SEALEVEL PC-SIO-850 High-Speed Serial Interface Card User Manual

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User Manual

Contents

Introduction

Congratulations! You have now entered the world of mobile communications via the Sealevel Systems PCSIO-850 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-850 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-850 is shipped with the following items. If any of these items are missing or damaged, contact the supplier.

- PC-SIO-850 PCMCIA Serial Interface Adapter
- DB-25 cable assembly (3604, CA164) or DB-9 cable assembly (3604-DB9)
- Impact Resistant Carrying Case (Jewel Case)

Advisory Conventions

	**Warning** The highest level of importance used to stress a condition where damage could result t o 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-850 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-850, 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 isn't adequate. Please refer to Appendix C for information on the SEAPC enabler and the diagnostic tool SSEnable.
Connecting the PC-SIO-850 to the computer requires no special technical skills. In fact it is usually done in as simple as two steps:

1. Follow the directions given for your operating system found on the supplied software.
2. 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-850 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-850 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.

Baud Rates and Divisors

The PC-SIO-850 is supplied with a 7.3728 MHz oscillator that effectively quadruples the data rate typically available on standard communication products. This is automatically accounted for by the Sealevel Systems advanced communication driver and the baud rates are immediately available.
When using a non-Windows application, such as DOS or Linux where the oscillator value is not selectable, the data rate desired should be divided by 4.
The following table shows some common data rates and the rates you should choose to match them if the oscillator rate is not selectable.

For this Data Rate	Choose this Data Rate
1200 bps	300 bps
2400 bps	600 bps
4800 bps	1200 bps
9600 bps	2400 bps
19.2K bps	4800 bps
57.6 K bps	9600 bps
115.2 K bps	19.2K bps
230.4K bps	57.6 K bps
460.8K bps	115.2 K bps

If your communications package allows the use of Baud rate divisors, choose the appropriate divisor from the following table:

For this Data Rate	Choose this Divisor
1200 bps	384
2400 bps	192
4800 bps	96
9600 bps	48
19.2K bps	24
38.4K bps	12
57.6K bps	8
115.2K bps	4
230.4K bps	2
460.8K bps	1

Technical Description

The PC-SIO-850 provides one RS-232 serial port utilizing the 16850 UART (Universal Asynchronous Receiver Transmitter).
The COMM+850.LPCI utilizes the 16850 UART. This chip features programmable baud rates, data format, interrupt control and industry leading 128-byte FIFOs.
The PC-SIO-850 is addressable as any COM: port (e.g. COM1:, COM2:, etc.) The PC-SIO-850 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 in the Card Services Documentation and the supplied software. Please refer to the software supplied with the PC-SIO-850 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.

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

Signal GND	Name Ground		in CO	Mode
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 connectors.


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	0º to 70º C (32º to 158º F)	-50º to 105º C (-58º to 221º 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 Requirements

Supply line	+5 VDC
Rating (mA)	25 mA

Physical Dimensions
The PC-SIO-580 conforms to the physical dimensions for all PCMCIA Type II cards as defined in the PCMCIA specifications 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, refer to the available Sealevel Software and this User Manual to verify that the Sealevel Systems adapter is configured correctly. The 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 Windows operating systems, 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 help eliminate any software issues and identify any hardware conflicts.
   If these steps do not solve your problem, please call Sealevel Systems' Technical Support, (864) 843-4343.
   Our technical support is free and available from 8:00 A.M.- 5:00 P.M., 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.asp**.
4. Sealevel Systems maintains a web page on the Internet. Our home page address is **www.sealevel.com**. The latest software updates, and newest manuals are available via our web site.
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 – 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. RS232 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 D – Compliance Notices

Federal Communications Commission (FCC) Statement

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”
- 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.

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.

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

Trademarks

Sealevel Systems, Incorporated acknowledges that all trademarks referenced in this manual are the service mark, trademark, or registered trademark of the respective company.

Documents / Resources

	SEALEVEL PC-SIO-850 High-Speed Serial Interface Card [pdf] User Manual PC-SIO-850 High-Speed Serial Interface Card, PC-SIO-850, High-Speed Serial Interface Card, Serial Interface Card, Interface Card, Card

References

- Sealevel - I/O & Computing Products, Engineering and Manufacturing
- FAQs - Sealevel