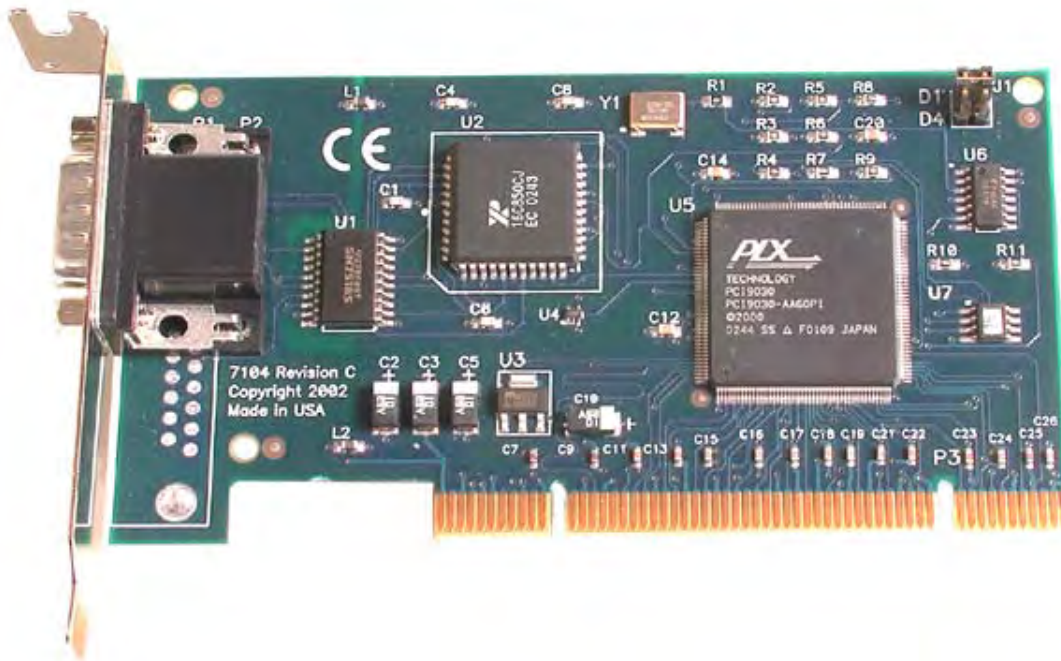




# *COMM+850.LPCI USER MANUAL*



**Part Number 7104**

Sealevel Systems, Inc.  
PO Box 830  
Liberty, SC 29657 USA

Telephone: 864.843.4343  
Fax: 864.843.3067  
[www.sealevel.com](http://www.sealevel.com)

## *Contents*

<b>INTRODUCTION</b> .....	<b>1</b>
OVERVIEW .....	1
WHAT IS INCLUDED.....	1
<b>CARD SETUP</b> .....	<b>2</b>
ADDRESS AND IRQ SELECTION .....	2
CLOCK MODES .....	2
BAUD RATES AND DIVISORS FOR THE 'D1' MODE.....	2
<b>INSTALLATION</b> .....	<b>3</b>
OPERATING SYSTEM INSTALLATION .....	3
WINDOWS 95/98/ME/NT/2000/XP.....	3
LINUX .....	3
QNX.....	3
PHYSICAL INSTALLATION.....	4
<b>TECHNICAL DESCRIPTION</b> .....	<b>5</b>
CONNECTOR PIN ASSIGNMENTS .....	5
RS-232 (DB-9 Male).....	5
<b>SPECIFICATIONS</b> .....	<b>6</b>
ENVIRONMENTAL SPECIFICATIONS .....	6
MANUFACTURING .....	6
POWER CONSUMPTION .....	6
PHYSICAL DIMENSIONS.....	6
<b>APPENDIX A - TROUBLESHOOTING</b> .....	<b>7</b>
<b>APPENDIX B - HOW TO GET ASSISTANCE</b> .....	<b>8</b>
<b>APPENDIX C - ELECTRICAL INTERFACE</b> .....	<b>9</b>
RS-232 .....	9
<b>APPENDIX D - ASYNCHRONOUS COMMUNICATIONS</b> .....	<b>10</b>
<b>APPENDIX E - SILK-SCREEN</b> .....	<b>11</b>
<b>APPENDIX F - COMPLIANCE NOTICES</b> .....	<b>12</b>
FEDERAL COMMUNICATIONS COMMISSION STATEMENT.....	12
EMC DIRECTIVE STATEMENT.....	12
<b>WARRANTY</b> .....	<b>13</b>

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## Introduction

### Overview

The Sealevel **COMM+850.LPCI** is a single channel PCI Bus serial I/O adapter. It provides one RS-232 serial port supporting data rates up to 460.8K bps. The board meets the requirements for the MD1 "Low Profile" specification as defined by PCISIG in PCI 2.2 "Low Profile Addendum." The **COMM+850.LPCI** also features Universal Bus (3.3 and 5.0V) operation.

The **COMM+850.LPCI** ships with a Low Profile PCI bracket that will only work in a Low Profile PCI slot. If you need a standard size PCI bracket, please order Item# 7104S.

### What is Included

The **COMM+850.LPCI** is shipped with the following items. If any of these items is missing or damaged, contact the supplier.

- **COMM+850.LPCI** Serial I/O Adapter
  - Item# 7104 ships with a Low Profile PCI bracket
  - Item# 7104S ships with a standard size PCI bracket
- Sealevel Software CD

## Card Setup

### Address and IRQ selection

The **COMM+850.LPCI** is automatically assigned resources by your motherboard BIOS. Only the I/O address may be modified by the user.

Adding or removing other hardware may change the assignment of I/O addresses and IRQs.

### Clock Modes

The **COMM+850.LPCI** employs a unique clocking option that allows the end user to select from divide by 4 and divide by 1 clocking modes. These modes are selected at Header J1.

To select the Baud rates commonly associated with COM: ports (i.e. 2400, 4800, 9600, 19.2, ... 115.2K bps ) place the jumper in the divide by 4 mode (silk-screen D4) position.

To select the maximum data rates up to 460.8K bps place the jumper in the divide by 1 (silk-screen D1) position. Please refer to the following page for these additional data rates.

### Baud Rates and Divisors for the 'D1' mode

The following table shows some common data rates and the rates you should choose if using the adapter in the 'D1' mode.

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	14.4K bps
115.2 K bps	28.8K 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

## Installation

### Operating System Installation

#### Windows 95/98/ME/NT/2000/XP

**Do not install the Adapter in the machine until the software has been fully installed.**

1. Start Windows.
2. Insert the Sealevel Systems CD in to your CD drive.
3. If 'Auto-Start' is enabled for this drive the software will automatically launch. Otherwise, point your browser to the 'Index.htm' on the root directory of the CD
4. Select 'Install Software'.
5. Select the Part Number for your adapter from the listing.
6. Select 'Windows 98/ME/2000/XP'. The setup file will automatically detect the operating environment and install the proper components. Next (depending on the OS version) select the 'Run this program from its current location' or 'Open' option. Follow the information presented on the screens that follow.
7. A screen may appear with the declaration: "The publisher cannot be determined due to the problems below: Authenticode signature not found." Please select the 'Yes' button and proceed with the installation. This declaration simply means that the Operating System is not aware of the driver being loaded. It will not cause any harm to your system.
8. During setup the user may specify installation directories and other preferred configurations. This program also adds entries to the system registry that are necessary for specifying the operating parameters for each driver. An uninstall option is also included to remove all registry/INI file entries from the system.

### Linux

Refer to D:\software\seacom\Other\Linux\**Linux.serial.readme** (where D: = your CDROM driver letter) found on the Sealevel Systems CD. This file contains valuable information on installing your adapter in the various Linux releases. Also in this sub-directory is the **Linux SerialHOWTO**. This series of files explains typical Linux serial implementations, as well as informing the user to Linux syntax and preferred practices.

### QNX

Refer to D:\software\seacom\Other\QNX6\**Install.readme** (where D: = your CDROM driver letter) found on the Sealevel Systems CD. This file contains valuable information on installing your adapter in the QNX6 Neutrino OS, as well as the files required to ensure a flawless implementation. Also provided on the Sealevel Systems CD are implementation instructions for QNX4. These are found in D:\software\seacom\Other\QNX4\**QNX\_COM.txt**.

## **Physical Installation**

The adapter can be installed in any PCI expansion slot and contains several jumper straps for each port that must be set for proper.

**Do not install the Adapter in the machine until the software has been fully installed.**

1. **Turn off PC power. Disconnect the power cord.**
2. Remove the PC case cover.
3. Locate an available PCI slot and remove the blank metal slot cover.
4. Gently insert the PCI adapter into the slot. Make sure that the adapter is seated properly.
5. Replace the screw. (This is required to ensure FCC Part 15 compliance.)
6. Replace the cover.
7. Connect the power cord

Installation is finished.

## Technical Description

The Sealevel Systems **COMM+850.LPCI** provides a versatile interface for any RS-232 device including modems, printers and plotters.

The **COMM+850.LPCI** utilizes the 16850 UART. This chip features programmable baud rates, data format, interrupt control and industry leading 128-byte FIFOs.

### Connector Pin Assignments

#### RS-232 (DB-9 Male)

Name	Pin #	Mode
TD Transmit Data	3	Output
RTS Request To Send	7	Output
DTR Data Term Ready	4	Output
GND Ground	5	
RD Receive Data	2	Input
DCD Data Carrier Detect	1	Input
DSR Data Set Ready	6	Input
CTS Clear To Send	8	Input
RI Ring Indicator	9	Input

**Note:** These assignments meet EIA/TIA/ANSI-574 DTE for DB-9 type connectors.

## Specifications

### Environmental Specifications

Specification	Operating	Storage
Temperature Range	0° to 50° C (32° to 122° F)	-20° to 70° C (-4° to 158° 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 U. L. 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	+12VDC	-12VDC	+5 VDC
Rating	50 mA	50 mA	300 mA

### Physical Dimensions

Board length	4.721 inches	(11.99 cm)
Board Height including Goldfingers	2.536 inches	(6.44 cm)
Board Height excluding Goldfingers	2.211 inches	(5.62 cm)



## Appendix A - Troubleshooting

Sealevel Software is supplied with the Sealevel Systems adapter and may be used in the troubleshooting procedures. Using this software and following these simple steps 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. The IRQ is typically selected by the BIOS or Operating system. Some BIOS setup software will allow changing the IRQ, but others do not. Another method of changing assigned resources is to try changing PCI slots. This will typically cause the BIOS or OS to reassign the resources.
4. Make sure the Sealevel Systems adapter is securely installed in a motherboard slot.
5. When running DOS or Windows 3.x refer to the supplied Sealevel Software and this User Manual to verify that the Sealevel Systems adapter is configured correctly. This software contains a diagnostic program 'SSD' (D:\software\seacom\Other\DOS\DIAG, where D: = the driver letter of your CDROM drive) will verify if an adapter is configured properly. This diagnostic program is written with the user in mind and is easy to use. You can use D:\software\seacom\Other\DOS\PCI\FindPCI.exe to determine resources that have been assigned to your adapter. Make sure that if available, the 'Use Plug-n-Play' option is turned '**OFF**' in your BIOS. Having this option set to '**ON**' in DOS or Windows 3.x will cause erratic operations.
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. Remember that a loopback test is not possible with the 'NE' switch turned on.
8. Always use the Sealevel Systems diagnostic software when troubleshooting a problem. This will eliminate any software issues from the equation.

-

## 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 <http://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.

**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 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 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. 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 **COMM+850.LPCI** is a DTE device.

## Appendix D - Asynchronous Communications

Serial data communications implies that individual bits of a character are transmitted consecutively to a receiver that assembles the bits back into a character. Data rate, error checking, handshaking, and character framing (start/stop bits) are pre-defined and must correspond at both the transmitting and receiving ends.

Asynchronous communications is the standard means of serial data communication for PC compatibles and PS/2 computers. The original PC was equipped with a communication or COM: port that was designed around an 8250 Universal Asynchronous Receiver Transmitter (UART). This device allows asynchronous serial data to be transferred through a simple and straightforward programming interface. A start bit, followed by a pre-defined number of data bits (5, 6, 7, or 8) defines character boundaries for asynchronous communications. The end of the character is defined by the transmission of a pre-defined number of stop bits (usually 1, 1.5 or 2). An extra bit used for error detection is often appended before the stop bits.

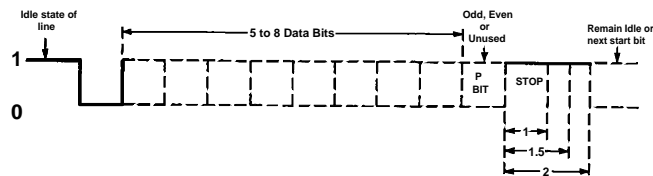
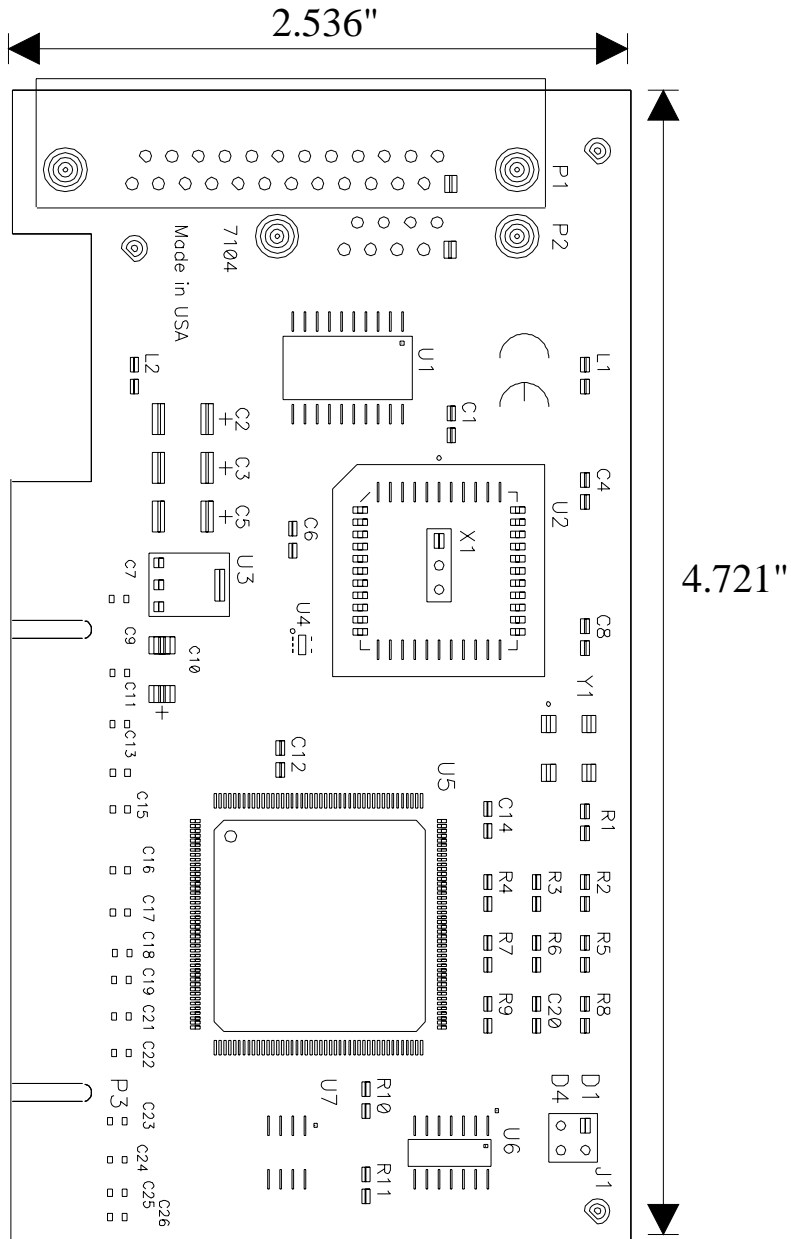


Figure 1 - Asynchronous Communications Bit Diagram

This special bit is called the parity bit. Parity is a simple method of determining if a data bit has been lost or corrupted during transmission. There are several methods for implementing a parity check to guard against data corruption. Common methods are called (E)ven Parity or (O)dd Parity. Sometimes parity is not used to detect errors on the data stream. This is referred to as (N)o parity. Because each bit in asynchronous communications is sent consecutively, it is easy to generalize asynchronous communications by stating that each character is wrapped (framed) by pre-defined bits to mark the beginning and end of the serial transmission of the character. The data rate and communication parameters for asynchronous communications have to be the same at both the transmitting and receiving ends. The communication parameters are baud rate, parity, number of data bits per character, and stop bits (i.e. 9600,N,8,1).

### Appendix E - Silk-Screen



## Appendix F - 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 the users 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".
- 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 to prevent or correct the interference.**

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



Sealevel's commitment to providing the best I/O solutions is reflected in the Lifetime Warranty that is standard on all Sealevel manufactured 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 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 life. 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 or abuse are not covered under this warranty.

Warranty service is obtained by delivering the Product to Sealevel and providing proof of purchase. **Return authorization must be obtained from Sealevel Systems before returned merchandise will be accepted. Authorization is obtained by calling Sealevel Systems and requesting a Return Merchandise Authorization (RMA) number.** The Customer agrees to insure 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.

Sealevel Systems 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. Sealevel Systems will not be liable for any claim made by any other related party.

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

**Sealevel Systems, Inc.**  
2779 Greenville Highway  
PO Box 830  
Liberty, SC 29657 USA  
(864) 843-4343 FAX: (864) 843-3067  
[www.sealevel.com](http://www.sealevel.com)  
Email: [support@sealevel.com](mailto:support@sealevel.com)

Technical Support is available from 8 a.m. to 5 p.m. Eastern time.  
Monday - Friday

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