

OLYMPUS

Intel Celeron/Pentium III EBX Single Board Computer

Technical Manual

Product Information

Full information about other Arcom products is available by contacting our Website at:
www.arcomcontrols.com

Useful Contact Information

Customer Support US

Tel: 913 549 1000
Fax: 913 549 1001
E-mail: support@arcomcontrols.com

Customer Support Europe

Tel: +44 (0)1223 412 428
Fax: +44 (0)1223 403 409
E-mail: support@arcom.co.uk

Sales offices

United States:

Arcom Control Systems Inc
7500 West 161st Street
Stilwell, KS 66085, USA
Tel: 913 549 1000
Fax: 913 549 1001

E-mail:
icpsales@arcomcontrols.com

United Kingdom:

Arcom Control Systems Ltd
Clifton Road
Cambridge CB1 7EA, UK
Tel: 01223 411 200
Fax: 01223 410 457

E-mail:
sales@arcom.co.uk

Sales hotlines

Belgium:

Groen Nummer:
Tel: 0800 7 3192
Fax: 0800 7 3191

France:

Numero Vert:
Tel: 0800 90 84 06
Fax: 0800 90 84 12

Germany:

Kostenlose Infoline:
Tel: 08001 824 511
Fax: 08001 824 512

Netherlands:

Gratis Nummer:
Tel: 0800 0221136
Fax: 0800 0221148

Italy:

Numero Verde:
Tel: 0800 790841
Fax: 0800 780841

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The board contains a Lithium non-rechargeable battery. Do not short-circuit the battery or place on a metal surface where the battery terminals could be shorted. During shipment the battery is isolated from the boards circuitry and should be connected before using the board, please refer to the link section of this manual for details. Please ensure that the if the battery is replaced that the new part conforms to the same specification.

When disposing of the board or battery, take appropriate care. Do not incinerate, crush or otherwise damage the battery.

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Table of Contents

DISCLAIMER	1
ANTI-STATIC HANDLING	1
BATTERY	1
ACKNOWLEDGEMENTS	1
TECHNICAL SUPPORT	2
INTRODUCTION	6
FEATURES	7
GETTING STARTED	9
USING THE OLYMPUS	9
CPU CONFIGURATION	9
INSTALLING MEMORY	10
CONNECTING A FLOPPY DISK DRIVE	11
CONNECTING A HARD DISK DRIVE	11
CONNECTING A CD-ROM/DVD (IDE TYPE)	11
USING THE ON BOARD FLASH ARRAY	11
USING THE COMPACTFLASH SOCKET	12
CONNECTING A MOUSE	12
USING THE SERIAL INTERFACES (RS232)	12
CONNECTING A PRINTER	13
USING THE AUDIO FEATURES	13
USING THE GAME/MIDI PORT	14
USING THE DIGITAL VISUAL INTERFACE (DVI-I)	14
USING THE PC/104 EXPANSION BUS	14
USING THE PCI BUS INTERFACE	14
USING THE USB PORTS	15
USING THE ETHERNET INTERFACE	15
USING THE DIGITAL I/O - CHARACTER LCD INTERFACE	16
USING THE UNIQUE ID	16
USING THE TAMPER DETECT INPUT	16
CONNECTORS	20
AWARD BIOS SETUP	21
BIOS INTRODUCTION	21
BIOS SETUP	21
STANDARD CMOS FEATURES	23
ADVANCED BIOS FEATURES	26
ADVANCED CHIPSET FEATURES	28
INTEGRATED PERIPHERALS	30
POWER MANAGEMENT SETUP	32
PNP/PCI CONFIGURATIONS	35
PC HEALTH STATUS	36
FREQUENCY/VOLTAGE CONTROL	37
LOAD FAIL SAFE DEFAULTS	38
LOAD OPTIMIZED DEFAULTS	39
SET SUPERVISOR / USER PASSWORD	40
SAVE & EXIT SETUP	41
EXIT WITHOUT SAVING	42
SOFTWARE SUPPORT	43
DATALIGHT ROM-DOS	43

DATALIGHT FLASHFX FLASH FILING SYSTEM	43
AWDFLASH UTILITY	43
BOOTDISK.....	44
OPERATING SYSTEM DRIVERS.....	45
WINDOWS 98 DRIVER SUPPORT	45
WINDOWS NT4.0 DRIVER SUPPORT	46
WINDOWS 2000 DRIVER SUPPORT	48
WINDOWS XP DRIVER SUPPORT	49
OTHER SOFTWARE SUPPORT	50
HARDWARE SUPPORT INFORMATION	51
DETAILED HARDWARE DESCRIPTION	52
PROCESSOR.....	52
MEMORY	52
SYNCHRONOUS DRAM INTERFACE	52
BIOS EPROM.....	52
FLASH MEMORY/SOLIDSTATE DISK	53
MEMORY MAP	54
I/O MAP	54
GRAPHICS CONTROLLER.....	55
INTERRUPT ASSIGNMENTS	57
DMA CONTROLLER.....	58
IDE INTERFACE	58
PRIMARY INTERFACE.....	58
SECONDARY INTERFACE (COMPACTFLASH)	58
FLOPPY DISK CONTROLLER	59
REAL TIME CLOCK	59
KEYBOARD/MOUSE CONTROLLER	59
ETHERNET CONTROLLER	60
AUDIO INTERFACE	61
GAME PORT	61
WATCHDOG TIMER	61
USB INTERFACE	63
TEMPERATURE SENSOR	63
PC/104 INTERFACE	63
PCI BUS INTERFACE	64
SERIAL PORTS.....	64
RS422/485 INTERFACES	65
RS422	65
RS485	65
PARALLEL PORT	66
POWER SUPPLY	67
STATUS LED'S	67
PC SPEAKER.....	67
TAMPER DETECT INPUT/UNIQUE ID	68
DIGITAL I/O - CHARACTER LCD DISPLAY INTERFACE	69
POWER BUTTON / SOFT ON/OFF.....	69
RESET SWITCH.....	69
APPENDIX A – CONNECTOR DETAILS.....	70
APPENDIX B – SPECIFICATION	80

APPENDIX C -MECHANICAL DIAGRAM..... 82

APPENDIX D - REFERENCE INFORMATION 83

APPENDIX E – TROUBLESHOOTING 84

APPENDIX F – DVI INTERFACE BOARD..... 85

 LINKS 85

 CONNECTORS 86

 LINK AND MECHANICAL DETAILS 88

Introduction

This manual describes the operation and use of Arcom Control Systems OLYMPUS single board computer. It has been designed to be used as a reference and user manual and includes information on using all aspects of the board.

This manual should have been supplied as part of an OLYMPUS Development Kit and you should have already read the 'Quickstart' manual.

The OLYMPUS is a high-performance, high-functionality multimedia PC/AT compatible computer designed to be embedded into OEM equipment. It contains all the standard features found in a PC/AT system with some embedded and multimedia additions. These include solidstate flash disk drive, Ethernet, AC97 Audio interface, PC/104 bus, PCI bus, CompactFlash socket and high performance VGA controller.

Once you have completed Development the board can be purchased in the following standard variants:-

OLYMPUS-M0-F0	No DRAM, No Flash
OLYMPUS-M0-F16	No DRAM, 16MB Flash (Loaded with Datalight ROM-DOS and Flash filing system)

The board can be supplied with a processor and memory fitted, the standard options are

Processor

Intel Pentium III 866MHz Coppermine CPU with fan and heatsink.
Intel Celeron 733MHz Coppermine CPU with fan and heatsink.

Memory

64MB	PC133 SDRAM Module.
128MB	PC133 SDRAM Module.
256MB	PC133 SDRAM Module.
512MB	PC133 SDRAM Module.

Cable kit

There is also a cable kit available for the OLYMPUS, which includes cables for

Power	Microphone
CRT	Speaker
Keyboard/Mouse	Line-in
ATA66 IDE (80 conductor)	Line-out
Ethernet	Auxiliary-In
Floppy Disk	2 x USB port
2 x Serial Port	Reset Button
Parallel Port	Power Button

Please contact your Arcom sales office for other configurations and latest pricing information.

Features

- CPU:
 - ⇒ Intel Pentium III 100/133MHz FSB Coppermine core FC-PGA up to 1GHz.
 - ⇒ Intel Celeron 100/66MHz FSB Coppermine core FC-PGA up to 850MHz.
 - ⇒ Socket 370 PGA
- Chipset:
 - ⇒ Via Technologies, Inc. Apollo PL133 chipset
 - ⇒ VT8604 North Bridge
 - ⇒ VT82C686B South Bridge
- BIOS
 - ⇒ Award Software V 6.0 PCI Plug and Play BIOS in Flash EPROM
 - ⇒ Onboard reprogramming
- System Memory:
 - ⇒ Up to 512MByte unbuffered 3.3V SDRAM
 - ⇒ 168-pin Dual In Line Memory Module (DIMM)
 - ⇒ PC100/133 Compliant
- Solid State Disk
 - ⇒ Up to 32MB Intel Strata Flash
 - ⇒ Datalight FlashFX Flash filling system.
 - ⇒ Type I/II CompactFlash card socket
- Video
 - ⇒ S3 Savage4, 4 x AGP 2D/3D Video Accelerator
 - ⇒ Shared memory architecture (SMA)
 - ⇒ 2 – 32MB Frame buffer
 - ⇒ Up to 1920 x 1440 resolution CRT support
 - ⇒ Up to 1280 x 1024 resolution DVI support
 - ⇒ Digital Visual Interface 1.0 compliant
 - ⇒ Auto-expansion and centering for VGA modes
- Integrated I/O
 - ⇒ Via VT82C686B with built in Real Time Clock and Keyboard controller.
 - ⇒ Socketed Lithium battery for non-volatile RTC and CMOS Ram.
- IrDA via interface module (Shared with COM2).
- Audio
 - ⇒ AC97 Compliant Audio interface
 - ⇒ Digital audio engine with 3D-hardware accelerator
 - ⇒ Line In, Line Out, Speaker, Auxiliary In, CD, MONO In/Out and Microphone
 - ⇒ 4W Speaker Amplifier
- UltraDMA/100/66/33 IDE
 - ⇒ PCI bus master IDE controller, up to two devices
 - ⇒ Supports UltraDMA/100, UltraDMA/66, UltraDMA/33, PIO Modes 3 & 4, Bus master IDE DMA mode 2 and Enhanced IDE devices.
 - ⇒ Supports ATAPI compliant devices including CD and DVD drives.
- FDD Interface
 - ⇒ Supports two floppy disk drives 360KB, 720KB, 1.2MB, 1.44MB, 2.88MB
- Parallel Port
 - ⇒ High speed parallel port SPP/EPP/ECP mode.
 - ⇒ IEEE1284 Compatible
 - ⇒ BIOS Configurable (Via Setup)
- Serial Ports
 - ⇒ Four 16C550 compatible high speed UART's
 - ⇒ 3 x RS232 and 1 x RS232/422/485 Interfaces (link selectable)
- USB Interface
 - ⇒ Two Universal Serial Bus (USB) interfaces

- ⇒ USB 1.1 Compliant.
- ⇒ Intel Universal HCI V1.1 compatible.
- Network support
 - ⇒ RealTek RTL8139C 10/100-BASETX Ethernet controller
 - ⇒ 32-bit PCI Interface
 - ⇒ Wake-On-LAN feature
- Expansion
 - ⇒ PC/104 expansion bus - 8/16 bit ISA compatible interface
 - ⇒ 33MHz +5V PCI Interface
- Software Compatibility
 - ⇒ Datalight ROM-DOS 7.1 operating system licence supplied with each board (Flash option only).
 - ⇒ Windows 98/2000/NT/NTe/CE/XP/XPe, Linux, QNX, VxWorks
 - ⇒ Other 80x86 compatible software applications.
- Programmable Watchdog Timer
 - ⇒ 0.5 to 1600 seconds
 - ⇒ NMI or RESET generated.
- Dual-Function Power Button.
- Unique ID feature.
 - ⇒ 48-bit Unique ID.
- Tamper Detect switch.
- Digital I/O port
 - ⇒ Designed to support Character LCD display Modules
- ACPI and APM Power Management support
- Size
 - ⇒ EBX Compatible footprint 5.75" x 8.00" (146mm x 203mm)

Getting Started

The Development Kit contains a “Quickstart” manual that has been designed to enable users to set-up and start using the board as soon as possible. You should read this manual and follow the steps defining how to set-up the board. Once you have completed this task you will have a working OLYMPUS system and can start adding other peripherals to enable you to start Development.

The section below has been designed to guide you through setting up and using some of the features of the OLYMPUS. If you would like more detailed information on any aspect of the board refer to the “Detailed Hardware Description” section of this manual.

Using the OLYMPUS

The OLYMPUS uses an Award Software PCI BIOS (Basic Input-Output System) to provide operating system support. The BIOS has a built-in set-up program that allows users to modify the basic system configuration. The set-up program can be invoked during the power on sequence by pressing the key when prompted or by pressing <CTRL>, <ALT> and <ESC>. The set-up parameters are stored in the CMOS RAM and will be retained when the power is switched off if the battery backup supply is connected (See link and connector section for details).

The BIOS defaults have been selected to enable the board to operate with a minimum of devices connected. If CMOS settings are lost the board will correctly power up and boot from the on-board flash disk (If present), without any other peripherals connected.

CPU Configuration

The OLYMPUS board has been specifically designed to support the Intel Pentium III and Celeron (coppermine) socket 370 processors. The appropriate voltage and speed selections are configured automatically when the processor is inserted into the board, there is no user configuration required. If the board is supplied as part of a Development Kit the CPU will be fitted to the board and it will be ‘Ready to Run’.

Intel support both Celeron and Pentium III CPU’s through their Telecommunications and Embedded Group (TEG) and Intel Embedded Architecture Division (EID). The two tables below show the available devices. The latest information regarding CPU availability can be found at www.intel.com/design/intarch.

Intel® Celeron® processors							
Product Number	Core Speed (MHz)	L2 Cache	External Bus Speed (MHz)	Thermal Design Power (Max)	Voltage	T _{case}	Package
RB80526RY850128	850	128K	100	25.7W	1.75V	80C*	370 FC-PGA
RB80526RX733128	733	128K	66	22.8W	1.75V	80C*	370 FC-PGA
RB80526RX566128	566	128K	66	19.2W	1.75V	90C*	370 FC-PGA

Pentium® III processors							
Product Number	Core Speed (MHz)	L2 Cache	External Bus Speed (MHz)	Thermal Design Power (Max)	Voltage	T_{junction}	Package
RB80526PZ001256	1 GHz	256K	133	29.0W	1.75V	75C	370 FC-PGA
RB80526PZ866256	866	256K	133	26.1W	1.75V	80C	370 FC-PGA
RB80526PY850256	850	256K	100	25.7W	1.75V	80C	370 FC-PGA
RB80526PZ733256	733	256K	133	22.8W	1.75V	80C	370 FC-PGA
RB80526PY700256	700	256K	100	21.9W	1.75V	80C	370 FC-PGA
RB80526PY600256	600	256K	100	19.6W	1.75V	82C	370 FC-PGA

If you are fitting your own CPU please ensure that it meets the specification detailed in Appendix B. The CPU should be fitted in the Zero-Insertion-Force (ZIF) socket IC15. The ZIF socket has a lever on the side, which should be pulled up prior to inserting the CPU. The CPU should be placed in the socket ensuring that the correct orientation is observed. Once the CPU is inserted in the socket the lever should be pushed down towards the board.

The CPU should be fitted with an appropriate heatsink and fan before the board is switched on. The fan should be connected to PL3 (Connection details are shown in Appendix A). Due to the small size of the OLYMPUS special care is required when selecting a heatsink. Some heatsink's may be too large for the board. This becomes more important if the PC/104 bus interface is going to be used. Arcom Control Systems can supply details of suitable heatsink's or supply the complete heatsink and FAN assembly if required. Please contact your sales engineer for details.

When installing the CPU you should be in an ESD safe area and if possible wearing a wrist strap which is connected to ground. If you fail to take appropriate precautions damage may occur to the CPU and board.

Installing Memory

The OLYMPUS supports a single 168-pin DIMM (Dual In-line Memory Module). If your board was supplied without memory fitted (M0 variant) or you wish to upgrade your memory, then you need to source a standard unbuffered 3.3V SDRAM module that conforms to either the PC100 or PC133 specifications. The OLYMPUS supports 16MB, 32MB, 64MB, 128MB, 256MB and 512MB modules. Both single sided and double sided modules can be used.

There are no link settings required to enable the board to support different memory sizes. The BIOS will automatically detect the memory and configure the board appropriately. Always ensure that the power is switched OFF before attempting to insert the memory module. The module should be inserted in the PL19 socket in an ESD safe area and you should be wearing an earth strap or touching a grounded surface to protect the device. The memory module is designed to ensure that it can only be plugged in with the correct orientation. Therefore if the module does not fit, check the key locations and ensure the memory is the correct type.

After power is applied to the board the BIOS will automatically configure the memory, and during the memory check a message will be printed on the display to show the amount of DRAM found.

Note: PC133 memory is required when using a CPU with a bus speed of 133MHz. All other CPU's can use either PC100 or PC133 memory.

Connecting a Floppy disk drive

The OLYMPUS supports up to two standard floppy disk drives. These can be connected to PL7 using a 34-way twisted ribbon cable. Both disk drives should be configured to use the drive select 1 signal, Drive A: should be connected via the twisted cable and DRIVE B: via the straight cable. The BIOS default configuration assumes that a 1.44MB floppy disk is connected as Drive A:. If you require a different configuration you must configure the BIOS using the set-up screen.

Note:- In order to support two floppy disk drives at the same time the 34-way cable should be fitted with three connectors. The board connector and one of the drive connectors should be fitted 1:1 and the third connector should have a twist in the cable which swaps pins 10 to 16 on this connector. A suitable cable is supplied in the Development Kit.

Connecting a Hard disk drive

Up to two IDE hard disk drives can be supported by the OLYMPUS board. Both drives should be connected to PL4 via a ribbon cable. The primary drive should be set-up as a 'MASTER' and the secondary drive as a 'SLAVE'. The BIOS will automatically detect the hard disk drive during the POST processes and configure the hardware correctly. The BIOS will attempt to load an operating system from the primary disk drive. This drive will become DRIVE C: once the operating system has loaded. If the board is fitted with flash memory and this has been formatted as a solidstate disk drive then it will be allocated as DRIVE D:. The secondary drive will be allocated the next available drive letter.

NOTE: If you are using an ATA66 or ATA100 disk drive then you must use an appropriate cable. The cable required has 80 conductors with a 40-way header on each end. A suitable cable is supplied as part of the OLYMPUS Development Kit. This cable can also be used with lower performance drives and other IDE style devices. If you use a standard 40 way cable with these drives you may experience intermittent problems with the hard disk drive.

Connecting a CD-ROM/DVD (IDE Type)

If an ATA CD-ROM/DVD drive is required in the system, it may be connected in place of the secondary drive detailed above. The CD-ROM/DVD should be configured as a 'SLAVE' device. Drivers will be required to support the drive under DOS. If a bootable CD/DVD is inserted in the drive the BIOS can be configured to automatically boot from this CD/DVD (Please refer to the BIOS Setup section for details). The CD/DVD drive may also be configured as a MASTER if it is the only device connected to PL4.

Using the on board Flash Array

If your board contains flash memory (F16) it will be configured using Datalight's FlashFX flash filling system. The on board flash is a 16M Byte 3.3V Intel Strata flash device. The board will be able to boot directly from this device if it contains a valid operating system. If this is the only drive in the system it will be configured as C:. If the board has a hard disk drive or

CompactFlash card attached the flash drive will be assigned the last drive letter. When supplied the flash will contain a bootable version of Datalight's ROM-DOS operating system.

Using the CompactFlash Socket

The OLYMPUS has a Type I/II CompactFlash socket mounted on the underside of the board. This socket is connected to the secondary IDE controller. The socket supports both Type I and Type II CompactFlash cards in either 3.3V or 5V mode. If a CompactFlash card is plugged into the socket it will act as a normal hard disk drive and will be detected by the BIOS during the POST process. If the card has an operating system loaded and there are no standard hard disk drives connected. The board will boot from the CompactFlash card and this will become DRIVE C:.

The CompactFlash card can only be inserted into the socket one way up. The correct orientation is for the top of the card i.e. the normal printed side can be seen when the card is inserted into the socket. The socket is fitted with an ejector button to aid in removal of the card.

Note: The OLYMPUS does not support Hot Swapping of the CompactFlash card. The system must be switched off before removing or inserting the card.

Connecting a Mouse

A PS/2 mouse can be connected to PL14 via an adapter cable. A suitable mouse and cable are supplied as part of the Development Kit. A driver has been included on the support CD-ROM to enable this mouse to be used under DOS. Windows 98/2000/NT/XP/CE will provide mouse support via built in drivers.

Using the Serial interfaces (RS232)

The four serial port interfaces on the OLYMPUS are fully PC compatible. They are decoded at standard PC address locations for COM1, COM2, COM3 and COM4. Applications will be able to use these ports without any special configuration. COM3 and COM4 can use non-standard IRQ lines, which enables all four ports to have an individual IRQ assigned. COM3 and COM4 can also be configured to share an interrupt line. This may be required if external PC/104 or PCI cards need to use interrupt resources. Interrupt assignment is configured by the BIOS and can be modified in the BIOS set-up screen.

Connection to the serial ports is via a 10 way boxed header. The pin assignment of these headers has been arranged to enable a 9-way IDC sub-miniature D-Type plug to be connected directly to pins 1-9 on the cable. The D-Type connector will be compatible with the standard 9-way connector on a desktop machine. Two suitable cables are provided in the Development Kit. Connection details are shown in the table below:

10 way Header	Signal Name	9-way D-Type Plug
1	Data Carrier Detect (DCD)	1
2	Data Set ready (DSR)	6
3	Receive Data (RX)	2
4	Request To Send (RTS)	7
5	Transmit Data (TX)	3
6	Clear To Send (CTS)	8
7	Data Terminal Ready (DTR)	4
8	Ring Indicator (RI)	9
9	Ground	5
10	No Connect	-

Connecting a Printer

An enhanced printer port has been incorporated onto the OLYMPUS. This port can be used to support a 'CENTRONICS' compatible printer or ECP/EPP bi-directional device. The signals are routed to a 26 way boxed header (PL6) and the pin assignment has been arranged to allow 1:1 connection with a 25 way IDC D-Type socket. This socket is compatible with a standard printer port connector on a desktop machine. A suitable adapter cable is supplied as part of the Development Kit. Connection details are shown in the table below:

26 way boxed Header	Signal Name	25 way D-Type Socket
1	STROBE	1
2	AUTOFEED	14
3	D0	2
4	ERROR	15
5	D1	3
6	INIT	16
7	D2	4
8	SELECT IN	17
9	D3	5
10	Ground	18
11	D4	6
12	Ground	19
13	D5	7
14	Ground	20
15	D6	8
16	Ground	21
17	D7	9
18	Ground	22
19	ACKNOWLEDGE	10
20	Ground	23
21	BUSY	11
22	Ground	24
23	PAPER EMPTY	12
24	Ground	25
25	SELECT	13
26	No Connect	-

Using the Audio features

The OLYMPUS supports an AC97 compatible Audio controller. The features provided are Line In, Line Out, Amplified Speaker, Auxiliary In, MONO In/Out, CD In and Microphone. The audio signals are routed to individual connectors these are listed in the table below

Function	Connector
Line In	PL2
Line Out	PL12
Speaker	PL8
Auxiliary In	PL15
MONO In/Out	PL10
CD In	PL16
Microphone	PL1

The BIOS can be configured to provide Legacy SoundBlaster 16 compatibility for use in DOS. Please refer to the BIOS Set-up section for details.

An appropriate driver is required for Windows 98/2000/NT/CE/XP. These drivers are supplied on the support CD-ROM in the Development Kit.

Using the GAME/MIDI Port

The OLYMPUS provides a GAME/MIDI port via PL5. In order to use this port the Legacy Audio support must be enabled in the BIOS. PL5 is a 16-way 0.1" boxed header and connection details are shown in Appendix A. The standard GAME port connector is a 15-way sub-miniature D-Type. A suitable cable will be required to connect to the joystick.

Using the Digital Visual Interface (DVI-I)

The OLYMPUS can be used to support a single channel DVI display up to 1280 x 1024. The DVI display should be connected to PL17. This connector supports both analog and digital connections. The OLYMPUS can be configured in the BIOS set-up screen to drive both the DVI and CRT displays at the same time or just one of the displays. The image on both of the displays will be the same as they are derived from a single VGA controller. A 1m DVI cable is included in the Development Kit.

Using the PC/104 expansion Bus

PC/104 modules can be used with the OLYMPUS to add extra functionality to the system. This interface supports 8/16 bit ISA bus style peripherals.

Arcom Control Systems have a wide range of PC/104 modules which are compatible with the OLYMPUS, these include modules for digital I/O, changeover relays ,analog I/O, motion control, video capture, CAN bus, serial interfaces etc. Please contact Arcom sales if a particular interface you require does not seem to be available as these modules are continually being developed. Other manufacturers boards can also be used with this interface if they conform to the PC/104 specification.

In order to use a PC/104 board with the OLYMPUS it should be plugged into PL22 for 8-bit cards and PL22/PL24 for 16-bit cards. Before powering up the system ensure that you have checked that the link settings on the card for I/O address, IRQ and DMA settings do not conflict with any devices on the OLYMPUS.

If you are using a PC/104 card that requires +5V or +12V, these will automatically be supplied via the PC/104 header. If you require -12V this can be supplied via the PC/104 header if the supply is connected to the 'POWER' connector PL11 pin 6. This is not supported by the power supply in the Development Kit. The OLYMPUS does not support the -5V supply and if this is required it must be supplied directly to the PC/104 board.

Using the PCI Bus Interface

The OLYMPUS contains a 120-pin PCI card socket (PL28). This socket is designed to support +5V 33MHz PCI cards. In order to use this interface the PCI card should be plugged into the board while the power supply is switched OFF. The BIOS will automatically detect the card during the POST process and will configure any I/O, Memory and IRQ settings needed to support the card.

The PCI socket can be used to support a 3rd party VGA card. If a VGA card is plugged into this socket it can be configured as either the primary or secondary display. Selection is configured in the BIOS set-up screen.

Note: There are three types of PCI card +5V, +3.3V and Universal. These cards have key locations in order to ensure correct orientation in the PCI socket. The OLYMPUS only supports +5V and Universal PCI cards. It does not support +3.3V cards, however it is possible to plug a +3.3V card into the OLYMPUS if the mounting bracket has been removed. Therefore before using a PCI card please verify that it is the correct type. If the mounting bracket is fitted then this should hang over the edge of the OLYMPUS board. If the bracket stops the card being plugged in then the card will be the incorrect type.

Using the USB Ports

The OLYMPUS contains two host Universal Serial Bus (USB) controllers. During the POST process the PCI Plug and Play BIOS will set up the control registers for these devices. The standard USB connector is a 4-way socket that provides power and data signals to the USB peripheral. The 10 way header PL9 has been designed to be compatible with PC expansion brackets which support two USB sockets (Refer to the USB section in this manual and Appendix A for more details).

The USB device will be supplied with a driver that must be installed to enable the device to be used (Refer to the documentation supplied with the device). Most USB peripherals are only supplied with drivers for Windows 98/2000 and XP operating systems. If you are not using one of these operating systems then you will need to investigate the availability of drivers.

Using the Ethernet Interface

The RealTek RTL8139C Ethernet Controller will be configured by the Award Plug and Play BIOS during the POST process. Drivers for various operating systems are supplied on the support CD-ROM, the appropriate driver must be loaded before the Ethernet interface can be used.

Connection is made via PL23, an 8 way 0.1" boxed header. The signals from this header should be wired to an 8 way RJ45 connector. The table below shows the required connections (A suitable cable is supplied in the OLYMPUS Development Kit). A second connector PL34 provides outputs that can be used to drive two LED's. These LED's are used to indicate Ethernet activity and 10Mbit or 100Mbit operation (Refer to appendix A for pin out details of this connector).

8 way boxed Header	Signal Name	RJ45
1	TX+	1
2	TX-	2
3	RX+	3
4	RJ-2	4
5	RJ-2	5
6	RX-	6
7	RJ-1	7, 8
8	LANGND	No Connection

Using the Digital I/O - Character LCD Interface

The OLYMPUS contains an 8-bit I/O port. This port is configured to be compatible with industry standard character LCD modules. The port is mapped into I/O address space at 25C-25DH and connection is made via a PL21. The support CD contains an example program, which can be used to display text on a 2 x 20 character LCD module.

Using the Unique ID

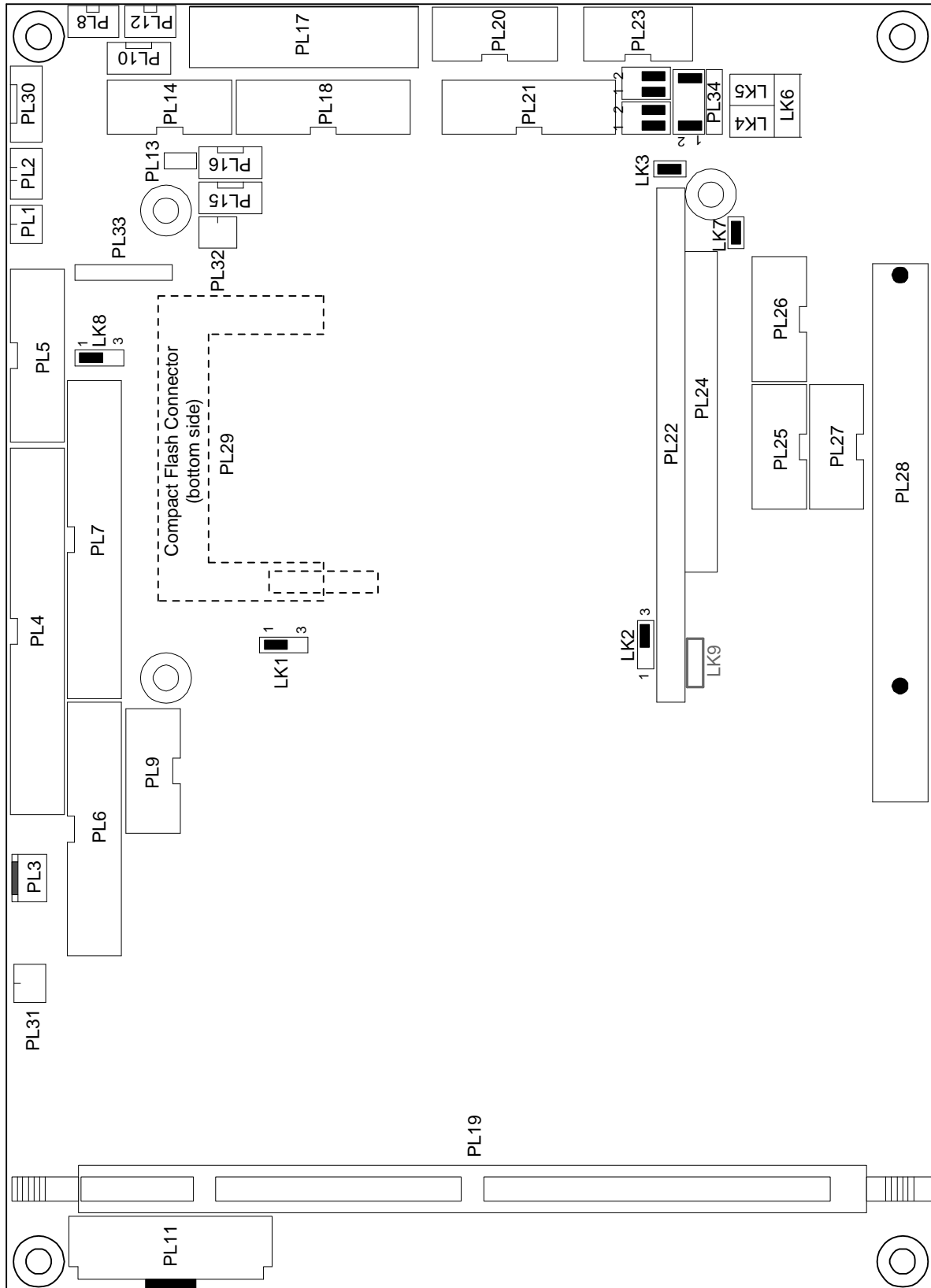
The OLYMPUS is fitted with a Dallas Semiconductors DS2401 Unique ID device. This device provides a unique 48 bit ID for each board. The ID is displayed on the screen during the POST process. The ID device is accessed via an I/O address register. A sample program showing the required software to read the ID is contained on the support CD supplied with the OLYMPUS Development Kit.

Using the Tamper Detect input

The tamper detect circuit is designed to provide security protection for the board in both powered and unpowered conditions. A Switch can be connected to PL13 to provide a tamper connection. If the switch is closed the tamper circuit will have power. If the switch is OPEN the power is removed. The tamper circuit provides an I/O bit that can be read at 25BH bit 2. If this bit is logic '1' then the tamper circuit is powered. If the bit is at logic '0' the tamper circuit power has been removed. The tamper circuit also provides power to a Dallas Semiconductors DS1302 real time clock. This device contains 32-bytes of battery backed RAM which can be used to store data. The support CD contains an example program showing how to access the DS1302 and reading the tamper bit.

Links and Connectors

There are eight user selectable links on the OLYMPUS. The following section provides details on these links. The '+' sign indicates the default position for each link.



LK1 – Clear CMOS/ Battery Disable

A battery link is fitted that is used to prevent drain on the battery during shipment. This link can also be used to clear the contents of the CMOS RAM.

LK1	Description
+1-2	Battery Backup Disabled (CMOS RAM cleared)
2-3	Battery Backup Enabled

Note: The OLYMPUS will not power up with the battery backup disabled. Therefore this link should always be in position 2-3 for normal operation.

LK2 - Watchdog Timer timeout setting

The watchdog timer has two operating modes. It will generate either an NMI or system RESET pulse upon timeout. This link is used to select between the two modes. If the link is not fitted then the timeout signal will be disabled.

LK2	Description
1-2	NMI (Non-Maskable Interrupt)
+2-3	RESET
Omit	Disabled

LK3 – RS485 (RS422 TX) Line Termination

This link is used to enable the RS485 (RS422 TX) lines to be terminated with a 120ohm resistor. This link should be fitted when the OLYMPUS board is positioned at the end of the network.

LK3	Description
+1-2	Fitted
Omit	Not Fitted

LK4/LK5/LK6 – COM4 Configuration

These links are used to set the required operating mode of the COM4 serial port. Valid combinations are shown in the table below. The connection for this serial port is made via PL25.

Mode	LK4	LK5	LK6
RS232	+3-5, 4-6	+3-5, 4-6	+1-2
RS422	1-3, 2-4	1-3, 2-4	3-4
RS485	1-3, 2-4	1-3, 2-4	5-6,7-8

LK7 – RS422 RX Line Termination

This link is used to enable the RS422 RX lines to be terminated with a 120ohm resistor. This link should be fitted when the OLYMPUS board is positioned at the end of the network.

LK7	Description
+1-2	Fitted
Omit	Not Fitted

LK8 – CompactFlash Card Voltage Selection

This link is used to select the power supply voltage for the CompactFlash interface. The link can be set to provide either +5V or +3.3V supply.

LK8	Description
+1-2	+5V Supply
2-3	+3V Supply

Note: CompactFlash cards should be designed to operate from either +5V or +3.3V supplies. When adjusting this link please verify that the CompactFlash card you are using supports the selected voltage setting. If the wrong voltage is used the CompactFlash card may be damaged.

Connectors

There are thirty four connectors on the OLYMPUS that allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers etc. Detailed pin assignments are shown in Appendix A.

Connector	Description
PL1	Microphone Input
PL2	Audio Line-In
PL3	CPU FAN
PL4	IDE Drive
PL5	Game/MIDI Port
PL6	Parallel Port
PL7	Floppy Disk Drive
PL8	Audio Speaker
PL9	Universal Serial Bus (USB)
PL10	Audio MONO In/Out
PL11	Power
PL12	Audio Line-Out
PL13	Tamper Switch/User Link
PL14	Keyboard/Mouse
PL15	Audio AUX Input
PL16	Audio CD Input
PL17	Digital Visual Interface
PL18	VGA CRT
PL19	SDRAM Socket
PL20	COM1 RS232 Serial Port
PL21	LCD Display/Digital I/O Port
PL22	8-bit PC/104 Connector
PL23	10/100M Ethernet
PL24	16-bit PC/104 Connector
PL25	COM4 RS232/RS422/RS485 Serial Port
PL26	COM2 RS232 Serial Port
PL27	COM3 RS232 Serial Port
PL28	32-Bit PCI Socket
PL29	Type I/II CompactFlash Socket
PL30	Infrared Port (IrDA)
PL31	Power Button/Soft On-Off
PL32	System RESET
PL33	JTAG Programming Header (Used in Manufacture only)
PL34	Ethernet activity LED

AWARD BIOS SETUP

This section provides details of the Award BIOS that comes with the OLYMPUS. Also contained here are instructions on how to set up the BIOS configuration.

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Celeron and Pentium III processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn ON the OLYMPUS, the Award BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system OFF and back ON again. The following message will appear on the screen:

Press to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

CMOS Setup Utility-Copyright © 1984-2001 Award Software		
<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Management Setup ▶ PnP/PCI Configurations ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving 	
Esc : Quit F9: Menu in BIOS ↑ ↓ → ← : Select Item		
F10 : Save & Exit Setup		
F6 : SAVE CMOS TO BIOS F7: LOAD CMOS FROM BIOS		
Time, Date, Hard Disk Type...		

The section below the setup items of the Main Menu displays the control keys for this menu. Another section located at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: If you find that the OLYMPUS cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings. The override feature can be invoked by holding the INSERT key down during the power on process.

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

Standard CMOS Features

“Standard CMOS Setup” ions in your computer system and set the system clock and error handling. If the motherboard is already

Standard CMOS option, however, if you change your system hardware configurations, the

2001 Award Software		
Date (mm:dd:yy)	Mon, Jan	Item Help
Time (hh:mm:ss)	2 : 31 : 24	
► IDE Primary Master	[None]	Menu Level ►
► IDE Primary Slave	[None]	
► IDE Secondary Master	[None]	Change the
► IDE Secondary Slave	[None]	Day, month,
		Year and
		Century
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	None	
Select Display Device	[AUTO]	
Base Memory	640K	
Extended Memory	56320K	
Total Memory	57344K	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following pages describe each item of this menu.

- Date
The date format is:

Day	the day of week, from Sun to Sat, determined by the BIOS, is read only
Month	the month, Jan (1) through Dec (12)
Date	the date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
Year	the year, from 1994 to 2079

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

- Time
The time format is:

Hour	From 00 to 23
Minute	From 00 to 59
Second	From 00 to 59

To set the time, highlight the “Time” field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

- IDE Primary/Secondary Master/Slave *Hard Drives*

The onboard PCI IDE connector provides Primary and Secondary channels for connecting up to two IDE hard disks or other IDE devices. The first is the “Master” and the second is the “Slave”. The secondary IDE channel is used to support the CompactFlash card socket. This device is always configured as a Master.

To configure the hard disk drive settings press <Enter> on the relevant drive entry. The BIOS screen will change and you can allow the BIOS to automatically detect the hard disk drive. By default the hard disk drive is set to auto detect. If you set the IDE mode to manual and use CHS mode you will need to set the parameters as defined in the table below:

CYLS	number of cylinders
HEAD	number of read/write heads
PRECOMP	write precompensation
LANDZ	landing zone
SECTOR	number of sectors
SIZE	Automatically adjust according to the configuration
MODE (for IDE HDD only):	Auto Normal (HD < 528MB) Large (for MS-DOS only) LBA (HD > 528MB and supports Logical Block Addressing)

NOTE: The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

- **Drive A / Drive B**

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **Video**

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	For Hercules or MDS adapters, includes high resolution monochrome adapters

- **Halt On**

This field determines whether the system will halt if an error is detected during power up.

All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
No errors	The system boot will not halt on any error detected. (default)
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

- **Select Display Device**

Auto	The BIOS will detect which displays are plugged into the board and only drive the relevant signals. (default)
CRT	The CRT display will be driven and the DVI display will be switched off.
LCD	The DVI display will be driven and the CRT display will be switched off..
CRT+LCD	The CRT and DVI outputs will always be driven.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Advanced BIOS Features		
Virus Warning	Disabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ►
CPU L2 Cache ECC Checking	Enabled	Allows you to
Processor Number Feature	Enabled	choose the VIRUS
Quick Power On Self Test	Enabled	Warning feature
First Boot Device	HDD-0	for IDE Hard disk
Second Boot Device	Floppy	boot sector
Third Boot Device	CDROM	protection. If this
Boot Other Device	Enabled	function is enable
Swap Floppy Drive	Disabled	and someone
Boot Up Floppy Seek	Disabled	attempts to write
Boot Up NumLock Status	On	data into this area,
Gate A20 Option	Fast	BIOS will show
Typematic Rate Setting	Disabled	a warning
Typematic Rate (Chars/Sec)	6	message on
Typematic Delay (Msec)	250	screen and alarm
Security Option	Setup	beep
OS Select for DRAM >64MB	Non-OS2	
Video BIOS Shadow	Enabled	
C8000-CBFFF	Disabled	
CC000-CFFFF	Disabled	
D0000-D3FFF	Disabled	
D4000-D7FFF	Disabled	
D8000-D8FFF	Disabled	
DC000-DFFFF	Disabled	
↑↓→← : Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Virus Warning**

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

NOTE: Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

- **CPU Internal Cache / External Cache**

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these are **Enabled**.

- **CPU L2 Cache ECC Checking**

When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is **Enabled**.

- **Processor Number Feature**

When a Pentium® III CPU is installed, the system automatically detects it and displays this item.

- **Quick Power On Self Test**

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned ON. If it is set to Enabled, BIOS will skip some items.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**

These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**

This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is **Enabled**.

- **Swap Floppy Drive**

This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to **Disabled**.

- **Boot Up Floppy Seek**

When enabled, the BIOS seeks for number of track (40 or 80) of the installed floppy drive. 360K type has 40 tracks while 760K, 1.2M and 1.44M have 80 tracks. By default, this field is set to **Disabled**.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**

This option enables and disables the numberlock function of the keypad. The default value is "On".

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

- **Gate A20 Option**

This you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB. The default setting is **Fast**.

- **Typematic Rate Setting**

When disabled, continually holding down any key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to **Disabled**.

- **Typematic Rate (Chars/Sec)**

When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to **6**.

- **Typematic Delay (Msec)**

When typematic rate is enabled, this item allows you to set the time interval between the display of the first and second characters. By default, this item is set to **250msec**.

- **Security Option**

This allows you to limit access to the System and Setup. The default value is **Setup**. When set to **System**, the system prompts for the User Password every boot up. Selecting **Setup** always boots up and prompts for Supervisor Password only when Setup utility is called up.

- **OS Select for DRAM > 64MB**

This allows system to access more than 64MB of DRAM memory when used with OS/2 depends on certain BIOS calls to access memory. The default setting is **Non-OS/2**.

- **Video BIOS Shadow**

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed. The default setting is **Enabled**.

- **C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**

Shadowing ROM reduces available memory between 640KB and 1024KB. These fields determine whether optional ROM is copied to RAM or not.

Advanced Chipset Features

This Setup menu controls the configuration of the motherboard chipset.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Advanced Chipset Features		
DRAM Timing By SPD	Enabled	Item Help
DRAM Clock	Host CLK	
SDRAM Cycle Length	3	Menu Level ►
Memory Hole	Disabled	
P2C/C2P Concurrency	Enabled	Enabled adds a
Fast R-W Turn Around	Enabled	Parity check to the
System BIOS Cacheable	Disabled	boot-up memory
Video RAM Cacheable	Disabled	tests. Select
Frame Buffer Size	8M	Enabled only if the
AGP Aperture Size	64MB	system DRAM
OnChip USB	Enabled	Contains parity
USB Keyboard Support	Disabled	
AC97 Audio	Auto	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI Delay Transaction	Enabled	
PCI#2 Access #1 Retry	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	
Memory Parity/ECC Check	Disabled	
↑↓→← : Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **DRAM Timing By SPD**

This item allows you to select whether the DRAM timing is controlled by the serial EEPROM fitted to the DIMM module.

- **DRAM Clock**

Set DRAM clock speed.

- **SDRAM Cycle Length**

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The default setting is **3**.

- **Memory Hole**

In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to **Disabled**.

- **P2C/C2P Concurrency**

This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency. By default, this field is set to **Enabled**.

- **Fast R-W Turn Around**

This item controls the DRAM timing. It allows you to enable/ disable the fast read, write turn around. By default, this field is set to **Enabled**.

- **System BIOS Cacheable**

When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH is cached, provided that the cache controller is **Enabled**.

- **Video RAM Cacheable**

When enabled, access to video BIOS addressed at C0000H to C7FFFH is cached, provided that the cache controller is **Enabled**.

- **Frame Buffer Size**

This item allows you to control the VGA frame buffer size. The default setting is **8M**.

- **AGP Aperture Size**
The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The options available are 32M and 64M. The default setting is **64M**.
- **OnChip USB**
This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature. By default, this field is set to **Enabled**.
- **USB Keyboard Support**
Select **Enabled** if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
- **AC97 Audio**
This feature is used to enable the AC97 audio controller. The options are **Auto** and **Disabled**. The default setting is **Auto**.
- **CPU to PCI Write Buffer**
When this field is **Enabled**, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When **Disabled**, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle..
- **PCI Dynamic Bursting**
This item allows you to enable/ disable the PCI dynamic bursting function.
- **PCI Master 0 WS Write**
When **Enabled**, writes to the PCI bus are executed with zero wait states.
- **PCI Delay Transaction**
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select **Enabled** to support compliance with PCI specification version 2.1. The default setting is **Disabled**.
- **PCI#2 Access #1 Retry**
When disabled, PCI#2 will not be disconnected until access finishes (default). When enabled, PCI#2 will be disconnected if max retries are attempted without success.
- **AGP Master 1 WS Write**
When **Enabled**, writes to the AGP(Accelerated Graphics Port) are executed with one wait state..
- **AGP Master 1 WS Read**
When **Enabled**, read to the AGP (Accelerated Graphics Port) are executed with one wait state..
- **Memory Parity/ECC Check**
This item **enabled** to detect the memory parity and Error Checking & Correcting.

Integrated Peripherals

This option sets your hard disk configuration, mode and port.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Integrated Peripherals		
OnChip IDE Channel0	Enabled	Item Help
OnChip IDE Channel1	Enabled	
IDE Prefetch Mode	Enabled	Menu Level ►
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
Init Display First	PCI Slot	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
IR Function Duplex	Half	
TX,RX inverting enable	No, Yes	
Onboard Parallel Port	378/IRQ7	
Onboard Parallel Mode	Normal	
ECP Mode Use DMA	3	
Parallel Port EPP Type	EPP1.9	
Onboard Serial Port 3	3E8	
Serial Port 3 IRQ	IRQ11	
Onboard Serial Port 4	2E8	
Serial Port 4 IRQ	IRQ10	
Onboard Legacy Audio	Disabled	
Soundblaster	Enabled	
SB I/O Address	220H	
SB IRQ Select	IRQ 5	
Sb DMA Select	DMA 3	
MPU-401	Enabled	
MPU-401 I/O Address	330-333H	
Game Port (200-207H)	Enabled	
↑↓→← : Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- On-Chip IDE Channel0/Channel1**
 The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.
- IDE Prefetch Mode**
 The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.
- Primary/Secondary Master/Slave PIO**
 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. In Auto mode, the system automatically determines the best mode for each device. The options available are Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.
- Primary/Secondary Master/Slave UDMA**
 Ultra DMA 66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software support Ultra DMA 33/66/100, select Auto to enable BIOS support. The options available are Auto, Mode 0, Mode 1, and Mode 2.

- **Init Display First**
This item allows you to decide to active whether PCI Slot or AGP first. The options available are PCI Slot, AGP.
- **IDE HDD Block Mode**
This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.
- **Onboard FDC Controller**
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 and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.
- **Onboard Serial Port 1/Port 2**
Select an address and corresponding interrupt for the first and second serial ports. The options available are 3F8/IRQ4, and Disabled for serial port 1. 2F8/IRQ3 and Disabled for Serial port 2.
- **UART 2 Mode**
The second serial port offers these infrared interface modes:
 - HPISR
 - ASKIR IrDA-compliant serial infrared port
 - Standard (default value)

NOTE: *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

When UART Mode Select is set as ASKIR or HPISR, the options RxD, TxD Active and IR Transmission delay will appear.

- **IR Function Duplex**
This item allows you to select the IR half/full duplex function.
- **TX,RX inverting enable**
This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.
- **Onboard Parallel Port**
This item allows you to determine access onboard parallel port controller with which I/O address. The options available are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.
- **Parallel Port Mode**
Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are Normal, ECP, ECP/EPP, EPP.
- **ECP Mode Use DMA**
Select a DMA channel for the parallel port for use during ECP mode.
- **Parallel Port EPP Type**
Select EPP port type 1.7 or 1.9.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Power Management Setup		
ACPI Function	[Disabled]	Item Help
▶ Power Management	[Press Enter]	Menu Level ▶
ACPI Suspend Type	[S1 (POS)]	
PM Control by APM	[Yes]	
Video off Option	[Suspend -> off]	
Video off Method	[V/H SYNC+Blank]	
MODEM Use IRQ	[3]	
Soft Off By PWRBTN	[Delay 4 sec]	
▶ Wake Up Events	[Press Enter]	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- ACPI Function**
 This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The options available are Enabled, Disabled.
- ACPI Suspend Type**
 This item allows you to select the type of ACPI suspend mode that your system will follow. It can either be set on the power-on standby mode "S1(POS)" with the ATX power supply on full power, or suspend to RAM "S3(STR)" mode with the ATX power supply running on 5VSB. The default setting is **S1(POS)**.
- Power Management**
 This category allows you to select the type (or degree) of power saving and is directly related to the following modes:
 - HDD Power Down
 - Doze Mode
 - Suspend Mode

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

Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU'S . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Define	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

NOTE: In order to enable the CPU overheat protection feature, the Power Management field should not be set to Disabled.

- PM Control by APM**
 When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting **YES** gives better power savings.
- Video Off Method**
 This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This causes the system to turn off the vertical and horizontal synchronization ports and write 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 to select video power management values.
Blank Screen	This option only writes blanks to the video buffer.

- **Modem Use IRQ**

This field names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity on the selected IRQ always awakens the system. The available choices are 3, 4, 5, 7, 9, 10, 11, and NA. By default, the IRQ is set to **3**.

- **Soft-off by PWRBTN**

This only works with systems using an ATX power supply. It also allows the user to define the type of soft power OFF sequence the system will follow.

Instant-Off (default)	This option follows the conventional manner systems perform when power is turned OFF. Instant Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF.
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **Wake Up Events**

The following wake-up events are provided on the OLYMPUS.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Wake-Up Events		
VGA	[OFF]	Item Help
LPT & COM	[LPT/COM]	Menu Level ►
HDD & FDD	[ON]	
PCI Master	[OFF]	
PowerOn by PCI card	[Enabled]	
Modem Ring Resume	[Enabled]	
RTC Alarm Resume	[Disabled]	
X Date of Month	0	
X Resume Time (hh:mm:ss)	0 : 0 : 0	
Primary INTR	[ON]	
IRQ's Activity Monitoring	[Press Enter]	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **VGA, LPT & COM, HDD & FDD**

Activity on the VGA, LPT, COM, HDD and FDD can be used to wake the board from suspend based on the settings in these fields.

- **RTC Alarm Resume**

The RTC can be used to wake the system on a set day and at a set time. This feature is normally **Disabled**. When **Enabled** you must enter the Day of Month and time fields.

- **Primary INTR**

The Primary interrupt must be set to **ON** to enable the individual IRQ activity monitoring to function. The default setting is **ON**.

- **IRQs Activity Monitoring**

CMOS Setup Utility-Copyright © 1984-2001 Award Software		
IRQs Activity Monitoring		
IRQ3 (COM 2)	[Enabled]	Item Help
IRQ4 (COM1)	[Enabled]	Menu Level ►
IRQ5 (LPT 2)	[Enabled]	
IRQ6 (Floppy Disk)	[Enabled]	
IRQ7 (LPT 1)	[Enabled]	
IRQ8 (RTC Alarm)	[Disabled]	
IRQ9 (IRQ 2 Redir)	[Disabled]	
IRQ10 (Reserved)	[Disabled]	
IRQ11 (Reserved)	[Disabled]	
IRQ12 (PS/2 Mouse)	[Enabled]	
IRQ13 (Coprocessor)	[Enabled]	
IRQ14 (Hard Disk)	[Enabled]	
IRQ15 (Reserved)	[Disabled]	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Each IRQ can be enabled or disabled. When Enabled the corresponding IRQ will be monitored when the system is on sleep mode. Activity on that IRQ will then cause the system to wake.

PnP/PCI Configurations

CMOS Setup Utility-Copyright © 1984-2001 Award Software PnP/PCI Configurations		
PNP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	Menu Level ► Select Yes if you are using a Plug and play capable operating system select No if you need the BIOS to configure non-boot devices
Resources Controlled By	[Auto (ESCD)]	
X IRQ Resources	[Press Enter]	
X DMA Resources	[Press Enter]	
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For VGA	[Enabled]	
Assign IRQ For USB	[Enabled]	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **PNP OS Installed**
This item determines whether a PnP OS is being installed or not. The options available are Yes and No. Default setting is No.
- **Reset Configuration Data**
Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.
- **Resources Controlled By**
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®98. The options available are Auto and Manual.
- **IRQ Resources**
When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:
 1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
 2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is "*PCI/ISA PnP*".
- **DMA Resources**
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:
 1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel.
 2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The default value is "*PCI/ISA PnP*".
- **PCI/VGA Palette Snoop**
Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.
- **Assign IRQ For USB/VGA**
Enable/Disable to assign IRQ for USB/VGA.

PC Health Status

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

CMOS Setup Utility-Copyright © 1984-2001 Award Software PC Health Status		
CPU Warning Temperature	[Disabled]	Item Help
Current CPU Temperature	50°C/122°F	
Current System Temp.	34°C/93°F	Menu Level ►
Current FAN Speed	5553RPM	
Vcore	1.51V	
2.5V	2.51V	
3.3V	3.31V	
5V	4.90V	
12V	12.12V	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- CPU Warning Temperature**
 This feature allows a temperature to be selected between 50°C and 92°C in 3°C increments. The BIOS will monitor the CPU temperature and will provide a warning if the temperature rises above the set limit.
- Current System Temperature**
 These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.
- Current FAN Speed**
 These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

Frequency/Voltage Control

CMOS Setup Utility-Copyright © 1984-2001 Award Software Frequency/Voltage Control		
Auto Detect DIMM/PCI Clk	[Enabled]	Item Help
Spread Spectrum	[Disabled]	Menu Level ►
CPU Host/PCI Clock1	[Default]	
↑↓→← : Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Auto Detect DIMM/PCI Clk**

This item automatically detects the clock speeds of the system memory installed as well as the PCI interface. The options available are Enabled and Disabled. The default setting is **Enabled**.

- **Speed Spectrum**

This item directly relates to the EMI performance of the whole system. When enabled, all system clocks run at slower speeds thereby decreasing the electromagnetic interference to the surrounding environment. Disabling this item improves the system performance but simultaneously increase the EMI. The default setting is **Disabled**.

Load Fail Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

CMOS Setup Utility-Copyright © Award Software	
▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Fail-Safe Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Supervisor Password
▶ Power Ma	
▶ PnP/PCI C	
▶ PC Health Status	
Load Fail-Safe Defaults (Y/N)? N	
Exit Without Saving	
Esc : Quit	
F10 : Save & Exit Setup	
↑ ↓ → ← : Select Item	
Load Fail-Safe Defaults	

To load BIOS defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

CMOS Setup Utility-Copyright © Award Software	
<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Man ▶ PnP/PCI Co ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password
<div style="border: 1px solid black; padding: 5px; text-align: center;"> Load Optimized Defaults (Y/N)? N </div>	
Esc : Quit F10 : Save & Exit Setup	Exit Without Saving ↑ ↓ → ← : Select Item
Load Optimized Defaults	

To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Set Supervisor / User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen. To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

CMOS Setup Utility-Copyright © Award Software	
<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Man ▶ PnP/PCI Con ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password
<div>Enter Password:</div>	
Esc : Quit F10 : Save & Exit Setup	
Change / Set/ Disable Password	

Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing “Y” quits the setup utility and saves all changes into the CMOS memory. Typing “N” brings you back to Setup utility.

CMOS Setup Utility-Copyright © Award Software	
<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Man ▶ PnP/PCI Con ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password
<div style="border: 1px solid black; padding: 5px; text-align: center;"> SAVE to CMOS and EXIT (Y/N)? Y </div>	
Esc : Quit F10 : Save & Exit Setup	Exit Without Saving ↑ ↓ → ← : Select Item
Save Data to CMOS	

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

CMOS Setup Utility-Copyright © Award Software	
<ul style="list-style-type: none"> ▶ Standard CMOS Features ▶ Advanced BIOS Features ▶ Advanced Chipset Features ▶ Integrated Peripherals ▶ Power Man ▶ PnP/PCI Con ▶ PC Health Status 	<ul style="list-style-type: none"> ▶ Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password
<div style="border: 1px solid black; padding: 5px; text-align: center;"> Quit Without Saving (Y/N)? N </div>	
Esc : Quit F10 : Save & Exit Setup	Exit Without Saving ↑ ↓ → ← : Select Item
Abandon all Datas	

Software Support

The Development Kit contains a support CD-ROM that incorporates reference material and software utilities that can be used to support the OLYMPUS. The following sections describe the software support and provide guidelines for using the drivers supplied on the CD.

Datalight ROM-DOS

If your OLYMPUS board is fitted with flash memory it will be supplied with a license for Datalight's ROM-DOS operating system. This operating system will be pre-installed on the flash drive.

ROM-DOS is a Microsoft MS-DOS compatible operating system, which has been specifically designed for embedded systems. The system and command files are physically much smaller, but still provide full compatibility to allow standard DOS applications to run without modification. ROM-DOS supports all the standard utility files like SYS, PRINT, MODE, FDISK, FORMAT etc. These files are supplied on the support CD-ROM and can be used as required.

A full user manual for ROM-DOS is also supplied on the CD that provides detailed information on the operating system and supported interrupts and features.

Datalight FlashFX Flash Filing System

The flash memory incorporated onto the OLYMPUS is configured as a silicon read/write disk drive. This disk is supported using Datalight's FlashFX software. This software is designed to enable the disk to be accessed using standard DOS routines. The FlashFX software is installed during the POST process as a BIOS extension. This enables the flash disk to be used as a boot disk and this will be the default boot device if a hard disk drive is not present in the system. When shipped the flash memory will be formatted and configured as a ROM-DOS system disk.

The FlashFX software has been designed to incorporate wear-levelling algorithms. The wear levelling ensures that the flash memory is used evenly and that no one sector is continually being written to. This enables the write performance of the flash device to be maximised.

The support CD contains utilities that can be used to ensure that the flash disk is configured correctly (See the README file in the FlashFX section of the support CD-ROM). If the flash disk gets corrupted for any reason these utilities can be used to reformat the flash. The 'Bootdisk' provides an automatic mechanism for reformatting the flash memory and copying the ROM-DOS operating system.

AWDFLASH Utility

The AWDFLASH utility provides users with the ability to update the BIOS used on the board. This may be required if you experience any incompatibilities with the BIOS and a later version is available.

The AWDFLASH utility can be invoked from the DOS command line and should be supplied with the BIOS image file name required i.e. AWDFLASH BIOS.BIN. The program will automatically load the file and prompt you to confirm that you want to reprogram the BIOS ROM. Once the device has been reprogrammed you should press F1 to reboot the system.

Note: - During this process it is important that you do not switch off the board as this may cause the BIOS ROM to be corrupted and this will stop the board from operating.

Bootdisk

The CD-ROM contains a ROM-DOS “Bootdisk” image. The image is stored in the BOOTDISK directory and can be loaded onto a blank floppy disk using the FLWRITE utility that is stored in this directory (Refer to the README file for the latest information). The floppy disk image is compatible with a 1.44MB floppy disk.

The Bootdisk can be used to load the ROM-DOS operating system from a floppy disk drive. A menu is provided once the board has started to boot to allow you to perform some pre-defined operations. These include booting ROM-DOS, reformatting the flash disk and copying the system files to the flash disk. Once the appropriate selection has been made the software will perform the operation automatically.

Operating System Drivers

The support CD contains drivers for Via Technologies chipset, S3 Graphics, Audio, and RealTek RTL8139C Ethernet controller. The following sections provide instructions for installing these drivers for Windows 98, Windows NT4.0, Windows 2000 and Windows XP. The CD also contains drivers for other operating systems and users should refer to the documentation on the CD.

Prior to installing any of the following operating systems you need to perform the following tasks:

1, If your board is fitted with flash memory, you will need to delete the FlashFX BIOS extension. To do this, create a 'Bootdisk' using the Development Kit CD-ROM. Connect a floppy disk drive to the OLYMPUS and boot from the 'Bootdisk'. A menu will be displayed on the screen, select option 6 and press return. This will delete the BIOS extension and reboot the OLYMPUS board.

2, On power up enter the Set-up utility by pressing the key when prompted. Select the '**Advanced BIOS Features**' menu. In this menu set the '**First Boot Device**' to '**CDROM**'. Press ESC and select '**Save and Exit**'.

Windows 98 Driver Support

Insert the Windows 98 CD into the CD-ROM drive and reboot the system.

A prompt will appear to enable you to start installing Windows 98. Complete the installation as described in the Windows 98 user manual.

Once the operating system has completed installation insert the support CD into your drive and follow the steps detailed below to install each driver. The CD will automatically start up in Windows Explorer. Before proceeding close this window.

Via Technologies 4in1 drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the 4in1 folder.
4. Double click on the '4in1438(2)v(A).exe' program.
5. Select 'OK', this will automatically run the 4in1 installation process.
6. Follow the on screen instruction to complete installation.
7. Select 'Finish' when complete to restart Windows 98.

S3 Graphics Driver

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Graphics folder.
4. Double-click on the Win9x98ME folder.
5. Double-click on the S3wlshld folder.
6. Double click on the 'Setup' program.
7. Select 'OK', this will automatically start installing the graphics drivers.
8. Follow the on screen instructions to complete installation.

Audio drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Audio folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the graphics drivers.
6. Follow the on screen instructions to complete installation, and Insert the 'Windows 98' CD when requested.
7. Select 'Finish' to restart Windows 98.

USB Patch

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the USB folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the USB patch.
6. Follow the on screen instructions to complete installation.
7. Select 'Finish' to restart Windows 98.

RealTek RTL8139C Ethernet Controller driver

1. Select 'Control Panel' from the 'Start'.
2. Double-click on the 'System' icon and select the 'Device Manager' tab.
3. Under 'Other devices' select the 'PCI Ethernet Controller'
4. Click on the 'Properties' button
5. Select the 'Driver' tab
6. Click on the 'Update driver' button
7. Click on 'Next' button
8. Select 'Search for better driver ..' and click 'Next button.
9. Select 'Specify location' and click on the 'Browse' button
10. Select the following directory from the CD \Ethernet\EXE\Win98 and click 'OK'
11. Click 'Next' twice and insert the 'Windows 98' CD when prompted.
12. Click 'OK', then 'Finish' and 'Yes' to complete installation.

Windows NT4.0 Driver Support

Insert the Windows NT 4.0 CD into the CD-ROM drive and reboot the system.

The CD-ROM will be detected as

IDE CD-ROM(ATAPI 1.2)/PCI IDE Controller.

You do not need to select any additional SCSI adapters, CD-ROM drives or special disk controllers.

Install NT 4.0 on an NTFS partition. When prompted, select 'Do not connect this computer to a network at this time' and leave the video controller configured as standard VGA. If you would like to install Windows NT4.0 Service pack 6a. Select the following file from the support CD once NT 4.0 has completed installation.

D:\NT4SP6A\I386\UPDATE\UPDATE.EXE

Via Technologies 4in1 drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the 4in1 folder.
4. Double click on the '4in1438(2)v(A).exe' program.
5. Select 'OK', this will automatically run the 4in1 installation process.
6. Follow the on screen instruction to complete installation.
7. Select 'Finish' when complete to restart Windows NT.

S3 Graphics Driver

1. **FROM THE 'START' MENU SELECT 'RUN'.**
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Graphics folder.
4. Double-click on the Winnt4 folder.
5. Double-click on the S3wlshld folder.
6. Double click on the 'Setup' program.
7. Select 'OK', this will automatically start installing the graphics drivers.
8. Follow the on screen instructions to complete installation.

Audio drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Audio folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the graphics drivers.
6. Follow the on screen instructions to complete installation, and Insert the 'Windows NT' CD when requested.
7. Select 'Finish' to restart Windows NT.

USB Patch

Windows NT does not support USB therefore this patch is not required.

RealTek RTL8139C Ethernet Controller driver

1. Select 'Control Panel' from the 'Start'.
2. Double-click on the 'Network' icon and select 'Yes'.
3. Select 'Wired to a Network'
4. Click on the 'Select from list' button
5. Select the 'Have disk' button'
6. Click on the 'Browse button and select 'D:\Ethernet\Exe\Winnt4.
7. Windows will find the 'RealTek RTl8139/810x Family PCI Fast Ethernet Adapter' driver.
8. Click on the 'OK' button to continue installation.
9. Follow the on screen instruction and insert the 'Windows NT' CD when prompted.
10. Select 'Finish' and 'Yes' to restart the computer when the installation process is complete

Windows 2000 Driver Support

Insert the Windows 2000 CD into the CD-ROM drive and reboot the system.

A prompt will appear to enable you to start installing Windows 2000. Complete the installation as described in the Windows 2000 user manual. When prompted cancel the Network and New Hardware wizards.

Once the operating system has completed installation insert the support CD into your drive and follow the steps detailed below to install each driver. The CD will automatically start up in Windows Explorer. Before proceeding close the window.

Via Technologies 4in1 drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the 4in1 folder.
4. Double click on the '4in1438(2)v(A).exe' program.
5. Select 'OK', this will automatically run the 4in1 installation process.
6. Follow the on screen instructions.
7. When prompted remove the tick for the 'VIA PCI IDE BUS Driver', this driver should not be installed. Continue to follow the instructions to complete installation.
8. Select 'Finish' when complete to restart Windows 2000.

S3 Graphics Driver

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Graphics folder.
4. Double-click on the WinXP2K folder.
5. Double-click on the S3wlshld folder.
6. Double click on the 'Setup' program.
7. Select 'OK', this will automatically start installing the graphics drivers.
8. Follow the on screen instructions to complete installation.

Audio drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Audio folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the graphics drivers.
6. Follow the on screen instructions to complete installation, and Insert the 'Windows 2000' CD when requested.
7. Select 'Finish' to restart Windows 2000.

USB Patch

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the USB folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the USB patch.
6. Follow the on screen instructions to complete installation.
7. Select 'Finish' to restart Windows 2000.

RealTek RTL8139C Ethernet Controller driver

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Ethernet folder.
4. Double-click on the EXE folder.
5. Double click on the 'Setup' program.
6. Select 'OK', this will automatically start installing the graphics drivers.
7. Follow the on screen instructions to complete installation.
8. Select 'Finish' when prompted.

Windows XP driver support

Insert the Windows XP CD into the CD-ROM drive and reboot the system.

A prompt will appear to enable you to start installing Windows XP. Complete the installation as described in the Windows XP user manual.

Once the operating system has completed installation insert the support CD into your drive and follow the steps detailed below to install each driver. The CD will automatically start up in Windows Explorer. Before proceeding close this window.

Via Technologies 4in1 drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the 4in1 folder.
4. Double click on the '4in1438(2)v(A).exe' program.
5. Select 'OK', this will automatically run the 4in1 installation process.
6. Follow the on screen instruction to complete installation.
7. Select 'Finish' when complete to restart Windows XP.

S3 Graphics Driver

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Graphics folder.
4. Double-click on the WinXP2K folder.
5. Double-click on the S3wlshld folder.
6. Double click on the 'Setup' program.
7. Select 'OK', this will automatically start installing the graphics drivers.
8. Follow the on screen instructions to complete installation.
9. Select 'Finish' when prompted to restart Windows XP.

Audio drivers

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Audio folder.
4. Double click on the 'Setup' program.
5. Select 'OK', this will automatically start installing the graphics drivers.
6. Follow the on screen instructions to complete installation.
7. Select 'Finish' to complete installation when prompted.

USB Patch

1. 'Browse' and select the CD-ROM.
2. Double-click on the USB folder.
3. Double click on the 'Setup' program.
4. Select 'OK', this will automatically start from the 'Start' menu select 'Run'.
5. Select installing the USB patch.
6. Follow the on screen instructions to complete installation.
7. Select 'Finish' to restart Windows XP.

RealTek RTL8139C Ethernet Controller driver

1. From the 'Start' menu select 'Run'.
2. Select 'Browse' and select the CD-ROM.
3. Double-click on the Ethernet folder.
4. Double-click on the EXE folder.
5. Double click on the 'Setup' program.
6. Select 'OK', this will automatically start installing the graphics drivers.
7. Follow the on screen instructions to complete installation.
8. Select 'Finish' when prompted.

Other Software Support

The support CD-ROM also contains the following material:

1. Microsoft internet Explorer 5.0
2. Mitsumi Mouse Driver (For DOS)
3. Adobe Acrobat Reader 5.05.
4. Microsoft DirectX8.1
5. Winzip 8.1
6. Example source code for:
 - Driving a 2 x 20 LCD from the Digital I/O
 - Unique ID
 - DS1302 RTC.
7. DVI Interface programming software and configuration files.

Please refer to the documentation on the CD-ROM for the latest information.

Hardware Support Information

As the OLYMPUS is a fully compatible PC/AT processor board any standard PC reference guide will provide information on the hardware aspects of the board. The following material has been included on the support CD-ROM as it relates to specific features of the board that may not be available from other sources. This information is stored in the REFERENCE directory:

1. Intel Celeron data sheet
2. Intel Pentium III data sheet.
3. Intel StrataFlash data sheet.
4. Via Technologies VT8604 product brief.
5. Via Technologies VT82C686A¹ data sheet.
6. PC100 SDRAM Specification.
7. PC133 SDRAM Specification.
8. RealTek RTL8139C data sheet.
9. Silicon Image TMDS device data sheets.
10. Windbond 83877 Super I/O data sheet
11. I²C Specification.
12. Dallas Semiconductors DS2401 data sheet
13. Dallas Semiconductors DS1302 data sheet.
14. Analog Devices AD1021 data sheet.
15. CompactFlash Card specification.
16. EBX Specification.
17. PC/104 Specification.
18. Digital Visual Interface (DVI) Specification.
19. NEC NL6448BC20-08 flat panel display data sheet.

If you are trying to source information on a specific item that is not listed above please refer to Appendix D that contains references to some relevant Internet sites.

Please refer to the documentation on the CD-ROM for the latest information.

NOTE 1: The OLYMPUS uses the VT82C686B, however this information is not public information and can only be obtained under NDA directly from VIA Technologies.

Detailed Hardware Description

The following section provides a detailed description of the functions provided by the OLYMPUS. This information may be required during Development once you have started adding extra peripherals or are starting to use some of the embedded features.

Processor

The OLYMPUS has been designed to support Intel Coppermine Celeron and Pentium PIII processors. These processors are available up to 850MHz Celeron and 1GHz Pentium PIII and are manufactured using a 0.18 μ process. These processors are available in Socket 370 Flip-Chip design.

The processor should be placed in the Zero-Insertion-Force (ZIF) socket. When inserting the processor please ensure that you have selected the correct orientation. The voltage and speed settings are automatically configured by the CPU and there are no switches or BIOS settings required to support different parts. The BIOS will display a message during the POST process to show the CPU and bus speed settings, which have been selected.

The processor must be fitted with an appropriate heatsink and fan. The OLYMPUS supports a +12V fan via PL3. This connector also has a SENSE signal that can be used to monitor the fan speed. Additional cooling may be required if the board is going to be placed in a high temperature ambient environment.

Memory

The OLYMPUS supports three types of memory device, the system memory (provided by a Synchronous DRAM module), the BIOS EPROM and the Flash array.

Synchronous DRAM Interface

A single 168-pin Dual-In-Line Memory Module (DIMM) socket is used to support up to 512M bytes of synchronous DRAM. This interface is designed to support 16MB, 32MB, 64MB, 128MB, 256MB, and 512MB modules which are 3.3V compatible and meet the PC133 or PC100 timing specification. The DIMM socket is designed to ensure that only the correct type of memory is installed.

The Award BIOS will automatically detect the amount of memory inserted into this socket during the power up process and set the appropriate registers correctly. The BIOS can also be configured to perform an exhaustive test on this memory during the POST process to ensure it is functioning correctly. This will cause the boot time to be increased and is disabled by default.

BIOS EPROM

A 256K byte Flash EPROM device is used to store the BIOS code. This device can be reprogrammed in situ using the AWDFLASH utility supplied on the support CD-ROM (See the software support section for details). The BIOS stored in this device is compressed to save space and is uncompressed during the power up process. The system BIOS is copied into shadow RAM between 0E0000H and 0FFFFFFH and the VGA BIOS is copied to 0C0000H.

The flash device is a +5V only device and there are no link settings required to enable programming.

Flash Memory/Solidstate Disk

The OLYMPUS board supports up to 32MB of soldered flash memory. This memory is configured to be a read/write silicon disk drive. The Datalight FlashFX flash filling system will automatically be loaded during the POST routine to enable the flash drive to be accessed. The flash drive uses a 16K-memory window at 000DC000-000DFFFF to access the devices and two I/O address locations are used to select the appropriate flash area. The I/O registers are shown below for information, under normal circumstances the FlashFx driver should be used to access this memory. The OLYMPUS also contains a Flash status LED that will illuminate whenever the Flash drive is accessed.

258H I/O Write

Bit No.	Paged Address Register 0
0	Address Bit A14
1	Address Bit A15
2	Address Bit A16
3	Address Bit A17
4	Address Bit A18
5	Address Bit A19
6	Address Bit A20
7	Address Bit A21

259H I/O Write

Bit No.	Paged Address Register 1
0	Address Bit A22
1	Address Bit A23
2	Address Bit A24
3	Address Bit A25
4	Software Flag 1
5	Software Flag 2
6	No Function
7	Flash Reset/Power down Bit 7 0 = device is reset/powered down 1 = device is enabled

259H I/O Read

Bit No.	Paged Address Register 1
0	Flash Busy Signal (0 = BUSY)
1	No function
2	No function
3	No function
4	Software Flag 1
5	Software Flag 2
6	No function
7	No function

These two registers will be reset to 00h (write) on power up/reset. This ensures that the Register 1 Bit 7 is 0, i.e. Flash is disabled and write protected.

Memory Map

The following table shows the memory map for the OLYMPUS.

Address	Block Size	Description
0FFFC0000H	256K	System BIOS ROM
0FFFBFFFFH	-	Extended memory limit (Depending on SDRAM fitted)
00100000H	511M	Extended memory
000E0000H	128K	System BIOS ROM and embedded SETUP
000DC000H	16K	Flash Memory Window
000CC000H	64K	Directed to PC/104 bus
000C8000H	16K	Datalight FlashFX BIOS Extension
000C0000H	32K	VGA BIOS extension
000A0000H	128K	Video RAM
00000000H	640K	System RAM

I/O Map

The PC/AT I/O address map is limited to 1K addresses. This is because only the lower ten address lines were originally used to decode I/O devices. The remaining lines were treated as undefined. Therefore the usable address range is from 0-3FFH, above this range devices are imaged and will be accessed throughout the entire 64K I/O address range of the processor.

The following table shows the I/O address mapping for the OLYMPUS. If expansion boards are added via the PC/104 interface you should ensure that they are configured to be at a free address location. Otherwise they will not function correctly and may even cause the OLYMPUS board to stop operating.

Device	I/O Location (Hex)
DMA Controller 1	000-00F
Interrupt Controller 1	020-021
Timer/Counter	040-043
Keyboard/Mouse	060-064
Real Time Clock	070-071
DMA Page Registers	080-08F
Interrupt Controller 2	0A0-0A1
DMA Controller 2	0C0-0DF
GAME Port	200-207
Legacy Audio	220-22F
Flash Paging Registers	258-259
DS2401/DS1302/TAMPER	25B
LED Display	25C-25D
Watchdog Timer	25E-25F
COM4	2E8-2EF
COM2	2F8-2FF
Legacy MPU-401	330-33F
Parallel Port	378-37F
Video Controller	3B0-3BB, 3C0-3CF, 3D0-3DF
COM3	3E8-3EF
Floppy Disk	3F0-3F7
COM1	3F8-3FF

Graphics Controller

The Via Technologies VT8604 North Bridge contains an integrated S3 Savage4 2D/3D Video accelerator. This device provides the following features:

- Optimized shared memory architecture (SMA).
- 2MB – 32MB frame buffer using system memory.
- Floating-point triangle setup engine.
- Single cycle 128-bit 3D architecture.
- 8M triangles/second setup engine.
- 140M pixels/second trilinear fill rate.
- Full AGP 4x, including sideband addressing and execute mode
- S3 DX7 texture compression (S3TC)
- Next generation, 128-bit 2D graphics engine
- High quality DVD video playback
- Flat panel monitor support (Using DVI 1.0 standard interface)
- 2D/3D resolution up to 1920 x1440

The following table shows the video modes supported by the OLYMPUS:

Resolution	Bits Per Pixel	System Memory Frame Buffer Size (8MB Default)		
		4MB	8MB	16/32MB
640x480	8/16/32	Y	Y	Y
800x600	8/16/32	Y	Y	Y
1024x768	8/16/32	Y	Y	Y
1280x1024	8	Y	Y	Y
1280x1024	16	Y	Y	Y
1280x1024	32	N	Y	Y
1600x1200	8	Y	Y	Y
1600x1200	16	Y	Y	Y
1600x1200	32	N	Y	Y
1920x1440	8	Y	Y	Y
1920x1440	16	N	Y	Y

The CRT output signals are routed to a 16-way 0.1" boxed header PL18. These signals will normally be connected directly to a VGA compatible CRT monitor. A suitable cable is provided as part of the OLYMPUS Development Kit. The following table shows the connection details for this cable. The CRT signals may be affected by noise, therefore this cable should be kept as short as possible and should be routed away from other signals to stop any crosstalk.

PL18 Pin	Signal Name	15 way D-Type High Density
1	RED	1
2	Ground	6
3	GREEN	2
4	No Connection	4
5	BLUE	3
6	Ground	7
7	DDC +5V	9
8	No Connection	11
9	Ground	8
10	Ground	5
11	Ground	10
12	HSYNC	13
13	DDC Data	12
14	VSNC	14
15	DDC Clock	15
16	No Connection	-

The OLYMPUS provides a DVI-I compatible interface via PL17. This connector provides both analog and digital outputs. Both the CRT and DVI display are driven from the same Video device therefore the image displayed will be the same. The DVI digital interface provides high quality output that can be driven over a long distance i.e. up to 5m. More information on DVI can be obtained from the Digital Display Working Group at www.ddwg.org.

If a second display is required this may be supported by using a PCI Video card. The BIOS can be configured to set the onboard graphics or the PCI card as the primary display. In order to use two video adapters the operating system and drivers must provide the relevant support.

The support CD contains drivers for the video interface for Windows 98/NT/2000 and XP.

Interrupt Assignments

The OLYMPUS contains two 8259 interrupt controllers, which are cascaded in the standard PC/AT compatible format. The table below shows the IRQ routing of the on-board devices.

IRQ	Usage
0	8254 Timer
1	Keyboard
2	Cascade used for IRQ8-15
3	COM2/COM4
4	COM1/COM3
5	Legacy audio Controller
6	Floppy Disk
7	Printer
8	Real Time Clock
9	Ethernet/USB
10	COM4
11	COM3
12	Mouse
13	Coprocessor
14	Primary IDE
15	Secondary IDE (CompactFlash)

These IRQ signals are routed to the PC/104 interface as well as the onboard devices. PC/104 boards can only use these signals if they are unassigned or the onboard device is disabled. Some of the interrupt lines are connected to PCI devices on board; these are the Ethernet, VGA, and USB controllers. During the Plug and Play BIOS configuration these devices are configured to use an available IRQ line. The table shows the default IRQ routing for these devices. If the devices are disabled or an adapter card is plugged into the PCI connector that requires an interrupt this routing may change.

Before using these interrupts check that the appropriate line is not already configured for another device. If you need to free up a particular interrupt it may be possible by setting the 'PNP/PCI Configuration' in the BIOS set-up screen. If an interrupt line is selected to support 'Legacy ISA mode' it will not be used by the Plug and Play BIOS and will remain free for ISA bus use. This will normally only apply to IRQ lines that are greater than IRQ9 as the lower order interrupts are already assigned to ISA bus devices.

Care should be taken when configuring these interrupts as you may find that particular combinations do not provide a working solution. This may be due to two or more PCI devices being routed to the same IRQ line. Although this is allowable in the PCI specification, not all device drivers provide the ability to share the interrupts.

DMA Controller

There are two 8237 DMA controllers on the OLYMPUS. These controllers are cascaded in a standard PC/AT style. DMA channels 0-3 are used to support 8-bit devices and DMA channels 4-7 support 16-bit devices. DMA channel 4 is used to provide cascading between the two controllers and therefore is unavailable for use. The table below shows the default assignment for the DMA channels on the OLYMPUS.

DMA	Usage
0	Unassigned
1	Legacy Audio Controller
2	Floppy Disk Interface
3	Parallel Port (ECP Mode)
4	Cascade
5	Legacy Audio Controller
6	Unassigned
7	Unassigned

The DMA signals are routed to the PC/104 interface as well as the onboard devices. They may only be used if they are unassigned or the onboard peripheral is disabled.

IDE Interface

The OLYMPUS has two Integrated Drive Electronics (IDE) controller interfaces. These IDE controllers are 32-bit PCI devices and support ATA/33, ATA/66 and ATA/100 modes of operation. The IDE controllers also support Bus mastering mode and a suitable driver is supplied on the support CD-ROM. The 32-bit interface provides a much faster access speed than the original ISA style interface.

Primary Interface

This interface supports up to two hard disk drives. The disk drives are connected via a 1:1 ribbon cable using PL4. One drive must be configured as a 'MASTER' and the other drive as a -ROM/DVD drive can also be used and should be configured as the 'SLAVE' device.

The BIOS will automatically detect which devices are connected via this interface and configure the controller correctly. The BIOS can be configured to make either the hard disk drive or CD-ROM/DVD the default boot device.

If a hard disk drive is attached to this interface the default configuration will cause the drive to be used as the standard boot device and the flash disk, if present, will become the next available drive.

Secondary Interface (CompactFlash)

The secondary controller is used to support a CompactFlash card interface. The CompactFlash socket PL29 is mounted on the underside of the OLYMPUS. This socket can be used to support both Type I and Type II CompactFlash cards. The CompactFlash card can be used to replace a mechanical drive in the system. If a formatted bootable card is placed in this socket and there is no boot device connected to the primary controller the BIOS will boot from CompactFlash and this will become DRIVE C:

NOTE: This interface can only be used with CompactFlash cards that support TRUE IDE mode. This mode is primarily used to support Flash cards and I/O cards will not normally operate in this mode. Also the OLYMPUS does not support “Hot” plugging of the card.

Floppy Disk Controller

The floppy disk interface is designed to support up to two standard floppy disk drives. Connections are made via a 34-way 0.1” boxed header PL7 (See Appendix A for pin assignment details). All standard capacities including 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB are supported. The BIOS must be configured appropriately for the desired format using the Setup program. The default BIOS configuration supports a single 1.44MB floppy disk drive configured as DRIVE A: and if this drive contains a bootable floppy when the board is powered up it will be used as the default boot device. If no drive is present the BIOS will continue to operate correctly.

The floppy disk drive cable should have three connectors, two of which are connected directly 1:1 and one that has pins 10-16 twisted. If only one drive is required it should be connected via the twisted cable and the drive should be set-up to use drive select 2. If two drives are required the second drive should also be configured for drive 2 but should be connected via the straight connector. This connection does not provide power and therefore a separate cable from the main supply should be used.

The floppy disk interface is decoded in I/O address space at 3F0-3F7H and uses IRQ6 and DMA channel 2.

Real Time Clock

The Real Time Clock is fully compatible with the PC/AT standard clock device. The date and time functions are stored in the real time clock when the main power is removed if the battery backup supply is enabled (See LK1 description). As well as providing time and date information the Real Time Clock is used to store the BIOS settings. The Real Time Clock is decoded in I/O address space at 70-71H and is connected to IRQ8. The Real Time Clock registers are accessed via an indexed addressing mechanism. I/O location 70H is used to select the appropriate register and 71H is used to access the data.

The maximum rated current for the Real Time Clock in battery backup mode is 5uA (Typical 3uA). A Lithium coin cell with a capacity of 180mA (CR2032) is used to supply the battery backup voltage. This battery will provide sufficient capacity for at least 10 years. The battery is disabled during shipment to prolong the useful life. If the board is going to be placed out of service for long periods of time then the battery should also be disabled. If the main supply is present on the board the battery automatically gets disconnected from the Real Time Clock circuitry.

The accuracy of the Real Time Clock is based on the operation of the 32.768KHz watch crystal. This will provide an accuracy of +/- 1minute per month if the board is in an ambient environment of +25°C. When the board is operated outside this temperature then the accuracy may be degraded.

Keyboard/Mouse Controller

An 8042 compatible keyboard controller provides support for a standard PC/AT keyboard and mouse. Connection is made via PL14, this is a 10-way 0.1” boxed header and a suitable cable is required to route the signals to the standard 6-pin MINI DIN connector. The keyboard controller is decoded at I/O address location 60-64H and uses IRQ1 for keyboard and IRQ12 for

mouse support. Power for the keyboard and mouse is sourced from the +5V supply and a resetable fuse protects the board if either interface is short-circuited.

The Development Kit is supplied with a cable that provides two mini-DIN style connectors. These connectors provide direct connection for a PS/2 style keyboard and mouse. The Development Kit also contains a PS/2 mouse.

The Award BIOS will automatically detect the presence of the keyboard and mouse and provide support. If these devices are not plugged in the BIOS will continue to operate correctly.

Keyboard Interface

PL14 Pin No.	Signal Name	MINI-DIN Pin No.
1	KB +5V	4
2	KB DATA	1
3	KB CLOCK	5
4	KB Ground	3

Mouse Interface

PL14 Pin No.	Signal Name	MINI-DIN Pin No.
6	MS +5V	4
7	MS DATA	1
8	MS CLOCK	5
9	MS Ground	3

Ethernet Controller

A RealTek RTL8139C Ethernet controller provides a 10/100-BASETX interface. This is a 32-bit PCI device that is configured by the Plug and Play BIOS during power ON. The device provides compliance with IEEE802.3u 100BASE-T specification and IEEE 802.3x Full Duplex Flow Control. A 93C46 EEPROM is used to store configuration data and ID information. This EEPROM is loaded with a unique MAC ID during the production process.

An 8-way 0.1" boxed header is used to provide signals (See Appendix A for pin assignment details). A cable must be used which connects these signals to the standard RJ45 8-way connector.

A second connector PL34 also provides users with status signals that are designed to drive LED's. The status lines provide 10/100M and Activity status. The LED's can be connected directly to this header. If the 10/100 LED is ON the controller will be working in 100M mode.

The support CD-ROM contains drivers for most operating systems and network software. These are stored in the ETHERNET directory.

Audio Interface

The OLYMPUS contains an AC'97 compatible Audio controller. The features provided are Line In, Line Out, Amplified Speaker, Auxiliary In, MONO In/Out, CD In and Microphone. The audio signals are routed to individual connectors these are listed in the table below

Function	Connector
Line In	PL2
Line Out	PL12
Speaker	PL8
Auxiliary	PL15
MONO In/Out	PL10
CD In	PL16
Microphone	PL1

The BIOS can be configured to provide Legacy SoundBlaster 16 compatibility for use in DOS. Please refer to the BIOS Set-up section for details. In order to support this mode the BIOS must be configured with the correct I/O address, IRQ and DMA settings. The speaker output is amplified onboard and can be used to provide up to 4 watts per channel. This allows non-powered speakers to be used with the board. The amplifier has built in short circuit protection.

An appropriate driver is required for Windows 98/2000/NT/CE/XP. These drivers are supplied on the support CD-ROM in the Development Kit. Using the drivers the audio signals can be combined together to provide a composite output.

Game Port

The OLYMPUS provides a standard PC compatible GAME port. This port can be used to support an analog joystick. Connection is made via PL5, which is designed to interface to a 15 way D-Type connector. The Game port is decoded in I/O address space at 200-201H.

Watchdog Timer

The OLYMPUS contains a watchdog timer, which can be used to protect against erroneous software. The Watchdog timer can be used to generate a NMI or RESET pulse. Selection is made using LK2 (Please refer to the link details section). The watchdog timer has a fully programmable timeout period between 0.5 seconds and 1600 seconds (26 minutes & 40 seconds).

The Watchdog timeout period is set by two variables M and N. The following table shows the relationship between these two values and the resultant timeout period.

M	N			
	1	2	3	4
0	0.5	5	50	100
1	1	10	100	200
2	1.5	15	150	300
3	2	20	200	400
4	2.5	25	250	500
5	3	30	300	600
6	3.5	35	350	700
7	4	40	400	800
8	4.5	45	450	900
9	5	50	500	1000
A	5.5	55	550	1100
B	6	60	600	1200
C	6.5	65	650	1300
D	7	70	700	1400
E	7.5	75	750	1500
F	8	80	800	1600

Note: Timeout period in seconds.

Programming Watchdog Timer

The following sequence is used to program the Watchdog timer. First the timer must be unlocked then the values for M and N can be programmed.

Unlock Watchdog timer: OUT 25E, 0AH
 OUT 25E, 0BH

Set Multiple (1-4): OUT 25E, 0NH; N=1,2,3,4

Set base timer (0-F) OUT 25F, 0MH; M=0,1,2,...F

Reset Timer

Once the Watchdog timer has been started the software must reset the timer within the selected timeout period. The timer is reset by reprogramming the M value as shown below:

Reset Watchdog timer OUT 25F, 0MH ; M=0,1,2,...F

Disabling the Watchdog Timer

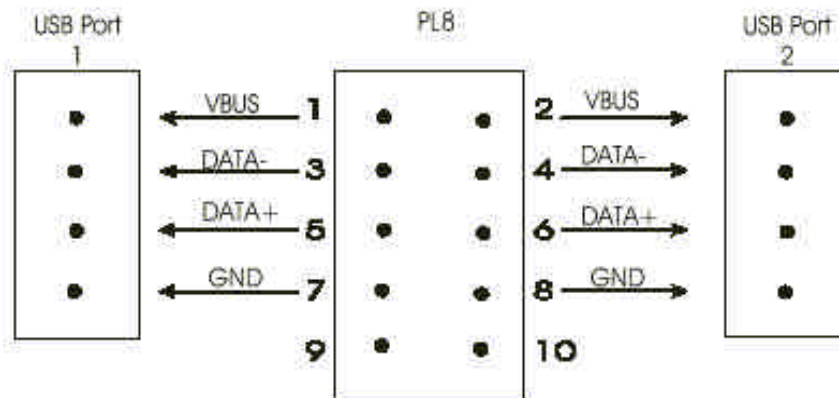
Once started the Watchdog timer can be disabled using software. The syntax is shown below:

Disable Watchdog timer OUT 25E, 00H

USB Interface

There are two host Universal Serial Bus (USB) interfaces on the OLYMPUS. These interfaces have been designed to support the USB specification V1.1 and Universal host controller interface V1.1 (UHCI).

There are four signal lines associated with each USB channel, VBUS, DATA+, DATA- and GND. A resettable fuse is fitted to the board for each channel to protect against short circuit conditions.



Windows 98/2000 and XP will automatically support the USB devices. Drivers will be supplied for the various operating systems with each USB device.

If you are looking for details on the USB bus, or would like to determine whether particular peripherals are available then look at the following internet site www.usb.org.

Temperature Sensor

An Analog Devices AD1021 thermal management device is fitted to the OLYMPUS. This device is used to monitor the CPU temperature. The AD1021 uses the on chip thermal DIODE built into the Celeron and PIII processors. The temperature can be monitored in the BIOS set-up screen.

A warning temperature can be set in the BIOS set-up. Once this maximum is reached the BIOS will provide a warning via the PC Speaker to indicate that the part has risen above the limit. The AD1021 also contains an on chip temperature monitor that is used to provide an indication of board (System) temperature.

This device is an I²C part and an example program is supplied on the Development Kit CD ROM. The example shows how to read the temperature and set the warning level.

PC/104 Interface

The PC/104 interface supports 8/16 bit ISA style signals. Add on boards can be used to enhance the functionality of the main board. The PC/104 standard has been adopted by a wide range of companies and boards are available which support various types of interface. This bus can be used to add digital I/O, analogue I/O, serial ports, video capture devices, PC CARD interfaces etc.

Any board plugged into this interface will be accessed as if it were part of the main board, therefore it may conflict with I/O and memory devices onboard if it has not been correctly configured. Before using an expansion board you should check that it can be configured to work along side the peripherals already incorporated onboard.

The PC/104 bus signals are fully compatible with the ISA bus electrical timing definitions. Some IRQ and DMA signal lines may be associated with onboard devices and are therefore are not free to be used by add on boards.

Information on PC/104 products and the PC/104 specification can be found at <http://www.pc104.org/>

PCI Bus Interface

The PCI bus signals are PCI 2.2 compliant and can be used to interface to 32-bit 33MHz compatible cards. If a PCI card is plugged into the socket the BIOS will automatically configure the device during the POST process and will add the board to the list of PCI Plug and Play devices displayed on the boot screen. If the PCI card requires an interrupt this will also be assigned at this stage. Due to the limited number of spare interrupt signals the card will normally share the interrupt with one of the onboard devices. This means that the driver for the PCI card must be designed to support interrupt sharing.

If an alternative or secondary VGA display is required a PCI VGA card can be plugged into this socket. This PCI card can become either the primary or secondary video controller based on the BIOS settings in the “**Advanced Chipset Features**” screen. If the card is set as the primary display it will be initialised during the boot phase and the video output will appear via this card. If it is the secondary display then the card must be supported by an appropriate driver.

The onboard S3 graphics controller can be configured as a secondary display and will be supported using the driver files supplied on the Development Kit CD.

Note: There are three types of PCI card +5V, +3.3V and Universal. These cards have key locations in order to ensure correct orientation in the PCI socket. The OLYMPUS only supports +5V and Universal PCI cards. It does not support +3.3V cards, however it is possible to plug a +3.3V card into the OLYMPUS if the mounting bracket has been removed. Therefore before using a PCI card please verify that it is the correct type. If the mounting bracket is fitted then this should hang over the edge of the OLYMPUS board. If the bracket stops the card being plugged in then the card will be the incorrect type.

Serial Ports

There are four high speed 16550 serial UART's on the OLYMPUS. All four channels are fully software compatible with the 16550 and can be used as standard RS232 serial interfaces. The table below shows the configuration for each channel.

Port	I/O Address	IRQ	Connector
COM1	3F8-3FFH	IRQ4	PL20
COM2	2F8-2FFH	IRQ3	PL26
COM3	3E8-3EFH	IRQ4 (IRQ10 or IRQ11)	PL27
COM4	2E8-2EFH	IRQ3 (IRQ10 or IRQ11)	PL25

The RS232 signals are routed to 10 way 0.1” boxed header which are designed to provide direct connection to 9 way D-type plugs. The serial ports provide support for various baud rates up to a maximum of 115K baud. The Award BIOS will detect the serial ports during the POST process and configure the baud rate, data, stop bits etc.

The table above provides details of the IRQ signal associated with each channel. If the standard IRQ3 and IRQ4 assignments are used then only one of the channels can be configured to use each interrupt. If your system requires more than two interrupts then the other ports can be configured to use IRQ10 and IRQ11. These interrupts may be assigned to PCI devices during the Plug and Play BIOS initialisation. Therefore you should select 'Legacy interrupts' in the '**PNP/PCI CONFIGURATION**' set-up screen.

RS422/485 Interfaces

The COM4 serial interface can be used to support RS232/RS422 and RS485 interfaces. The default configuration has been selected to enable RS232 operation. There are three links LK4, LK5 and LK6, which are used to configure the signals for this serial port (Please refer to the Link Settings section of this manual for details).

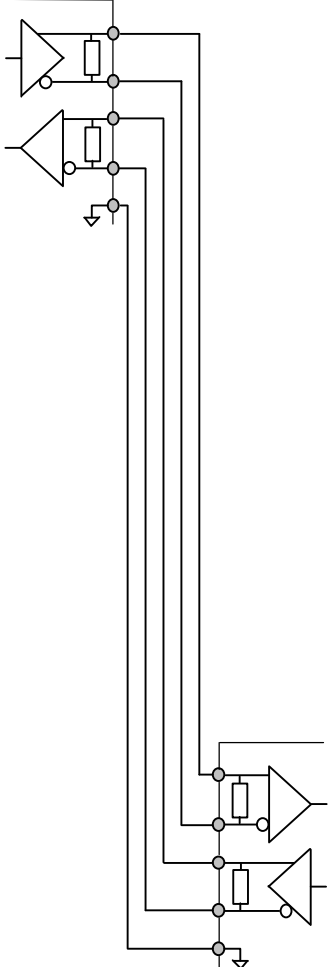
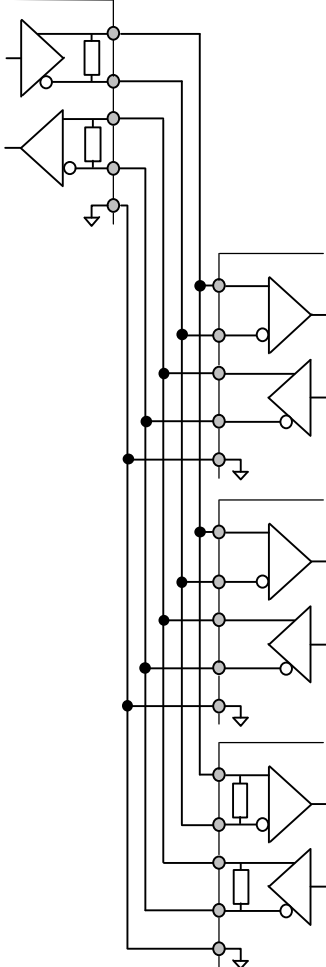
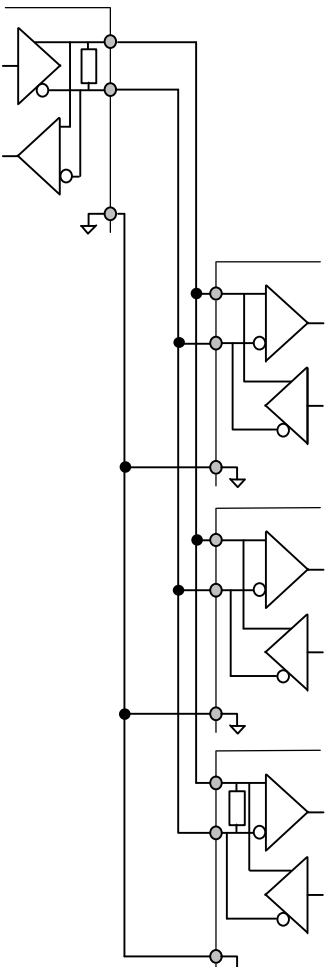
RS422

The RS422 interface provides full duplex communication. The signals available are TX+, TX-, RX+, RX- and Ground. The maximum cable length for an RS422 system is 4000ft (1,200m) and it supports 1 driver and up to 10 receivers.

RS485

This is a half-duplex interface that provides combined TX and RX signals. PL14 pin 5 provides TXB/RXB and pin 6 provides TXA/RXA. A ground connection is also required for this interface. The maximum cable length for this interface is the same as RS422 (4000ft or 1,200m), but RS485 supports up to 32 transmitters and receivers on a single network. Only one transmitter should be switched on at a time.

The OLYMPUS uses the RTS signal to control transmission, when this signal is at logic '1' the driver is switched off and data can be received from other devices. When the RTS line is at logic '0' the driver is on. Any data that is transmitted from the OLYMPUS will be automatically echoed back to the receiver. This enables the serial communications software to detect that all data has been sent and disable the driver when required. LK3 and LK7 should be made (to connect the 120ohm line termination resistors) if the OLYMPUS is at the end of the network. The differences between each of the configurations are illustrated below:

RS422 POINT-TO-POINT		RS422 MULTI-DROP		RS485	
					
Number of Wires	5	Number of Wires	5	Number of Wires	3
Transmitters Enabled	Active RTS	Transmitters Enabled	Active RTS	Transmitters Enabled	Active RTS
Receivers Enabled	Always	Receivers Enabled	Always	Receivers Enabled	Always
Duplex Mode	Full	Duplex Mode	Full	Duplex Mode	Half

Parallel Port

The parallel port is fully IEEE1284 compatible and provide Standard Parallel Port (SPP), Enhanced Parallel Port (EPP) and Extended Capabilities (ECP) support. The parallel port is decoded at I/O address location 378-37FH (LTP1) and uses IRQ7. In ECP mode the BIOS can be used to select an appropriate DMA channel, the default channel is DMA 3.

The parallel port has built in protection circuitry to protect against powered devices being connected when the main supply is removed and damaging the device. Each data and control signal is designed to source/sink 14mA maximum.

The parallel port connector PL6 is a 26-way 0.1" boxed header. The pin assignment of this connector has been designed to provide 1:1 connection to an IDC 25-way D-Type socket (See Appendix A for details). The socket will be compatible with a standard PC parallel port connector.

The parallel port can be used to connect an external printer, tape drive, disk drive, scanner etc.

Power Supply

The OLYMPUS is designed to operate from a $+5V \pm 5\%$ (4.75V to +5.25V) and $+12V \pm 5\%$ supply. The power connector has inputs for the ATX style +5VSTB (+5V Standby) and PSON signals. These can be used with an ATX power supply to support low power sleep mode. If the ATX supply is used a Power switch must be connected to PL31. When the power supply is switched ON this switch must be pressed to enable the supply. During operation the power switch can be used to place the board in suspend or if it is pressed for > 4 seconds the board will go in standby mode.

The OLYMPUS generates two voltages onboard. These are the CPU core voltage and +3.3V. The voltage level for the CPU core is selected automatically by the CPU fitted to the board. The +3.3V supply is used to power some of the onboard components and is also available on the PCI socket if required.

The +5V supply is monitored automatically onboard and if this supply falls below 4.63V the board will be placed in RESET. When the power supply rises above this threshold voltage the board will start to operate again. This power supply monitor will ensure that the board does not hang if the supply voltage fails at any point.

The BIOS has built in power management, which can be enabled by the Set-up program during the POST process. Various aspects of the board can be controlled by the power management software. The board can be placed in a power down state and woken using external input from the mouse, keyboard, serial ports, real time clock etc. The power management software is designed to monitor activity and will start to slow down the CPU and switch off functions if long periods of inactivity are detected.

Status LED's

There are three status LED's on-board. These LED's are used to indicate that the main power supplies are present and the flash disk is being accessed. The table below shows the details for each LED.

LED	Name	Color	Description
D1	+5V	Red	Indicates that the +5V supply is present
D2	Flash Access	Green	Each time the on board flash disk is accessed this LED will illuminate.
D3	+12V	Yellow	Indicates that the +12V supply is present.

PC Speaker

An onboard speaker can be used to notify the user of an error condition during POST or normal operation. The speaker output is controlled by counter 2 output of the 8254 counter/timer (Refer to PC software programming guides for more information).

The speaker output is also fed to the Audio CODEC and will be mixed with the standard audio output.

Tamper Detect Input/Unique ID

The OLYMPUS contains two security features, these are Tamper detect and a Unique ID. In order to support these features the OLYMPUS has a I/O port at address 25BH. Information regarding the use of this port is shown in the tables below:

25BH I/O Write

Bit No.	
0	DS2401 Data out
1	DS1302 Data Out
2	DS1302 Clock Signal
3	DS1302 RESET Line
4	No Function
5	No Function
6	No Function
7	No Function

25BH I/O Read

Bit No.	
0	DS2401 Data In
1	DS1302 Data In
2	Tamper Switch 0= Tamper Switch OPEN 1= Tamper Switch CLOSED
3	No Function
4	No Function
5	No Function
6	No Function
7	No Function

Tamper Detect Input

The tamper detect circuit allows an application to determine whether a simple switch has been opened at any time even when. The switch could be a door switch, keyswitch or alarm panel output. The OLYMPUS stores any change to the switch state even when the system power is removed. This detection mechanism will operate for up to 5 days while the main power is switched off.

When the board is assembled into a unit the switch should be designed to make the connections on PL13. If the switch remains closed then the tamper circuit will remain powered and the tamper detect bit will stay at logic '1'. If the switch is OPEN'ed the power will be removed from the tamper circuit and the tamper detect bit will be rest to logic '0'. The tamper circuit uses a 0.22F Supercap to provide power when the main supply is removed. During normal operation the Supercap is trickle charged.

The tamper detect bit can be read via I/O location 25BH bit 2.

The tamper detect circuit also controls the power to a Dallas Semiconductors DS1302 Real Time Clock. This device contains 32 bytes of static RAM, which can be used to store security information. The Real Time Clock feature of this device is not used by the OLYMPUS as it is not PC compatible. Once the tamper switch has been OPEN'ed the data in this device will be erased. The DS1302 also contains a verification bit, which can be used to determine whether

power has been removed. The DS1302 data sheet is supplied on the support CD in the OLYMPUS Development Kit.

Unique ID

The Unique ID is provided by a Dallas Semiconductors DS2401 device. This device contains a unique 48-bit number, which can be used to identify each board individually. The ID is read from the device during the POST process and is displayed on the boot screen. A sample program is also provided on the Development Kit CD, which can be used to access the device. The DS2401 is a 1-wire device and communication is achieved via I/O address 25BH bit 0.

Digital I/O - Character LCD Display Interface

The OLYMPUS contains an 8-bit I/O port. This port is accessed at 25C-25DH. The design of this port is configured to directly drive standard character style LCD modules. Connection is made via PL21, this is a 16-way 0.1" boxed header. The port can also be used to interface to an external I/O device. The support CD contains an example program that can be used to initialise and display text on a 2 x 20 LCD module. This code can be modified to support other resolutions .i.e. 16 x 2, 24 x 2 etc. The display must contain a Hitachi HD44780 or compatible controller.

NOTE: The pinout of this connector has been arranged to provide 1:1 connection with the LCD module. However this assumes that the connector on the LCD module is mounted on the rear of the display. Mounting the connector like this means that the display can be placed against a panel without the connector getting in the way. Please check the pinout of your display before using this interface.

Power Button / Soft On/Off

A momentary switch should be connected to PL31 if an ATX style power supply is used with the OLYMPUS. This switch will control the power supply, the first press of the switch will turn the power supply ON. If the switch is pressed again for < 4 seconds the board will go into suspend mode. If the switch is pressed for > 4 seconds the board will go into standby mode.

In suspend mode the main supply voltages are connected to the board, but the display is switched OFF and the CPU goes into a low power condition. Pressing the power button will bring the board out of suspend and it will continue to operate as normal.

In standby mode the main supply voltages are switched OFF. The only power still provided is the 5V Standby signal. This power supply is used to enable the board to automatically be powered up from external events i.e. WAKE-ON-LAN. In this mode of operation the board will start up and go through the normal boot process.

RESET Switch

A momentary switch may be connected to PL32. If the switch is pressed it will cause the board to be reset. All onboard devices will be reinitialised and the BIOS will start executing from the top of memory. This may be useful during Development to restart the board after a software crash.

Appendix A – Connector details

PL1 – Microphone Input

2-way 2mm shrouded header

Pin	Signal Name
1	MIC input signal
2	Ground

PL2 – Audio Line-In

3-way 2mm shrouded header

Pin	Signal Name
1	Line-In left
2	Audio ground
3	Line-In right

PL3 – CPU FAN

3-way 0.1" header

Pin	Signal Name
1	FAN Speed detect
2	+12V
3	Ground

PL4 - IDE Disk Interface

40-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	/RESET	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	+5V
21	DREQ	22	Ground
23	/IOW	24	Ground
25	/IOR	26	Ground
27	/IOCHRDY	28	Ground
29	DACK	30	Ground
31	INTR	32	/IOCS16
33	SA1	34	No Connect
35	SA0	36	SA2
37	/CS0	38	/CS1
39	LED	40	Ground

PL5 – GAME/MIDI Port

16-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	SWA	4	SWC
5	JTA	6	JTC
7	Ground	8	MSOUT
9	Ground	10	JTD
11	JTB	12	SED
13	SWB	14	MSIN
15	+5V	16	No Connection

PL6 - Parallel Port (LPT1)

26-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	/STROBE	2	/AUTO
3	D0	4	/ERROR
5	D1	6	/INIT
7	D2	8	/SELECT
9	D3	10	Ground
11	D4	12	Ground
13	D5	14	Ground
15	D6	16	Ground
17	D7	18	Ground
19	/ACK	20	Ground
21	BUSY	22	Ground
23	PAPER END	24	Ground
25	SELECT	26	No Connect

Note:- This pin-out is designed to provide a 1:1 connection to a 25 way IDC D-Type socket.

PL7 - Floppy Disk Interface

34-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	Ground	2	DRV DEN0
3	Ground	4	-
5	-	6	DRV DEN1
7	Ground	8	/INDEX
9	Ground	10	/MTR0
11	Ground	12	/DRV1
13	Ground	14	/DRV0
15	Ground	16	/MTR1
17	Ground	18	DIR
19	Ground	20	/STEP
21	Ground	22	/WDATA
23	Ground	24	/WGATE
25	Ground	26	/TRK0
27	Ground	28	/WP
29	Ground	30	/RDATA
31	Ground	32	HDSEL
33	Ground	34	DSKCHG

PL8 – Audio Speaker Out

3-way 2mm shrouded header

Pin	Signal Name
1	Left Channel
2	Audio ground
3	Right Channel

PL9 - USB Ports

10-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	VBUS-1	2	VBUS-2
3	DNEG-1	4	DNEG-2
5	DPOS-1	6	DPOS-2
7	Ground	8	Ground
9	Ground	10	Ground

PL10 – MONO Audio In/Out

4-way 2mm shrouded header

Pin	Signal Name
1	MONO Out
2	Audio Ground
3	MONO In
4	Audio Ground

PL11 - Power Connector

8-pin locking power connector 3.96mm housing.

Pin	Signal Name
1	+5V
2	Ground
3	+12V
4	+5V Standby (ATX)
5	PSON (ATX)
6	-12V
7	Ground
8	+5V

PL12 – Audio Line-Out

3-way 2mm shrouded header

Pin	Signal Name
1	Left Channel
2	Audio ground
3	Right Channel

PL13 – Tamper Detect Switch/User Link

2-way 0.1" header

Pin	Signal Name
1	Switch pin 1
2	Switch pin 2

PL14 – Keyboard/Mouse Interface

10-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	KB5V	2	KBDATA
3	KBCLK	4	KBGND
5	+5V	6	MS5V
7	MSDATA	8	MSCLK
9	MSGND	10	+12V

PL15 – Auxiliary Audio In/Out

4-way 2mm shrouded header

Pin	Signal Name
1	Audio Ground
2	Left Channel
3	Audio Ground
4	Right Channel

PL16 – CD Audio Input

4-way 2mm shrouded header

Pin	Signal Name
1	Left Channel
2	CD Ground
3	Right Channel
4	CD Ground

PL17 – Digital Visual Interface (DVI-I)

DVI-I Combined Analog & Digital Connector

Pin	Signal Name	Pin	Signal Name
1	T.M.D.S Data 2-	2	T.M.D.S Data 2+
3	Ground	4	No Connection
5	No Connection	6	DDC Clock
7	DDC Data	8	Analog VSYNC
9	T.M.D.S Data 1-	10	T.M.D.S Data 1+
11	Ground	12	No Connection
13	No Connection	14	+5V
15	Ground	16	Hot Plug Detect
17	T.M.D.S Data 0-	18	T.M.D.S Data 0+
19	Ground	20	No Connection
21	No Connection	22	Ground
23	T.M.D.S Clock+	24	T.M.D.S Clock-
C1	Analog Red	C2	Analog Green
C3	Analog Blue	C4	Analog HSYNC
C5	Analog Ground		

PL18 -VGA CRT connector

16-way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	RED	2	Ground
3	GREEN	4	No Connect
5	BLUE	6	Ground
7	+5V (Fused)	8	No Connect
9	Ground	10	Ground
11	Ground	12	HSYNC
13	DDCSDA	14	VSYN
15	DDCSCL	16	No Connect

PL19 – SDRAM Socket

168-pin 3.3V Unbuffered DIMM Socket.

PL20 – COM1 RS232 Serial Port

10 pin 0.1" boxed pin header.

Pin	Signal Name	Pin	Signal Name
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	No Connect

PL21 – Digital I/O – LCD Character Display

16-way 0.1" boxed header

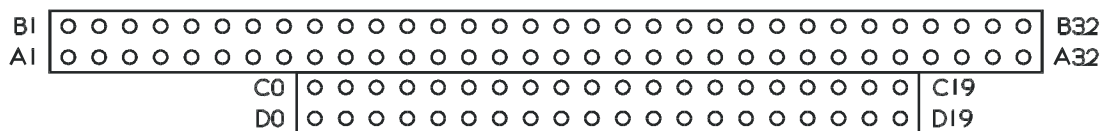
Pin	Signal Name	Pin	Signal Name
1	+5V	2	Ground
3	RS	4	VO (Contrast)
5	ENABLE	6	/IOW
7	D1	8	D0
9	D3	10	D2
11	D5	12	D4
13	D7	14	D6
15	CATHODE	16	ANODE

PL22 & PL24 - PC/104 Connector

Row A & B - 64 way 0.1" Non-Stackthrough PC/104 compatible connector

Row C & D - 40 way 0.1" Non-Stackthrough PC/104 compatible connector

Pin	Row A	Row B	Row C	Row D
0	-	-	Ground	Ground
1	/IOCHCK	Ground	/SBHE	/MEMCS16
2	D7	RSTDRV	LA23	/IOCS16
3	D6	+5V	LA22	IRQ10
4	D5	IRQ9	LA21	IRQ11
5	D4	-5V	LA20	IRQ12
6	D3	DRQ2	LA19	IRQ15
7	D2	-12V	LA18	IRQ14
8	D1	/ENDXFR	LA17	/DACK0
9	D0	+12V	/MEMR	DRQ0
10	IOCHRDY	KEY	/MEMW	/DACK5
11	AEN	/SMEMW	D8	DRQ5
12	A19	/SMEMR	D9	/DACK6
13	A18	/IOW	D10	DRQ6
14	A17	/IOR	D11	/DACK7
15	A16	/DACK3	D12	DRQ7
16	A15	DRQ3	D13	+5V
17	A14	DACK1	D14	MASTER
18	A13	DRQ1	D15	Ground
19	A12	/REFRESH	KEY	Ground
20	A11	SYSCLK	-	-
21	A10	IRQ7	-	-
22	A9	IRQ6	-	-
23	A8	IRQ5	-	-
24	A7	IRQ4	-	-
25	A6	IRQ3	-	-
26	A5	/DACK2	-	-
27	A4	TC	-	-
28	A3	BALE	-	-
29	A2	+5V	-	-
30	A1	OSC	-	-
31	A0	Ground	-	-
32	Ground	Ground	-	-



Note: The -5V (B5) signal is not supported by the OLYMPUS. The -12V (B7) signal can be supplied via the POWER connector PL11, however the power supply in the Development Kit does not provide this signal.

PL23 – 10/100M Ethernet

8-way 0.1" boxed header

Pin	Signal Name	Pin	Signal Name
1	TX+	2	TX-
3	RX+	4	No Connection
5	No Connection	6	RX-
7	No Connection	8	Ground

PL25 – COM4 RS232/RS422/RS485 Serial Port

10 pin 0.1" boxed pin header.

Pin	Signal Name			Pin	Signal Name		
	RS232	RS422	RS485		RS232	RS422	RS485
1	DCD	TX-	TX/RX-	2	DSR	No Connect	No Connect
3	RXD	TX+	TX/RX+	4	RTS	No Connect	No Connect
5	TXD	RX-	No Connect	6	CTS	No Connect	No Connect
7	DTR	RX+	No Connect	8	RI	No Connect	No Connect
9	Ground	Ground	Ground	10	No Connect	No Connect	No Connect

PL26 – COM2 RS232 Serial Port

10 pin 0.1" boxed pin header.

Pin	Signal Name	Pin	Signal Name
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	No Connect

PL27 – COM3 RS232 Serial Port

10 pin 0.1" boxed pin header.

Pin	Signal Name	Pin	Signal Name
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	No Connect

PL28 - PCI Connector

32-bit card edge connector

Pin	Side B	Side A	Pin	Side B	Side A
1	-12V	/TRST	32	AD17	AD16
2	TCK	+12V	33	/CBE2	+3.3V
3	GND	TMS	34	GND	/FRAME
4	TDO	TDI	35	/IRDY	GND
5	+5V	+5V	36	+3.3V	/TRDY
6	+5V	/INTC	37	/DEVSEL	GND
7	/INTD	/INTA	38	GND	/STOP
8	/INTB	+5V	39	/LOCK	+3.3V
9	/PRSNT1	RSVD	40	/PERR	SDONE
10	RSVD	+5V(I/O)	41	+3.3V	/SBO
11	/PRSNT2	RSVD	42	/SERR	GND
12	KEY	KEY	43	+3.3V	PAR
13	KEY	KEY	44	/CBE1	AD15
14	RSVD	RSVD	45	AD14	+3.3V
15	GND	/RST	46	GND	AD13
16	CLK	+5V(I/O)	47	AD12	AD11
17	GND	/GNT	48	AD10	GND
18	/REG	GND	49	M66EN	AD09
19	+5V(I/O)	RSVD	50	GND	GND
20	AD31	AD30	51	GND	GND
21	AD29	+3.3V	52	AD08	/CBE0
22	GND	AD28	53	AD07	+3.3V
23	AD27	AD26	54	+3.3V	AD06
24	AD25	GND	55	AD05	AD04
25	+3.3V	AD24	56	AD03	GND
26	/CBE3	IDSEL	57	GND	AD02
27	AD23	+3.3V	58	AD01	AD00
28	GND	AD22	59	+5V(I/O)	+5V(I/O)
29	AD21	AD20	60	/ACK64	/REQ64
30	AD19	GND	61	+5V	+5V
31	+3.3V	AD18	62	+5V	+5V

PL29 - CompactFlash Connector

50 pin CompactFlash Type I/II Socket

Pin	Signal Name	Pin	Signal Name
1	Ground	2	D03
3	D04	4	D05
5	D06	6	D07
7	/CS0	8	A10
9	/ATA SEL	10	A09
11	A08	12	A07
13	+5V	14	A06
15	A05	16	A04
17	A03	18	A02
19	A01	20	A00
21	D00	22	D01
23	D02	24	/IOCS16
25	/CD2	26	/CD1
27	D11	28	D12
29	D13	30	D14
31	D15	32	/CS1
33	/VS1	34	/IORD
35	/IOWR	36	/WE
37	INTRQ	38	+5V
39	/CSEL	40	/VS2
41	/RESET	42	IORDY
43	/INPACK	44	/REG
45	/DASP	46	/PDIAG
47	D08	48	D09
49	D10	50	Ground

PL30 – Infrared Interface (Irda)

5-way 0.1" pin header

Pin	Signal Name
1	+5V
2	No Connection
3	IRRX
4	Ground
5	IRTX

PL31 – Power Button/Soft On-Off

2-way 2mm shrouded header

Pin	Signal Name
1	Power button
2	Ground

PL32 – System RESET

2-way 2mm shrouded header

Pin	Signal Name
1	RESET signal
2	Ground

PL33 – In-System-Programming header

This connector is used at manufacturing time only.

PL34 – Ethernet LED's
4-way 0.1" pin header

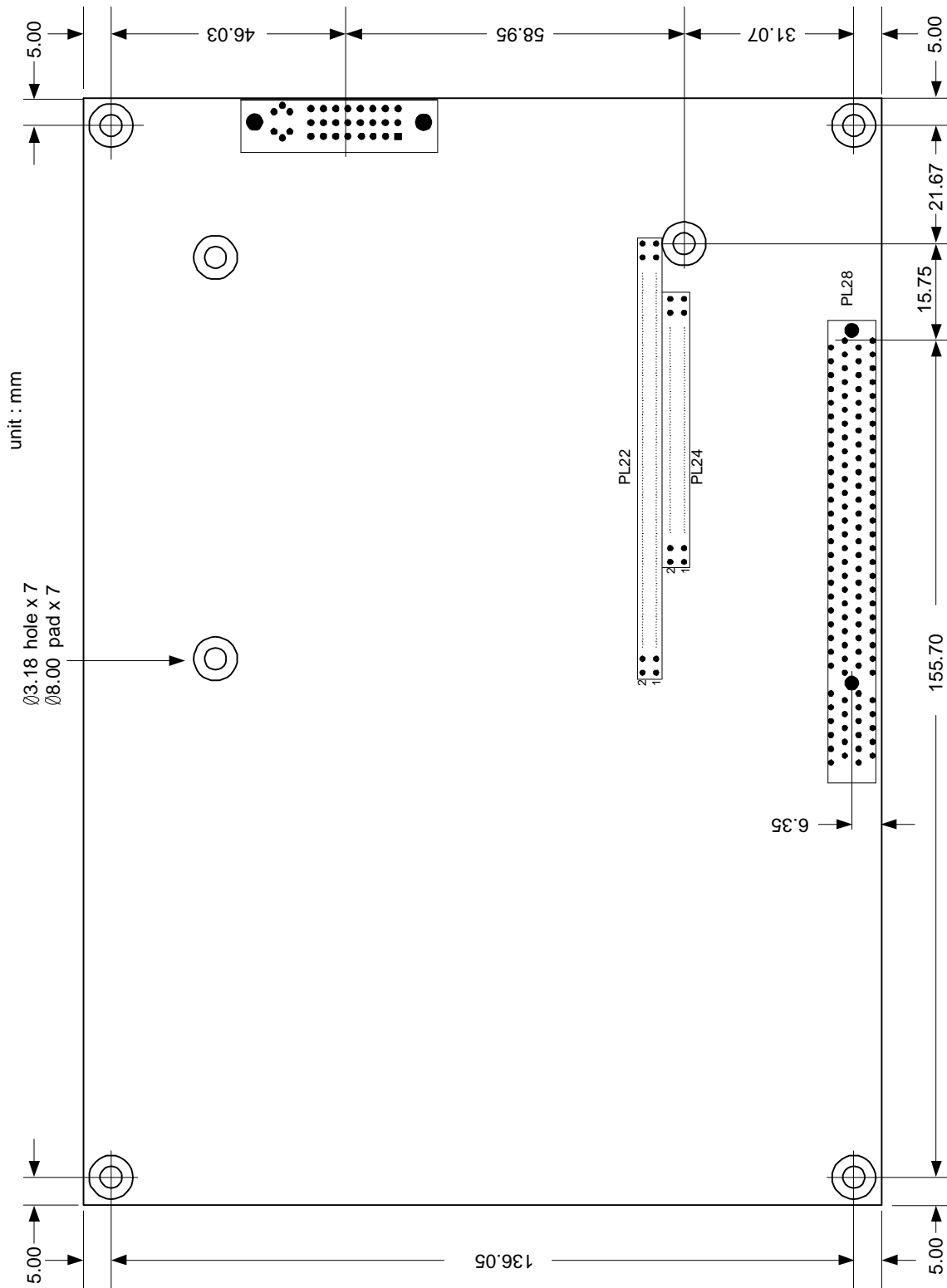
Pin	Signal Name
1	LED+, 100M
2	LED-, 100M
3	LED+, Active
4	LED-, Active

Appendix B – Specification

CPU	Intel Pentium III coppermine Intel Celeron coppermine Socket 370 FC-PGA	
Chipset	Via Technologies Inc VT8604 North Bridge VT82C686B South Bridge	
Memory	16MB, 32MB, 64MB, 128MB, 256MB, 512MB 3.3V unbuffered SDRAM Single 168 - pin DIMM Module. 8MB, 16MB and 32MB Intel Strata Flash 256K Flash BIOS EPROM	
VGA Video	S3 Savage 4 2D/3D Video Accelerator 4x AGP 2MB - 32MB Frame Buffer Digital Visual Interface DVI-I (Single Channel)	
Resolution	640x480	8/16/32
	800x600	8/16/32
	1024x768	8/16/32
	1280x1024	8
	1280x1024	16
	1280x1024	32
	1600x1200	8
	1600x1200	16
	1600x1200	32
	1920x1440	8
	1920x1440	16
Peripherals	Serial	COM1, COM2, COM3 RS232 COM4 RS232/422/485
	Parallel	SPP/EPP/ECP
	Keyboard	PS/2 Style
	Mouse	PS/2 Style
	Floppy	2 drives supported
	IDE	2 drives supported, UltraDMA 100
	CompactFlash	1 x 50 pin Type I and II CompactFlash socket.
	Audio	AC97 compatible, 4W Output
	USB	Dual channel support V1.1
	Game/MIDI	Game Port
Security Features	Tamper Detect Circuit 48-bit unique board ID	
Temperature	Operating	0° to +60° C
	Storage	0° to +85° C
Humidity	10% to 90% RH (Non-condensing)	
Real Time Clock	Accuracy +/- 1min/month	

Software	Datalight ROM-DOS operating system. Datalight FlashFX flash filing system
Power Requirements	+5V +/- 5% 5A (typical) (Celeron 533MHz fitted) +12V +/- 5% 1A (typical) +5VSB Optional
Battery	3.0V Lithium 180mAH (CR2032 Coin Cell) Maximum discharge current 5uA (Typical 3uA)
Dimensions	EBX Compatible Format 5.75" x 8.00" 146mm x 203mm
Weight	320 grams (No CPU, Heatsink or Memory)

Appendix C -Mechanical Diagram



All dimensions in mm.

Appendix D - Reference Information

Arcom Control Systems

Product information, product notices, updated drivers and support material.

24hr-Online ordering System

www.arcomcontrols.com

PC/104 Consortium

PC/104 and PC/104-Plus Specifications. Vendor information and available add on products.

www.pc104.org

PCI Special Interest Group

PCI Bus specification and list of manufacturers.

www.pcisig.org

USB Information

Universal Serial Bus (USB) Specification and product information.

www.usb.org

Intel Semiconductor

Intel Celeron and Pentium III data sheets

www.Intel.com

VIA Technologies

Apollo PL133 chipset data sheets and latest driver information

www.via.com.tw

PCISIG PCI Special Interest Group

PCI standard information

www.pcisig.com

Datalight Inc.

ROM-DOS and FlashFX information.

www.datalight.com

Award Software

BIOS documentation and support material.

www.award.com

Digital Visual Interface

Digital Display working group

www.ddwg.org

Infrared Data Association

Trade association for defining infrared standards.

www.irda.org

Appendix E – Troubleshooting

The OLYMPUS board is normally delivered 'Ready to Run' and will automatically start running and load an operating system when power is applied. Either from the on board flash memory, CompactFlash or mechanical disk drive. Once the board is running the information in this manual will provide you with guidelines and connection details for attaching peripherals and using the board.

If you are experiencing problems with a particular feature of the board, please refer to the relevant documentation to ensure that the board is configured correctly. If you are still unable to resolve the problem then contact Arcom Control Systems technical support team who will be able to offer advice and investigate the problem.

If the board does not start running when power is applied, and the display remains blank then there may be a problem with the system configuration. Follow the steps below to determine the cause of the problem:

1. Switch OFF the OLYMPUS and disconnect from the power supply. Switch ON the power supply and measure the output +5V and +12V supplies with digital voltmeter (DVM). The +5V supply should be between +4.85V and +5.25V. The +12V supply should be between +11.5V and +12.5V. If this is incorrect adjust and re-apply power to the board. If the board does not work go to step 2.
2. With the power supply connected and switched ON. Check the voltage at the power connector PL11 between pin 1 (+5V), Pin 3 (+12V) and pin 2 (GND). If either voltage is outside the tolerance in step 1, adjust the supply until it meets the specification. The board should automatically start running when the supply reaches the minimum voltage, but it is safest to switch OFF then ON again to make sure that the board starts correctly. If the board still does not work go to step 3.
3. With the power supply switched OFF remove the SDRAM module from the DIMM socket. This is located on the underside of the board. To remove the module pull the two side tabs and the module will automatically release itself. Replace the module and ensure that it is pushed into the socket. Switch the power ON and check to see if the board powers up correctly, if the board does not work go to step 4.
4. Remove any PC/104 adapter boards or PCI adapter cards plugged into the OLYMPUS. Apply power to the board and see if it starts working. If the board starts to boot check the link settings on the PC/104 boards to ensure that they do not conflict with devices on the OLYMPUS. Once the settings have been checked replace the PC/104 board and apply power. If the board continues to work switch OFF and replace any PCI cards and check operation again. If the board did not start to work go to step 5.
5. Check all link settings are in the default location as listed in the 'Links' section of this manual and remove all cables except VGA cable (or flat panel cable), keyboard cable and power supply cable. Apply power and check to see if the board starts correctly.

If you have completed all of the above steps and the board still fails to operate, then it will need to be returned to Arcom Control Systems for repair. Please contact the technical support department who will be able to give details of the returns procedure.

Appendix F – DVI Interface Board

The DVI interface on the OLYMPUS can be used to directly interface to a DVI compatible display. This display can use either the analog or digital signals to drive the display. The interface uses a standard cable that can be up to 5m long. The DVI standard has been adopted by many manufactures that provide desktop style LCD monitors. Some LCD manufacturers have also adopted this standard although this is limited to displays that are aimed at the desktop market i.e. 15 inches and above.

In order to support smaller LCD displays Arcom Control Systems have developed a DVI interface board. This board will be supplied as part of the OLYMPUS Development Kit and will be sold as a companion item to the OLYMPUS. The DVI board decodes the DVI signals and converts them to digital signals, which can be directly connected to an LCD module. The digital signals are routed to a 40-way 0.1" boxed pin header for easy connection.

The DVI interface board can be used to support TFT LCD displays from 640 x 480 to 1280 x 1024 and up to 24 bits. The board will only support displays, which are configured as 1-bit per pixel. The board provides support for both +3.3V and 5V displays and has control circuitry to provide correct power sequencing.

The DVI board contains an EEPROM that is used to store information about the attached display. This EEPROM can be reprogrammed via the DVI interface using a utility program supplied by Arcom. Sample configuration files are supplied on the OLYMPUS support CD along with the programming application. The default configuration for the EEPROM is designed to support a 640 x 480 display.

Links

The DVI interface board has two user links that can be used to alter the operation of the board. These are described below:

LK1 – Backlight Voltage selection

This link is used to select the backlight voltage supply level. This can be either +5V or +12V.

LK1	Description
+A	+5V
B	+12V

LK2 – LCD Voltage selection

This link is used to select the LCD supply voltage. This can be either +5V or +3.3V

LK2	Description
A	+5V
+B	+3.3V

Connectors

There are three connectors on the DVI interface board, these are:

PL1 – DVI-D

DVI Digital connector

Pin	Signal Name	Pin	Signal Name
1	T.M.D.S Data 2-	2	T.M.D.S Data 2+
3	Ground	4	No Connection
5	No Connection	6	DDC Clock
7	DDC Data	8	No Connection
9	T.M.D.S Data 1-	10	T.M.D.S Data 1+
11	Ground	12	No Connection
13	No Connection	14	+5V EEPROM
15	Ground	16	Hot Plug Detect
17	T.M.D.S Data 0-	18	T.M.D.S Data 0+
19	Ground	20	No Connection
21	No Connection	22	Ground
23	T.M.D.S Clock+	24	T.M.D.S Clock-
C1	No Connection	C2	No Connection
C3	No Connection	C4	No Connection
C5	No Connection		

PL2 - Flat Panel Interface

40 Way 0.1" boxed pin header

Pin	Signal Name	Pin	Signal Name
1	FPD0	2	FPD1
3	FPD2	4	FPD3
5	Ground	6	FPD4
7	FPD5	8	FPD6
9	FPD7	10	Ground
11	FPD8	12	FPD9
13	FPD10	14	FPD11
15	Ground	16	FPD12
17	FPD13	18	FPD14
19	FPD15	20	Ground
21	FPD16	22	FPD17
23	FPD18	24	FPD19
25	Ground	26	FPD20
27	FPD21	28	FPD22
29	FPD23	30	Ground
31	CLOCK	32	Ground
33	LCDPWR	34	LCDPWR
35	VSNC	36	HSYNC
37	Ground	38	DISPEN
39	BACKLIGHT	40	Ground

PL3 – Power

4 way Molex

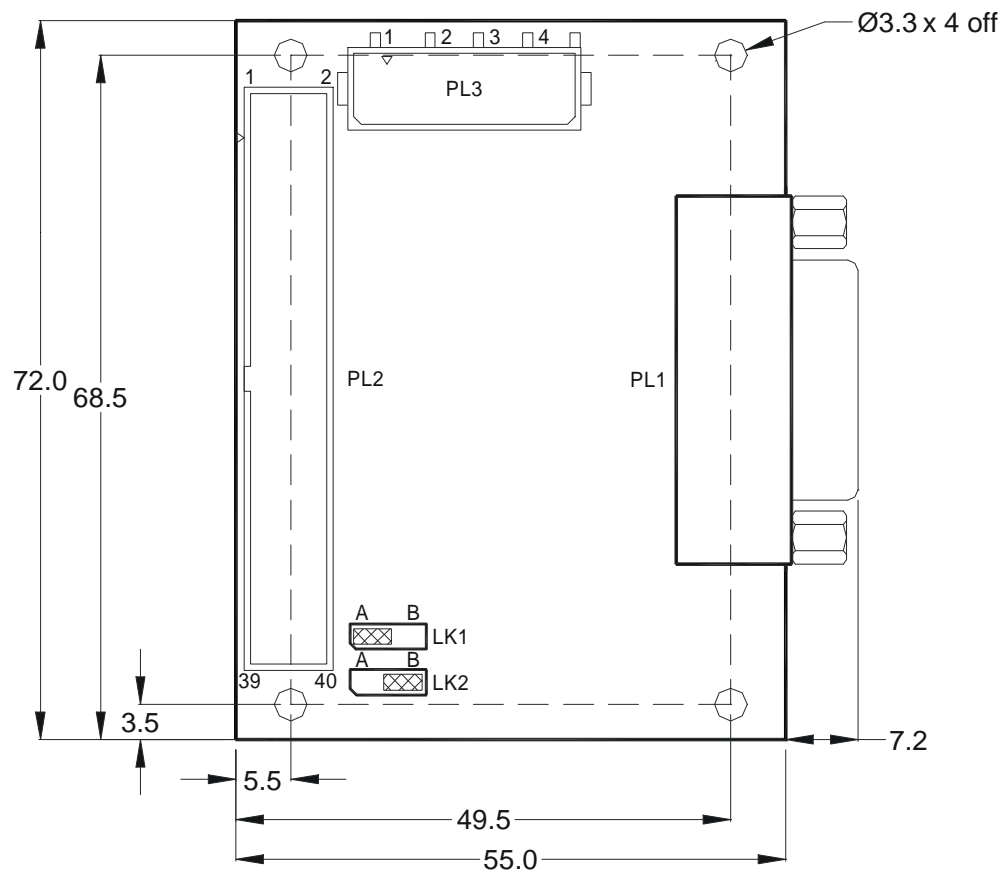
Pin	Signal Name
1	+12V
2	Ground
3	Ground
4	+5V

Note: +12V supply is used to support backlight circuit only and is not required if a +5V backlight is used.

The OLYMPUS Development Kit can be supplied with an optional 6.5" NEC 640 x 480 18-bit TFT colour display(NL6448BC20-08). If this display is supplied a suitable cable for connection to the DVI interface board is also included. The connection details for this cable are shown in the table below:

DVI Interface Board PL2	LCD Pin Number	LCD Signal Name
33	28	Power
34	29	Power
38	27	DE
35	4	VSYNC
36	3	HSYNC
31	2	SHFCLK
4	21	P3
3	20	P2
7	23	P5
6	22	P4
9	25	P7
8	24	P6
13	13	P10
14	14	P11
17	16	P13
16	15	P12
19	18	P15
18	17	P14
24	7	P19
23	6	P18
27	9	P21
26	8	P20
29	11	P23
28	10	P22
10,5,15,20,25,30,32,37,40	1,5,12,19,26	Ground

Link and Mechanical Details



All dimensions in mm.