Roo232 User Guide

Revision 1.1

Introduction

Roo232 is a RS232 level-shifter for connecting a PC directly to the Roomba using the serial port. It is ideal for applications using embedded PCs such as PC104, Mini-ITX, or other SBC computers. Roo232 provides a serial interface to connect a PC directly to the Roomba through the RS232 port (usually Comm. 1). Any program that can talk to the serial port is able to send commands to the Roomba as well as receive information from it.

1. Installing the Roo232

Note: Roo232 requires a Male-2-Male 7pin mini-din cable or similar for connecting to Roomba. Roo232 does not require the installation of new drivers for use.

1. Plug Roo232 into any Comm port on your computer. To avoid damage to the part, it is recommended to use an additional DB9 cable instead of mounting Roo232 directly on the computer.
2. Note the Comm Port that Roo232 is plugged into (usually Comm 1). For Windows users, the *port number* can be found in Control Panel → System → Hardware → Device Manager → Ports. This is the port that you must use to communicate with Roomba.
3. Use a Male-to-Male DIN7 cable to connect Roo232 to Roomba.
4. You can now begin to communicate with Roomba using your PC over a serial connection.

An already available program for Roomba communication is the SCI Tester which can be found in the software section of the company webpage. Please refer to Roomba SCI documentation for information on SCI commands - http://www.roombadevtools.com/productcart/pc/docs/docs_roombasci.pdf

2. Interface

The TX and RX of the USB module on Roo232 are connected to the RX and TX pins of Roomba respectively. The user controls the TX and RX pins of the USB module through the controlling application. A falling edge on the DD pin causes Roomba activate. Figure 1 shows the block diagram of the system.

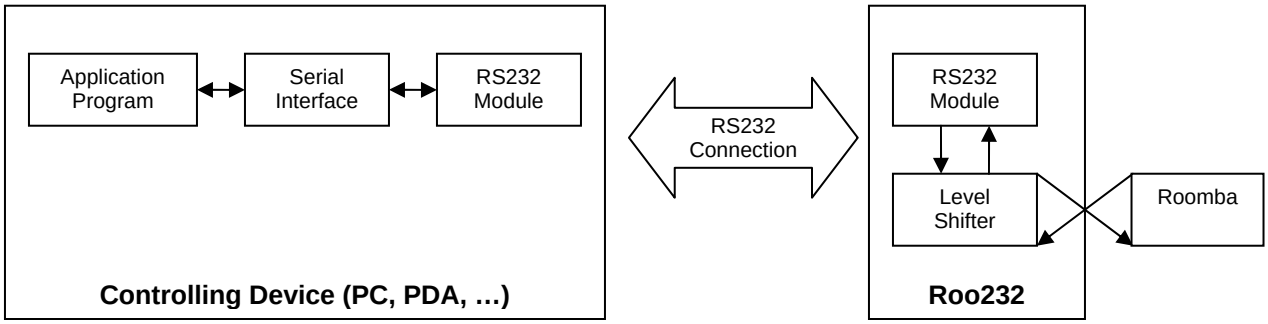

Figure 1. Block Diagram of the Roo232 System and Communication with the Controlling Application

The interface between Roo232 and Roomba is through a 5 pin connector, which connects to the 5 pins of the DIN 7 connector on the Roomba. Table 1 shows the pin map of J1 connector on the Roo232 board.

Note: The pins with the same names on Roo232 and Roomba should be directly connected together. Make sure not to switch the RXD and TXD signals or the GND and DD signals.

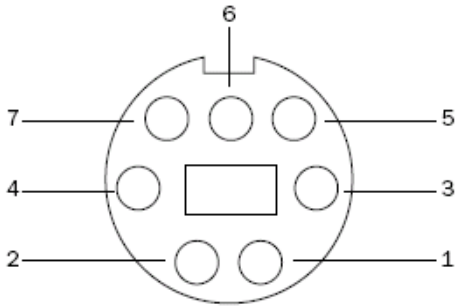

Figure 2. Pin-out connector of the Roo232. Mirrors input for SCI port. Refer to the Roomba SCI Manual for more information.

Pin #	Roo232 Signal Name	IO Direction	Explanation
1	Vpwr (15.6V)	Power In (10 – 25 V)	Unregulated Power
2	Vpwr (15.6V)	Power In (10 – 25 V)	Unregulated Power
3	TXD	Output (0 – 3.3 V)	Transmit Signal
4	RXD	Output (0 – 3.3 V)	Receive Signal
5	GND	Ground (0V)	Ground
6	GND	Ground (0V)	Ground
7	DD	Output (0 – 3.3 V)	For waking up Roomba

Table 1. Pin Map of J1 Connector on Roo232

3. Troubleshooting FAQ

Q. What commands can I send Roomba?

A. The Roomba SCI Interface includes basic functionality which makes it ideal as a robotics platform. The documentation explains the already available SCI commands that can be sent to Roomba - http://www.roombadevtools.com/productcart/pc/docs/docs_roombasci.pdf. We highly recommend you read the SCI documentation.

Q. Why doesn't Roomba respond to my commands?

A. Make sure your Roomba has the SCI (Serial Command Interface). Roombas manufactured before October 24th, 2005 do not come with the built-in SCI. To determine when your Roomba was manufactured, refer to the bar code underneath the battery of your Roomba. The following page shows how - http://www.roombadevtools.com/productcart/pc/content_docs_upgrade.asp

Q. My Roomba was manufactured before October 2005. What should I do?

A. Don't worry! Roombas may be upgraded to obtain the SCI. Both RoombaDevTools and iRobot carry *OSMO*s which enable your pre-October 2005 Roomba to have the Serial Command Interface. Refer to "Upgrading an existing Roomba with an OSMO Hacker" on the following page - http://www.roombadevtools.com/productcart/pc/content_docs_upgrade.asp to determine which OSMO is needed.

Q. Where can I find existing programs that allow me to interact with Roomba?

A. You can often find programs that people have already written under the software section of our webpage - http://www.RoombaDevTools.com. In addition, there are links to programs that other people have written in our Community Projects section. Be advised that the software and source code is provided "as is" and we do not guarantee nor warranty the software below in any manner. As such, any Telnet or similar type programs will work on any platform of your choosing. For more information on how to communicate with Roomba, please download the Roomba SCI Documentation.