

Software Installation and Configuration Guide

Windows 95/98

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Comtrol Corporate Headquarters:

Internet URL: www.comtrol.com

email: support@comtrol.com

FTP site: [ftp.comtrol.com](ftp://comtrol.com)

FAX: (651) 631-8117

Phone: (651) 631-7654

Comtrol Europe:

Internet URL: www.comtrol.co.uk

email: support@comtrol.co.uk

FAX: +44 (0) 1 869-323-211

Phone: +44 (0) 1 869-323-220

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Introduction

Overview

The Control *RocketPort/RocketModem Software Installation and Configuration Guide* covers the following Control software products:

- RocketPort/RocketModem Windows NT Driver (6540)
- RocketPort/RocketModem Windows 95/98 Driver (6533)
- RocketPort/RocketModem Novell NetWare Driver (6535)
- RocketPort/RocketModem SCO OpenServer Driver (6543)
- RocketModem AT Command Set

Please note that these software drivers support a broad range of Control hardware products, and that both this guide and the driver you install may include features not applicable to your installation.

Each Control adapter, board, or interface comes packaged with a *Hardware Reference Card*, which covers hardware-specific installation instructions and performance characteristics. For more information about your Control product, see the *Hardware Reference Card*.

Operating System Requirements

The drivers discussed in this document work with the following operating systems:

- Microsoft Windows[®] NT (3.51, 4.0, or higher)
Note: *NT 4.0 or higher is required to support Multilink PPP. RAS or RRAS is required to support Remote Access Service. Under NT 4.0, Service Pack 3 is required to support RAS.*
 - Citrix[®] WinFrame[®] (1.7 or later)
 - Microsoft Windows[®] 95 and Windows[®] 98
 - Novell[®] NetWare[®] 3.12, 3.2, or 4.1x (with MPR 3.1A or higher and/or NetWare Connect 2.0.30 or higher)
 - Novell IntranetWare I (with NIAS and Support Pack v1.0)
 - SCO[®] OpenServer[™] (5.0.x)
-

Technical Support

Control has a staff of support technicians available to help you. U.S. and U.K. telephone support is available during business hours, Monday through Friday (holidays excluded), at the phone number(s) listed on the previous page. Before you call Control technical support, please have the following information available.

Table 1. Support Call Information

Item	Information
Product name	
Country where used	
Serial number*	
Part number**	
I/O address***	
Interrupt (IRQ)***	
Operating system type and release	
OS service pack number	
Driver version number	
Computer make, model, and speed	
Other Control products installed and their I/O addresses, if applicable	
Other serial port adapters installed and respective COM port numbers	

* *Serial numbers can be found on a printed tag on the RocketPort/RocketModem circuit board.*

** *Part numbers can be found on both the box and on a tag on the circuit board. It is a six-digit number similar to this: **96850-4**.*

*** *The I/O address is set in two places: in the DIP switch block on the circuit board, and in the driver software. The IRQ, if used, is set in the driver software only.*

Control Corporate Headquarters

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email: support@comtrol.com

FTP site: [ftp.comtrol.com](ftp://ftp.comtrol.com)

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Phone: (651) 631-7654

Control Europe

Internet URL: www.comtrol.co.uk

email: support@comtrol.co.uk

FAX: +44 (0) 1 869-323-211

Phone: +44 (0) 1 869-323-220

Software and Document Updates

For information not in this guide, see the **README** and/or online **Help** files on the installation media.

Control manuals and other documents are available in electronic form on the Control corporate headquarters (U.S.) web site. Driver software updates can be downloaded at no charge from the Control U.S. ftp site. Always check the web and ftp sites to make sure that you have the current driver and documentation.

- Control U.S. web site: <http://www.comtrol.com>
- Control U.S. ftp site: <ftp://ftp.comtrol.com>

The current released version of the software is stored in the **Rocket** directory. If a newer version has reached the beta testing stage, it can be found in the **BETA** directory. Beta software is made available on an “**as-is**” basis and users of beta software assume all risks and liabilities relating thereto.

Note: *Downloadable driver software files are stored in either zipped (filename.zip) or self-extracting zip (filename.exe) format. You must extract the zipped files before installing a downloaded file. For more information, see the appropriate section for your server operating system.*

Table 2. Device Drivers for RocketPort and RocketModem

Operating System (Level)	Part Number	RocketPort ISA	RocketPort PCI	RocketPort Plus	RocketPort 485	RocketModem
BSDI (3.0)	†	*	*			
FreeBSD 2.2+	†	*	*			
FreeBSD 3.0	†	*	*			
Linux (V1.2.0 or higher)	††	*	*			
MS-DOS (5.0 and 6.2) Int 14 & FOSSIL	6546	*	*	*	*	*
Novell (3.12 through 4.11)	6535	*	*	*		*
OS/2 (2.X and 3.X) not WARP Connect	6522††	*	*			
QNX 4.X (16- and 32-bit)	6523	*	*			
SCO OpenServer (5.0.X)	6543	*	*		*	*
SCO UNIX/Open Desktop (3.2v4.2 & 3.2v5)	6500	*				
Solaris X86 (2.4, 2.5.1, and 2.6)	6519	*				
SVR3.2 UNIX (3.2v3 and 3.2v4)	6502	*				
SVR4 UNIX (SVR4.2 and UnixWare 1.X)	6503	*				
SVR4 UNIX (UnixWare 2.1.X)	6544	*	*			
Windows 3.1 and WFWG 3.11	6536	*	*			
Windows 95/98	6533	*	*		*	*
Windows NT (3.51 and 4.0) I386	6540	*	*	*	*	*
Windows NT (3.51 and 4.0) DEC ALPHA	6540R	*	*	*	*	*

† See the README the FTP site or use the search engine on the Web site.

†† <ftp://tsx-11.mit.edu/pub/linux/packages/comtrol/comtrol-1.12.tar.gz>

Windows 95/98

Overview

Use this section to install and configure the RocketPort or RocketModem driver for the Windows 95 or Windows 98 operating systems. This driver supports the following products:

- RocketModem
- RocketPort
- RocketPort 485

Note: *The readme.txt file that is delivered with the driver may contain additional information not published in this Guide.*

For information regarding the specific capabilities of your RocketPort or RocketModem adapter, see the documentation that is packaged with each Control hardware product.

Installation Prerequisites

Before you begin installation, note the following:

1. This guide assumes that you have already installed the Windows 95 or Windows 98 operating system (OS) and that you have an understanding of OS operation. This product was developed and tested using both Windows 95 and Windows 98. These instructions were developed using Windows 95; Windows 98 prompts and screens may differ slightly.
2. The installation procedures differ depending on whether you are installing a PCI- or ISA-bus RocketPort or RocketModem. If you need help determining which type of adapter you have, see the *Hardware Installation Card* that came packaged with the adapter.
3. If this is an **initial installation** (installing the adapter and driver for the first time), go to *Installing the New Driver* on page 14 and perform the procedures listed there in the order given.
4. If you have already installed earlier Control RocketPort or RocketModem software on this system, see *Updating or Removing an Existing Driver*, below.

Updating, Disabling, or Removing the Driver

Updating from an earlier RocketPort Windows 95 Driver

If you are updating from an earlier version of the RocketPort *Windows 95* driver software, install the hardware first, then reboot the system and follow these instructions:

1. Access the **System Properties** window. (Either double-click on the Control Panel **System** icon or right-click on the **My Computer** icon and select **Properties**.)
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the RocketPort/RocketModem and click **Properties**.
5. Select the **Driver** tab.
6. Click the **Update Driver** button.
7. Follow the instructions that appear on-screen.

Upgrading from an earlier RocketPort Windows 3.1 or DOS Driver

If you are upgrading from the RocketPort *Windows 3.1* or *Windows for Workgroups* driver, you must remove the old software and activate the default drivers (**comm.driv** and **vcd.386**) before installing the Windows 95/98 driver. If you need help doing so, contact Control technical support.

Note: *This driver can co-exist with the RocketPort INT14/FOSSIL driver. For more information, see the readme file on the distribution media.*

Disabling the Windows 95/98 Device Driver

To temporarily disable the Windows 95/98 driver, follow these steps:

1. Access the **System Properties** window.
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the RocketPort/RocketModem and click **Properties**.
5. Select the **General** tab.
6. Check the **Disable in this hardware profile** box.
7. Click **OK**.
8. Restart the computer so that your changes take effect.

Removing the Windows 95/98 Device Driver

There are two parts to removing a RocketPort or RocketModem: removing the adapter, and removing the driver.

1. Access the **System Properties** window.
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the RocketPort/RocketModem to be removed and click the **Remove** button.
5. Click **OK**, then **Close**.
6. From the **Control Panel** program group, select **Add/Remove Programs**.
7. Select **Control RocketPort/RocketModem** and click **Add/Remove**.
8. Click **OK**.
9. Shut down the computer, switch off the power, and physically remove the RocketPort or RocketModem.

Note: *Removing the device driver software does not remove the Control program group. To remove the program group from the Start button menu, see the instructions for "Customizing the Start Menu" in the Windows help system.*

Removing PCI-Bus Adapters

PCI-bus I/O addresses are slot-specific. If you want to move a PCI-bus adapter from one slot to another, you must use Device Manager to remove the board first, then shut down the system, remove the adapter, and reinstall it in the new slot.

If you move or remove a PCI-bus adapter without first removing it in Device Manager, the system "thinks" the original board is still installed and you must edit the registry to correct this.

Likewise, if you remove the driver without also removing the adapter, the system will recognize the "unknown" PCI device and automatically start the Add New Hardware wizard each time the computer is rebooted.

Installing the New Driver

Follow the procedures below to install the device driver.

Note: *The installation process varies depending on whether you are installing a PCI- or ISA-bus adapter.*

Extracting the Installation Files

This driver may be shipped as a self-extracting zipped file. Before you can install the driver, you must:

1. Locate the **6533.exe** file on the distribution media, or download it from the Control ftp or web site.
2. In Windows Explorer, double-click on **6533.exe**. The self-extractor utility is started.

The utility displays the default target drive and directory where the extracted files will be placed. (For example, `c:\windows\temp`.)

3. Optionally, select a different target drive and/or directory.
4. Click the **Unzip** button.

The self-extractor utility places the extracted driver files in that directory. It also creates a subdirectory labeled **\RS485**, which contains files specific to the RocketPort 485 adapter.

When the process is finished, a reminder message is displayed. You may now close the self-extractor utility.

5. If you are installing an ISA-bus adapter, go to page 17.

Software Installation: PCI-Bus

Follow these steps to install the Windows 95/98 device driver for use with a PCI-bus RocketPort or RocketModem:

1. If you are *updating* from an earlier version of the driver, install the hardware, then use the driver update process described on page 12.

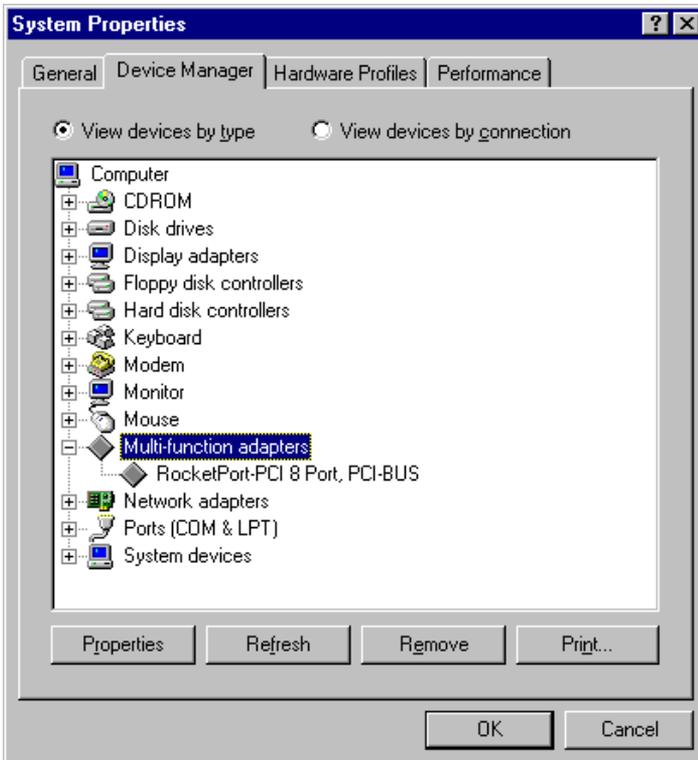
If you are *upgrading* from the Windows 3.1 or Windows for Workgroups driver, you must remove the old software before proceeding. If you need help doing so, contact Control technical support.

2. Shut down the computer and switch off the system unit power.
3. Install the PCI-bus adapter, following the instructions in the *Hardware Installation Card*.
4. Switch on the system unit and use the bootable *Diagnostics* to verify that the adapter is installed and operating correctly.

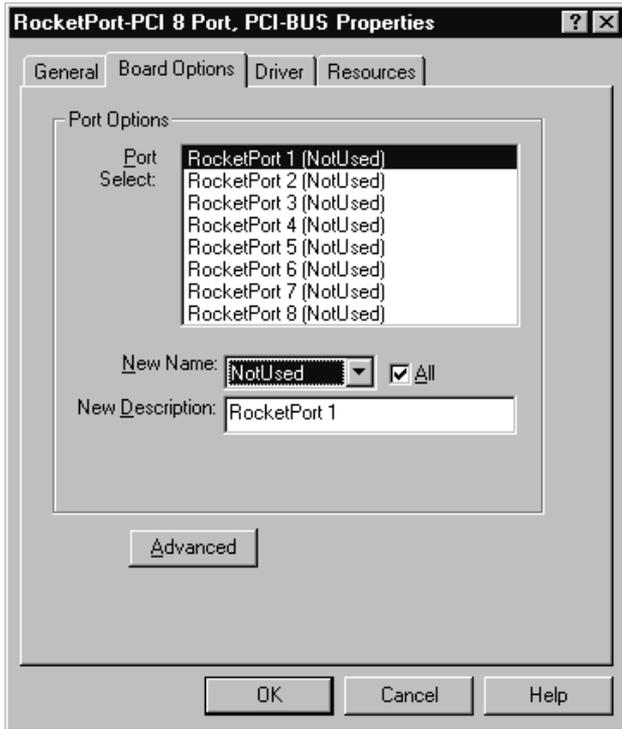
5. After the adapter passes diagnostics, remove the diagnostics diskette and reboot the computer into Windows.

The system should recognize that a new PCI-bus device has been installed and start the Add New Hardware Wizard.

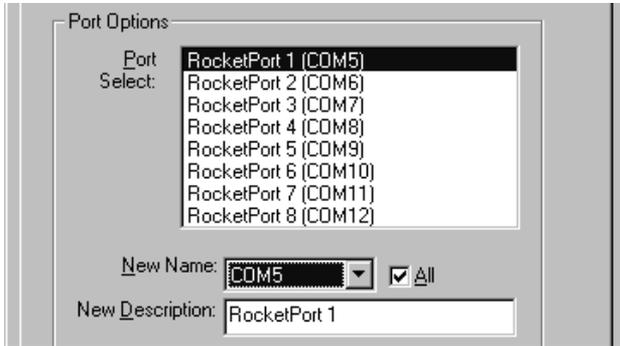
6. If you used the self-extraction process to create an installation diskette, insert the device driver diskette when prompted. Otherwise, use the **Browse** option to find the hard drive directory to which the driver files were extracted.
7. Click **Finish**.
***Note:** You may be required to re-enter the source directory. Do so until it longer requests the source directory.*
8. After the install wizard has finished installing the driver software, **right-click** on the My Computer icon and select **Properties**.
9. Select the **Device Manager** tab.
10. Select and open the **Multi-function adapters** option:



11. Select the RocketPort/RocketModem device and click the **Properties** button.
12. Select the **Board Options** tab.
13. Use the **Port Select** window to select the RocketPort/RocketModem port to configure, and the **New Name** droplist to assign a COM port number to the port.



If the **All** box is checked, all ports *after* the one you select are automatically numbered in sequence:



You can also use the **New Description** field to rename individual ports: for example, you can describe COM5 as **RocketPort 1**.

14. If desired, click the **Advanced** button to access the **Advanced Board Options** window.

For example, the **Advanced Board Options** are used to configure the driver for rates above 230.4K bps. For more information, see *Advanced Board Options*, beginning on page 22.

15. When you are done, click **OK** to exit the **Board Options** window.
16. Click **OK** to exit the **System Properties** window.
17. Reboot the system so that your changes take effect.
18. If you have installed a **RocketModem**, go to page 27.

To configure all other modems, go to page 29.

To configure serial printers, go to page 31.

Software Installation: ISA-Bus

Follow these steps to install the Windows 95/98 device driver for use with an ISA-bus **RocketPort** or **RocketModem**:

1. If you are *updating* from an earlier version of the Windows 95/98 driver, install the hardware, use the driver update process described on page 12, then update the configuration as needed.
If you are *upgrading* from the Windows 3.1 or Windows for Workgroups driver, remove the old software before proceeding. If you need help doing so, contact Control technical support.
2. Click the **Start** button, select **Settings**, then select **Control Panel**.

3. Double-click the **Add New Hardware** icon. The Add New Hardware Wizard starts.
4. Click **Next**. You are asked if you want Windows to search for new hardware



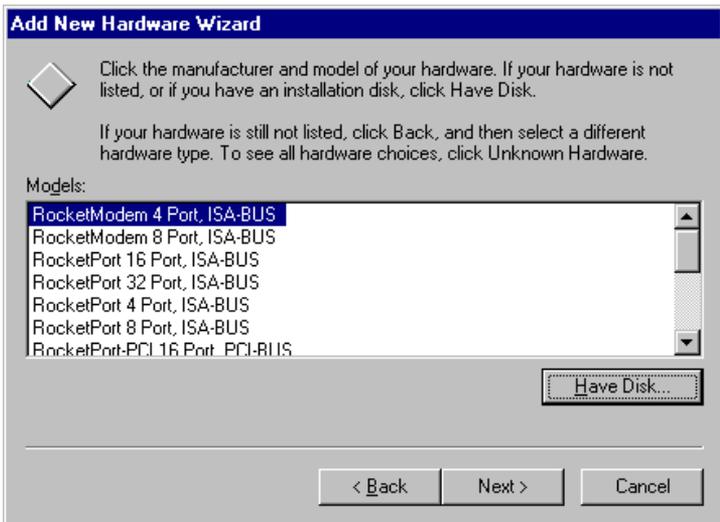
5. Click **No**, then click **Next**.

You are asked to select the type of hardware to install:

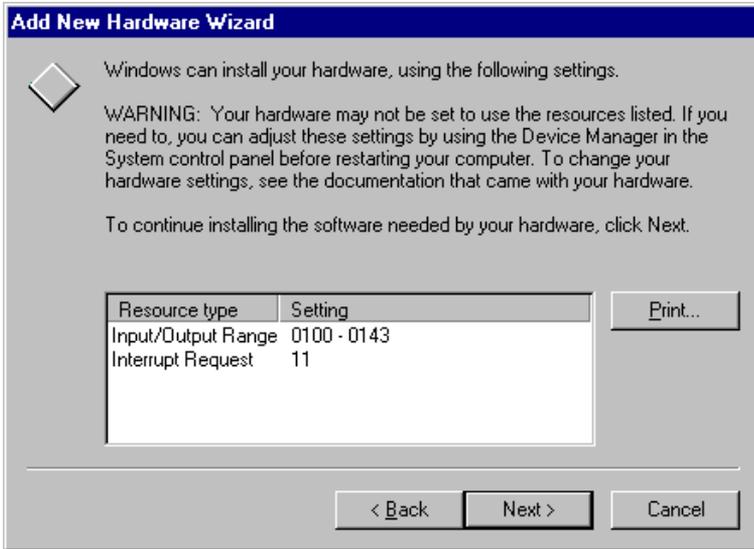


6. Select **Multi-function adapters** and click **Next**. A list of board manufacturers and models displays.
7. Click the **Have Disk** button. Then enter the drive and directory where you stored the extracted installation files and click **OK**.

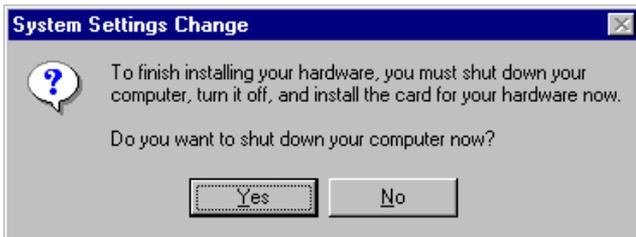
The list of products supported by this driver displays:



8. Select the Control product you are installing and click Next. The Add New Hardware Wizard selects an I/O address and IRQ setting. *Make note of these values, as you may need to change them.*



9. Click Next. The system copies the driver files and rebuilds the driver database.
10. Click Finish. The following message displays:



11. If the I/O address and interrupt selected by the system in Step 8 match those you plan to use when installing the hardware, click Yes to shut down your computer and skip to Step 12.
If the I/O address or interrupt selected in Step 8 do *not* match those you plan to use, click No, then follow these additional steps:
 - a. Access the System Properties window. (Either double-click on the Control Panel System icon, or right-click on the My Computer icon and select Properties.)
 - b. Select the Device Manager tab.

- c. Double-click on **Multi-function adapters**.
 - d. Select the **RocketPort** or **RocketModem** and click **Properties**.
 - e. Select the **Resources** tab.
 - f. Select **Input/Output Range** and click the **Change Setting** button.
 - g. Set the **Value** to the hardware I/O address you plan to use.
 - h. Optionally, select **Interrupt Request** and click the **Change Setting** button, then set the **Value** to the IRQ you plan to use.
 - i. Make sure the **Use automatic settings** checkbox is blank.
 - j. Click **OK** to return to the **Resources** tab.
 - k. Click **OK** to close the window. A warning message displays.
 - l. Click **Yes** to continue. Another message displays advising you to shut down and restart your computer.
 - m. Click **Yes**. Then shut down your computer.
12. When it is safe to do so, switch off the computer's power and install the **RocketPort** or **RocketModem**, following the instructions in the *Hardware Installation Card*.
- Note:** *Pay special attention to the I/O Address DIP switch setting. If the address you select on the hardware does not match the address selected in the software, you will need to repeat Step 11 later and shut down and reboot again.*
13. Switch on the system unit, and use the bootable *Diagnostics* supplied with the hardware to verify that the adapter is installed and operating correctly.
14. After the adapter passes diagnostics, remove the diagnostics diskette and reboot the computer under Windows. The system should recognize that new hardware has been installed and automatically find and install the software for it. Be patient; this may take some time.

When the process is complete, the system creates and displays the **Control RocketPort/RocketModem** program group:



15. Your system is now ready for use. No reboot is necessary.
 16. If desired, continue with the **Advanced Configuration** options, below.
 - To configure external modems, go to page 29.
 - To configure serial printers, go to page 31.
-

Advanced Configuration

After initial installation, use the following procedures to change RocketPort/RocketModem configuration settings.

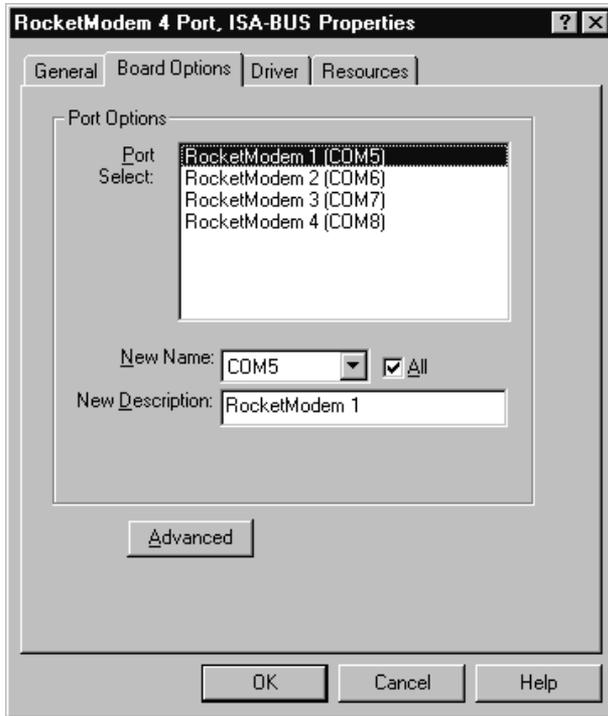
COM Port Numbering

When installing a PCI-bus RocketPort, the COM port numbers are usually set in Step 13 of the PCI installation procedure. When installing an ISA-bus RocketPort or RocketModem, the first Control port defaults to COM5 and the other ports follow in sequence.

To change the COM port number assignment, follow these steps:

1. Access the **System Properties** window. (Either double-click on the Control Panel **System** icon or right-click on the **My Computer** icon and select **Properties**.)
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the RocketPort/RocketModem and click **Properties**.
5. Select the **Board Options** tab.

Your current COM port assignment displays:



6. Use the **Port Select** window to select the RocketPort/RocketModem port you want to work with.
7. Use the **New Name** droplist to select the COM port number you want to associate with the selected port.

Note: Do not use an existing COM port number. If you do, the existing port will be disabled.

If the **All** box is checked, then all subsequent ports are numbered in sequence. If the **All** box is *not* checked, you can set the COM number for each port individually.

8. If desired, use the **New Description** field to give each port a more descriptive or meaningful name.
9. When you are done, click **OK** to return to the System Properties window.
10. Your changes take effect immediately. No restart is required.

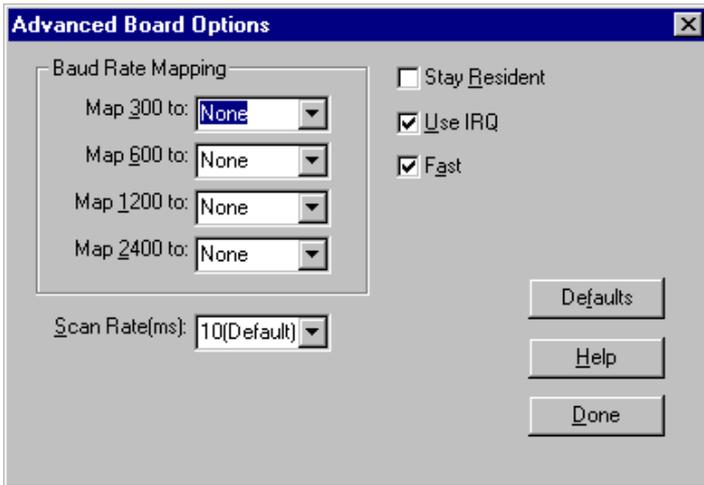
Remapping Baud Rates

This option lets you remap the 300, 600, 1200, and 2400 baud rates to more useful values. A common use of this option is to enable an application to use a higher baud rate than is otherwise available.

Once a value is placed in one of the mapped fields, whenever an application selects the mapped rate, the alternate rate is used instead. For example, if you map 300 to 115200, then select 300 baud in an application, the actual baud rate used is 115,200.

Follow these steps to remap baud rates:

1. Access the **System Properties** window. (Either double-click on the Control Panel System icon or right-click on the My Computer icon and select Properties.)
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the RocketPort/RocketModem and click **Properties**.
5. Select the **Board Options** tab.
6. Click the **Advanced** button. This window displays:



7. In the **Baud Rate Mapping** section of this window, select the rate you want to remap.
8. Use the droplist to select a new baud rate, or type in a value.

Note: See the Hardware Installation Card to determine which baud rates are supported by your RocketPort or RocketModem.

9. Repeat Steps 7 and 8 as required.
10. If mapping to a rate above 230.4K bps, set the scan rate as described below.
11. Click **Done** to save your changes and return to the Board Options window.
12. Click **OK** to return to the System Properties window.
13. Your changes take effect immediately. No restart is required.

Scan Rate: Using Baud Rates Above 230.4K bps

The **Scan Rate** option on the Advanced Board Options window is used if you are driving ports at rates above 230.4K bps. For example, to drive a RocketPort Octacable at 460.8K bps, set the Scan Rate to 5 ms.

In order to use a Scan Rate faster than 10 ms, the **Use IRQ** box must also be checked. As this is the default state of the driver, this is not normally an issue. However, see the following topic.

Installation Without a Dedicated IRQ

You can configure this driver to run without an IRQ selection. In this state the controller runs off the system timer.

To run without an IRQ, uncheck the **Use IRQ** box on this screen. (This does not free up the IRQ, but simply informs the driver not to use it.)

If you are experiencing IRQ conflicts or need to make more substantial changes, see *Changing the IRQ* on page 26.

Stay Resident

This driver is normally loaded into memory only when needed. If you check the **Stay Resident** box on this screen, the driver is forced to stay resident in memory, which can be useful for avoiding the loading and unloading process.

Note: *If the Stay Resident option is checked, you may need to restart your system before driver configuration changes take effect.*

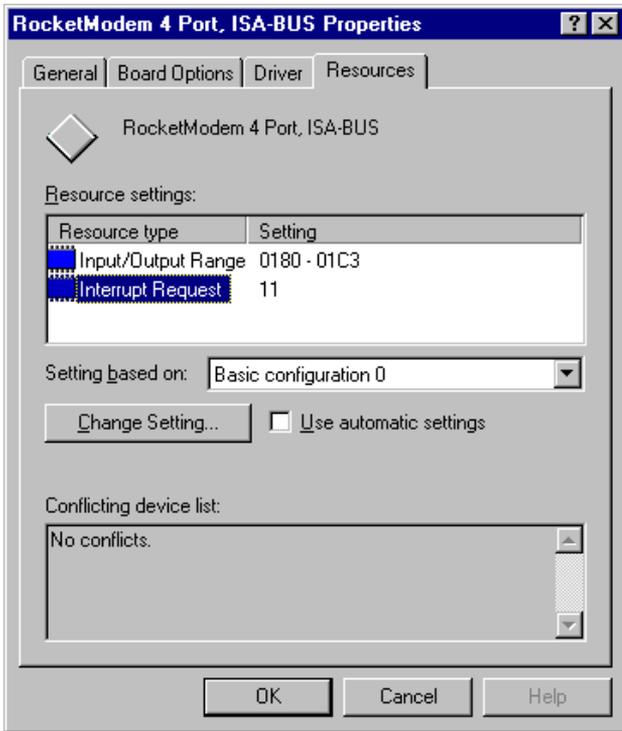
Fast

The **Fast** checkbox on the Advanced Board Options window sets output queue reporting to be based on the software buffer alone. This option is selected by default as it produces faster throughput and better efficiency. Some specialized applications may need to know precisely (down to the millisecond) when data is actually sent out the port, in which case you may need to uncheck this option.

Changing the IRQ

If you experience IRQ conflicts or need to make more substantial changes beyond disabling IRQ use, follow these steps:

1. Access the **System Properties** window.
2. Select the **Device Manager** tab.
3. Double-click on **Multi-function adapters**.
4. Select the **RocketPort/RocketModem** and click **Properties**.
5. Select the **Resources** tab.



6. Select **Interrupt Request**.
7. Click the **Change Setting** button.
8. Use the **Value** control to adjust the interrupt. The range of available options is determined by the board type. If a PCI-bus adapter is installed, you cannot change the interrupt.

If all the Control boards in the computer are ISA-bus, your options are None, 3, 4, 5, 9, 10, 11, 12, or 15.

Pay attention to the **Conflict information** window, as it displays the names of other devices using the selected interrupt.

9. Make sure the **Use automatic settings** checkbox is clear (empty).
10. Click **OK** to return to the Resources tab.

Optionally, if it is an ISA controller, select **Basic Configuration 2** to run without an interrupt.

Optionally, if it is a PCI controller, you may be able to use the System Setup Utility to allocate IRQ lines between the ISA and PCI bus. If the PCI slot does not have an IRQ assigned to it, the driver uses the system timer for its service. Use of an IRQ is strongly recommended for port speeds of 115,200 and higher.

11. Click **OK** to exit the System Properties window.
12. Reboot the system so that your changes take effect.

RocketPort 485

If you have installed one or more RocketPort 485 adapters in your computer and have configured the adapters for RS-485 operation (see the *RocketPort 485 Hardware Installation Card* for more information), read this subsection.

Note: *RS-485 operation is configured by setting jumpers on the RocketPort 485. If you have not installed at least one RocketPort 485 and configured it accordingly, do not use this option.*

This driver supports toggle-mode (toggle RTS low during transmission) RS-485.

This mode must be invoked in an application by using a custom driver call as demonstrated by the `rtty.exe` and `wcom32.exe` programs. Source is available for these files in the `\RS485` subdirectory that is created when you extract the driver files. You can get instructions for RTTY by entering `rtty` at the DOS prompt. RS-485 toggle can be invoked from a menu button in the sample version of `WCOM32`.

Adding RocketPort Cards

To add more PCI-bus adapters to an installed and working RocketPort or RocketModem installation, simply shut down the computer and install the new boards. When the computer is switched on again, it recognizes the new boards and installs driver software for each port automatically.

To add more ISA-bus adapters to an existing installation, follow these steps:

1. Click the **Start** button, select **Settings**, then select **Control Panel**.
2. Double-click the **Add New Hardware** icon. The **Add New Hardware Wizard** starts.
3. Click **Next**. You are asked if you want Windows to search for new hardware.
4. Click **No**, then click **Next**. You are asked to select the type of hardware to install.
5. Select **Multi-function adapters** and click **Next**. A list of board manufacturers and models is displayed.
6. Select **Control**. Then select the model of **RocketPort** or **RocketModem** you are installing.
7. Click **Next**. The install wizard selects an available I/O address and IRQ setting.
8. Click **Next**.
9. Click **Finish**.
10. Click **Yes** to shut down your computer. Turn off the power.
11. Set the I/O address DIP switches as described in the *Hardware Installation Card*.
12. Install the new adapter.
13. Switch the computer back on and use the bootable diagnostic to verify that the board is installed and operating correctly.
14. After the board passes diagnostics, remove the diagnostic disk from the drive and reboot the system into Windows.
15. Reset the board basic configuration:
 - a. Access the **System Properties** window. (Either double-click on the **Control Panel System** icon, or right-click on the **My Computer** icon and select **Properties**.)
 - b. Select the **Device Manager** tab.
 - c. Double-click on **Multi-function adapters**.
 - d. Select the new **RocketPort/RocketModem** and click **Properties**.
 - e. Select the **Resources** tab.
 - f. Set "Setting Based on" to **Basic Configuration 1**.
 - g. Click **OK** to close the window. A warning message is displayed.
 - h. Click **Yes** to continue. Another message is displayed advising you to restart your computer.
 - i. Click **Yes**.
16. Shut down and restart the computer, so your changes take effect.

Configuring Modems

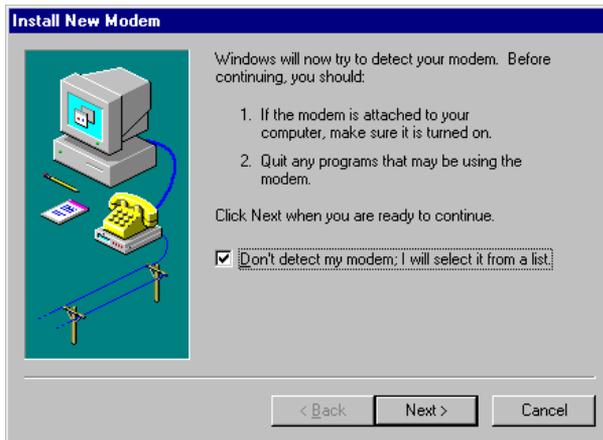
RocketPort adapters can support any asynchronous serial modem for use by any application that uses Windows 95/98 COM ports.

Note: *There is one exception to this rule: the RocketPort 8J is not recommended for use with modems, as it lacks the full-range of control signals. All other RocketPort models work with modems.*

RocketModem boards are essentially RocketPort boards with built-in and dedicated modems. The serial ports are not accessible externally.

Follow these steps to install and configure modems. Exceptions for RocketModems are called out.

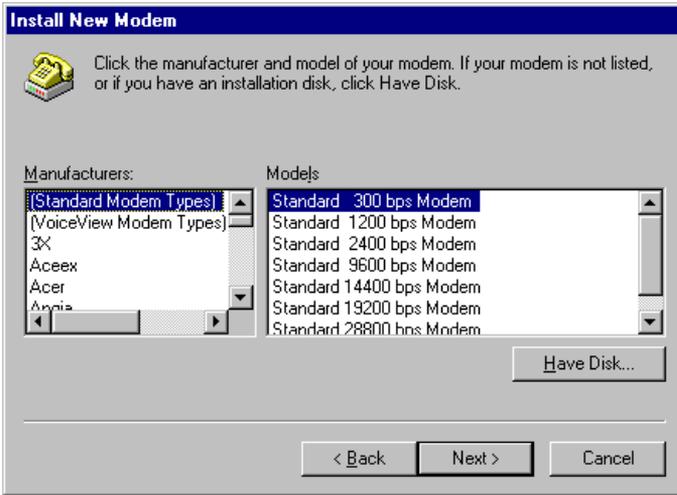
1. If using a RocketPort, connect the modem(s) to the desired port(s). Power up the modem(s).
2. Open the Control Panel window.
3. Double-click on the Modems icon. The Install New Modem wizard starts:



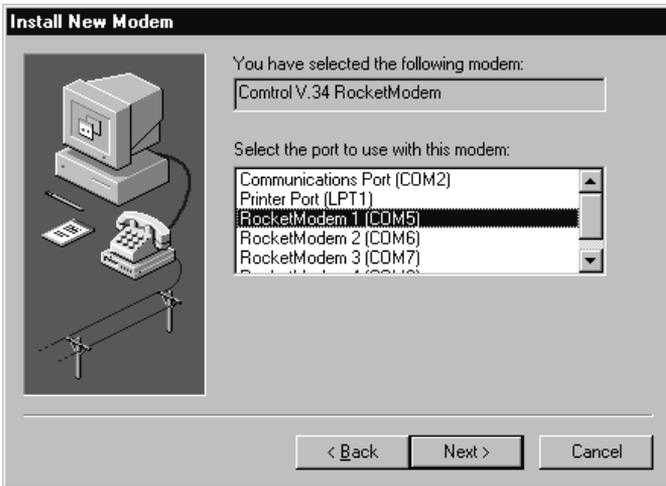
4. Check the “Don’t detect my modem” box.

Note: *Do not use the auto-detect feature. The Windows modem auto-detect function does not recognize ports above COM10, and it scans down, beginning with the highest detected COM port. This can produce extremely confusing modem-to-port numbering and naming sequences.*

5. Click Next. A list of modem manufacturers and models displays:

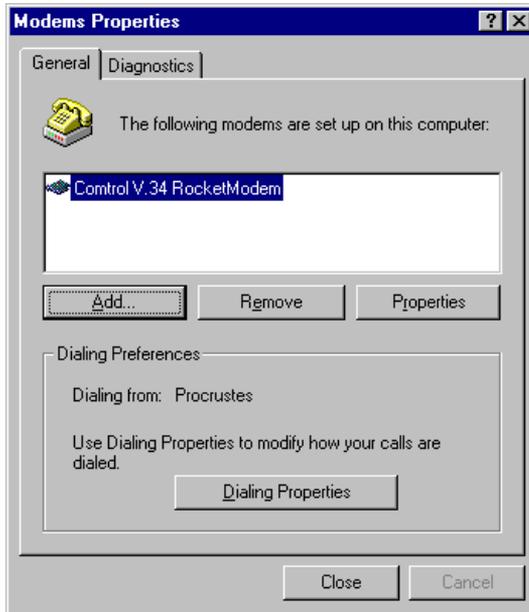


6. **RocketPort:** select your modem from the lists, or click **Have Disk**.
RocketModem: select **Control** and the appropriate **RocketModem** model.
7. Click Next. The list of available ports displays:



8. Select the port to which the modem is attached and click Next. The system installs the modem software.

9. Click **Finish**. The Modems Properties window displays:



10. To add more modems, click the **Add** button and repeat Steps 4 through 9.
11. *Optionally*:
- Click **Dialing Properties** to configure basic phone service information.
 - Highlight a modem and click **Properties** to configure port speed, data bits, parity, and so on.
 - Click the **Diagnostics** tab, then select a port and click **More Info** to query and test the modem.
12. When you are done, click **Close** to exit the Install New Modem wizard. Your changes take effect immediately. No reboot is required.

Configuring Printers

Follow these steps to connect a serial printer to a **RocketPort**.

Note: You may need the Windows 95 or Windows 98 CD-ROM in order to load drivers and complete printer installation. Make sure you have this CD on-hand before beginning the process.

1. Connect the printer to the desired port. Use a DTE-to-DTE null modem cable unless the printer maker specifies otherwise.
2. From the **Start** button menu, select **Settings**, then **Printers**.
3. Double-click on the **Add Printer** icon. The Add Printer Wizard starts.
4. Click **Next**.
5. Select **Local Printer** and click **Next**.
6. Select your printer make and model and click **Next**.
If your printer is not listed, click **Have Disk** to use the printer manufacturer-supplied driver. Some printer manuals will tell you to use another manufacturer's printer driver.
7. Select one of the available COM ports and click **Configure Port**.
8. Enter the baud rate, flow control, and other information as specified by the printer manufacturer, and click **OK**.
9. Click **Next**.
10. Optionally, enter a custom name for this printer, and select whether this printer is the Windows default printer. Click **Next**.
11. Select whether to print a test page and click **Finish**.
You may be prompted to insert the Windows 95/98 CD-ROM in order to load drivers. Do so and follow the on-screen instructions.
12. If the test page prints successfully, you are ready to begin using the printer. No reboot is needed.

Changing Printer Port Configuration After Installation

To change port configuration after a printer is installed, open the **Printers** window, **right-click** on the printer in question, then select **Properties** from the menu.

All port configuration options are found on the **Details** tab.

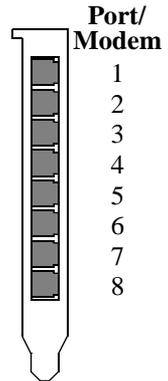
Troubleshooting

If you are having trouble with a RocketPort or RocketModem adapter, try the following:

1. Verify that you are addressing the port correctly. In many applications, device names above COM9 require the prefix `\\.\` in order to be recognized. For example, to reference COM20, use `\\.\COM20` as the file or port name.
 2. Verify that you are using the correct types of cables in the correct places and that all cables are connected securely at both ends.
-

3. Verify that you have obtained and installed all Microsoft service packs for your operating system.
4. Verify that you have the latest Control driver for your adapter and operating system. Current versions of all Control software can be downloaded at no charge from the Control web or ftp sites.
5. Verify that you are using the correct ports. The RocketPort 8J uses the displayed bracket.

The RocketPort 4J uses four RJ45 jacks. The port at the “top” edge of the card is Port 1, and the port at the “bottom” edge of the card is Port 4.



6. If you are using an ISA-bus adapter, check to make sure that the DIP switch on the adapter is set an I/O address that matches the I/O address selection, and that there are no address or interrupt conflicts with other boards.
7. Use the Advanced Board Options to reset the Scan Rate and IRQ to the default settings.
8. Make sure the RocketPort is seated firmly in the expansion slot, and that the expansion slot screw is in place.
9. Remove the driver software and reinstall it, using a different I/O address (ISA-bus adapters only).
10. Use the Test Terminal program (page 38) to troubleshoot communications on a port-by-port basis.
11. Use the Port Monitor program (page 40) to check for errors, modem control, and status signals.
12. Shut down the server, reboot from the Diagnostic diskette, and follow the on-screen instructions to test the hardware.
13. If you are unable to resolve the problem, see the *Introduction* for information on contacting Control technical support.

Known Issues

In addition to the general tips listed above, we have identified a number of specific issues and conditions that affect RocketPort or RocketModem performance.

- **All products**

The Control Panel **Add/Remove Software** option can be used to remove the driver, *version 1.42 or later*. Earlier versions of the driver cannot be removed through this option.

If you need help removing an earlier driver from your system, see for information on contacting Control technical support.

- **All PCI-bus products**

PCI-bus I/O addresses are *slot specific*. If you want to move a RocketPort from one PCI slot to another, you must use the Device Manager to remove the board first, then shut down the system, remove the adapter, and reinstall it in the new slot.

If you move or remove a PCI-bus adapter without first removing it in Device Manager, the system “thinks” the original board is still installed and you must edit the registry to correct this.

- **RocketPort with 3COM/U.S. Robotics Modems**

Symptom: Message displays, “The communication device attached to COMxx is not functioning.”

Solution: Most USB modems come from the factory set to “Load NVRAM defaults.” Reconfigure the modem to “Load Factory Defaults,” as the driver issues settings from the `mdm*.inf` file.

Driver Error Messages

The driver may display a blue screen error message if it determines a fault condition. The following lists some of the possible errors.

Table 3. Driver Error Messages

Message	Condition	Solution
Interrupts Not Functioning	The driver tested and determined the interrupt (IRQ) is not functioning properly.	Change the IRQ or run without an IRQ.
IRQ Initialization	The driver could not use the interrupt specified.	Change the IRQ or run without an IRQ.
Hardware error-ctrl:## Addr:##, Irq:##	A hardware error was encountered while initializing the board hardware.	Change the I/O setting (if ISA, make sure you check/change the I/O DIP switch).
Number of Ports Mismatch	The actual number of ports on a board does not match the configuration.	Delete in Device Manager and reinstall with correct Control adapter selected.
Hardware Channel Init	A specific port could not be initialized at the hardware level.	Run the Diagnostic.

Programming Information

Microsoft provides technical support for communication calls, which the RocketPort or RocketModem series supports. This means most applications for the Windows 95/98 operating system (or other 32 bit programs) operate on RocketPort or RocketModem ports without modification.

To assist you, Comtrol has created sample code (**PROG32.ZIP**), which is available on the WEB and FTP sites. For further examples, you can look at *Microsoft Windows 95/98 Software Development Kit (SDK) Programming Reference* books.

For help programming COM API, contact Microsoft technical support.

Windows 95/98 Software Support

This driver uses the Microsoft COMM API and supports all applications that use the Windows 95/98 COMM driver. This includes but is not limited to:

- Hyperterminal
- Briefcase
- Microsoft Mail and FAX
- Microsoft Online/Exchange
- Dial-Up Networking
- PPP/SLIP
- Most Microsoft 16- and 32-bit API-supported applications.

Driver Limitations

The following are known limitations of the driver and are not implemented due to hardware constraints or lack of demand. The following are options used in the `SetCommState()` programming call.

- **fTXContinueOnXoff** - Not Implemented. Option to stop Tx Flow when RocketPort sends a Xoff.
- **fDSRSensitivity** - Not Implemented. This option ignores any received data while DSR is not active.
- **fRTSToggle** - Not Implemented. This option turns the RTS on during data transmission.
- **Parity** - Only NONE/ODD/EVEN supported (No mark or No space).
- **StopBits** - Restricted to 1 or 2 (No 1.5).
- **ByteSize** - Restricted to 7 or 8 (No 5, 6).

The Windows 3.1 special RocketPort library calls are not supported in Windows 95/98 (this was supplied for Windows 3.1 only as a means of opening ports above COM10.)

In Windows 95/98, the current solution is to rewrite the program as a 32-bit program and then use the special sequence `\\.\COM11` in the `CreateFile()` call.

DCB Device Control Block Parameters

- **XonLim, XoffLim** - The RocketPort or RocketModem series does not handle flow control like traditional PC COM ports. Keep in mind the adapters have large hardware input/output buffers, and any control strategy based on buffer levels brings the following question: should the trip point be in reference to the hardware buffer, or the driver software buffer, or both? And if the hardware performs the flow control, you cannot consider the software buffer in the equation. You also need to balance this with efficiency.

RTS/CTS flow control is handled by the RocketPort or RocketModem card on a hardware level. The RTS trip points are hardwired to about 7/8 full and empty in relation to the hardware input buffer of 1,024 bytes.

DTR/DSR flow control is handled at the software driver level. The DTR trip point is hardwired at the level at which the software input buffer becomes full (the hardware input buffer of 1,024 bytes still remains). The low level is **XonLim**, and is in relation to the drivers software buffer.

- **fOutX** - if set, this cause data transmission to halt upon reception of a XOFF char and resume when a XON char is received. The XON/XOFF characters are specified by **XoffChar** and **XonChar** parameters and may be changed by the application. The trip points are hardwired to 7/8 full and empty in relation to the hardware input buffer of 1,024 bytes.
- **fInX** - if set, when the receive buffer is near full, an XOFF char will be sent out to stop the incoming flow of data. When the receive buffer empties, the XON character is sent to resume incoming data. The **fInX** trip point is hardwired at the level at which the software buffer becomes full (same as DTR above).
- **fBinary** - *Leave this bit set on!* ASCII mode (this value at zero) enables the EOF char to be detected. After the EOF char has been detected, no more data is allowed to be read, and an overflow error is displayed if more data is received. While Non-Binary mode is supported, it should not be used.

Bypassing the Normal Windows 32 APIs

An application program cannot talk to the port driver directly, and must go through the normal API calls. In the Windows 95/98 environment it is possible to write a VCOMM client to bypass the Win32 API layer, but this is not recommended and is not portable to the Windows NT environment.

Real Time Issues

The driver runs in a polled interrupt fashion; the system is interrupted every poll period. The poll period default is 10 milliseconds (100 Hz).

What this means is that all Event processing is restricted to the poll period interval. This will only be a problem for some applications that require very precise synchronization with other hardware. In some cases, this may be worked around by polling the queue counts through `GetCommError()`.

Opening Ports Higher Than COM10

In order to open up COM ports higher than COM10 a special named format is used with `CreateFile()`: `\\.COM10` (when using the C language you need to double up the backslashes: `\\.COM10`). This works only for 32-bit programs running under Windows NT or Windows 95/98. In Windows 3.1 there is no provision for opening COM ports above COM10. Control had developed a custom library to work around this problem under Windows 3.1. 16-bit applications running under Windows NT or Windows 95/98 also have this restriction.

COMMTIMEOUTS:

GetCommTimeouts() and SetCommTimeouts() Structure

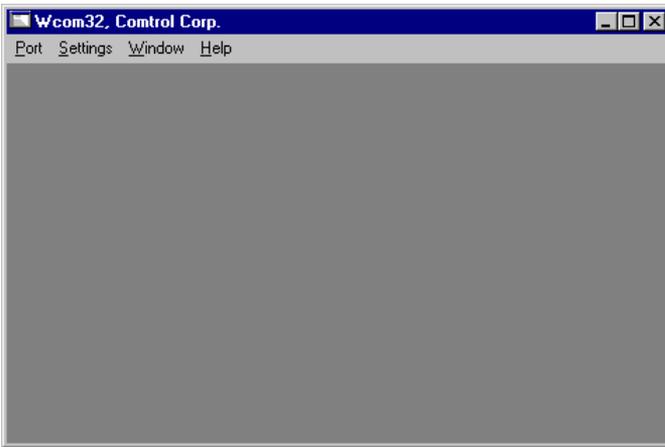
These features are implemented in a standard part of the operating system and not in the port-driver, although it does rely on callback facilities built into the driver. These timeouts should be used to avoid getting stuck forever in a read or write operation when using the standard (non-overlapped) mode of operation.

Using Test Terminal (wcom32.exe)

WCOM32 is a terminal program that enables you to open a port, send characters and commands to the port, and toggle the control signals.

Note: *WCOM32 will not work on a port if any other application is using the port. Stop all passive or background fax or telecomm programs before using WCOM32.*

To start WCOM32, select **Test Terminal** from the Control RocketPort RocketModem program group. The program window displays:



Follow these steps:

1. Select **Open Port** from the Port menu. A list of possible COM port numbers displays.
2. Select the COM port you want to test.

If the COM port does not exist or if it is currently being used by another program, a Create File Error message displays.

If the COM port is available, a terminal window pops up:



Note the <loop> button in the terminal window. If this option is activated, it is green and uppercase (**LOOP**), the COM port internal loopback feature is activated and the data is returned by the COM port hardware. If this option is deactivated, it is gray and lowercase (**loop**), the internal loopback is deactivated, and the data is being sent out the COM port.

Testing a RocketPort

1. Place a loopback plug on the COM port you are testing. Make sure the loop button is off.
2. From the Port menu, select **Send Test Data**. The program sends out a repeating data stream. To stop this, select **Send Test Data** again.

If the loopback plug is in place and the port is working correctly, the test data should be echoed back to the screen.

If the loopback plug is not in place or the port is not working correctly, no data or garbled data is echoed back to the screen.

Note: *If no characters appear, try putting the loopback plug on an adjacent port. It may be that you have the ports mixed up.*

3. If further testing is required, select **Loopback Test** from the Port menu. If the loopback plug is in place and the port is working correctly, the system should return the message "Passed."

If the loopback plug is not in place or the port is not working correctly, the system will return the message "Failed."

4. If the port has failed in Step 2 or 3, and the RocketPort is equipped with an external interface box or fanout cable, click the loop button to switch the internal loopback feature on.
5. Repeat Steps 2 and 3. If the port now passes the tests, the fault may lie in the interface box or fanout cable. Contact Control technical support for more assistance.

Using Port Monitor (rktmon.exe)

The Port Monitor program (rktmon.exe) offers a summary of all RocketPort or RocketModem statistics in one easy-to-read spreadsheet view. It also enables you to verify operation of all RocketPort or RocketModem ports from a single window.

The Port Monitor display follows the familiar spreadsheet model: each COM port is a horizontal row, and each vertical column displays a variable or value for the respective COM port. (For definitions of the abbreviations used, see the *Port Monitor Variable List* table.)

Port Monitor can also produce statistics and reports that can help you verify the operation of the COM ports and connected peripherals.

Some immediate feedback includes:

- The state of the modem control and status signals.
- Open ports.
- Raw byte input and output counts obtained from the driver.
- Port errors.

The available statistics include:

- Instantaneous characters per second (CPS) calculations.
- Minute, hour, and day CPS averages and peaks.
- Carrier detect (CD) signal runtime and transition count.

Reports can be automatically generated on an hourly and/or daily basis, and can cover all ports collectively or a separate report for each port. You can also set how often the values are recalculated, fine-tuning thoroughness against system efficiency, and automatically run external batch files to perform additional processing and analysis.

Starting Port Monitor

To run Port Monitor, select **Port Monitor** from the Control RocketPort RocketModem program group.

The monitor window displays:

Device	Oper	CTS	DSR	CD	RTS	DTF	TxTotal	RxTotal	TxCPSInst	RxCPSInst
COM5	On	On	On	Off	On	On	61	52	0	0
COM6	On	On	On	Off	On	On	61	52	0	0
COM7	On	On	On	Off	On	On	61	52	0	0
COM8	On	On	On	Off	On	On	61	52	0	0

Once the monitor window displays, Port Monitor is active and collecting data. If any cumulative data has been saved from previous sessions, it is automatically brought in and used.

Port Monitor continues to run and collect data until you terminate it, at which point all accumulated data is automatically saved for use in the next session.

Changing Screen Appearance

While Port Monitor is running, there are a number of commands and controls that change the appearance of the screen.

Table 4. Port Monitor Screen Commands

Desired Change	Procedure
Change the monitor window font.	Select Font from the Edit menu.
Change width of a single column.	Left-click on the column separator (vertical) line and drag it to the desired width.
Change column placement.	Left-click in the middle of the column you want to move and drag it to the desired location.
Remove a column.	Right-click on the column you want to remove and select Remove from the pop-up menu.
Clear all fields and reset them to null values.	Right-click on the upper left cell in the table and select Reset from the pop-up menu.*
Clear any single field <i>except</i> the upper left cell.	Right-click on the field to be cleared and select Reset from the pop-up menu.*

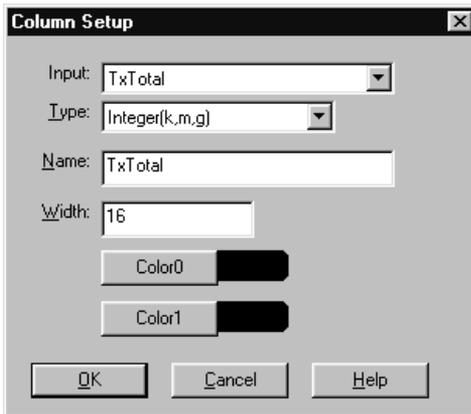
Table 4. Port Monitor Screen Commands

Desired Change	Procedure
Add a column.	Right-click on the column now occupying the desired location and select Add from the pop-up menu. You are prompted to name the variable you want to display, as well as other information. (See <i>Column Setup</i> , below.) After you click OK , the column is inserted in the selected location and the existing column is moved to the right.
Change other properties of a column.	Right-click on the column and select Properties from the pop-up menu. (See <i>Column Setup</i> , below.)

* *The Reset command does not clear raw data from the calcs.dat file. It simply resets the selected display fields to their null values. For more information regarding calcs.dat see page 44.*

Column Setup

When you select **Add** or **Properties** from the column pop-up menu, the Column Setup window displays:



Use the **Input** droplist to select the variable displayed in the column.
Use the **Type** droplist to select the way in which the value displays:

either as an integer, as an on/off state, as an integer with a kilo, mega, or giga suffix, or as an hh:mm:ss time stamp. This defaults to the appropriate type for the selected Input variable.

Use the **Name** variable to change the column heading name.

Use the **Width** variable to specify the column width in characters.

Use **Color0** to set the column character color when the value is zero.

Use **Color1** to set the column character color when the value is not zero.

When done, click **OK** to save your changes and return to Port Monitor.

Report Configuration

To configure reports, select **Config** from the Edit menu. The Program Setup window displays:

The **Single** report options cover all ports and are overwritten each time the reports are generated. The **Multiple** report options generate a separate report for each port, and each report file is appended each time the report is generated.

For **Hour** reports, use the **Single** and **Multiple** droplists to select whether you are generating single or multiple reports, or both. For each report type, select from the following types of data to include:

- **None:** no report is generated.
- **Hour Data:** only variables with “Hour” in the name are included.
- **All Data:** all variables are included.

- **View Data:** only variables that appear on-screen are included.

The **External Program** field is used to enter a command line to run another program after the hourly reports have been generated. For example, you can use this to run a batch file that performs custom report processing. The **Test** button causes the command line to be executed immediately.

For **Day** reports, the single and multiple droplists behave the same, but your choices are:

- **None:** no report is generated.
- **Day Data:** only variables with the words “Day” or “Raw” in the names are included.
- **All Data:** all variables are included.
- **View Data:** only the variables that appear in the Port Monitor window are included.

Likewise, the **External Program** field is used to enter a command line to be executed after the daily reports have been generated.

The **Update Time** option allows you to set the rate at which the port information is obtained and the calculations performed. There is a trade-off between Port Monitor efficiency and response time. If you are using Port Monitor to view the port activity on the screen, you may want to set the update time to 1 or 2 seconds, so that the screen is updated frequently. If you are concerned about the monitor program using CPU resources, set this to a higher value, (6 to 20 seconds) in order to decrease the time required by the program to perform the calculations and update the screen.

If Port Monitor is left active to generate reports, minimizing or reducing the display area of the program will help reduce CPU requirements of updating the screen.

Port Monitor Files

Port Monitor creates and uses the following files:

- **rktmon.view**
- **calcs.dat**

The default column layout is saved in **rktmon.view**. If you have been experimenting with the appearance of the monitor screen, you can use the File menu **Save** option to save your customized layout in another .view file. You can retrieve this file later by using the File menu **Open** option, or you can use the Edit menu **View Default** option to retrieve **rktmon.view** and restore the default view.

All Port Monitor calculations are saved at program exit and on the hour in a binary file named **calcs.dat**. This enables you to halt Port Monitor

execution without losing accumulated data.

Port Monitor also creates a \REPORTS directory. All hourly and daily reports are saved in this directory, under the following names:

- **hall.txt** — hourly single report
- **dall.txt** — daily single report
- **hcomx.txt** — hourly multiple reports, where *x* is the port number
- **dcomx.txt** — daily multiple reports, where *x* is the port number

WARNING: *Since multiple reports append new data each time they are written, the multiple report files grow in size. It is up to you to delete them periodically.*

Some safeguards are built into the program to avoid filling up a hard disk drive due to growing report files. The monitoring program stops writing additional data to the multiple reports if they reach a size of 2 MB. Also, the program will not write out data files to the disk drive if the spare room on the drive is less than 2 MB in size.

To view or edit an hourly or daily report, use the Edit Report option on the File menu, or use a system tool such as NOTEPAD.

For more information, see the Port Monitor Help file.

Port Monitor Variables

The following table lists Port Monitor variables.

Table 5. Port Monitor Variable List

Variable	Description
Open	Open status, on if open, off if closed.
Cts	Input CTS pin status.
Dsr	Input DSR pin status.
Cd	Input CD (carrier detect) pin status.
Rts	Output RTS pin status.
Dtr	Output DTR pin status.
TxTotal	Total bytes transmitted.
RxTotal	Total bytes received.
TxCPSInst	Instantaneous average of transmit characters per second.
RxCPSInst	Instantaneous average of receive characters per second.

Table 5. Port Monitor Variable List

Variable	Description
Errors	Total hardware receive errors (parity, framing, and overruns.)
TxMinCPS	Last minute average of transmit characters per second.
RxMinCPS	Last minute average of receive characters per second.
TxCPSMinAvMax	Peak TxCPSInst for the last minute.
RxCPSMinAvMax	Peak RxCPSInst for the last minute.
TxCPSHourAvMax	Peak TxMinCPS for the last hour.
RxCPSHourAvMax	Peak RxMinCPS for the last hour.
TxCPSDayAvMax	Peak TxMinCPS for the last day.
RxCPSDayAvMax	Peak RxMinCPS for the last day.
TxTotalRaw	Total number of transmit bytes raw data from the driver.
RxTotalRaw	Total number of receive bytes raw data from the driver.
TxMinCnt	Count of transmit bytes sent in last minute.
TxHourCnt	Transmit bytes count sent in the last hour.
TxDayCnt	Transmit bytes count sent in the last day.
RxMinCnt	Receive bytes count sent in the last minute.
RxHourCnt	Receive bytes count sent in the last hour.
RxDayCnt	Receive bytes count sent in the last day.
TxMinCntWrk	Transmit bytes count sent in this minute.
TxHourCntWrk	Transmit bytes count sent in this hour.
TxDayCntWrk	Transmit bytes count sent in this day.
RxMinCntWrk	Receive bytes count sent in this minute.
RxHourCntWrk	Receive bytes count sent in this hour.
RxDayCntWrk	Receive bytes count sent in this day.
TxCPSMinAvMaxWrk	Peak TxCPSInst for the current minute.
TxCPSHourAvMaxWrk	Peak TxMinCPS for the current hour.

Table 5. Port Monitor Variable List

Variable	Description
TxCPSDayAvMaxWrk	Peak TxHourCPS for the current day.
RxCPSMinAvMaxWrk	Peak RxCPSInst for the current minute.
RxCPSHourAvMaxWrk	Peak RxMinCPS for the current hour.
RxCPSDayAvMaxWrk	Peak RxHourCPS for the current day.
CDRuns	Carrier detect turn-on count.
CDDayRuns	Carrier detect turn-on count in the last day.
CDDayRunsWrk	Carrier detect turn-on count in the current day.
CDRunTime	Time in seconds carrier detect has been on.
CDHourRunTime	Time in seconds carrier detect has been on in the last hour.
CDDayRunTime	Time in seconds carrier detect has been on in the last day.
CDHourRunTimeWrk	Time in seconds carrier detect has been on this hour.
CDDayRunTimeWrk	Time in seconds carrier detect has been on this day.
StatusFlags	Bit flags, Open, CTS, DSR, CD, RTS, DTR
TxPkts	Raw count of total transmit packets sent.
RxPkts	Raw count of total receive packets sent.
OverrunErrors	Total count of receive overrun errors.
FramingErrors	Total count of receive framing errors.
ParityErrors	Total count of receive parity errors.
OverrunErrorsRaw	Total count of receive overrun errors, from the driver.
FramingErrorsRaw	Total count of receive framing errors, from the driver.
ParityErrorsRaw	Total count of receive parity errors, from the driver.

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