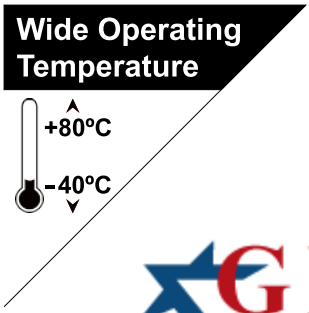



Global AMERICAN

integration with integrity

# 3007660 User's Manual

## PC/104 Plus CPU Module

## Version 1.0

## Copyrights



## Trademarks

# Table of Contents

# Chapter 1

# Introduction

## 1.1 About 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 Global American before further handling.

## 1.2 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

## 1.3 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 regulations concerning special waste.

## 1.4 Technical Support

If you have any technical difficulties, please contact
**Global American's Technical Support** or call (603) 886-3900,
Toll Free (800) 833-8999.

## 1.5 Packing List

1 x 3007660



1x CPU Heat Sink


1 x CD-ROM


1 x Quick Installation Guide

If any of the above items is damaged or missing, contact Global American, Inc.

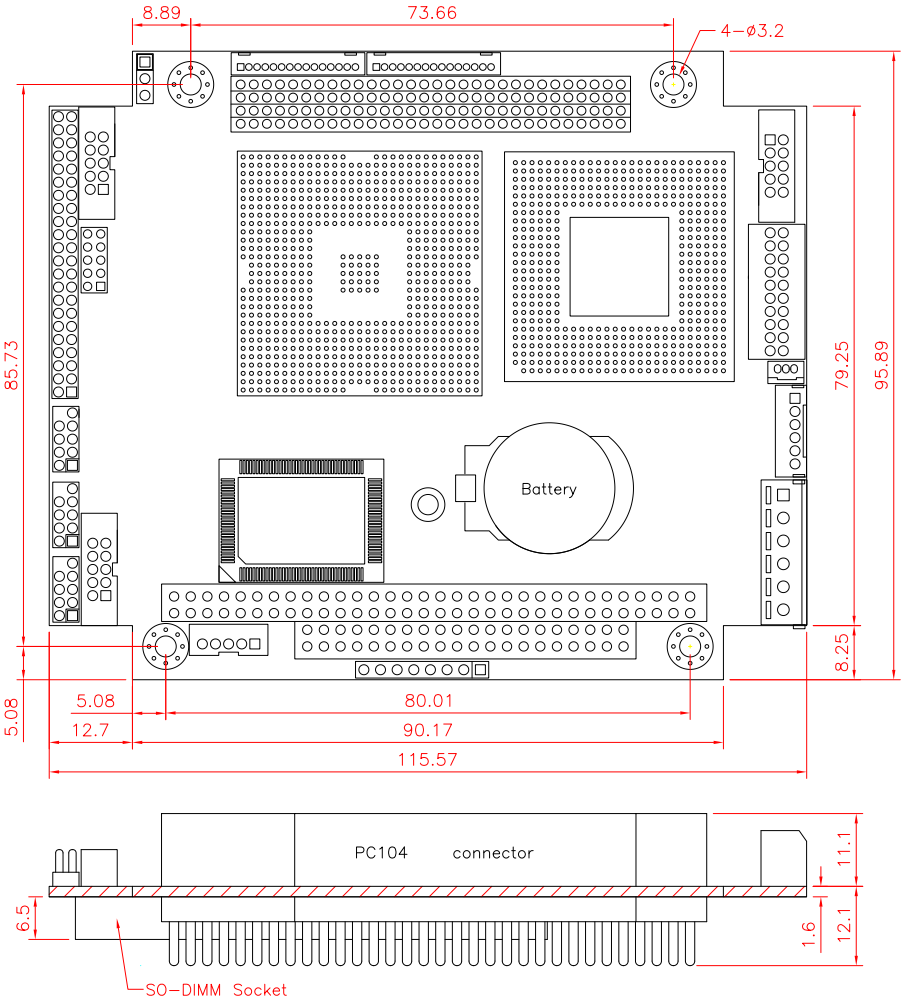
## 1.6 Ordering Information

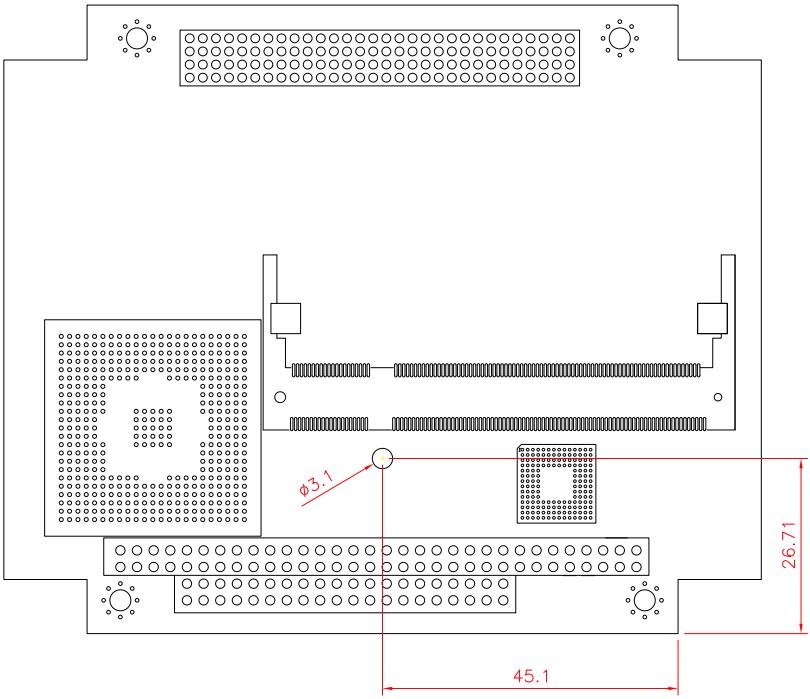
| | |
|---|---|
| 3007660A | PC/104 Plus Intel Celeron M 600MHz with CRT/ LCD/ Audio and LAN |
| 3007660B | PC/104 Plus Intel Pentium M 1.4GHz with CRT/ LCD/ Audio and LAN |
| 1204110 | Cable Kit |

## 1.7 Specification

| | |
|---|---|
| Form Factor | PC/104 Plus form factor |
| Processor | Intel Celeron M 600MHz or<br>Intel Pentium M 1.4GHz (Optional) |
| Chipset | Intel 852GM + Intel 82801DB (ICH4) |
| System Memory | 1 x 200-pin DDR SO-DIMM socket up to 1GB SDRAM |
| VGA/ LCD Controller | Intel 852GM Extreme Graphics2 Engine up to 64MB UMA Video RAM |
| Ethernet | Intel 82562ET 10/100Mbps Controller |
| I/O Chips | W83627HG |
| BIOS | Phoenix-Award PnP Flash BIOS |
| Audio | ALC655 AC'97 codec, supports MIC-In/ Line-In / Line-Out |
| LCD | Supports 18/36-bit LVDS up to 1600 x 1200 |
| Hardware Monitor | Integrated in W83627HG |
| RTC | Built-in Intel ICH4 with lithium battery |
| Power Input Connector | 1*6-pin power terminal |
| Operation Temp. | -40 ~ 80ºC (-40 ~ 176ºF) |
| Watchdog Timer | 1 - 255 Level (Sec. or Min.) |
| Dimension (L x W) | 116 x 96 mm (4.6" x 3.8") |

## 1.8 Board Dimensions

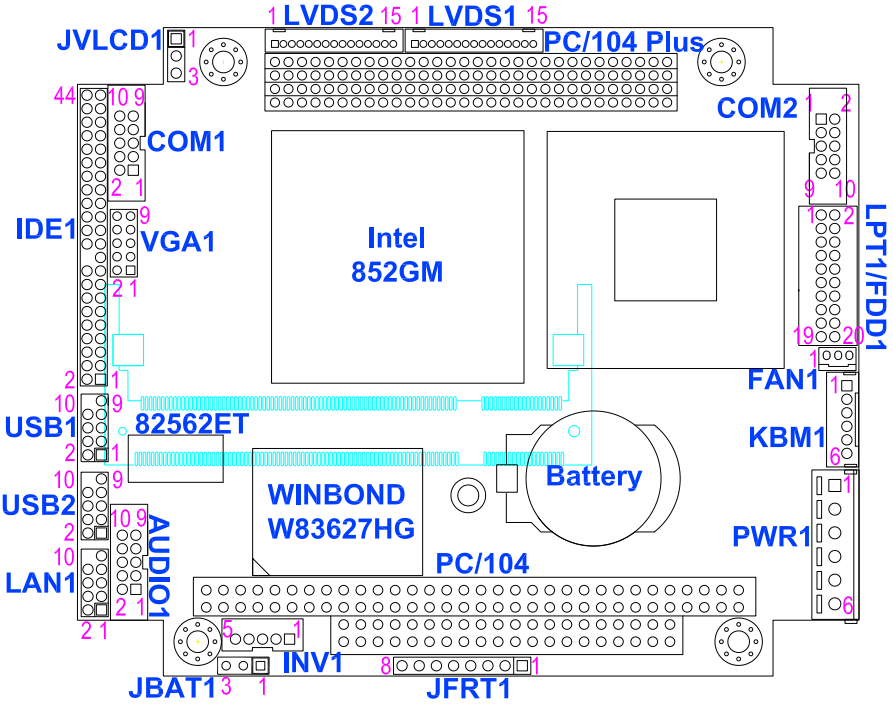



ϕ3.1
26.71
45.1

# Chapter 2

# Installation

## 2.1 Jumpers and Connectors

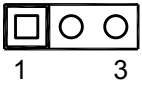


## Jumpers

### JVLCD1: LCD Panel Voltage Select

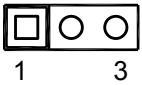
The voltage of LCD panel could be selected by JVLCD1 in 5V or 3.3V.

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




### JBAT1: CMOS Setup

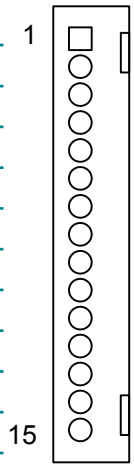
| Pin | Mode |
|---|---|
| 1-2 | Keep CMOS (Default) |
| 2-3 | Clear CMOS |



## Connectors

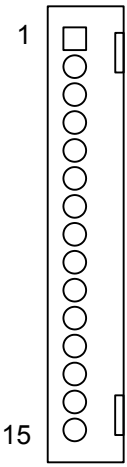
### LVDS1/ LVDS2: LVDS LCD Connector

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | TX1CLK+ |
| 3 | TX1CLK- |
| 4 | GND |
| 5 | TX1D0+ |
| 6 | TX1D0- |
| 7 | GND |
| 8 | TX1D1+ |
| 9 | TX1D1- |
| 10 | GND |
| 11 | TX1D2+ |
| 12 | TX1D2- |
| 13 | GND |
| 14 | TX1D3+ |
| 15 | TX1D3- |



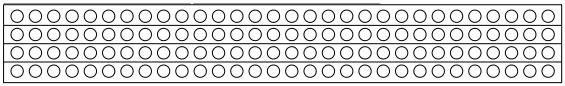

LVDS1

| Pin | Description |
|---|---|
| 1 | VCC |
| 2 | TX2CLK+ |
| 3 | TX2CLK- |
| 4 | GND |
| 5 | TX2D0+ |
| 6 | TX2D0- |
| 7 | GND |
| 8 | TX2D1+ |
| 9 | TX2D1- |
| 10 | GND |
| 11 | TX2D2+ |
| 12 | TX2D2- |
| 13 | GND |
| 14 | TX2D3+ |
| 15 | TX2D3- |




LVDS2

### PC/104 Plus: PC/104+ PCI Interface

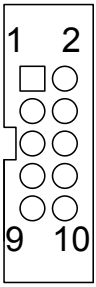


PC/104+

Please go to http://www.pc104.org for more information.

## COM1, COM2: Serial Port Connectors

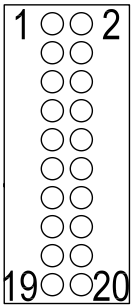
| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | DCD | 2 | RXD |
| 3 | TXD | 4 | DTR |
| 5 | GND | 6 | DSR |
| 7 | RTS | 8 | CTS |
| 9 | RI | 10 | N/C |




## LPT1/ FDD1: Parallel Port or FDD Connector

It can be selected by LPT or FDD mode via BIOS

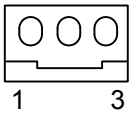
| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | STROBE | 2 | AFD |
| 3 | PTD0 | 4 | ERROR |
| 5 | PTD1 | 6 | INIT |
| 7 | PTD2 | 8 | SLIN |
| 9 | PTD3 | 10 | GND |
| 11 | PTD4 | 12 | GND |
| 13 | PTD5 | 14 | GND |
| 15 | PTD6 | 16 | BUSY |
| 17 | PTD7 | 18 | PE |
| 19 | ACK | 20 | SELECT |



## FAN1: CPU Fan Power Connector

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

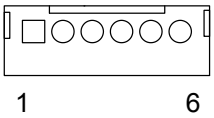
| Pin | Description |
|---|---|
| 1 | FAN_CTL |
| 2 | +12V |
| 3 | GND |




## KBM1: Keyboard & Mouse

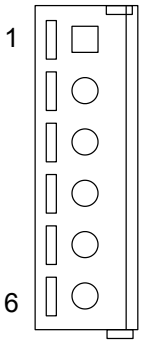
6-pin Keyboard & Mouse wafer connector

| Pin | Description |
|---|---|
| 1 | KB_DATA |
| 2 | GND |
| 3 | MS_DATA |
| 4 | KB_CLK |
| 5 | KB_VCC |
| 6 | MS_CLK |




## PWR1: Power Supply Connector

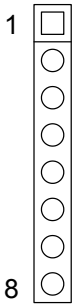
| Pin | Description |
|---|---|
| 1 | +12V |
| 2 | GND |
| 3 | GND |
| 4 | GND |
| 5 | +5V |
| 6 | +5V |



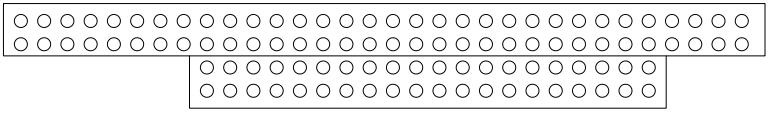
## JFRT1: Switches and Indicators

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

| Pin | Description |
|---|---|
| 1 | RESET+ |
| 2 | GND |
| 3 | PWR LED+ |
| 4 | GND |
| 5 | HDD LED+ |
| 6 | HDD LED- |
| 7 | SPK OUT+ |
| 8 | SPK OUT- |




## PC/104: PC/104 ISA Interface



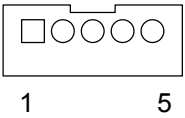
PC/104

Please go to http://www.pc104.org for more information.

## INV1: LCD Inverter Connector

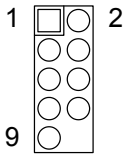
Onboard 5-pin mini boxheader

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



## LAN1: Fast Ethernet Connector

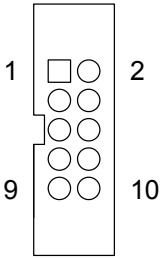
| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | TX+ | 2 | TX- |
| 3 | RX+ | 4 | D2+ |
| 5 | D2+ | 6 | RX- |
| 7 | D3+ | 8 | D3+ |
| 9 | GND | | |




## AUDIO1: Audio Interface Connector

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

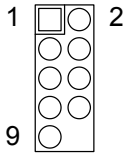
| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | Line_in Left | 2 | Line_in Right |
| 3 | GND | 4 | GND |
| 5 | Mic_in | 6 | N/C |
| 7 | GND | 8 | GND |
| 9 | Line_out Left | 10 | Line_out Right |




## USB1/ USB2: USB Connectors

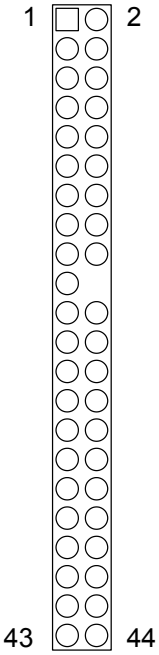
USB1/ USB2 supports two USB 2.0 by pin header

| 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 (Key) |



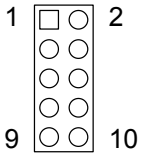
## IDE1: 44-pin IDE Connector

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | IDE RESET | 2 | GND |
| 3 | DATA7 | 4 | DATA8 |
| 5 | DATA6 | 6 | DATA9 |
| 7 | DATA5 | 8 | DATA10 |
| 9 | DATA4 | 10 | DATA11 |
| 11 | DATA3 | 12 | DATA12 |
| 13 | DATA2 | 14 | DATA13 |
| 15 | DATA1 | 16 | DATA14 |
| 17 | DATA0 | 18 | DATA15 |
| 19 | GND | 20 | N/C (Key) |
| 21 | REQ | 22 | GND |
| 23 | IO WRITE | 24 | GND |
| 25 | IO READ | 26 | GND |
| 27 | IO READY | 28 | N/C |
| 29 | DACK | 30 | GND |
| 31 | IRQ14 | 32 | N/C |
| 33 | ADDR1 | 34 | ATA66 DETECT |
| 35 | ADDR0 | 36 | ADDR2 |
| 37 | CS#2 | 38 | CS#3 |
| 39 | IDEACTP | 40 | GND |
| 41 | VCC (+5V) | 42 | VCC (+5V) |
| 43 | GND | 44 | N/C |



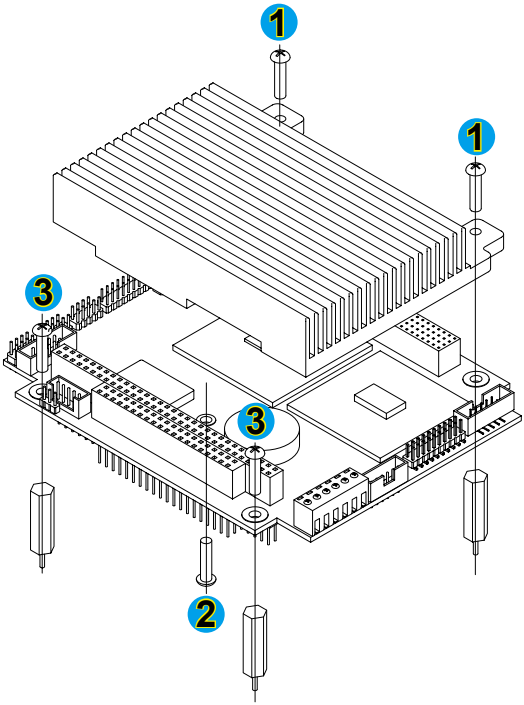
## VGA1: CRT Connector

| Pin | Description | Pin | Description |
|---|---|---|---|
| 1 | RED | 2 | GND |
| 3 | GREEN | 4 | GND |
| 5 | BLUE | 6 | CRTDEC |
| 7 | HSYNC | 8 | GND |
| 9 | VSYNC | 10 | GND |



## 2.2 Heatsink Installation

1. Put the heatsink on 3007660, and screw it on in the direction shown in the figure below. Insert two screws (No. 1) downward into the holes and turn them tightly.
2. Insert screw (No. 2) upward into the hole and turn it tightly.
3. Insert two screws (No. 3) downward into the holes and turn them tightly.



## 2.3 The Installation Paths of CD Driver

| Driver | Path |
|---|---|
| AUDIO | \AUDIO\REALTEK\AC97 |
| CHIPSET | \CHIPSET\INTEL\INF 6.3 |
| IDE | \IDE\Intel\ICH4 |
| LAN | \ETHERNET\INTEL\PRO 10 & 100 |
| VGA | \GRAPHICS\INTEL\85X |
| USB | \USB2\ICH4 |

# Chapter 3

# 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 |
|---|---|
| 00000000-0009FFFF | System board extension for PnP BIOS |
| 00000000-FFFFFFFF | PCI standard PCI-to-PCI bridge |
| 00000000-FFFFFFFF | PCI standard PCI-to-PCI bridge |
| 00000000-FFFFFFFF | PCI standard PCI-to-PCI bridge |
| 000A0000-000AFFFF | Standard PCI Graphics Adapter (VGA) |
| 000B0000-000BFFFF | Standard PCI Graphics Adapter (VGA) |
| 000C0000-000CC7FF | Standard PCI Graphics Adapter (VGA) |
| 000D8000-000D97FF | Intel(R) PRO/100 VE Network Connection |
| 000D9800-000DBFFF | Motherboard resources |
| 000F0000-000F3FFF | Motherboard resources |
| 000F0000-000F3FFF | Motherboard resources |
| 000F4000-000F7FFF | Motherboard resources |
| 000F8000-000FFFFF | Motherboard resources |
| 00100000-00FFFFFF | System board extension for PnP BIOS |
| D0000000-D7FFFFFF | Standard PCI Graphics Adapter (VGA) |
| D8000000-DFFFFFFF | Standard PCI Graphics Adapter |
| E0000000-E3FFFFFF | PCI standard host CPU bridge |
| E4000000-E4000FFF | Intel(R) PRO/100 VE Network Connection |
| E4000000-E40FFFFF | PCI standard PCI-to-PCI bridge |
| E4100000-E417FFFF | Standard PCI Graphics Adapter |
| E4180000-E41FFFFF | Standard PCI Graphics Adapter (VGA) |
| E4200000-E42003FF | PCI Universal Serial Bus |
| E4201000-E42011FF | PCI Multimedia Audio Device |
| E4202000-E42020FF | PCI Multimedia Audio Device |
| FEC00000-FEC0FFFF | System board extension for PnP BIOS |

| | |
|---|---|
| FEE00000-FEE0FFFF | System board extension for PnP BIOS |
| FFB00000-FFB7FFFF | System board extension for PnP BIOS |
| FFB80000-FFBFFFFF | Unknown Device |
| FFF00000-FFFFFFFF | System board extension for PnP BIOS |
| Port 0000-FFFF | PCI standard PCI-to-PCI bridge |
| Port 0020-0021 | Programmable interrupt controller |
| Port 0040-0043 | System timer |
| Port 0060-0060 | Standard 101/102-Key or Microsoft Natural Keyboard |
| Port 0061-0061 | System speaker |
| Port 0070-0071 | System CMOS/real time clock |
| Port 0081-0083 | Direct memory access controller |
| Port 0087-0087 | Direct memory access controller |
| Port 0089-008B | Direct memory access controller |
| Port 008F-0091 | Direct memory access controller |
| Port 00A0-00A1 | Programmable interrupt controller |
| Port 00C0-00DF | Direct memory access controller |
| Port 00F0-00FF | Numeric data processor |
| Port 0170-0177 | Secondary IDE controller (single fifo) |
| Port 0170-0177 | Standard Dual PCI IDE Controller |
| Port 01F0-01F7 | Primary IDE controller (single fifo) |
| Port 02F8-02FF | Communications Port (COM2) |
| Port 0376-0376 | Secondary IDE controller (single fifo) |
| Port 0376-0376 | Standard Dual PCI IDE Controller |
| Port 0378-037F | Printer Port (LPT1) |
| Port 03B0-03BB | Standard PCI Graphics Adapter (VGA) |
| Port 03C0-03DF | Standard PCI Graphics Adapter (VGA) |
| Port 03F6-03F6 | Primary IDE controller (single fifo) |
| Port 03F6-03F6 | Standard Dual PCI IDE Controller |
| Port 03F8-03FF | Communications Port (COM1) |
| Port 0400-04BF | PCI bus |

| | |
|---|---|
| Port 04D0-04D1 | PCI bus |
| Port 0500-051F | PCI System Management Bus |
| Port 0778-077B | Printer Port (LPT1) |
| Port 0CF8-0CFF | PCI bus |
| Port 9000-903F | Intel(R) PRO/100 VE Network Connection |
| Port 9000-9FFF | PCI standard PCI-to-PCI bridge |
| Port A000-A01F | Standard Universal PCI to USB Host Controller |
| Port A400-A41F | Standard Universal PCI to USB Host Controller |
| Port A800-A81F | Standard Universal PCI to USB Host Controller |
| Port AC00-AC07 | Standard PCI Graphics Adapter (VGA) |
| Port B400-B4FF | PCI Multimedia Audio Device |
| Port B800-B83F | PCI Multimedia Audio Device |
| Port F000-F007 | Primary IDE controller (single fifo) |
| Port F000-F00F | Standard Dual PCI IDE Controller |
| Port F008-F00F | Secondary IDE controller (single fifo) |

## 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 00 | System Timer |
| IRQ 01 | Standard 101/102-Key or Microsoft Natural Keyboard |
| IRQ 02 | Programmable interrupt controller |
| IRQ 03 | Communications Port (COM2) |
| IRQ 04 | Communications Port (COM1) |
| IRQ 05 | PCI Multimedia Audio Device |
| IRQ 05 | PCI System Management Bus |
| IRQ 05 | IRQ Holder for PCI Steering |
| IRQ 07 | Printer Port (LPT1) |
| IRQ 08 | System CMOS/real time clock |
| IRQ 09 | PCI Universal Serial Bus |
| IRQ 09 | IRQ Holder for PCI Steering |
| IRQ 0A | Standard Universal PCI to USB Host Controller |
| IRQ 0A | Standard Universal PCI to USB Host Controller |
| IRQ 0A | IRQ Holder for PCI Steering |
| IRQ 0A | Standard PCI Graphics Adapter (VGA) |
| IRQ 0B | Intel(R) PRO/100 VE Network Connection |
| IRQ 0B | Standard Universal PCI to USB Host Controller |
| IRQ 0B | IRQ Holder for PCI Steering |
| IRQ 0C | PS/2 Compatible Mouse Port |
| IRQ 0D | Numeric data processor |
| IRQ 0E | Primary IDE controller (single fifo) |
| IRQ 0E | Standard Dual PCI IDE Controller |
| IRQ 0F | Secondary IDE controller (single fifo) |
| IRQ 0F | Standard Dual PCI IDE Controller |

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