Contents

Quick Start for Windows 95

Installing the OMB-SP232/422 in Windows 95

With the first insertion of the PC Card, Windows 95 will pop up a window:

"Windows has found new Hardware and is installing software for it"

The correct selection would be "Select from a list of alternate drivers".

The next screen displayed will be the "Select Hardware Type".

Arrow down until the "Other devices" selection is highlighted. Click OK.

Select Device ✕

Click the Other devices that matches your hardware, and then click OK. If you don't know which model you have, click OK. If you have an installation disk for this device, click Have Disk.

Mode_ls:

Unsupported Device

Have Disk...

OK   Cancel
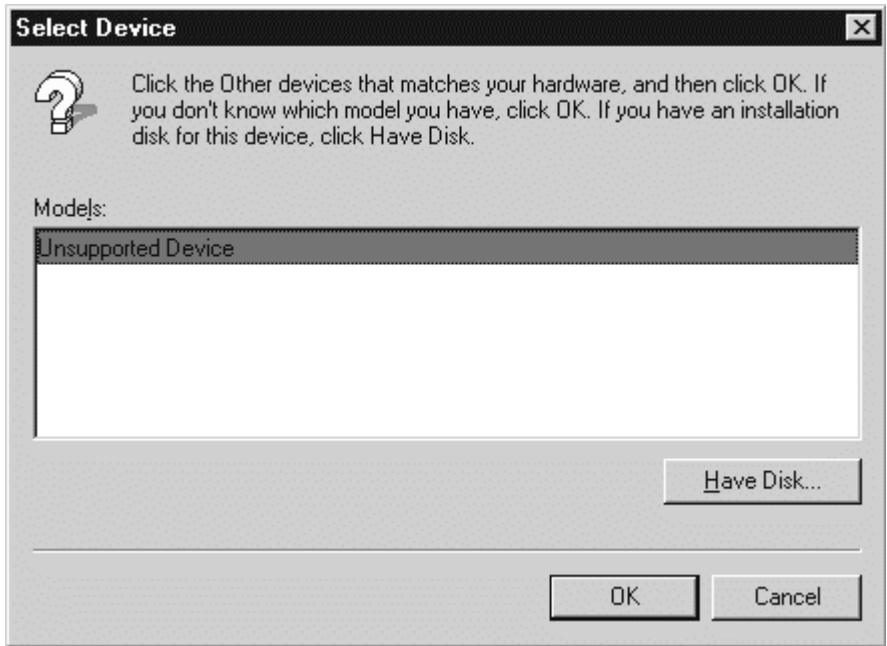
'Unsupported Device' should be highlighted, click the 'OK' command button. (Don't be alarmed by the 'Unsupported Device' moniker, Windows 95 will allocate an I/O address and IRQ for use with your OMB-SP232/422. These resources are all that is required for your interface to function properly.)

Your device is now installed in the Windows 95 registry. To change/verify the Address or IRQ, use the Windows 95 Device Manager. Every time the card is installed, after the first installation, Windows 95 assumes that you will be using it in the 'same as previous' installation and uses these settings as a default.

Windows 95 OSR2

Installing the OMB-SP232/422 under Windows 95 OSR2 is significantly different from installing the card under the Retail release of Windows 95. If the following steps are followed in the correct order, the installation is quite easy. One of the most important issues is to make sure that the user has previously installed the Windows 95 Card and Socket services. If this step has not been accomplished, it must be done first.

With the first insertion of the PC Card, Windows 95 will pop up a window:

The next Screen will prompt:

Press the Finish command button and allow the 'Wizard' to complete.
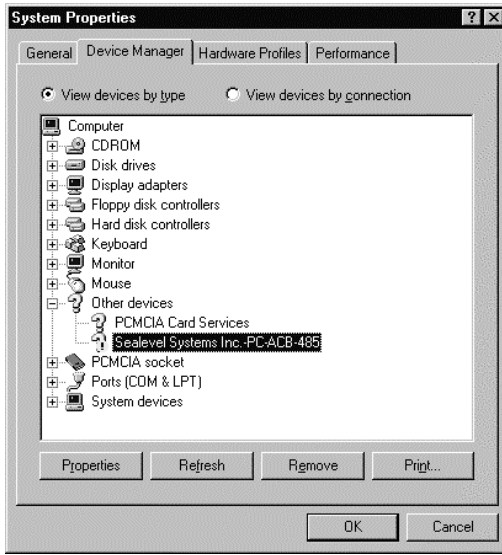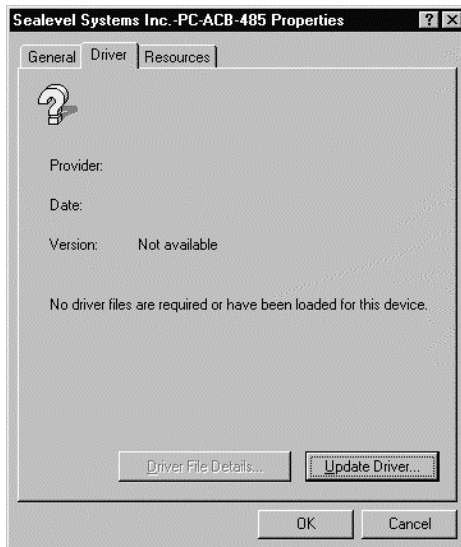
Next step is to open the 'Device manager' and select the 'Other devices' key that corresponds to your OMB-SP232/422.

After the Key opens select the 'Driver' Tab and press the 'Update Driver' command button.

When the Update Device Driver Wizard loads choose the 'No, select driver from list' option button and click the 'Next' command button.

Update Device Driver Wizard

This wizard searches your local drives, network, and Internet locations for updated drivers for:

Sealevel Systems Inc.-PC-ACB-485

If you have a disk or CD-ROM that contains updated drivers for this device, insert it now.

It is recommended that you let Windows search for an updated driver. To do this, click Next to continue.

Do you want Windows to search for the driver?

○ Yes (Recommended)

◉ No, select driver from list

< Back   Next >   Cancel

'Other devices' should be highlighted, if not scroll down until it is and click the 'Next' command button.

Update Device Driver Wizard

Select the type of device from the list below, then click Next.

Hard disk controllers
Infrared
Keyboard
Memory Technology Drivers (MTDs)
Modem
Monitor
Mouse
Multi-function adapters
Network adapters
Other detected devices
Other devices

< Back   Next >   Cancel

'Unsupported Device' should be highlighted, click the 'Finished' command button. (Don't be alarmed by the 'Unsupported Device' moniker, Windows 95 will allocate an I/O address and IRQ for use with your OMB-SP232/422. These resources are all that is required for your interface to function properly.)

Your device is now installed in the Windows 95 registry. To change/verify the Address or IRQ, use the Windows 95 Device Manager. Every time the card is installed, after the first installation, Windows 95 assumes that you will be using it in the 'same as previous' installation and uses these settings as a default.

Changing settings from the Default

Now that the **OMB-SP232/422** has been added to the system using the previous steps, the resources (i.e. I/O address and IRQ) can be changed using the following steps:

1.) Select the Control Panel folder and select the System icon.

2.) Select the Device Manager tab and click on the "+" symbol next to the "Unsupported Device" selection. Choose the port that corresponds to the **OMB-SP232/422.**

3.) Click the Properties button and then select the Resources tab.

4.) Select Basic Configuration 8, this will allow you to customize both the IRQ and I/O settings.

5.) If the message "This resource setting cannot be modified." is displayed, make sure you have selected a Base Configuration which allows this resource to be changed and that the Use Automatic Settings checkbox is not selected.

6.) When the "OK" button is pressed Windows 95 will automatically update your settings. It will not be necessary to re-boot.

Refer to the Card Setup section for tips on installing the **OMB-SP232/422** with DOS Card and Socket Services.

Introduction

Overview

Congratulations! You have now entered the world of mobile communications via the Omega Engineering **OMB-SP232/422** Serial Interface.

In the last few years, the portable and notebook market has grown by leaps and bounds. Most early laptops and notebooks handled I/O expansion through proprietary expansion slots. These slots provided limited expansion for specific peripherals such as modems and FAX peripherals. Mass storage peripherals were factory installed and could not be easily changed. Interconnectivity through local area networks offered limited performance through slow parallel port network interfaces.

During this time period two standards organizations, JEIDA and PCMCIA were working on the standardization of memory IC cards. These cards were designed as strictly non-volatile silicon storage. JEIDA was the first to propose the 68 pin connector standard for memory cards. In 1989, PCMCIA adopted the JEIDA 68 pin standard and worked with JEIDA on further developments.

As the notebook market grew, the need for a standard I/O bus was realized. The PCMCIA saw an opportunity to meet this need with an expanded version of the 68 pin interface. Further development occurred, and within one year release 2.0 of the standard was completed. Release 2.0 was a major update to Release 1.0 and included full hardware support for I/O devices. Release 2.0 coincided with JEIDA's 4.1 release and is identical.

The **OMB-SP232/422** continues the Omega Engineering tradition of an easy to use, highly reliable, and technically advanced serial I/O solution.

What's Included

The **OMB-SP232/422** is shipped with the following items. If any of these items are missing or damaged, contact the supplier.

- **OMB-SP232/422** PCMCIA Serial Interface Adapter
- DB-25 cable assembly
- Impact Resistant Carrying Case (Jewel Case)
- 3.5″ ACB Toolkit Diskette
- User Manual

Card Setup

Card and Socket Services must be loaded on the system prior to installing the **OMB-SP232/422** card. Card and Socket Services are typically supplied by the PCMCIA slot provider (i.e. the computer manufacturer or the PC adapter manufacturer).

Socket Services are the lowest level of the PCMCIA Software hierarchy. Socket Services provide a standard interface to the higher level drivers and isolate the socket controller's specific hardware details. Socket Services provide the **'BIOS'** interface to the socket controller hardware. Socket Services are typically hidden under Card Services and are rarely directly accessible by application software.

Card Services provide the interface to application software and drivers. Card Services are responsible for allocating card resources and ensuring that card resources do not interfere with other existing system resources. Card Services are typically implemented as a driver and loaded via CONFIG.SYS during boot up. Almost all PCMCIA type cards require some sort of software driver. In the case of the **OMB-SP232/422**, the generic Card Services driver supplied with the computer system should provide adequate support for most applications. If the generic Card Services are not sufficient, an **'Enabler'** is provided with the **OMB-SP232/422** that will address unique interfacing requirements (i.e. non standard I/O addressing, different IRQ selection etc.). Please refer to Appendix C for information on the SEAPC enabler and the diagnostic tool, SSEnable.

The following pages present a few examples of main stream Card and Socket Services and their implementation (including Windows 95).

Phoenix Technologies PhoenixCARD Manager Plus™

The PhoenixCARD Manager is shipped with several PC card compatible Notebook and Laptop computers, as well as IBM PCDOS 6.1.

DEVICE=C:\PCMPLUS\PCMSS.EXE
Socket Services Driver

DEVICE=C:\PCMPLUS\PCMCS.EXE /WAIT=20 /ADDR=C8 /IRQ=10 /FLASH
Card Services

DEVICE=C:\PCMPLUS\PCMMTD.EXE
Memory Technology Driver

DEVICE=C:\PCMPLUS\PCMSCD.EXE /BEEP /COM=4 /RS=4
Phoenix Super Client Driver. Generic enabler to configure I/O Cards

DEVICE=C:\PCMPLUS\PCMATA.SYS /O
ATA Fixed Disk and SRAM cards in a DOS FAT structured format

PhoenixCARD Manager Utility Programs

PCMINFO.EXE	Provides information about each PCMCIA socket and any cards that are inserted
WPCMINFO.CPL	Windows version of PCMINFO
PCMVCD.386	Windows Device Driver. Provides support for FAX and Modem Cards

SystemSoft CardSoft™ PCMCIA

SystemSoft provides PCMCIA software solutions for a number of notebook and desktop PC Card adapters.

DEVICE=C:\CARDSOFT\SS365SL.EXE /SIRM=FFFF /SKT=3
Socket Services Driver

DEVICE=C:\CARDSOFT\CS.EXE
Card Services

DEVICE=C:\CARDSOFT\CSALLOC.EXE \CARDSOFT\CSALLOC.INI
Card Services resource allocation

DEVICE=C:\CARDSOFT\CARDID.EXE C:\CARDSOFT\CARDID.INI
Generic Card enabler

CardSoft™ PCMCIA Utility

CARDINFO.EXE	Scan PC card slots and lists type and manufacture of PC CARD

Installation

Card and Socket Services must be loaded on the system prior to installing the **OMB-SP232/422** card. The PCMCIA slot provider (i.e. the computer manufacturer or the PC adapter manufacturer) typically supplies the Card and Socket Services. These Services must be installed for the **OMB-SP232/422** to operate properly. Refer to the Card Setup section of this manual and your Card and Services documentation for aid in configuring your Card and Socket Services.

Connecting the **OMB-SP232/422** to the computer requires no special technical skills. It is installed by simply sliding the card into a PCMCIA Type II compliant slot on the personal computer. The PCMCIA slot is keyed so that the **OMB-SP232/422** cannot be installed backwards or upside down. The card should install with a minimal amount of pressure. Do not force the card into the slot. Forcing the card can result in damage to the **OMB-SP232/422** or to the PCMCIA slot. After the card has been installed into the PCMCIA slot, the I/O cable should be connected to the card. The cable is keyed to prevent it from being installed incorrectly.

Technical Description

The Sealevel **OMB-SP232/422** **A**dvanced **C**ommunications **B**oard provides a PCMCIA compliant computer with one high speed Synchronous /Asynchronous port. The **OMB-SP232/422** can be used in a variety of sophisticated communications applications such as SDLC, HDLC, X.25, Bi-Synchronous, Mono-Synchronous and high speed Asynchronous.

The **OMB-SP232/422** utilizes the Zilog 85233 Enhanced Serial Communications Controller (ESCC). This chip features programmable baud rate, data format, and interrupt control. Refer to the **ESCC Technical Manual**, the **Zilog Datacom I/C Handbook** and the supplied Diskette for programming details on the ESCC chip.

Address and IRQ combinations are very flexible and information on selecting these combinations is available in your Card Services Documentation, and the supplied Diskette. Please refer to the README.DOC supplied with the **OMB-SP232/422** for any manual updates, corrections and software specific changes.

Connector Pin Assignments

RS-232 (Model OMG-SP232)

Name		Pin #	Mode
GND	Ground	7	
RX	Receive Data	3	Input
CTS	Clear To Send	5	Input
RXC	Receive Clock	17	Input
DCD	Data Carrier Detect	8	Input
TX	Transmit Data	2	Output
RTS	Request To Send	4	Output
TSET	Transmit Signal Element Timing	24	Output
DTR	Data Terminal Ready	20	Output**

** DTR is hard wired "On" or "Active"

RS-530/422/485 (OMG-SP422)

Name			Pin#	Mode
GND		Ground	7	
TDB	TX+	Transmit Positive	14	Output
TDA	TX-	Transmit Negative	2	Output
RTSB	RTS+	Request To Send Positive	19*	Output
RTSA	RTS-	Request To Send Negative	4*	Output
TSETB	TSET+	Transmit Signal Element Timing Positive.	11	Output
TSETA	TSET-	Transmit Signal Element Timing Negative	24	Output
RDB	RX+	Receive Positive	16	Input
RDA	RX-	Receive Negative	3	Input
CTSB	CTS+	Clear To Send Positive	13	Input
CTSA	CTS-	Clear To Send Negative	5	Input
RXCB	RXC+	Receive Clock Positive	9	Input
RXCA	RXC-	Receive Clock Negative	17	Input
DTRB	DTR+	Data Terminal Ready Positive	23	Output**
DTRA	DTR-	Data Terminal Ready Negitive	20	Output**

Note: The OMB-SP422 is capable of "Point To Point" RS-422/530 communications if the RTS line is asserted prior to transmitting and released after transmission (RS-485 mode). If RS-485 mode is not acceptable a simple modification can be accomplished at the factory that allows "Point to Point" communications regardless of the RTS line (like RS-232).

* These signals are only available if the RS-422/530 modification is performed at the factory.

** DTR is hard wired "On" or "Active"

Specifications

Environmental Specifications

Specification	Operating	Storage
Temperature Range	0º to 50º C (32º to 122º F)	-20º to 70º C (-4º to 158º F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Power Consumption

Supply Line	Product	Rating (mA)
+5 VDC	3610/3611	25 mA

Mean Time Between Failures (MTBF)

Greater than 150,000 hours. (Calculated)

Physical Dimensions

The **OMB-SP232/422** conforms to the physical dimensions for all PCMCIA Type 2 cards as defined in the PCMCIA specification 2.0.

Appendix A - Troubleshooting

An Advanced Communications Board Developers Toolkit Diskette is supplied with the Omega Engineering adapter and will be used in the troubleshooting procedures. By using this diskette and following these simple steps, most common problems can be eliminated without the need to call Technical Support.

1. Identify all I/O adapters currently installed in your system. This includes your on-board serial ports, controller cards, sound cards etc. The I/O addresses used by these adapters, as well as the IRQ (if any) should be identified.

2. Configure your Omega Engineering adapter so that there is no conflict with currently installed adapters. No two adapters can occupy the same I/O address

3. Make sure the Omega Engineering adapter is using a unique IRQ. While the Omega Engineering adapter does allow the sharing of IRQs, many other adapters (i.e. SCSI adapters & on-board serial ports) may not.

4. Use the supplied diskette and User Manual to verify that the Omega Engineering adapter is configured correctly. The supplied diskette contains a diagnostic program **'SSDACB'** that will verify if an adapter is configured properly. This diagnostic program is written with the user in mind and is easy to use. Refer to the \UTIL\UTIL.TXT file on the supplied diskette for detailed instructions on using **'SSDACB'**.

The next few pages identify common errors and specific remedies.

Problem: Card Services reports that the PC Card cannot be found.

Possible Cause: The PC Card internal Card Information Structure (CIS) is not being read correctly by Card Services.

Solution: Use the supplied Client enabler program **SeaPC** (see page 13) to install the PC Card.

_____

Problem: Card services or **SeaPC** successfully allocates the I/O address or IRQ but the port fails to operate.

Possible Cause: When using the I/O Client enabler program **SeaPC**, there is the possibility that the selected I/O address or Interrupt is already in use by another adapter in the system. Card services usually check for an available I/O address during installation or during the boot process. If new hardware or software is installed in the system that may cause an I/O address or IRQ conflict, Card Services may not be able to arbitrate the specified resources.

Solution: Select a different I/O address and IRQ.

_____

Problem: SeaPC will not enable the port at the specified I/O address and Interrupt.

Possible Cause: Card Services flags certain I/O addresses and Interrupts as used and will not allow other Client Enabler Driver, like SEAPC to use them.

Solution: Select a different I/O address and IRQ in the **SeaPC** setup file.

_____

Problem: The host system will not configure the card or the system shuts down after the PC Card is inserted.

Possible Cause: Host hardware may not supply enough power to the PCMCIA slot.

Solution: Check to make sure the PCMCIA slot is rated to supply enough power to the card. On some palmtop and battery powered systems, there is a specified limit to the available power a PCMCIA slot can use. In this case, try installing the card when the system is powered by the AC adapter.

_____

Problem: Card Services will not respond to card insertion events.

Possible Cause: Memory conflict, External floppy or hard disks, VGA video cards, SCSI adapters, LAN Network adapters.

Solution: Consult the Card Services documentation for instruction on memory requirements. If using DOS, it will probably be necessary to exclude a specified memory range in the CONFIG.SYS file.

_____

Problem: PC Cards that are inserted will not configure properly or Card Services reports that the card is not recognized.

Possible Cause: Memory shadowing conflicts.

Solution: Make sure that memory shadowing in the PC is disabled in the regions that memory windows are being used by the host PCMCIA adapter.

Appendix B - How To Get Assistance

Please refer to Appendix A - Troubleshooting prior to calling Technical Support.

1. Read this manual thoroughly before attempting to install the adapter in your system.

2. When calling for technical assistance, please have your user manual and current adapter settings. If possible, please have the adapter installed in a computer ready to run diagnostics.

3. Omega Engineering maintains a Home page on the Internet. Our home page address is WWW.OMEGA.COM. The latest software updates, and newest manuals are available via our FTP site that can be accessed from our home page.

4. Technical support is available Monday to Friday from 8:30 a.m. to 6:00 p.m. Eastern time. Technical support can be reached at (800) 826-6342 x2295

RETURN AUTHORIZATION MUST BE OBTAINED FROM OMEGA ENGINEERING BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING OMEGA ENGINEERING AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

Appendix C - SeaPC and SSEnable Software

SeaPC

SeaPC is a PCMCIA Version 2.0 compliant DOS client that will enable the selected PC Cards I/O address and IRQ when inserted. The **SeaPC** driver is located on the supplied diskette in the PCMCIA directory. Please refer to the DOS\PCMCIA\PCMCIA.TXT file for additional information.

Features

- Allows unique addressing and IRQ selection

- Provides the highest level of compatibility with installed systems compliant with PCMCIA standard 2.0 or higher

When should I use the enabler?

This PC Card Client Enabler is not needed in all situations. **SeaPC** should be used if one or more of the following conditions occur:

- The PCMCIA system software (Card and Socket Services) on the host computer will not configure the cards automatically.

- The PCMCIA system software on the host computer does not supply a configuration utility to allow the PC Card to be configured automatically.

- The configuration utility with the PCMCIA system software does not function properly.

SeaPC System Requirements

SeaPC was designed to operate on an IBM PC / AT or compatible computer. **SeaPC** requires approximately 3 kilobytes of free conventional memory. If **SeaPC** is loaded more than once, an additional 3 kilobytes plus buffer space is required for each resident copy. **SeaPC** may be used with memory managers and loaded into expanded memory. **SeaPC** requires MS-DOS or PC-DOS version 3.00 or higher and Card and Socket Services that are compliant with PCMCIA version 2.00 or higher.

Installation of SeaPC

Executing the Driver

SeaPC is a DOS Terminate and Stay Resident (TSR) program that can be executed from the DOS command prompt or from the AUTOEXEC.BAT file. For additional information on the AUTOEXEC.BAT file please refer to the DOS manual. When **SeaPC** is executed, a setup file must be specified on the command line.

Command Line Options

To display the available command line options, Type "**SeaPC** /?" at the DOS command prompt. The following should be displayed.

C:>**SeaPC** /?
Omega Engineering, Inc. **SeaPC** PC Card I/O Enabler Version 1.00
Omega Engineering Inc. (C) 1994. All rights reserved.

Syntax: **SeaPC** [/F:file] [/U] [/I] [/V] [/?]
        /F:[file] Where file is the configuration file
        /U   Unconditional installation
        /I   Display info on resident copies of **SeaPC** without installing the enabler
        /V   Show verbose installation information
        /?   Display command line options, inhibit driver from   loading

Note: That the /F: option is the only required command line parameter. If the setup file is not located in the default directory, the drive and path must be specified. The following section details the syntax of the setup file.

Setup File

An example setup file named **SeaPC.ini** is provided on the diskette. This file may be edited with the DOS EDIT utility. The following is the syntax for a PC Card configuration:

[card]
BaseIO = *Base I/O address*
IRQ = *Interrupt Request Signal*
Type = *Device Type*
Interface = *Electrical Interface Utilized*

Note: All items in *italics* need to be provided by the user. The following is a description of each entry in the setup file:

BaseIO	Base I/O address in Hexadecimal. Valid ranges are from 0 – 3FF Hex. Some ranges may be reserved by the PCMCIA system software or occupied by other peripherals in the host computer system.
IRQ	Interrupt Request Signal in Decimal. Valid ranges are from 2-15. Please note that some IRQs be reserved by the PCMCIA system software or occupied by other peripherals in the host computer system.
Type	Device Type. Valid option is UART for the 3600 or 3601
Interface	Electrical Interface Utilized. Valid options are RS-232, RS-422, RS-485. (In the scope of the driver, RS-422 and RS-485 are viewed as the same value.)

A semicolon (;) at the beginning of a line denotes a comment and the remainder of that line is ignored. Note the above syntax is an example for one card. Multiple cards (up to eight) may be configured using the following syntax:

;First Card
[card]
BaseIO=238
IRQ=10
Type = UART
Interface=RS-232

Using the PC Card on platforms other than ISA

Most PCMCIA systems are based on the standard PC (ISA) architecture, however in some situations it may be necessary to install the PC Card in a non ISA system (for example Micro-channel or PCI). For this reason the setup file has an additional parameter that allows pulse mode interrupts. An ISA system uses level mode interrupts which is the default setting. To enable pulse mode interrupts, add the following line to the setup file:

IRQMode = Pulse

Remember this feature will only work on a platform that supports pulse mode interrupts, and if the Card and Socket services support pulse mode interrupts.

SSEnable

SSEnable is a PCMCIA DOS only utility that will allow the use of your PC Card without loading card and socket services. The utility is provided for applications that conflict with card and socket services. Please note that this utility does NOT use Card and Socket services and greatly reduces the features of the PCMCIA card. **One very important thing to remember about SSEnable is that it does not provide 'Hot Swapping' capability for the PCMCIA socket. Hot insertion or removal of the PC Card while using SSEnable could cause damage to the PCMCIA socket and/or the card.**

Note: **SSEnable** will only work with Intel PCIC compatible socket controllers.

The command line parameters for the program are listed by typing **SSEnable** at the DOS prompt. The following are example command line entries for the **SSEnable** program:

Enable base I/O address 238 hex,-IRQ 5, -memory range d000-dffff, (which has been excluded from any memory manager and is reserved for the PC Card attribute memory) and the PC Card is in socket 1

SSEnable /b:238 /i:5 /m:d000 /s:1

To remove the configuration on socket 1 type:

SSEnable /s:1 /r

Appendix D - Electrical Interface

RS-232

Quite possibly the most widely used communication standard is RS-232. This implementation has been defined and revised several times and is often referred to as RS-232 or EIA/TIA-232. The IBM PC computer defined the RS-232 port on a 9 pin D sub connector and subsequently the EIA/TIA approved this implementation as the EIA/TIA-574 standard. This standard is defined as the *9-Position Non-Synchronous Interface between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange*. Both implementations are in wide spread use and will be referred to as RS-232 in this document. RS-232 is capable of operating at data rates up to 20 Kbps at distances less than 50 ft. The absolute maximum data rate may vary due to line conditions and cable lengths. RS-232 often operates at 38.4 Kbps over very short distances. The voltage levels defined by RS-232 range from -12 to +12 volts. RS-232 is a single ended or unbalanced interface, meaning that a single electrical signal is compared to a common signal (ground) to determine binary logic states. A voltage of +12 volts (usually +3 to +10 volts) represents a binary 0 (space) and -12 volts (-3 to -10 volts) denotes a binary 1 (mark). The RS-232 and the EIA/TIA-574 specification defines two type of interface circuits, Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). The Omega Engineering adapter is a DTE interface.

RS-422

The RS-422 specification defines the electrical characteristics of balanced voltage digital interface circuits. RS-422 is a differential interface that defines voltage levels and driver/receiver electrical specifications. On a differential interface, logic levels are defined by the difference in voltage between a pair of outputs or inputs. In contrast, a single ended interface, for example RS-232, defines the logic levels as the difference in voltage between a single signal and a common ground connection. Differential interfaces are typically more immune to noise or voltage spikes that may occur on the communication lines. Differential interfaces also have greater drive capabilities that allow for longer cable lengths. RS-422 is rated up to 10 M bps and can have cabling 4000 feet long. RS-422 also defines driver and receiver electrical characteristics that will allow 1 driver and up to 32 receivers on the line at once. RS-422 signal levels range from 0 to +5 volts. RS-422 does not define a physical connector.

RS-485

RS-485 is backwardly compatible with RS-422; however, it is optimized for partyline or multi-drop applications. The output of the RS-422/485 driver is capable of being **Active** (enabled) or **Tri-State** (disabled). This capability allows multiple ports to be connected in a multi-drop bus and selectively polled. RS-485 allows cable lengths up to 4000 feet and data rates up to 10 M bps. The signal levels for RS-485 are the same as those defined by RS-422. RS-485 has electrical characteristics that allow for 32 drivers and 32 receivers to be connected to one line. This interface is ideal for multi-drop or network environments. RS-485 tri-state driver (not dual-state) will allow the electrical presence of the driver to be removed from the line. Only one driver may be active at a time and the other driver(s) must be tri-stated. The output modem control signal RTS controls the state of the driver. Some communication software packages refer to RS-485 as RTS enable or RTS block mode transfer. RS-485 can be cabled in two ways, two wire and four wire mode. Two wire mode does not allow for full duplex communication, and requires that data be transferred in only one direction at a time. For half-duplex operation, the two transmit pins should be connected to the two receive pins (Tx+ to Rx+ and Tx- to Rx-). Four wire mode allows full duplex data transfers. RS-485 does not define a connector pin-out or a set of modem control signals. RS-485 does not define a physical connector.

RS-530

RS-530 (a.k.a. EIA-530) compatibility means that RS-422 signal levels are met, and the pin-out for the DB-25 connector is specified. The EIA (Electronic Industry Association) created the RS-530 specification to detail the pin-out, and define a full set of modem control signals that can be used for regulating flow control and line status. The RS-530 specification defines two types of interface circuits, Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). The Omega Engineering adapter is a DTE interface.

Appendix E - Compliance Notices

Federal Communications Commission Statement

FCC - This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in such case the user will be required to correct the interference at his own expense.

EMC Directive Statement

Products bearing the CE Label fulfill the requirements of the EMC directive (89/336/EEC) and of the low-voltage directive (73/23/EEC) issued by the European Commission.

To obey these directives, the following European standards must be met:

• **EN55022 Class A** - "Limits and methods of measurement of radio interference characteristics of information technology equipment"

• **EN50082-1** - "Electromagnetic compatibility - Generic immunity standard" Part 1: Residential, commercial and light industry

• **EN60950 (IEC950)** - "Safety of information technology equipment, including electrical business equipment"

Warning
This is a Class A Product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Always use cabling provided with this product if possible. If no cable is provided or if an alternate cable is required, use high quality shielded cabling to maintain compliance with FCC/EMC directives.

Warranty

Omega Engineering, Inc. warrants this product to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, Omega Engineering will, at it's option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Omega Engineering assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Omega Engineering will not be liable for any claim made by any other related party.

RETURN AUTHORIZATION MUST BE OBTAINED FROM OMEGA ENGINEERING BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING OMEGA ENGINEERING AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

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