User's Guide

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OMG-USB-232-1

Single Port RS-232 to USB Adaptor

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Servicing North America:

USA:
ISO 9001 Certified
One Omega Drive, P.O. Box 4047
Stamford CT 06907-0047
TEL: (203) 359-1660 FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Bergar
Laval (Quebec) H7L 5A1, Canada
TEL: (514) 856-6928 FAX: (514) 856-6886
e-mail: info@omega.ca

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Mexico: En Español: (001) 203-359-7803 e-mail: espanol@omega.com
FAX: (001) 203-359-7807 info@omega.com.mx

Servicing Europe:

Benelux:
Postbus 8034, 1180 LA Amstelveen, The Netherlands
TEL: +31 (0)20 3472121 FAX: +31 (0)20 6434643
Toll Free in Benelux: 0800 0993344
e-mail: sales@omegaeng.nl

Czech Republic:
Frystatska 184, 733 01 Karviná, Czech Republic
TEL: +420 (0)59 6311899 FAX: +420 (0)59 6311114
Toll Free: 0800-1-66342 e-mail: info@omegashop.cz

France:
11, rue Jacques Cartier, 78280 Guyancourt, France
TEL: +33 (0)1 61 37 29 00 FAX: +33 (0)1 30 57 54 27
Toll Free in France: 0800 466 342
e-mail: sales@omega.fr

Germany/Austria:
Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
TEL: +49 (0)7056 9398-0 FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: info@omega.de

United Kingdom:
ISO 9002 Certified
One Omega Drive, River Bend Technology Centre
Northbank, Irlam, Manchester
M44 5BD United Kingdom
TEL: +44 (0)161 777 6611 FAX: +44 (0)161 777 6622
Toll Free in United Kingdom: 0800-488-488
e-mail: sales@omega.co.uk

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Introduction

Overview

The **OMG-USB-232-1** equips the PC with 1 USB to RS-232 Asynchronous serial port providing a versatile interface for common RS-232 needs (i.e. modem, mouse and plotter). The advantage of this product over more traditional approaches is that it doesn't require opening the computer case, nor does it require resources such as I/O ports or IRQ's. It does require a system that supports USB both in terms of hardware and operating system.

What's Included

The **OMG-USB-232-1** is shipped with the following items. If any of these items is missing or damaged, contact the supplier.

- **OMG-USB-232-1** USB to RS-232 Serial I/O Adapter
- USB Cable Part Number CA179 for Connecting to Upstream Host/Hub
- Software
- User Manual

Installation

Operating System Installation

Choose **Install Software** at the beginning of the CD and select the **Serial I/O** software drivers and install **SeaCOM**.

System Installation

The screen captures below are taken from a Windows ME installation. Your particular operating system may differ slightly from what is shown based on your version of Windows.

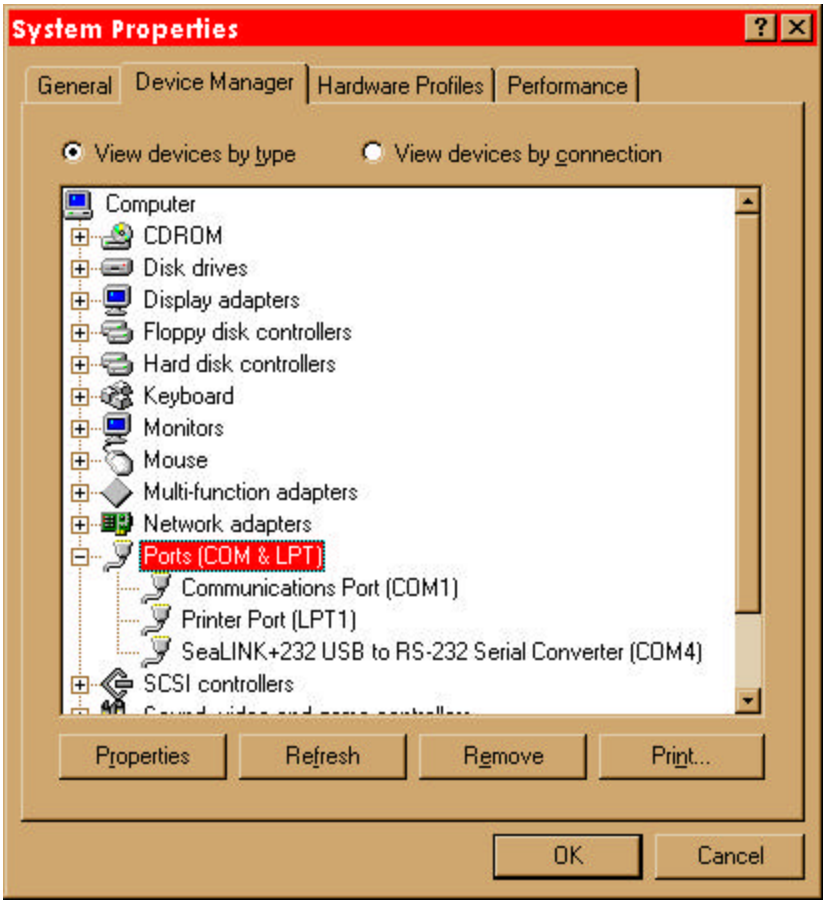
The **OMG-USB-232-1** can be connected to any Upstream Type "A" port either at the PC host or an Upstream Hub. The **OMG-USB-232-1** is hot-pluggable, meaning there is no need to power down your computer prior to installation. The **OMG-USB-232-1** requires no user hardware configuration since there are no jumpers present on the card.

1. Connect **OMG-USB-232-1** to an Upstream Host or Hub.

This indicates that the system has recognized the new device and will now proceed to locate a driver.

Since you have already installed the software by running “Setup”, simp ly click “Next” to proceed. The drivers that were installed during setup will automatically be used to configure the adapter.

Windows has now located a driver and installed the software. Click "Finish" to proceed. You should see one more "New Hardware Found", indicating the actual port being created. If you view your systems' Device Manager at this point, you should have a new "COM" port in the Ports (COM & LPT) Device Class. It should look similar to the screen shot on the following page.



You can access your new COM: port by using the assigned COM: identifier shown above. In this case, it is COM4: but this assignment will vary from system to system. At this point, the hardware is recognized. To verify operation use the supplied WinSSD diagnostic utility. WinSSD can be found in the Start, Programs group.

Technical Description

The **OMG-USB-232-1** utilizes a USB UART. This chip features programmable baud rate, data format, 128 byte Dual Port TX Buffer, and 384 byte Dual Port RX Buffer. The RS-232 transceiver supports data rates up to 460.8K baud. Refer to Appendix C for cable length limitations.

Features

- Hot-Pluggable device that doesn't require opening the case
- No system resources are required (i.e. I/O ports or IRQ's)
- LED status indicators for "USB Enabled", "TD", and "RD"

Connector Pin Assignments (DB25 Male)

Name		Pin #	Mode
TD	Transmit Data	2	Output
RTS	Request To Send	4	Output
DTR	Data Term Ready	20	Output
GND	Ground	7	
RD	Receive Data	3	Input
DCD	Data Carrier Detect	8	Input
DSR	Data Set Ready	6	Input
CTS	Clear To Send	5	Input
RI	Ring Indicator	22	Input

Note: These assignments meet EIA/TIA/ANSI-574 DTE specifications for DB-25 type connectors.

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

Manufacturing

- All 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	50 mA

Mean Time Between Failures (MTBF)

Greater than 150,000 hours. (Calculated)

Physical Dimensions

Package Length	3.8 inches	(9.66 cm)
Package Width	2.3 inches	(5.84 cm)
Package Height	1.0 inches	(2.54 cm)

Appendix A - Troubleshooting

Serial Utility test software is supplied with the adapter and will be used in the troubleshooting procedures. Using this software and following these simple steps, most common problems can be eliminated without the need to call Technical Support.

1. If your adapter isn't working, first check to make sure that USB support is enabled in the System BIOS and it is functioning properly in the operating system. This can be done by using either the Windows 98/ME or Windows 2000 Device Manager.

2. Ensure that the software has been installed on the machine so that the necessary files are in place to complete the installation.

3. When the **OMG-USB-232-1** is configured properly, the USB Enabled LED (EN) will be lit. This should allow you to use the WinSSD utility and the supplied loopback plug to check communications. The supplied loopback plug connects TD to RD. If you decide to test the Modem Control Signals, a full pin loopback plug will be required. Details on loopback plugs are included within WinSSD. Contact Omega if you need further assistance

4. When testing the **OMG-USB-232-1** in loopback mode, you should see both the TD and RD LED's flashing as well as seeing echoed data on the screen. The loopback test first transmits a HEX pattern, 55AA, and then an ASCII string of data. If this test passes, then the **OMG-USB-232-1** is ready for use in your application.

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 connected 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, accessible from our home page.
4. Technical support is available Monday through Friday from 8:30 a.m. to 6:00 p.m. Eastern time. Technical support can be reached at 1-800-DAS-IEEE,

RETURN AUTHORIZATION MUST BE OBTAINED FROM OMEGA BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING OMEGA CUSTOMER SERVICE AND REQUESTING AN AUTHORIZED RETURN (AR) 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 **OMG-USB-232-1** 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. Character boundaries for asynchronous communications are defined by a starting bit followed by a pre-defined number of data bits (5, 6, 7, or 8). 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.

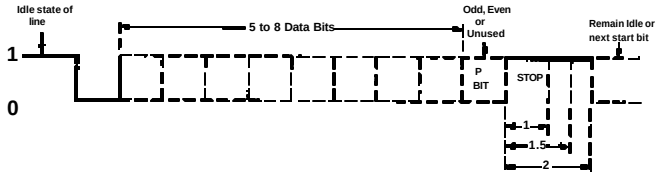


Figure 1 - Asynchronous Communications Bit Diagram

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 refereed 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 - 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 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.

EN60950 (IEC950) - 'Safety of information technology equipment, including electrical business equipment'

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 EMC directives.

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OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

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The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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