel datasheet and set the **J7 LVDS Power Selection Jumper** (p. 2-18) to a proper voltage.



Display Matrix

	CRT	LVDS	TV-OUT	SDVO	PCI-E x16 port
CRT		V	V	V	X
LVDS	V		V	V	X
TV-OUT	V	V		V	X
SDVO	V	V	V		X
PCI-E x16 port	X	X	X	X	

V : Support X : No Support

SIGNAL	PIN	SIGNAL
+12V	2 1	+12V
+12V	4 3	+12V
GND	6 5	+12V
GND	8 7	VCC3/VCC5
LCD_VDD	10 9	LCD_VDD
LDDC_DATA	12 11	LDDC_CLK
LVDS_VDDEN	14 13	L_BKLTCTL
GND	16 15	L_BKLTEN
LA_DATA0	18 17	LA_DATA0#
LA_DATA1	20 19	LA_DATA1#
LA_DATA2	22 21	LA_DATA2#
LA_CLK	24 23	LA_CLK#
LA_DATA3	26 25	LA_DATA3#
GND	28 27	GND
LB_DATA0	30 29	LB_DATA0#
LB_DATA1	32 31	LB_DATA1#
LB_DATA2	34 33	LB_DATA2#
LB_CLK	36 35	LB_CLK#
LB_DATA3	38 37	LB_DATA3#
GND	40 39	GND

Front USB Connector: F_USB1, F_USB2

This connector, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**

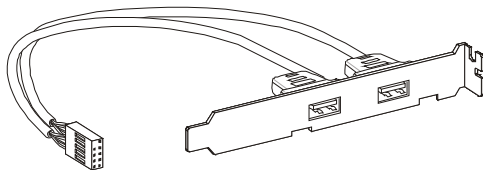


F_USB1/2

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	NC

USB 2.0 Bracket
(Optional)

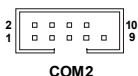


Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

Serial Port Connector: COM 2

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it through the optional serial port bracket.

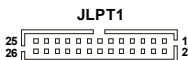


Pin Definition

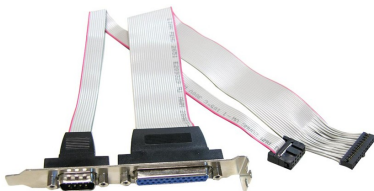
PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	DataSet Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	VCC_COM3	PowerSource

Parallel Port Connector: JLPT1

The mainboard provides a 26-pin header for connection to an optional parallel port bracket. The parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin	Signal Name	Pin	Signal Name
1	RSTB#	2	AFD#
3	PRND0	4	ERR#
5	PRND1	6	PINIT#
7	PRND2	8	LPT_SLIN#
9	PRND3	10	GND
11	PRND4	12	GND
13	PRND5	14	GND
15	PRND6	16	GND
17	PRND7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

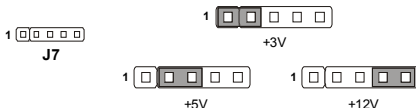


Parallel/Serial Port Bracket (Optional)

Jumper

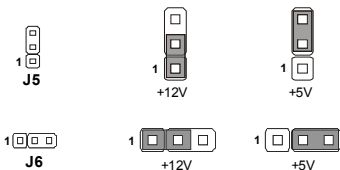
LVDS Power Selection Jumper: J7

Use this jumper to specify the operation voltage of the LVDS interfaced flat panel.



COM Port Power Jumpers: J5, J6

These jumpers specify the operation voltage of the onboard serial ports.



Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set this jumper to clear data.



Important

You can clear CMOS by shorting 1-2 pin while the system is off. Then return to 2-3 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

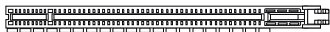
Slot

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports PCI Express interface expansion cards.

The PCI Express x 16 slot supports up to 4.0 GB/s transfer rate.

The CON1 is Mini PCI-E connector for wireless LAN, TV tuner, and Robson NAND Flash.



PCI Express x16 Slot



Mini PCI-E Slot

PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.



32-bit PCI Slot

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

DEVICE	INT Pin	IDSEL	CLOCK	REQ# / GNT#
32-bit PCI Slot	PIRQA	AD17	PCICLK 0	REQ#0 / GNT#0
32-bit PCI Riser	PIRQC	AD18	PCICLK 1	REQ#1 / GNT#1
32-bit PCI Riser	PIRQD	AD19	PCICLK 2	REQ#2 / GNT#2

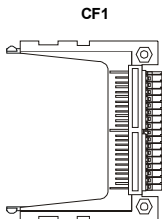


Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CompactFlash Card Slot: CF1

This CompactFlash slot shares one channel of the IDE controller. You can install one CompactFlash type I / type II device.



CF Mode Selecting Jumper: JCF_SEL1

This jumper is used to select Master/Slave mode of the CF device.

JCF_SEL1



Important

- * The CF1 slot and the IDE1 connector shares and uses the same channel. CF1 and IDE1 can support up to 2 IDE devices without CF device or 1 IDE device with 1 CF device.
- * If you install two IDE devices, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.
- * If you install one IDE device with ATA133 IDE cable and one CF device, you must configure the CF drive to Master mode by setting jumper JCF_SEL1. CF only supports Master mode by using the ATA133 IDE cable.
- * CF only supports Slave mode by using ATA33 IDE cable.

Chapter 3

System Resources

This chapter provides information on the following system resources:

1. Watch Dog Timer Setting (p.3-2);
2. AMI POST Code (p.3-3);
3. Resource List (p.3-7).

Watch Dog Timer Setting

Software code

SIO_IDX equ 2EH

SIO_DTA equ 2FH

Timer equ 10; reset after 10 seconds

1. Enter configuration mode
mov dx,SIO_IDX
mov al,87h
out dx,al
out dx,al
2. Set to LDN 08
mov dx,SIO_IDX
mov al,07h
out dx,al
mov dx,SIO_DTA
mov al,08h
out dx,al
3. Set WatchDog Timer
mov dx,SIO_IDX
mov al,0f6h
out dx,al
mov dx,SIO_DTA
mov al,Timer
out dx,al
4. Exit configuration mode
mov dx,SIO_IDX
mov al,0AAh
out dx,al

AMI POST Code

Bootblock Initialization Code Checkpoints

The Bootblock initialization code sets up the chipset, memory and other components before system memory is available. The following table describes the type of checkpoints that may occur during the bootblock initialization portion of the BIOS:

Checkpoint	Description
Before D1	Early chipset initialization is done. Early super I/O initialization is done including RTC and keyboard controller. NMI is disabled.
D1	Perform keyboard controller BAT test. Check if waking up from power management suspend state. Save power-on CPUID value in scratch CMOS.
D0	Go to flat mode with 4GB limit and GA20 enabled. Verify the bootblock checksum.
D2	Disable CACHE before memory detection. Execute full memory sizing module. Verify that flat mode is enabled.
D3	If memory sizing module not executed, start memory refresh and do memory sizing in Bootblock code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. Main BIOS checksum is tested. If BIOS recovery is necessary, control flows to checkpoint E0.
D7	Restore CPUID value back into register. The Bootblock- Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel). See <i>POST Code Checkpoints</i> section of document for more information.

POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialize CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.

POST Code Checkpoints

Checkpoint	Description
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See <i>DIM Code Checkpoints</i> section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See <i>DIM Code Checkpoints</i> section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, ... etc.) successfully installed in the system and update the BDA, EBDA...etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh.

	Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).

Resource List

Generic I/O Ports

(I) ICH8M GPIO

Pin	GPIO	Typ	Multi	Power	Connection.
AG12	0	I/O	BMBUSY#	3.3v	PM_BMBUSY#
AG22	11	I/O	SMBALERT#	3.3v	SMB_ALERT#
AE20	15	I/OD	STP_PCI#	3.3v	PM_STP_PCI#
AG18	3	I/OD	STP_CPU#	5v	PM_STP_CPU#
AH11	32	I/OD	CLKRUN#	3.3v	P_CLKRUN#
AJ8	1	I/OD	TACH1	3.3v	NC
AJ9	6	I/O	TACH2	3.3v	NC
AH9	7	I/O	TACH3	3.3v	NC
AE16	8	I/O	GPIO8	3.3v	SIO_PME#
AC19	12	I/O	GPIO12	3.3v	SPI_HOLD_GPO#
AG8	17	I/O	TACH0	3.3v	SPI_WP#
AH12	18	I/O	GPIO18	3.3v	SLPB TIN#
AE11	20	I/O	GPIO20	3.3v	ATA DETO
AG10	22	I/O	SCLOCK	3.3v	NC
AH25	27	I/O	QRT_STATE0	3.3v	EL_STATE0
AD16	28	I/O	QRT_STATE1	3.3v	EL_STATE1
AG13	35	I/O	SATA CLKREQ#	3.3v	CLK_SATA_OE#
AF9	38	I/O	SLOAD	3.3v	NC
AJ11	39	I/O	SDATAOUT0	3.3v	NC
AD10	48	I/O	SDATAOUT1	3.3v	NC
AJ12	21	I/O	SATA0GP	3.3v	RESISTOR
AJ10	19	I/O	SATA1GP	3.3v	RESISTOR
AF11	36	I/O	SATA2GP	3.3v	RESISTOR
AG11	37	I/O	SATA3GP	3.3v	RESISTOR
AH27	26	I/O	S4_STATE#	3.3v	NC
AJ27	24	I/O	NCMEM_LED	3.3v	LAN_EN
AJ24	10	I/O	ME_EC_ALERT	3.3v	PHY_DIS#
AF22	14	I/O	EC_ME_ALERT	3.3v	NC
AG19	9	I/O	WOL_EN	3.3v	NC
AG16	40	I/O	OC1#	3.3v	OC0#
AG15	41	I/O	OC2#	3.3v	OC0#
AE15	42	I/O	OC3#	3.3v	OC0#
AF15	43	I/O	OC4#	3.3v	OC1#
AG17	29	I/O	OC5#	3.3v	OC1#
AD12	30	I/O	OC6#	3.3v	OC1#
AJ18	31	I/O	OC7#	3.3v	OC1#

2807780 Mainboard

(II) SIO GPIO

Pin	GPIO	Typ	Multi	Power	Connection.
121	17	I/O	VID7	VCC5	NC
122	16	I/O	VID6	VCC5	NC
123	15	I/O	VID5	VCC5	NC
124	14	I/O	VID4	VCC5	NC
125	13	I/O	VID3	VCC5	NC
126	12	I/O	VID2	VCC5	NC
127	11	I/O	VID1	VCC5	NC
128	10	I/O	VID0	VCC5	NC
120	20	O	CPUFANOUT1/GP20	VCC	CFAN_PWM
119	21	I/O	CPUFANN1/GP21	VCC	CPU_FAN
89	33	I/O	RSTOUT3#/GP33/SDA	VSB	NC
90	32	I/O	RSTOUT2#/GP32/SCL	VSB	NC
91	31	I/O	GP31	VSB	NC
92	30	I/O	GP30	VSB	NC
67	57	O	GP57/PSOUT#	VSB	PWRBTN#
68	56	I	GP56/PSIN#	VSB	IO_PWRBTN#
64	37	I/O	GP37	VSB	NC
72	53	I/O	GP53/PSON#	VSB	PS_ON#
73	52	I	GP52/SUSB#	VSB	SLP_S3#
77	50	I/O	WDTO#GP50	VSB	GP50
2	23	I/O	SCK/GP23	VCC	NC
88	34	O	RSTOUT4#GP34	VSB	NC
69	36	I/O	GP36	VSB	NC
87	35	I/O	GP35	VSB	NC
75	51	O	RSMRST#	VSB	VCC3
56	61	I	DCDA#	VCC	DCDA#
50	66	I	DDSRA#	VCC	DDSRA#
53	63	I	SINA	VCC	SINA
51	65	I/O	RTSA#	VCC	RTSA#
54	62	O	SOUTA	VCC	SOUTA
49	67	I	CTSA#	VCC	CTSA#
52	64	O	DTRA#	VCC	DTRA#
57	60	I	RIA#	VSB	RIA#
84	41	I	DCDB#	VSB	DCDB#

System Resources

79	46	I	DSRB#	VS	DSRB#
82	43	I	SINB	VS	SINB
80	45	O	RTSB#	VS	RTSB#
83	42	O	SOUTB	VS	SOUTB
78	47	I	CTSB#	VS	CTSB#
81	44	O	DTRB#	VS	DTRB#
85	40	I	RIB#	VS	RIB#
63	26	I/O	KBDAT#	VS	KBDAT#
62	27	I/O	KBCLK#	VS	KBCLK#
66	24	I/O	MSDAT#	VS	MSDAT#
65	25	I/O	MSCLK#	VS	MSCLK#
70	55	I/O	SUSLED	VS	GND
71	54	I/O	PWROK	VS	NC

I/O Map

I/O Port	Description
0000-000F	DMA Controller 1
0020-0021	Interrupt Controller 1
002E-002F	SIO Port
0040-0043	System Timer
004E-004F	TPM Port
0060, 0064	Keyboard Controller
0070-0073	RTC and CMOS
0080-0090	DMA Controller Page Registers
0092	Port 92h
00A0-00A1	Interrupt Controller 2
00B2-00B3	APM register
00C0-00DF	DMA Controller 2
00F0-00FF	Numeric Data Processor
01F0-01F7	Primary IDE Controller
02F8-02FF	COM2
0376	Secondary IDE Controller
0378-037F	LPT1
03F6	Primary IDE Controller
03F8-03FF	COM1
0400-045F	ACPI I/O space
0500-050F	SMBus I/O Space
0CF8-0CFF	PCI configuration Port

PCI Devices

PCI Device					
Device	Ven. ID	Dev. ID	Bus#	Dev#	Func#
Host Bridge	8086	2A00	00	00	00
VGA-compatible Controller	8086	2A02	00	02	00
Other Display Controller	8086	2A03	00	02	01
Ethernet Controller	8086	104B	00	19	00
UHCI USB Controller	8086	2834	00	1A	00
UHCI USB Controller	8086	2835	00	1A	01
Unknown Device	8086	283A	00	1A	07
Unknown Device	8086	284B	00	1B	00
PCI-to-PCI Bridge	8086	283F	00	1C	00
UHCI USB Controller	8086	2830	00	1D	00
UHCI USB Controller	8086	2831	00	1D	01
UHCI USB Controller	8086	2832	00	1D	02
Unknown Device	8086	2836	00	1D	07
Subtractive Decode P2P Bridge	8086	2448	00	1E	00
ISA Bridge	8086	2815	00	1F	00
IDE Controller	8086	2850	00	1F	01
IDE Controller	8086	2828	00	1F	02
Smbus	8086	283E	00	1F	03

SMBus Resource Allocation

SMBus Resource Allocation		
Device	Address	Description
MS-7	0101 111X	ACPI Controller
DIMM Slot	1010 0000	SPD

ISA Interrupt Allocation

ISA Interrupt Allocation	
IRQ	Description
IRQ0	System Timer
IRQ1	Keyboard Controller
IRQ2	Cascade Interrupt
IRQ3	COM2
IRQ4	COM1
IRQ5	PCI Device
IRQ6	PCI Device
IRQ7	LPT1
IRQ8	RTC
IRQ9	ACPI Controller Interrupt
IRQ10	PCI Device
IRQ11	PCI Device
IRQ12	PS/2 Mouse
IRQ13	Numeric Data Processor
IRQ14	Primary IDE Controller
IRQ15	Secondary IDE Controller

ISA DMA Channel Allocation

DMA Channel	Description
Channel 0	Unassigned 8-bit channel
Channel 1	Unassigned 8-bit channel
Channel 2	Unassigned 8-bit channel
Channel 3	Unassigned 8-bit channel
Channel 4	Cascade channel
Channel 5	Unassigned 16-bit channel
Channel 6	Unassigned 16-bit channel
Channel 7	Unassigned 16-bit channel

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.



Address: Global American, Inc.
17 Hampshire Drive
Hudson, NH 03051

Telephone: Toll Free (U.S. Only) 800-833-8999
(603)886-3900

FAX: (603)886-4545

Website: <http://www.globalamericaninc.com>

E-Mail: salesinfo@globalamericaninc.com
