ePCI-102 User's Guide

Via Eden Half-Size SHB

Document Revision 1.1



kontron

... always a Jump ahead!

Ref. : M8006_TECH_1/ January 2004

Customer Service

Contact Information: Kontron Canada, Inc.
616 Curé-Boivin
Boisbriand, Québec, Canada
J7G 2A7
Tel: (450) 437-5682
(800) 354-4223
Fax: (450) 437-8053
E-mail: support@ca.kontron.com

Visit our site at: www.kontron.com

© 2003 Kontron, an International Corporation. All rights reserved.
The information in this user's guide is provided for reference only. Kontron does not assume any liability arising out of the application or use of the information or products described herein. This user's guide may contain or reference information and products protected by copyrights or patents and does not convey any license under the patent rights of Kontron, nor the rights of others.

Kontron is a registered trademark of Kontron. All trademarks, registered trademarks, and trade names used in this user's guide are the property of their respective owners. All rights reserved. Printed in Canada. This user's guide contains information proprietary to Kontron. Customers may reprint and use this user's guide in other publications. Customers may alter this user's guide and publish it only after they remove the Kontron name, cover, and logo.

Kontron reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology. Changes that affect the operation of the unit will be documented in the next revision of this user's guide.

Contents

Customer Service i

Contents ii

Safety Instructions vi
- Before You Begin vii
- When Working Inside a Computer viii
- Preventing Electrostatic Discharge ix
- Working with Batteries x

Preface xii
- How to Use This Guide xiii
- Customer Comments xiv
- Advisory Conventions xiv
- Unpacking xv
- Powering Up the System xv
- Adapter Cables xvi
- Storing Boards xvi
- Regulatory Compliance xvi
- Limited Warranty xvi

1 Product Description 1-0
- 1.1 Product Overview 1-1
- 1.2 What's Included 1-1
- 1.3 Board Specifications 1-1
- 1.4 ePCI Compliance 1-3

2 Onboard Features 2-0
- 2.1 Block Diagram 2-1
- 2.2 System Core 2-2
  - 2.2.1 Processors 2-2
  - 2.2.2 Chipset Feature 2-2
  - 2.2.3 Memory Interface 2-5
- 2.3 VT8231 Super South Bridge 2-6
  - 2.3.1 Enhanced IDE Interfaces (J5 and J10) 2-6
  - 2.3.2 CompactFlash Interface (J11) 2-7
  - 2.3.3 USB Interfaces 2-8
  - 2.3.4 USB2 and USB3(J3) 2-8
  - 2.3.5 Floppy Connector(J4) 2-9
  - 2.3.6 PS/2 Mouse and Keyboard(J13) 2-10
  - 2.3.7 Serial Ports 2-11
  - 2.3.8 Parallel Port (J7) 2-13
  - 2.3.9 Ethernet Controller (J12) 2-15
  - 2.3.10 Multifunction Connector(J8) 2-16

2.4 ATX Power Supply Control(J17) 2-16
2.5 Watchdog Timer 2-17
2.6 Video Interface 2-18
2.6.1 Supported Resolutions 2-18
2.6.2 Major Features Description 2-18

3 Installing the board 3-0
3.1 Setting Jumpers 3-1
3.1.1 3.1.1 Jumper Description 3-1
3.1.2 Setting Jumper & locations 3-2
3.2 Processor 3-3
3.3 Memory 3-3
3.3.1 Installing Memory 3-4
3.4 Onboard Interconnectivity 3-5
3.4.1 Onboard Connectors and Headers 3-5
3.4.2 Front Plate Connectors and Indicators 3-6
3.5 Backup Battery 3-7
3.5.1 Operation and Preventative Maintenance 3-7

4 Software Setup 4-0
4.1 PHOENIX BIOS Setup Program 4-1
4.1.1 Accessing the BIOS Setup Program 4-1
4.1.2 Menu Bar 4-3
4.2 Installing Drivers 4-15
4.2.1 Video Drivers 4-15
4.2.2 Ethernet Drivers 4-15
4.2.3 Other Drivers 4-15
4.3 Console Redirection (VT100 Mode) 4-16
4.3.1 Requirements 4-16
4.3.2 Setup & Configuration 4-16
4.3.3 Running Without a Terminal 4-17

A. Memory & I/O Maps A-1
A.1 Memory Mapping A-1
A.2 I/O Mapping A-2

B. Interrupt Lines B-1
B.1 IRQ Lines B-1

C. Board Diagrams C-1
C.1 Top Devices Surface Mount C-1
C.2 Mounting Holes C-2
C.3 Top Mounting Components C-3

D. Connector Pinouts D-1
D.1 Connectors and Headers Summary D-1
D.2 Serial Port 1 - (J1) RS-232 ..... D-2
D.3 Power D-2
D.4 USB Header (J3) D-2
D.5 Floppy Drive (J4) D-3
D.6 Primary & Secondary EIDE Connector (J5 & J10) D-3
D.7 CPU Fan Header (J6) D-4
D.8 Parallel Port (J7) D-4
D.9 Multi-Function (J8) D-5
D.10 Jumptec Intelligent LVDS Interface (J9) D-6
D.11 CompactFlash™ (J11) D-7
D.12 Ethernet 10Base-T/100Base-TX (J12) D-7
D.13 PS/2 Keyboard/Mouse (J13) D-7
D.14 USB1 and USB2 (located on faceplate) (J14 & J15) D-8
D.15 CRT VGA Interface (J16) D-8
D.16 ATX-Type BOARD Power (J17) D-8

E. BIOS Setup Error Codes E-1
E.1 POST Beep E-1
E.1.1 Recoverable POST Errors E-1
E.1.2 Terminal POST Errors E-1
E.1.3 Test Points and Beep Codes E-1
E.2 POST Messages E-7
E.3 Error Messages E-7

F. BIOS Update & Emergency Procedure F-1
F.1 BIOS Update Precedure F-1
F.2 Emergency Procedure F-1

G. Troubleshooting G-1
G.1 Power and Boot Problems G-1
G.1.1 Power Supply Doesn't Start G-1
G.2 SHB Used in Stand-Alone With ATX Control G-1
G.3 SHB Used in a Backplane Without ATX Control G-1
G.4 SHB Used in a Backplane With ATX Control G-2
G.4.1 Power Supply Doesn't Stop (Softoff doesn't work) G-2
G.4.2 Bad Behavior Following an AC loss G-2
G.4.3 SHB Stuck in Reset G-2
G.4.4 SHB Hang During Boot G-3
G.5 Off-board PCI Problems G-3
G.5.1 Bus A Problems G-3
G.6 IDE Problems G-3
G.7 Booting from a USB floppy does not work G-3

H. Getting Help H-1

Safety Instructions

Contents

Before You Begin vii
When Working Inside a Computer viii
Preventing Electrostatic Discharge ix
Working with Batteries x

Before You Begin

Before handling the board, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the "Advisories" section in the Preface for advisory conventions used in this user's guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating the computer. Only qualified, experienced, authorized electronics service personnel should access the interior of the computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.

- Use extreme caution when installing or removing components. Refer to the installation instructions in this user's guide for precautions and procedures. If you have any questions, please contact Kontron Technical Support.

WARNING



High voltages are present inside the chassis when the unit's power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.



When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

Turn off the computer and any peripherals.

Disconnect the computer and peripherals from power sources or subsystems to prevent electric shock or systemboard damage. This does not apply to when hot-swapping parts.

Follow the guidelines provided in “Preventing Electrostatic Discharge“ on the following page.

Disconnect telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sue both connectors are correctly oriented and aligned.

CAUTION



Do not attempt to service the system yourself, except as explained in this user’s guide. Follow installation and troubleshooting instructions closely.



Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Kontron strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

Take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.

- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.

- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Working with Batteries

Care and Handling Precautions for Lithium Batteries

Your computer board has a standard, nonrechargeable lithium battery. To preserve the battery's lifetime, the battery enable jumper has been removed for shipping.

- Do not short circuit
- Do not heat or incinerate
- Do not charge
- Do not deform or disassemble
- Do not apply solder directly
- Do not mix different types or partially used batteries together
- Always observe proper polarities

Replacing Lithium Batteries

Exercise caution while replacing lithium batteries!

WARNING



Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries, following manufacturer's instructions.



ATTENTION



Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabriquant.



ACHTUNG



Explosionsgefahr bei falschem Batteriewechsel. Verwenden Sie nur die empfohlenen Batterietypen des Herstellers. Entsorgen Sie die verbrauchten Batterien laut Gebrauchsanweisung des Herstellers.



ATENCION



Puede explotar si la pila no este bien reemplazada. Solo reemplazca la pila con tipas equivalentes segun las instrucciones del manifacturo. Vote las pilas usads segun las instrucciones del manifacturo.



Preface

Contents

How to Use This Guide xiii
Customer Comments xiv
Advisory Conventions xiv
Unpacking xv
Powering Up the System xv
Adapter Cables xvi
Storing Boards xvi
Regulatory Compliance xvi
Limited Warranty xvi



How to Use This Guide

This user's guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

You can find the latest release of this User's Guide at:

http://www.kontron.com or at: ftp://ftp.kontron.ca/support/

For the circuits, descriptions and tables indicated, Kontron assumes no responsibility as far as patents or other rights of third parties are concerned.

The following is a summary of chapter contents:

- Chapter 1, Product Description
- Chapter 2, Onboard Features
- Chapter 3, Installing the board
- Chapter 4, Software Setup
- Appendix A, Memory & I/O Maps
- Appendix B, Interrupt Lines
- Appendix C, Board Diagrams
- Appendix D, Connector Pinouts
- Appendix E, Bios Setup Error Codes
- Appendix F, BIOS Update & Emergency Procedure
- Appendix G, Trouble Shooting
- Appendix H, Getting Help

Customer Comments

If you have any difficulties using this user's guide, discover an error, or just want to provide some feedback, please send us a message at Tech.Writer@ca.kontron.com. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user's guide in our Web site. Thank you.

Advisory Conventions

Seven types of advisories are used throughout the user guides to provide helpful information or to alert you to the potential for hardware damage or personal injury. They are Note, Signal Paths, Related Jumpers, BIOS Settings, Software Usage, Cautions, and Warnings. The following is an example of each type of advisory. Use caution when servicing electrical components.



Note :
Indicate information that is important for you to know



Signal Paths:
Indicate the places where you can fin the signal on the board



Related Jumpers:
Indicate the jumpers that are related to this sections



BIOS Settings :
Indicate where you can set this option in the BIOS



Software Usage :
Indicates how you can access this feature through software.

CAUTION



Indicate potential damage to hardware and tells you how to avoid the problem.



WARNING



Indicates potential for bodily harm and tells you how to avoid the problem.



Disclaimer: We have tried to identify all situations that may pose a warning or a caution condition in this user's guide. However, Kontron does not claim to have covered all situations that might require the use of a Caution or a Warning.

Unpacking

Follow these recommendations while unpacking:

- Remove all items from the box. If any items listed on the purchase order are missing, notify Kontron customer service immediately.
- Inspect the product for damage. If there is damage, notify Kontron customer service immediately.
- Save the box and packing material for possible future shipment.

Powering Up the System

Before any installation or setup, ensure that the board is unplugged from power sources or subsystems.

If you encounter a problem, verify the following items:

- Make sure that all connectors are properly connected.
- Verify your boot devices.
- If the system does not start properly, try booting with only the video monitor connected to the board and without any other I/O peripherals attached, including PCI adapters.

If you still cannot start your system, please refer to the Emergency Procedure in the Appendix Section of this User's Guide.

Make sure your system provides the minimum DC voltages required at the board's slot, especially if DC power is carried by cables.

If you are still not able to get your board running, contact our Technical Support for assistance.

Adapter Cables

Because adapter cables come from various manufacturers, pinouts can differ. The direct crimp design offered by Kontron allows the simplest cable assembly. All cables are available from Kontron Sales Department.

Storing Boards

Electronic boards are sensitive devices. Do not handle or store device near strong electrostatic, electromagnetic, magnetic or radioactive fields.

Regulatory Compliance

This product has been designed to meet the FCC regulatory for Class B devices.

WARNING



This product is designed to meet Class B. If not installed in a properly shielded enclosure and used in accordance with this User's Guide, this product may cause radio interference in which case users may need to take additional measures at their own expense.



Limited Warranty

Kontron Canada, Inc, ("The seller") warrants its boards to be free from defects in material and workmanship for a period of two (2) years commencing on the date of shipment. The liability of the seller shall be limited to replacing or repairing, at the seller's option, any defective units. Equipment or parts, which have been subject to abuse, misuse, accident, alteration, neglect, or unauthorized repair are not covered by this warranty. This warranty is in lieu of all other warranties expressed or implied.

1 Product Description

Contents

1.1 Product Overview 1-1
1.2 What's Included 1-1
1.3 Board Specifications 1-1
1.4 ePCI Compliance 1-3

1.1 Product Overview

Based on the VIA CPU and chipset, the ePCI-102 supports the VIA Eden™ 733MHz and the VIA Eden™ 1.0 GHz processors. The ePCI-102 can support up to 512MB of PC133 SDRAM and features a 10/100 BaseT-TX Ethernet interface. VGA performance is provided by the integrated Pro Savage 4 with CRT and flat panel support. It also supports a CompactFlash disk. Other I/Os include four USB ports, PS/2 mouse/keyboard, floppy, Ultra DMA/100, parallel and serial ports.

Designed to support embedded applications such as point of sales terminals, small network security appliances, test & measurement and industrial automation applications, the ePCI-102 will offer a natural evolution for current VIPer (ISA Half-Size) board users and will allow them to scale up with higher performance ePCI products -- such as the ePCI-100 or ePCI-101 -- as their requirements evolve.

1.2 What's Included

This board is shipped with the following items:

1. One Quick Reference Sheet.
2. One CD-ROM containing drivers.
3. One ePCI 102 board
4. Cables that have been ordered

If any item is missing or damaged, contact the supplier.

1.3 Board Specifications

FEATURES	DESCRIPTION
Supported Microprocessors	• VIA Eden^{tm} 733MHz or VIA Eden^{tm} 1.0GHz
Cache Memory	• Total of 192K Cache
Chipset	• Via Twister 8606
Bus Interface	• CPU Front side bus at 133 MHz • Bus: 32-bit PCI at 33MHZ, universal keying
System Memory	• Up to 512MB on 1 x 168-pin latching DIMM sockets of PC133 unbuffered SDR SDRAM
Flash Memory	• 512KB for BIOS field upgrade

Board Specifications (continued)

I/O	**Description**	Faceplate	Onboard	Total
	Video	1	-	1
	USB	2	2	4
	Serial	-	1	1
	PS/2 Mouse & Keyboard	1	1	1
	Ethernet	1	-	1
	Hard Disk	-	4	4
	Compact Flash	-	1	1
	Floppy	-	2	2
	Parallel	-	1	1
	Video	Pro Savage 4 integrated in North Bridge, 2D/3D graphics acceleration, up to 32MB. Supports CRT display with resolution of up to 1600 x 1200. Support flat panel through JILI interface		
	USB	4 USB 1.1 compliant		
	Serial	configurable as RS-232/RS-422/485		
	Parallel	One bi-directional with all IEEE 1284 protocols supported with BIOS selectable IRQs and addressing		
	Ethernet	One 10Base-T/100Base-Tx integrated in South Bridge		
	Hard Disk	Ultra DMA/100, support for four IDE drives (in master / slave configuration); PIO Mode 4, Bus Master IDE or synchronous DMA mode transfer up to 100MB/s		
	Floppy Disk	Support for two drives		
	Compact Flash	Supports CompactFlash disk module (on secondary channel)		
Clock/Calendar	• Real-time clock with 256 bytes battery backup CMOS RAM			
Connectors on faceplate	CRT Keyboard / Mouse Ethernet USB1 and 2	15-pin D-Sub 6-pin Mini-DIN 1 x RJ-45 with built-in LEDs 2 x 4-pin USB female		
Connectors on Headers (onboard)	CPU fan(1) Dual USB(1) Parallel port(1) ATA/IDE (2)	Power On(1) Multifunction(1) CompactFlash module(1) JILI flat panel connector(1)	Serial Port(1) ATX power supply(1) Floppy(1)	
BIOS Features	• Phoenix BIOS in Boot Block Flash with recovery code; save CMOS in Flash and boot from LAN capability • Setup console redirection to serial port (VT100 mode) with CMOS setup access • Onboard peripheral can be enabled or disabled by software • Diskless, keyboardless, and videoless operation extensions. Keyboardless and videoless operation need console redirection • System, video and LAN BIOS shadowing • HDD S.M.A.R.T. support • Advanced Configuration and Power Interface (ACPI 1.0) • Hardware monitor (Vcore, 12V, 5V, 2.5V, 3.3V, CPU temperature, CPU fan). • ATX support with SOFTOFF			

Board Specifications (continued)

Supervisory	• Single stage software programmable watchdog timer, time out from 0.4 sec to 10 min • Hardware system monitor (voltages, monitoring fan), CPU temperature monitor		
OS Compatibility	• Microsoft Windows 2000 family • Microsoft Windows XP • Linux		
Mechanical	122 x 185 x 25.4 mm at CPU / fan (4.8 x 7.3 x1.5 in. at CPU / fan)		
Power Requirements	Supply Voltage VCC = +3.3V ±5% +5V ±5% +12V ± 5% +12V ± 5% ICC typ. +5V 1.9 A ICC typ. +3.3V 2.8 A ICC typ. +12V 0.1 A ICC typ. –12V 0 A Tested with a Eden^{tm} 1.0GHz and 512M of PC-133		
Environmental		Operating	Storage and Transit
	Temperature	0-60°C/32-140°F**	-40 to +70°C/-40 to 158°F*
	Humidity	5% to 90% @40°C/104°F non-condensing	5% to 95% @ 40°C/104°F* non-condensing
	Altitude*	4,000 m / 13,123 ft	15,000 m / 49,212 ft
	Shock*	5G each axis	Bellcore GR-63-CORE Section 4.3
	Vibration*	1.0G, 5-500Hz each axis	2.0G, 5-50Hz; 3.0G, 50-500Hz each axis
Reliability	• MTBF: TBD • USB and mouse/keyboard voltage protected by self-resetting fuses		
Safety/EMC	Designed to meet or exceed: • Safety: UL 60950 3rd Ed.; CSA C22.2 No 60950-00; EN 60950:2000; IEC60950-1 • EMI/EMC: FCC 47 CFR Part 15, Class B; EN55022/EN55024		
Warranty	2 year limited warranty		

*Designed to meet or exceed
** A minimum of 150 LFM is needed when use in fanless operation.

1.4 ePCI Compliance

This product conforms to the following specifications:

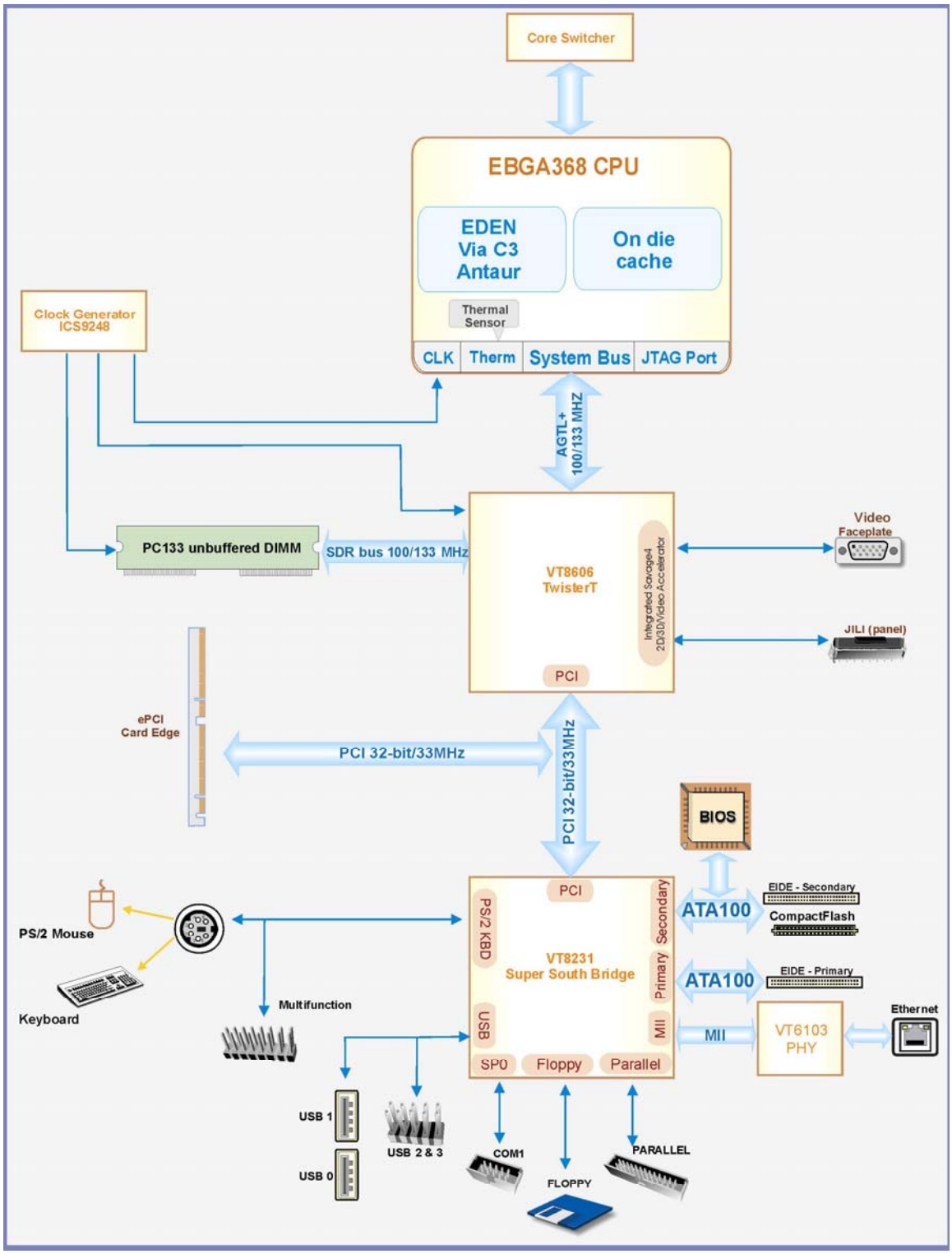
- PICMG1.2 R1.0
- JILI R2.0

2 Onboard Features

Contents

2.1 Block Diagram.....2-1
2.2 System Core.....2-2
2.3 VT8231 Super South Bridge 2-6
2.4 ATX Power Supply Control(J17).....2-16
2.5 Watchdog Timer.....2-17
2.6 Video Interface 2-18

2.1 Block Diagram



2.2 System Core

2.2.1 Processors

The ePCI-102 system board supports VIA Eden processors in the EGA 368 package. Single CPU configuration is supported. In the option list, you will see a list of possible configurations. 133 MHz front side bus supported. Major CPU features include:

- MMX-compatible instructions
- SSE-compatible instructions
- Two large (64-KB each, 4-way) on-chip caches
- 64-KB Level 2 victim cache (16-way)
- Two large TLBs (128 entries each, 8-way) with two page directory caches
- Branch Target Address Cache with 1k entries each identifying 2 branches
- Unique and sophisticated branch prediction mechanisms
- Bus speeds up to 133 MHz
- Extremely low power dissipation
- Very small die (52 mm^2 in TSMC 0.13µ technology)

Please call Kontron to get the available CPU speed and configuration. See VIA's Web site for additional details about Eden architecture and instruction set.

2.2.2 Chipset Feature

The ePCI-102 is based on the VIA 8606 chipset which include the following high performance devices

- Defines Integrated Solutions for Value PC Mobile Designs
  - High performance SMA North Bridge: Integrated VIA Pro133A and S3 Graphics' ProSavage4 in a single chip
  - 64-bit Advanced Memory controller supporting PC133 / PC100 SDRAM
- High Performance CPU Interface
  - 133 / 100 MHz CPU Front Side Bus (FSB)
  - Five outstanding transactions (four In-Order Queue (IOQ) plus one output latch)
  - Dynamic deferred transaction support

- Advanced High-Performance DRAM Controller
  - DRAM interface runs synchronous (133/133 or 100/100) mode or pseudo-synchronous (133/100, 100/133) mode with FSB
  - Concurrent CPU, AGP, and PCI access
  - Supports standard PC133 and PC100 SDRAM memory types
  - Support 3 DIMMs or 6 banks for up to 1.5 GB of DRAM (256Mb DRAM technology)
  - 64-bit data width
  - Supports maximum 8-bank interleave (8 pages open simultaneously); banks are allocated based on LRU
  - SDRAM X-1-1-1-1-1-1-1 back-to-back accesses

- Integrated ProSavage4 2D/3D/Video Accelerator
  - Optimized Shared Memory Architecture (SMA)
  - Full internal AGP 4x performance
  - Significant internal architectural upgrades from original S3 Savage4 stand alone product
  - 8 / 16 / 32 MB frame buffer using system memory
  - Floating point triangle setup engine
  - Single cycle 128-bit 3D architecture
  - 8M triangles/second setup engine
  - 140M pixels/second trilinear fill rate
  - Microsoft Direct X texture compression
  - Next generation, 128-bit 2D graphics engine
  - High quality DVD video playback
  - 2D/3D resolutions up to 1600x1200

- 3D Rendering Features
  - Single-pass multiple textures
  - Anisotropic filtering
  - 8-bit stencilbuffer
  - 32-bit true color rendering
  - Specular lighting and diffuse shading
  - Alpha blending modes
  - Massive 2K x 2K textures
  - MPEG-2 video textures
  - Vertex and table fog
  - 16 or 24-bit Z-buffering
  - Reflection mapping, texture morphing, shadows, procedural textures and atmospheric effects

- 2D Hardware Acceleration Features
  - ROP3 Ternary Raster Operation BitBLTs
  - 8, 16, and 32 bpp mode acceleration

- Motion Video Architecture
  - High quality up/down scaler
  - Planar to packed format conversion
  - Motion compensation for full speed DVD playback
  - Hardware subpicture blending and highlights
  - Multiple video windows for video conferencing
  - Contrast, hue, saturation, brightness and gamma controls
  - ZV-Port Interface for display of video from an external source

- Concurrent PCI Bus Controller
  - PCI 2.2 compliant, 32-bit 3.3V PCI interface with 5V tolerant inputs
  - Supports up to 5 PCI masters
  - PCI to system memory data streaming support
  - Delay transaction from PCI master accessing DRAM
  - Symmetric arbitration between Host/PCI bus for optimized system performance

- Advanced System Power Management Support
  - Independent clock stop controls for CPU / SDRAM, AGP, and PCI bus
  - PCI and AGP bus clock run and clock generator control
  - Suspend-to-DRAM and self-refresh power down
  - Low-leakage I/O pads
  - ACPI 1.0B and PCI Bus Power Management 1.1 compliant

- Additional Features
  - Simultaneous display of CRT with LCD Panel
  - 250 MHz RAMDAC with Gamma Correction
  - I_2C Serial Bus and DDC Monitor Communications
  - 2.5V Core and Mixed 3.3V/5V Tolerant and GTL+ I/O
  - 35 x 35mm HSBGA package (Ball Grid Array with Heat Spreader) with 552 balls

The south bridge VIA 8231 major feature are listed below

- Integrated Peripheral Controllers
  - Integrated Fast Ethernet Controller with 1 / 10 / 100 Mbit capability
  - Integrated USB Controller with two root hub and four function ports
  - Dual channel UltraDMA-33 / 66 /100 master mode EIDE controller

- Integrated Legacy Functions
  - Integrated Keyboard Controller with PS2 mouse support
  - Integrated DS12885-style Real Time Clock with extended 256 byte CMOS RAM and Day/Month Alarm for ACPI
  - Integrated Bus Controller including DMA, timer, and interrupt controller
  - Serial IRQ for docking and non-docking applications
  - Flash EPROM, 32Mbit (4Mbyte) EPROM and combined BIOS support
  - Fast reset and Gate A20 operation

- Fast Ethernet Controller
  - High performance PCI master interface with scatter / gather and bursting capability
  - Standard MII interface to Ethernet or HomePNA PHYceiver
  - 1 / 10 / 100 MHz full and half duplex operation
  - Transmit data buffer byte alignment for low CPU utilization
  - Separate 2K byte FIFOs for receive and transmit of full Ethernet packets
  - Flexible dynamically loadable EEPROM algorithm
  - Physical, Broadcast, and Multicast address filtering using hashing function
  - Flexible wakeup events: link status change, magic packet, unicast physical address match, predefined pattern match
  - Software controllable power down

- UltraDMA-100 / 66 / 33 Master Mode PCI EIDE Controller
  - Dual channel master mode PCI supporting four Enhanced IDE devices
  - Transfer rate up to 100 MB/sec to cover up to PIO mode 4, multi-word DMA mode 2, and UltraDMA mode 5
  - Thirty-two levels (doublewords) of prefetch and write buffers per channel
  - Dual DMA engine for concurrent dual channel operation
  - Bus master programming interface for SFF-8038i rev.1.0 and Windows-95 / 98 / 2000 compliant
  - Full scatter gather capability
  - Support ATAPI compliant devices including DVD devices
  - Support PCI native and ATA compatibility modes
  - Complete software driver support

- Integrated Super IO Controller
  - Supports serial port, parallel port, and floppy disk controller functions
  - Serial Port
  - Programmable character lengths (5,6,7,8)
  - Even, odd, stick or no parity bit generation and detection
  - Programmable baud rate generator
  - Independent transmit/receiver FIFOs
  - Plug and play with 96 base IO address and 12 IRQ options
  - Multi-mode parallel port
  - Standard mode, ECP and EPP support
  - Dynamic and static switch between parallel port pinout and FDC pinout
  - Plug and play with 192 base IO address, 12 IRQ and 4 DMA options
  - Floppy Disk Controller
  - 16 bytes of FIFO
  - Data rates up to 1Mbps
  - Perpendicular recording driver support
  - Two FDDs with drive swap support
  - Plug and play with 48 base IO address, 12 IRQ and 4 DMA options

- Universal Serial Bus Controller
  - USB v.1.1 and Intel Universal HCI v.1.1 compatible
  - Eighteen level (doublewords) data FIFO with full scatter and gather capability
  - Root hub and four function ports
  - Integrated physical layer transceivers with optional over-current detection status on USB ouiinputs
  - Legacy keyboard and PS/2 mouse support

- System Management Bus Interface
  - One master / slave SMBus and one slave-only SMBus
  - Host interface for processor communications
  - Slave interface for external SMBus masters

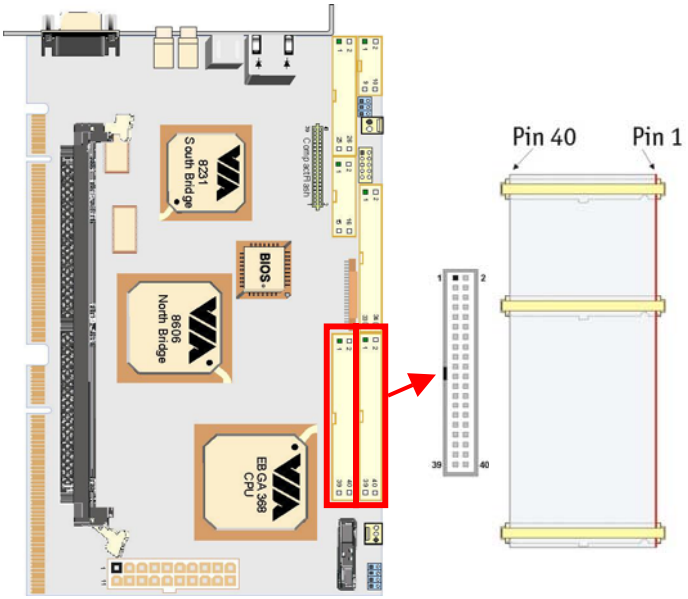
2.2.3 Memory Interface

This product supports up to 512 Megabytes on one 168-pin latching DIMM sockets. Supported memory includes PC133 SDRAM, 3.3V non-registered SDRAM, non-ECC/ECC mode.

2.3 VT8231 Super South Bridge

2.3.1 Enhanced IDE Interfaces (J5 and J10)

The board features two channels Bus Master PCI EIDE dedicated to Primary IDE logical interface. Each channel supports up to two devices (including CD-ROMs, hard disks, CompactFlash) with independent timings, in Master/Slave combination.



Pin	Signal	Pin	Signal
1	RST#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C. (KEY)
21	DMARQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY	28	GND (CSEL)
29	DMACK#	30	GND
31	IRQ	32	IOCS16#*
33	A1	34	PDIAG#
35	A0	36	A2
37	CS0#	38	CS1#
39	ACT#	40	GND

* connected on J10

Signal Paths: Primary IDE interface: J5 (40-pin header) and Secondary IDE interface: J10 (40-pin header) and J11 (CompactFlash connector).

Related Jumpers: W7: when jumper is present, the CompactFlash is in "master" mode, otherwise it is in "slave" mode.

Bios Settings:

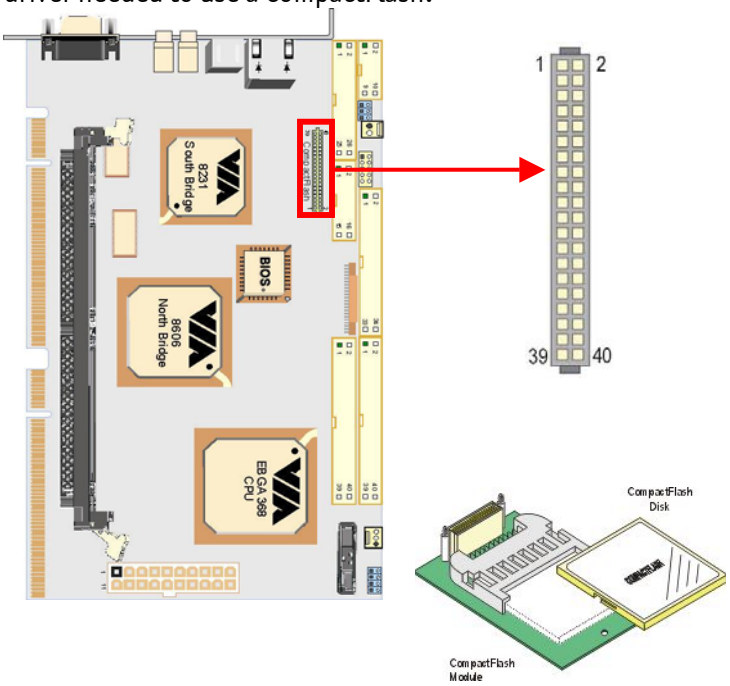
- Main
- Specify disk type
- Advanced \ Local bus IDE adapter
- Enable/disable IDE adapter

CAUTION

Two Master devices (or two Slave devices) must not be installed on the same interface at the same time.

2.3.2 CompactFlash Interface (J11)

This board supports an ATA/IDE compatible flash disk by using a CompactFlash carrier module. The CompactFlash disk connects directly on the Secondary EIDE interface. It must be configured the same way as a standard hard disk using the BIOS setup program (Autodetect function). There is no driver needed to use a CompactFlash.



Pin	Signal	Pin	Signal
1	D11	2	GND
3	D12	4	D3
5	D13	6	D4
7	D14	8	D5
9	D15	10	D6
11	CS1#	12	D7
13	DMACK#	14	CS0#
15	DMARQ	16	IOR#
17	PDIAG#	18	IOW#
19	IRQ15	20	VCC
21	VCC	22	VCC
23	GND	24	GND
25	RESET#	26	GND
27	CSEL	28	A2
29	A1	30	DASP#
31	A0	32	IORDY
33	D0	34	D8
35	D1	36	D9
37	D2	38	D10
39	IOCS16#	40	GND

Signal Paths: J11 (CompactFlash connector)

Related Jumpers: W7: when jumper is present, the CompactFlash is in "master" mode, otherwise it is in "slave" mode.

Bios Settings:

- Main
- Specify disk type
- Advanced \ Local bus IDE adapter
- Enable/disable IDE adapter

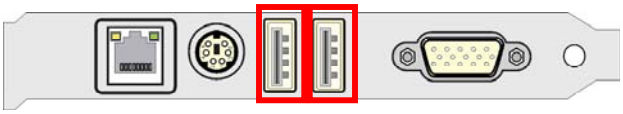
CAUTION

1. When using a CompactFlash, the operating temperature must not exceed 50°C/122°F

2. When connecting a CompactFlash on J11 (secondary IDE port) and a hard disk on J10 (header for the secondary IDE port), make sure that you configure one device as master and the other as slave. Two master devices (or two slave devices) must not be installed on the same IDE channel at the same time.

2.3.3 USB Interfaces

The USB strengths are as follows: capability to daisy chain as many as 127 devices per interface, fast bi-directional, isochronous/asynchronous interface, 12Mbps transfer rate, and standardization of peripheral interfaces into a single format. USB supports Plug and Play and hot swapping operations (OS level). These user-friendly features allow USB devices to be automatically attached, configured and detached, without reboot or running setup.



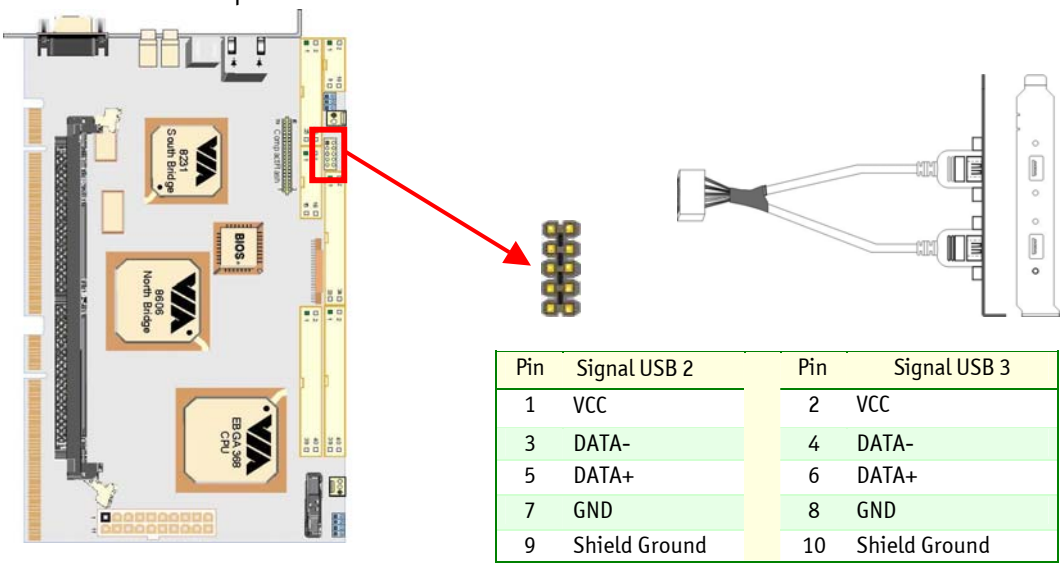
Pin	Signal
1	VCC
2	DATA-
3	DATA+
4	GND

Signal Paths: USB0 and USB 1 signals are available on faceplate through J15 and J14 connectors.

Bios Settings:
Advanced: Legacy USB Support (keyboard and mouse)

2.3.4 USB2 and USB3 (J3)

If the USB Port connectors on the faceplate aren't sufficient, a USB header is available for additional USB port connectors. Connect the 2 ports USB connector to the USB header and mount the USB bracket to an open slot in the chassis.



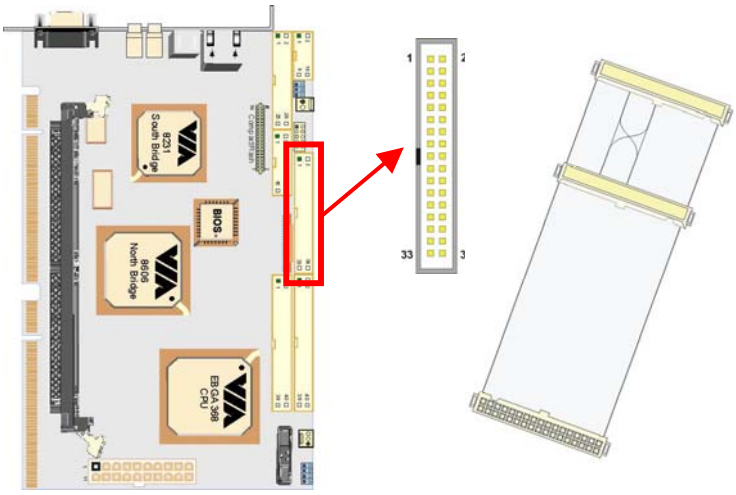
Pin	Signal USB 2	Pin	Signal USB 3
1	VCC	2	VCC
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	GND	8	GND
9	Shield Ground	10	Shield Ground

Signal Paths: J3 (USB header for two ports)

Bios Settings:
To enable/disable the USB Host controller, refer to Section Advanced Menu selection, *OnChip USB Device*.
To support USB keyboard, refer to Section Advanced Menu selection, *USB BIOS Legacy Support*.

2.3.5 Floppy Connector(J4)

The onboard floppy disk controller is IBM PC XT/AT compatible. Up to two drives are supported.



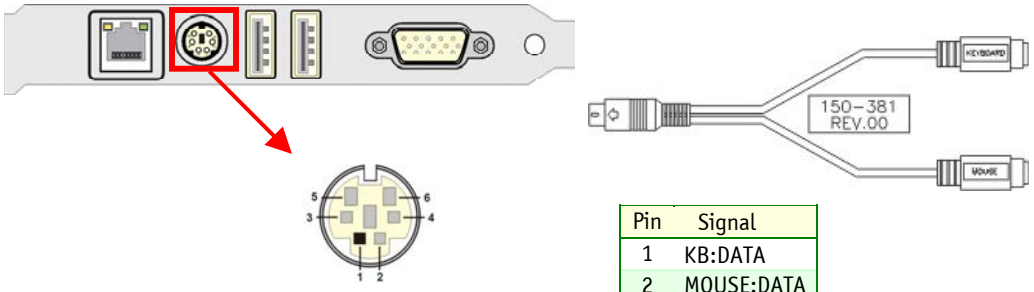
Pin	Signal	Pin	Signal
1	GND	2	DENSEL#
3	GND	4	N.C.
5	GND	6	N.C.
7	GND	8	INDEX#
9	GND	10	MTR0#
11	GND	12	DSEL1#
13	GND	14	DSEL0#
15	GND	16	MTR1#
17	N.C.	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRK0#
27	N.C.	28	WRPROT#
29	FDETECT	30	RDATA#
31	GND	32	HDSEL#
33	N.C.	34	DSKCHG#

Signal Paths: J4: Floppy disk interface on standard header.

Bios Settings:
- Main
- Select type of drive
- Main Advanced \ I/O Device Configuration
- Enable/disable floppy

2.3.6 PS/2 Mouse and Keyboard (J13)

The onboard keyboard controller is 8042 software compatible.



Pin	Signal
1	KB:DATA
2	MOUSE:DATA
3	GND
4	VCC
5	KB:CLK
6	MOUSE:CLK

Signal Paths:

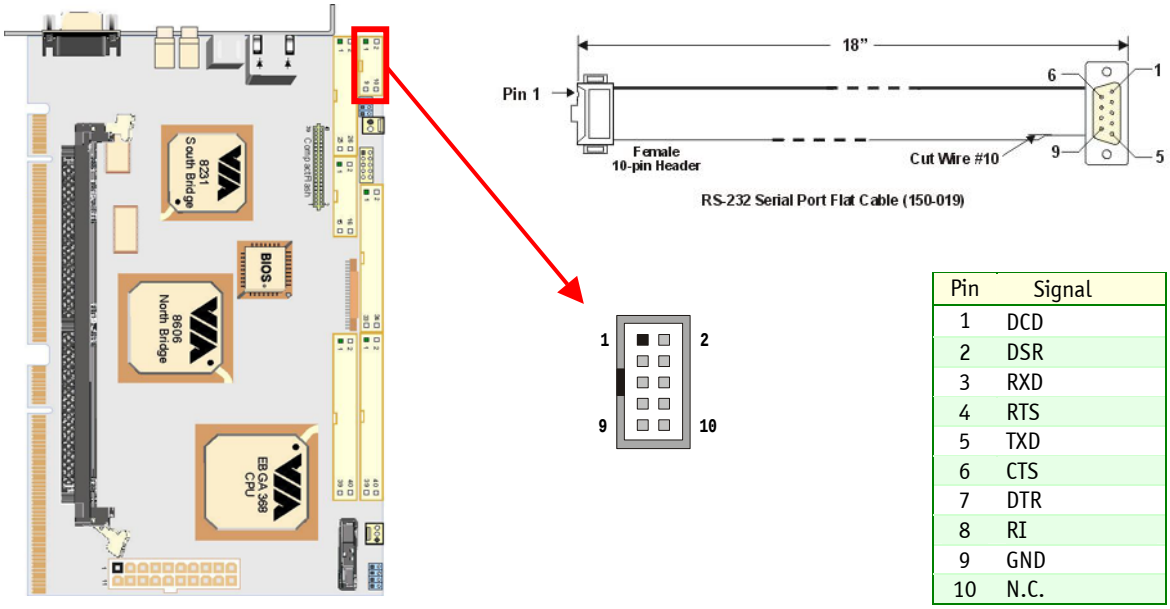
J13 :direct connection for the keyboard. If the mouse is needed use a splitter cable.
J8: keyboard and mouse on header connector.

Bios Settings:

- Advanced \ Boot Setting Configuration
- Enable/Disable/ Auto Detect PS/2 Mouse

2.3.7 Serial Ports

One full function serial port is provided on the board for asynchronous serial communications. It is 16C550 high-speed UART compatible and support 16-byte FIFO buffers for transfer rates from 2400bps to 115Kbps.



Pin	Signal
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND
10	N.C.

2.3.7.1 Serial Port 1 (J1)

This serial port is buffered for RS-232, RS-422 or RS-485 operations. The interface includes the complete signal set for handshaking, modem control, interrupt generation, and data transfer.

Signal Paths: J1 Serial Port 1 (RS-232, RS-422 or RS485)

Related Jumpers: W1 and W2: insert both jumper if serial port 1 is used in RS-422 or RS-485 mode and need termination resistors. Termination resistors are 120-ohm.

Bios Settings:

- Advanced \ I/O Devices Configuration
- Enabled / Disabled / Auto Serial port
- RS-232 / RS-422 / RS-485 Mode
- 3F8 / 2F8 / 3E8 / 2E8 Base I/O address
- IRQ3 / IRQ4 Interrupt

Upon a power-up or reset, the Serial Port 1 interface circuit is automatically configured for the operation mode setup in the BIOS. This Serial Port signal assignation on the connector depends on the operation mode (RS-232, RS-422, or RS-485) it has been set:

Pin	RS-232	RS-422	RS-485
1	DCD	RSV	RSV
2	DSR	RSV	RSV
3	RXD	RXB	485B
4	RTS	RXA	485A
5	TXD	TXB	RSV
6	CTS	TXA	RSV
7	DTR	RSV	RSV
8	RI	RSV	RSV
9	GND	GND	GND
10	N.C.	N.C.	N.C.

RS-232 Protocol:
When configured for RS-232 operation mode, the Serial Port 1 is 100% compatible with the IBM-AT serial port signals.
RS-422 Protocol:
The RS-422 protocol (Full Duplex) uses both RX and TX lines simultaneously during a communication session.

CAUTION



In RS-422 mode, W1 and W2 jumper caps must be installed to connect the 120-ohm line termination resistors .



RS-485 Protocol:
During a communication session, the RS-485 protocol (Half Duplex) uses differential signals. It differs from the RS-422 mode as it offers the ability to transmit and receive over the same pair of wires and allows the sharing of the communication line by multiple stations. This configuration (also known as Party Line) allows only one system to take control of the communication line at the time.
In RS-485 mode, the RX lines are used as the transceiver lines and the RTS signal is used to control the direction of the RS-485 buffer.
When set for RS-485 mode in the BIOS, upon power-up or reset, the transceiver is set by default in receiver mode to prevent unwanted disturbance on the line. Party line operation mode requires termination resistors to be installed at both ends of the network.

CAUTION

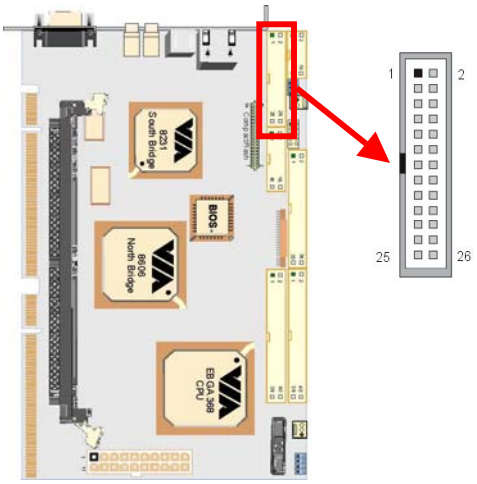


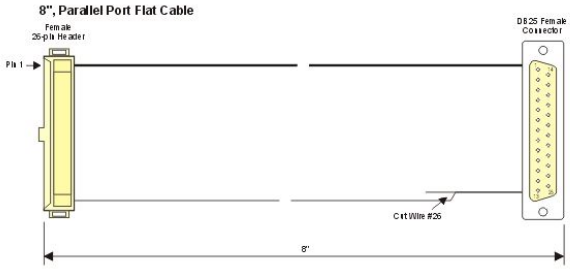
When installing the board at one end of the network, W1 and W2 jumper caps must be installed to connect the 120 ohms termination resistors (See *Setting Jumpers*).



2.3.8 Parallel Port (J7)

The board features one IEEE-1854 multi-mode parallel port. It is compatible with Standard Mode IBM PC/XT, PC/AT, and PS/2 compatible bi-directional parallel port, Enhanced Parallel Port (EPP), and Enhanced Capabilities Port (ECP).





Pin	Signal	Pin	Signal
1	STB#	2	ALF#
3	D0	4	ERR#
5	D1	6	INIT#
7	D2	8	SLCTIN#
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

Signal Paths:
J7: parallel Port interface on header.

Bios Settings:
- Advanced \ I/O Device Configuration
- Enable/disable parallel port
- Select operating mode

Note:
To operate in EPP or ECP mode, ensure the peripheral is designed to work in this mode and the BIOS setup is configured to support it.

Standard Mode

The Standard mode is unidirectional. It is supported to maintain the compatibility with the IBM PC standard.

EPP Mode

The EPP (Enhanced Parallel Port) mode consists of a hardware independent method of accessing a parallel port configured as EPP. It provides support for single I/O cycle as well as the high performance block I/O transfers. The EPP mode always uses the most optimum method for I/O transfers. For example, if the hardware supports it, EPP mode will perform 32-bit I/O block transfers.

EPP mode assumes that the parallel port can be used to connect more than one peripheral device using multiplexor or daisy chain configurations.

A multiplexor is an external device that permits up to eight parallel port devices to share a single parallel port.
A daisy chain device has two ports: input and output. The input port is connected either to the host parallel port or the daisy chain device in front of it. The output is used to connect the next peripheral device to the daisy chain. The last device, however, can be one without daisy chain support.

ECP Mode

ECP (Extended Capabilities Port) works the same as EPP mode, but it will take precedence over the EPP mode when addressing multiple logical devices in a single physical product. While the EPP mode may intermix read and write operations without any overhead or protocol handshaking, the ECP mode negotiates data transfers using a request from the host and an acknowledgment from the peripheral.



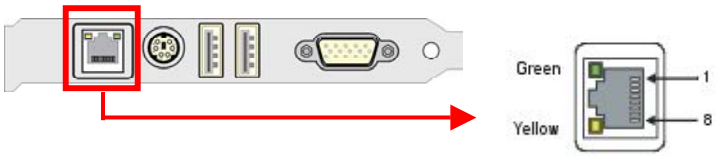
Note:
For more information on the ECP protocol, please refer to the Extended Capabilities Port Protocol and ISA Interface Standard (available from Microsoft Corporation) or contact our Technical Support Department.

Upon a power-up or reset, the Parallel Port interface circuits is automatically configured for the operation mode setup in the BIOS. This Parallel Port signal assignation on the connector depends on the operation mode (STD, EPP, or ECP) it has been set:

Pin	STD	EPP	ECP	
			Compatible Mode	High Speed Mode
1	STB#	WRITE#	STROBE#	STROBE#
2	ALF#	DATASTB#	AUTOFD	HOSTACK
3	D0	D0	D0	D0
4	ERR#	N.C.	FAULT	PERIPHRQST
5	D1	D1	D1	D1
6	INIT#	N.C.	INIT	REVERSERQST
7	D2	D2	D2	D2
8	SLCTIN#	ADDRSTRB#	SELECTIN	SELECTIN
9	D3	D3	D3	D3
10	GND	GND	GND	GND
11	D4	D4	D4	D4
12	GND	GND	GND	GND
13	D5	D5	D5	D5
14	GND	GND	GND	GND
15	D6	D6	D6	D6
16	GND	GND	GND	GND
17	D7	D7	D7	D7
18	GND	GND	GND	GND
19	ACK#	INTR	ACK#	ACK#
20	GND	GND	GND	GND
21	BUSY	WAIT	BUSY,PERIPHACK	BUSY,PERIPHACK
22	GND	GND	GND	GND
23	PE	N.C.	PERROR, ACKREVERSE	PERROR, ACKREVERSE
24	GND	GND	GND	GND
25	SLCT	N.C.	SELECT	SELECT
26	GND	GND	GND	GND

2.3.9 Ethernet Controller (J12)

One Ethernet controller is integrated in South Bridge. This controller support 10Base-T and 100Base-TX operations: 10Mbps and 100Mbps network speeds are automatically detected and switched.



Pin	Signal 10/100
1	TX+
2	TX-
3	RX+
4	N.C.
5	N.C.
6	RX-
7	N.C.
8	N.C.



Signal Paths:
J12 RJ45 connector on the bracket.

Bios Settings:



- Advanced \ PCI Configuration
- Enabled / disabled LAN Device
- Enabled / disabled Onboard LAN PXE ROM
- Boot
- Boot from LAN boot order

Boot from LAN

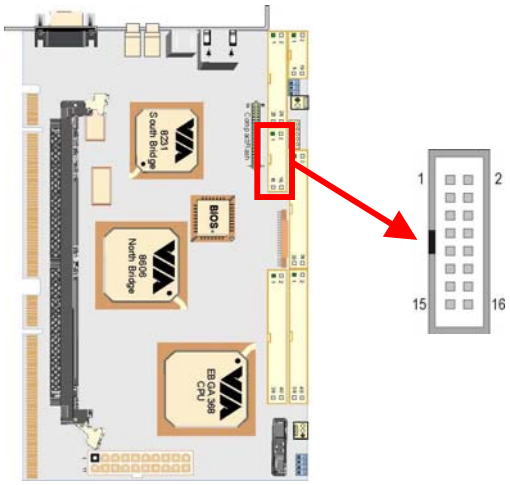
The Boot from LAN capability is supported. To enable the option, use the BIOS Setup program (Boot Menu Selection).

Drivers

A CDROM is included with the product. It contains network drivers for most common operating systems.

2.3.10 Multifunction Connector(J8)

Standard PS2 keyboard, PS2 mouse, speaker output, reset and hard disk activity LED signals are available on the Multifunction connector.

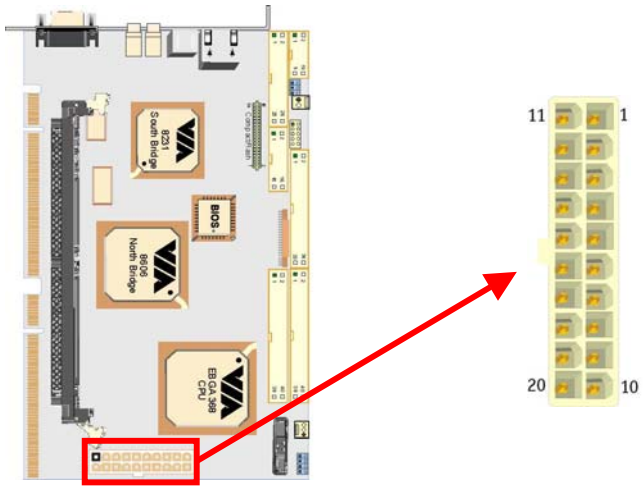


Pin	Signal	Pin	Signal
1	KB:CLK	2	GND
3	KB:DATA	4	GND
5	VCC	6	VCC
7	SPEAKER	8	VCC
9	MOUSE:CLK	10	GND
11	MOUSE:DATA	12	GND
13	PBRES#	14	GND
15	IDE:ACT#	16	VCC

Signal Paths:
J8 (Multifunction Connector)

2.4 ATX Power Supply Control(J17)

If an ATX power supply is used, the SHB can control it either through its edge connector and the backplane or, if the SHB is used in standalone, through its ATX connector and hardware monitor connector pushbutton input.



Pin	Signal	Pin	Signal
11	VCC3	1	VCC3
12	-12V	2	VCC3
13	GND	3	GND
14	PS_ON#	4	VCC
15	GND	5	GND
16	GND	6	VCC
17	GND	7	GND
18	N.C.	8	PWROK
19	VCC	9	5VSB
20	VCC	10	+12V

Signal Paths:

J17: ATX power connector for stand-alone use.

J2: Push Button

Bios Settings:

- Power \ Power Button Function
- Power Off or Sleep

2.5 Watchdog Timer

The system BIOS makes it very easy to use the watchdog via software interrupt 15h. Two ways are possible to access the watchdog: The simplest way is to use AH=0E0h to init or trigger the watchdog. The second way is to use the functions "Write I2C" and "Read I2C" with AH=0E1h and handling the I2C bus protocol.

With the aid of a special Interrupt 15h function, the watchdog on this board can be controlled very easily.
The respective functions have the following calling conventions:

Watchdog Init	Int 15h	00h
Input:	AH = E0h AL = 00h BX = timeout in 0.2sec increments CX = delay in 0.2sec increments DX = watchdog action (0 = reset)	
Output:	None	
Description:	This function is used to initialize the watchdog on this boards.	

Watchdog Trigger	Int 15h	01h
Input:	AH = E0h AL = 01h	
Output:	None	
Description:	This function is used to trigger the watchdog on this board	

2.6 Video Interface

The video controller is a Savage4 2D/3D/Video Accelerator and is integrated in the VT8606 using 8 / 16 / 32 MB of system memory and capable of CRT resolutions up to 1600 x 1200.



Signal Paths:
J16 on the faceplate.



Bios Settings:

- Boot \ Display Control
- Display ,Mode
- Flat Panel Type

2.6.1 Supported Resolutions

The maximum video resolution and performance depend directly on the drivers running with your software application. Resolution and number of colours specification are listed below:

Resolution	Number of Colours
640x480, 800x600, 1024x768, 1280x1024, 1600x1200	256 (8 bits)
640x480, 800x600, 1024x768, 1280x1024, 1600x1200	65,536 (16 bits)
640x480, 800x600, 1024x768, 1280x1024	16.8 million (32 bits)

2.6.2 Major Features Description

- **VGA Compatibility**
  The video controller integrates S3 Graphics' 128-bit ProSavage4™ graphics accelerator into a single chip. TwisterT brings mainstream graphics performance to the Value PC with leading-edge 2D and 3D video acceleration into a cost effective package.

- **128-bit 2D Graphics Engine**
  TwisterT's advanced 128-bit 2D graphics engine delivers high-speed 2D acceleration for productivity applications. Several enhancements have been made to the 2D architecture to optimize SMA performance and to provide acceleration in all color depths.

- **High-Performance 3D Accelerator**
  Featuring a new super-pipelined 128-bit engine, TwisterT utilizes a single cycle architecture that provides high performance along with superior image quality. Several new features enhance the 3D architecture, including single-pass multitexturing, anisotropic filtering, and an 8-bit stencil buffer. TwisterT also offers the industry's only simultaneous usage of single-pass multitexturing and single-cycle trilinear filtering – enabling stunning image quality without performance loss. TwisterT further enhances image quality with true 32-bit color rendering throughout the 3D pipeline to produce more vivid and realistic images. TwisterT's advanced triangle setup engine provides industry leading 3D performance for a realistic user experience in games and other interactive 3D applications. The 3D engine is optimized for AGP texturing from system memory.

3 Installing the board

Contents

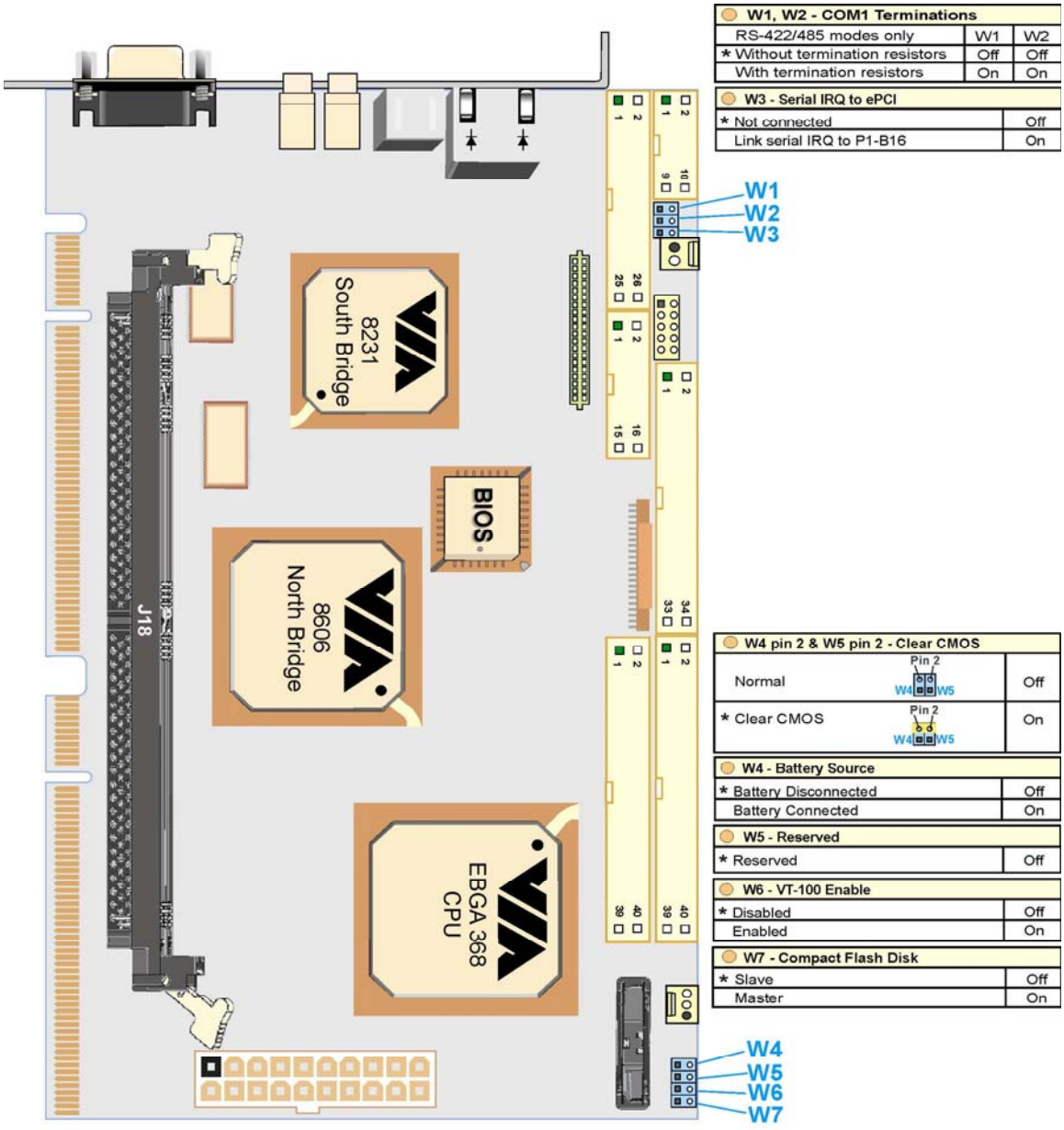
3.1 Setting Jumpers 3-1
3.2 Processor 3-3
3.3 Memory 3-3
3.4 Onboard Interconnectivity.....3-5
3.5 Backup Battery.....3-7

3.1 Setting Jumpers

3.1.1 Jumper Description

Description		
COM 1 Terminations	Use these jumpers to connect or disconnect the termination resistors on/from Serial COM1 when set for RS-422/RS-485 operation mode 0.	**W1 and W2**
Serial IRQ to ePCI	When the jumper is on, the serial IRQ is linked to P1-B16	**W3**
Battery Source	When the jumper is off, the battery is disconnected. This jumper must be installed even when no battery is populated or the ePCI-102 will not function properly.	**W4**
Reserved	Reserved for Kontron's usage only.	**W5**
VT-100 Enable	When enabled, allows VT100 or ANSI terminal connection (data serial download from a remote computer).	**W6**
Compact Flash Disk	Use this jumper to set the Compact Flash in master or slave mode. When enable, the Compact Flash is in Master Mode	**W7**
Clear CMOS	Use this jumper setting to clear the CMOS memory.	**W4 pin 2 and W5 pin2**

3.1.2 Setting Jumper & locations



W1, W2 - COM1 Terminations		
RS-422/485 modes only	W1	W2
* Without termination resistors	Off	Off
With termination resistors	On	On

W3 - Serial IRQ to ePCI	
* Not connected	Off
Link serial IRQ to P1-B16	On

W4 pin 2 & W5 pin 2 - Clear CMOS	
Normal (Pin 2 on W4 W5)	Off
* Clear CMOS (Pin 2 on W4 W5)	On

W4 - Battery Source	
* Battery Disconnected	Off
Battery Connected	On

W5 - Reserved	
* Reserved	Off

W6 - VT-100 Enable	
* Disabled	Off
Enabled	On

W7 - Compact Flash Disk	
* Slave	Off
Master	On

* : Default Setting

3.2 Processor

This product is shipped with the CPU installed with a thermal solution. Because the thermal solution is a custom one and the thermal interface is critical for cooling, Kontron does not guarantee thermal performance if the heat sink is removed and then reinstalled by the end user.

3.3 Memory

Only use validated memory with this product. Currently recommended part numbers are:

Manufacturer Part Number	Description	Company
VM366S924-GA	DIMM SDRAM 64MB 8M*64 UB PC133 1"MAX	VIRTIUM
UG58T6648HJ	DIMM SDRAM 64MB 8M*64 UB PC133 1"MAX	UNIGEN
UG58T6646JM-PLKA	DIMM SDRAM 64MB 8M*64 UB PC133 1"MAX	UNIGEN
VM366S924-GA	DIMM SDRAM 64MB 8M*64 UB PC133 1"MAX	VIRTIUM
VM366S924-GAS	DIMM SDRAM 64MB 8M*64 UB PC133 1"MAX	VIRTIUM
UG516T6648HJ	DIMM SDRAM 128MB 16M*64 UB PC133 1"MAX	UNIGEN
UG516T6686KM-PLKA	DIMM SDRAM 128MB 16M*64 UB PC133 1"MAX	UNIGEN
VM366S1724-GAS	DIMM SDRAM 128MB 16M*64 UB PC133 1"MAX	VIRTIUM
VM366S1724-GA	DIMM SDRAM 128MB 16M*64 UB PC133 1"MAX	VIRTIUM
VM366S3254-GAS	DIMM SDRAM 256MB 32M*64 UB PC133 1"MAX	VIRTIUM
VM366S3254-GA	DIMM SDRAM 256MB 32M*64 UB PC133 1"MAX	VIRTIUM
UG532T6686KM-PLKA	DIMM SDRAM 256MB 32M*64 UB PC133 1"MAX	UNIGEN
VM366S6553-GA	DIMM SDRAM 512MB 64M*64 UNBUF PC133	VIRTIUM
VM366S6553-GAM	DIMM SDRAM 512MB 64M*64 UNBUF PC133	VIRTIUM
UG564T6688KJ-PLKA	DIMM SDRAM 512MB 64M*64 UNBUF PC133	UNIGEN

Memory should have the following characteristics:

- PC133
- 3.3V only
- Single-sided or double-sided
- Serial Presence Detect (SPD) EEPROM
- 64-bit DIMMs supported
- 1.15 inch maximum height

WARNING

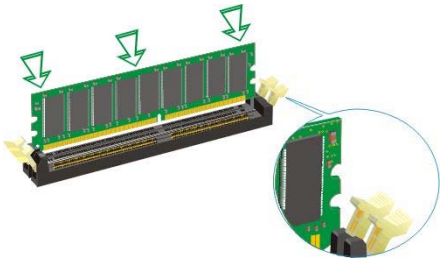
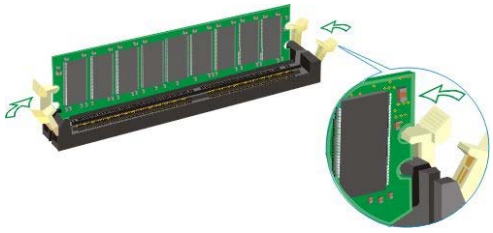
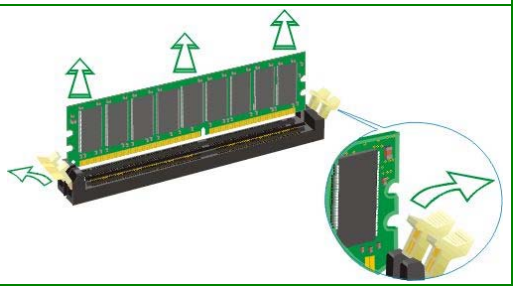


Because static electricity can cause damage to electronic devices, take the following precautions:

- Keep the board in its anti-static package, until you are ready to install memory.
- Wear a grounding wrist strap before removing the board from its package; this will discharge any static electricity that may have built up in your body.
- Handle the board by the faceplate or its edges.



3.3.1 Installing Memory

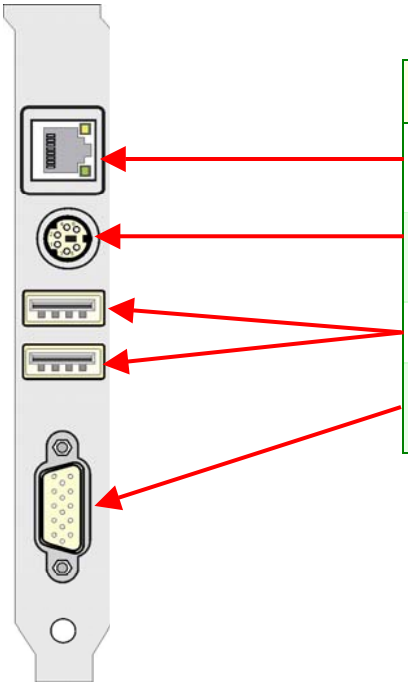
On an anti-static plane, place the board so that you are facing the DIMM sockets (the edge bracket must be located on the right).	
Insert the DIMM into any available socket, aligning the notches on the module with the socket's key inserts.	
Push vertically the DIMM into the socket until the retaining clips on each side snap on.	
To remove a DIMM from a socket, push down the retaining clips on each side of the socket, to release the module. Pull the module upward to remove.	

3.4 Onboard Interconnectivity

3.4.1 Onboard Connectors and Headers

Description	Connector	Comments	
Ethernet LAN	J12	RJ-45 connector with built-in activity and link indicators	These connectors are located on faceplate
PS2 Mouse/Keyboard	J13	6-pin mini-din	
USB1	J14	4-pin USB connector	
USB0	J15	4-pin USB connector	
VGA	J16	15-pin DSUB female connector	
Serial Port1	J1	10-pin connector Configurable as RS-232, RS-422, RS-485	
Power Button	J2	2-pin connector	
USB 2&3	J3	10-pin header	
Floppy	J4	34-pin connector	
Primary IDE	J5	40-pin connector	
CPU Fan	J6	3-pin connector	
Parallel Port	J7	26-pin connector	
Multifunction	J8	16-pin connector	
JILI	J9	40-pin connector	
Secondary IDE	J10	40-pin connector	
CompactFlash	J11	40-pin connector	
ATX Power connector	J17	20-pin connector	
Memory socket	J18	168-pin memory socket	
Battery socket	BT1		

3.4.2 Front Plate Connectors and Indicators

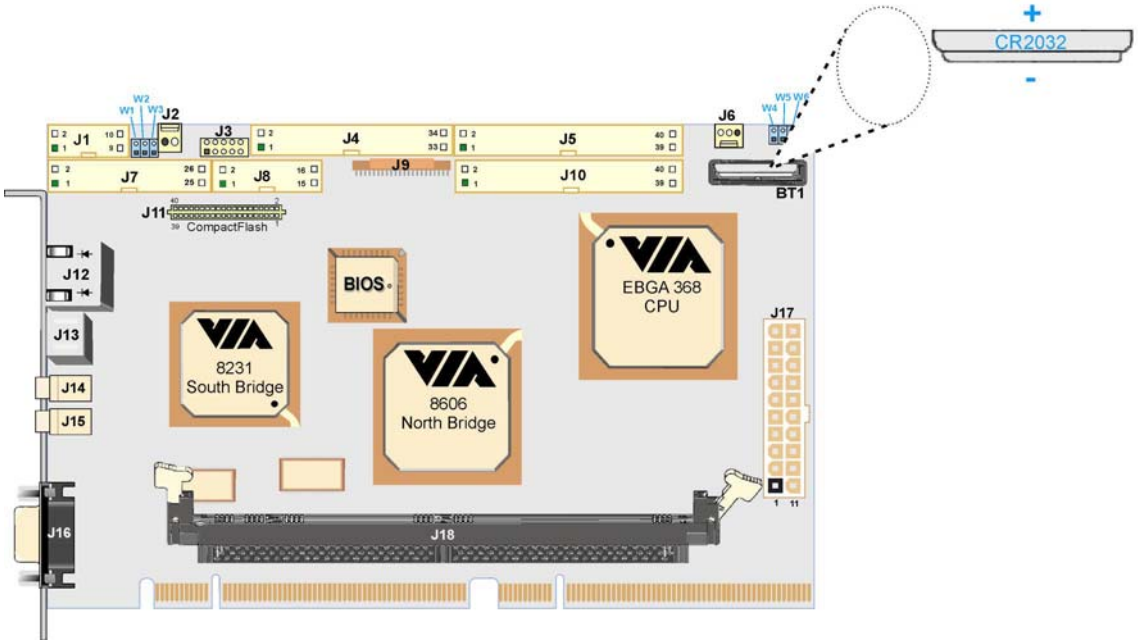


Name	Description	Comments
J12	LAN1	Ethernet RJ-45 connectors with built-in activity and link indicators
J13	Keyboard / mouse	6-pin female minidin
J14 & J15	USB 0 and USB 1	Standard 4pin female connector
J16	Video Connector	Standard 15-pin DSUB female connector

3.5 Backup Battery

An onboard 3V lithium battery is provided to back up BIOS setup values and the real time clock (RTC). When replacing, the battery must be connected as follows:

1. Remove the old battery from the socket.
2. Insert a new one in place with respect to the positive and negative location.



WARNING

There is a danger of explosion if you replace the battery incorrectly.
Replace the battery with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.
When you receive a board, remove the **onboard battery jumper** to enable the battery. (See Section 3: Jumper settings.)

3.5.1 Operation and Preventative Maintenance

The operational battery voltage must be between 2.4 and 3.0 volts.

When the board is stored and is kept in it's original package, the battery must be replaced when the battery voltage is below 2.4 volts.

For preventive operational maintenance, we recommend to verify the battery voltage after 4 years. After that period, we recommend that the safety voltage is checked more often. The normal battery life expectancy depends on the utilisation of the board.

- Kontron ordering MRP: 100-004
- Battery description: CR2032 3V battery

4 Software Setup

Contents

4.1 PHOENIX BIOS Setup Program 4-1
4.2 Installing Drivers.....4-15
4.3 Console Redirection (VT100 Mode).....4-16

4.1 PHOENIX BIOS Setup Program

All relevant information for operating the board and connecting peripherals is stored in the CMOS memory. A battery-backed up memory holds this information when the board is powered off; the BIOS setup program is required to make changes to the setup.

4.1.1 Accessing the BIOS Setup Program

The system Basic Input Output System (BIOS) provides an interface between the operating system and the hardware of the ePCI-102 processor board. The ePCI-102 uses the Phoenix Setup program, a setup utility in flash memory that is accessed by pressing the <DELETE> key at the appropriate time during system boot. This utility is used to set configuration data in CMOS RAM.

CAUTION



Before modifying CMOS setup parameters, ensure that the W4 battery selection jumper is installed to enable the CMOS battery back up.

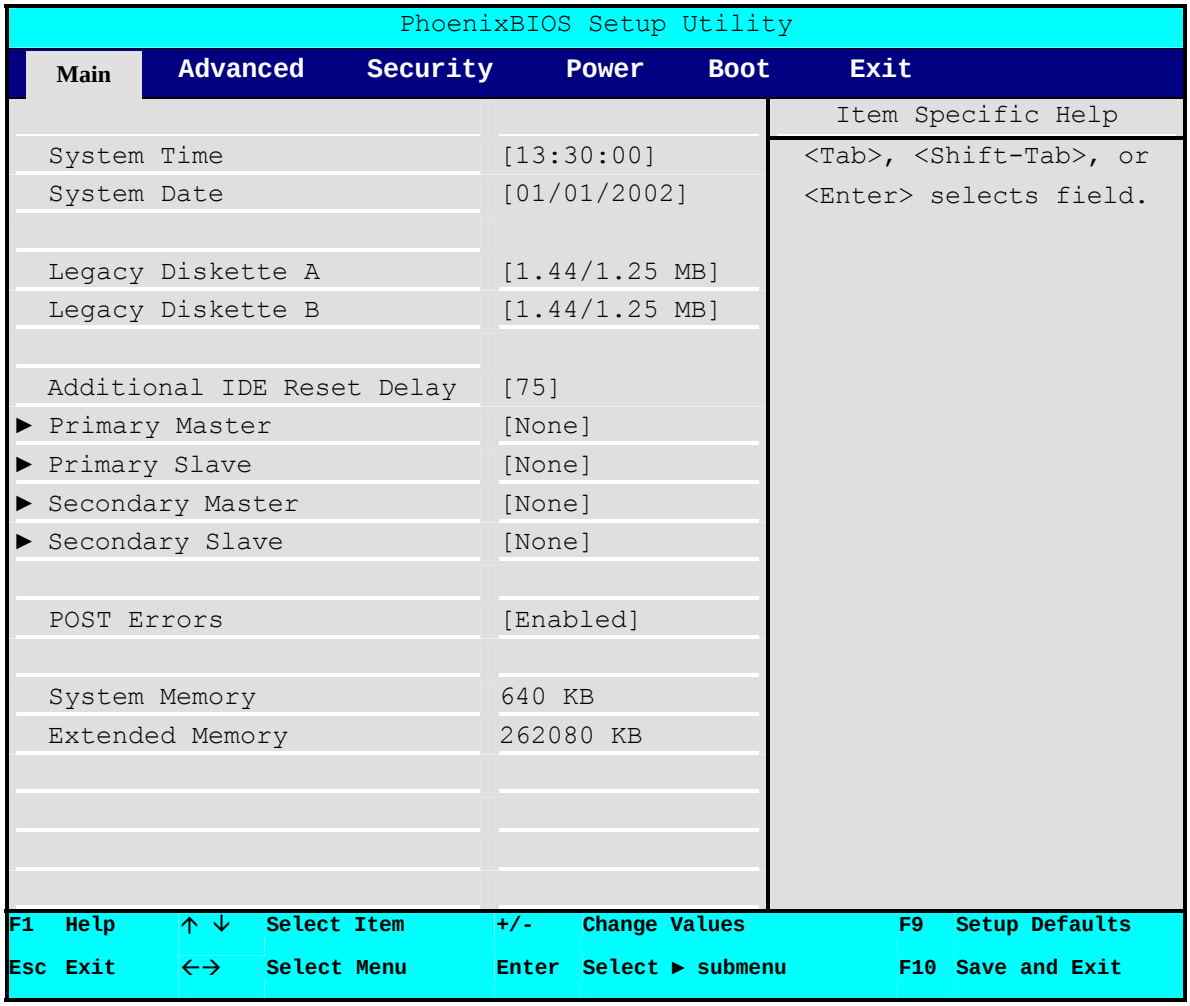


To run the Phoenix Setup program incorporated in the ROM BIOS:

1. Turn on or reboot the system.
2. When you get the following message, hit <DELETE> key to enter SETUP.

PhoenixBIOS 4.0 Release 6.0
Copyright 1985-2002 Phoenix Technologies Ltd.
All Rights Reserved
KONTRON(R) ePCI-102 BIOS Version 1.0
(c)Copyright 2003 Kontron Inc.

The main menu of the Phoenix BIOS CMOS Setup Utility appears on the screen.



Whenever you are not sure about a setting, refer to the list of default values. The list is provided in the event that a value has been changed and you wish to set this option to its original value. Loading the SETUP defaults affects all parameters and will reset options previously altered.

The Setup Defaults values provide **optimum performance** settings for all devices and system features.



Note:
The CMOS setup option is based on **BIOS Version 1.0**. The options and default settings can change in a new BIOS release.

CAUTION



These parameters have been provided to give control over the system. However, the values for these options should be changed only if the user has a full understanding of the timing relationships involved.



4.1.2 Menu Bar

The Menu Bar at the top of the window lists these selections:

Menu Selection	Description
Main	Use this menu for basic system configuration.
Advanced	Use this menu to set the Advanced Features available on your system.
Security	Use this menu to give the end user password control of access to the Setup menus, HD boot, Floppy access and HD boot sector.
Power	Use this menu to set the power button function and show the hardware monitor current state.
Boot	Use this menu to determine the booting device order.
Exit	Use this menu to exit the BIOS.

Use the left and right ← and → arrows keys to make a selection.

4.1.2.1 Legend Bar

Use the keys listed in the legend bar on the bottom to make your selections or exit the current menu. The chart on the following page describes the legend keys and their alternates.

Key	Function
<F1> or <Alt-H>	General Help windows (See 4.1.2.2).
<Esc>	Exit this menu.
← → arrow keys	Select a different menu.
<Home> or <End>	Move cursor to top or bottom of window.
<PgUp> or <PgDn>	Move cursor to top or bottom of window.
<F5> or <->	Select the Previous Value for the field.
<F6> or <+> or <Space>	Select the Next Value for the field.
<F9>	Load the Default Configuration values for all menus
<F10>	Save and exit.
<Enter>	Execute Command; display possible value for this field or select the submenu.

To select an item, use the arrow keys to move the cursor to the field your want. Then use the plus-and-minus value keys to select a value for that field. To save values commands in the Exit Menu save the values currently displayed in all the menus.

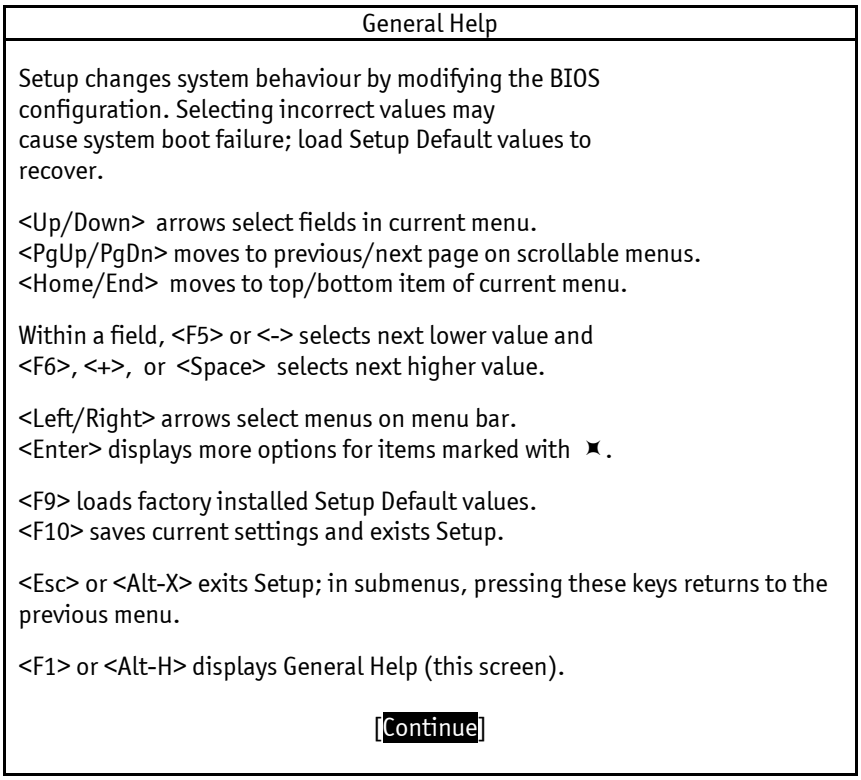
To display a submenu, use the arrow keys to move the cursor to the submenu your want. Then press <Enter>. A pointer (►) marks all submenus.

4.1.2.2 Field Help Window

The help window on the right side of each menu displays the help text for the currently selected field. It updates as you move the cursor to each field.

4.1.2.3 General Help Windows

Pressing <F1> or <Alt-H> on any menu brings up the General Help window that describes the legend keys and their alternates:



4.1.2.4 Main Menu Selection

The scroll bar on the right of any windows indicates that there is more than one page of information in the windows. Use <PgUp> and <PgDn> to display all the pages. Pressing <Home> and <End> displays the first and last page. You can make the following selections on the Main Menu itself. Use the submenus for other selections.

Feature	Options		Description
System Time	HH:MM:SS		Set the system time.
System Date	MM/DD/YYYY		Set the system date.
Legacy Diskette A:	Disabled 360Kb 5 ¼ " 1.2MB 5 ¼ " 720 Kb 3 ½ " **1.44/1.25 MB 3 ½ "** 2.88 MB 3 ½ "		Select the type of floppy disk drive installed in your system. **Note :** 1.25MB 3 1/2" references a 1024 byte/sector Japanese media format. The 1.25MB, 3 1/2 diskette requires a 3-Mode floppy-disk drive.
Legacy Diskette B:	**Disabled** 360Kb 5 ¼ " 1.2MB 5 ¼ " 720 Kb 3 ½ " 1.44/1.25 MB 3 ½ " 2.88 MB 3 ½ "		Select the type of floppy disk drive installed in your system. **Note :** 1.25MB 3 1/2" references a 1024 byte/sector Japanese media format. The 1.25MB, 3 1/2 diskette requires a 3-Mode floppy-disk drive.
Primary Master	Type	None	None : No booting device installed.
		CD-ROM Multi-Sector Transfers LBA Mode Control 32 BIT I/O Transfer Mode Ultra DMA Mode SMART Monitoring	**Multi-Sector Transfers** Choices : Disabled, 2,4,8, and 16 sectors Any selection except Disabled determines the number of sectors transferred per block. Standard is 16 sectors per block. **LBA Mode Control** Choices : Disabled, Enabled Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, heads, and Sectors. **32 Bit I/O** Choices : Disabled, Enabled Enables 32-bit communication between CPU and IDE card. Requires PCI or local bus. **Transfer Mode** Choices : Standard, Fast PIO 1, Fast PIO 2, Fast PIO 3, Fast PIO 4, FPIO 3 / DMA 1, FPIO 4 / DMA2. Selects the method for transferring the data between the hard disk and system memory. The Setup menu only lists those options supported by the drive and platform. **Ultra DMA Mode** Choices : Disabled, Mode 0, 1, 2, 3, 4, 5. Select the Ultra DMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode. **SMART Monitoring** Display type of Monitoring. This field is a "Display Only".
		ATAPI Removable	Same choices as CD-ROM

Main Menu Selection (continued)

Feature		Options		Description
Primary Master (Continued)	Type (continued	IDE Removable		Same choices as CD-ROM
		Other ATAPI		Same choices as CD-ROM
		(USER)	Cylinders	**Cylinders** Set the number of cylinders
			Heads	**Heads** Set the number of heads. Choices are 1 to 16
			Sectors	**Sectors** Set the number of sectors per track
			Maximum Capacity	**Maximum Capacity** Maximum capacity is displayed according to the cylinders, heads and sectors selected.
			Multi-Sector Transfers	**Multi-Sector Transfers** Choices are : Disabled, 2, 4, 8 and 16 sectors. Specify the number of sectors per block for multiple sector transfers. "MAX" refers to the size the disk returns when queried.
			LBA mode Control	**LBA Mode Control** Choices are : Enabled, Disabled Enabling LBA cause Logical Block Addressing to be used in place of Cylinders Heads and Sectors
			32 Bit I/O	**32 Bit I/O** Choices are : Enabled, Disabled. This setting enables or disables 32 bit IDE data transfers.
			Transfer Mode	**Transfer Mode** Choices are : Standard, Fast PIO 1, Fast PIO 2, Fast PIO 3, Fast PIO 4, FPIO 3 / DMA 1, FPIO 4 / DMA2. Select the method for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.
			Ultra DMA Mode	**Ultra DMA Mode** Choices are: Disabled, Mode 0 to 5. Select the Ultra DMA mode used for moving data to/from the drive Autotype the drive to select the optimum transfer mode.
			SMART Monitoring	**SMART Monitoring** Display type of Monitoring. This field is a "Display Only".
	Auto			BIOS autodetects the hard disk installed
Primary Slave				Same as Primary Master
Secondary Master	Same as Primary Master			
Secondary Slave	Same as Primary Master			
POST Errors	No **Yes**			Pauses and displays SETUP entry or resumes boot prompt if error occurs on boot. If disabled, system always attempts to boot.
System Memory	N/A			Displays amount of conventional memory detected during boot up.
Extended Memory	N/A			Displays the amount of RAM memory detected during boot up minus the base memory (1 MB).

4.1.2.5 Advanced Menu Selection

Feature	Options	Description
Boot Settings Configuration	**This is a submenu; see section 4.1.2.5.1**	Additional setup menus to configure boot settings
PCI Configuration	**This is a submenu; see section 4.1.2.5.2**	Additional setup menus to configure PCI devices
Memory Cache	**This is a submenu; see section 4.1.2.5.3**	
I/O Device Configuration	**This is a submenu; see section 4.1.2.5.4**	Peripheral Configuration
Advanced Chipset Control	**This is a submenu; see section4.1.2.5.5**	Select option for Advanced Chipset features.
Console Redirection	**This is a submenu; see section 4.1.2.5.6**	Additional setup menus to configure console.

4.1.2.5.1 Boot Settings Configuration

Feature	Options	Description
Enable ACPI	Yes **No**	Enable ACPI BIOS (Advance Configuration and Power Interface).
Reset Configuration Data	No **Yes**	Select "Yes" if you want to clear the Extended System Configuration Data (ESCD) area.
Summary Screen	**Disable** Enable	If enabled, a summary screen is displayed just before booting the OS to let the end user see the system configuration.
Quick Boot Mode	Disable **Enabled**	Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.
Dark Boot	Enabled **Disabled**	If enabled, system comes up with a blank screen instead of the diagnostic screen during bootup.
PS/2 Mouse	Disable Enabled **Auto Detect**	'Disabled' prevents installed PS/2 mouse from functioning but frees up IRQ 12. 'Enabled' forces PS/2 mouse port to be enabled regardless if a mouse is present. 'Auto Detect' will enable the PS/2 mouse only if present.

4.1.2.5.2 PCI Configuration

Feature	Options	Description
LAN Device	**Enabled** Disabled	Enable or disable onboard Ethernet controller.
Onboard LAN PXE ROM	**Disabled** Enabled	Enable the remote boot BIOS extension for the onboard LAN controller.
Default Primary Video Adapter	External **Onboard**	In a system with an Onboard and an external PCI video adapter end user can select the adapter which will be initialized by the BIOS.
Assign IRQ to PCI VGA	No **Yes**	Determines if a PCI VGA device get an IRQ assigned. Win98SE has shutdown problems if a PCI VGA controller hasn't an IRQ assigned!
Local Bus IDE adapter	Disabled Primary Secondary **Both**	Enables onboard PCI IDE device.
OnChip USB Device	**Enabled** Disabled	Enable onboard USB Port 0-1 controller
USB BIOS Legacy Support	Enabled **Disabled**	Enables or Disables support for USB keyboards and mice. Enable for use with a non-USB aware Operating System such as DOS or UNIX.

4.1.2.5.3 Memory Cache

Feature	Options	Description
Memory Cache	Disabled **Enabled**	Enables or Disables the L2 cache.
Cache System BIOS area	Uncached **Write Protect**	Caches the system BIOS to improve performance.
Cache Video BIOS area	Uncached **Write Protect**	Caches the video BIOS to improve performance.
Cache Extended Memory Area	Uncached Write Through Write Protect **Write Back**	Controls caching of extended and conventional system memory.

4.1.2.5.4 I/O Device Configuration

Feature	Options	Description
Floppy Disk Controller	Disabled **Enabled**	Enables onboard FDC controller.
Serial port	Disabled Enabled **Auto**	Disabled turns off the port. Enabled requires end user to enter the base I/O address and IRQ. Auto makes the BIOS or OS configure the port, depending on PNP OS setting.
Mode	**RS-232** RS-422 RS-485	Set the mode for the serial port.
Base I/O address	**3F8** 2F8 3E8 2E8	Select I/O base of port.
Interrupt	IRQ3 **IRQ4**	Select IRQ of Port
Parallel Port	Disabled Enabled **Auto**	Disabled turns off the port. Enabled requires end user to enter base I/O address and the IRQ. Auto makes the BIOS or OS configure the port, depending on PNP OS setting.
Mode	Uni-directional ECP **EPP**	Set the mode for the parallel port.
Interrupt	IRQ5 **IRQ7**	Select IRQ of Port
Base I/O address	**378** 278 178	Select I/O base of port.
Watchdog Settings	**Disabled** Reset	Select watchdog operation mode.
Timeout	0.4s, 1s, 5s, 10s, **30s**, 1m, 5m, 10m,	Maximum trigger period.
Delay	1s, 5s, 10s, **30s**, 1m, 5m, 10m, 30m	Delay after boot to start watchdog

4.1.2.5.5 Advanced Chipset Control

Feature	Options	Description
PCI Delay Transaction	Disabled **Enabled**	Latches PCI-to-ISA cycles into buffer to free the PCI bus.
Aperture Size	2M 4M 8M 16M 32M **64M** 128M 256M	Select the size of AGP graphics aperture.
Frame Buffer Size	None **8Mb** 16Mb 32Mb	Select the size of the VGA UMA frame buffer.
Spread Spectrum Modulation	Disabled 0.25% **0.5%**	Enables the spread spectrum support of the clock synthesizer to reduce EMI.

4.1.2.5.6 Console Redirection

Feature	Options	Description
Com Port Address	On-board COMA	
Baud Rate	300 1200 2400 9600 **19.2K** 38.4K 57.6K 115.2K	Enable the specified baud rate.
Parity	None	Display information
Data Bits	8	Display information
Stop Bit(s)	1	Display information
Console Type	VT-100 VT-100, 8bit PC-ANSI, 7bit **PC ANSI** VT100+ VT-UTF8	Enable the specified console type.
Flow Control	**None** XON/XOFF CTS/RTS	Enable flow control
Continue C.R. after POST	**Off** On	Enable console redirection after OS has loaded.

4.1.2.6 Security Menu

Feature	Options	Description
Set Supervisor Password	Enter Password	Pressing < Enter> displays the dialog box for entering the user password. In related systems, this password gives full access to setup.
Set User Password	Enter Password	Pressing < Enter> displays the dialog box for entering the user password. In related systems, this password gives restricted access to setup.
Diskette access	User **Supervisor**	Enabled requires supervisor password to access floppy disk.
Fixed Disk boot sector	**Normal** Write Protect	Write-protect the boot sector on the hard disk for virus protection. Requires a password to format or Fdisk the hard disk.
Password on boot	**Disabled** Enabled	Enabled requires a password on boot. Requires prior setting of the supervisor password. If supervisor password is set and this option is disabled, BIOS assumes user is booting.

4.1.2.7 Power Menu

Feature	Options	Description
Power Button Function	**Power Off** Sleep	Power Off sets the power button to switch off the system immediately. Sleep sets the power button to go into sleep state or to switch off the system, when the power button is pressed for at least 5 sec.
Hardware Monitor	This is a Sub-Menu , see section 4.1.2.7.1	Show hardware monitor current state.

4.1.2.7.1 Hardware monitor

Feature	Options	Description
Vcore	x.xx V	Reports current CPU core voltage in Volt.
V(12)	x.xx V	Reports current 12V external supplie voltage in Volt.
V(5)	x.xx V	Reports current 5V external supplie voltage in Volt.
V(2.5)	x.xx V	Reports current 2.5V onboard voltage in Volt.
V(3.3)	x.xx V	Reports current 3.3V external supplie voltage in Volt.
CPU Temp	xx °C/ xxx °F	Reports current CPU die temperature.
CPU Fan 1 speed	xxxx rpm	Reports current speed of connected fan.

4.1.2.8 Boot Menu

Feature	Options	Description
Boot Device Priority	This is a Sub-Menu , see section 4.1.2.8.1	
Display Control	This is a Sub-Menu , see section 4.1.2.8.2	

4.1.2.8.1 Boot Device Priority

Options	Description
-Removable Devices Legacy Floppy Drives -Hard Drive Primary Master Bootable Add-in Cards -Hard Drive Bootable Add-in Cards * -CD-ROM Drive -Network Boot	Keys used to view or configure devices: **<Enter>** expands or collapses devices with a **+** or **–** **<Ctrl+Enter>** expands all **<Shift + 1>** enables or disables a device **<+>** or **<->** moves the device up or down **<n>** May move removable device between Hard Disk or Removable Disk **<d>** Remove a device that is not installed. * Note : The hard drives and SCSI drives detected will be listed in this section and the first drive in the list will be the boot drive.

4.1.2.8.2 Display Control

Feature	Options	Description
Display Mode	CRT only LCD only **CRT+LCD**	Select the display boot devices.
Flat Panel Type	**Auto Detect** VGA SVGA XGA SXGA UXGA Enter PAID Enter FPID	Set either a fixed panel type or let BIOS autodetect the panel via JILI adapter information. VGA = 640x480 1x18 SVGA = 800x600 1x18 XGA = 1024x768 1x18 SXGA = 1280x1024 2x18 UXGA = 1600x1200 2x18 Use [Enter PAID] Or [Enter FPID] To manually enter the panel adapter ID or the flat panel ID.

4.1.2.9 Exit Menu Selection

Feature	Options		Description
	Exit Saving Changes	Yes / No	**Exit Saving Changes** Setup and save your changes to CMOS.
	Exit Discarding Changes	Yes / No	**Exit Discarding Changes** Exit utility without saving Setup data to CMOS.
	Load Setup Defaults	Yes / No	**Load Setup Defaults** Exit utility without saving Setup data to CMOS.
	Discard Changes	Yes / No	**Load Setup Defaults** Load default values for all SETUP items.
	Saves Changes	Yes / No	**Discard Changes** Load previous values from CMOS for all SETUP items.
			Save Changes Save Setup Data to CMOS.

4.1.2.10 Boot Utilities

Phoenix Boot Utilities are:

- Phoenix QuietBoot™
- Phoenix MultiBoot™

Phoenix QuietBoot displays a graphic illustration rather than the traditional POST messages while keeping you informed of diagnostic problems.

Phoenix MultiBoot is a boot screen that displays a selection of boot devices from which you can boot your operating system.

4.1.2.11 Phoenix Quiet Boot

Right after you turn on or reset the computer, Phoenix QuietBoot displays the QuietBoot Screen, a graphic illustration created by the computer manufacturer instead of the text-based POST screen, which displays a number of PC diagnostic messages.

To exit the QuietBoot screen and run Setup, display the Multiboot menu, or simply display the PC diagnostic messages, you can simply press one of the hot keys described below.

The QuietBoot Screen stays up until just before the operating system loads unless:

- You press <ESC> to display the POST screen.
- You press <Del> to enter Setup.
- POST issues an error message.
- The BIOS or an option ROM requests keyboard input.

The following explains each of these situations.

4.1.2.12 Press <ESC>

Pressing <ESC> switches the POST screen. The boot process continues with the text-based POST screen until the end of POST and then displays the BootFirst Menu with these options:

- Load the operating system from a boot device of your choice.
- Enter Setup.
- Exit the Boot First Menu (with <ESC>) and load the operating system from the boot devices in the order specified in Setup.

4.1.2.13 Press <Del>

Pressing <Del> at any time during POST enter Setup.

4.1.2.14 Keyboard Input Request

If the BIOS or an Option ROM (add-on card) requests keyboard input, QuietBoot switches over to the POST screen and the Option ROM displays prompts for entering the information. POST continues from there with the regular POST screen.

4.1.2.15 Phoenix Multiboot

Phoenix Multiboot expands your boot options by letting you choose your boot device, which could be a hard disk, floppy disk, CDROM, Flash Disk, SCSI or LAN. You can select your boot device in Setup, or you can choose a different device each time you boot during POST by selecting your boot device in **The Boot First Menu (ESC key)**.
Multiboot consist of :

- Setup Boot Menu
- Boot First Menu

4.2 Installing Drivers

4.2.1 Video Drivers

Various drivers are provided for different operating systems and software. To install a driver, refer to the Setup program located on the CD-ROM (provided with your board).

4.2.2 Ethernet Drivers

Various drivers are provided for different operating systems and software. To install a driver, use the Setup program and the ReadMe.txt file located on the CD-ROM (provided with your board).

4.2.3 Other Drivers

For other operating system drivers and installation instructions or for more information, visit our Web site at www.kontron.com or our FTP site at ftp.kontron.ca/support/ or you may also contact Kontron's Technical Support department.

4.3 Console Redirection (VT100 Mode)

The VT100 operating mode allows remote setups of the board. This configuration requires a remote terminal that must be connected to the board through a serial communication link.

4.3.1 Requirements

The terminal should emulate a VT100 or ANSI terminal. Terminal emulation programs such as Telix© or Procom© can also be used.

4.3.2 Setup & Configuration

Follow these steps to set up the VT100 mode:

1. Connect a monitor and a keyboard to your board and turn on the power.
2. Enter into the CMOS Setup program in the "Advanced" page, "Console Redirection" menu.
3. Select the VT100 mode and the appropriate COM port and save your setup.
4. Connect the communications cable.



Note:
If you do not require a full cable for your terminal, you can set up a partial cable by using only the TXD and RXD lines. To ignore control lines simply loop them back as shown in VT100 Partial Setup cable diagram.

5. Configure your terminal to communicate using the same parameters as in CMOS Setup.
6. Install the VT100 jumper. Reboot the board.
7. Use the remote keyboard and display to setup the BIOS.

Save the setup, exit, and disconnect the remote computer from the board to operate in stand-alone configuration.

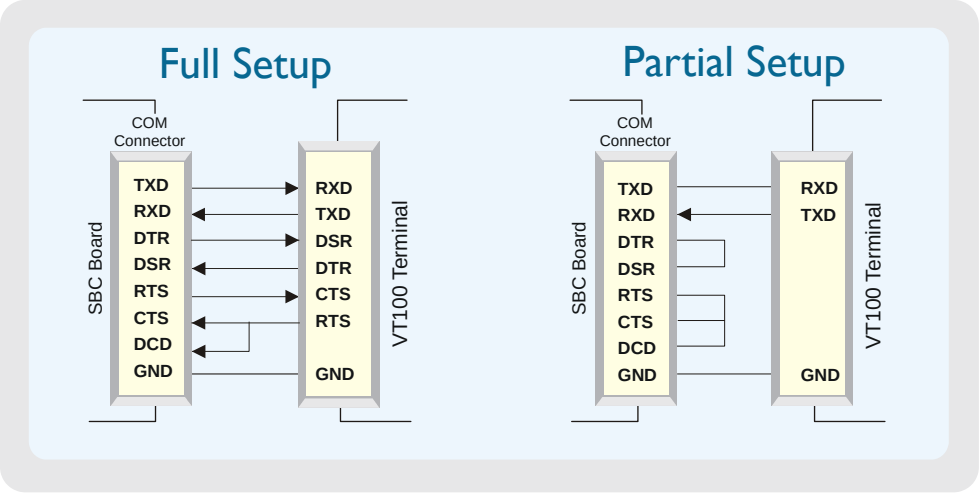
Console Redirection is done by refreshing the Video address @ B8000h at the selected BAUD rate. This means that a low baud rate refreshes the screen slowly, but the CPU time is maximized for the applications. A high BAUD rate refreshes the screen rapidly but the CPU is frequently interrupted by the Serial Port.

Console Redirection provided by Phoenix based BIOS offers various escape sequences to emulate keyboard function keys. The following table lists the escape sequences available.

Escape sequence	Function	Escape sequence	Function
Esc Del	Warm Reset	Esc [6 4 ~	(Ctrl-F1)
Esc O P	F1	Esc [6 5 ~	(Ctrl-F2)
Esc O Q	F2	Esc [6 6 ~	(Ctrl-F3)
Esc O R	F3	Esc [6 7 ~	(Ctrl-F4)
Esc O S	F4	Esc [6 8 ~	(Ctrl-F5)
Esc O w	F3	Esc [6 9 ~	(Ctrl-F6)
Esc O x	F4	Esc [7 0 ~	(Ctrl-F7)
Esc O t	F5	Esc [7 1 ~	(Ctrl-F8)
Esc O u	F6	Esc [7 2 ~	(Ctrl-F9)
Esc O q	F7	Esc [7 3 ~	(Ctrl-F10)
Esc O r	F8	Esc [7 4 ~	(Ctrl-F11)
y	F10	Esc [7 5 ~	(Ctrl-F12)

4.3.3 Running Without a Terminal

The board can boot up without a screen or terminal attached. If the speed is set to Auto and no terminal is connected, the speed is set to 115,200 bauds.
Furthermore, you can run without any console at all by simply not enabling VT100 Mode and by disabling the onboard video.



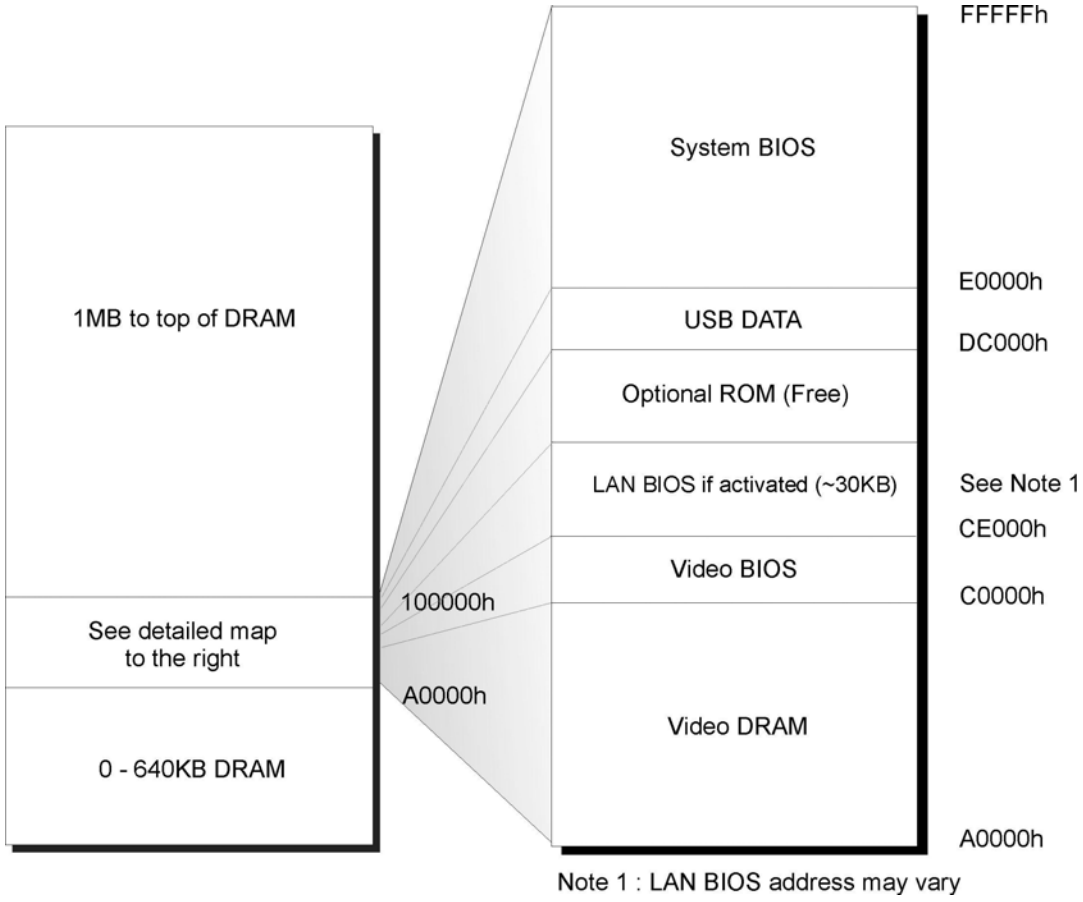
Appendix

Contents

A. Memory & I/O Maps A-1
B. Interrupt Lines B-1
C. Board Diagrams C-1
D. Connector Pinouts D-1
E. BIOS Setup Error Codes E-1
F. BIOS Update & Emergency Procedure F-1
G. Troubleshooting G-1
H. Getting Help H-1

A. Memory & I/O Maps

A.1 Memory Mapping



Address	Function
00000-9FFFF	0-640 KB DRAM
A0000-BFFFF	Video DRAM
C0000-CDFFF	Video BIOS
CE000-DBFFF	LAN BIOS around 30KB if activated, address may vary
	Optional ROM (Free)
	External SCSI BIOS 18KB-56KB , address may vary
	16K at D8000h if USB Legacy Support is not disabled else 16K at DC000h.
	USB BIOS Legacy Support, 16K at DC000h if not disabled
E0000-FFFFF	System BIOS
100000-PCI Memory	DRAM available
PCI memory-4GB	Hole for PCI memory, APIC and BIOS flash device

A.2 I/O MAPPING

Address	Function
000-01F	DMA Controller 1
020-03F	Interrupt Controller 1
040-05F	Timer
060-06F	Keyboard
070-07F	Real-time clock
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller 2
0C0-0DF	DMA Controller 2
0F0-0F1, 0F8-0FF	Math Coprocessor
1F0-1F7, 3F6	Primary IDE
170-177, 376	Secondary IDE
278-27A	Parallel Port (option)
2E8-2EF	Serial Port (option)
2F8-2FF	Serial Port (option)
370-377	Floppy Disk (option)
378-37A	Parallel Port (LPT1)
3BC-3BE	Parallel Port (option)
3E8-3EF	Serial Port (option)
3F0-3F7	Floppy Disk
3F8-3FF (COM1)	Serial Port (COM1)
400-0FFF	Chipset Reserved
3C0-3CF/3D0	Graphic Controller
3DF/3B0-3BB	

B. Interrupt Lines

B.1 IRQ LINES

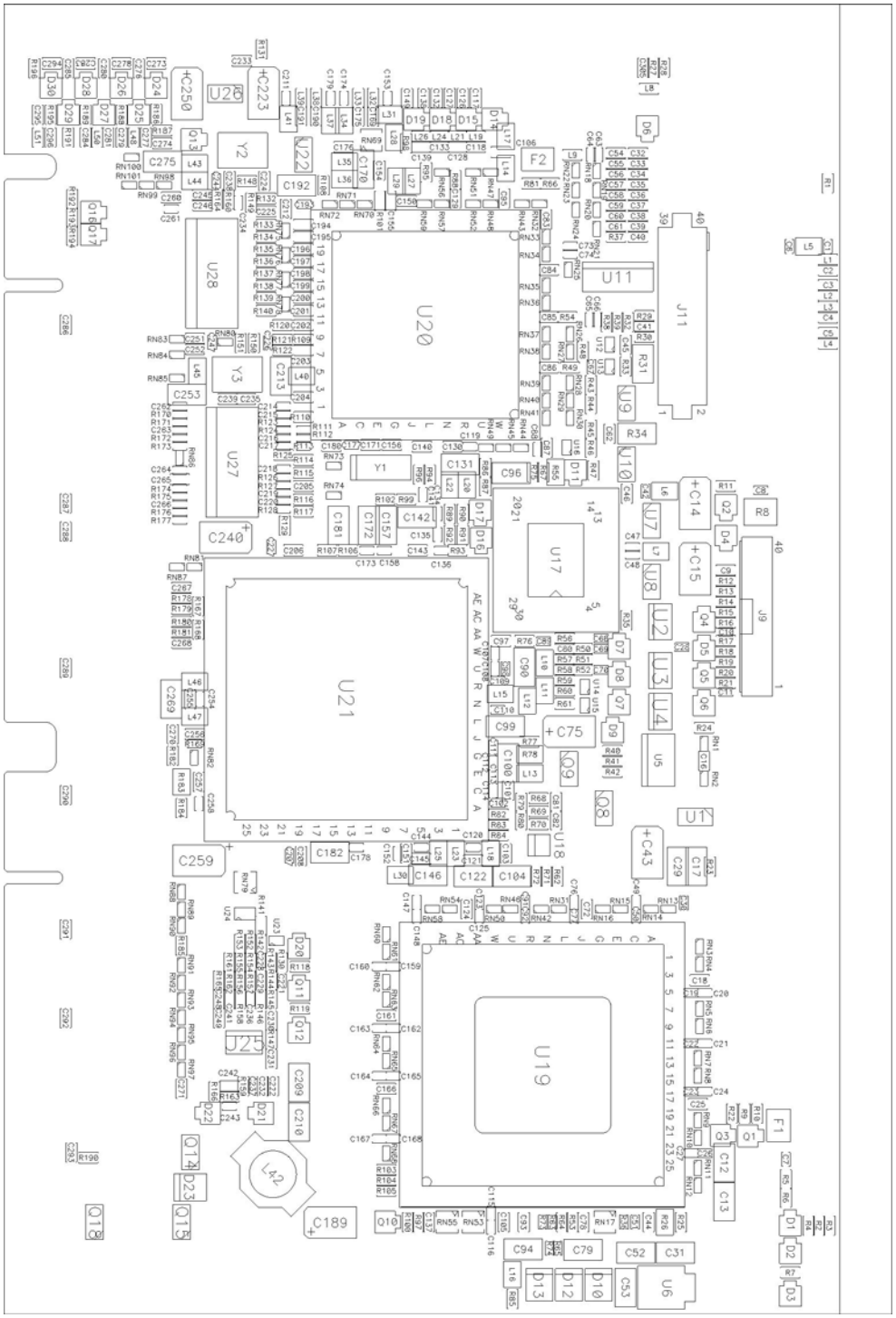
The board is fully PC compatible with interrupt steering for PCI plug and play compatibility.

Controller # 1		Controller # 2	
IRQ 0	Timer Output 0	IRQ 8	Real-Time Clock
IRQ 1	Keyboard (Output Buffer Full)	IRQ 9	Available [1]
IRQ 2	Cascade Controller # 2	IRQ 10	Available [1]
IRQ 3*	Available [1]	IRQ 11	Available [1]
IRQ 4*	Serial Port 1	IRQ 12	PS/2 Mouse
IRQ 5*	Available [1]	IRQ 13	Coprocessor Error
IRQ *6	Floppy Controller	IRQ 14	Primary IDE * or available [1]
IRQ 7*	Available [1]	IRQ 15	Secondary IDE * or available [1]

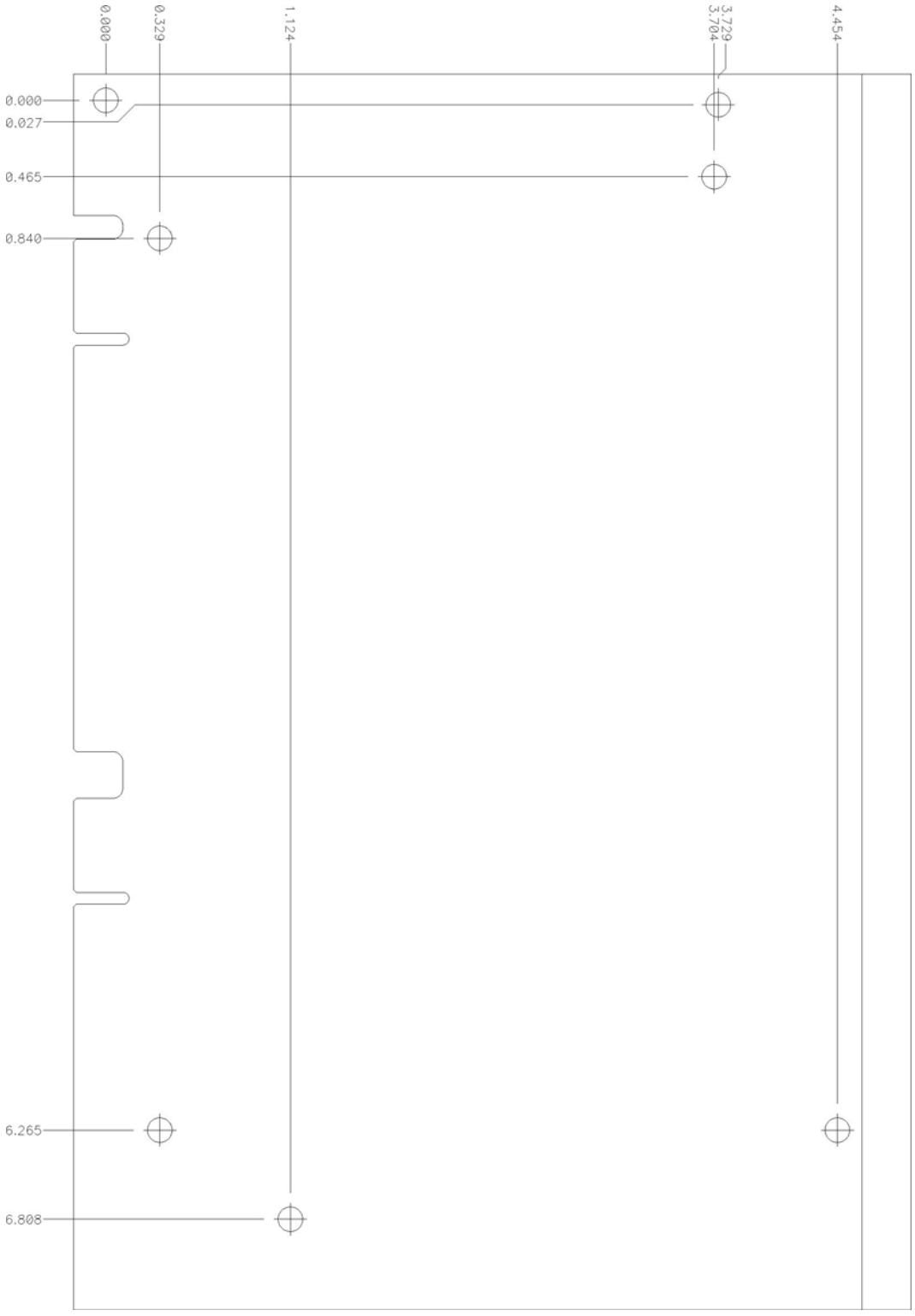
* :All functions marked with an asterisk (*) can be disabled or reconfigured.
1 Available lines service on board and external PCI/ISA PnP devices or a Legacy ISA device.

C. Board Diagrams

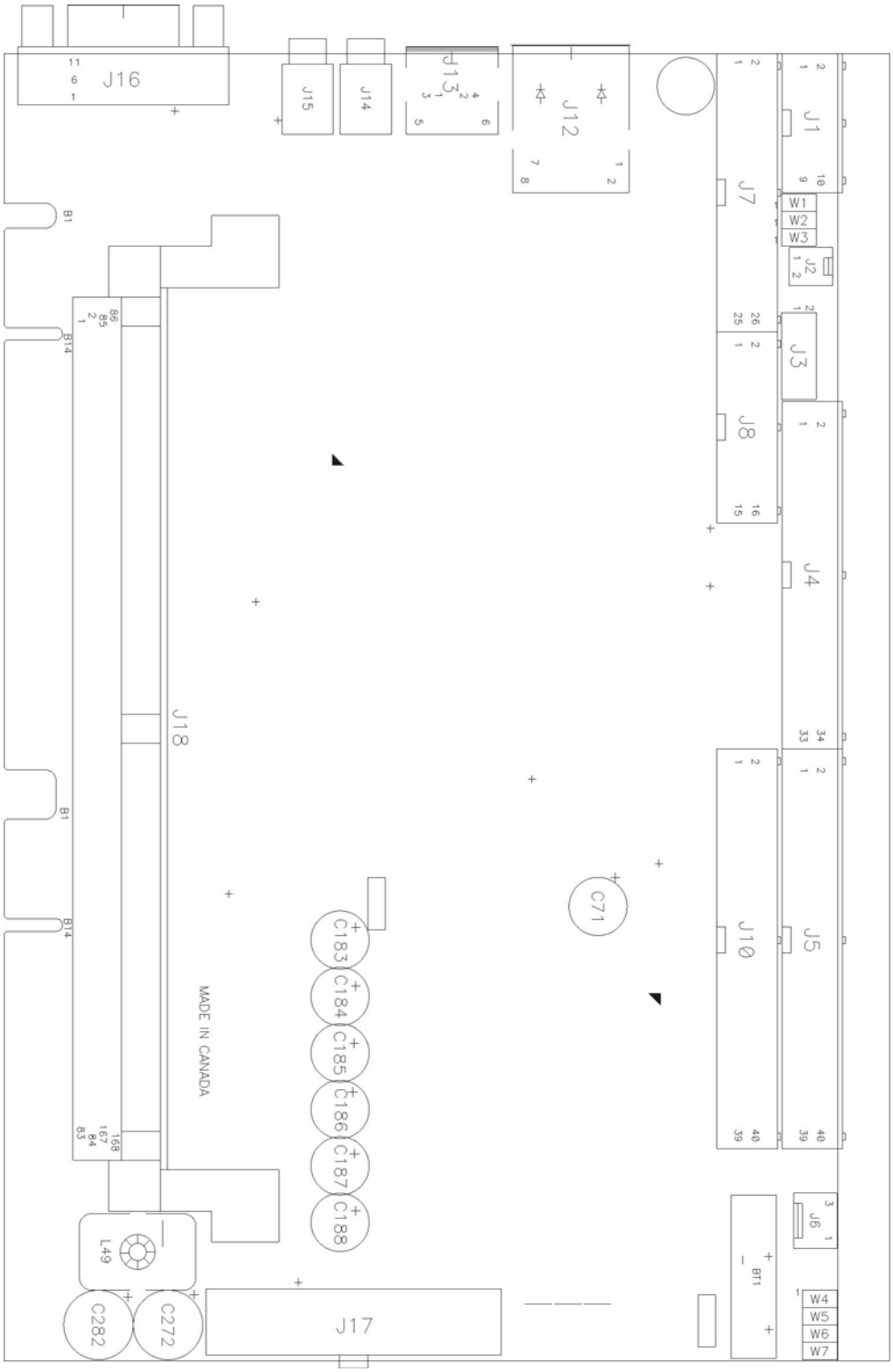
C.1 TOP DEVICES SURFACE MOUNT



C.2 MOUNTING HOLES



C.3 TOP MOUNTING COMPONENTS



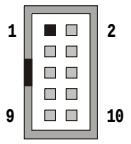
D. Connector Pinouts

D.1 CONNECTORS AND HEADERS SUMMARY

Connector	Description
J1	Serial Port 1 Connector
J2	Power-on connector
J3	USB Header connector
J4	Floppy Disk Connector
J5	Primary IDE connector
J6	CPU Fan connector
J7	Parallel Port Connector
J8	Multifunction connector
J9	JILI connector
J10	Secondary IDE connector
J11	CompactFlash connector
J12	Ethernet connector
J13	PS2 Mouse / Keyboard connector
J14	USB 1 connector
J15	USB 2 connector
J16	VGA connector
J17	ATX Power connector
J18	PC133 Memory socket
BT1	CMOS Battery Backup socket

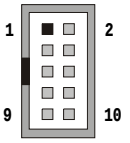
D.2 SERIAL PORT 1 - (J1) RS-232

Signal	Pin		Pin	Signal
DCD	1		2	DSR
RXD	3		4	RTS
TXD	5		6	CTS
DTR	7		8	RI
GND	9		10	N.C.



Serial Port 1 - (J1) RS-232/RS-422/RS-845

Signal	Pin		Pin	Signal
RSV	1		2	RSV
RX-	3		4	RX+
TX-	5		6	TX+
RSV	7		8	RSV
GND	9		10	N.C.



D.3 POWER

Signal	Pin
Pushbutton#	1
GND	2



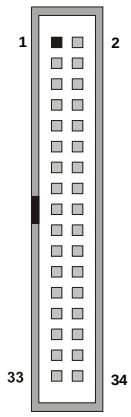
D.4 USB HEADER (J3)

Signal	Pin		Pin	Signal
USB2:VCC	1		2	USB3:VCC
USB2:DATA-	3		4	USB3:DATA-
USB2:DATA+	5		6	USB3:DATA+
USB2:GND	7		8	USB3:GND
GND	9		10	GND



D.5 FLOPPY DRIVE (J4)

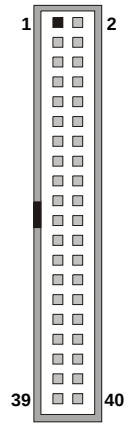
Signal	Pin		Pin	Signal
GND	1		2	DENSEL#
GND	3		4	N.C.
GND	5		6	N.C.
GND	7		8	INDEX#
GND	9		10	MTR0#
GND	11		12	DSEL1#
GND	13		14	DSEL0#
GND	15		16	MTR1#
N.C.	17		18	DIR#
GND	19		20	STEP#
GND	21		22	WDATA#
GND	23		24	WGATE#
GND	25		26	TRK0#
N.C.	27		28	WRPROT#
FDETECT	29		30	RDATA#
GND	31		32	HDSEL#
N.C.	33		34	DSKCHG#



Active Low Signal

D.6 PRIMARY & SECONDARY EIDE CONNECTOR (J5 & J10)

Signal	Pin		Pin	Signal
RST#	1		2	GND
D7	3		4	D8
D6	5		6	D9
D5	7		8	D10
D4	9		10	D11
D3	11		12	D12
D2	13		14	D13
D1	15		16	D14
D0	17		18	D15
GND	19		20	KEY
DMARQ	21		22	GND
IOW#	23		24	GND
IOR#	25		26	GND
IORDY	27		28	CSEL
DMACK#	29		30	GND
IRQ	31		32	N.C.
A1	33		34	DIAG#
A0	35		36	A2
CS0#	37		38	CS1#
DASP#/ACT#	39		40	GND



Active Low Signal

D.7 CPU FAN HEADER (J6)

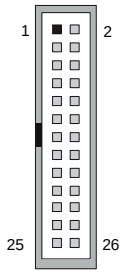
Signal	
SENSE	1
+12V	2
GND	3



D.8 PARALLEL PORT (J7)

Standard Mode

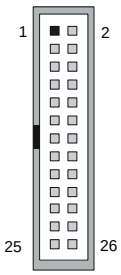
Signal	Pin		Pin	Signal
STB#	1		2	ALF#
D0	3		4	ERR#
D1	5		6	INIT#
D2	7		8	SLCTIN#
D3	9		10	GND
D4	11		12	GND
D5	13		14	GND
D6	15		16	GND
D7	17		18	GND
ACK#	19		20	GND
BUSY	21		22	GND
PE	23		24	GND
SLCT	25		26	GND



Active Low Signal

EPP Mode

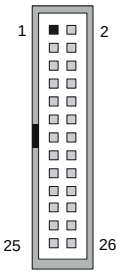
Signal	Pin		Pin	Signal
WRITE#	1		2	DATASTB#
D0	3		4	N.C.
D1	5		6	N.C.
D2	7		8	ADDRSTRB#
D3	9		10	GND
D4	11		12	GND
D5	13		14	GND
D6	15		16	GND
D7	17		18	GND
INTR	19		20	GND
WAIT#	21		22	GND
N.C.	23		24	GND
N.C.	25		26	GND



Active Low Signal

ECP Mode

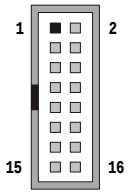
Signal	Pin		Pin	Signal	
				Compatible Mode	High Speed Mode
STROBE#	1		2	AUTOFD	HOSTACK
D0	3		4	FAULT	PERIPHRQST
D1	5		6	INIT	REVERSERQST
D2	7		8	SELECTIN	SELECTIN
D3	9		10	GND	
D4	11		12	GND	
D5	13		14	GND	
D6	15		16	GND	
D7	17		18	GND	
ACK#	19		20	GND	
BUSY, PERIPHACK	21		22	GND	
PERROR, ACKREVERSE	23		24	GND	
SELECT	25		26	GND	



Active Low Signal

D.9 MULTI-FUNCTION (J8)

Signal	Pin		Pin	Signal
KB:CLK	1		2	GND
KB:DATA	3		4	GND
VCC	5		6	VCC
SPEAKER	7		8	VCC
MOUSE:CLK	9		10	GND
MOUSE:DATA	11		12	GND
PBRES#	13		14	GND
IDE:ACT#	15		16	VCC

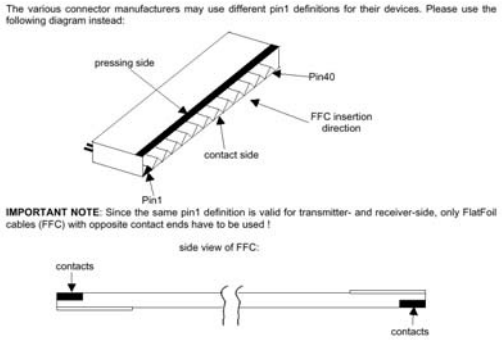


Active Low Signal

D.10 JUMPTEC INTELLIGENT LVDS INTERFACE (J9)

Signal	Pin
LCDFLM	1
LVD0- (odd)	2
LVD0+ (odd)	3
ENAVDD	4
LVD1- (odd)	5
LVD1+ (odd)	6
N.C.	7
LVD2- (odd)	8
LVD2+ (odd)	9
GND	10
LVC- (odd)	11
LVC+ (odd)	12
GND	13
LVD3+ (odd)	14
LVD3- (odd)	15
DDC_Data	16
LVD0- (even)	17
LVD0+ (even)	18
DDC_Clock	19
LVD1- (even)	20
LVD1+ (even)	21
N.C.	22
LVD2- (even)	23
LVD2+ (even)	24
GND	25
LVDC- (even)	26
LVDC+ (even)	27
GND	28
LVD3- (even)	29
LVD3+ (even)	30
VCC	31
VCC	32
VCC	33
VCC	34
EnableBacklight	35
GND	36
GND	37
+12V	38
+12V	39
+12V	40

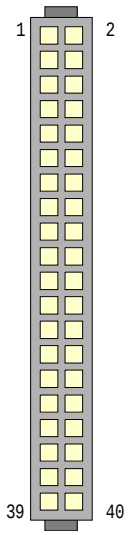




For more information, consult Jumptec JILI specification.

D.11 CompactFlash™ (J11)

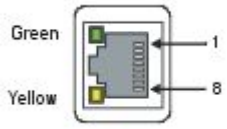
Signal	Pin		Pin	Signal
D11	1		2	GND
D12	3		4	D3
D13	5		6	D4
D14	7		8	D5
D15	9		10	D6
CS1#	11		12	D7
DMACK#	13		14	CS0#
DMARQ	15		16	IOR#
PDIAG#	17		18	IOW#
IRQ15	19		20	VCC
VCC	21		22	VCC
GND	23		24	GND
RESET#	25		26	GND
CSEL	27		28	A2
A1	29		30	DASP#
A0	31		32	IORDY
D0	33		34	D8
D1	35		36	D9
D2	37		38	D10
IOCS16#	39		40	GND



Active Low Signal

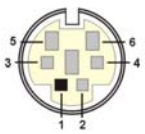
D.12 Ethernet 10Base-T/100Base-TX (J12)

Signal	Pin
TX+	1
TX-	2
RX+	3
N.C.	4
N.C.	5
RX-	6
N.C.	7
N.C.	8



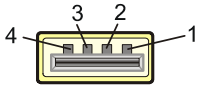
D.13 PS/2 Keyboard/Mouse (J13)

Signal	
KB:DATA	1
MOUSE:DATA	2
GND	3
VCC	4
KB:CLK	5
MOUSE:CLK	6



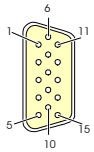
D.14 USB1 AND USB2 (LOCATED ON FACEPLATE) (J14 & J15)

Signal	Pin
VCC	1
DATA-	2
DATA+	3
GND	4



D.15 CRT VGA INTERFACE (J16)

Signal		Signal		Signal	
RED	1	Analog GND	6	N.C.	11
GREEN	2	Analog GND	7	SDATA	12
BLUE	3	Analog GND	8	HSYNC	13
N.C.	4	N.C.	9	VSYNC	14
GND	5	GND	10	SCLK	15



D.16 ATX-TYPE BOARD POWER (J17)

Signal	Pin		Pin	Signal
VCC3	11		1	VCC3
-12V	12		2	VCC3
GND	13		3	GND
PS_ON#	14		4	VCC
GND	15		5	GND
GND	16		6	VCC
GND	17		7	GND
N.C.	18		8	PWROK
VCC	19		9	5VSB
VCC	20		10	+12V



Active Low Signal

E. BIOS Setup Error Codes

E.1 POST BEEP

E.1.1 Recoverable POST Errors

Whenever a recoverable error occurs during POST, *Phoenix* BIOS displays an error message describing the problem.
Phoenix BIOS also issues a beep code (one long tone followed by two short tones) during POST if the video configuration fails (no card installed or faulty) or if an external ROM module does not properly checksum to zero.
An external ROM module (e. g. VGA) can also issue audible errors, usually consisting of one long tone followed by a series of short tones.

E.1.2 Terminal POST Errors

There are several POST routines that issue a **POST Terminal Error** and shut down the system if they fail. Before shutting down the system, the terminal error handler issues a beep code signifying the test point error, writes the error to port 80h, attempts to initialize the video, and writes the error in the upper left corner of the screen (using both mono and color adapters).
The routine derives the beep code from the test point error as follows:

1. The 8- bit error code is broken down to four 2 bit groups (Discard the most significant group if it is 00).
2. Each group is made one- based (1 through 4) by adding 1.
3. Short beeps are generated for the number in each group.

Example:
Test point 01Ah = 00 01 10 10 = 1- 2- 3- 3 beeps

E.1.3 Test Points and Beep Codes

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O address 80h. Use this code during trouble shooting to establish at what point the system failed and what routine was being performed.
If the BIOS detects a terminal error condition, it halts POST after issuing a terminal error beep code (See above) and attempting to display the error code on upper left corner of the screen and on the port 80h LED display.
If the system hangs before the BIOS can process the error, the value displayed at the port 80h is the last test performed. In this case, the screen does not display the error code.

Code	Beeps	POST Routine Description
02h		Verify Real Mode
03h		Disable Non-Maskable Interrupt (NMI)
04h		Get CPU type
06h		Initialize system hardware
07h		De-shadow BIOS code
08h		Initialize chipset with initial POST values
09h		Set IN-POST flag, Verify CMOS and RTC validity
0Ah		Initialize CPU registers

Code	Beeps	POST Routine Description
0Bh		Enable CPU cache
0Ch		Initialize caches to initial POST values
0Eh		Initialize I/O component
0Fh		Initialize the local bus IDE
10h		Initialize Power Management
11h		Load alternate registers with initial POST values
12h		Restore CPU control word during warm boot
13h		Initialize PCI Bus Mastering devices
14h		Initialize keyboard controller
16h	1- 2- 2- 3	BIOS ROM checksum
17h		Initialize cache before memory autosize
18h		8254 timer initialization
1Ah		8237 DMA controller initialization
1Ch		Reset Programmable Interrupt Controller
20h	1- 3- 1- 1	Test DRAM refresh
22h	1- 3- 1- 3	Test 8742 Keyboard Controller
24h		Set ES segment register to 4 GB
26h		Enable A20 line
28h		Autosize DRAM
29h		Initialize POST Memory Manager
2Ah		Clear 512 KB base RAM
2Bh		Enhanced COMS init
2Ch	1- 3- 4- 1	RAM failure on address line ***xxxx*** *
2Eh	1- 3- 4- 3	RAM failure on data bits ***xxxx*** * of low byte of memorybus
2Fh		Enable cache before system BIOS shadow
30h	1- 4- 1- 1	RAM failure on data bits ***xxxx*** * of high byte of memory bus
32h		Test CPU bus- clock frequency
33h		Initialize Phoenix Dispatch Manager
34h		CMOS test (on Suspend-to-Disk resume)
35h		Register re-initialization
36h		Warm start shut down
38h		Shadow system BIOS ROM
39h		Cache re-initialization
3Ah		Autosize cache
3Ch		Advanced configuration of chipset registers
3Dh		Load alternate registers with CMOS values
42h		Initialize interrupt vectors
45h		POST device initialization
46h	2- 1- 2- 3	Check ROM copyright notice
48h		Check video configuration against CMOS
49h		Initialize PCI bus and devices (I/O 81h = PCI Bus tested)
4Ah		Initialize all video adapters in system

Code	Beeps	POST Routine Description
4Bh		QuietBoot (logo) start
4Ch		Shadow video BIOS ROM
4Eh		Display BIOS copyright notice
4Fh		Multi-Boot (Boot menu support) Initialization
50h		Display CPU type and speed
51h		Initialize EISA board
52h		Test keyboard
54h		Set key click if enabled
55h		USB initialization (legacy support)
56h		Enable Keyboard
58h	2- 2- 3- 1	Test for unexpected interrupts
59h		Initialize POST display service
5Ah		Display prompt "Press DEL to enter SETUP"
5Bh		Disable CPU cache
5Ch		Test RAM between 512 and 640 KB
60h		Test extended memory
62h		Test extended memory address lines
64h		Jump to UserPatch1
66h		Configure advanced cache registers
67h		Early Initialize of Multi Processor APIC
68h		Enable external and CPU caches
69h		Setup System Management Mode (SMM) area
6Ah		Display external L2 cache size
6Bh		Load custom defaults (optional)
6Ch		Display shadow- area message
6Eh		Clear Memory
70h		Display error messages
72h		Test for configuration error detected
74h		Test RTC
76h		Check for keyboard errors
7Ch		Set up hardware interrupt vectors
7Dh		Intelligent Sytem Monitoring initialization
7Eh		Initialize coprocessor if present
80h		Disable onboard Super I/O ports and IRQs for Auto-detection.
81h		Late POST device initialization
82h		Detect and install external RS232 ports
83h		Configure non-Motherboard Configurable Device IDE controllers
84h		Detect and install external parallel ports
85h		Initialize PC-compatible PnP ISA devices
86h		Re- initializes onboard I/O ports.
87h		Configure Motheboard Configurable Devices (optional)
88h		Initialize BIOS Data Area

Code	Beeps	POST Routine Description
89h		Enable Non-Maskable Interrupts (NMIs)
8Ah		Initialize Extended BIOS Data Area
8Bh		Test and initialize PS/2 mouse
8Ch		Initialize floppy controller
8Fh		Determine number of ATA drives (optional)
90h		Initialize hard-disk controllers, auto-detect IDE drives
91h		Initialize local-bus hard-disk controllers
92h		Jump to UserPatch2
93h		Build MPTABLE for multi-processor boards
95h		Install CD ROM for boot
96h		Clear huge ES segment register
97h		Fixup Multi Processor table
98h	1- 2	Search for option ROMs. One long, two short beeps on checksum failure
99h		Check for SMART Drive (optional)
9Ch		Set up Power Management
9Dh		Initialize security engine (optional)
9Eh		Enable hardware interrupts
9Fh		Determine number of ATA and SCSI drives (optional)
A0h		Set time of day
A4h		Initialize Typematic rate
A8h		Erase DEL prompt
AAh		Scan for DEL key stroke
ACh		Enter SETUP
AEh		Clear Boot flag
B0h		Check for errors
B2h		POST done – prepare to boot operating system
B4h	1	One short beep before boot
B5h		Terminate QuietBoot (optional)
B6h		Check password (optional)
B7h		ACPI initialization
B9h		Prepare Boot
BAh		Initialize DMI parameters
BCh		Clear parity checkers
BDh		Display MultiBoot menu
BEh		Clear screen (optional)
BFh		Display Summary Screen
C0h		Try to boot with INT 19
C1h		Initialize POST Error Manager (PEM)
C2h		Save the current boot type into CMOS
C2h		Initialize error logging
C3h		Check the requested boot type (Cold or Warm)
C3h		Initialize error display function

Code	Beeps	POST Routine Description
C4h		Initialize system error handler
C4h		Install the IRQ1 vector for BIOS Hot Keys
C5h		PnP NoteDock dual CMOS (optional)
C5h		Mark the fact that we are no longer in POST
C6h		Console Redirection SIO Initialize
C7h		Remove Console Redirection
C8h		Force Emergency Flash update check (Ctrl-E and bad CMOS)
C8h		Test Gate A20
C9h		Extended checksum (optional)
CDh		Install Console Redirection Interrupt Handler
CFh		Extended BIOS data Fail
D1h		BIOS stack initialization
D2h		Unknown interrupt
D3h		Setup WAD (reserved memory used by BIOS)
D4h		Get CPU string
E0h		Software SMI failure during POST

Code	Beeps	For Boot Block in Flash ROM
80h		Initialize the chipset
81h		Initialize the bridge
82h		Initialize the CPU
83h		Initialize system timer
84h		Initialize system I/O
85h		Check force recovery boot
86h		Checksum BIOS ROM
87h		Go to BIOS
88h		Set Huge Segment
89h		Initialize Multi Processor
8Ah		Initialize OEM special code
8Bh		Initialize PIC and DMA
8Ch		Initialize Memory type
8Dh		Initialize Memory size
8Eh		Shadow Boot Block
8Fh		System memory test
90h		Initialize interrupt vectors
91h		Initialize Run Time Clock
92h		Initialize video
93h		Initialize System Management Mode
94h	1	Output one beep before boot
95h		Boot to Mini DOS
96h		Clear Huge Segment
97h		Boot to Full DOS
A0h		Test SIO Clock Validity
A2h		Check TEST# Jumper for POST to COM, see Extension Registers.
B0h		Reset System for Erratas, Hyper-Threading
B1h		Early Boot Block Initialize completed.

E.2 POST MESSAGES

During the Power On Self Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

"PRESS F1 TO CONTINUE, DEL TO ENTER SETUP".

E.3 ERROR MESSAGES

One or more of the following messages may be displayed if the BIOS detects an error during the POST.

CMOS BATTERY HAS FAILED

1. If it's the first boot, check for the onboard battery jumper W4. The board is shipped with W4 jumper set to OFF (onboard battery disconnected). This jumper must be shorted (ON) for proper battery operation.
2. CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This indicates that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

OPERATING SYSTEM NOT FOUND

No boot device was found. This could mean either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Floppy Drive A and press Enter. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

Expansion ROM not initialized

Cannot initialize the PCI expansion ROM. There is not enough free conventional memory for expansion ROM (C0000h to DFFFFh). Expansion ROM not required to boot should be disabled.

F. BIOS Update & Emergency Procedure

F.1 BIOS UPDATE PRECEDURE

The BIOS update procedure is detailed in a ReadMe file included with the BIOS package as well as the update utility. This package can be downloaded from our website www.kontron.com or from our FTP site ftp://ftp.kontron.ca/Support

F.2 EMERGENCY PROCEDURE

Symptoms:

- No POST code on a power up (when using a POST card).
- Board does not boot, even after usual hardware and connection verifications.
- At power up, there is floppy disk led activity, which is one sign that the BIOS as detected a corrupted BIOS CRC prior POST and fallen back automatically to Emergency Recovery Mode looking for the floppy Emergency disk.

The Emergency Recovery procedure is detailed in a ReadMe file included with the Emergency BIOS package as well as the update utility. This package can be downloaded from our website http://www.kontron.com or from our FTP site ftp://ftp.kontron.ca/Support

G. Troubleshooting

G.1 Power and Boot Problems

This section describes common problems. Read it carefully before calling Kontron technical support.

G.1.1 Power Supply Doesn't Start

A simple visual test for supply voltage is done by checking the fan operation. Once the power is applied to the board, the power supply fan must be running. Make sure you respect the minimum load for the power supply.

If a backplane is used, it might provide visible indications of the power supply. When OFF, only auxiliary supplies (+5Vaux and +3.3Vaux if any) should be ON. When ON, all supplies LEDs should be ON and the "PowerGood" LED (if any) should be ON.

If all LEDs are off, this is an indication that the power supply has detected an overcurrent. Remove all loads from the power supply with the exception of the SHB. Do not try to power an empty system; power supplies also have a minimum load requirement.

G.2 SHB Used in Stand-Alone With ATX Control

Even if the SHB is normally used in a backplane, it might be a good idea to try it in stand-alone to make sure that the power supply and the SHB are both functional.

Put the SHB flat on a non-conductive surface. Plug the 20-pin cable from the power supply into the SHB J17 connector and don't connect any other cable.

Plug the power supply in an AC outlet and turn on the mechanical "ON" switch (if any) of the power supply.

If the power supply does not start, try another one.

If it still does not start, contact Kontron technical support.

G.3 SHB Used in a Backplane Without ATX Control

First, try the board in the stand-alone non-ATX configuration (see section G.2) to make sure that the SHB and power supply are functional.

When ATX control is not used, the power supply is turned ON either by its mechanical ON/OFF switch or a latching pushbutton used to fake an ATX control.

In all case, the backplane should provide some jumper setting to bypass the SHB ATX circuit. Consult your backplane documentation.

If no pushbutton is used, set the backplane jumpers for "Always ON" configuration. If there is no such setting on the backplane, put J2 on the SHB and set the backplane jumpers so that the SHB will control the power supply. If no jumpers are present on the backplane, this should be the default configuration.

If it does not work, contact your backplane vendor's technical support.

With the latching pushbutton configuration, the control signals do not go through the SHB. If it does not work, it is a backplane configuration problem. Consult your backplane documentation.

G.4 SHB Used in a Backplane With ATX Control

In doubt, try the SHB and backplane in stand-alone non-ATX configuration (see section G.2) to make sure they are both functional.

Set any backplane ATX configuration jumpers to "Controlled by SHB".

Next, connect the push button the backplane. If it doesn't work, contact your backplane vendor's technical support.

G.4.1 Power Supply Doesn't Stop (Softoff doesn't work)

First, make sure that jumper there is no jumper on J2.

When you turn-off the board, you have to press the ATX pushbutton for a minimum of 4 seconds. Press the pushbutton for 10 seconds to be sure.

G.4.2 Bad Behavior Following an AC loss

Following an AC loss, you can choose to leave the board off or put it in the state is was before the AC loss (i.e. mimic a non-ATX power supply behavior).

This is a BIOS setup option in the "power" menu.

G.4.3 SHB Stuck in Reset

The following table gives possible causes that can keep the board in reset.

Possible Cause	Things to try
Power supply doesn't assert its "PowerGood" signal	Check pin P1-B2 (second finger of first connector on primary component side). You should see a voltage above 2.4V. If not, try another power supply.
One or more supply is too low.	Take a voltmeter and measure the following voltages on the backside of the SHB, in the pins of its stand-alone power connector: +3.3V, +5V, +12V, +5Vsb. Those supplies should be within 5%.
Shorted reset switch.	Make sure pin #13 of multi-function connector (J8) is not grounded. Unplug any cable on J8 to be sure.

G.4.4 SHB Hang During Boot

First, you want to read the last postcode on a PCI post card or you want to listen to the beep post code. Consult the BIOS postcode listing. This might give you a clue on what the problem is. If you call Kontron technical support, the first thing they will ask you is to read the postcode.

Possible Cause	Things to try
PCI device conflict on bus A	See section on *off-board* PCI problems.
Memory problems.	Make sure the memory type is in the approved list and is properly inserted.
Cable problems.	Remove all non-essential cables and check pin #1 alignment on the remaining cables.

G.5 OFF-BOARD PCI PROBLEMS

First, remove all PCI card in the system. If it works, the problem is probably related to external PCI cards. If it still does not work and the backplane has a PCI bridge on bus A, you might have a conflict between the chipset and the bridge. See section on bus A problems. Otherwise, populate the PCI cards on bus A only to see if its works. Go to the appropriate section.

G.5.1 Bus A Problems

Bus A being a conventional 33MHz PCI bus, it's unlikely that it's a timing or protocol problem.

One known problem is a device conflict between the chipset and an external PCI device that has an IDSEL set to AD28 and AD29. You must only use the slots with an IDSEL set to AD30 and AD31 or you need a backplane that allow you to change the IDSEL AD28 and AD29 by AD24 and AD25.

If the backplane comes from a different vendor, avoid using the slot next to the SHB if you can. If you cannot or if the backplane has a bridge, consult your backplane vendor's technical support for a possible workaround.

G.6 IDE PROBLEMS

When only one drive is present on an IDE channel, it must be configured as the master device, otherwise it will not be detected.

When a drive is present on the primary channel and a CompactFlash is also present, the channel speed is restricted by the CompactFlash. Use a 40-wire cable for the external drive or the CompactFlash will not be detected.

G.7 BOOTING FROM A USB FLOPPY DOES NOT WORK

When the option Legacy Diskette A: is not disabled, the USB floppy cannot be used to boot. This happens even when there is no floppy drive plugged in the floppy disk controller.

H. Getting Help

At Kontron, we take great pride in our customers' successes. We believe in providing full support at all stages of your product development.

If at any time you encounter difficulties with your application or with any of our products, or if you simply need guidance on system setups and capabilities, contact our Technical Support at:

CANADIAN HEADQUARTERS
Tel. (450) 437-5682
Fax: (450) 437-8053

If you have any questions about Kontron, our products, or services, visit our Web site at: www.kontron.com

You also can contact us by E-mail at: support@ca.kontron.com

Or at the following address:

Kontron Canada, Inc.
616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

RETURNING DEFECTIVE MERCHANDISE

Before returning any merchandise please do one of the following if your product malfunctions:

- Call

    1. Call our **Technical Support** department in Canada at **(450) 437-5682**. Make sure you have the following on hand: **our Invoice #,** your **Purchase Order #,** and the **Serial Number** of the defective unit.

    2. Provide the serial number found on the back of the unit and explain the nature of your problem to a service technician.

    3. The technician will instruct you on the return procedure if the problem cannot be solved over the telephone.

    4. Make sure you receive an **RMA #** from **our Technical Support** before returning any merchandise.

- Fax

    1. Make a copy of the request form on the following page.

    2. Fill it out.

    3. Fax it to us at: (450) 437-8053

- E-mail

    1. Send us an e-mail at: RMA@ca.kontron.com. In the e-mail, you must include your name, your company name, your address, your city, your postal/zip code, your phone number, and your e-mail. You must also include the **serial number** of the defective product and **a description of the problem.**

When returning a unit.

i) In the box, you have to include the name and telephone number of a person whom we can contact for further explanations if necessary when returning goods. **Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.**

ii) Ensure that the unit is properly packed. Pack it in a rigid cardboard box.

iii) Clearly write or mark the RMA number on the outside of the package you are returning.

iv) Ship prepaid. We take care of insuring incoming units.

Kontron Canada Inc.
616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada



Return to Manufacturer Authorization Request

Contact Name:	_____		
Company Name:	_____		
Street Address:	_____		
City:	_____	Province/State:	_____
Country:	_____	Postal/Zip Code:	_____
Phone Number:	_____	Extension:	_____
Fax Number:	_____	E-Mail:	_____

Serial Number	Failure or Problem Description	P.O. # (if not under warranty)

Kontron Canada, Inc., 616 Curé Boivin, Boisbriand, Québec, Canada, J7G 2A7

Fax this form to Kontron's Technical Support department in Canada at (450) 437-8053