

PC-SIO-232

User Manual | 3603



SEALEVEL®

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Introduction

Congratulations! You have now entered the world of mobile communications via the Sealevel Systems PC-SIO-232 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 seen. The PCMCIA groups 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 PC-SIO-232 continues the Sealevel Systems tradition of an easy to use, highly reliable, and technically advanced serial I/O solution.

Before You Get Started

What's Included

The PC-SIO-232 is shipped with the following items. If any of these items are missing or damaged, please contact Sealevel for replacement.

- **PC-SIO-232 PCMCIA Serial Interface Adapter**
- **DB-25 cable assembly (3603, CA164) or DB-9 cable assembly (3603-DB9)**
- **Impact Resistant Carrying Case (Jewel Case)**

Advisory Conventions



Warning

The highest level of importance used to stress a condition where damage could result to the product, or the user could suffer serious injury.



Important

The middle level of importance used to highlight information that might not seem obvious or a situation that could cause the product to fail.



Note

The lowest level of importance used to provide background information, additional tips, or other non-critical facts that will not affect the use of the product.

Card Setup

Card and Socket Services must be loaded on the system prior to installing the PC-SIO-232 card. **Card and Socket Services are supplied by the PCMCIA slot provider (i.e., the computer manufacturer or the PC adapter manufacturer). These may be in the form of a third party add-on Card and Socket service (e.g., CardSoft's CardWizard) or with your current operating system (e.g., Windows 95/98/ME/2000/XP).**

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. Almost all PCMCIA type cards require some sort of software driver. In the case of the PC-SIO-232, the generic Card Services driver supplied with the computer system should provide adequate support for most applications. A DOS 'Enabler' is also provided for older systems in which the Generic Enabler is not adequate. Please refer to [Appendix C](#) for information on the SEAPC enabler and the diagnostic tool SSEnable.

Connecting the PC-SIO-232 to the computer requires no special technical skills. In fact, it is usually done by following a few simple steps:

1. Begin by locating, selecting, and installing the correct software from the [Sealevel software driver database](#).
2. Select the **Part Number (3603)** for your adapter from the listing.
3. Select "Download Now" for the SeaCOM for Windows.' The setup file will automatically detect the operating environment and install the proper components. Next (depending on your browser) select the 'Run this program from its current location' or 'Open' option. Follow the information presented on the screens that follow.
4. Simply slide the card into a PCMCIA Type II compliant slot on the personal computer. The PCMCIA slot is keyed so that the PC-SIO-232 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 PC-SIO-232 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 also keyed to prevent it from being installed incorrectly.

Technical Description

The PC-SIO-232 provides one RS-232 serial port utilizing the 16550 UART (Universal Asynchronous Receiver Transmitter).

The PC-SIO-232 is addressable as any COM: port (e.g., COM1:, COM2:, etc.) The PC-SIO-232 provides for selectable IRQs (3,4,5,7,9,10,11,12,15). I/O address and IRQ combinations are very flexible, and information on selecting these combinations is available upon request. Please refer to the software available for the PC-SIO-232 for any manual updates, corrections, and software specific changes.

Each COM: Port requires a minimum of one block of eight I/O addresses. For example, COM1: is usually hex address 3F8. 3F8 is the base address, and the COM: ports extend through 3FF. In most applications, each COM: port will utilize one IRQ.

If you have any questions concerning the Card and Socket Services Documentation and the software setup of the PC-SIO-232, please contact Sealevel System Technical support. Refer to [Appendix B](#) for contact information.

Connector Pin Assignments for RS-232 (DB-25 and DB-9 Male)

Signal	Name	DB-25	DB-9*	Mode
GND	Ground	7	5	
TD	Transmit Data	2	3	Output
RTS	Request To Send	4	7	Output
DTR	Data Terminal Ready	20	4	Output
RD	Receive Data	3	2	Input
CTS	Clear To Send	5	8	Input
DSR	Data Set Ready	6	6	Input
CD	Carrier Detect	8	1	Input
RI	Ring Indicator	22	9	Input



These assignments meet EIA/TIA/ANSI-574 DTE for DB-9 type connector.



Please terminate any control signals that are not going to be used. The most common way to do this is connect RTS to CTS and RI. Also, connect DCD to DTR and DSR. Terminating these pins, if not used, will help insure you get the best performance from your adapter.

Specifications

Environmental Specifications

Specification	Operating	Storage
Temperature Range	0° to 70° C (32° to 158° F)	-50° to 105° C (-58° to 221° F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Manufacturing

All Sealevel Systems Printed Circuit boards are built to UL 94V0 rating and are 100% electrically tested. These printed circuit boards are solder mask over bare copper or solder mask over tin nickel.

Power Consumption

Supply Line	Product	Rating (mA)
+5 VDC	3603	25 mA

Physical Dimensions

The PC-SIO-232 conforms to the physical dimensions for all PCMCIA Type II cards as defined in the PCMCIA specification 2.0.

Appendix A – Troubleshooting

The adapter should provide years of trouble-free service. However, in the event that device appears to not be functioning incorrectly, the following tips can eliminate most common problems 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 Sealevel Systems 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 Sealevel Systems adapter is using a unique IRQ. While the Sealevel Systems adapter does allow the sharing of IRQs, many other adapters (i.e., SCSI adapters & on-board serial ports) do not.
4. Make sure the Sealevel Systems adapter is securely installed in the PC Card Slot.
5. When running DOS or Windows 3.x refer to the Sealevel Software available upon request and this User Manual to verify that the Sealevel Systems adapter is configured correctly. This software contains a diagnostic program 'SSD' which will verify if an adapter is configured properly. This diagnostic program is written with the user in mind and is easy to use
6. For Windows95/98/ME/NT/2000, the diagnostic tool '[WinSSD](#)' is installed in the SeaCOM folder on the Start Menu during the setup process. First find the ports using the Device Manager, then use 'WinSSD' to verify that the ports are functional.
7. Always use the Sealevel Systems diagnostic software when troubleshooting a problem. This will eliminate any software issues from the equation.

For additional support, please call Sealevel Systems' Technical Support, (864) 843-4343. Our technical support is free and available from 8:00AM-5:00PM Eastern Time, Monday through Friday. For email support contact: support@sealevel.com.

Appendix B – How To Get Assistance

Please refer to Troubleshooting Guide prior to calling Technical Support.

1. Begin by reading through the Trouble Shooting Guide in Appendix A. If assistance is still needed please see below.
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. Sealevel Systems provides an FAQ section on its web site. Please refer to this to answer many common questions. This section can be found at <http://www.sealevel.com/faq.htm>.
4. Sealevel Systems maintains a Home page on the Internet. Our home page address is www.sealevel.com. The latest software updates, and newest manuals are available via our FTP site that can be accessed from our home page.
5. Technical support is available Monday to Friday from 8:00 A.M. to 5:00 P.M. Eastern Time. Technical support can be reached at (864) 843-4343. For email support contact: support@sealevel.com.

RETURN AUTHORIZATION MUST BE OBTAINED FROM SEALEVEL SYSTEMS BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING SEALEVEL SYSTEMS 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 available upon your request. If you have any questions concerning the software or the drivers for the PC-SIO-232, please contact Sealevel System Technical support. Refer to [Appendix B](#) for contact 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 2.0 or higher.

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 /?
```

```
Sealevel Systems, Inc. SeaPC PC Card I/O Enabler Version 1.00
```

```
Sealevel Systems 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
```



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 available upon your request. Please contact Sealevel’s Technical Support for additional information. 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
```



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 3603
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

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 available 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. SSEnable is available upon your request. If you have any questions concerning the software for the ULTRA-PC-SIO-485 please contact Sealevel System Technical support. Refer to [Appendix B](#) for contact information.



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 or the card.

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-dfff, (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
```



SSEnable will only work with Intel PCIC compatible socket controllers

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 widespread 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) denote a binary 1 (mark). The RS-232 and the EIA/TIA-574 specification define two types of interface circuits, Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). The Sealevel Systems adapter is a DTE interface.

Appendix E – Compliance Notices

Federal Communications Commission (FCC) Statement



This equipment has been tested and found to comply with the limits for Class B 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 residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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 B** - "Limits and methods of measurement of radio interference characteristics of information technology equipment"
- **EN55024** - "Information technology equipment Immunity characteristics Limits and methods of measurement".



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.

Caution

Sealevel Systems, Inc. is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution of attachment of connecting cables and equipment other than those specified by Sealevel Systems. Such unauthorized modifications, substitutions, or attachments may void the user's authority to operate the equipment. The correction of interference caused by such unauthorized modifications, substitutions, or attachments will be the responsibility of the user.

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 directives.

Canadian Radio Interference Regulations

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet Appareil numérique de la classe B respecte toutes les exigences de Règlement sur le matériel du Canada.

Warranty

Sealevel's commitment to providing the best I/O solutions is reflected in the Lifetime Warranty that is standard on all Sealevel manufactured I/O products. We are able to offer this warranty due to our control of manufacturing quality and the historically high reliability of our products in the field. Sealevel products are designed and manufactured at its Liberty, South Carolina facility, allowing direct control over product development, production, burn-in and testing. Sealevel achieved ISO-9001:2015 certification in 2018.

Warranty Policy

Sealevel Systems, Inc. (hereafter "Sealevel") warrants that the Product shall conform to and perform in accordance with published technical specifications and shall be free of defects in materials and workmanship for the warranty period. In the event of failure, Sealevel will repair or replace the product at Sealevel's sole discretion. Failures resulting from misapplication or misuse of the Product, failure to adhere to any specifications or instructions, or failure resulting from neglect, abuse, accidents, or acts of nature are not covered under this warranty.

Warranty service may be obtained by delivering the Product to Sealevel and providing proof of purchase. Customer agrees to ensure the Product or assume the risk of loss or damage in transit, to prepay shipping charges to Sealevel, and to use the original shipping container or equivalent. Warranty is valid only for original purchaser and is not transferable.

This warranty applies to Sealevel manufactured Product. Product purchased through Sealevel but manufactured by a third party will retain the original manufacturer's warranty.

Non-Warranty Repair/Retest

Products returned due to damage or misuse and Products retested with no problem found are subject to repair/retest charges. A purchase order or credit card number and authorization must be provided in order to obtain an RMA (Return Merchandise Authorization) number prior to returning Product.

How to obtain an RMA (Return Merchandise Authorization)

If you need to return a product for warranty or non-warranty repair, you must first obtain an RMA number. Please contact Sealevel Systems, Inc. Technical Support for assistance:

Available	Monday – Friday, 8:00AM to 5:00PM EST
Phone	864-843-4343
Email	support@sealevel.com

Trademarks

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