



*integration with integrity*

**User's Manual**

**Mini-ITX Motherboard 2807950**

**Version 1.0, April 2008**

---

## Copyrights

This manual is copyrighted and all rights are reserved. It does not allow any non authorization in copied, photocopied, translated or reproduced to any electronic or machine readable form in whole or in part without prior written consent from the manufacturer.

In general, the manufacturer will not be liable for any direct, indirect, special, incidental or consequential damages arising from the use of inability to use the product or documentation, even if advised of the possibility of such damages. The manufacturer keeps the rights in the subject to change the contents of this manual without prior notices in order to improve the function design, performance, quality and reliability. The author assumes no responsibility for any errors or omissions, which may appear in this manual, nor does it make a commitment to update the information contained herein.

## Trademarks

Intel is a registered trademark of Intel Corporation.

Award is a registered trademark of Award Software, Inc.

PS/2 is a trademark of International Business Machines Corporation.

Microsoft Windows is a registered trademark of Microsoft Corporation.

Winbond is a registered trademark of Winbond Electronics Corporation.

All other trademarks, products and or product's name mentioned herein are mentioned for identification purposes only, and may be trademarks and/or registered trademarks of their respective companies or owners.

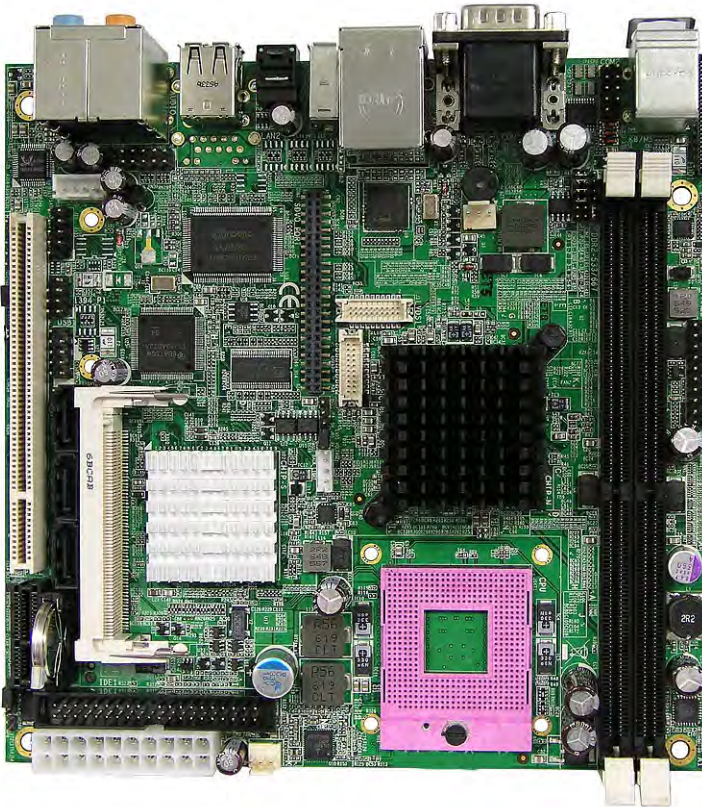
---

# Table of Contents

<b>Introduction .....</b>	<b>1</b>
Product Description.....	1
Checklist.....	2
2807950 Specifications .....	3
Board Dimensions .....	4
<b>Installations .....</b>	<b>5</b>
Installing the CPU .....	6
Installing the Memory .....	7
Setting the Jumpers .....	8
Connectors on 2807950.....	11
<b>Appendix .....</b>	<b>27</b>
A. I/O Port Address Map.....	27
B. Interrupt Request Lines (IRQ).....	28
C. Watchdog Timer Configuration.....	29

---

***IMPORTANT NOTE: When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed (CTRL-ALT-F1).***



***THE 2807950 MINI ITX MOTHERBOARD***

---

# Introduction

## Product Description

---

---

The 2807950 Mini ITX board incorporates the Mobile Intel® GM965 Express Chipset for Embedded Computing, consisting of the Intel® GM965 Graphic Memory Controller Hub (GMCH) and Intel® I/O Controller Hub (ICH8-M), an optimized integrated graphics solution with a 533MHz and 800MHz front-side bus. Dimensions of the board are 170mm x 170mm.

The integrated powerful 3D graphics engine, based on Intel® Graphics Media Accelerator X3100 (Intel® GMA X3100) architecture, operates at core speeds of up to 400 MHz. It features a low-power design, is validated with the Intel® Core 2 Duo and Intel® Celeron processors on 65nm process. With dual channel DDR2 667MHz two DIMM socket on board, the board supports up to 4GB of DDR2 system memory.

Intel® Graphics supports a unique intelligent memory management scheme called Dynamic Video Memory Technology (DVMT). DVMT handles diverse applications by providing the maximum (384MB) availability of system memory for general computer usage, while supplying additional graphics memory when a 3D-intensive application requests it. The Intel GMA X3100 graphics architecture also takes advantage of the high-performance Intel processor. Intel GMA X3100 graphics supports Dual Independent Display technology.

The main features of the board are:

- Supports Intel® Core™ 2 Duo (Merom 800MHz), Intel® Celeron
- Supports up to 2.4GHz, 533MHz/800MHz FSB
- Two DDR2 SDRAM DIMM, Max. 4GB memory
- Onboard 10/100 BaseT and Marvell PCI-Express Gigabit LAN
- Intel® GM965 Express VGA for CRT / LVDS
- 2x SATA, 6x USB 2.0, 2x COM, Watchdog timer, 1394
- 1x MiniPCI, 1x PCI, 1xPCI-E(x1) slots, optional DVI

Optional daughter cards:

3901080: Chrontel 7308, supports 24 bit single or dual LVDS channel

3901220: Chrontel 7021, supports CRT

3901100: Chrontel 7307C, single DVI (connector on cable)

3901090: Chrontel 7307C, dual DVI (connector on cable)

3901180: Chrontel 7307C, dual DVI (one connector on card and one on cable)

2807950A only

---

## Checklist

---

---

Your 2807950 package should include the items listed below.

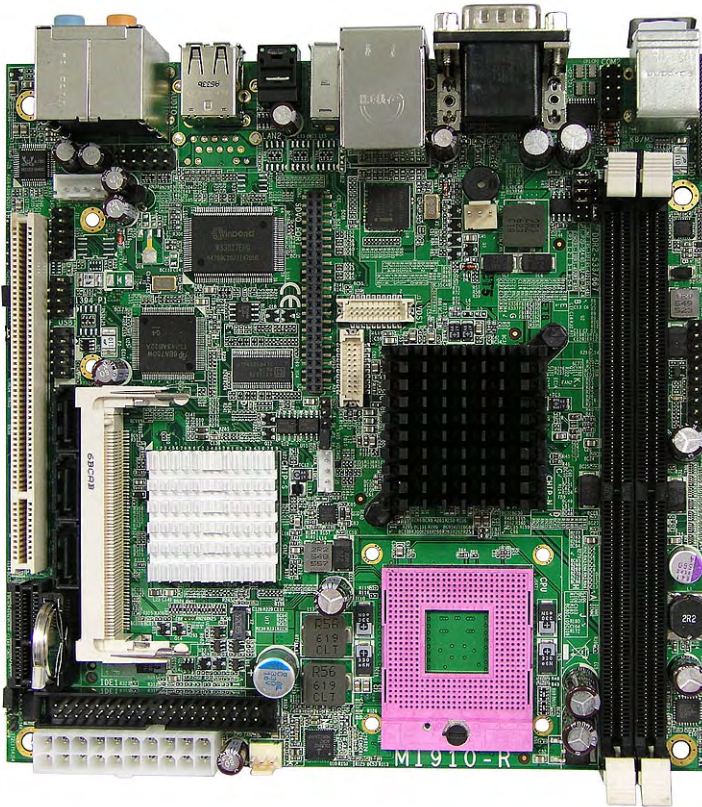
- The 2807950 Mini-ITX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Cable kit (IDE, Serial port, Serial ATA)

## 2807950 Specifications

<b>CPU Supported</b>	Intel® Core™ 2 Duo, Intel Celeron mobile processors
<b>CPU Voltage</b>	0.700V ~ 1.5V (IMVP-6)
<b>System Speed</b>	Up to 2.4GHz or above
<b>CPU FSB</b>	533MHz/800MHz FSB
<b>Cache</b>	1MB/2MB/4MB
<b>Green /APM</b>	APM1.2
<b>CPU Socket</b>	mPGA Socket 478
<b>Chipset</b>	Intel GM965 Chipset GMCH: GM965 1299-pin Micro-FCBGA ICH8M: 82801HBM 678-pin mBGA
<b>BIOS</b>	Award BIOS, support ACPI Function
<b>Memory</b>	DDR2 667/533 SDRAM DIMM x2 (w/o ECC function), Max. 4GB
<b>VGA</b>	GMA965 built-in, supports CRT
<b>SDVO (Dual CH)</b>	Through 3901080 card (Chrontel 7308, 24+24 bits single/dual channel LVDS, Chrontel 7021, CRT) Through 3901100 card (Chrontel 7307C, DVI single or Dual)
<b>LVDS LCD Panel</b>	GM965 built-in, supports 24+24 bits (Type 1 only), single or dual channel LVDS
<b>LAN</b>	1. ICH8M 10/100/gigabit MAC + PHY (dual footprint option): <ul style="list-style-type: none"> <li>• Intel 82566DC Nineveh 10/100/1000 (2807950A)</li> <li>•</li> </ul> 2. Marvell 88E8053 PCI-e Gigabit LAN controller x1 (2807950C/D)
<b>USB</b>	ICH8M built-in USB 2.0 host controller, support 6 ports
<b>Serial ATA Ports</b>	ICH8M built-in SATA controller, supports 2 ports
<b>1394</b>	TI TSB43LV22(dual port)
<b>Parallel IDE</b>	ICH8M built-in one channel Ultra DMA 33/66/100,CF Type II
<b>Audio</b>	ICH8M Built-in audio controller + AC97 Codec ALC885 w/ 7.1 channels, SPDIF-OUT
<b>LPC I/O</b>	W83627EHF: COM1, COM2 (RS232/RS422/RS485), slim FDC 1.44MB, IrDA x1 & hardware monitor (3 thermal, 4 voltage monitor inputs, 2 fan headers)
<b>Digital IO</b>	4 in & 4 out
<b>Keyboard/Mouse</b>	Supports PS/2 Keyboard/Mouse Connector
<b>Expansion Slots</b>	PCI slot x1, PIC-E (x1) slot x1 and Mini PCI socket x1
<b>Edge Connector</b>	PS/2 connector x1 for keyboard/mouse Gbit LAN RJ-45 + dual USB stack connector 10/100 LAN RJ45 + dual USB stack connector DB9 x1 for COM 1; DB15 x1 for VGA SPDIF-OUT connector x1; 1394 connector x1 RCA Jack 3x2 for Audio (Front-Out, Line-In, Mic, Center/LFE, Surround & Surround Back)
<b>Onboard Header/ Connector</b>	40 pins box-header x1 for IDE1; 26 pins header x1 for slim floppy CF Connector x1 @ solder side 10 pins pin-header x1 for Digital I/O; 10 pins pin-header x1 for COM2 10 pins pin-header x 1 for USB 5,6; 5 pins pin-header x 1 for IrDA DF13 connector x2 for LVDS; 10 pins pin-header x1 for audio Line-Out & Mic 4 pins pin-header x1 for CD in; 7 pins pin-header x1 for 1394 SATA connector x2 for SATA ports
<b>Watchdog Timer</b>	Yes (256 segments, 0, 1, 2...255 sec/min)
<b>System Voltage</b>	+5V, +3.3V, +12V, -12V, 5VSB (2A)
<b>Others</b>	Modem Wakeup, LAN Wakeup
<b>Board Size</b>	170mm x 170mm (Mini ITX)

---

***IMPORTANT NOTE: When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed (CTRL-ALT-F1).***



***THE 2807950 MINI ITX MOTHERBOARD***

---

# Installations

This section provides information on how to use the jumpers and connectors on the 2807950 in order to set up a workable system. The topics covered are:

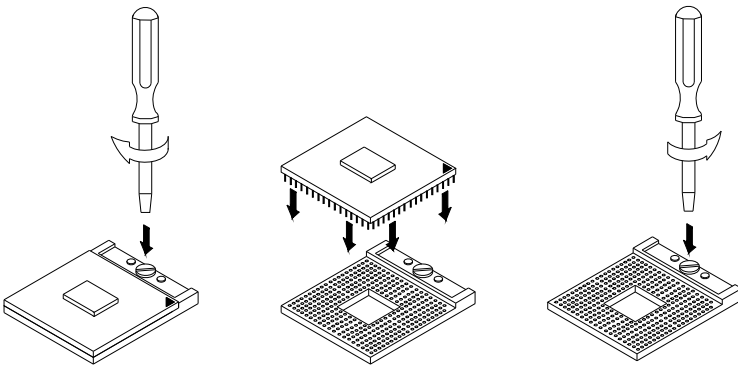
Installing the CPU .....	6
Installing the Memory .....	7
Setting the Jumpers .....	8
Connectors on 2807950 .....	11

---

## Installing the CPU

---

The 2807950 board supports a Socket 478MN (MEROM) processor socket for Intel® Core™ 2 Duo, Intel® Celeron mobile processors. The processor socket comes with a screw to secure the processor. As shown in the left picture below, loosen the screw first before inserting the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Once the processor has slide into the socket, fasten the screw. Refer to the figures below.



**NOTE:** *Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

---

## Installing the Memory

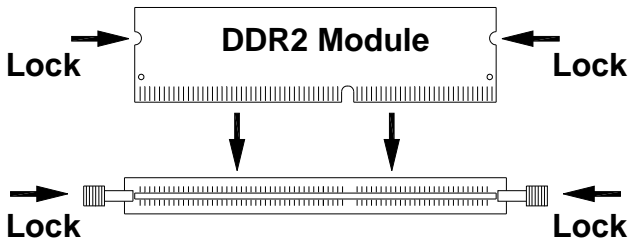
---

The 2807950 board supports two DDR2 memory socket for a maximum total memory of 4GB in DDR2 memory type.

### Installing and Removing Memory Modules

To install the DDR2 modules, locate the memory slot on the board and perform the following steps:

1. Hold the DDR2 module so that the key of the DDR2 module aligned with that on the memory slot.
2. Gently push the DDR2 module in an upright position until the clips of the slot close to hold the DDR2 module in place when the DDR2 module touches the bottom of the slot.
3. To remove the DDR2 module, press the clips with both hands.



---

## Setting the Jumpers

---

---



Jumpers are used on 2807950 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on 2807950 and their respective functions.

Jumper Locations on 2807950.....	9
JP5: LCD Panel Power Selection.....	10
JP9: PCI/PCIE Riser Card Selection .....	10
JBAT1: Clear CMOS Setting .....	10
JP8: CompactFlash Slave/Master Selection.....	10



***IMPORTANT NOTE: When the system boots without the CRT being connected, there will be no image on screen when you insert the CRT/VGA cable. To show the image on screen, the hotkey must be pressed.***





### JP5: LCD Panel Power Selection

JP5	LCD Panel Power
 1 2 3	3.3V
 1 2 3	5V



### JP9: PCI/PCIE Riser Card Selection

JP9	Riser Card
 1 2 3	IP390 Riser Card Install
 1 2 3	IP151, IP240 Riser Card Install

### JBAT1: Clear CMOS Setting

JBAT1	Setting
 1 2 3	Normal
 1 2 3	Clear CMOS

### JP8: CompactFlash Slave/Master Selection

JP8	CF Setting
 Short	Master
 Open	Slave

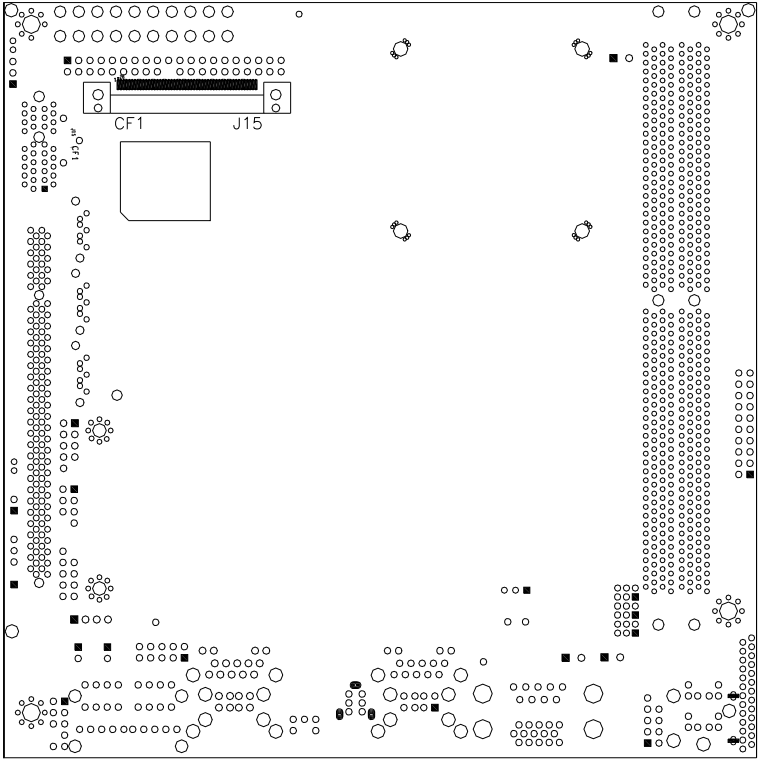
---

## Connectors on 2807950

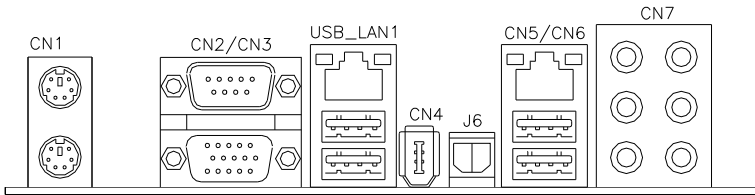
---

CN1: PS/2 Keyboard and PS/2 Mouse Connectors.....	14
CN2, CN3: COM1 and VGA Connector.....	14
USB_LAN1: 10/100 RJ-45(2807950A), GbE RJ45(2807950C/D) and USB1/2 Ports.....	15
CN4: 1394 Connector.....	15
J6: SPDIF Out Connector.....	15
CN5, CN6: GbE RJ-45(2807950C/D) and USB3/4 Ports .....	15
CN7: Audio Connector.....	15
FAN1: System Fan Power Connector .....	15
FAN2: CPU Fan Power Connector .....	15
IDE1: IDE Connector.....	16
FDD1: Floppy Drive Connector.....	16
ATX1: ATX Power Supply Connector .....	17
J1 (F_PANEL): System Function Connector .....	17
F_USB1: USB0/USB1 Connector.....	19
JP1, JP2, JP3: RS232/422/485 (COM2) Selection .....	19
J2: COM2 Serial Port .....	20
J3, J4: LVDS Connectors (1st channel, 2nd channel) .....	20
J5: LCD Backlight Connector .....	20
J7: Mini PCI Connector.....	20
CN8, CN9: SATA Connectors .....	20
J8: Digital I/O.....	21
J9: CD-In Pin Header .....	21
J10: SPI Flash Connector (factory use only).....	21
J11: 1394 Connector.....	21
J12: Front Audio Connector .....	21
J13: PCI-E(x1) Slot .....	21
J14: IrDA Connector .....	22
J15: Compact Flash Connector.....	22
PCI1: PCI Slot (supports 2 Master).....	22
CON1: SDVO Port Connector .....	22
Headers and Connectors on 2807950 Daughter Cards .....	23
3901080 – JP4 LCD Panel Power Selection .....	23
3901080 – J1 LCD Backlight Setting .....	23
3901080 – J3 and J2 1 <sup>st</sup> /2 <sup>nd</sup> LVDS Channel Connectors .....	23
3901220 – J4 VGA Connector .....	24
3901100 – J2 DVI Connector.....	25
3901090 – J1, J2 1 <sup>st</sup> /2 <sup>nd</sup> DVI Connectors .....	25

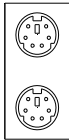




2807950 Solder Side



### CN1: PS/2 Keyboard and PS/2 Mouse Connectors

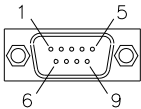


PS/2 Mouse

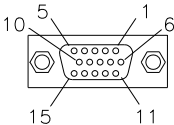
PS/2 Keyboard

Signal Name	Keyboard	Mouse	Signal Name
Keyboard data	1	1	Mouse data
N.C.	2	2	N.C.
GND	3	3	GND
5V	4	4	5V
Keyboard clock	5	5	Mouse clock
N.C.	6	6	N.C.

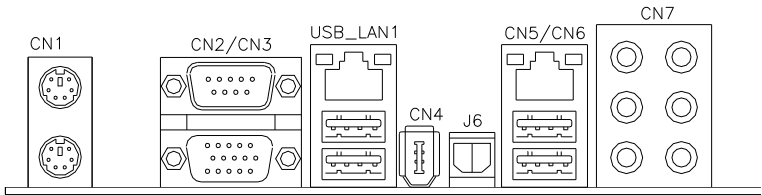
### CN2, CN3: COM1 and VGA Connector



Signal Name	Pin #	Pin #	Signal Name
DCD	1	6	DSR
RXD	2	7	RTS
TXD	3	8	CTS
DTR	4	9	RI
GND	5	10	Not Used



Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		



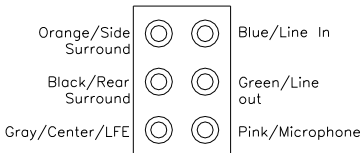
**USB\_LAN1: 10/100 RJ-45(2807950A), 10/100/1000 RJ45 (2807950C/D) and USB1/2 Ports**

**CN4: 1394 Connector**

**J6: SPDIF Out Connector**

**CN5, CN6: GbE RJ-45(2807950C/D) and USB3/4 Ports**

**CN7: Audio Connector**



**FAN1: System Fan Power Connector**

FAN1 is a 3-pin header for system fans. The fan must be a 12V (500mA).



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

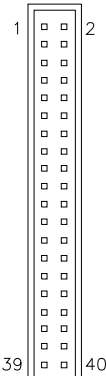
**FAN2: CPU Fan Power Connector**

FAN2 is a 3-pin header for the CPU fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

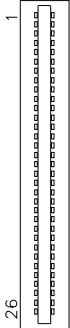
## IDE1: IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

## FDD1: Floppy Drive Connector

FDD1 is a slim 26-pin connector and will support up to 2.88MB FDD.



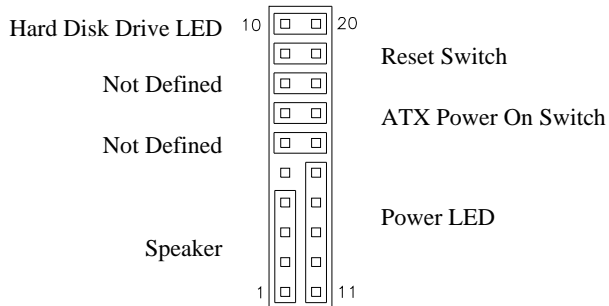
Signal Name	Pin #	Pin #	Signal Name
VCC	1	2	INDEX
VCC	3	4	DRV_SEL
VCC	5	6	DSK_CH
NC	7	8	NC
NC	9	10	MOTOR
DINST	11	12	DIR
NC	13	14	STEP
GND	15	16	WDATA
GND	17	18	WGATE
GND	19	20	TRACK
NC	21	22	WPROT
GND	23	24	RDATA
GND	25	26	SIDE

## ATX1: ATX Power Supply Connector

Signal Name	Pin #	Pin #	Signal Name
3.3V	11	1	3.3V
-12V	12	2	3.3V
Ground	13	3	Ground
PS-ON	14	4	+5V
Ground	15	5	Ground
Ground	16	6	+5V
Ground	17	7	Ground
-5V	18	8	Power good
+5V	19	9	5VSB
+5V	20	10	+12V

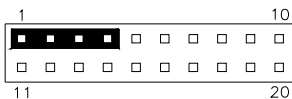
## J1 (F\_PANEL): System Function Connector

J1 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J1 is a 20-pin header that provides interfaces for the following functions.



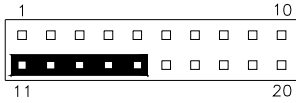
### Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

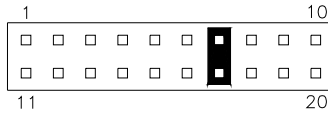
### Power LED: Pins 11 - 15



Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	No connect
15	Ground

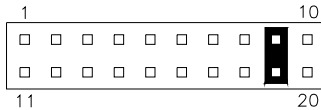
### ATX Power ON Switch: Pins 7 and 17

This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



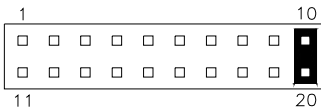
### Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.



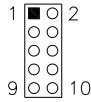
### Hard Disk Drive LED Connector: Pins 10 and 20

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	HDD Active
20	5V

## F\_USB1: USB0/USB1 Connector



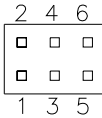
Signal Name	Pin	Pin	Signal Name
Vcc	1	2	Vcc
D0-	3	4	D1-
D0+	5	6	D1+
Ground	7	8	Ground
NC	9	10	Ground

### JP1, JP2, JP3: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

The following table describes the jumper settings for COM2 selection.

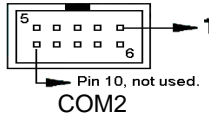


COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP3: 1-2	JP3: 3-4	JP3: 5-6
	JP2: 3-5 & 4-6	JP2: 1-3 & 2-4	JP2: 1-3 & 2-4
	JP1: 3-5 & 4-6	JP1: 1-3 & 2-4	JP1: 1-3 & 2-4

COM2 is jumper selectable for RS-232, RS-422 and RS-485.

Pin #	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

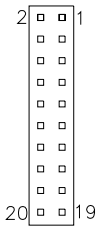
## J2: COM2 Serial Port



Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

## J3, J4: LVDS Connectors (1st channel, 2nd channel)

The LVDS connectors on board consist of the first channel (J3) and second channel (J4) and supports 18-bit or 36-bit.



Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
NA	10	9	NA
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

## J5: LCD Backlight Connector

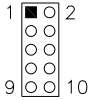


Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Ground

## J7: Mini PCI Connector

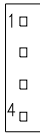
## CN8, CN9: SATA Connectors

## J8: Digital I/O



Signal Name	Pin	Pin	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

## J9: CD-In Pin Header



Pin #	Signal Name
1	CD Audio R
2	Ground
3	Ground
4	CD Audio L

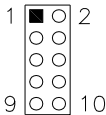
## J10: SPI Flash Connector (factory use only)

## J11: 1394 Connector



Signal Name	Pin	Pin	Signal Name
TPA+	1	2	TPB+
TPA-	3	4	TPB-
+12V	5	6	NC
GND	7	8	NC

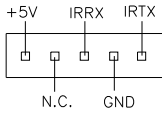
## J12: Front Audio Connector



Signal Name	Pin #	Pin #	Signal Name
MIC2_L	1	2	Ground
MIC2_R	3	4	Presence#
Line2_L	5	6	MIC2_ID
Sense	7	8	NC
Line2_R	9	10	Line2_ID

## J13: PCI-E(x1) Slot

## J14: IrDA Connector



Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

## J15: Compact Flash Connector



### PCI1: PCI Slot (supports 2 Master)

## CON1: SDVO Port Connector

Signal Name	Pin #	Pin #	Signal Name
+12V	A1	B1	+12V
+12V	A2	B2	+12V
+5V	A3	B3	+5V
3.3V	A4	B4	3.3V
RESET	A5	B5	GND
GND	A6	B6	GND
SDVOC CLK+	A7	B7	SDVOC CLK-
SDVOC Blue+	A8	B8	SDVOC Blue-
GND	A9	B9	GND
SDVOC Green+	A10	B10	SDVOC Green-
SDVOC Red+	A11	B11	SDVOC Red-
GND	A12	B12	GND
SDVO TVClkIn+	A13	B13	SDVO TVClkIn-
SDVOB Int+	A14	B14	SDVOB Int-
GND	A15	B15	GND
SDVO CtrlData	A16	B16	SDVO CtrlClk
SDVOB Clk+	A17	B17	SDVOB Clk-
GND	A18	B18	GND
SDVOB Blue+	A19	B19	SDVOB Blue-
SDVOB Green+	A20	B20	SDVOB Green-
GND	A21	B21	GND
SDVOB Red+	A22	B22	SDVOB Red-
SDVO Stall+	A23	B23	SDVO Stall-
GND	A24	B24	GND

## Headers and Connectors on 2807950 Daughter Cards

### 3901080 – JP4 LCD Panel Power Selection

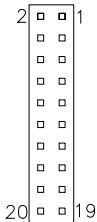
JP4	Voltage
	3.3V
	5V

### 3901080 – J1 LCD Backlight Setting

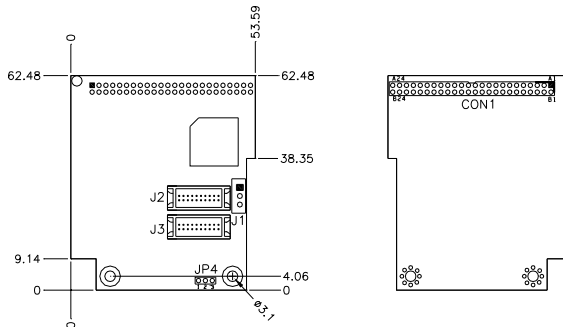


Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Ground

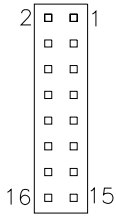
### 3901080– J3 and J2, 1<sup>st</sup> /2<sup>nd</sup> LVDS Channel Connectors



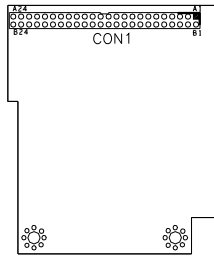
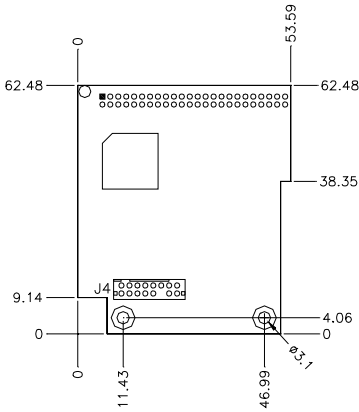
Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V



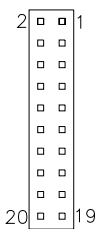
### 3901220 – J4 VGA Connector



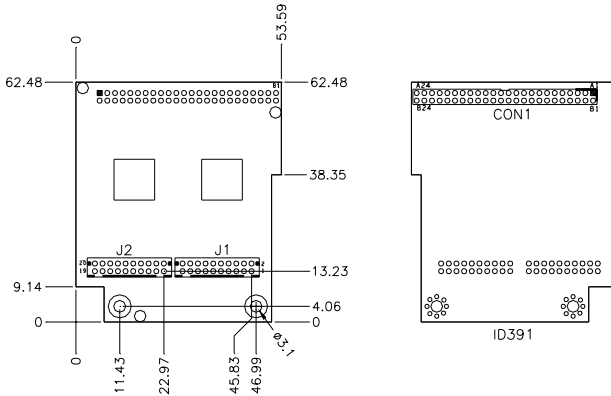
Signal Name	Pin #	Pin #	Signal Name
+5V	2	1	RED
Ground	4	3	GREEN
N.C.	6	5	BLUE
SDA	8	7	N.C.
HSYNC	10	9	Ground
VSYNC	12	11	Ground
SCL	14	13	Ground
N.C.	16	15	Ground



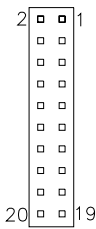
### 3901100 – J2 DVI Connector



Signal Name	Pin #	Pin #	Signal Name
TDC1-	2	1	TDC1+
Ground	4	3	Ground
TLC-	6	5	TLC+
+5V	8	7	Ground
NC	10	9	HPDET
TDC2-	12	11	TDC2+
Ground	14	13	Ground
TDC0-	16	15	TDC0+
NC	18	17	NC
DDC_SC	20	19	DDC_SD



### 3901090 – J1, J2 1<sup>st</sup>/ 2<sup>nd</sup> DVI Connectors



Signal Name	Pin #	Pin #	Signal Name
TDC1-	2	1	TDC1+
Ground	4	3	Ground
TLC-	6	5	TLC+
+5V	8	7	Ground
NC	10	9	HPDET
TDC2-	12	11	TDC2+
Ground	14	13	Ground
TDC0-	16	15	TDC0+
NC	18	17	NC
DDC_SC	20	19	DDC_SD

**Remarks:** When using dual DVI, the first DVI video output is through J1. After setting the drivers in Windows, then the second DVI output (via J2) will function. 3901090 and 3901100 are different since the latter (3901100) has video output via J2. The pin assignments of J1 and J2 are the same.

This page is intentionally left blank.

---

# Appendix

## A. 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
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

---

## B. 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
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

---

## C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

### SAMPLE CODE:

```
//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#include <stdio.h>
#include <stdlib.h>
#include "W627EHF.H"
//=====
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//=====
int main (int argc, char *argv[])
{
    unsigned char bBuf;
    unsigned char bTime;
    char **endptr;

    copyright();

    if (argc != 2)
    {
        printf(" Parameter incorrect!!\n");
        return 1;
    }

    if (Init_W627EHF() == 0)
    {
        printf(" Winbond 83627HF is not detected, program abort.\n");
        return 1;
    }
    bTime = strtol (argv[1], endptr, 10);
    printf("System will reset after %d seconds\n", bTime);

    EnableWDT(bTime);

    return 0;
}
//=====
```

```

void copyright(void)
{
    printf("\n===== Winbond 83627EHF Watch Timer Tester (AUTO DETECT) =====\n")
        "      Usage : W627E_WD reset_time\n"
        "      Ex : W627E_WD 3 => reset system after 3 second\n"
        "      W627E_WD 0 => disable watch dog timer\n");
}
//=====
void EnableWDT(int interval)
{
    unsigned char bBuf;

    bBuf = Get_W627EHF_Reg( 0x2D);
    bBuf &= (10x01);
    Set_W627EHF_Reg( 0x2D, bBuf);           //Enable WDTO

    Set_W627EHF_LD( 0x08);                 //switch to logic device 8
    Set_W627EHF_Reg( 0x30, 0x01);        //enable timer

    bBuf = Get_W627EHF_Reg( 0xF5);
    bBuf &= (10x08);
    Set_W627EHF_Reg( 0xF5, bBuf);        //count mode is second

    Set_W627EHF_Reg( 0xF6, interval);    //set timer
}
//=====
void DisableWDT(void)
{
    Set_W627EHF_LD(0x08);                 //switch to logic device 8
    Set_W627EHF_Reg(0xF6, 0x00);        //clear watchdog timer
    Set_W627EHF_Reg(0x30, 0x00);        //watchdog disabled
}
//=====

```

```

//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#include "W627EHF.H"
#include <dos.h>
//=====
unsigned int W627EHF_BASE;
void Unlock_W627EHF (void);
void Lock_W627EHF (void);
//=====
unsigned int Init_W627EHF(void)
{
    unsigned int result;
    unsigned char ucDid;

    W627EHF_BASE = 0x2E;
    result = W627EHF_BASE;

    ucDid = Get_W627EHF_Reg(0x20);
    if (ucDid == 0x88)
    {
        goto Init_Finish;
    }

    W627EHF_BASE = 0x4E;
    result = W627EHF_BASE;
    ucDid = Get_W627EHF_Reg(0x20);
    if (ucDid == 0x88)
    {
        goto Init_Finish;
    }

    W627EHF_BASE = 0x00;
    result = W627EHF_BASE;

Init_Finish:
    return (result);
}
//=====
void Unlock_W627EHF (void)
{
    outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
    outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
}
//=====
void Lock_W627EHF (void)
{
    outportb(W627EHF_INDEX_PORT, W627EHF_LOCK);
}
//=====
void Set_W627EHF_LD( unsigned char LD)
{
    Unlock_W627EHF();
    outportb(W627EHF_INDEX_PORT, W627EHF_REG_LD);
    outportb(W627EHF_DATA_PORT, LD);
    Lock_W627EHF();
}

```

```

=====
void Set_W627EHF_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_W627EHF();
    outportb(W627EHF_INDEX_PORT, REG);
    outportb(W627EHF_DATA_PORT, DATA);
    Lock_W627EHF();
}
=====
unsigned char Get_W627EHF_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_W627EHF();
    outportb(W627EHF_INDEX_PORT, REG);
    Result = inportb(W627EHF_DATA_PORT);
    Lock_W627EHF();
    return Result;
}
=====

//=====
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//=====
#ifndef __W627EHF_H
#define __W627EHF_H                1
//=====
#define    W627EHF_INDEX_PORT      (W627EHF_BASE)
#define    W627EHF_DATA_PORT      (W627EHF_BASE+1)
//=====
#define    W627EHF_REG_LD          0x07
//=====
#define W627EHF_UNLOCK             0x87
#define    W627EHF_LOCK            0xAA
//=====
unsigned int Init_W627EHF(void);
void Set_W627EHF_LD( unsigned char);
void Set_W627EHF_Reg( unsigned char, unsigned char);
unsigned char Get_W627EHF_Reg( unsigned char);
//=====
#endif //__W627EHF_H

```

---

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>

Support: Technical Support at Global American