

MultiCom/MV 1.0

Digi AccelePort Xem[®] Guide[™]

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800 West Metro Parkway
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Printed in the U.S.A.
August 2000
Part Number: VS-MCMVDI001

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Introduction

The MultiCom/MV Digi AccelePort Xem Manual is a guide to assist with the MultiCom/MV installation for users of the Digi AccelePort Xem hardware. Use this manual along with the *Access Resource* CD from Digi International 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 Digi AccelePort Xem 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 steps to install MultiCom are dependent upon the operating system you are running. Please refer to the table below for a list of the steps required to install MultiCom and set up the Digi hardware.

Step	Windows 95/98	Windows NT	Windows 2000
1	Install MultiCom	Install MultiCom	Install MultiCom
2	Install Digi Driver	Install Hardware	Install Hardware
3	Install Hardware	Install Digi Driver	Configure HW
4	Configure HW		

Install the MultiCom Software

A setup program is provided to ensure proper MultiCom 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 folders for this file but if an older version is located in other folders, problems could result.

Install the Digi Driver for the AccelePort Xem Hardware

A CD is included with the Digi AccelePort hardware. Insert this CD and a window with several options will appear on the screen. Click on the Install Software option and select Windows NT Device Driver if you are running under Windows NT 4.0 or choose Windows 95 Device Driver if you are running either Windows 95 or Windows 98. Note that Windows 2000 does not require installation of hardware drivers as Windows 2000 contains drivers for the Digi AccelePort Xem hardware.

If using Windows NT, you must be logged on with administrator rights and add the card as a network adapter. Use the Control Panel and double click on Network. Choose the Adapter tab and select Add. Select Have Disk and enter x:\win_nt\i386 where x is the drive letter of your CD drive. Select the Digi AccelePort Xem (PCI) Adapter from the list of adapters. Then add the PORTS module that came with your system when prompted.

Install the Hardware

Install the Digi PCI card in the computer and attach the external PORTS module with the supplied cable.

Configure the Hardware

For Windows 95/98 or Windows 2000, Windows will recognize the new hardware upon rebooting and prompt you for configuration parameters. Windows NT automatically configures the card when the driver is loaded.

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 Digi AccelePort Xem hardware does not support RS-422 communication.

Data Bits Support

The Digi AccelePort Xem board supports 5, 6, 7, and 8 data bits. To configure a port for the number of data bits, pass the number of data bits desired to the data bits parameter in the init VI.

Stop Bit Support

The Digi AccelePort Xem board supports 1, 1.5, and 2 stop bits. To configure a port for 1 stop bit, pass a 0 (zero) to the stop bits parameter in the init VI. To select 1.5 stop bits, pass a 1 to the init VI. To select 2 stop bits, pass a 2 to the init VI.

Parity Support

The Digi AccelePort Xem driver supports all parity options - none, odd, even, mark, and space parity.

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 Digi AccelePort PORTS box. For instance, if your PC has two built-in COM ports, these would be ports 0 and 1 in MultiCom and the first Digi AccelePort PORTS 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.

Baud Rates

The following baud rates are supported under MultiCom.

150	2,400	28,800
300	4,800	38,400
600	9,600	57,600
1,200	14,400	115,200
1,800	19,200	

Although the Digi hardware supports 230,400 baud, MultiCom does not support this rate using this hardware.

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 Digi AccelePort Xem 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.

Buffer Sizes

The Digi AccelePort Xem 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 4096 bytes. On a Windows NT machine with 64 MB of RAM, the default buffer size is 32,767 bytes. On a Windows 2000 computer with 64 MB of RAM, the default buffer size is also 32,767 bytes. This value cannot be changed while using the Digi AccelePort Xem 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.

Reads/Writes May Hang LabVIEW

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.

Serial Port Break VI

The break generated by the Digi AccelePort Xem 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 AccelePort Xem board.

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 AccelePort Xem Hardware

If you are running Windows 95/98 or Windows 2000 and need to move the AccelePort Xem card within the computer or uninstall the AccelePort Xem 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 Digi Network 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

While the MultiCom software does not require an interrupt to run, the Digi AccelePort Xem hardware does require an interrupt. Use the Device Manager to verify there is no conflict of interrupt lines after installing the hardware.

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.