



SeaLINK PLC-16

Users Manual



Part Number 8206

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Introduction

Overview

The **SeaLINK PLC-16** provides 8 Form C relays rated at 2A, making it suitable for latching power, data or other electronic signals for control applications. Eight optically isolated inputs are also provided to allow monitoring off board switch closures, relays or any other general purpose monitoring needs.

What's Included

The **SeaLINK PLC-16** ships with the following items. If any of these items is missing or damaged, contact the supplier.

- **SeaLINK PLC-16** Adapter
- Sealevel Software
- USB A to B Cable, Part number CA179

Installation

Windows 98/ME/2000/XP Installation

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 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 from current location' or 'Open' option. Follow the information presented on the screens that follow. 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 available to remove SeaIO files and registry/INI file entries from the system.

Windows NT Note: Windows NT is not USB aware and thus cannot support the adapter.

Technical Description

The **SeaLINK PLC-16** provides two parallel input/output (I/O) ports. The ports are organized as ports A and B. Port A is an input port interfaced to optically isolated inputs, while port B is the relay output port. The **SeaLINK PLC-16** is a line-powered device requiring a USB port capable of sourcing 500 mA.

Features

Digital Inputs

- Number of inputs: Eight.
- Type: Non-polarized, optically isolated from each other and from the computer.
- Voltage Range: 0 to 24V DC or AC.

Relay Outputs

- Number of outputs: Eight.
- Contact Rating: 2A carry current, bifurcated, gold clad, silver palladium.
- Contact Arrangement: SPDT (Single Pole Double Throw) Form C.
- Contact Resistance: Initial 100 milliohms maximum.
- Contact Life: mechanical: 10 million operations minimum.
- Contact Life: electrical: 5 million operations minimum at full load.
- Operating Time: 2 milliseconds maximum.
- Release Time: 1 milliseconds maximum.

Digital Input Port

Port A is an 8 bit input port connected to optically isolated input sensors. Each sensor can be used to interface a voltage input and sense whether the voltage is on or off. Each sensor is isolated, (with respect to a common ground), from every other sensor, and isolated with respect to the host PC ground. This means that signals such as low-level AC line voltage, motor servo voltage, and control relay signals can be 'sensed', or read by the PC, without the risk of damage due to ground loops or ground faults.

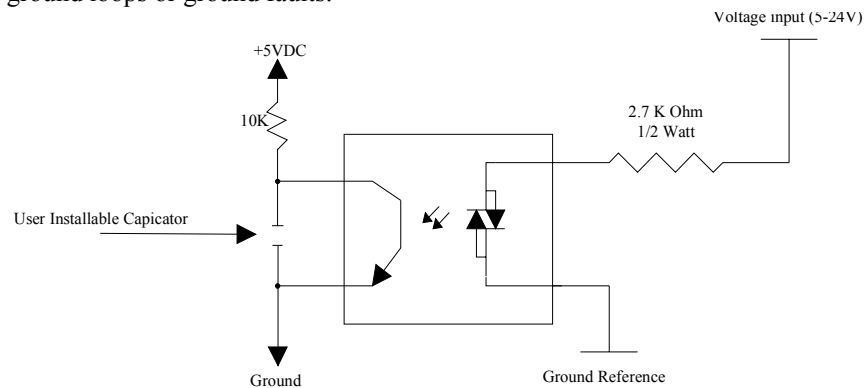


Figure 1: Input Wiring

Each sensor input pair has a current limiting resistor (2.7K ohm) that is used to limit the input current to the opto-isolator. A current path is required to 'turn-on' the sensor.

The opto-isolator has two 'back-to-back' diodes internally. This allows AC or DC signals to be sensed, regardless of polarity.

Input Voltage

The opto-isolator requires approximately 1 mA to turn on. The maximum input current is 60 mA. Adding additional resistors to the input current limiting resistor can increase the voltage to be sensed. Two things to consider when selecting additional input resistance:

1. Turn on voltage for the circuit to sense.
2. The maximum input voltage. Maximum input voltage is a function of power. The resistor must not allow the opto-isolator to be overdriven. The following formulas apply:

Turn on current: 1 mA

Isolator diode drop: 1.1 V

Resistor power Max: 1/2 W

Turn on Voltage = diode drop + (turn on current) x (resistance)

Maximum voltage = square root of (resistor value * resistor power)

Default Configuration :

Input Turn on Voltage = $1.1V \times 0.001A \times 2700\text{ohm} = 3.8 \text{ VDC}$

Current Draw = $(\text{Voltage} - 1.1)/2700$

1 mA @ 3.8 VDC

4 mA @ 12 VDC

8.5 mA @ 24 VDC

Absolute Max Voltage (Inputs) =

square root of $(2700\text{ohm} \times 0.5\text{w}) = 36\text{VDC}$

The input circuits are not for monitoring 120-volt AC circuits.

Output Port (Relay)

The **SeaLINK PLC-16** provides 8 Form C (SPDT) Electro-mechanical relays. These relays have three connections; Normally Open (NO), Normally Closed (NC) and a Common. The relays are all de-energized at power-on. Writing a logic value of one or zero will change the state. Refer to the **Application Programmers Interface** for more information. On/off status of the relays can be read back by any read operation in the API.

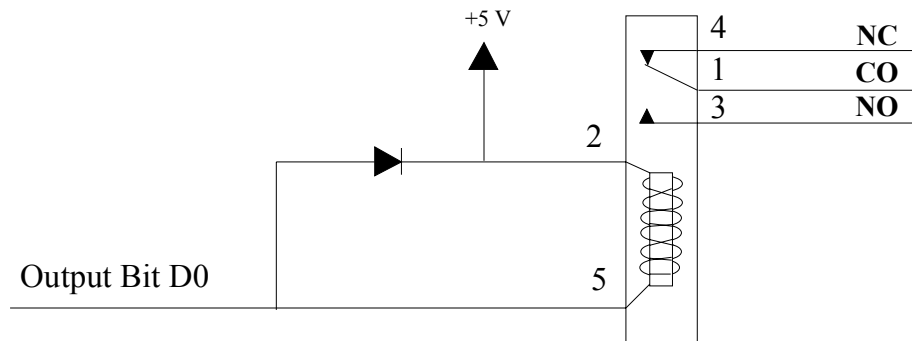


Figure 2: Output Wiring

Programming

Application Programmers Interface (API)

Most modern operating systems do not allow direct hardware access. The SeaIO driver and API have been included to provide control over the hardware in Windows. The purpose of this section of the manual is to help the customer with the mapping of the API to the actual I/O and relays for the **SeaLINK PLC-16** specifically. Complete documentation of the API can be found in the SeaI/O help file.

Serial String

Each device has an eight digit alphanumeric serial string stored in non-volatile memory. On the Windows platforms, this number is used to give each unit a separate identity. This identity allows the device to be moved to any USB port or hub port on your computer while retaining its device number. If a device becomes damaged and is replaced the new device should be given the same serial string as the device it is replacing. This string is stored in a EEPROM along with other critical information. This EEPROM is read during enumeration. The device should not be unplugged during its enumeration due to remote possibility that the data in the EEPROM could be corrupted if power is removed during a read/write cycle to the EEPROM. Enumeration is complete when the LED is lit.

The control panel utility provides the capability to read or modify this string. However, **setting the same string for two units will cause the second unit to fail enumeration, and make it invisible to the operating system.** Should this occur, unplug one unit and set the serial string for the other unit to a different string.

3rd Party Software Support

Third party software support for many HMI/MMI and other process control software is included on the product installation CD. For the most up to date information on third party software support, please visit <http://www.sealevel.com/thirdpartysoftware.asp>.

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	+5 VDC
Rating	500 mA

Appendix A - Troubleshooting

Following these simple steps can eliminate most common problems.

Install software **first**. After installing the software then proceed to adding the hardware. This places the required installation files in the correct locations.

1. Read this manual thoroughly before attempting to install the adapter in your system.
2. Use Device Manager under Windows to verify proper installation.
3. Use the SeaIO control panel applet for card identification and configuration.
4. 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 8:00AM-5PM Eastern Time Monday through Friday.

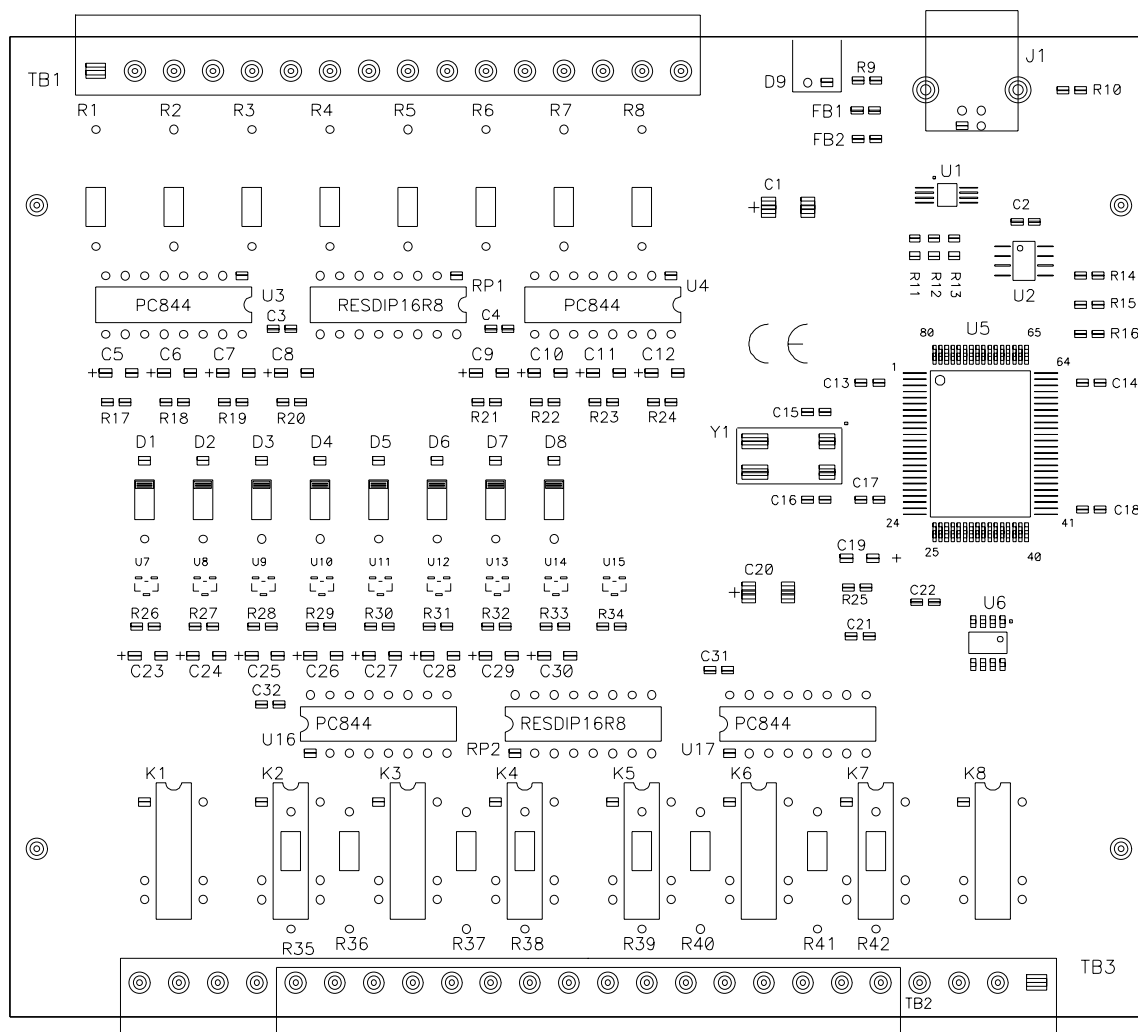
Appendix B - How To Get Assistance

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.

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 - Silk-Screen



Appendix D - 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.

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

Monday - Friday

Trademarks

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