

MultiCom/MV 1.0

Control RocketPort[®] Guide[™]

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Introduction

The Multicom/MV Control RocketPort Manual is a guide to assist with the Multicom/MV installation for users of the Control RocketPort hardware. Use this manual along with the instructions included with the Control Software and Documentation CD included with the hardware and the *MultiCom/MV 1.0 Software Guide for LabVIEW for Windows* to complete a successful installation of the MultiCom system.

This manual also provides hardware specific information for using the Control RocketPort hardware with MultiCom/MV. MultiCom features that are not fully supported by the hardware is noted in this manual.

Installation and Setup

MultiCom/MV version 1.0 supports the Windows 95, Windows 98, Windows NT 4.0, and Windows 2000 operating systems. The following steps are required to install the MultiCom software and configure your Control hardware.

1. Install the MultiCom software.

A setup program is provided to ensure proper software installation. To install MultiCom, run the SETUP.EXE file on the installation diskette. A program group called MultiCom/MV 1.0 for LabVIEW will be added to Windows. This group will contain an uninstall program.

The installed files are described in the *MultiCom/MV 1.0 Software Guide for LabVIEW for Windows* manual.

Note: If you are installing MultiCom/MV version 1.0 over a previous version of MultiCom, make sure that the old MCOM32.DLL file is removed from your hard disk. The installation program checks your windows and windows system directories for this file but if an older version is located in other directories, problems could result.

2. Install the Control driver for the RocketPort Hardware.

A CD from Control is included with the RocketPort hardware. Follow the instructions on the Quick Start Card that is included with the CD for instructions on installing the driver. Note that Windows 2000 does not require installation of hardware drivers as Windows 2000 contains drivers for the Control hardware.

3. Shut Down Your Computer and Install the Hardware.

Install the MultiCom hardware, including the PCI card and the 8 or 16-port panel. Upon rebooting the PC, Windows will recognize the new hardware and set it up automatically for you. You will then need to restart your computer one more time.

General Information

Understanding the MultiCom Hardware

The data buffers associated with the MultiCom/MV system are stored in the system memory of the computer. When a read or write is performed, data is read from or written to the corresponding memory location. Sizes of the buffers are controlled by the operating system and cannot be changed by the user.

RS-232 and RS-422 Communication

The options of RS-232 or RS-422 communication are chosen in hardware. For MultiCom/MV systems which have RS-422 capability, there is a switch associated with each port on the external panel. This switch determines whether the given port will use RS-232 communication or RS-422 communication. If there is no switch on the external panel, the system does not have the capability to perform RS-422 communication and can only communicate using RS-232. Please note that the 8-port Octacable system and the 16-port rack-mount system are RS-232 only.

Data Bits Support

The Control board supports either 7 or 8 data bits; the option for 5 and 6 data bits are not supported. To configure a port for 7 data bits, pass a 7 to the data bits parameter in the init VI. To select 8 data bits, pass an 8 to the init VI.

Stop Bit Support

The Control board supports either 1 or 2 stop bits; the 1.5 stop bits option is not supported. To configure a port for 1 stop bit, pass a 0 (zero) to the stop bits parameter in the init VI. To select 2 stop bits, pass a 2 to the init VI.

Parity Support

The Control board supports none, odd, and even parity. Mark and space parity are not supported. To configure a port for no parity, pass a 0 (zero) to the parity parameter in the init VI. To select odd parity, pass a 1 to the parity parameter in the init VI. To select even parity, pass a 2 to the parity parameter in the init VI.

Port Numbering

In order to remain compatible and consistent with LabVIEW, the MultiCom VIs use a zero based numbering scheme, (i.e., the first port is number zero). MultiCom includes any system ports when assigning port numbers to the ports on the Control panel. For instance, if your PC has two built-in COM ports, these would be ports 0 and 1 in MultiCom and the first Control serial port would be port 2.

If multiple boards are used, the ports will be numbered according to the slot location of the board. PCI slots are numbered in the computer. The lowest slot number will have the first set of ports, the next lowest number will have the next set of ports, and so on.

Serial Port Break VI

The break generated by the RocketPort board is a fixed time length. Although the MultiCom Serial Port Break VI includes a delay terminal for compatibility with the original LabVIEW VI, the value passed is ignored by the RocketPort board.

Handshaking Modes

All of the handshaking modes featured in the original LabVIEW VIs are supported by MultiCom.

Input Buffer Handshaking

When either hardware (RTS) or XON/XOFF handshaking is being used for receiving data, the MultiCom port signals to the sending device when it can/cannot receive additional data. The number of characters in the input buffer determines when the RTS line changes and/or when the XON and XOFF characters are sent. The Control RocketPort hardware controls when data is held off from being accepted by the receiving port and also controls when the receiving port signals the sender that it is accepting data again.

Baud Rates

The following baud rates are supported under MultiCom.

300	7,200	115,200
600	9,600	230,400
1,200	19,200	460,800
2,400	38,400	
4,800	57,600	

Note that to set a baud rate at or above 57,600 in Windows 95/98, the baud rate must be remapped in the Device Manager. Under Windows 95/98, access the Advanced option under the Board Options tab in the RocketPort properties. Using a baud rate of 460,800 requires the Scan Rate value in the Advanced Board Options to be modified. See the help text associated with this dialog box for more information.

To set the baud rate at or above 57,600 in either Windows NT or Windows 2000, the baud rate must be remapped in the Device Manager. Under Windows NT or Windows 2000, choose the Main Setup Tab and highlight the port to set the baud rate. Right click the mouse, select Properties, and modify the Override and lock baud rate to prompt to change the baud rate.

Buffer Sizes

The RocketPort board uses system memory for its buffers to store input and output data. The default size of each buffer for each port is dependent mainly upon the operating system. On a Windows 98 system with 128 MB of RAM, the default buffer size is 8192 bytes. On a Windows NT computer and a Windows 2000 computer each with 64 MB of RAM, the default buffer size is 4096 bytes. This value cannot be changed while using the Control hardware with the MultiCom software. Passing a value other than the default buffer size to the buffer size input prompts in the MultiCom Init+ VI will not change the buffer sizes.

Note: The original Serial Port Init VI will default the input and output buffer sizes to 1024 bytes if the buffer size terminal is left unwired. Keep this difference in mind if you replace an original VI with one of the MultiCom init VIs; the operation of your application may be affected.

Reads/Writes May Hang LabVIEW

The MultiCom software does not require an interrupt to run. When running with the interrupt disabled, no Windows (LabVIEW or otherwise) interaction can occur once LabVIEW enters the MultiCom code. Consequently, if you request more characters to be read than have been transmitted, the computer will wait indefinitely until the requested number of characters are read (unless a timeout is specified or an EOS character is detected). Likewise, if a write is held off due to a handshake situation, the computer will wait indefinitely until the hold off condition is released. To avoid this problem it is important to follow these guidelines:

Reads

- Use the *MultiCom Bytes at Serial Port* VI to determine the number of bytes that can be read. The proper use of this VI will also increase the execution efficiency of your code since no time will be spent in the MultiCom software waiting for data to be received.
- Use the *MultiCom Serial Port Read+* VI with timeout enabled to prevent LabVIEW from hanging if no data is available.

Writes

- Use the *MultiCom Bytes at Output Port* VI to determine if there is room in the output buffer for the new output string. The proper use of this VI will also increase the execution efficiency of your code since no time will be spent in the MultiCom software waiting for the output buffer to empty.
- Use the *MultiCom Serial Port Write+* VI with timeout enabled to prevent LabVIEW from hanging due to handshaking.

If LabVIEW hangs in one of these wait loops, press <Ctrl><Alt> followed by <Enter> to shut down LabVIEW and return to Windows.

Parity Error Byte in the Flow Control Cluster

If the high-order byte of the Parity Error Byte field in the Flow Control cluster in the serial initialization routines is non-zero, MultiCom will insert an FFh into the input buffer (not the low order byte of the Parity Error Byte field as in LabVIEW) when a parity error is detected. The low-order byte of the Parity Error Byte field is not used by MultiCom.

Moving or Uninstalling the Control Hardware

If you are running Windows 95/98 or Windows 2000 and need to move the Control card within the computer or uninstall the Control hardware, you need to uninstall the driver before physically uninstalling the card. Use the Install/Remove Software option under the Control Panel.

If you are running Windows NT, remove the RocketPort Adapter entry. This can be done before or after removing the hardware.

NOTE: If you do not uninstall the driver first when using Windows 95/98 or Windows 2000, the port numbering will be improperly configured and resetting the port numbering will require multiple changes to the registry.

Using Interrupts

The Control RocketPort is configured by default to use interrupts. An interrupt is not required to run MultiCom though. If you are using Windows NT or Windows 2000, you cannot disable the interrupt. To disable the interrupt under Windows 95/98, enter the Device Manager, open Multifunction, right click on the Control RocketPort entry, and select Properties. Under the Board Options tab, select Advanced and deselect the check box for Use IRQ.

NOTE: Disabling the interrupt in the Advanced Board Options dialog box will not free up the interrupt for use by other devices in your system. The interrupt will still be shown as used by the Control RocketPort board in the Device Manager.

How to Reach Us

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Technical support is available by e-mail, fax or voice. Phone support is available business days, 9:00 a.m. to 5:00 p.m. Eastern time.

Before calling for technical support please double check your work. When calling, it is important to have all relevant information on hand.