

ROBO-8612VGA

Single Board Computer

User's Manual

P/N: B8980070 Version 1.0

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Table of Contents

How to Use This Manual

| | |
|--|------------|
| Chapter 1 System Overview | 1-1 |
| 1.1 Introduction..... | 1-1 |
| 1.2 Check List | 1-2 |
| 1.3 Product Specification | 1-2 |
| 1.3.1 Mechanical Drawing..... | 1-5 |
| 1.4 System Architecture | 1-6 |
| Chapter 2 Hardware Configuration | 2-1 |
| 2.1 Jumper Setting | 2-1 |
| 2.2 Connector Location | 2-3 |
| Chapter 3 System Installation..... | 3-1 |
| 3.1 Socket 370 Celeron/Pentium-III Processor | 3-1 |
| 3.2 Main Memory | 3-2 |
| 3.3 Installing the Single Board Computer | 3-3 |
| 3.3.1 VIA CLE266 Chipset Component Driver..... | 3-3 |
| 3.3.2 Integrated Graphics / Video Accelerator Chipset..... | 3-3 |
| 3.3.3 Realtek 8110S Gigabit Ethernet controller | 3-4 |
| 3.3.4 Clear CMOS Operation..... | 3-5 |
| 3.3.5 Watch Dog Timer Programming..... | 3-5 |
| Chapter 4 BIOS Setup Information..... | 4-1 |
| 4.1 Entering Setup..... | 4-1 |
| 4.2 Main Menu | 4-2 |
| 4.3 Standard CMOS Setup Menu | 4-3 |
| 4.4 IDE Adaptors Setup Menu..... | 4-5 |
| 4.5 Advanced BIOS Features..... | 4-6 |
| 4.6 Advanced Chipset Features | 4-9 |
| 4.7 Integrated Peripherals | 4-10 |
| 4.8 Power Management Setup | 4-15 |
| 4.9 PnP/PCI Configurations | 4-18 |
| 4.10 PC Health Status..... | 4-20 |
| 4.11 Frequency/Voltage Control..... | 4-21 |
| 4.12 Default Menu | 4-21 |
| 4.13 Supervisor/User Password Setting | 4-22 |
| 4.14 Exiting Selection | 4-23 |
| Chapter 5 Troubleshooting | 5-1 |
| 5.1 BIOS Setting..... | 5-1 |
| 5.2 FAQ | 5-3 |

Appendix A

Appendix B

How to Use This Manual

The manual describes how to configure Portwell ROBO-8612VGA system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : System Overview. Presents package contents and an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration. Shows the definitions and locations of Jumpers and Connectors for convenient system configurations.

Chapter 3 : System Installation. Describes how to properly mount the CPU, main memory and Compact Flash to get a safe installation and provides a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. Specifies the meaning of each setup parameters, how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will provide users some guidelines of troubleshooting.

Chapter 5 : Troubleshooting. Provides useful tips to quickly bring ROBO-8612VGA into desired operations. As basic hardware installation has been addressed in Chapter 3, this chapter will basically focus on system integration issues, in terms of backplane setup, BIOS setting, and OS diagnostics.

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EC Declaration of Conformity (To Be Added)

For the following equipment:

Product Name:

Model Name:

Trade Name:

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC). The equipment was evaluated and passed the test, the following standards were applied :

| | | |
|-------|--------------|-------------------------|
| EMC : | EN 55022 | (1994/ A1:1995 Class A) |
| | EN 50082-2 | (1991) |
| | EN 61000-4-2 | (1995) |
| | EN 61000-4-3 | (1996) |
| | EN 61000-4-4 | (1995) |
| | EN 61000-3-2 | (1995) |
| | EN 61000-3-3 | (1995) |

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Chapter 1

System Overview

1.1 Introduction

ROBO-8612VGA, PICMG 1.0 SBC supports Intel® Pentium® III / Celeron processor, DDR SDRAM, Video display, Gigabit Ethernet and Audio.

The ROBO-8612VGA adopts VIA CLE266 chipset that support Intel® Pentium® III, & Celeron processor with DDR 200/266 up to 2GB system memory. This special processor and memory combination provides user a lower TDP (Thermal Design Power) processor with smaller cooler and better availability of memory. Under critical environment and space limitation consideration, some users dare not use bigger TDP processor or cannot use processor that is bundled with big cooler. Therefore Intel® Pentium® III level processor is still the best choice. SBC designed with old chipset only supports SDRAM, along with time shifting SDRAM availability is getting worse and worse. It is wonderful idea to have common memory modules in stock for both P3 and P4 based system.

In additional to the features of processor and system memory, CLE266 also integrates AGP 4X equivalent performance graphics accelerator. With SMA (Shared Memory Architecture), it shares 16, 32 or 64MB system memory for frame buffer. Besides, ROBO-8612VGA also supports one Gigabit Ethernet, six USB 2.0 ports and Audio in/out. Ethernet and USB port become very popular interface for data upstream and downstream interfaces. A higher bandwidth Ethernet port speeds up transactions with server, to have Gigabit grade Ethernet is mandatory. USB is a very friendly interface; its hot-swappable, rich devices and easily installation are making it getting more and more popular.

With VIA chipset supply life cycle guarantee, the chipset shall continue going till the end of year 2007. And last buy notice will be issued at least six months ahead of EOL (End-of-Life).

In summary, ROBO-8612VGA offers

- Cost-effective design for P3 level processor and DDR memory
- AGP 4X equivalent performance display
- Gigabit Ethernet
- Audio in/out
- Six USB 2.0 ports, two serial ports, two EIDE 133 channel, one floppy channel, one parallel port and one type II CompactFlash socket

1.2 Check List

The ROBO-8612VGA package should cover the following basic items

- ✓ One ROBO-8612VGA single board computer
- ✓ One dual Serial ports cable kit
- ✓ One Parallel port cable kit
- ✓ One FDC cable
- ✓ One IDE cable
- ✓ One Y-cable cable for PS/2 keyboard and mouse
- ✓ One 5-pin keyboard cable for backplane connection
- ✓ One 4-pin ATX power control cable for backplane connection
- ✓ One Installation Resources CD-Title
- ✓ One booklet of ROBO-8612VGA manual

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1.3 Product Specification

- **Main processor**
 - Intel® Pentium® III / Celeron Processor/FC-PGA2
 - FSB: 66/100/133MHz
- **BIOS**

Phoenix (Award) system BIOS with 4Mb Flash ROM with easy upgrade function
ACPI, DMI, Green function and Plug and Play Compatible
- **Main Memory**
 - Two DIMM sockets support 200/266 DDR-SDRAM up to 2GB System Memory
 - Non-ECC, non-buffered DIMMS only
- **L2 Cache Memory**

512/256/128KB in Intel® Pentium® III / Celeron Processor
- **Chipset**

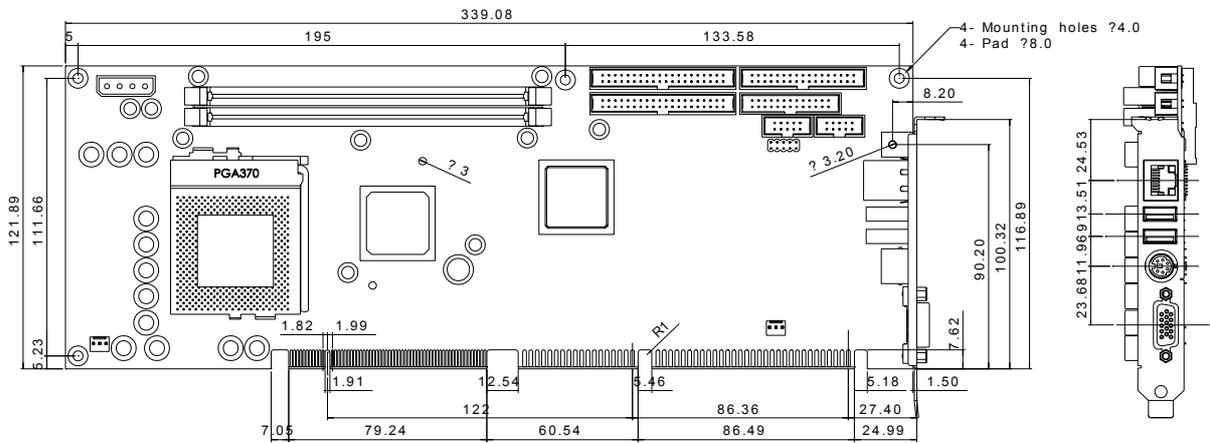
VIA CLE266 chipset (VT8623 & VT8235)
- **Bus Interface**
 - Follow PICMG 1.0 Rev 2.0 standard (32-bit PCI and 16-bit ISA)
 - Fully complies with PCI Local Bus specification V2.2 (support 4 master PCI slots)
- **PCI IDE Interface**

Support two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA 33/66/100/133 mode transfer and Bus Master feature

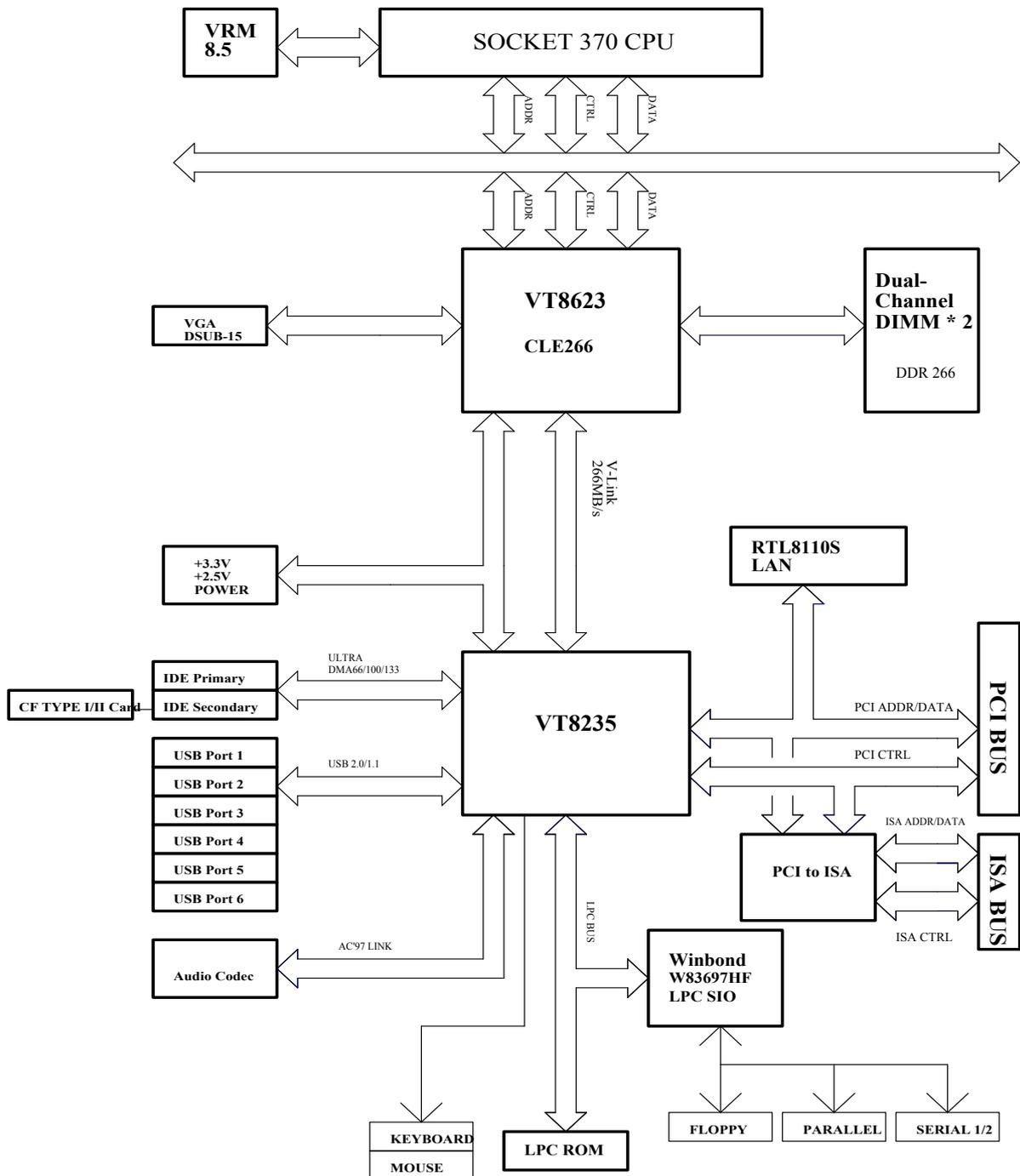
- **Floppy Drive Interface**
Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD
- **Serial Ports**
 - Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs
 - Two RS-232 ports (one RS-232/422/485 selectable port)
- **IR Interface**
Support one 6-pin header for serial Standard Infrared wireless communication
- **Parallel Port**
Support one parallel port with SPP, EPP and ECP modes
- **USB Interface**
Support six USB (Universal Serial Bus) ports (2-port on bracket; 4-port headers) for high-speed I/O peripheral devices
- **PS/2 Mouse and Keyboard Interface**
Support one 6-pin Mini-DIN connector for PS/2 keyboard/mouse connection through Y-Cable separation and one 5-pin shrouded connector for PS/2 keyboard connection through backplane connection
- **ATX Power Control Interface**
One 4-pin header to support ATX power control with Modem Ring-On and Wake-On-LAN function
- **Auxiliary I/O Interfaces**
System reset switch, external speaker, power and HDD active LED, etc
- **Real Time Clock/Calendar (RTC)**
Support Y2K Real Time Clock/Calendar with battery backup for 7-year data retention
- **Watchdog Timer**
 - Support WDT function through software programming for enable/disable and interval setting
 - Generate system reset
- **CompactFlash**
 - True IDE mode, compatibles with the ATA/ATAPI-4 specification
 - One Type II CF socket on secondary IDE channel for supporting up to 1GB memory
 - Bootable for no drives on primary channel
- **On-board VGA**
 - Integrated Graphics / Video Accelerator
 - Optimized share memory architecture (SMA)
 - 16/32/64MB frame buffer using system memory
 - Graphics engine clocks up to 133MHz decoupled from memory clock
 - Motion compensation for full speed DVD playback

- **On-board Ethernet LAN**
Realtek 8110S Gigabit Ethernet controller to support RJ-45 connector
- **High ISA Driving Capability**
Support 64mA high driving capability for multi-slots ISA-bus
- **High Driving GPIO**
Support 8 programmable high driving GPIO
- **Cooling Fans**
Support three 3-pin headers for CPU, System and Power fans
- **System Monitoring Feature**
Monitor CPU temperature, system temperature and major power sources, etc
- **Bracket**
Support one Ethernet port with 2 indicators, dual USB ports, one Mini-DIN port for PS/2 keyboard/mouse, and one CRT port
- **Outline Dimension (L X W):**
339.08mm (13.35") X 121.89mm (4.8")
- **Power Requirements:**
 - +12V (System) @0.5A
 - +5V (System) @6.0A
 - Test configuration:
 - CPU: Intel Pentium III-1.2GHz (133*9 L2 Cache: 512KB)
 - Memory: CENTON PC-2700 CL2.5 512MB*2
 - Primary Master IDE HDD: Samsung SV2042H
 - OS: Microsoft Windows 2000 Professional + SP4
 - Test Programs: 3D Mark 2001 PRO for loading VGA and Burning Test V3.0 for loading CPU
 - Connected Fans: Only CPU fan connected
 - Run Time: 30 minutes
- **Operating Temperature:**
-5°C ~ 55°C (23°F ~ 131°F)
- **Storage Temperature:**
-20°C ~ 80°C
- **Relative Humidity:**
0% ~ 95%, non-condensing

1.3.1 Mechanical Drawing



1.4 System Architecture



ROBO-8612VGA System Block Diagram

Chapter 2 Hardware Configuration

This chapter provides the definitions, the positions of jumpers, headers and connector. All of the configuration jumpers on ROBO-8612VGA are in the proper position. The default settings shipped from factory are marked with a star (★).

2.1 Jumper Setting

Please refer to Figure. 2-1 for the jumper locations

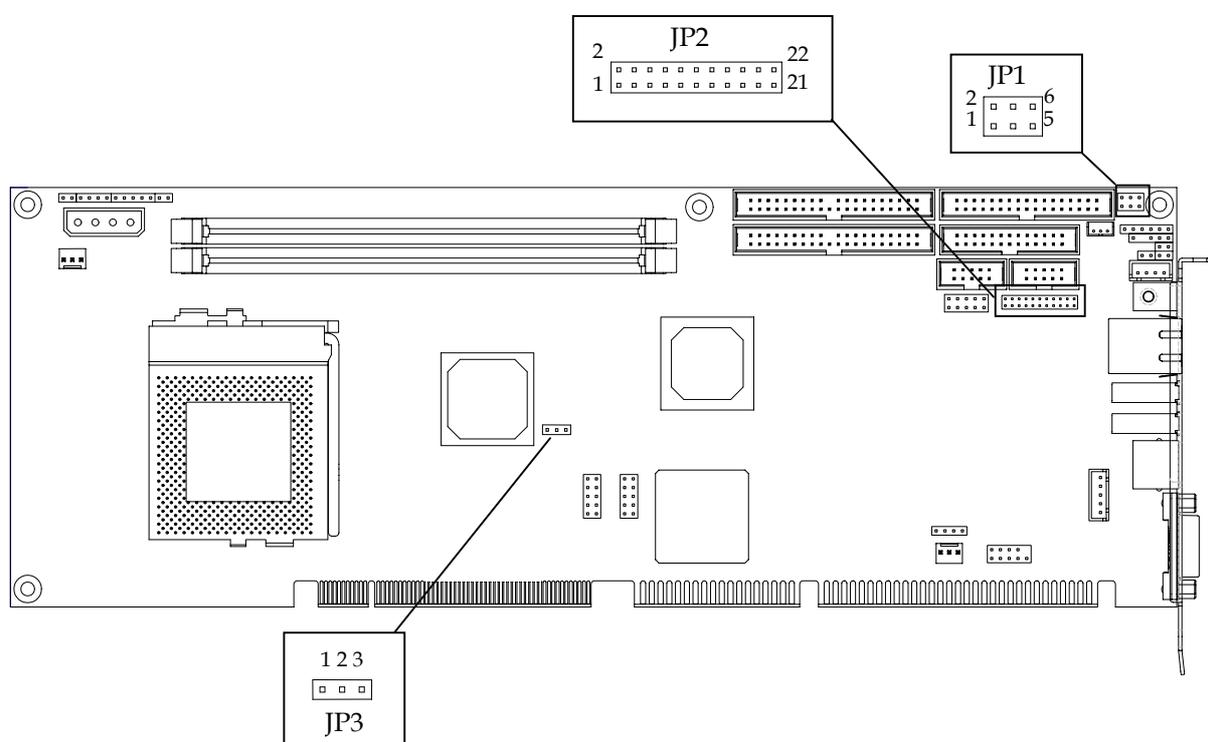


Figure. 2-1 ROBO-8612VGA Jumper Location

JP1: ATX/AT Power Supply Selection

| JP1 | Function |
|---------------|-------------|
| 1-3,2-4 Short | AT Power |
| 3-5,4-6 Short | ATX Power ★ |

JP2: COM2 Function Setting

| Function | Jumper Settings (pin closed) |
|----------|--------------------------------|
| RS-232★ | 5-6,9-11,10-12,15-17,16-18 |
| RS-422 | 3-4,7-9,8-10,13-15,14-16,21-22 |
| RS-485 | 1-2,7-9,8-10,19-20 |

JP3: CMOS Clear

| JP3 | Function |
|-----------|----------|
| 1-2 Short | Clear |
| 2-3 Short | Normal★ |

2.2 Connector Location

Please refer to Figure. 2-2 for the Connector locations

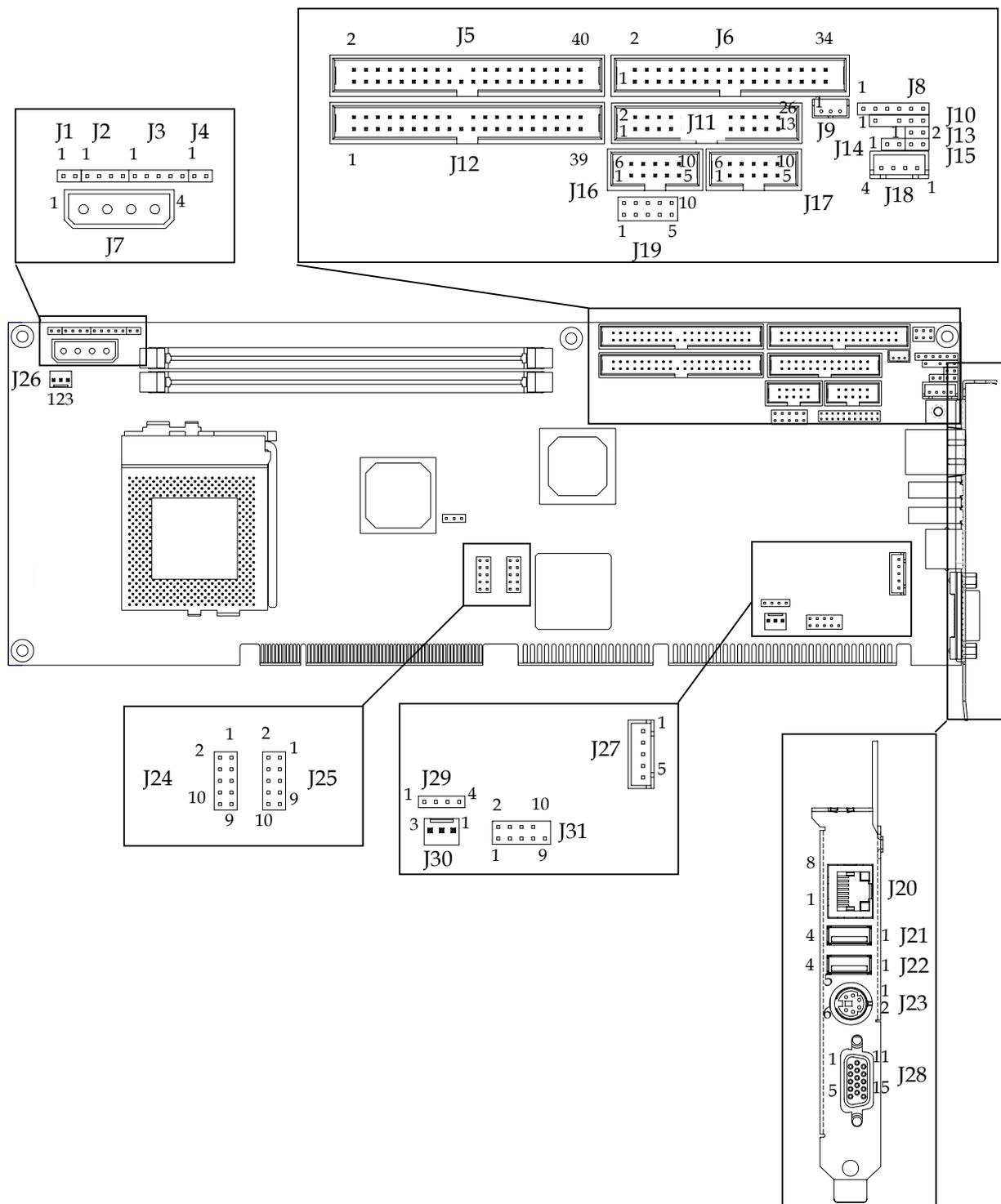


Figure 2-2 ROBO-8612VGA Connector Location (Component Side)

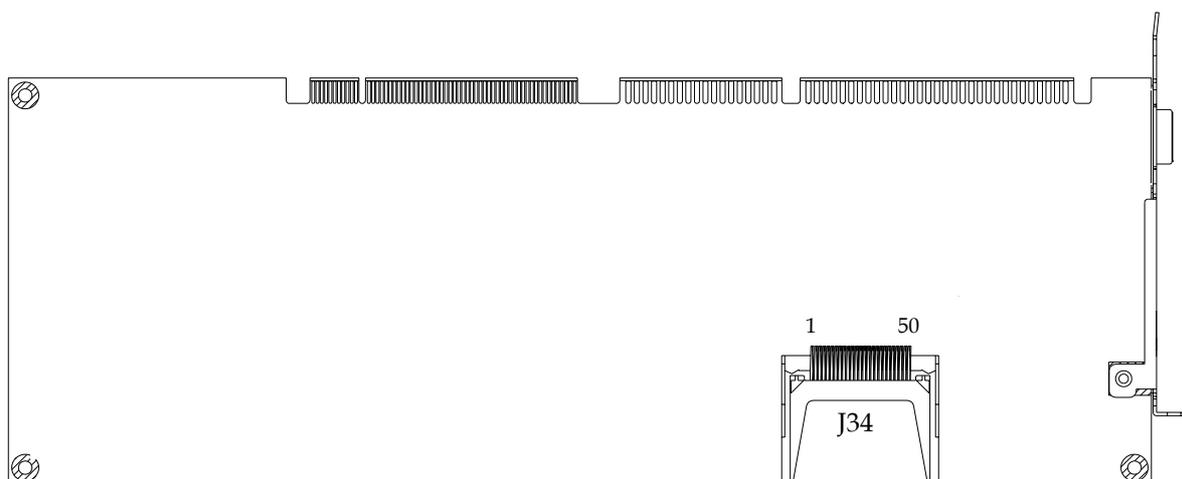


Figure 2-2 ROBO-8612VGA Connector Location (Solder Side)

Connector's Function List

| Connector Location | Description |
|--------------------|---|
| J1 | Reset Header |
| J2 | External Speaker Header |
| J3 | Power ON LED Header |
| J4 | IDE Active LED Header |
| J5 | IDE Primary Interface Connector |
| J6 | Floppy disk interface |
| J7 | Standard 4 pin power connector |
| J8 | Standard IrDA Header |
| J9 | Wake on Lan Connector |
| J10 | SM Bus Connector |
| J11 | Parallel Port Connector |
| J12 | IDE Secondary Interface Connector |
| J13 | Intruder pin header |
| J14 | Wake on Ring pin Header |
| J15 | ATX Power Button Interface |
| J16 | Serial Port 2x5 shrouded connector (COM2) |
| J17 | Serial Port 2x5 shrouded connector (COM1) |
| J18 | ATX power control connector |
| J19 | GPIO pin Header |
| J20 | Ethernet RJ-45 Interface connector |
| J21 | USB Port 1 |
| J22 | USB Port 2 |
| J23 | PS/2 Keyboard& Mouse connector |
| J24 | External USB interface (Support two port) |
| J25 | External USB interface (Support two port) |
| J26 | FAN power connector |

| | |
|------------|--|
| | PIN1 : GND PIN2 : +12V PIN3 : Pull-up +5V (Reserved for sense signal) |
| J27 | External Keyboard connector |
| J28 | VGA DSUB-15 connector |
| J29 | CD IN pin Header |
| J30 | FAN power connector PIN1 : GND PIN2 : +12V PIN3 : Pull-up +5V (Reserved for sense signal) |
| J31 | Audio Connector |

Pin Assignments of Connectors

J1: Reset Button Connector

| PIN No | Signal Description |
|--------|---------------------------------|
| 1 | Reset Signal Input (Active low) |
| 2 | Ground |

J2: External Speaker Connector

| PIN No. | Signal Description |
|---------|--|
| 1 | Speaker Signal Output (Open-drain w/ internal series 33 Ohm) |
| 2 | N/C |
| 3 | Ground |
| 4 | +5V |

Note:

The pull-high voltage of external speaker is limited at 5V maximum.

J3: Power LED Connector

| PIN No. | Signal Description |
|---------|--------------------------------------|
| 1 | +5V (330 Ohm pull-up for power LED+) |
| 2 | N/C |
| 3 | Ground (For Power LED-) |
| 4 | N/C |
| 5 | Ground |

J4: Hard Disk Drive LED Connector

| PIN No. | Signal Description |
|---------|------------------------------------|
| 1 | +5V (270 ohm pull-up for HDD LED+) |
| 2 | HDD Active # (HDD LED-) |

J5/J12 Primary/Secondary IDE Connector (IDE1/IDE2)

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1 | RESET# | 2 | Ground |
| 3 | Data 7 | 4 | Data 8 |
| 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 |
| 9 | Data 4 | 10 | Data 11 |
| 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 |
| 15 | Data 1 | 16 | Data 14 |
| 17 | Data 0 | 18 | Data 15 |
| 19 | Ground | 20 | N/C |
| 21 | DMA REQ | 22 | Ground |
| 23 | IOW# | 24 | Ground |
| 25 | IOR# | 26 | Ground |
| 27 | IOCHRDY | 28 | Pull-down |
| 29 | DMA ACK# | 30 | Ground |
| 31 | INT REQ | 32 | N/C |
| 33 | SA1 | 34 | CBLID# |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0# | 38 | HDC CS1# |
| 39 | HDD Active# | 40 | Ground |

J6: FDC Interface Connector

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1 | Ground | 2 | Density Select 0 |
| 3 | Ground | 4 | N/C |
| 5 | Ground | 6 | Density Select 1 |
| 7 | Ground | 8 | Index# |
| 9 | Ground | 10 | Motor ENA# |
| 11 | Ground | 12 | Drive Select B# |
| 13 | Ground | 14 | Drive Select A# |
| 15 | Ground | 16 | Motor ENB# |
| 17 | Ground | 18 | Direction# |
| 19 | Ground | 20 | Step# |

| | | | |
|----|--------|----|----------------|
| 21 | Ground | 22 | Write Data# |
| 23 | Ground | 24 | Write Gate# |
| 25 | Ground | 26 | Track 0# |
| 27 | Ground | 28 | Write Protect# |
| 29 | Ground | 30 | Read Data# |
| 31 | Ground | 32 | Head Select# |
| 33 | Ground | 34 | Disk Change# |

J7: Standard 4pin Power Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | +12V |
| 2 | Ground |
| 3 | Ground |
| 4 | +5V |

J8: IrDA Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | +5V |
| 2 | N/C |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |
| 6 | N/C |

J9: External Wake On LAN Connector

| PIN No. | Signal Description |
|---------|--|
| 1 | 5VSB |
| 2 | Ground |
| 3 | External WOL Signal Input (Active low) |

J10: SMBus Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | SMBus Clock |
| 2 | N/C |
| 3 | Ground |
| 4 | SMBus Data |
| 5 | +3V |

J11: Parallel Port Connector

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1 | Strobe# | 14 | Auto Form Feed# |
| 2 | Data 0 | 15 | Error# |
| 3 | Data 1 | 16 | Initialization# |
| 4 | Data 2 | 17 | Printer Select IN# |
| 5 | Data 3 | 18 | Ground |
| 6 | Data 4 | 19 | Ground |
| 7 | Data 5 | 20 | Ground |
| 8 | Data 6 | 21 | Ground |
| 9 | Data 7 | 22 | Ground |
| 10 | Acknowledge# | 23 | Ground |
| 11 | Busy | 24 | Ground |
| 12 | Paper Empty | 25 | Ground |
| 13 | Printer Select | 26 | N/C |

J13: Intruder Detection Connector

| PIN No. | Signal Description |
|---------|-----------------------------|
| 1 | Intruder Signal Input Pin 1 |
| 2 | Ground Signal Input Pin 2 |

J14: External Wake On Ring Connector

| PIN No. | Signal Description |
|---------|--------------------------------|
| 1 | Ring Signal Input (Active low) |
| 2 | Ground |

J15: ATX Power button Interface

| PIN No. | Signal Description |
|---------|---|
| 1 | Pull-high 1K Ohm to +5VSB |
| 2 | Power Button Signal Input (Active high) |

J16: COM2 Serial Port 2 Connector

| PIN No. | Signal Description | | |
|---------|---------------------------|--------|--------|
| | RS-232 | RS-422 | RS-485 |
| 1 | DCD (Data Carrier Detect) | TX- | DATA- |
| 2 | RXD (Receive Data) | TX+ | DATA+ |
| 3 | TXD (Transmit Data) | RX+ | N/C |
| 4 | DTR (Data Terminal Ready) | RX- | N/C |
| 5 | GND (Ground) | GND | GND |
| 6 | DSR (Data Set Ready) | N/C | N/C |
| 7 | RTS (Request to Send) | N/C | N/C |
| 8 | CTS (Clear to Send) | N/C | N/C |
| 9 | RI (Ring Indicator) | N/C | N/C |
| 10 | N/C | N/C | N/C |

Note:

J16 (COM2) could be configurable as RS-232/422/485 with jumper JP2.

J17: COM1 Serial Port 1 Connector

| PIN No. | Signal Description |
|---------|---------------------------|
| | RS-232 |
| 1 | DCD (Data Carrier Detect) |
| 2 | RXD (Receive Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Terminal Ready) |
| 5 | GND (Ground) |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request to Send) |
| 8 | CTS (Clear to Send) |
| 9 | RI (Ring Indicator) |
| 10 | N/C |

J18: ATX Power Control Connector

| PIN No. | Signal Description |
|---------|-------------------------------|
| 1 | ATX Power Good Signal (PW-OK) |
| 2 | ATX 5V Stand-by (5VSB) |
| 3 | ATX Power On Control (PS-ON) |
| 4 | Ground |

J19: General Purpose I/O Connector

| PIN No. | Signal Description |
|---------|------------------------------------|
| 1 | General Purpose I/O Port 0 (GPIO0) |
| 2 | General Purpose I/O Port 1 (GPIO1) |
| 3 | General Purpose I/O Port 2 (GPIO2) |
| 4 | General Purpose I/O Port 3 (GPIO3) |
| 5 | Ground |
| 6 | General Purpose I/O Port 4 (GPIO4) |
| 7 | General Purpose I/O Port 5 (GPIO5) |
| 8 | General Purpose I/O Port 6 (GPIO6) |
| 9 | General Purpose I/O Port 7 (GPIO7) |
| 10 | +5V |

Note:

All General Purpose I/O ports can only apply to standard TTL $\pm 5\%$ signal level (0V/5V).

J20: Ethernet RJ-45 Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | MDI0+ (MDI0P) |
| 2 | MDI0- (MDI0N) |
| 3 | MDI1+ (MDI1P) |
| 4 | MDI2+ (MDI2P) |
| 5 | MDI2- (MDI2N) |
| 6 | MDI1- (MDI1N) |
| 7 | MDI3+ (MDI3P) |
| 8 | MDI3- (MDI3N) |

J21/J22: Primary/Secondary USB Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | +5V |
| 2 | USB0- |
| 3 | USB0+ |
| 4 | Ground |

J23: PS/2 Keyboard/Mouse Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | Keyboard Data |
| 2 | Mouse Data |
| 3 | Ground |
| 4 | +5V |
| 5 | Keyboard Clock |
| 6 | Mouse Clock |

J24/J25: External USB Connector

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1 | +5V | 2 | Frame Ground |
| 3 | USB2- | 4 | Ground |
| 5 | USB2+ | 6 | USB3+ |
| 7 | Ground | 8 | USB3- |
| 9 | Frame Ground | 10 | +5V |

J26/30: CPU/System Fan Connector

| PIN No. | Signal Description |
|---------|----------------------------|
| 1 | Ground |
| 2 | +12V |
| 3 | Fan Speed Detecting signal |

Note:

Please make sure the fan connected to J26/30 must be a 12V input Fan. Otherwise, there might be unexpected damage with either Fan or SBC.

J27: External Keyboard Connector

| PIN No. | Signal Description |
|---------|--------------------|
| 1 | Keyboard Clock |
| 2 | Keyboard Data |
| 3 | N/C |
| 4 | Ground |
| 5 | +5V |

J28: VGA DSUB-15 CRT Connector

| PIN No. | Signal Description |
|---------|-----------------------------------|
| 1 | Red |
| 2 | Green |
| 3 | Blue |
| 4 | Monitor ID0 (MONID0) (5V I/F) |
| 5 | Ground |
| 6 | Ground |
| 7 | Ground |
| 8 | Ground |
| 9 | +5V |
| 10 | Ground |
| 11 | Monitor ID1 (MONID1) (5V I/F) |
| 12 | VGA DDC Data (5V I/F) |
| 13 | Horizontal Sync. (HSYNC) (5V I/F) |
| 14 | Vertical Sync. (VSYNC) (5V I/F) |
| 15 | VGA DDC Clock (5V I/F) |

J29: Audio CD-in Connector

| PIN No. | Signal Description |
|---------|---------------------|
| 1 | CD-in Left Channel |
| 2 | CD Ground |
| 3 | CD Ground |
| 4 | CD-in Right Channel |

J31: Audio MIC/Line-in/Line-out Connector

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|----------------------------|---------|--------------------|
| 1 | MIC with Reference Voltage | 2 | Analog Ground |
| 3 | Line-in Left Channel | 4 | Analog Ground |
| 5 | Line-in Right Channel | 6 | Analog Ground |
| 7 | Line-out Left Channel | 8 | Analog Ground |
| 9 | Line-out Right Channel | 10 | N/C |

Note:

The Reference Voltage on MIC signal offers 2.25V~2.75V with 5mA drive.

J34: Compact Flash Card

| PIN No. | Signal Description | PIN No. | Signal Description |
|---------|--------------------|---------|--------------------|
| 1 | Ground | 26 | N/C |
| 2 | Data 3 | 27 | Data 11 |
| 3 | Data 4 | 28 | Data 12 |
| 4 | Data 5 | 29 | Data 13 |
| 5 | Data 6 | 30 | Data 14 |
| 6 | Data 7 | 31 | Data 15 |
| 7 | HDC CS0# | 32 | HDC CS1# |
| 8 | Ground | 33 | Ground |
| 9 | Ground | 34 | IOR# |
| 10 | Ground | 35 | IOW# |
| 11 | Ground | 36 | Pull-Up |
| 12 | Ground | 37 | INT REQ |
| 13 | VCC | 38 | VCC |
| 14 | Ground | 39 | Pull-down |
| 15 | Ground | 40 | N/C |
| 16 | Ground | 41 | RESET# |
| 17 | Ground | 42 | IOCHRDY |
| 18 | SA2 | 43 | N/C |
| 19 | SA1 | 44 | DMA REQ |
| 20 | SA0 | 45 | HDD Active# |
| 21 | Data 0 | 46 | Pull-down |
| 22 | Data 1 | 47 | Data 8 |
| 23 | Data 2 | 48 | Data 9 |
| 24 | N/C | 49 | Data 10 |
| 25 | N/C | 50 | Ground |

Chapter 3

System Installation

This chapter provides instructions to set up ROBO-8612VGA. The additional information is enclosed to help set up onboard PCI device and handle WDT operation in software programming.

3.1 Socket 370 Celeron/Pentium-III Processor

Installing S370 CPU

- 1) Lift the handling lever of CPU socket outwards and upwards to the other end.
- 2) Align the processor pins with pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly. You need to check and rebuild the CPU pin uniformly.
- 3) Push down the lever to lock processor chip into the socket.
- 4) Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the socket 370.

Removing CPU

- 1) Unlock the cooling fan first.
- 2) Lift the lever of CPU socket outwards and upwards to the other end.
- 3) Carefully lift up the existing CPU to remove it from the socket.
- 4) Follow the steps of installing a CPU to change to another one or place handling bar to close the opened socket.

Configuring System Bus

ROBO-8612VGA will automatically detect system bus based on the type of CPU used. However, users may configure CPU core/bus ratio in BIOS setup menu for engineering sample processors.

3.2 Main Memory

Two DIMM sockets support 200/266 DDR-SDRAM up to 2GB System Memory. ROBO-8612VGA will automatically detect memory clock, based on the processor and DDR-SDRAM used.

For system compatibility and stability, do not use memory module without brand. ROBO-8612VGA uses non-ECC, non-buffered DIMMS only. Randomly installing DIMM in any one of the DIMM sockets is allowed. User may install different size of DRAM module on DIMM1, DIMM2 or all to make the system boot.

Be cautious with the contact and lock mechanism of memory module and socket, it may impact on the system reliability. Follow normal procedures to install your DRAM module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

Note:

- (1) To maintain system stability, do not change any of DRAM parameters in BIOS setup to upgrade system performance without acquiring technical information.
- (2) Due to VIA CLE266 chipset limitation, the type of DDR-SDRAM with ECC function is not supported. In the event of ECC DDR-SDRAM being adopted, ECC function is NOT supported while ECC DDR-SDRAM can act only as a normal DDR-SDRAM without causing any error.
- (3) Due to VIA CLE266 chipset limitation, Buffered (Registered) DDR-SDRAM is not supported. Buffered DDR-SDRAM will simply freeze up the system.

3.3 Installing the Single Board Computer

To install ROBO-8612VGA into standard chassis or proprietary environment, you need to perform the following :

- Step 1 : Check all jumpers setting on proper position
- Step 2 : Install and configure CPU and memory module on right position
- Step 3 : Place ROBO-8612VGA into the dedicated position in your system
- Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that single board computer is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and ISA-bus slot. **It is recommended to apply 4-pin 5-1/4" IDE device power connectors from your power supply onto J7 to ensure a sufficient current supply.**

Note:

Please refer to section 3.3.1 to 3.3.3 to install Chipset/VGA/LAN drivers.

3.3.1 VIA CLE266 Chipset Component Driver

VIA CLE266 chipset is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-95/98/98SE/2000, please install VIA 4in1 Chipset Component driver before any of other Drivers are installed.

Chipset component driver can be found in \Chipset\VIA directory of ROBO-8612VGA CD-title. Please execute "VIAHyperion4in1???v.exe" to start installation.

3.3.2 Integrated Graphics / Video Accelerator Chipset

It is optimized share memory architecture and 16/32/64MB frame buffer using system memory. This combination makes ROBO-8612VGA an excellent piece of multimedia hardware.

With no additional video adaptor, this onboard video will usually be the system display output.

Drivers Support

Please find VIA CLE266 Graphica driver in the ROBO-8612VGA CD-title. Drivers support Windows-98/98SE/ME, Windows-2000, and Linux. Pls confirm drivers !

\Graphic\Via_Cle

- (1) Windows-95/98/98SE/ME: Please execute \Graphic\Via_Cle\win9x\ Setup.exe to start graphics driver installation.
- (2) Windows-2000/XP: Please execute \Graphic\Via_Cle\Win2KXP\ Setup.exe to start graphics driver installation.
- (3) Redhat Linux: Please refer to the "VIA RH9.0 CLE266 Display Driver ver0.91A.gz" file in \Graphic\Via_Cle\Linux directory for graphics drivers installation guide.

3.3.3 Realtek 8110S Gigabit Ethernet controller

There is not any jumper available for disabling on-board Ethernet. ROBO-8612VGA does not require its on-board LAN device to be disabled to work with other add-on LAN cards.

Drivers Support

Please find 8110S driver in /Ethernet/ R8110s directory of ROBO-8612VGA CD-title. The drivers support Windows-NT 3.51/4.0, Windows-95/98/98SE, Windows-2000, Windows-2000, SCO OpenServer 5.0.2, SCO Unixware 7.0, OS2 and Linux.

On-board LED Indicator (for LAN status)

ROBO-8612VGA provides two LED indicators to report Ethernet interfaces status. Please refer to the table below as a quick reference guide.

| 8110S | Name of LED | Operation of Ethernet Port | | |
|-------|--------------------------|-------------------------------------|----------|--------|
| | | On | Off | Blink |
| LED1 | LAN Link LED | Good link | Bad link | |
| LED2 | LAN speed and Active LED | 100 Mbps: Green 1000Mbps: Orange | 10 Mbps | Active |

3.3.4 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

| JP3 | FUNCTION |
|-----|---------------------|
| 1-2 | Clear CMOS Contents |
| 2-3 | ★ Normal Operation |

To correct operate CMOS Clear function, users may turn off the system, move JP3 jumper to 1-2 position (this will not consume any power). To clear CMOS, please turn on the power and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP3 back to 2-3 position (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load in BIOS default setting.

3.3.5 Watch Dog Timer Programming

Watch Dog Timer is a special function; the user can monitor and control the system via software or hardware implementation. If the implementation does not respond in seconds, the system will be rebooted automatically. With this mechanism, the lost or damage can be minimized, when there is not monitoring personnel onsite. Following list are ROBO-8612VGA Watch Dog Timer sample Code, this is for reference only:

```
/*          W83697 WDT DEMO PROGRAM
           File Name : 697_WDT.C
           Write by : John Ma
*/

#include <stdio.h>
#include <conio.h>
#include <dos.h>

unsigned char time_out;          /* recode WDT time-out value */

void show_title(void)
{
    clrscr();
    printf("\n\nPortwell Inc. W83697HF WDT DEMO PROGRAM V1.00\n\n");
    printf("1.Set WDT Time-out value and Enable WDT\n");
    printf("2.Retrigger WDT\n");
    printf("3.Disable WDT and Exit\n");
    printf("\n\nPress 1 - 3 :");
}
```

```
}  
  
void enable_WDT(void)  
{  
    printf("\n\nPress number 1 - 255 to select time-out time(second)");  
    scanf("%d",&time_out);  
    asm cli;  
    /* Step1. Enter W83697 extended function mode:  
       write 0x87 to port 2e twice  
    */  
    outportb(0x2e, 0x87);  
    outportb(0x2e, 0x87);  
    /* Step2. Select W83697 Pin119 to be WDTO#  
       write 0x29 to port 2e to point W83697 CR_29  
       write 0x20(bit6:5) to port 2f to select WDTO#  
    */  
    outportb(0x2e, 0x29);  
    outportb(0x2f, 0x20);  
    /* Step3. Select W83697 logic device 8:  
       write 0x07 to port 2e to point W83697 CR_07  
       write 0x08 to port 2f to select logic device 8  
    */  
    outportb(0x2e, 0x07);  
    outportb(0x2f, 0x08);  
    /* Step4. Enable Logic device 8:  
       write 0x30 to port 2e to point W83697 CR_30  
       write 0x1 to port 2f to enable  
    */  
    outportb(0x2e, 0x30);  
    outportb(0x2f, 0x1);  
    /* Step5. Config W83697 WDT using second to be unit:  
       write 0xf3 to port 2e to point W83977ATF CR_f3  
       write 0x00 to port 2f to select time-out unit is second  
    */  
    outportb(0x2e, 0xf3);  
    outportb(0x2f, 0x00);  
    /* Step6. Set WDT time-out time:  
       write 0xf4 to port 2e to point W83697 CR_f4  
       write time_out to port 2f to set time-out time  
    */  
    outportb(0x2e, 0xf4);  
    outportb(0x2f, time_out);  
    /* Step7. Exit W83697 extended function mode:  
       write 0xaa to port 2e  
    */  
    outportb(0x2e, 0xaa);  
}
```

```
    asm sti;
}

void retrigger_WDT(void)
{
    asm cli;
    /* Step1. Enter W83697 extended function mode:
       write 0x87 to port 2e twice
    */
    outportb(0x2e, 0x87);
    outportb(0x2e, 0x87);
    /* Step2. Select W83697 logic device 8:
       write 0x07 to port 2e to point W83697 CR_07
       write 0x08 to port 2f to select logic device 8
    */
    outportb(0x2e, 0x07);
    outportb(0x2f, 0x08);
    /* Step3. Retriggle WDT time-out time:
       write 0xf4 to port 2e to point W83697 CR_f4
       write time_out to port 2f to set time-out time in W83697
    */
    outportb(0x2e, 0xf4);
    outportb(0x2f, time_out);
    /* Step4. Exit W83697 extended function mode:
       write 0xaa to port 2e
    */
    outportb(0x2e, 0xaa);
    asm sti;
    printf("\n\n!!! Trigle !!!");
    delay(1000);
}
```

```
void disable_WDT(void)
{
    asm cli;
    /* Step1. Enter W83697 extended function mode:
       write 0x87 to port 2e twice
    */
    outportb(0x2e, 0x87);
    outportb(0x2e, 0x87);
    /* Step2. Select W83697 logic device 8:
       write 0x07 to port 2e to point W83697 CR_07
       write 0x08 to port 2f to select logic device 8
    */
    outportb(0x2e, 0x07);
    outportb(0x2f, 0x08);
```

```
/* Step3. Disable WDT :
   write 0xf4 to port 2e to point W83697 CR_f4
   write 0x00 to port 2f to set time-out time in W83697
*/
outportb(0x2e, 0xf4);
outportb(0x2f, 0x00);
/* Step4. Exit W83697 extended function mode:
   write 0xaa to port 2e
*/
outportb(0x2e, 0xaa);
asm sti;
}

int main(void)
{
    int key;

    show_title();
    while(1)
    {
        key = getch();
        switch (key)
        {
            case '1':
                enable_WDT();
                break;
            case '2':
                retriggle_WDT();
                break;
            case '3':
                disable_WDT();
                return(0);
            default:
                break;
        }
        show_title();
    }
}
```

Chapter 4

BIOS Setup Information

ROBO-8612VGA is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it is retained during power-off periods. When system is turned on, ROBO-8612VGA communicates with peripheral devices, and checks its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message "Hit if you want to run SETUP" appears, press key immediately to enter BIOS setup program.

If the message disappears before one can respond, and reenter Setup is needed, please restart the system to try "COLD START" again by turning it OFF and then ON, or press the "RESET" button. Also, "WARM START" can be accomplished by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the key at the right time and the system will not boot, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, the keyboard may be used to choose among options or modify the system parameters to match the options with desired system configuration. The table below will outline all of keystroke functions in BIOS setup.

| General Help | |
|---------------|----------------------|
| ↑ ↓ → ← | : Move |
| Enter | : Select |
| + / - /PU /PD | : Value |
| ESC | : Exit |
| F1 | : General Help |
| F2 | : Item Help |
| F5 | : Previous Values |
| F6 | : Fail-Safe Defaults |
| F7 | : Optimized Defaults |
| F9 | : Menu in BIOS |
| F10 | : Save |

4.3 Standard CMOS Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number desired in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.

Phoenix- AwardBIOS CMOS Setup Utility
Standard CMOS Features

| | | |
|--|---------------------|---|
| Date (mm:dd:yy) | Mon, Jul 26 2004 | Item Help |
| Time (hh:mm:ss) | 10 : 29 : 50 | |
| ▶ IDE Primary Master | [Maxtor 94098U8] | Menu Level ▶ |
| ▶ IDE Primary Slave | [CD-540E] | Change the day, month, year and century |
| ▶ IDE Secondary Master | [None] | |
| ▶ IDE Secondary Slave | [None] | |
| Drive A | [1.44M, 3.5 in.] | |
| Drive B | [None] | |
| Video | [EVG/VGA] | |
| Halt On | [All, But Keyboard] | |
| Base Memory | 640K | |
| Extended Memory | 490496K | |
| Total Memory | 491520K | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

■ Menu Selections

| Item | Options | Description |
|----------------------|--|---|
| Date | mm:dd:yy | Change the day, month, year and century |
| Time | hh:mm:ss | Change the internal clock |
| IDE Primary Master | Options are in its sub menu | Press <Enter> to enter the sub menu of detailed options |
| IDE Primary Slave | Options are in its sub menu | Press <Enter> to enter the next page for detail hard drive settings |
| IDE Secondary Master | Options are in its sub menu | Press <Enter> to enter the next page for detail hard drive settings |
| IDE Secondary Slave | Options are in its sub menu | Press <Enter> to enter the next page for detail hard drive settings |
| Drive A Drive B | None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in | Press <Enter> to enter the next page for detail hard drive settings |
| Video | EGA/VGA CGA 40 CGA 80 MONO | Select the default video device |
| Halt On | All Errors No Errors All, But Keyboard All, But Diskette All, But Disk/Key | Select the situation in which you want the BIOS to stop the POST process and notify you |
| Base Memory | 640K | Displays the amount of conventional memory detected during boot up |
| Extended Memory | N/A | Displays the amount of extended memory detected during boot up |
| Total Memory | N/A | Displays the total memory available in the system |

4.4 IDE Adaptors Setup Menu

The IDE adaptors control the IDE devices, such as hard disk drive or cdrom drive. It uses a separate sub menu to configure each hard disk drive.

Phoenix- AwardBIOS CMOS Setup Utility
IDE Primary Master

| | | |
|--|-------------|---|
| IDE HDD Auto-Detection | Press Enter | Item Help |
| IDE Primary Master | Auto | Menu Level ▶ To atuo-detect the HDD's size, head ... on this channel |
| Access Mode | Auto | |
| Capacity | 40981MB | |
| Cylinder | 19617 | |
| Head | 16 | |
| Precomp | 0 | |
| Landing Zone | 19616 | |
| Sector | 255 | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

■ Menu Selections

| Item | Options | Description |
|------------------------|-----------------------------------|---|
| IDE HDD Auto-detection | Press Enter | Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu. |
| IDE Primary Master | None Auto Manual | Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE ! |
| Access Mode | CHS LBA Large Auto | Choose the access mode for this hard disk |
| Capacity | Auto Display your disk drive size | Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking |

| | | |
|---|------------------------|---|
| | | program. |
| The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual' | | |
| Cylinder | Min = 0 Max = 65535 | Set the number of cylinders for this hard disk |
| Head | Min = 0 Max = 255 | Set the number of read/write heads |
| Precomp | Min = 0 Max = 65535 | **** Warning: Setting a value of 65535 means no hard disk |
| Landing zone | Min = 0 Max = 65535 | **** |
| Sector | Min = 0 Max = 255 | Number of sectors per track |

4.5 Advanced BIOS Features

This section allows user to configure the system for basic operation. User has the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced BIOS Features

| | |
|---|---|
| Virus Warning [Disabled] CPU Internal Cache [Enabled] External Cache [Enabled] Quick Power On Self Test [Enabled] First Boot Device [Floppy] Second Boot Device [HDD-0] Third Boot Device [LS120] Boot Other Device [Enabled] Swap Floppy Seek [Disabled] Boot Up Floppy Seek [Enabled] Boot up NumLock Status [On] Gate A20 Option [Fast] Typematic Rate Setting [Disabled] X Typematic Rate (Chars/sec) 6 X Typematic delay (Msec) 250 Security Option [Setup] OS Select For DRAM > 64MB [Non-OS2] Video BIOS Shadow [Enabled] | Item Help <hr/> Menu Level ► Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep. |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | |

Virus Warning

It allows user to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

| | |
|----------|---|
| Enabled | Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table. |
| Disabled | No warning message will appear when anything attempts to access the boot sector or hard disk partition table. |

CPU Internal Cache / External Cache

These two categories speed up memory access. However, it depends on CPU/Chipset design.

| | |
|----------|---------------|
| Enabled | Enable cache |
| Disabled | Disable cache |

Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

| | |
|----------|-------------------|
| Enabled | Enable quick POST |
| Disabled | Normal POST |

First/Second/Third Boot Device

Select your Boot Device Priority.

The choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2 HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.

Boot Other Device

Select Your Boot Device Priority.

The choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, choose enable to assign physical driver B to logical drive A and Vice-Versa.

The choice: Enabled, Disabled.

Boot Up Floppy Seek

Enabled tests floppy drives to determine whether they have 40 or 80 tracks.

The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off, On.

Gate A20 Option

Fast-lets chipsets control Gate A20 and Normal - a pin in the keyboard controller controls Gate A20. Default is Fast.

The choice: Normal, Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller - When enabled, the typematic rate and typematic delay can be select.

The choice: Enabled, Disabled.

Typematic Rate (Chars/sec)

The rate at which character repeats when you hold down a key.

The choice: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic delay (Msec)

The delay before key strokes begin to repeat.

The choice: 250, 500, 750, and 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

| | |
|---------------|---|
| System | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| Setup | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. |

OS Select For DRAM > 64MB

Select OS/2 only if you are running SO/2 operating system with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Video BIOS Shadow

Enabled copies Video BIOS to shadow RAM Improves Performance.

The choice: Enabled, Disabled.

4.6 Advanced Chipset Features

This section allows user to configure the system based on the specific features of the VIA CLE266 Chipset. This Chipset manages bus speeds and access to system memory resources, such as DRAM (DDR SDRAM) and the external cache. It also coordinates communication between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time one might consider making any changes would be if data lost is discovered while using your system.

Phoenix- AwardBIOS CMOS Setup Utility
Advanced Chipset Features

| | | |
|--|------------|----------------|
| Memory Hole | [Disabled] | Item Help |
| System BIOS Cacheable | [Disabled] | Menu Level ▶ |
| Video RAM Cacheable | [Disabled] | |
| Onboard LAN Control | [Enabled] | |
| VGA Share Memory Size | [32M] | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

The choice: Disabled, 15M-16M.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video RAM Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" to ignore this BIOS caching function.

The choice: Enabled, Disabled.

Onboard LAN Control

This item allows you to enable LAN function.

The choice: Enabled, Disabled.

VGA Share Memory Size

Users can set the display memory size that shared from main memory.

The choice: 16M, 32M, and 64M.

4.7 Integrated Peripherals

Phoenix- AwardBIOS CMOS Setup Utility Integrated Peripherals

| | |
|---|--------------|
| <ul style="list-style-type: none"> ▶ VIA OnChip IDE Device [Press Enter] ▶ VIA OnChip PCI Device [Press Enter] ▶ Super IO Device [Press Enter] | Item Help |
| | Menu Level ▶ |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | |

IDE HDD Block Mode

If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
VIA OnChip PCI Device

| | | |
|--|------------|--------------|
| VIA-3058 AC97 Audio | [Audio] | Item Help |
| Init Display First | [PCI Slot] | |
| OnChip USB Controller | [Enabled] | Menu Level ▶ |
| OnChip USB 2.0 Controller | [Enabled] | |
| USB Keyboard Support | [Disabled] | |
| USB Mouse Support | [Disabled] | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

VIA-3058 AC97 Audio

This item allows you to enable AC97 Audio function.

The choice: Auto, Disabled.

Init Display First

This item allows you to select the first display port to be initialized.

The choice: PCI Slot, AGP.

OnChip USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

The choice: Enabled, Disabled.

OnChip USB 2.0 Controller

This entry is for disable/enable EHCI controller only. This BIOS itself may/may not have high speed USB support built in, the support will be automatically turn on when high speed device were attached.

The choice: Enabled, Disabled.

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

The choice: Enabled, Disabled.

USB Mouse Support

This item allows you to enabled USB Mouse function under POST, BIOS Setup menu, DOS, or Window-NT with no USB driver loaded.

The choice: Enabled, Disabled.

Phoenix- AwardBIOS CMOS Setup Utility
Super IO Device

| | | | |
|--|------------|--------------|--|
| Onboard FDC Controller | [Enabled] | Item Help | |
| Onboard Serial Port 1 | [3F8/IRQ4] | | |
| Onboard Serial Port 2 | [2F8/IRQ3] | Menu Level ▶ | |
| UART Mode Select | [Normal] | | |
| X RxD, TxD Active | Hi, Lo | | |
| X IR Transmission Delay | Enabled | | |
| X UR2 Duplex Mode | Half | | |
| X Use IR Pins | IR-Rx2Tx2 | | |
| Onboard Parallel Port | [378/IRQ7] | | |
| Parallel Port Mode | [SPP] | | |
| X EPP Mode Select | EPP1.7 | | |
| X ECP Mode Use DMA | 3 | | |
| Watch Dog Timer Select | [Disabled] | | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | | |

Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows users to select Infrared transmission mode.

| | |
|---------------|--------------------------------|
| Normal | Disable Infrared function |
| IrDA | Select IrDA mode transmission |
| ASKIR | Select ASKIR mode transmission |

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

| | |
|---------------|--|
| Hi, Hi | High rate for receiving / High rate for transmitting |
| Hi, Lo | High rate for receiving / Low rate for transmitting |
| Lo, Hi | Low rate for receiving / High rate for transmitting |
| Lo, Lo | Low rate for receiving / Low rate for transmitting |

IR Transmission Delay

This option will be available when IR is enabled.

The choice: Enabled, Disabled.

UR2 Duplex Mode

The available choices are full duplex mode and half duplex mode

The choice: Full, Half.

Use IR Pins

The available choices are IR-Rx2Tx2/ RxD2, TxD2.

The choice: IR-Rx2Tx2 / RxD2, TxD2.

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The choice: Disabled, 378/IRQ7, 278/IRQ5, and 3BC/IRQ7.

Parallel Port Mode

There are four different modes for the onboard parallel port :

| | |
|------------------|--------------------------|
| SPP | Switch to SPP mode |
| EPP | Switch to EPP mode |
| ECP | Switch to ECP mode |
| ECP + EPP | Switch to ECP + EPP mode |

EPP Mode Select

Select different version of EPP mode.

The choice: EPP1.7, EPP1.9.

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choice: 3, 1.

Watch Dog Timer Select

This BIOS testing option is able to reset the system according to the selected table.

The choice: Disabled, 10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, and 4 Min.

4.8 Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix- AwardBIOS CMOS Setup Utility
Power Management Setup

| | | |
|--|------------------|--------------|
| ACPI Function | [Enabled] | Item Help |
| Power Management | [User Define] | |
| HDD Power Down | [Disabled] | |
| Suspend Mode | [Disabled] | Menu Level ▶ |
| Video Off Option | [Suspend -> Off] | |
| Video Off Method | [V/H SYNC+Blank] | |
| Soft-Off by PWRBTN | [Instant-Off] | |
| Ac Loss Auto Restart | [On] | |
| ▶ IRQ/Event Activity Detect | [Press Enter] | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to “HDD Power Down”, “Suspend Mode”.

There are three selections for Power Management, three of which have fixed mode settings.

| | |
|--------------------------|--|
| Min. Power Saving | Minimum power management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min. |
| Max. Power Saving | Maximum power management. Suspend Mode = 1 Min., and HDD Power Down = 1 Min. |
| User Defined | Allow you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 Hour and HDD Power Down ranges from 1 Min. to 15 Min. |

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The choice: Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, and 1 Hour.

Video Off Option

The choice: Always On, Suspend -> Off.

Video Off Method

This determines the manner in which the monitor is blanked.

| | |
|-----------------------|--|
| V/H SYNC+Blank | This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. |
| Blank Screen | This option only writes blanks to the video buffer. |
| DPMS Support | Initial display power management signaling. |

Soft-Off by PWRBTN

This item allows users to set the time to remove the power after the power button is pressed.

The choice: Instant-Off, Delay 4 Sec.

Ac Loss Auto Restart

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

| | |
|------------|--|
| On | System automatically restores power back |
| Off | System stays at power -off |

Phoenix- AwardBIOS CMOS Setup Utility
IRQ/Event Activity Detect

| | | |
|--|------------|--------------|
| Wake-up by PCI card | [Disabled] | Item Help |
| Modem Ring Resume | [Disabled] | |
| RTC Alarm Resume | [Disabled] | Menu Level ▶ |
| X Date(of Month) Alarm | 0 | |
| X Time(hh:mm:ss) Alarm | 0 : 0 : 0 | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

Wake-Up by PCI card

This option can be enabled to support Wake Up by on-board LAN.

The choice: Disabled, Enabled.

Modem Ring Resume

When select “Enabled”, a system that is at soft-off mode will be alert to Wake-On-Modem.

The choice: Enabled, Disabled.

RTC Alarm Resume

This item allows users to enable/disable the resume by alarm function. When “Enabled” is selected, system using ATX power supply could be powered on if a customized time and day is approached.

The choice: Enabled, Disabled.

Date(of Month) Alarm

When “Resume by Alarm” is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choice: 0 ~ 31.

Time(hh:mm:ss) Alarm

When “Resume by Alarm” is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choice: hh (0~23), mm (0~59), ss (0~59).

4.9 PnP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system, which allows I/O devices to operate at speeds nearing the speed the CPU itself, uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix- AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

| | | |
|--|---------------|--|
| PNP OS Installed | [No] | Item Help |
| Reset Configuration Data | [Disabled] | |
| Resources Controlled By | [Auto (ESCD)] | Menu Level ▶ |
| X IRQ Resources | Press Enter | Select Yes if you are using a plug and play capable operating system Select No if you need the BIOS to configure non-boot devices. |
| X DMA Resources | Press Enter | |
| PCI/VGA Palette Snoop | [Disabled] | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | |

PNP Configuration

Select Yes if you are using a plug and play capable operating system Select No if you need the BIOS to configure non-boot devices.

The choice: No, Yes.

PCI/VGA Palette Snoop

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the plug and play standard whether designed for PCI or ISA bus architecture.

The choice: Enabled, Disabled.

4.10 PC Health Status

Phoenix- AwardBIOS CMOS Setup Utility
PC Health Status

| | | | |
|--|-------------|--------------|--|
| CPU Warning Temperature | [Disabled] | Item Help | |
| Current System Temp. | 35°C /95°F | Menu Level ▶ | |
| Current CPU Temperature | 40°C /104°F | | |
| Current CPUFAN1 Speed | 4856 RPM | | |
| Current CPUFAN2 Speed | 0 RPM | | |
| Vcore | 1.48 V | | |
| +3.3 V | 3.31V | | |
| +5 V | 4.89 V | | |
| +12 V | 11.91 V | | |
| -12 V | -12.11 V | | |
| -5 V | -4.89 V | | |
| VBAT(V) | 3.28 V | | |
| 5VSB(V) | 5.37 V | | |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | | | |

CPU Warning Temperature

This item allows you to set a temperature above which the system will start the beeping warning. Default setting is disabled.

The choices : Disabled, 50°C /122°F, 53°C /127°F, 56°C /133°F, 60°C /140°F, 63°C /145°F, 66°C /151°F, 70°C /158°F.

4.11 Frequency/Voltage Control

Phoenix- AwardBIOS CMOS Setup Utility
Frequency / Voltage Control

| | |
|--|--------------|
| Auto Detect PCI/DIMM Clk [Enabled] | Item Help |
| | Menu Level ▶ |
| ↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults | |

Auto Detect PCI/DIMM Clk

The choice: Enabled, Disabled.

4.12 Default Menu

Selecting “Defaults” from the main menu shows you two options, which are described below,

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N)?

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4.13 Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between are:

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.14 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing “Y” stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)? **N**

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Chapter 5

Troubleshooting

This chapter provides a few useful tips to quickly get ROBO-8612VGA running with success. As basic hardware installation has been addressed in Chapter 2, this chapter will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

5.1 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the device cables required before turning on AT power. CPU, CPU fan, CPU fan power cable, 184-pin DDR SDRAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device power cables, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure a successful power up with ROBO-8612VGA, it is recommended, when going with the boot-up sequence, to hit “DEL” key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to “**Load Optimal Defaults**”, press “Enter” and “Y” to load in default optimal BIOS setup. This will force your BIOS setting back to the initial factory configuration. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting any time when system appears to be unstable in boot up sequence.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, picks up any one from Primary/Secondary Master/Slave IDE ports, and press, “Enter”. Setup the selected IDE port and its access mode to “Auto”. This will force system to automatically pick up the IDE devices that are being connected each time system boots up.

Improper disable operation

There are various occasions where users disable a certain device/feature in one application through BIOS setting. These variables may not be set back to the original values when needed. These devices/features will certainly fail to be detected.

When the above conditions happen, it is strongly recommended to check the BIOS settings. Make sure certain items are set as they should be. These include the floppy drive, COM1/COM2 ports, parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users would like to disable a certain device/port to release IRQ resource. A few good examples are

- Disable COM1 serial port to release IRQ #4
- Disable COM2 serial port to release IRQ #3
- Disable parallel port to release IRQ #7
- Disable PS/2 mouse to release IRQ #12 ,..., etc.

A quick review of the basic IRQ mapping is given below for your reference.

| IRQ# | Description |
|---------|-----------------------------------|
| IRQ #0 | System Counter |
| IRQ #1 | Keyboard |
| IRQ #3 | COM2 |
| IRQ #4 | COM1 |
| IRQ#5 | Multimedia Device |
| RQ #6 | Floppy Disk Controller |
| IRQ #7 | Printer Port (Parallel Port) |
| IRQ #8 | System CMOS / Real time Clock |
| IRQ #9 | Microsoft ACPI-Compliant System |
| IRQ #10 | USB 1.0/1.1 UHCI Controller |
| IRQ #10 | USB 1.0/1.1 UHCI Controller |
| IRQ #11 | USB 2.0 ECHI Controller |
| IRQ #11 | Network Controller |
| IRQ #12 | PS/2 Compatible Mouse |
| IRQ #14 | VIA Bus Master PCI IDE Controller |
| IRQ #14 | Primary IDE Controller |
| IRQ #15 | VIA Bus Master PCI IDE Controller |
| IRQ #15 | Secondary IDE Controller |

It is then very easy to find out which IRQ resource is ready for additional peripherals. If IRQ resource is not enough, please disable some devices listed above to release further IRQ numbers as desired.

5.2 FAQ

Unboot issues

Symptom: After installing CPU and everything required, but why my ROBO-8612VGA is still not working?

Solution: Please make sure that you've used the backplane, which follows PICMG spec.

Symptom: After shutting down Windows, why my system failed to boot up again?

Solution: First, please make sure your ACPI in the BIOS is disabled. Indeed, when system is running with AT power supply and enabled ACPI, it will cause system to failed to boot up. That's because system will go to sleeping mode as shutting down under Windows. To solve this problem, you have to either clean CMOS or push ATX Power button.

Symptom: My ROBO-8612VGA just keeps beeping, and nothing has been shown on the screen?

Solution: As a matter of fact, each beep sound represents different definition of error message. Therefore, please refer to the table as follow,

| Beep sounds | Meaning | Action |
|------------------------------------|-------------------------------|--|
| One long beep with one short beeps | DRAM error | Change DRAM or reinstall it |
| One long beep constantly | DRAM error | Change DRAM or reinstall it |
| One long beep with two short beeps | Monitor or Display Card error | Please check Monitor connector whether it inserts properly |
| Beep rapidly | Power error warning | Please check Power mode setting |

Information & Support

Q: I am using an ATA-66 (or 100) hard drive, how can I know that ATA-66 function is started?

A: First of all, you need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 (or 100) message while hard drive is being detected. Besides, after Microsoft series OS installation successfully, you must install ATA-66/100 driver, then the function can be active.

Q: I am using an ATA-66 or 100 hard drive, how can I know that ATA 66/100 is active?

A: As matter of fact, you need to use 80 pins ATA-66 IDE cable to enable ATA 66 function. While POST stage of detecting hard drive, you will see ATA - 66/100 message. Besides, after installing Microsoft Windows system, you also need to install ATA 66/100 driver. Otherwise, this function won't be active in Windows.

Q: After setting up my serial port from RS-232 to RS-485, why my serial port still cannot work.

A: Unlike RS-232, RS-485's signal is differential signal. Therefore, its data must connect to same definition of pins. For example, there are only two pins in RS-485, which are DATA - and DATA +. Its connection must be "DATA - connects to DATA -", and "DATA + connects to DATA +". Otherwise, RS-485 won't be able to transfer its data.

Q: After installing Compact Flash, why the device on Secondary has been missing?

A: Compact Flash is set to master on Secondary channel. If you accidentally set any IDE device to the same channel as Compact Flash default does. Your device will work improperly; the setting of Compact Flash is unchangeable.

Q: I am a customer of Portwell, where can I get new BIOS to update my SBC?

A: Indeed, you can always go to Portwell Download center to download update BIOS. Besides, before downloading anything, please mail us to get your download account number.

Portwell Download Center

<http://www.portwell.com.tw/download.asp>

To request your Account Number for Download Center, please fill out the information form on our Internet after selecting the information that you want.

Q: How can password be erased when forgotten the password of BIOS?

A: Please set JP13 to 1-2 pins for few sec, and then put jumper back to 3-4 pins.

Note:

Please visit our technical web site at

<http://www.portwell.com.tw>

For additional technical information, which isn't covered in this manual, you can mail to tsd@mail.portwell.com.tw or you can also send mail to our sales, they will be very delighted to forward them to us.

System Memory Address Map

Each On-board device in the system is assigned a set of memory addresses, which also can be identical of the device. The following table lists the system memory address used.

| Memory Area | Size | Device Description |
|--------------------------------------|------|--------------------|
| 0000 - 003F | 1K | Interrupt Area |
| 0040 - 004F | 0.3K | BIOS Data Area |
| 0050 - 006F | 0.5K | System Data |
| 0070 - 04C3 | 17K | DOS |
| 04C4 - 057F | 2.9K | Program Area |
| 0580 - 9FFE | 617K | [Available] |
| 9FFF - 9FFF | 0.1K | Unused |
| = Conventional memory ends at 640K = | | |
| A000 - AFFF | 64K | VGA Graphics |
| B000 - B7FF | 32K | Unused |
| B800 - BFFF | 32K | VGA Text |
| C000 - CE7F | 58K | Video ROM |
| CE80 - D049 | 7.2K | Unused |
| D04A - DFFF | 62K | High RAM |
| E000 - EFFF | 64K | Page Frame |
| F000-FFFF | 64K | System ROM |
| HMA | 64K | First 64K Extended |

Interrupt Request Lines (IRQ)

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

| IRQ# | Current Use | Default Use |
|-------------|--------------------|--------------------|
| IRQ 0 | SMARTDRV | System Timer |
| IRQ 1 | SMARTDRV | Keyboard Event |
| IRQ 2 | [Unassigned] | Usable IRQ |
| IRQ 3 | System ROM | COM2 |
| IRQ 4 | System ROM | COM1 |
| IRQ 5 | [Unassigned] | Usable IRQ |
| IRQ 6 | System ROM | Diskette Event |
| IRQ 7 | [Unassigned] | Usable IRQ |
| IRQ 8 | System ROM | Real-time Clock |
| IRQ 9 | [Unassigned] | Usable IRQ |
| IRQ 10 | [Unassigned] | Usable IRQ |
| IRQ 11 | [Unassigned] | Usable IRQ |
| IRQ 12 | System ROM | IBM Mouse Event |
| IRQ 13 | System ROM | Coprocessor Error |
| IRQ 14 | System ROM | Hard Disk Event |
| IRQ 15 | [Unassigned] | Usable IRQ |