VIPer824

Half-Size ISA Industrial SBC

Technical Reference Manual
Version 1.6, February 2003

www.kontron.com

Ref. : M824_TECH

FOREWORD

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DOCUMENTATION SURVEY

> **VIPer824 – Technical Reference Manual**

Your comments are valuable for us and will contribute to improve the quality of this product by complementing and returning this form.

1. Overall rating of the Technical Reference Manual: ❑ Excellent ❑ Satisfactory ❑ Fair ❑ Poor

2. Was the information you were seeking easy to find? ❑ Yes ❑ No

    If no, can you comment? _____

3. What section of this manual do you refer to the most? _____

4. How can you rate this manual?

    In terms of clarity of information: ❑ Excellent ❑ Satisfactory ❑ Fair ❑ Poor
    Comments: _____
    _____

    In terms of complexity: ❑ Too technical ❑ Just OK ❑ Not technical enough
    Comments: _____
    _____

    In terms of classification of information: ❑ Excellent ❑ Satisfactory ❑ Fair ❑ Poor
    Comments: _____
    _____

5. Is there any missing information? ❑ Yes ❑ No

    If yes, what information is missing?_____
    _____

6. Is some information not properly or clearly explained? ❑ Yes ❑ No

    If yes, can you comment?_____
    _____

7. Additional comments (any changes or modifications to this manual): _____
    _____
    _____

Please send your comments to:

Kontron Inc

Technical Writing dept.
616 Curé Boivin, Boisbriand
(Québec) CANADA J7G 2A7

Name _____
Company _____
Address _____
_____ **Optional** _____

ADDITIONAL COMMENTS

Your computer board has a standard non-rechargeable lithium battery. To preserve the battery lifetime, **the battery enable jumper is removed when you receive the board**. If you do not have any jumper cap, we suggest you to use the Watchdog Timer jumper cap.

EXERCISE CAUTION WHILE REPLACING LITHIUM BATTERY

⚡ 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 according to the 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 fabricant. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

⚡ 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 usadas segun las instrucciones del manifacturo.

⚠️**VIDEO BIOS**

The board supports many different types of Flat Panel displays. We have fully tested a number of these panels and provides all the BIOS software support and the technical information needed.

If you have access to the Internet, many video BIOS and related interconnection charts are available on our web site. You can download these files, if you are a customer and have a password. If you do not have your password, contact our Technical Support to obtain it.

Our address is: http://www.kontron.com.

⚠️**POWERING-UP THE BOARD**

If you should encounter a problem, verify the following items:

1. Make sure that all connectors are properly connected.

2. Check your boot diskette.

3. If the board still does not start up properly, you should try booting your system with the SBC installed in the system, a monitor and a mouse connected to the board. This is the minimum required to verify the board's operation.

4. If you still are not able to verify your board, please refer to the emergency Procedure in the Appendix Section.

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

⚠️**PREVENTING VIRUSES**

We take every precaution against computer viruses. For your protection, we have *safely sealed* all utility compact disks. If the seal is broken, **do not use the diskette**. Contact our Technical Support department for further instructions at (450) 437-5682 (Canada).

To safeguard against computer viruses in general, do not freely lend your utility diskettes and regularly perform virus scans on all your computer systems.

⚠️**ADAPTER CABLES**

While adapter cables are provided from various sources, the pinout is often different. The direct crimp design offered allows the simplest   cable assembly. All cables are available from our Sales Department.

⚠️**FLAT PANEL POWER**

The VIPer824 supplies the Flat Panel with sequenced 5V or 3.3V power. The power supply selection is performed through jumper W12.

Make sure you select the correct power voltage for your Flat Panel.

Incorrect power voltage can damage your Flat Panel.

⚠️**FLAT PANEL CONTROL SIGNALS AND THE V-PORT CONNECTOR**

When the voltage level for the flat panel control signal is set at 3.3V via jumper W12, only 3.3V logic levels can be used for the V-PORT connector.
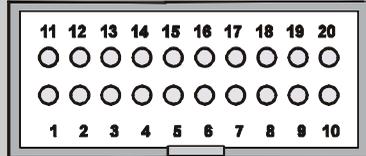
⚠️**FLAT PANEL CABLE LENGTH**

The flat panel cable length for the SBC should be cut on the unconnected end to a recommended maximum length of 18 inches from the high-density connector. Though some Flat Panels may support longer flat cables, and we have made allowance for this by providing more than 18 inches of cable, it is the customer's responsibility to ensure that the additional length is fully support by specifications of the Flat Panel.
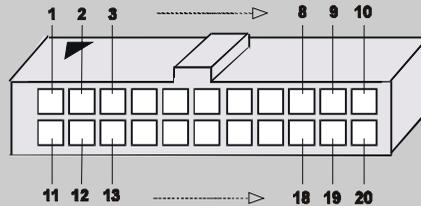
⚠ **20-PIN HIGH-DENSITY FLAT PANEL CONNECTOR**

The J6 Flat Panel connector found on the VIPer824 is a 20-pin high-density connector, which has a different pinout than most dual row headers. The pin numbers are shown below.

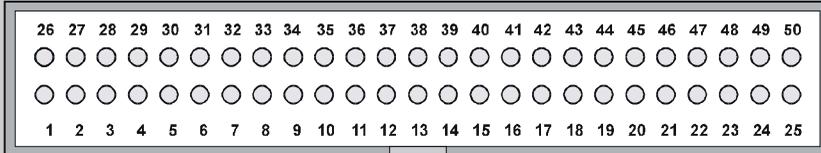ONBOARD 20-PIN FLAT PANEL CONNECTOR

FLAT PANEL CABLE MATING CONNECTOR

In the same way, the mating connector on the Flat Cable (our part #150-334) has the same linear pinout, as shown above. Two 10-pin flat cables are crimped to this connector: one cable has Pins 1 to 10 and the other cable has Pins 11 to 20.
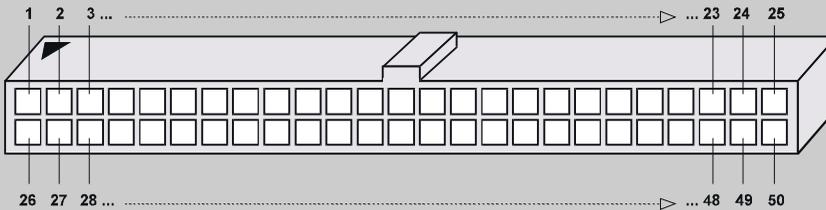
⚠ 50-PIN HIGH-DENSITY CONNECTOR

The J8 Flat Panel connector found on the VIPer824 is a 50-pin high-density connector, which has a different pinout than most dual row headers. The pin numbers are shown below.

ONBOARD 50-PIN FLAT PANEL CONNECTOR

FLAT PANEL CABLE MATING CONNECTOR

In the same way, the mating connector on the Flat Panel Cable (our part #150-105) has the same linear pinout, as shown above. Two 25-pin flat cables are crimped to this connector: one cable has Pins 1 to 25 and the other cable has Pins 26 to 50.

UNPACKING AND SAFETY PRECAUTIONS

STATIC ELECTRICITY

Since static electricity can cause damage to electronic devices, the following precautions should be taken:
1. Keep the board in its anti-static package, until you are ready to install it.

2. Always touch a grounded surface or 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.

3. Handle the board by the edges.

Storage Environment

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

Power Supply

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

Unpacking

Follow these recommendations while unpacking:

1. After opening the box, save it and the packing material for possible future shipment.

2. Remove the board from its anti-static wrapping and place it on a grounded surface.

3. Inspect the board for damage. If there is any damage or missing items, notify immediately.

When unpacking you will find:

1. One SBC.

2. One Quick Reference sheet

3. One CDROM containing drivers.

TABLE OF CONTENTS

PART 1 – PRODUCT DESCRIPTION

PART 2 – SOFTWARE SETUPS

PART 3 – APPENDICES

PRODUCT DESCRIPTION

PART **1**

1. PRODUCT OVERVIEW

1.1 DESCRIPTION

The VIPer824 is a PC/AT industrial Single Board Computer (SBC) based on the Intel Pentium (Socket 7) processor and the Intel Triton II chipset.

The VIPer824 is based on the half size PC/AT card format and can be installed into a standard passive ISA backplane. The SBC and backplane assembly is used as a substitute for the standard PC motherboard, and in general includes all of the standard interfaces and peripherals that are normally included in a top of the line PC.

The VIPer824 can also be used without a backplane, as a stand-alone computer: in such a case, it is powered through the external power connector and expansion is possible through the PC/104 connector.

The major advantages of the board are summarized below:

❑ **Microprocessor Support:** Pentium, Pentium MMX, and compatible are supported.

❑ **External Cache:** 512KB of Pipelined burst cache.

❑ **System Memory:** from 8 to 256MB FPM or EDO memory on two vertical 72-pin SIMM sockets.

❑ **CompactFlash Disk:** connects directly on the Secondary IDE interface.

❑ **PC/104 Connector:** When used in conjunction with the V-PORT, the board supports the VIPerVision, Video Camera Interface module.

❑ **Universal Serial Bus (USB):** Supports two USB ports.

❑ **Video:** PCI 64-bit CRT/Flat Panel video controller (69000) with 2MB of on-chip SDRAM video memory.

❑ **Fast Ethernet Controller:** Supports 10Base-T and 100Base-TX Ethernet interface options (82559).

❑ **Operating Systems:** Supports all operating systems developed for x86 and Pentium processors: DOS, Windows 3.1, OS/2, Windows 95, Windows NT, UNIX, QNX, Novell 4.10, etc.

❑ **Boot Block Flash BIOS:** 256KB device contains all the board's BIOS, and is used for nonvolatile configuration storage required for the Plug and Play BIOS. Protected boot block section allows for reprogramming of BIOS, even in the case of an inadvertent corruption of the Flash contents.

❑ **BIOS Licenses:** AWARD CPU BIOS and Chips and Technologies Video BIOS.

1.2 VIPer824 – BLOCK DIAGRAM
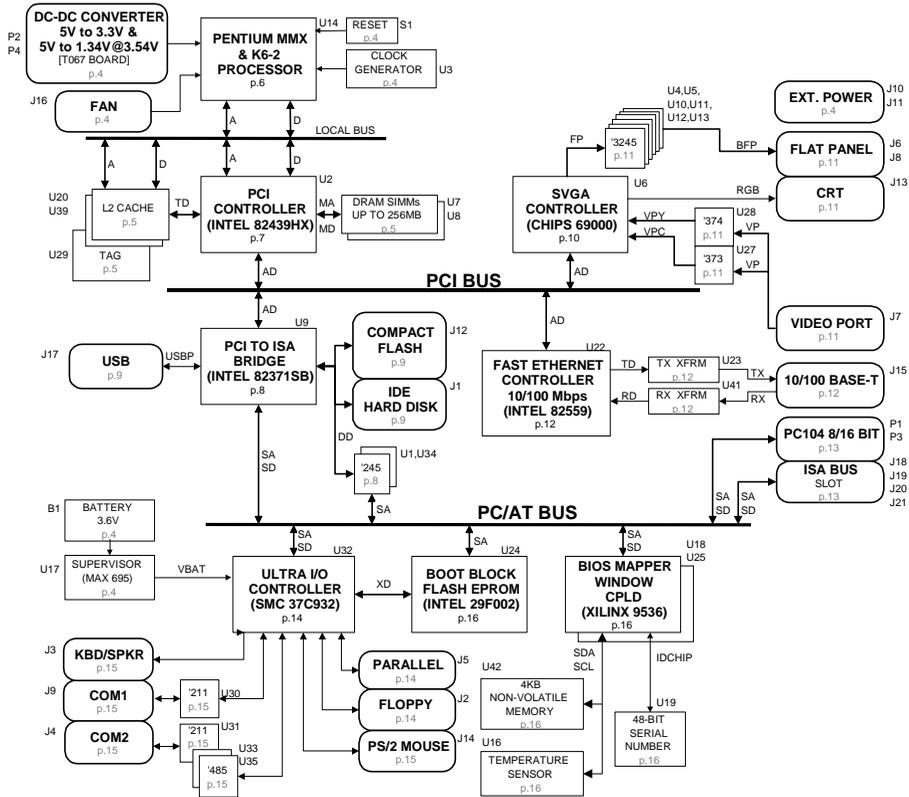
1.3   VIPer824-LP

The VIPer824-LP differs from the standard VIPer824 in that it is dedicated for low-power (LP) applications.

The VIPer824 LP board is specified as follows:

❑   **Processor:** Supports the Pentium 133 VRT (Split-Plane, Vcore = 3.1V) clocked at 75MHz.

❑   **Thermal Management:** none, while the temperature sensor is not implemented.

❑   **External Cache:** 256KB of Pipelined burst cache.

❑   **CPU cooling:** uses a heatsink.

❑   **Flat Panel:** no flat panel extension (supports 24-bit flat panel only. The J6 flat panel connector is removed).

❑   4K user serial EEPROM is not supported

❑   There is no serial board ID.

❑   Typical current consumption is 1.8A.

Jumper settings for this configuration are provided in the next section.

1.4 VIPer824 – CONNECTOR AND JUMPER LOCATION
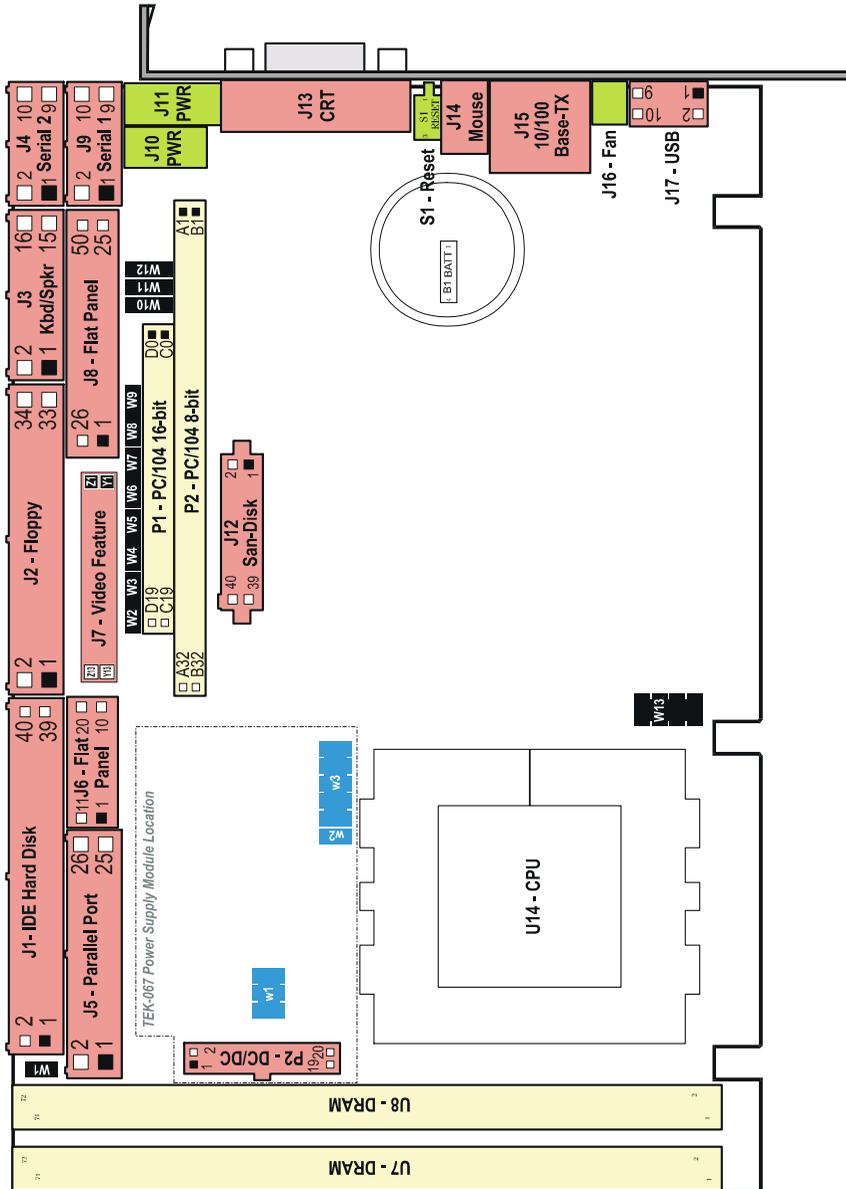
2. JUMPER SETTINGS

The processor related jumpers must conform to the following:

VIPer 824 - CPU Related Jumpers

● W1, 2, 3, 4, 5, 13 (5-6/7-8) - CPU Clock

CPU	W1	W2	W3	W4	W5	W13
						7-8
75MHz	off	on	on	off	off	off
90MHz	off	on	off	off	off	off
100MHz	off	off	on	on	off	off
120MHz	off	on	off	off	on	off
133MHz	off	off	on	on	on	off
150MHz	on	on	off	off	on	off
166MHz	on	off	on	on	on	off
200MHz	on	off	on	off	on	off
166-MMX	on	off	on	on	on	off
200-MMX	on	off	on	on	off	off
233-MMX	off	off	on	on	off	off
K6-166	on	off	on	on	on	off
K6-200	on	off	on	on	off	off
K6-233	off	off	on	on	off	off
K6-2-233	off	off	on	on	off	off
K6-2-266	off	off	on	on	on	on
K6-2-300	on	off	on	on	on	on
K6-2-333	on	off	on	on	off	on
K6-2-366	off	off	on	on	off	on

● w1, 2, 3 - DC/DC Converter

w1	w2	w3					
			1-2	3-4	5-6	7-8	9-10
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
1-3	2-4	on	on	off	on	on	off
3-5	4-6	off	off	off	off	on	off
3-5	4-6	off	off	off	off	on	off
3-5	4-6	off	off	off	off	on	off
3-5	4-6	off	on	off	off	on	off
3-5	4-6	off	on	off	off	on	off
3-5	4-6	off	off	off	on	on	off
3-5	4-6	off	off	on	off	off	off
3-5	4-6	off	off	on	off	off	off
3-5	4-6	off	off	on	off	off	off
3-5	4-6	off	off	on	off	off	off
3-5	4-6	off	off	on	off	off	off

VIPer 824-LP - Pentiun 133MHz VRT CPU cloked at 75MHz

● W1, 2, 3, 4, 5, 13 (5-6/7-8) - CPU Clock

CPU	W1	W2	W3	W4	W5	W13
						7-8
75MHz	off	on	on	off	off	off

● w1, 2, 3 - DC/DC Converter

w1	w2	w3					
			1-2	3-4	5-6	7-8	9-10
3-5	4-6	off	on	on	off	on	off

⚡ **Careful attention should be taken when installing a processor:**
Faulty jumper settings can damage both your processor and your board.

The other jumpers are described below:

NAME	FUNCTION	CONFIGURATION (INITIAL SETTING: *)
W6, W7	Serial Port 2 Termination	**● W6, W7 - Serial Port 2 Termination** |	W6	W7
RS-485 with Termination	on	on
RS-485 without Termination *	off	off | No Termination required in RS-232 mode
W8	Watchdog Timer	**● W8 - Watchdog Timer** 	Enabled	on
Disabled *	off	
W9	NMI Setup	**● W9 - Non Maskable Interrupt Setup** 	On Power Fail Output	on
Disabled *	off	
W10	Battery Selection	**● W10 - Battery Selection** 	Internal Battery	1-2
External Battery	2-3
Battery Disconnected *	off	 **Danger of explosion if battery is incorrectly replaced.** Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions .
W11	Power Fail Detection Source	**● W11 - Power Fail Detection Source** 	External Power Fail Input to pin 6 of J11 *	1-2
Internal/External battery when less than 3V	2-3	
W12	Voltage Level for Flat Panel and Interface	**● W12 - Voltage Level for Flat Panel and Interface** 	5V signal level *	1-2
3.3V signal level	2-3	
W13	Extended BIOS Modes	**● W13 - Extended BIOS Modes** |	on	off
1-2	Reserved	Reserved *
3-4	VT100 Mode	Standard Mode *
5-6	Enable Onboard Video *	Disable Onboard Video
7-8	Processor > 233MHz	Processor ≤ 233MHz *	

3. FEATURE DESCRIPTION

The VIPer824 is built around the Pentium and Pentium MMX processors from Intel. K6 and K6-2 processors from AMD are also supported:

Processors	Internal Clock Speed
Pentium	75, 90, 100, 120, 133, 150, 166 and 200 MHz
Pentium MMX	166, 200 and 233 MHz
AMD K6	166, 200 and 233 MHz
AMD K6-2	233, 266, 300, 333 and 366MHz

The power supply of the CPU is provided by the TEK-067 DC/DC Converter module. When installing a new processor, jumper settings must be provided on both the DC/DC Converter module (for the CPU voltage), and the VIPer824 board (for the Clock Speed).

To avoid damage to the processor, the CPU voltage must be as specified by the CPU manufacturer:

Single-voltage Pentium processors must be set for 3.3 V only. In the case of split-core technology (Pentium MMX or K6), the right core voltage must be selected. For example, Pentium MMX processors running at 166MHz, 200MHz and 233MHz require 2.8 V core voltage. Be sure you know the specified core voltage for your processor when it is a split-core technology!

> ✎ **NOTE**
> The VIPer824-LP board is a special configuration of the standard product: it is designed for Low-Power (LP) applications, and supports a 133MHz Pentium VRT (Voltage Reduced Technology) processor under-clocked at 75MHz.
> See also the description in Section 1.3.

3.1 CPU/SYSTEM CORE - PROCESSOR

The processor and its cooling system are factory installed, and the relative jumpers are set according to the CPU specification.

SETUPS

Related Jumpers

To configure the board for another processor, use:

W1-W5 and **W13** (7-8) jumpers on the board to setup the CPU clock speed

w1-w3 jumpers on the DC/DC Converter module to setup the CPU voltage

Jumper settings are described in the next section – *Setting Jumpers.*

BIOS Level

To enable or disable the CPU internal cache, run the BIOS Setup program, *BIOS Features* option.

MAKING CONNECTIONS

The processor installs in the U14 socket. Insert carefully the processor into its socket, and ensure to match the beveled corner of the chip surface with the corresponding marking of the processor socket. Use a "chip-puller" or thin screwdriver to remove the processor.

The +5V fan power supply is provided on both **j1** (DC/DC Converter module) and **J16** (board) headers.

MORE ...

Processors supported by the VIPer824 are specified as follows:

Processor	Type and Voltage	Processor	Type and Voltage
Pentium-100	Single plane: Vcore=Vio=3.3V	AMD K6-166	Split plane: Vcore=2.9V, Vio=3.3V
Pentium-120		AMD K6-200	
Pentium-133		AMD K6-233	Split plane: Vcore=3.2V, Vio=3.3V
Pentium-150		AMD K6-2 233	Split plane: Vcore=2.2V, Vio=3.3V
Pentium-166		AMD K6-2 266	
Pentium-200		AMD K6-2 300	
P166-MMX	Split plane: Vcore=2.8V, Vio=3.3V	AMD K6-2 333	
P200-MMX		AMD K6-2 366	
P233-MMX			

3.2   CPU/SYSTEM CORE - MEMORY

Two vertical SIMM sockets (72 pins) are provided to support from 8MB to 256MB of system memory (FPM or EDO).

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
Options to setup the DRAM are provided by the BIOS Setup program, *Chipset Features* option.

MAKING CONNECTIONS

The memory module must be installed in the U7 and U8 sockets.

4M, 8M, 16M, 64M and 128M, 32/36 type memory configurations are supported

MORE ...

The system memory must conform to the following:

. Single-sided or double-sided FPM or EDO SIMM
. 5V, 70/60ns
. Parity and/or ECC is supported

3.3   CPU/SYSTEM CORE - BATTERY

The board is installed with a 3.6V, 370mAh lithium battery (22.5x5.6mm, wafer form factor with plug-in terminations).

SETUPS

Related Jumpers
To enable onboard CMOS backup, connect the battery to the board's circuitry by setting the **W10** jumper to 1-2 position (onboard Battery).

Jumper settings are described in the next section – *Setting Jumpers.*

BIOS Level
No BIOS setup is required.

MAKING CONNECTIONS

Initially, the board is shipped with the battery jumper set so as the battery is disconnected from the board circuitry: **W10** in position 2-3 (External Battery).

When operating with the board for the first time, the jumper must be installed in position 1-2.

When setting the board for an external battery the external voltage source must be applied to the pin 6 of the J11 Power header, and the W10 jumper must be installed in position 2-3.

MORE ...

The internal or external battery can be supervised through the onboard Power Fail Detection function (battery voltage drops below 3.08V) using the **W11** jumper.

For more information on the Power Fail Detection function please refer to the next section - *Jumper Settings* and the *Supervisory Feature* described in this Section.

3.4   ETHERNET INTERFACE

The 10Base-T/100Base-TX Ethernet interface controller (82559) resides on the PCI bus and is therefore Plug and Play by default. It is assigned with one PCI master REQ/GNT pair.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
The onboard Ethernet controller can be enabled/disabled through the BIOS Setup Program, *Integrated Peripherals* option.

MAKING CONNECTIONS

GREEN: Link Integrity - Ligths on when the link is good in either 10 or 100Mbps.
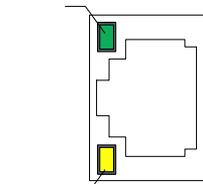
YELLOW: Activity - Ligths on while transmitting or receiving.

The communication link plugs into the J15 RJ-45 connector located on the edge bracket.

10Mbps or 100Mbps network speed is automatically detected and switched.

Link and Activity LEDs (respectively green and amber) are built on the connector.

The 10Base-T uses UTP (Unshield Twisted Pair) cables, category 3, 4 or 5 (5 is better).

The 100Base-TX uses UTP cable category 5 that must comply with the IEEE 802.3 10Base-T standard for two pairs.

MORE ...

The network driver is contained on the diskette referred to as *Intel 82S558/559, Fast Ethernet Pro 100 / PCI*. For instructions on the installation of the network driver, please refer to the READ_NET.TXT (ASCII) or READ_NET.DOC (Word 6.0) file.

Once the proper Ethernet driver is installed, the onboard PnP BIOS and the driver automatically allocate resources – I/O addresses, IRQ and DMA channels.

3.5 I/O DEVICES – I/O CONNECTIONS

Connections for speaker, reset and user switches, and hard drive activity LED are available through the Kdb/Spk/IO J3 connector. Signals can be issued using the keyboard cable: #150-018-01, provided with the board.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
No BIOS setup is required.

MAKING CONNECTIONS

When using the #150-018-01 keyboard cable, signals are issued as follows:
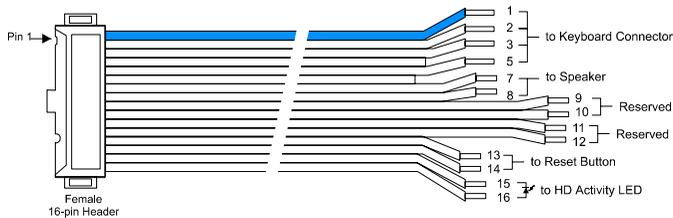
MORE ...

No external limiting resistor is required while connecting the HD Activity LED. A 330-ohm resistor is integrated onboard.

3.6 I/O DEVICES - KEYBOARD

Connections for keyboard, speaker, download and reset switches, and hard drive activity LED are available through the J3 Keyboard/Speaker connector, using a keyboard cable (#150-018-01, provided with the board).

SETUPS

Related Jumpers
No jumper settings are required.

BIOS Level
To setup the Typematic Rate of the keyboard, run the BIOS Setup Program, *BIOS Features* option.

MAKING CONNECTIONS

The usual way to connect a keyboard is to issue signals a standard AT keyboard connector using the #150-018-01 keyboard cable provided with your board. It is described below:
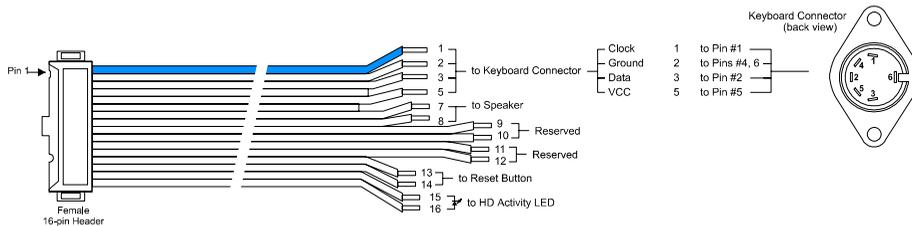
MORE ...

The standard AT keyboard can be replaced by a USB keyboard: the USB keyboard support must be declared at the BIOS level (*Integrated Peripherals* option). This option only applies at the DOS and BIOS level.

A self-resetting fuse protects the keyboard interface.

3.7   I/O DEVICES – PS/2 MOUSE

The PS/2 mouse connects to the VIPer824 through the J14 header using a 4-pin header/Mini DIN PS/2 Mouse cable.

SETUPS

Related Jumpers
> No jumper setting is required.

BIOS Level
> The PS/2 mouse is assigned by default with the IRQ12 that is also used to wake-up the system when entered into a power management mode. To free this interrupt from monitoring, run the BIOS Setup program, *Power Management* option.

MAKING CONNECTIONS

To connect a standard PS/2 mouse to the board, please refer to the following scheme of the #150-337-00 PS/2 Mouse cable (provided with the board):


```
Pin 1

Female
4-pin Header          17.10"
```

PS/2 Mouse Connector
(back view)

1   to Pin #4
2   to Pin #1
3   to Pin #3
4   to Pin #5
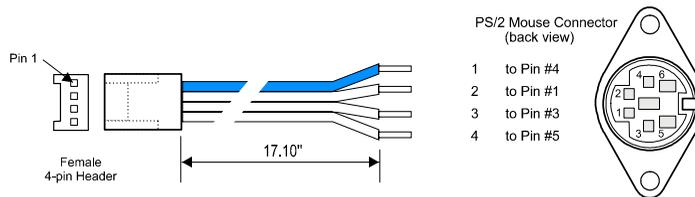
MORE ...

> A self-resetting fuse protects the mouse interface.

3.8   PARALLEL PORT

The board features the bi-directional enhanced parallel port that supports the IEEE 1284 protocols including compatibility, nibble byte EPP and ECP modes.

IRQs and addresses can be configured at the BIOS level.

SETUPS

Related Jumpers
   No jumper setting is required.

BIOS Level
   The Parallel Port is assigned by default with the IRQ7 interrupt. To free this interrupt from monitoring, run the BIOS Setup program, *Power Management* option.

   To setup the Parallel Port (I/O address, IRQ, operating mode), run the BIOS Setup Program, *Integrated Peripherals* option.

MAKING CONNECTIONS

   The parallel port is available through the J5 Parallel Port header. To setup the parallel port as a standard printer port, a 26-pin header/D-Sub 25-pin adapter cable is required.
   A 10" printer cable with bracket is available and is referred to as #150-172.

10", Parallel Port Flat Cable

Female 26-pin Header

Pin 1

DB25 Female Connector

Cut Wire #26

10"
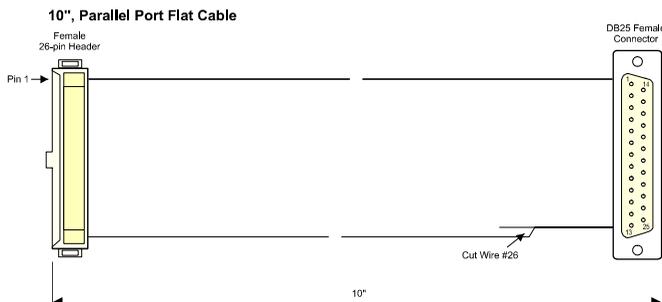
MORE ...

By default, the parallel port is set for ECP+EPP 1.9 operation mode.
The signal assignation on the J5 Parallel Port connector differs depending on the operation mode.
For more information on the signal assignation, please refer to Appendix D – *Connector Pinouts*.

3.9   PC/104 INTERFACE

Standard PC/104 modules are supported through the P1/P2 PC/104 connectors.
Signals provided are 8/16-bit ISA set.

SETUPS

Related Jumpers
    No jumper setting is required on the board.

BIOS Level
    No BIOS setup is required.

MAKING CONNECTIONS

    Connector implementation conforms to the PC/104 and PC/104-*Plus* specifications.

    P1 provides standard ISA signals (16 bits)
    P2 provides standard ISA signals (8 bits)

MORE ...

    The PC/104 interface can be combined with Video Feature J7 header to support the VIPerVision Video Camera Interface module.

3.10 SERIAL PORTS – SERIAL PORT 1

Serial Port 1 is available through the J9 connector and supports RS-232 operation mode.

SETUPS

Related Jumpers
No hardware setup is required.

BIOS Level
The following settings are available through the BIOS Setup program:

IRQ monitoring	see *Power Management Setup* option
Port Address/IRQ assignation	see *Integrated Peripherals* option

MAKING CONNECTIONS

The usual way to connect a device to a serial port is to issue signals through a 10-pin header/D-Sub 9-pin adapter cable. An 18" 10-pin header/D-Sub 9-pin adapter cable is available and is referred to as #150-019.

18"

Pin 1 →

Female
10-pin Header   **RS-232 Serial Port Flat Cable (150-019)**   Cut Wire #10

6   1
9   5
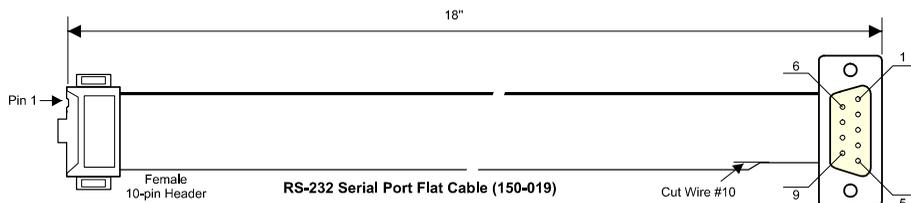
MORE ...

While adapter cables are provided from various sources, the pinout is often different. The direct crimp design offered allows the simplest cable assembly. All cables are available by contacting the Sales Department.

3.12 SERIAL PORTS – SERIAL PORT 2

Serial Port 2 is available through the J4 connector and supports both RS-422/RS-485 and RS-232 operation modes.

SETUPS

Related Jumpers
If required, for RS-485 mode operation, termination resistors can be tied to the RX and TX pairs of the Serial Port 2 by shorting respectively the **W6** and **W7** jumpers.

BIOS Level
The following settings are available through the BIOS Setup program:

IRQ monitoring	see *Power Management Setup* option
Port Address/IRQ assignation	see *Integrated Peripherals* option
Port Mode	see *Integrated Peripherals* option

MAKING CONNECTIONS

The usual way to connect a device to a serial port is to issue signals through a 10-pin header/D-Sub 9-pin adapter cable. An 18" 10-pin header/D-Sub 9-pin adapter cable is available and is referred to as #150-019.
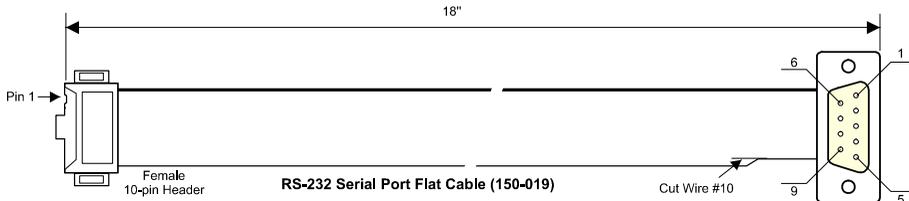
MORE ...

In RS-485 mode the Serial Port 2 supports either full-duplex or party line operation:

Full-Duplex – upon power-up or reset, the COM2 interface circuits are automatically set for full-duplex operation". Pin 3 and 4 of J4 act as the receiver lines and pin 5 and 6 act as the transmitter line.

Party Line – to enable party line operation, set the bit 2 of I/O port 190h (or 290h or 390h, depending on the I/O base address value – see BIOS Setup program, *Chipset Feature* option). The transceiver lines (pins 3 and 4 of J4) will be controlled by the RTS signal. Upon power-up or reset, the transceiver is by default in "receiver mode" to prevent online perturbations. If the board is placed at one end of the network, use W6 and W7 jumpers to enable termination resistors.

3.13 STORAGE DEVICES – *COMPACTFLASH*

A CompactFlash disk consists of a CompactFlash device and a CompactFlash module that supports it.

The CompactFlash module connects to the board through the J12 CompactFlash connector.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
Since the CompactFlash disk is IDE compliant it requires no software driver. It is tied directly to the Secondary IDE interface.

The CompactFlash disk specifications are automatically detected at the BIOS level – *Standard CMOS Setup*.

MAKING CONNECTIONS

The CompactFlash assembly and mounting are presented below:
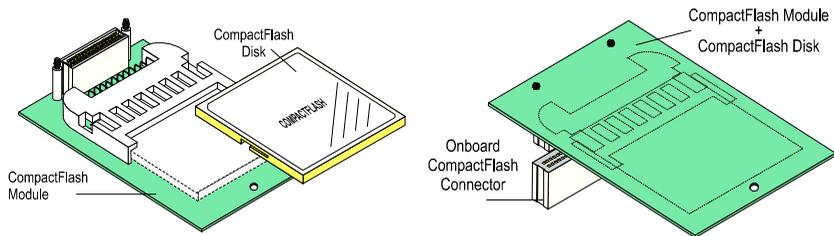
MORE ...

The CompactFlash disk is bootable as a standard IDE disk unit. To select the boot sequence, refer to Section 4 – *BIOS Features Setup*.

3.14 STORAGE DEVICES – FLOPPY DISK DRIVE

The floppy disk interface supports up to two drives (360KB to 2.8MB drives) through the J2 Floppy connector. Connecting a floppy disk drive requires a standard IBM 34-pin floppy disk cable.

SETUPS

Related Jumpers
> No jumper setting is required.

BIOS Level
> The floppy disk controller can be disabled at the BIOS level, *Integrated Peripherals* option.
>
> To setup the floppy disk drive installation, refer to the *Standard CMOS Setup* option.
>
> To protect the floppy disk against write accesses, refer to the *BIOS Features Setup* option.

MAKING CONNECTIONS

> A standard IBM 34-pin adapter cable is required to connect a floppy disk drive. An 18" flat cable is available and is referred to as #150-051.
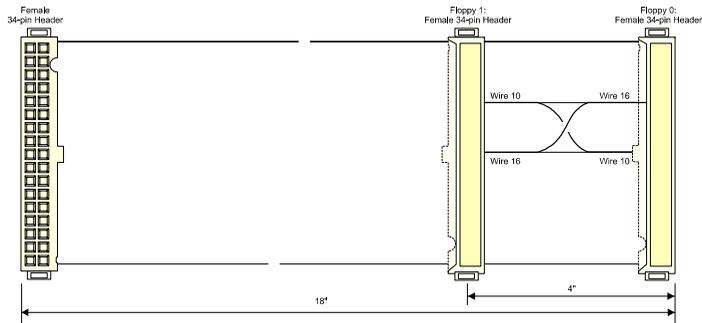
MORE ...

> The connector located at the opposite of the connector that plugs into the Floppy Disk Drive connector of the board carries signals for the boot drive (Floppy 0). It is recognized as Floppy Disk A by the BIOS. The other connector is reserved to the Floppy Disk B.

3.15 STORAGE DEVICES – HARD DISK DRIVE

The board supports up to two hard disk drives through the J1 IDE connector (Primary interface), in Master/Slave configuration.
Connecting a hard disk drive requires a standard IBM 40-pin hard disk cable.

SETUPS

Related Jumpers

No jumper setting is required.

BIOS Level

Standard setups are provided at the *Standard CMOS Setup* option.

To setup the disk boot sequence, refer to the *BIOS Features Setup* option.

Other setups are provided at the *Integrated Peripherals Setup* option

---

MAKING CONNECTIONS

A standard IBM 40-pin adapter cable is required to connect a hard disk drive. An 18" flat cable is available and is referred to as #150-259.
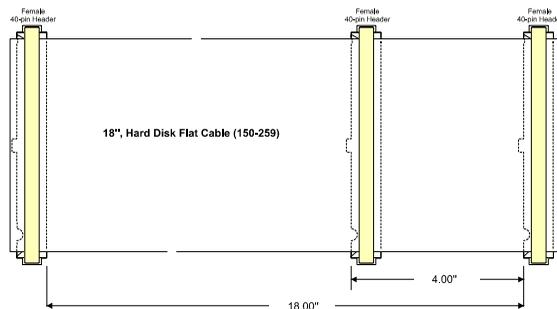
MORE ...

When installing two hard disks, both are connected in parallel. The recognition between Master and Slave device is provided by the jumper settings supported on the devices.

3.16 SUPERVISION FEATURES – SUPERVISOR REGISTERS

Three 8-bit supervisor registers (x90h-x92h) are provided to set and control special I/O features of the board. These registers can be assigned with three consecutive and relocating addresses.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
The base address of the first supervisor register (x90h) can be selected within 190h, 290h, or 390h. Registers 1 and 2 are located at the subsequent addresses.

To select the Base Address, use the *Chipset Features, Supervisor Base Address* option.

SUPERVISIOR REGISTERS

Supervisor Register 0 (x90h)			
bit 0	R/W	ENWD	Enable/Disable watchdog circuit
bit 1	R/W	CWD	WD control (toggle) to reset the watchdog timer when ENWD is high)
bit 2	R/W	ST1	En./Dis. /RTS2 for RS-485 (COM2)
bits 3-7	Reserved		

Supervisor Register 1 (x91h)			
bit 0	R	PFO#	Power Detection or Battery low status (0=PFO failed ; 1=PFO good)
bits 1-7	Reserved		

Supervisor Register 2 (x92h)		
bits 0-7	Reserved	

Active Low Signal

3.17 SUPERVISION FEATURES – POWER FAIL DETECTION

The Power Fail Detection feature can be used to monitor a power fail condition that could be initiated by either the onboard battery or an external power source (W10 jumper).

SETUPS

Related Jumpers
    Refer to W11 Power Fail jumper to select the power source to be controlled.

BIOS Level
    No setting required.

OPERATION

The power fail status is available through the bit 0 of the Supervisor Register x91h
The bit is trigged from High to Low when the power source that is controlled drops below a threshold:

       . 3.08V, when the onboard battery voltage is controlled

     . A user-defined value when an external battery placed under the control of the board. The user-defined threshold is determined by a resistor divider, made up of R132 (1Kohm) and R18 to be installed by the user. Use the following formula to calculate the value of R18: $R18 = 1Kohm. (Vext - 1.25)/1.25$

Use the J11 (pin 6) Power connector to connect an external battery to the board.

3.18 SUPERVISION FEATURES – POWER MANAGEMENT

All power management controls and setups are provided at the BIOS level.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
All setups are provided at the BIOS level, refer to the BIOS Setup program description.

OPERATION

The board supports three levels of power management:

Doze mode – after a selected period of system inactivity, the CPU clock runs at lower speed while all other devices still operate at full speed.

Standby mode – after entering Doze mode, and a selected period of system inactivity has elapsed, the fix disk drive and the video shut off while all other devices still operate at a full speed.

Suspend mode – after entering Standby mode, and a selected period of system inactivity has elapsed, all devices except the CPU shut off.

The power management can be resumed by an IRQ assigned to the modem (when used). An activity of the assigned IRQ always awakens the system.

The hard disk drive can be powered down while all other devices remain active. The HDD Power-down mode is only available if the device supports this capability.

3.19 SUPERVISION FEATURES - WATCHDOG

The Watchdog is provided to monitor the processor's inactivity. It issues a failure signal if the processor fails to refresh the watchdog within a timeout period (1.6 seconds).

SETUPS

Related Jumpers
The watchdog can be enabled/disabled onboard using the W8 jumper.

BIOS Level
No setting required.

OPERATION

When operating with the watchdog, be aware of the following:
1. The watchdog timer must be enabled by setting High (Enable) the Watchdog status bit (Bit 0 – Supervisor Register x90h).
2. The watchdog timer must be refreshed (reset) by software. This operation is controlled by Bit 1 – Supervisor Register x90h that must be toggled from 0 to 1 every 1.6 seconds.
3. If a failure occurs, the watchdog generates a system reset.

3.20 USB PORT

The VIPer824 provides a dual USB port through the J17 USB connector. To conform to the standard USB requirements, a USB adapter cable is required.

SETUPS

Related Jumpers
No jumper setting is required.

BIOS Level
To assign an IRQ to the USB port refer to the *PnP / PCI Configuration* option.

To connect an USB keyboard, run the BIOS Setup Program, *Chipset Features* option, and enable the USB keyboard support. This option is only supported at the BIOS and DOS level.

MAKING CONNECTIONS
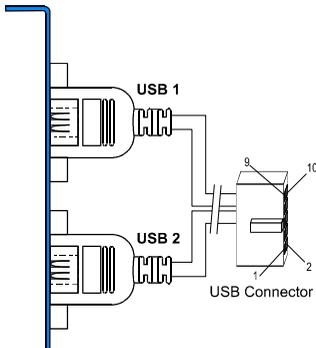
A 10-pin header/Dual USB adapter cable with bracket is available and is referred to as #150-316.

USB 1

9   10

USB 2

1   2

USB Connector

MORE ...

Each channel's supply pin is protected by a self-resetting 1A fuse.

3.21 VIDEO FEATURES – CRT DISPLAY

Analog RGB VGA signals are available for direct CRT display connection through the J13 VGA CRT connector located on the edge bracket.

SETUPS

Related Jumpers
To disable the onboard video controller, remove the jumper from the pin 5 and 6 of the W13 jumper (Extended BIOS Modes).

BIOS Level
The CRT Only operation mode must be set at the BIOS level, *Standard CMOS Setup* option. Other configurations are: Flat Panel Only, or simultaneous CRT/Flat Panel (*both*).

MAKING CONNECTIONS

The CRT monitor connects directly to the VIPer824 through the J13 VGA CRT connector located on the edge bracket.

MORE ...

In simultaneous CRT/Flat Panel mode (same application on both the CRT and the flat panel displays), the resolution of the CRT display is imposed by the resolution selected for the flat panel display (See the Flat Panel description on the next page).

3.22 VIDEO FEATURES – FLAT PANEL DISPLAY

The flat panel connects to the VIPer824 through the J8 Flat Panel connector. A cable must be designed to tie the panel to the board in accordance to the pinout of both the J8 Flat Panel connector and the panel connector. The pinout of the flat panel connector is provided in Appendix D – *Connector Pinout*.

SETUPS

Related Jumpers
Signal and power level can be switched from 3.3V to 5V using the **W12** jumper.

BIOS Level
Run the BIOS Setup Program, *Standard CMOS Setup* option to configure the board to support a flat panel display.

MAKING CONNECTIONS

When designing an application including a flat panel, ensure the video BIOS supports the panel you have chosen. For more information on flat panels and their connection, please refer to our web site (*Support and Services, Video BIOS* page), or do not hesitate to contact our Technical Support Department.

MORE ...

WARNING
It is recommended not to exceed a maximum length of 18" when designing a flat panel cable. Though some flat panels may support a longer cable, it is the customer's responsibility to ensure that the additional length is fully supported by the panel's specification.

SOFTWARE SETUPS

PART **2**

4. BIOS SETUP PROGRAM

To run the AWARD Setup program incorporated in the ROM BIOS proceed as follows:

1. Turn on or reboot the system.

2. Hit the DELETE key before or when the message - *"PRESS **DEL** TO ENTER SETUP"*
    appears near the bottom of the screen.

3. The main menu appears on the screen.

The following options are available:

Option	Description
Standard CMOS Setup	This Setup page includes all the items in a standard, AT-compatible BIOS (date, time, hard disk type, floppy disk type, video adapter type, memory…).
BIOS Features Setup	Use this screen to set all the items of AWARD's special enhanced features.
Chipset Features Setup	Use this screen to set all the items of the chipset's special features.
Power Manag. Setup	Use this screen to set power conservation options.
PnP/PCI Configuration	Use this screen to set plug and play and PCI configuration options.
Integrated Peripherals	I/O subsystems that depend on the integrated peripheral controllers in your system.
Supervisor/User Password Setting	Change, set, or disable password. It allows you to limit access to the system and the Setup, or just to the Setup.
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk parameters.
HDD Low-Level Format	This option does not appear in many BIOS versions. Most manufacturers of IDE hard drives strongly recommend that you do not run a low-level format on their drives, because of the danger that the bad-track table may be over-written. Award supplies this utility for service personnel only. ***If you need to run a low-level format on your hard drive, contact your drive manufacturer for instructions!***
Load Bios Defaults (Safe)	The BIOS defaults are **fail safe** settings that consist of the safest set of parameters. Use them if the system is behaving erratically. They should always work but do not provide optimal system performance.
Load Setup Defaults (Optimal)	The Setup defaults are **optimal settings** that provide optimum performance for all devices and system features. If CMOS RAM is corrupted, the Setup defaults are loaded automatically.
Save and Exit	Use this option to save the configuration in CMOS and Flash memory.
Exit without Saving	Exits the AWARD Setup without saving the configuration to CMOS RAM.

Whenever you are not sure about a certain setting, refer to the list of default values. Default values are provided in the event that a value has been changed and one wishes to restore original values.

Loading the BIOS or SETUP defaults will affect all the options and will reset options previously altered. Loading default values at the main menu changes setups for all screens while loading default values in a particular setup screen will affect only that screen.

BIOS default settings consist of the safest set of parameters. Use it if the system is behaving erratically. They should always work but do not provide optimal system performance.

SETUP default values provide optimum performance for all devices and system features.

> ⚠ **CAUTION**
> Before modifying CMOS setup parameters, ensure that the Battery jumper is installed (See *Setting Jumpers* Section).
> The board is capable of operating without the onboard battery if the CMOS values are saved into the Flash memory.

4.1   BASIC COMMANDS

Operations within each menu and screen are summarized below:

Up arrow (↑)	Move to previous item.
Down arrow (↓)	Move to next item.
Left arrow (←)	Move to the item to the left.
Right arrow (→)	Move to the item to the right.
Esc key	In Main Menu: Quit settings with saving options. In sub-menus: Exit and return to Main Menu.
PgUp key	Increase the numeric value or make changes.
PgDn key	Decrease the numeric value or make changes.
+ key	(Numeric keypad) Increase the numeric value or make changes.
- key	(Numeric keypad) Decrease the numeric value or make changes.
F5 key	Restore the previous setup values.
F6 key	Load the default setup values from BIOS Default Table.
F7 key	Load the setup values from the Setup Default Table.
F10 key	Save all the CMOS changes.

4.2   STANDARD CMOS SETUP

This part of the setup allows you to set the time, date, hard disk type, types of floppy drives and video type.

Date/Time	The current values for each category are displayed.
Hard Disks	Two IDE controllers are implemented (Primary and Secondary); each supports two disks (Master Disk and Slave Disk).
Drive A / Drive B	Selects the category identifying the types of floppy disk drive A or drive B that have been installed in the computer.
Video	This option specifies the basic type of display adapter card installed in the system.
CRT & LCD	Indicates whether the CRT only, LCD only or Both display modes are selected.
Halt On	This option specifies the type of the error that will stop the system during the BIOS booting procedure. When an error occurs the corresponding message is displayed. Press F1 to continue or DEL to enter into the BIOS setup program. The settings are: All errors, No errors, All but keyboard, All but diskette, and All but disk/key (default setting).

4.3   BIOS FEATURES SETUP

Option	BIOS Default	Setup Default	Possible Settings	Description
Virus Warning	Dis.	Dis.	En., Dis.	When Enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive. **Note: Many disk diagnostic programs that access the boot sector table can trigger the virus-warning message. If you plan to run such a program, we recommend that you first disable the virus warning.**
CPU Internal Cache	Dis.	En.	En., Dis.	Enables or Disables the CPU Internal Cache (L1 cache).
External Cache	Dis.	En.	En., Dis.	Enables or Disables the External Cache (L2 cache).
Quick Power-On Self-Test	Dis.	En.	En., Dis.	Select Enabled to reduce the amount of time required running the power-on self-test (POST). **Note: A quick POST skips certain steps. We recommend that you normally disable quick POST. It is better to find a problem during POST than lose data during your work.**
Boot Sequence	A, C, SCSI	C, A, SCSI	A, C, SCSI; C, A, SCSI; C, CDROM, A; CDROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C only	The original IBM PCs load the DOS operating system from drive A (floppy disks), so IBM PC-compatible systems are designed to search for an operating system first on drive A, then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive.
Swap Floppy Drive	Dis.	Dis.	En., Dis.	Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B. If there is only one floppy on the system, it could be assigned to B with this option.
Boot Up Floppy Seek	Dis.	Dis.	En., Dis.	When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360KB floppy drives have 40 tracks; drives with 720KB, 1.2MB, and 1.44MB capacity all have 80 tracks. **Note: Because very few modern PCs have 40 track floppy drives, we recommend that you set this field to Disabled to save time.**
Boot Up NumLock Status	Off	Off	On, Off	Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.
Boot Up System Speed	High	High	Low, High	Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.
Typematic Rate Setting	Dis.	Dis.	En., Dis.	When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When Enabled, you can select a typematic rate and a typematic delay.
Typematic Rate (Chars/Sec)	30	30	6-30 char/sec	When the typematic rate setting is Enabled, you can select a typematic rate (the rate at which characters repeat when you hold down a key) of 6, 8, 10, 12, 15, 20, 24 or 30 characters per second.
Typematic Delay (msec)	250	250	250-1000 ms	When the typematic rate setting is Enabled, you can select a typematic delay (the delay before key strokes begin to repeat.

...

BIOS FEATURES SETUP (Continued)

Option	BIOS Default	Setup Default	Possible Settings	Description
Security Option	Setup	Setup	Setup, System	If you have set a password, select whether the password is required every time the system boots ("System" option), or only when you enter Setup ("Setup" option).
OS Select For DRAM > 64MB	Non-OS2	Non-OS2	Non-OS/2, OS/2	Select OS2 only if you are running an OS/2 operating system with greater than 64MB of RAM.
Save CMOS in Flash	Dis.	Dis.	En., Dis.	When this option is set to "Enabled", the CMOS RAM Setup will be restored from the Flash BIOS at each power up. If the battery fails, only the date and time could be lost.
Video BIOS Shadow	Dis.	En.	En., Dis.	Software that resides in a read-only memory (ROM) chip on a device is called firmware. The Award BIOS allows shadowing of firmware such as the system BIOS, the video BIOS, and similar operating instructions that come with some expansion peripherals (for example, a SCSI adapter).
CC000-CFFFF	Dis.	Dis.	En., Dis.	
D0000-D3FFF	Dis.	Dis.	En., Dis.	
D4000-D7FFF	Dis.	Dis.	En., Dis.	Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar firmware for expansion peripherals.
D8000-DBFFF	Dis.	Dis.	En., Dis.	
DC000-DFFFF	Dis.	Dis.	En., Dis.	Video BIOS shadows into memory area C0000-CBFFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

4.4   CHIPSET FEATURES SETUP

Option	BIOS Default	Setup Default	Possible Settings	Description
Auto Configuration	En.	En.	En., Dis.	Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.
DRAM Timing	70ns	70ns	70ns, 60ns	The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.
DRAM RAS# Precharge Time	4	4	4, 3	Select the number of CPU clocks allocated for the Row Address Strobe (RAS#) signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.
DRAM R/W Leadoff Timing	7/6	7/6	7/6, 6/5	Select the combination of CPU clocks the DRAM on your board requires before each read from or write to the memory. Changing the value from the setting determined by the board designer for the installed DRAM might cause memory errors.
Fast RAS# to CAS# Delay	3	3	3, 2	When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS to Column Address Strobe (CAS).
DRAM Read Burst (EDO/FPM)	x333/ x444	x333/ x444	x444/ x444, x333/ x444, x222/ x333	Sets the timing for reads from EDO (Extended Data Output) or FPM (Fast Page Mode) memory. The lower the numbers, the faster the system addresses memory. Selecting timing numbers lower than the installed DRAM is able to support can result in memory errors.
DRAM Write Burst Timing	x333	x333	x444, x333, x222	Sets the timing for writes to memory. The lower the timing numbers, the faster the system addresses memory. Selecting timing numbers lower than the installed DRAM is able to support can result in memory errors.
Turbo Read Leadoff	Dis.	Dis.	En., Dis.	Select Enabled to shorten the leadoff cycles and optimize performance in cacheless, 50-60 MHz, or one-bank EDO DRAM systems.
DRAM Speculative Leadoff	Dis.	Dis.	En., Dis.	A read request from the CPU to the DRAM controller includes the memory address of the desired data. When Enabled, Speculative Leadoff lets the DRAM controller pass the read command to memory slightly before it has fully decoded the address, thus speeding up the read process.
Turn-Around Insertion	Dis.	Dis.	En., Dis.	When Enabled, the chipset inserts one extra clock to the turn-around of back-to-back DRAM cycles.
ISA Clock	PCI CLK/ 4	PCI CLK/ 4	PCI CLK/ 4, PCI CLK/ 3	You can set the speed of the AT bus at one-third or one-fourth of the PCI clock speed (60 or 66 MHz).
System BIOS Cacheable	Dis.	En.	En., Dis.	Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may occur.
Video BIOS Cacheable	Dis.	En.	En., Dis.	Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, in any program writes to this memory area, a system error may occur.
8 Bit I/O Recovery Time	3	1	1-8, NA	The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.
16 Bit I/O Receiving Time	2	1	1-4, NA	These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

•••

CHIPSET FEATURES SETUP (Continued)

Option	BIOS Default	Setup Default	Possible Settings	Description
Peer Concurrency	En.	En.	En., Dis.	Peer concurrency means that more than one PCI device can be active at a time.
Chipset Special Features	En.	En.	En., Dis.	When Disabled, the chipset behaves as if it were the earlier Intel 82430FX chipset.
DRAM ECC/PARITY Select	Parity	Parity	ECC, Parity	Set this option according to the type of DRAM installed in your system: error-correcting code (ECC) or parity (default).
Memory Parity/ECC Check	Auto	Auto	En., Dis., Auto	In Auto mode, the BIOS enables memory checking automatically when it detects the presence of ECC or parity DRAM.
Single Bit Error Report	En.	En.	En., Dis.	If ECC is enabled, selecting Enabled here tells the system to report an error when a correctable single-bit error occurs.
Chipset NA# Asserted	En.	En.	En., Dis.	When Enabled, the chipset will use the NA (Next Address) protocol with the CPU to enable cache bursting.
Pipeline Cache Timing	Faster	Faster	Faster, Fastest	For a secondary cache of 256KB (one bank), select Faster. For a secondary cache of 512KB (two banks), the system designer must select Faster (3-1-1-1, 2-1-1-1) or Fastest (3-1-1-1, 1-1-1-1). Cache timing 3-1-1-1 is at the CPU access speed. It requires special SRAMs because the 3-1-1-1 timing is at the CPU clock rate.
Passive Release	En.	En.	En., Dis.	When Enabled, CPU to PCI bus accesses are allowed during passive release otherwise the arbiter only accepts another PCI master access to local DRAM.
Delayed Transaction	Dis.	En.	En., Dis.	The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specifications version 2.1.
Memory Hole Location	None	None	512K-640K, 15M-16M, None	You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.
Supervisor I/O Base Addr.	190h	190h	190h, 290h, 390h	This option determines the base address for the Supervisor I/O Register.

4.5   POWER MANAGEMENT SETUP

Option	BIOS Default	Setup Default	Possible Settings	Description
Power Management	Dis.	Dis.	Min Saving, Max Saving, User Define, Disabled	This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. Max Saving: Maximum power savings. Inactivity period is 1min in each mode. Min Saving: Minimum power savings. Inactivity period is the maximum setting in each mode (1h for Doze, Standby and Suspend). User Define: Set each mode individually. Select time-out periods in the PM Timers section (see below).
PM Control by APM	Yes	Yes	Yes, No	If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings. This enables power management control by an external program (generally the operating system).
Video Off Method	V/H SYNC + Blk	V/H SYNC + Blk	V/H SYNC + Blank, DPMS, Blank Screen	Determines the manner in which the monitor is blanked. V/HSYNC + Blank: System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer. DPMS Support: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values. Blank Screen: System only writes blanks to the video buffer.
Modem Use IRQ	3	3	N/A, 3, 4, 5, 7, 9, 10, 11	Name the IRQ line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.
PM Timers				The following modes are Green PC power saving functions. They are user-configurable only during User Defined Power Management mode.
Doze Mode	Dis.	Dis.	1-40 min, 1h, Disable	When the selected period of system inactivity prior to Doze mode (1 minute to 1 hour) has elapsed, the CPU clock runs at lower speed while all other devices still operate at full speed.
Standby Mode	Dis.	Dis.	1-40 min, 1h, Disable	After entering Doze mode, when the selected period of system inactivity prior to Standby mode (1 minute to 1 hour) has elapsed, the fixed disk drive and the video shut off while all other devices still operate at full speed.
Suspend Mode	Dis.	Dis.	1-40 min, 1h, Disable	After entering Standby mode, when the selected period of system inactivity prior to Suspend mode (1 minute to 1 hour) has elapsed, all devices except the CPU shut off.
HDD Power Down	Dis.	Dis.	1-15min, Disable	When the selected period of drive inactivity prior to HDD power down (1 to 15 minutes) has elapsed, the hard disk drive powers down while all other devices remain active. The HDD power down mode is only available if the hard drive has this capability.
Thermal Management	Dis.	Dis.	Enabled, Disabled	When this option is enabled, the CPU temperature is monitored. Whenever the CPU overheats, the CPU slows down to lower the temperature.
CPU Low Temp. ($^{\circ}$C)	58	58	30-60	The CPU will be slowed down when it reaches the selected "CPU Overheat ($^{\circ}$C)" temperature or higher. Full speed will be resumed when the temperature comes down to the selected "CPU Low Temp. ($^{\circ}$C)".
CPU Overheat ($^{\circ}$C)	64	64	40-70	**Note: If you update the values for the CPU Low Temp. or CPU Overheat option, they will only be in effect after the VIPer821 is powered off and powered on again.**
CPU Temperature ($^{\circ}$C)	Varies	Varies	Varies	Displays the current CPU temperature, when Thermal Management option is enabled.

•••

POWER MANAGEMENT SETUP (Continued)

Option	BIOS Default	Setup Default	Possible Settings	Description
Wake Up Events In Doze & Standby			On, Off	When the system is in Doze or Standby mode, you may disable activity monitoring of some common interrupt requests (IRQ3/4/8/12) so they do not wake the system. The default wake-up event is keyboard activity. In these wake-up event fields, you can turn On or Off four commonly used interrupts. For example, if you have a modem on IRQ3, you can turn on IRQ3 as a wake-up event, so an interrupt from the modem can wake up the system. Or you may wish to turn Off IRQ12 (the PS/2) mouse as a wake-up event, so accidentally brushing the mouse does not awaken the system.
IRQ3	Off	On		
IRQ4	Off	On		
IRQ8	Off	On		
IRQ12	Off	On		
Power Down and Resume Events			On, Off	You may disable monitoring of common interrupt requests so they do not reset activity timers.
IRQ3 (COM 2)	Off	On		
IRQ 4 (COM 1)	Off	On		
IRQ 5 (LPT 2)	Off	On		
IRQ 6 (Floppy Disk)	Off	Off		
IRQ 7 (LPT 1)	Off	On		
IRQ 8 (RTC Alarm)	Off	Off		
IRQ 9 (IRQ2 Redir)	Off	On		
IRQ 10 (Reserved)	Off	On		
IRQ 11 (Reserved)	Off	On		
IRQ12 (PS/2 Mouse)	Off	On		
IRQ 13 (Coproc)	Off	On		
IRQ 14 (Hard Disk)	Off	On		
IRQ 15 (Reserved)	Off	On		

4.6   PnP/PCI CONFIGURATION

Option	BIOS Default	Setup Default	Possible Settings	Description
PnP OS Installed	No	No	Yes, No	If the operating system (OS) is Plug and Play (for example Windows 95), select "Yes" if you want the OS to allocate resources according to Plug and Play standards, or "No" if you want the same resource allocations at every system boot-up. Select "No" when the OS is not Plug and Play (for example, DOS).
Resources Controlled By	Auto	Manual	Auto, Manual	The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt requests (IRQs) and DMA assignment fields disappear, as the BIOS automatically assigns them.
Reset Configuration Data	Dis.	Dis.	En., Dis.	Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.
IRQ *n* Assigned To		IRQ-3, IRQ-4: Legacy ISA All other: PCI/ISA PnP	PCI/ISA PnP, Legacy ISA	When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt: Legacy ISA: Devices compliant with the original PC AT bus, requiring a specific interrupt, such as IRQ4 for serial port 1. PCI/ISA PnP: Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture. When Legacy ISA is selected for an IRQ line, this resource will not be available for PCI/ISA PnP.
DMA *n* Assigned To		PCI/ISA PnP	PCI/ISA PnP, Legacy ISA	When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt: Legacy ISA: Devices compliant with the original PC AT bus specification, requiring a specific DMA channel. PCI/ISA PnP: Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture. When Legacy ISA is selected for a DMA channel, this resource will not be available for PCI/ISA PnP.
PCI IRQ Activated By	Level	Level	Level, Edge	Leave the IRQ trigger set at *Level* unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.
PCI IDE IRQ Map To	PCI-Auto	PCI-Auto	PCI-Auto, ISA, PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4	This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary.
Primary IDE INT#	A	A	A, B, C, D	Each PCI peripheral connection is capable of activating up to four interrupts: INT# A, INT# B, INT# C and INT# D. By default, a PCI connection is assigned INT# A. Assigning INT# B has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE INT# fields default to values appropriate for two PCI IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.
Secondary IDE INT#	B	B	A, B, C, D	
Used Mem Base Address		N/A	N/A, C800, CC00, D000, D400, D800, DC00	Select a base address for the memory area used by any peripheral that requires high memory.
Used Mem Length			8K, 16K, 32K, 64K	Select a length for the memory area specified in the previous field. This field does not appear if no base address is specified.

4.7 INTEGRATED PERIPHERALS

Option	BIOS Default	Setup Default	Possible Settings	Description
IDE HDD Block Mode	Dis.	En.	En., Dis.	Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
PCI Slot IDE 2nd Channel	En.	En.	En., Dis.	You may separately disable the second channel on an IDE interface installed in a PCI expansion slot.
On-Chip Primary/Secondary PCI IDE	En.	En.	En., Dis.	The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.
IDE Primary/Secondary Master/Slave PIO	Auto	Auto	Modes 0-4, Auto	The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance and speed. In Auto mode, the system automatically determines the best mode for each device. If you select a mode that the drive does not support, it may not work, so choose a lesser value or Auto to see the best mode for the drive.
USB Controller & Keyboard	Dis.	Dis.	En., Dis.	Select Enabled, if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. This chipset supports USB keyboards.
Onboard FDC Controller	En.	En.	En., Dis.	Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.
Onboard Serial Port 1/2	Auto	Auto	Dis., 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto	Select a COM port address and IRQ# for the first and second serial ports.
Serial Port 2 Mode	RS-232	RS-232	RS-232, RS-422, RS-485	Select the operation mode for Serial Port 2.
VT100 Mode on Serial Port 1 or 2	1	1	1, 2	Selects the communication port for VT100 mode: Serial Port 1 or 2.
Duplex Select			Half, Full	This option only appears when IrDA or ASK-IR is selected in the UART2 Mode option. Half Duplex allows one communication at a time, while full duplex allows simultaneous communication.
TxD, RxD Active			Hi, Hi ; Hi, Lo Lo, Hi ; Lo, Lo	This option only appears when IrDA or ASK-IR are selected in the UART2 Mode option. Determines whether the transmit signal (TxD) and the receive signal (RxD) are active high (Hi) or active low (Lo).
Onboard Parallel Port	378/IRQ7	378/IRQ7	378/IRQ7, 278/IRQ5, 3BC/IRQ7, Dis.	Select a LPT address and IRQ# for the physical parallel (printer) port.
Parallel Port Mode	Normal	ECP + EPP1.9	ECP+EPP1.9, Normal, EPP1.7+SPP, ECP+EPP1.7, SPP, EPP1.9+SPP, ECP	Select an operating mode for the onboard parallel port. Select ECP or EPP unless you are certain both your hardware and software does not support ECP or EPP mode.
ECP Mode Use DMA		3	1, 3	Select a DMA channel for the port.
Ethernet Controller	En.	En.	En., Dis.	Enables/disables the onboard Ethernet controller.

5. UPDATING THE BIOS WITH UBIOS

BIOS UPDATE PROCEDURE

The BIOS update procedure can be found with the Emergency Recovery procedure on our ftp site: ftp://ftp.kontron.ca/Support in the FAQ section:

Download the FAQ# KC_0028 at location:
ftp://ftp.kontron.ca/Support/Support_FAQ - Questions & Answers/

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 falled back automatically to Emergency Recovery Mode looking for the floppy Emergency disk.

Please go on our FTP site in order to get the latest Emergency Recovery BIOS for that specific product.
BIOS maybe found at: Ftp://Ftp.Kontron.ca/Support/BIOS_Emergency/

Emergency Recovery Procedure is included within the Zip file of the Emergency BIOS to download. Latest Emergency Recovery procedure can be found on the FAQ section of the FTP site under FAQ # KC_0028 at location:
ftp://ftp.kontron.ca/Support/Support_FAQ - Questions & Answers/

UBIOS is a utility that allows you to take BIOS files from a disk and update the Flash BIOS device with them.

It also allows BIOS files in the Flash BIOS device to be saved to disk.

> ⚠ **CAUTION**
> When using UBIOS, ensure there is no Device Manager or Memory Manager (EMM86) installed.

The program can be executed in one of two modes:

Interactive Mode: In this mode the program is menu-driven.

Batch Mode: It is also possible to run the program without menus by a command that specifies the selected options and files with parameters.

> ⚠ **CAUTION**
> Using UBIOS, will clear the CMOS Setup in ROM. Therefore, it is recommended that you take note of your Setup parameters (especially Hard Disk parameters), so you can reset them afterwards.
> To update BIOS files, these files must be in the same directory as the UBIOS.EXE program. Therefore, prior to running the program, make sure the files you wish to update and the UBIOS program file are in the same directory.
> When you enter UBIOS, only the current directories are available. Within the UBIOS program, you can change the drive, but not the directory.

5.1   INTERACTIVE MODE

To run the program in interactive mode, type "UBIOS" from the DOS prompt. At the presentation screen, hit any key on the keyboard to display the main screen:

```
                        UBIOS 4.xx
Write Flash BIOS device             Retrieve a BIOS to a file
  Update ALL BIOS                      Copy ALL BIOS
  Update VGA BIOS                      Copy VGA BIOS
  Update SCSI BIOS                     Copy SCSI BIOS
  Update LAN BIOS                      Copy LAN BIOS

 [ESC]-QUIT


This option will replace the entire content of Flash BIOS with a .BIN file

Note:  Please refer to the UPDATING BIOS section of Technical Reference Manual
       for further details about the different UBIOS menu options.
```

The main screen consists two groups of options: Write Flash BIOS device and Retrieve a BIOS to a file. Use the first group to update the Flash BIOS device with a BIOS file stored on disk. Use the second group to copy the contents of the Flash BIOS device to files on disk.

The **Update ALL BIOS** option is highlighted. Its description appears shaded row.

   . Move the arrow keys to highlight another option.
   . Press ENTER to select the highlighted option.
   . Press the ESC key to exit the program (when in the main menu).

Four types of BIOS files appear on the main screen:

- **ALL BIOS File:** This file combines all BIOS files contained in the Flash BIOS device in a single file. It has the .BIN extension.

- **VGA BIOS File:** This file contains the VGA BIOS section of the Flash BIOS. There are two possible types of VGA BIOS files: files with the .VGA extension (supports CRT displays only) and files with the .BFP extension (supports CRT and Flat Panel displays).

- **SCSI BIOS File:** This file contains the SCSI BIOS section of the Flash BIOS. It has the .BIN extension.

- **LAN BIOS File:** This file contains the LAN BIOS section of the Flash BIOS. It has the .BIN extension.

5.1.1   Updating Flash BIOS

If you select one of the **Update** options from the main menu, a screen similar to the following is displayed:

```
You are currently using    VIPer824
                           MAIN BIOS VERSION

Current directory is
                           C:\
Searching for file:
                           *.bin

File Number-SELECT  [ESC]-Quit this menu  Drive letter to change drive.

File:
  1- ALL.BIN        Documentation:  NOT AVAILABLE




```

Files of the type you selected in the main menu and which are in the current directory are displayed in the **File** window.

To change directory, type the drive letter. If there are any files of the type you selected in this directory, they will be displayed in the **File** window.

The **Documentation** window displays "NOT AVAILABLE". It will be used in the future for displaying the contents of a .doc file.

To return to the previous menu, press the ESC key.

To select a file from the **File** window, in order to update the Flash BIOS with this file, type the file number which appears before the filename in the list. A new screen is displayed as shown below. This is the Flash BIOS Update screen. You must first confirm if you want to update the Flash BIOS with the selected file (the filename appears next to **Reading file)**, by typing "Y" for Yes, "N" for No.

```
                        FLASH BIOS UPDATE

Reading file :  all.bin              100%


         Do you really want to update BIOS ? (Y/N)



```

To update the file, type "Y", the program will write the file to the Flash. The progress of the operation is indicated in percentage completed.

When the update is over the screen will appear as follow:

```
                         FLASH BIOS UPDATE

Reading file :  all.bin                 100%
PLEASE WAIT – Writing                   100%



           Do you really want to update BIOS ? (Y/N)


Make sure that the watchdog is disabled by JUMPER DURING the next boot ONLY.
Just to ensure a good CPLD update.
After the next boot you can enable the watchdog
Please REBOOT as soon as possible …
Note:  Please refer to the UPDATING BIOS section of Technical Reference Manual.



Hit any key to continue ...
```

To return to the main menu, hit any key on the keyboard.

✎ **NOTE**
There may be slight changes to the Flash BIOS Update screen compared to those shown here for an Update ALL BIOS operation. Also, if an error occurs, these will be indicated on the screen.

5.1.2 Copying Flash BIOS

If you select one of the **Copy** options from the main menu, a screen similar to the following is displayed:

```
                          FLASH BIOS COPY


Enter Filename for Flash BIOS (*.bin)          821all.bin
```

You begin a Flash Copy operation, by typing a filename (including the extension) for the file you are creating. You <u>must</u> use the same extension as the one indicated in parentheses on the screen. In the above example, the filename entered was "821all.bin".

Press ENTER to proceed.

The progress of the operation will display on the screen in percentage completed.

If the filename entered for the BIOS file already exists, the following message will appear on the screen:

File already exits! Overwrite? (Y/N)

If you choose to overwrite the existing file, its content will be lost.

To return to the main menu, hit any key on the keyboard.

> ✎ **NOTE**
> There may be slight changes to the Flash BIOS Update screen compared to those shown here for an Update ALL BIOS operation. Also, if an error occurs, these will be indicated on the screen.

5.2   BATCH MODE

While files can be manually selected using the Interactive Mode, Flash BIOS Update or Copy can be achieved through Batch Mode.

The command line format is as follows:

UBIOS -B [**operation**] [**filetype**] [**filename**] [**options**] where:

-B	specifies that this is a Batch Mode command.
[operation]	is the Flash BIOS operation you wish to perform, and can be replaced with one of three letters:

U   for Update,
C   for Copy, or
V   for Verify (used to compare the contents of the Flash BIOS device and the specified BIOS file).

[**filetype**]	is the filetype of the BIOS file to program (with an update operation) or to create (with a copy operation), and can be replaced with one of the following:

ALL   for All BIOS files in a single file with the .BIN extension,
VGA   for VGA BIOS file with the .VGA or .BFP extension,
SCSI   for SCSI BIOS file with the .BIN extension,
LAN   for LAN BIOS file with the .BIN extension.

[**filename**]	is the name of the BIOS file (including the extension) to program (with an update operation) or to create (with a copy operation), and can be replaced with the filename which corresponds to the filetype. For example, if "VGA" was listed as filetype, then the filename could be "FLAT.BFP".
[**options**]	these are optional parameters that may be added:

	/C	This option will not clear the CMOS Setup when updating main BIOS (AMIBIOS), however this is not recommended since the CMOS Setup should be updated when the main BIOS is changed.
	/R	Instructs UBIOS to reset the board upon completion of an operation.
	/?	To get a summary of the Batch Mode options from UBIOS. It will display a Batch options summary of valid UBIOS command lines. The same help information will also be displayed each time UBIOS detects an error in the command line.

5.3   AUTOMATIC CPLD UPGRADE AFTER A BIOS UPDATE

During the first system bootup after you update the Flash BIOS device with the UBIOS utility, the BIOS may need to upgrade the CPLD devices.

This message appears on the screen when the BIOS writes to the devices:

```
A hardware upgrade will be performed on some CPLDs. Follow the
instructions below with special care. Do not disturb the process.

DO NOT RESET OR POWER DOWN THE BOARD!!!

    □□□ Device 1 □□□   0% □□□□□□□□□□□□□□□□□□□ 100%

Status :
        Please wait...
```

The color of the boxes displayed in the message indicates these functions:

Device OK	Green
Device busy	Blue
Device will be updated	Red

If your device upgrade was successful, the following message is displayed under the "Status:" line prior to rebooting:

```
Update complete successfully, wait for the automatic reboot.
Rebooting in 5 second(s).
```

If the update is not successful, the following message appears under the "Status:" line:

```
ERROR: general failure programming CPLDs!
Please contact our Technical Support Department.
```

You must contact our technical support for further instructions.

> ⚠ **CAUTION**
> Whenever the BIOS performs a CPLD hardware upgrade, disable the watchdog (by removing the W9 jumper) and do not interrupt the system in any way (power down, reset, mouse or keyboard functions). The devices will be damaged and your board rendered inoperative if you disturb the update process!

6. VT100 MODE

The VT100 mode may be required to communicate with the board using a remote terminal through a serial communication link.

In this configuration, the remote terminal must emulate VT100 or ANSI terminal and support an emulation program such as Telix or Procomm.

The serial cable must conform to one of the following:
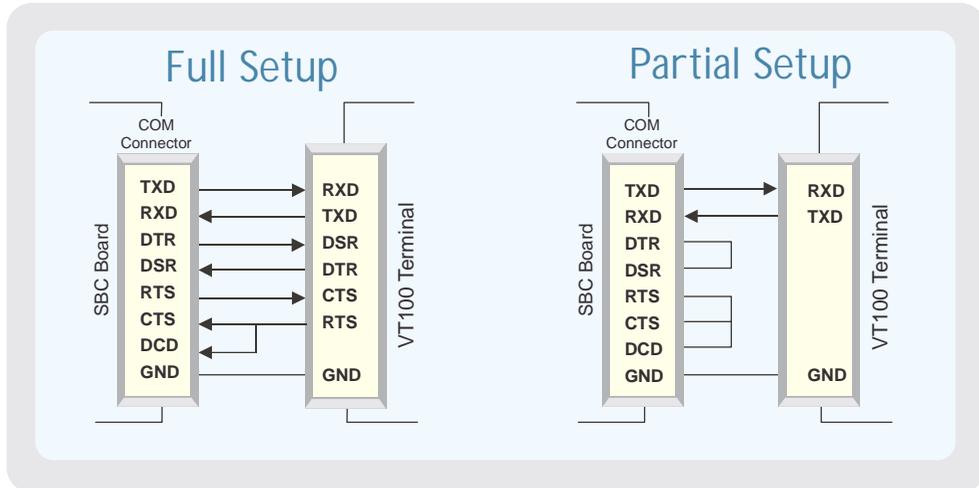
6.1 SETUP AND CONFIGURATION

Follow these steps for setting up VT100 Mode:

- Power off your VIPer824 and install jumper W13 (3-4) to enable the VT100 Mode. Note: both Serial Port 1 and Serial Port 2 support the VT100 Mode.

- Connect the serial cable. Note: if a full setup cable is not required a partial cable by only the TXD and RXD lines can be used. Simply loop back the control lines according to the partial setup cable diagram.

- Power on your VIPer824 and run the BIOS Setup program, Integrated Peripherals option, and select a communication port.

- The remote terminal must be set to support the following protocol:
  8 Bits / No Parity / 1 stop bit / Echo Off.

6.2   RUNNING WITHOUT A TERMINAL

The board can boot up without a screen or terminal attached. However, if VT100 Mode is desired, but the terminal is to be disconnected, you must ensure the control lines are in an active state. Failing this, the system may "hang" while waiting for the control lines to become active. Wiring the cable according to the partial setup allows the lines to remain active. This does not apply if the VT100 jumper is not set.

PART **3**

APPENDICES

A. **BOARD SPECIFICATIONS**

B. **MEMORY AND I/O MAPS**

C. **BOARD DIAGRAMS**

D. **CONNECTOR PINOUTS**

E. **BIOS SETUP ERROR CODES**

F. **EMERGENCY PROCEDURE**

A. BOARD SPECIFICATIONS

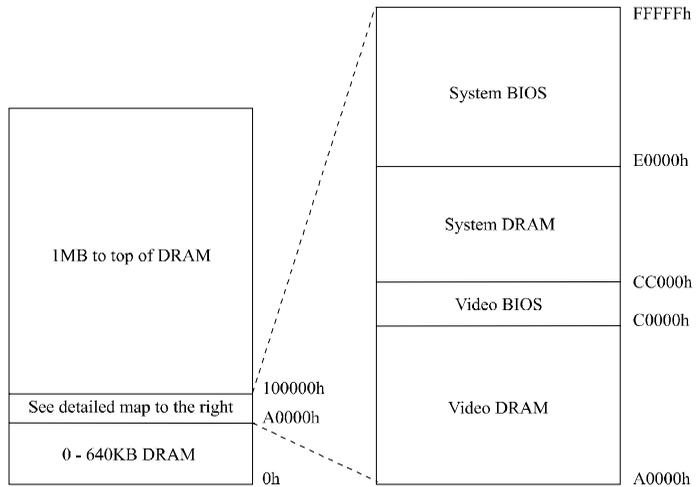| VIPer824	DESCRIPTION
Overview	Half-Size ISA Industrial Single Board Computer
Supported Microprocessors	Pentium, Pentium MMX, Pentium VRT, K6 and K6-2 82430HX chipset
Data Path	64-bit on CPU and memory bus ; 32-bit on PCI bus ; 16-bit on ISA bus
Bus Interface	PC/AT bus or stand-alone operation PCI Rev 2.1 compliant (internal); PC/104 USB interface EIDE interface
System Memory	Up to 256MB of FPM or EDO DRAM shared on two 72-pin SIMM socket, 5V single-sided or double-sided modules ; Parity/non-parity and ECC supported
Cache Memory	Level 1: 8/8KB Instruction/Data Level cache Level 2: 512K pipeline burst (256K on the VIPer824-LP)
Boot Block Flash	256KB of Flash BIOS for field upgrade
I/Os	*USB* Two Universal Serial Bus (USB) ports *Serial* Two UART serial ports configurable as COM1-4. COM2 is configurable as RS-232, RS-422, or RS-485. *Parallel* One bi-directional multi-mode port with nibble, byte, EPP and ECP support *Hard Disk* Enhanced IDE interface for up to two devices in Master/Slave configuration; LBA, PIO Mode 0-4 and Ultra DMA/33 *CompactFlash*: optional CompactFlash disk interfaces on Secondary EIDE channel, user upgradable, bootable *Ethernet* auto-select 10Base-T, 100Base-TX (Intel 82559) *Floppy* Supports for two disk drives from 360KB to 2.88MB *Keyboard* Standard AT keyboard via 16-pin KBD/SKr connector *Mouse* PS/2 mouse via 4-pin PS/2 mouse header

VIPer824	DESCRIPTION
Video	69000 video controller from Chips and Technologies on local PCI bus Simultaneous CRT / Flat Panel display support V-Port interface compatible with the VIPerVision digital video module CRT: up to 1024x768x64K colors or 1280x1024x256 colors FP: DSTN, TFT color displays ; Get Panel Type function Direct support of 1024x768xXGA * 2MB of on-chip SDRAM video memory

Connectors	*Edge Bracket*
	     CRT video 15-pin D-Sub
	     Ethernet RJ-45 with built-in LEDs
	Onboard Connectors
	     IDE Hard Drive 40-pin connector
	     Floppy Disk 34-pin connector
	     Keyboard 16-pin connector
	     USB 10-pin connector
	     Flat Panel 50-pin high-density + 20-pin connectors *
	     V-Port 26-pin header
	     Fan 2-pin header
	     Power 5-pin and 6-pin headers
	     CPU Power 20-pin connector
	     PS/2 Mouse 4-pin header
	     CompactFlash 40-pin dedicated connector
	     Parallel Port 26-pin connector
	     Serial Ports 10-pin connectors
	     PC/104 PC/104 standard connector

BIOS Features	Award BIOS in Boot Block Flash. Auto configuration, extended setup, PnP support. Extension for Diskless, keyboardless, and videoless operations. BIOS POST and Setup console redirection to serial port. Programmable memory wait states. System and video, BIOS shadowing Advanced power management support *. Ability to support MS-DOS and other applications from Flash disk.

* Not supported by the VIPer824-LP board.

VIPer824	DESCRIPTION
Supervisory	One stage watchdog timer ; Power failure / low-battery detector; Built-in Ethernet activity / link.LEDs
Operating System Compatibility	MS-DOS® 6.22, Windows® 3.1, Windows® 95, Windows® NT 4.0, Windows® 98, Unix, QNX 4.24, etc
Dimensions	7.125 x 4.80 inches / 181 x 122 mm Half-size form factor
Power Requirements	Supply Voltages +5V, ±5%

Reliability	MTBF: over 100,000 hours (MIL-HDBK-217F)
	Designed to meet or exceed:
	    Safety: UL1950 ; CSA C22.2 No950 ; EN 60950 ; IEC950
	    EMI/EMC: FCC 47 CFR Part 15/CISPR22 ;
	            CE Mark to EN55022/EN50082.
	USB and keyboard/mouse voltage protected by self-resetting fuses.
	Board serial number in EEPROM

Environmental Conditions	Operating Temp. 0 to +62°C (with airflow) - 5% to 95% Storage Temp. -30°C to +85°C

Power Requirements table:

Proc. Speed	133	166	200MMX	233MMX
ICC typ.: 5V	2.68A	2.96A	3.28A	3.64A
ICC Susp.: 5V	1.40A	1.42A	1.48A	1.56A
Setup	16MB DRAM ; 512KB Cache ;2MB Video DRAM ; Ethernet			

B. MEMORY & I/O MAPS

B.1   MEMORY MAPPING

```
                                                                    FFFFFh

                                                     System BIOS

                                                                    E0000h

          ┌──────────────────┐
          │                  │                       System DRAM
          │                  │
          │ 1MB to top of DRAM│                                    CC000h
          │                  │                       Video BIOS
          │                  │                                    C0000h
          │                  │
          │                  │      100000h
          ├──────────────────┤      A0000h           Video DRAM
          │See detailed map to the right│
          ├──────────────────┤
          │   0 - 640KB DRAM  │
          └──────────────────┘      0h                            A0000h
```

Address	Function
00000-9FFFF	0-640 KB DRAM
A0000-BFFFF	64KB Video Memory
C0000-CBFFF	32KB Video BIOS
D000-D3FF	Optional: Flash window
D400-D700	Optional: BIOS Extension
E0000-FFFFF	64KB Main BIOS
100000-Top of DRAM	1 MB - Top of DRAM

B.2   I/O MAPPING

Address	Optional Add.	Optional Add.	Optional Add.	Function
000-01F				DMA Controller 1
020-03F				Interrupt Controller 1
040-05F				Timers
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
190-197	290-297	390-397		Control Port
1F0-1F7, 3F6				Primary IDE
170-177, 376				Secondary IDE
3F0-3F7	370-377			Floppy Disk
378-37A	3BC-3BE	278-27A		Parallel Port (LPT1 by default)
3F8-3FF (COM1)	2F8-2FF (COM2)	3E8-3EF (COM3)	2E8-2EF (COM4)	Serial Port 1 (COM1 by default)
2F8-2FF (COM2)	3F8-3FF (COM1)	3E8-3EF (COM3)	2E8-2EF (COM4)	Serial Port 2 (COM2 by default)
3C0-3CF, 3D0-3DF, 3B0-3BB				Graphics Controller (I2C Port)

B.3   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	Serial Port 2 *	IRQ 11	Available [1]
IRQ 4	Serial Port 1 *	IRQ 12	PS/2 Mouse
IRQ 5	Parallel Port 2 *	IRQ 13	Coprocessor Error
IRQ 6	Floppy Controller *	IRQ 14	Primary IDE * or available [1]
IRQ 7	Parallel Port 1 * or 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.

B.4   DMA CHANNELS

The board provides the functionality of two 8237 DMA controllers. Eight DMA channels are available.

According to Plug and Play standards, the system BIOS automatically allocates DMA Channel 1 or 3 for the parallel port's ECP mode. Channel 2 is reserved for the floppy controller and Channel 4 is used to cascade Channels 0 through 7 to the microprocessor.

DMA Channel	Function
DMA 0	Available
DMA 1	PnP available (ECP)
DMA 2	Floppy controller
DMA 3	PnP available (ECP) *
DMA 4	Cascade controller # 1
DMA 5	PnP available
DMA 6	PnP available
DMA 7	PnP available

C. BOARD DIAGRAMS

C.1   ASSEMBLY – TOP DIAGRAM
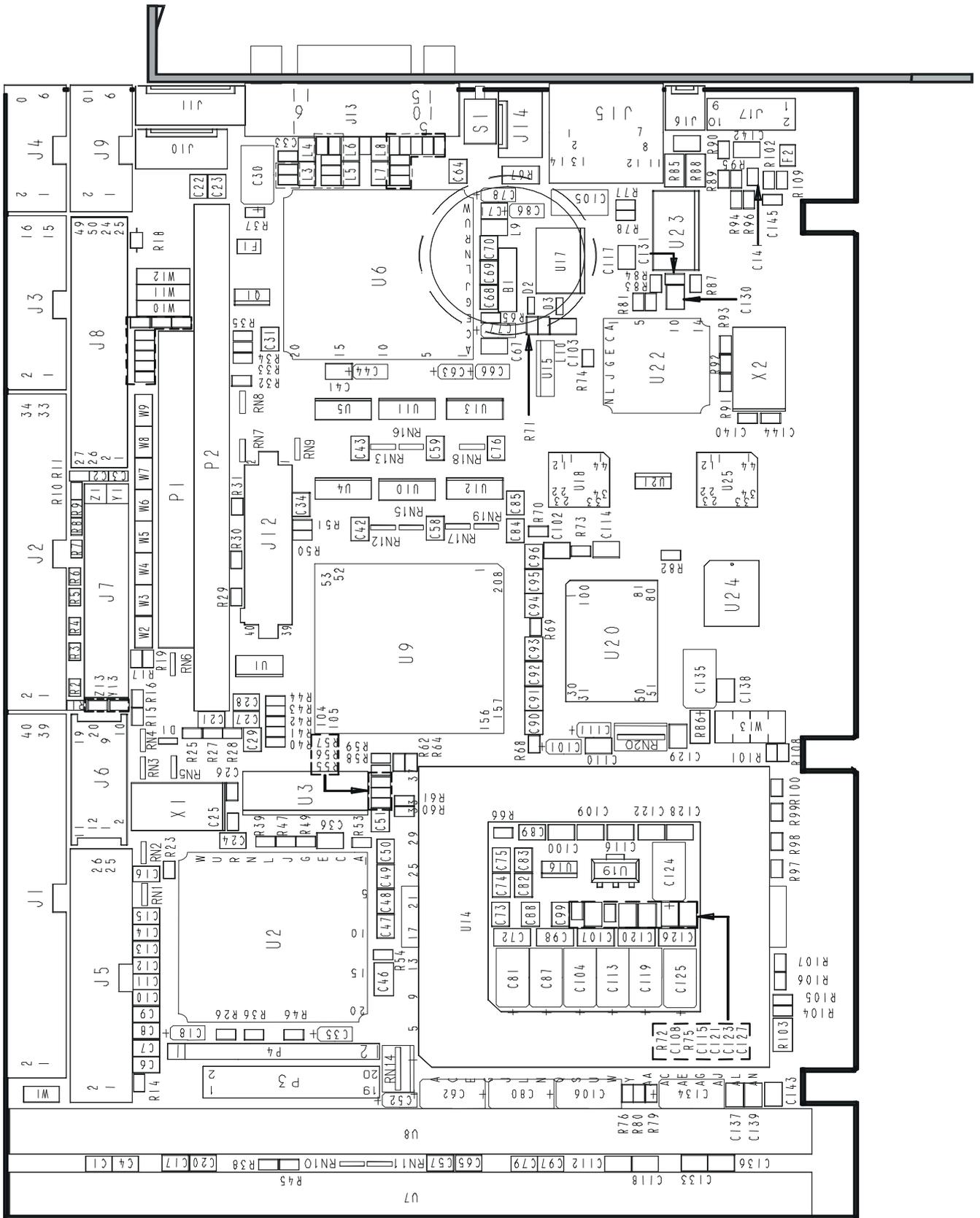
C.2 ASSEMBLY – BOTTOM DIAGRAM
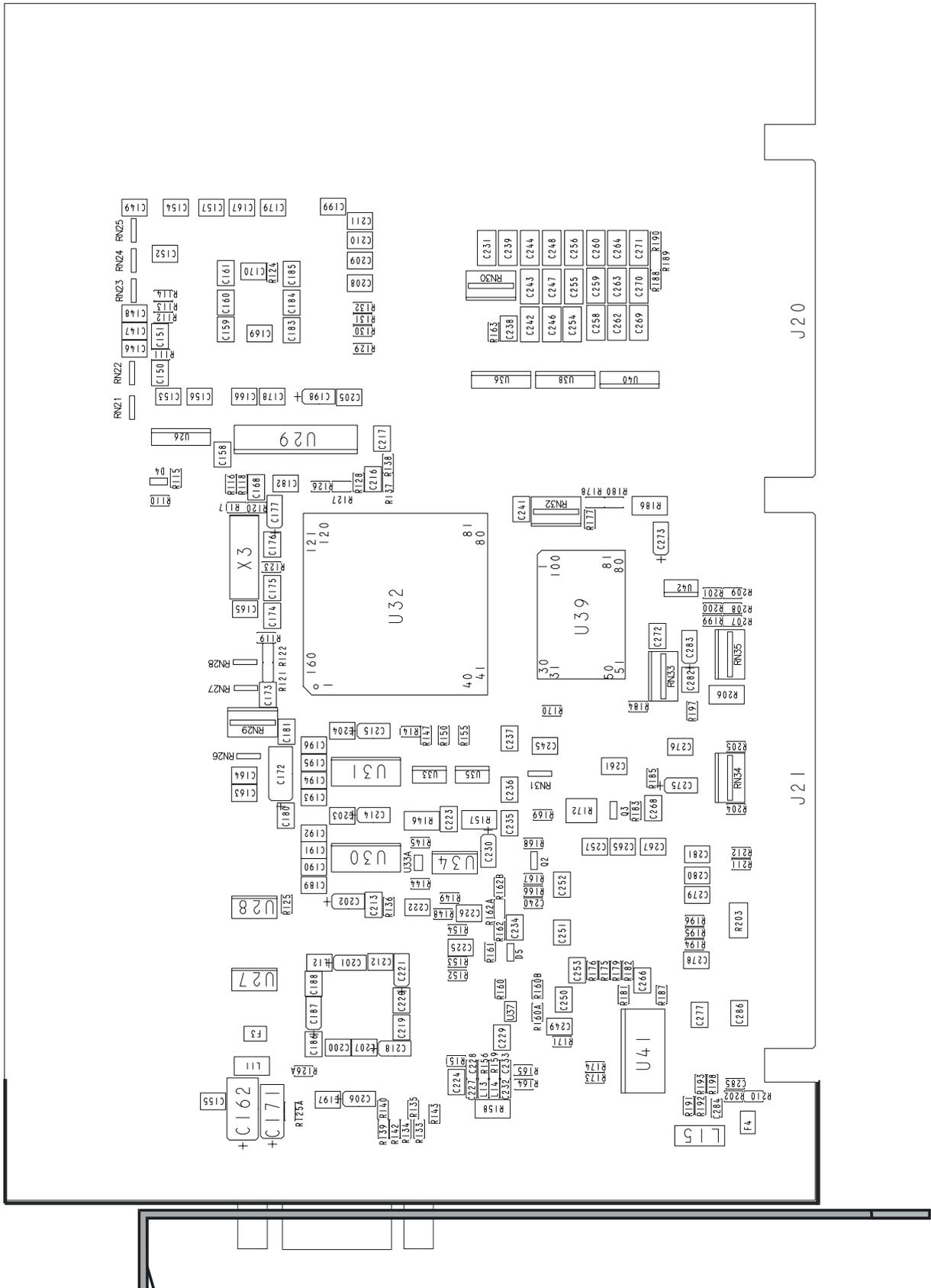
C.3 ASSEMBLY – MECHANICAL DIAGRAM

C.4 DC/DC CONVERTER – MODULE DIAGRAMS

Top Side

Bottom Side

Mechanical
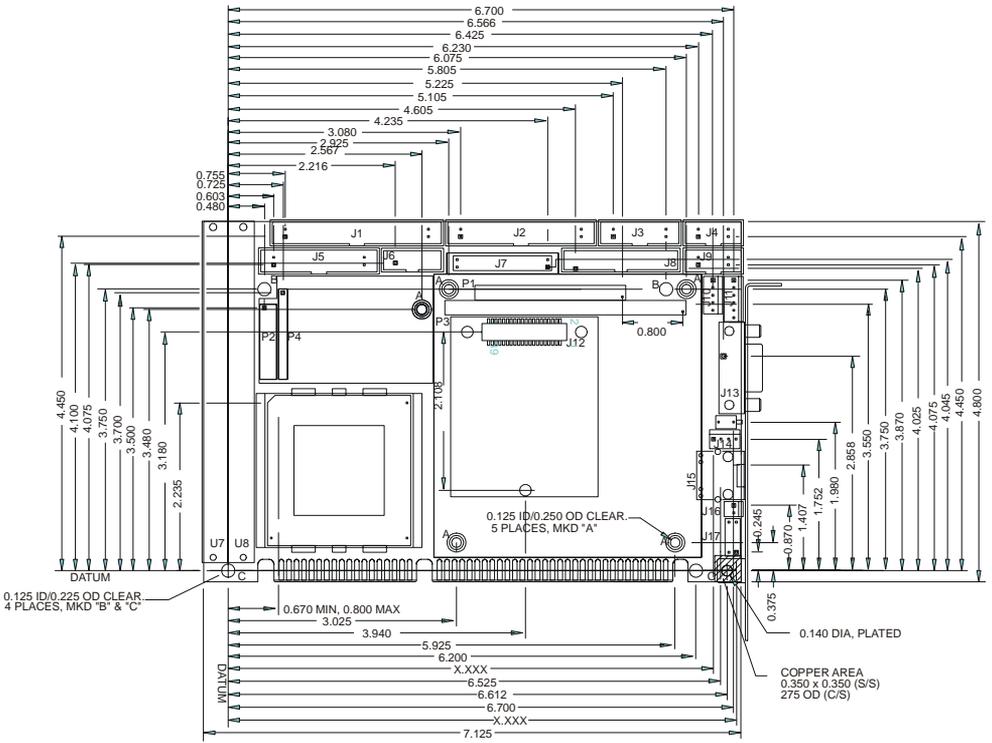
D. CONNECTOR PINOUTS

Connectors and headers are listed below:

J1	IDE Hard Disk Drive connector
J2	Floppy Disk connector
J3	Keyboard/Speaker connector
J4	Serial Port 2 connector
J5	Parallel Port connector
J6	Flat Panel 20-pin connector
J7	V-Port
J8	Flat Panel 50-pin connector
J9	Serial Port 1 connector
J10	Power Supply header (5 pins: +5V, GND)
J11	Power Supply header (6 pins: +5V, +12V, -12V, GND, and Power Fail)
J12	CompactFlash connector
J13	SVGA CRT Video connector
J14	PS/2 Mouse header
J15	Ethernet connector
J16	CPU Fan header
J17	Dual USB connector
P3	DC/DC Converter (CPU power)
P1/P2	PC/104 connector (16-bit/8-bit)

D.1   IDE HARD DISK DRIVE CONNECTOR (J1)

Pin Number				Pin Number
Signal		Top View		**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	N.C.
DRQ	21		22	GND
IOW#	23		24	GND
IOR#	25		26	GND
IORDY	27		28	BALE
DACK#	29		30	GND
IRQ14	31		32	N.C.
A1	33		34	GND
A0	35		36	A2
CS1#	37		38	CS3#
ACT#	39		40	GND

D.2   FLOPPY DISK DRIVE CONNECTOR (J2)

Pin Number				Pin Number
Signal		Top View		**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#
N.C.	29		30	RDATA#
GND	31		32	HDSEL#
N.C.	33		34	DSKCHG#

D.3   KEYBOARD/SPEAKER CONNECTOR (J3)

Pin Number		Top View	Pin Number	
Signal				Signal
KB:CLK	1		2	GND
KB:DATA	3		4	GND
VCC	5		6	VCC
SPEAKER	7		8	VCC
KBDINH#	9		10	GND
DOWNLD#	11		12	GND
PBRES#	13		14	GND
IDE:ACT#	15		16	VCC
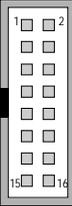
D.4   SERIAL PORT 2 CONNECTOR – RS-232/RS-422 (J4)

Pin Number			Top View	Pin Number		
Signal				Signal		
(RS-422)	(RS-232)				(RS-232)	(RS-422)
RSV	DCD	1		2	DSR	RSV
RX (-)	RXD	3		4	RTS	RX (+)
TX (-)	TXD	5		6	CTS	TX (+)
RSV	DTR	7		8	RI	RSV
GND	GND	9		10	N.C.	N.C.
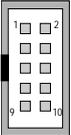
D.5   PARALLEL PORT CONNECTOR (J5)

Pin Number		Top View	Pin Number	
Signal				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
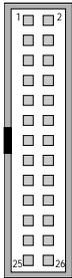
D.6   FLAT PANEL (J6)

Pin Number				Pin Number	
Signal				**Signal**	
FP24	1		11	FP32	
FP25	2		12	FP33	
FP26	3		13	FP34	
FP27	4		14	FP35	
GND	5		15	GND	
FP28	6		16	GP0	
FP29	7		17	GP1	
FP30	8		18	GP2	
FP31	9		19	ACTI	
GND	10		20	FPVAR_SW (+3.3V / +5.0V)	

Top View

D.7   V-PORT (J7)

Pin Number				Pin Number	
Signal				**Signal**	
GND	Z1		Y1	VPC0	
GND	Z2		Y2	VPC1	
GND	Z3		Y3	VPC2	
I2C_DATA	Z4		Y4	VPC3	
VP_VSYNC	Z5		Y5	VPC4	
ENCAM#	Z6		Y6	VPC5	
VCC	Z7		Y7	VPC6	
GND	Z8		Y8	VPC7	
GND	Z9		Y9	I2C_CLK	
GND	Z10		Y10	VP_HSYNC#	
GND	Z11		Y11	VP_IO_1	
ZVPCLK	Z12		Y12	VP_IO_2	
VACTI	Z13		Y13	GND	

Top View

D.8   FLAT PANEL CONNECTOR (J8)

Top View

Pin Number				Pin Number
Signal				**Signal**
ENAVCC	1	26	GND
FPVAR_SW(+3.3V/+5.0V)	2	27	FP8
ENAVEE	3	28	FP9
STDBY#	4	29	GND
ENABKL	5	30	FP10
GND	6	31	FP11
M/DE	7	32	GND
VCC	8	33	FP12
GND	9	34	FP13
LP/DE	10	35	GND
FLM	11	36	FP14
GND	12	37	FP15
SHFCLK	13	38	GND
GND	14	39	FP16
FP0	15	40	FP17
FP1	16	41	GND
GND	17	42	FP18
FP2	18	43	FP19
FP3	19	44	GND
GND	20	45	FP20
FP4	21	46	FP21
FP5	22	47	GND
GND	23	48	FP22
FP6	24	49	FP23
FP7	25	50	GND

D.9   SERIAL PORT 1 CONNECTOR (J9)

Top View

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

D-5
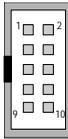
D.10   POWER CONNECTOR (J10)

Pin Number		
Signal		
VCC	1	
GND	2	
GND	3	
VCC	4	
VCC	5	

Front View
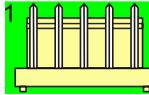
D.11   POWER CONNECTOR (J11)

Pin Number		
Signal		
VCC	1	
GND	2	
GND	3	
+12V	4	
-12V	5	
Power Fail Detect..	6	

Front View
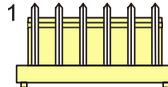
D.12   IDE *COMPACTFLASH* CONNECTOR (J12)

Top View

Pin Number				Pin Number	
Signal				**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	

D-6
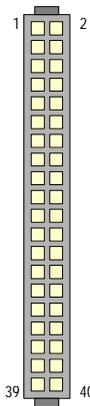
D.13 VIDEO CONNECTOR (J13)

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
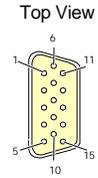
Top View

D.14 PS/2 MOUSE CONNECTOR (J14)

Pin Number	
Signal	
MOUSE:CLOCK	1
GND	2
MOUSE:DATA	3
VCC	4
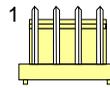
Front View

D.15 ETHERNET CONNECTOR (J15)

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

Top View

Green

Yellow
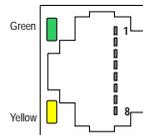
D.16 FAN CONNECTOR (J16)

Pin Number	
Signal	
VCC	1
GND	2

Front View

D.17 DUAL USB CONNECTOR (J17)

Pin Number	
Signal	
USB0:VCC	1
USB0:DATA-	3
USB0:DATA+	5
USB0:GND	7
GND	9

Top View
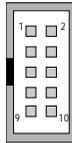
	Pin Number
	Signal
2	USB1:VCC
4	USB1:DATA-
6	USB1:DATA+
8	USB1:GND
10	GND

D.18 DC/DC CONVERTER – CPU POWER (P3)

Pin Number	
Signal	
VCC	1
VCC	3
VCC	5
GND	7
GND	9
VCC3 (+3.34V)	11
GND	13
+12V	15
VCORE (CPU)	17
VCORE (CPU)	19

Top View

	Pin Number
	Signal
2	VCC
4	VCC
6	VCC
8	GND
10	GND
12	VCC3 (+3.34V)
14	GND
16	VCORE (CPU)
18	VCORE (CPU)
20	VCORE (CPU)

The CPU Vcore value depends on the setup provided on the DC/DC converter module. Please refer to the Section 3-*Jumper Settings*.

D.19   PC/104 CONNECTORS (P1/P2)

P1		
	D	**C**
0	GND	GND
1	MEMCS16#	SBHE#
2	IOCS16#	SA23
3	IRQ10	SA22
4	IRQ11	SA21
5	IRQ12	SA20
6	IRQ15	SA19
7	IRQ14	SA18
8	DACK0#	SA17
9	DRQ0	MEMR#
10	DACK5#	MEMW#
11	DRQ5	SD8
12	DACK6#	SD9
13	DRQ6	SD10
14	DACK7#	SD11
15	DRQ7	SD12
16	VCC	SD13
17	MASTER#	SD14
18	GND	SD15
19	GND	GND

A B

D C

P1   P2

P2		
	A	**B**
IOCHK#	GND	1
SD7	Rᴇsᴇᴛ Dʀᴠ	2
SD6	VCC	3
SD5	IRQ9	4
SD4	-5V	5
SD3	DRQ2	6
SD2	-12V	7
SD1	0WS#	8
SD0	+12V	9
IOCHRDY	N.C.	10
AEN	SMEMW#	11
SA19	SMEMR#	12
SA18	IOW#	13
SA17	IOR#	14
SA16	DACK3#	15
SA15	DRQ3	16
SA14	DACK1#	17
SA13	DRQ1	18
SA12	REFRESH#	19
SA11	SYSCLK	20
SA10	IRQ7	21
SA9	IRQ6	22
SA8	IRQ5	23
SA7	IRQ4	24
SA6	IRQ3	25
SA5	DACK2#	26
SA4	T/C	27
SA3	BALE	28
SA2	VCC	29
SA1	OSC	30
SA0	GND	31
GND	GND	32

E. BIOS SETUP ERROR CODES

E.1   POST BEEP

POST beep codes are defined in the BIOS to provide low-level tone indication when an error occurs during the BIOS initialization.

Beep codes consist of a combination of long and short beeps. They are described as follows:

Beep Codes

Post code	Beep Code	Description
41	**-*	Enterring the boot block recovery code (i.e. Main BIOS checksum error)
22	*-*-*	Error when getting the boot block flash ID code
33	*-*-*-*	Error when erasing the boot block flash
44	*-*-*-*-*	Error when programming the boot block flash
55	*-*	Success of the boot block recovery code. The board is ready to be manually reset.

LEGEND

Symbol	Description
*	1 Beep code
-	Silence

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. This list includes messages for both the ISA and EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

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

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

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 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.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DRIVE DISK CONTROLLER

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause BIOS to ignore the missing keyboard and continue the boot.

MEMORY ADDRESS ERROR AT ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY PARITY ERROR AT ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode use the Configuration utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

MEMORY VERIFY ERROR AT ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory size in the memory map to locate the bad chip.

OFFENDING SEGMENT

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

E.4   POST CODES

POST (hex)	Name	Description
C0	Turn Off Chipset Cache	OEM Specific-Cache control
01	Processor Test 1	Processor Status (1FLAGS) Verification. Tests the following processor status flags: Carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
02	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00.
03	Initialize Chips	Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1, and 2, including set EISA timer to a known state. Initialize DMA controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
04	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
05	Blank video, Initialize keyboard	Keyboard controller initialization.
06	Reserved	
07	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power-on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory.
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection.
08	Setup low memory	Early chip set initialization. Memory presence test. OEM chip set routines. Clear low 64K of memory. Test first 64K memory.
09	Early Cache Initialization	Cyrix CPU initialization. Cache initialization.
0A	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL.
0B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
0C	Initialize keyboard	Detect type of keyboard controller (optional). Set NUM LOCK status.

POST Codes (continued)

POST (hex)	Name	Description
0D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
0E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup.
0F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization.
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupts Bits	Turn off interrupts then verify no interrupt mask register is on.
18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity/IO Check)	Verify NMI can be cleared.
1A		Display CPU clock
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).
20	Enable Slot 0	Initialize slot 0 (System Board).
21-2F	Enable Slots 1-15	Initialize slots 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256KB to 640KB and extended memory above 1 MB.
31	Test Base and Extended Memory	Test base memory from 256KB to 640KB and extended memory above 1 MB using various patterns. NOTE: This will be skipped in ISA mode and can be « skipped » with ESC key in EISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be « skipped » with ESC key in EISA mode.
33-3B	Reserved	
3C	Setup Enabled	
3D	Initialize & Install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize Cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values.
40		Display virus protect disable or enable
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and any drives.
42	Initialize Hard Drive & Controller	Initialize hard drive controller and any drives.
43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	

POST Codes (continued)

POST (hex)	Name	Description
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor
46-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i.e., any non-fatal errors that were detected during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker. Enable NMI, Enable Cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from C8000h to EFFFFh. Note: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h: BIOS area.
60	Setup Virus Protect	Setup virus-protect according to Setup.
61	Set Boot Speed	Set system speed for boot.
62	Setup NumLock	Setup NumLock status according to Setup.
63	Boot Attempt	Set low stack. Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display: Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1 - Page 1, E2 - Page 2, etc.
FF	Boot	

F. EMERGENCY PROCEDURE

Follow this procedure only in case of emergency such as a critical error occurred during the Boot Block Flash BIOS update (when using UBIOS utility program or saving the AWARD parameters into the flash memory) or if you meet one of the following symptoms at anytime:

1. No POST code on a power up (when using a POST card).
2. System stops at POST 41(when using a POST card) and associated beep code is generated (Refer to Section E.1).
3. Board does not boot, even after following all the usual verifications: cables, power, bootup diskette.

F.1 EMERGENCY PROCEDURE

The Emergency Procedure is described as follows:

1. Remove the battery jumper (W10) to reset the CMOS values.
2. Disable the Power Fail Detection function (W11 removed).
3. Ensure the Supervisor I/O base address is set to 190h (see BIOS Setup Program).
4. Connect a 1.44MB floppy drive (drive A) to the board, and insert the EMERGENCY diskette in it.
5. Power on the board. (Note that no VGA is present during this procedure.)
6. Boot block flash update will be completed when the POST code 55 is displayed (when using a POST card) or the associated beep code sounds (indicated in Section E-1).
7. After the procedure is successfully completed, power down the board, install the battery and Power Fail Detection jumpers and power up the board. Be aware to restore the I/O base address as it was previously

   The boot block flash BIOS should be correctly programmed and the system should run properly.

> ✎ **NOTE**
> The preparation of an Emergency Diskette is described in Section F.2 - *Generate an Emergency Floppy Diskette*.

F.2   GENERATE AN EMERGENCY FLOPPY DISKETTE

Use a system that has a 1.44 Mbytes floppy drive A.

1. Insert the EMERGENCY diskette in drive A:

2. Copy the two files WDISK.COM and EMERDISK.TEK from drive A: to your hard drive (those files are available in your diskette package).

3. Remove the EMERGENCY diskette and insert a DOS formatted floppy diskette in drive A:.

4. At the DOS prompt of your hard drive (same path of the two files WDISK.COM and EMERDISK.TEK), type WDISK EMERDISK.TEK then press Enter.

5. The program may display one of the following messages:

    `"Emergency Code transferred"`
    > The emergency diskette has been successfully created. Take the appropriate actions and restart from the step 4) when you see the following messages.

    `"Write to disk failure!"`
    > Verify if your floppy diskette is write-protected.

    `"The file to program in flash was not found"`
    > Be sure that EMERDISK.TEK file is in your current path.

    `"Unable to read the binary file"` or **`"Unable to close the opened file"`**
    > Possible floppy diskette corruption or bad data transfer between floppy disk and host system.

    `"Unable to allocate a memory block of 256 Kbytes"`
    > Not enough memory to run the WDISK program.

G. GETTING HELP

We take great pride in our customer's successes. We strongly 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, you may contact our Technical Support department at:

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

If you have any questions about our products or services, you may reach us at the above numbers or by writing to:

616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

LIMITED WARRANTY

We ("The seller") warrant our 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.

RETURNING DEFECTIVE MERCHANDISE

If your product malfunctions, please do the following before returning any merchandise:

1) Call our Technical Support department in Canada at (450) 437-5682. Make sure you have the following at hand:

- The Invoice number

- Your purchase order number

- The serial number of the defective board.

2) Give the serial number found on the back of the board and explain the nature of your problem to a service technician.

3) If the problem cannot be solved over the telephone, the technician will further instruct you on the return procedure.

4) Prior to returning any merchandise, make sure you receive an RMA number from our Technical Support and clearly mark this number on the outside of the package you are returning. To request a number, follow these steps:

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

- Fill out the form and be as specific as you can about the board's problem.

- Fax it to us.

5) When returning goods, please include the name and telephone number of a person whom we can contact for further explanations if necessary. Where applicable, always include all duty papers and invoice(s) associated with the item(s) in question.

6) When returning a board:

   i)   Make sure that the board is properly packed: Place it in an antistatic plastic bag and pack it in a rigid cardboard box.

   ii) Ship prepaid to (but not insured):

<div align="center">

616 Curé Boivin
Boisbriand, Québec
J7G 2A7 Canada

</div>

kontron

RETURN TO MANUFACTURER AUTHORIZATION REQUEST

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

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

Fax this form to our Technical department in Canada at (450) 437-8053.