



Port Monitor and Test Terminal User Guide

Windows Operating Systems



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Overview

Test Terminal (WCom2)

The Test Terminal program enables you to open a port, send characters and commands to the port, and toggle the control signals. This application can be used to troubleshoot communications on a port-by-port basis.

Using Test Terminal and a loop-back plug on a port will help test serial ports and verify port operation by allowing you to send data out the port on the transmit side, loop the data back to the receive side and view the received data on the screen.

If you have a peripheral device connected to the serial port and know the device's command set, you can also send commands to the device. For example, if you have a modem connected to the port, you can use AT commands to query the modem and dial out to the host system.

Port Monitor (PMon2)

The Port Monitoring program offers a summary of all Control device statistics in one view. It also enables you to verify operation of all Control device ports from a single window. The statistics are displayed in a 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 simplified port monitoring and superior ease of use.

Port Monitor can also produce statistics and reports that can help you verify COM port operation and the 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 device 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.

Installing the Appropriate Utility

Test Terminal and Port Monitor are available in several Comtrol tools.

- **RocketPort or RocketModem IV** users will need to install the Comtrol Utility Package. See [Comtrol Utility](#) on Page 9 for information about locating and installing the Comtrol Utility. The *Comtrol Utility Package* supports the DeviceMaster families but typically customers prefer installing PortVision DX, which includes Port Monitor and Test Terminal and is a powerful DeviceMaster configuration and monitoring application.

Note: *RocketPort or RocketModem IV also provides a bootable hardware diagnostic to test the adapter. The diagnostic is shipped with the product. Refer to the Software and Documentation CD for the diagnostic or locate it using the appropriate ftp download page at: <ftp://ftp.comtrol.com/html/default.htm>.*

- **DeviceMaster** users should install PortVision DX. See [PortVision DX](#) on Page 13 for information about locating and installing PortVision DX.

Locating Comtrol Tools and Product Documentation

Loopback plugs are required for testing in Test Terminal (WCom2). A loopback plug is a serial port plug with pins wired together that you can use with an application to test serial ports.

A loopback plug was shipped with your product but you can build additional or a replacement using the document in the table below.

Product	Utility	Location
DeviceMaster	PortVision DX	ftp://ftp.comtrol.com/dev_mstr/portvision_dxs/
RocketPort or RocketModem IV	Comtrol Utility	ftp://ftp.comtrol.com/utilities/windows/comtrol_utility/

Documentation	Location
<i>DeviceMaster Installation and Configuration Guide</i>	ftp://ftp.comtrol.com/dev_mstr/rts/docs/dev_mstr_install_guide.pdf
<i>RocketModem IV Hardware Installation</i>	ftp://ftp.comtrol.com/rmodem/hw_doc/rm4/rm4_install-doc.pdf
<i>RocketPort EXPRESS User Guide</i>	ftp://ftp.comtrol.com/rport_express/userguide/rp_express_userguide.pdf
<i>RocketPort EXPRESS SMPTE User Guide</i>	ftp://ftp.comtrol.com/rport_express_smpte/userguide/rp_express_smpte_userguide.pdf
<i>RocketPort INFINITY User Guide</i>	ftp://ftp.comtrol.com/rport_infinity/userguide/rp_infinity_userguide.pdf
<i>RocketPort Plus Universal PCI</i>	ftp://ftp.comtrol.com/rport/hw_doc/universal_pci/plus/rp_upci_plus.pdf
<i>RocketPort Plus 422 Universal PCI</i>	ftp://ftp.comtrol.com/rport/hw_doc/universal_pc/plus_422/RP_uPCI_Plus422_UserGuide.pdf
<i>RocketPort Universal PCI</i>	ftp://ftp.comtrol.com/rport/hw_doc/universal_pci/standard/rp_upci.pdf

Documentation	Location
<i>RocketPort Universal PCI SMPTE</i>	ftp://ftp.comtrol.com/rport/hw_doc/universal_pci/smpte/ RP_uPCI_SMPTE_UserGuide.pdf

Control Contact Information

You can contact Control Corporation using several methods.

- Download Page** Make sure that you installed the latest software. If you have not done so, check the Control [web site](#).
- Customer Forum** If you are connected to the internet, you can view any available FAQs for your product in the [support forum](#).
- Online Support** You can access our [online support](#) instead of calling Technical Support. If you have not used this page before, you will need to register using your email address. Control will email you a response within 24 hours (Monday through Friday).
- Knowledge Center** If you are connected to the internet, you can view the [Control Knowledge Center](#).
- Phone Support** You can contact Control by calling **763-957-6000** (8AM to 6PM CST/USA).
- RMA Information** Access the [RMA web page](#) where you can locate a phone number to call, submit a request, or email a request to return a product. It also provides the procedures and address information.

Control Utility

The Control Utility Package is innovative software for serial port communication, testing, monitoring and reporting for the RocketPort and RocketModem IV families.

Note: *The Control Utility Package supports the DeviceMaster families but typically customers prefer installing PortVision DX, which includes Port Monitor and Test Terminal and is a powerful DeviceMaster configuration and monitoring application.*

This section includes the following topics:

- [Overview](#)
- [Locating the Control Utility](#)
- [Installing the Control Utility](#) on Page 10

Overview

The Control Utility Package contains three useful software applications named Test Terminal, Port Monitor, and Peer Tracer for communicating directly, monitoring, and reporting statistics of any COM, RS-232, RS-422, and RS-485 serial ports you have installed in a system.

The Control Utility Package supports the following operating systems:

- Windows 2000
- Windows XP
- Windows Server 2003
- Windows Vista
- Windows Server 2008
- Windows 7
- Windows Server 2012
- Windows 8

Locating the Control Utility

The Control Utility is available on the *Software and Documentation* CD or you can download the latest version from: ftp://ftp.comtrol.com/utilities/windows/control_utility. The Control Utility is an **.msi** file that automatically starts the installation procedure.

The Control Utility package includes the following applications that you can access from the *Control Program* group:

- Port Monitor (PMon2)
- Test Terminal (WCOM2)

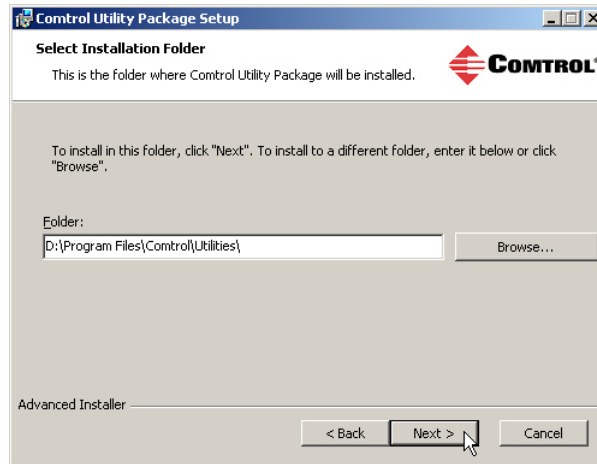
Installing the Control Utility

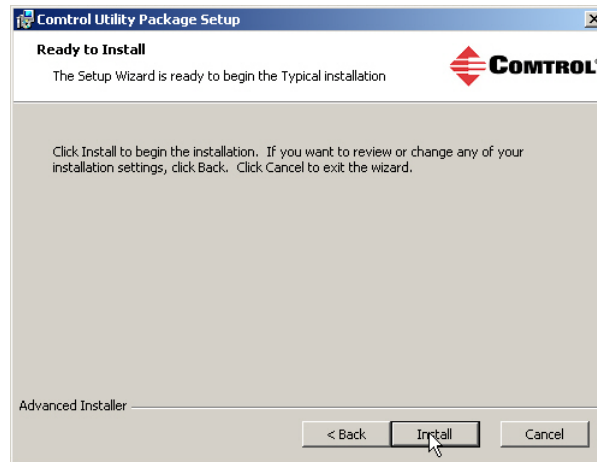
Use the following procedure to install the Control Utility package.

1. Execute the **Control_Utility_Package_x.xx.msi** file, where **x_xx** is the Control Utility version number.
2. Click **Next**.



3. Click **Next**.



4. Click **Install**.5. Click **Finish**.

It is not necessary to reboot the PC after installation.

6. Go to [Using Port Monitor \(PMon2\)](#) on Page 19 or [Using Test Terminal](#) on Page 23 for procedures on using these applications.

PortVision DX

PortVision DX is Comtrol Corporation's break-through software for efficiently locating, configuring and managing DeviceMaster over the network.

This section contains the following topics:

- [Overview](#)
- [Locating PortVision DX](#) on Page 14
- [Installing PortVision DX](#) on Page 14

Overview

PortVision DX automatically detects Comtrol Ethernet-attached products physically attached to the local network segment so that you can configure the network address, upload firmware, and manage the following products:

- DeviceMaster family
 - DeviceMaster PRO
 - DeviceMaster RTS
 - DeviceMaster Serial Hub
 - DeviceMaster UP
 - DeviceMaster 500
- IO-Link Master
- RocketLinx switches

In addition to identifying Comtrol Ethernet-attached products, you can use PortVision DX to display any third-party switch and hardware that may be connected directly to those devices. All non-Comtrol products and unmanaged RocketLinx switches are treated as non-intelligent devices and have limited feature support. For example, you cannot configure or update firmware on a third-party switch.

PortVision DX supports the following operating systems:

- Windows XP
- Windows Server 2003
- Windows Vista
- Windows Server 2008
- Windows 7
- Windows Server 2012
- Windows 8

Configuring Security Settings and PortVision DX

The following list provides basic PortVision DX operations that are affected how the DeviceMaster interacts with PortVision DX when security is enabled using the web interface (SocketServer/NS-Link).

- PortVision DX must scan the DeviceMaster before configuring security.
- PortVision DX locates the DeviceMaster before setting either **Secure Data Mode** or **Secure Config Mode**.
- If PortVision DX discovers the DeviceMaster after setting security, the following conditions occur:
 - The IP address of the DeviceMaster does not display.
 - The *Software Settings* and *Web Interface* tabs are not present in the *Properties* page.
 - The IP mode displays as DHCP without the ability to modify.
 - The **Upload** and **Reboot** icons on the *Launch Bar* are grayed out and the options are disabled in the popup menus.

Note: *If the DeviceMaster was previously configured with security, PortVision DX features are reduced.*

Locating PortVision DX

PortVision DX is available on the *Software and Documentation CD* or you can download the latest version from: ftp://ftp.comtrol.com/dev_mstr/portvision_dx.

The PortVision DX application is an **.msi** file that automatically starts the installation procedure

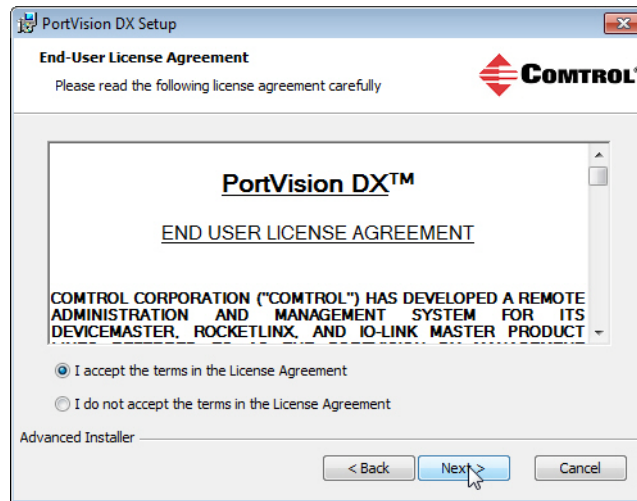
Installing PortVision DX

Use the following procedure to install PortVision DX.

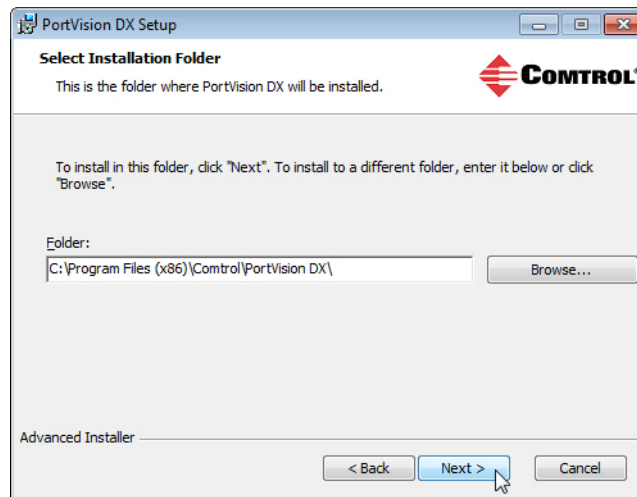
1. Execute the **PortVision_DX[version].msi** file.
2. Click **Next** on the *Welcome* screen.



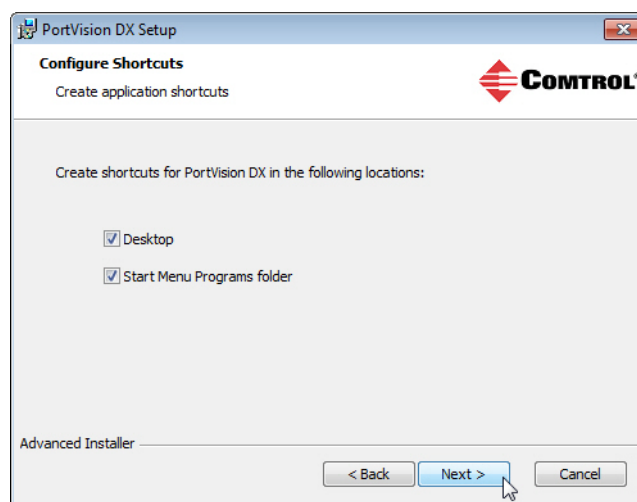
3. Click **I accept the terms in the License Agreement** and **Next**.



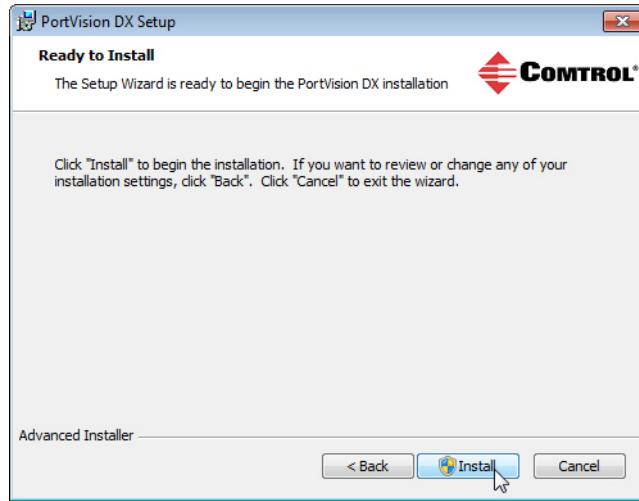
4. Click **Next** or optionally, browse to a different location and then click **Next**.



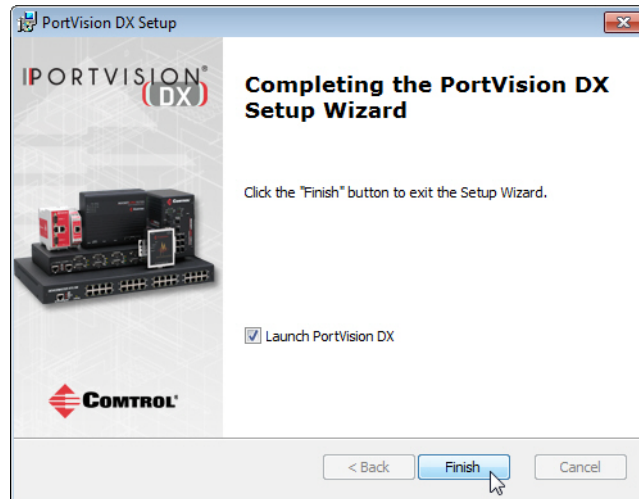
5. Click **Next** to configure the shortcuts.



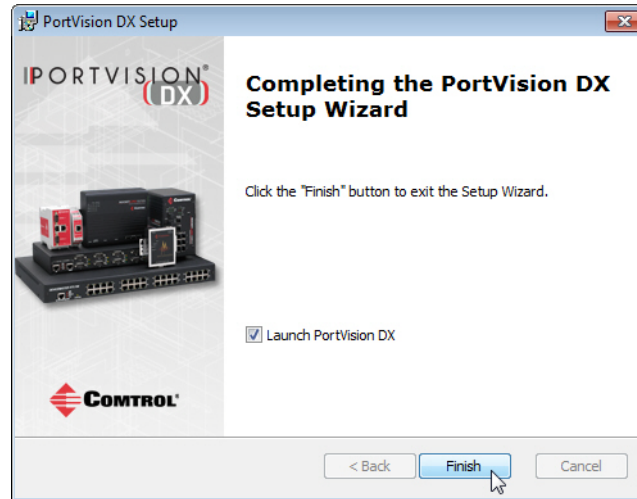
6. Click **Install**.



7. Depending on the operating system, you may need to click **Yes** to the *Do you want to allow the following program to install software on this computer?* query.
8. Click **Launch PortVision DX** and **Finish** in the last installation screen.

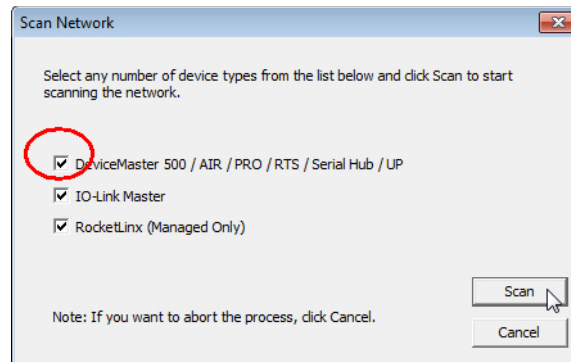


9. Click **Launch PortVision DX** and **Finish** in the last installation screen.



10. Depending on the operating system, you may need to click **Yes** to the *Do you want to allow the following program to make changes to this computer?* query.
11. Select the Comtrol Ethernet-attached products that you want to locate and then click **Scan**.

You can save time if you only scan for DeviceMasters.



Note: *If the Comtrol Ethernet-attached product is not on the local segment and it has been programmed with an IP address, it will be necessary to manually add the Comtrol Ethernet-attached product to PortVision DX.*

If you need additional information about PortVision DX, refer to the **Help** system.

12. Go to [Using Port Monitor \(PMon2\)](#) on Page 19 or [Using Test Terminal](#) on Page 23 for procedures on using these applications.

Using Port Monitor (PMon2)

You can use this subsection to test the RocketPort, RocketModem IV, or DeviceMaster driver installation. If you need to install the device driver, go to <ftp://ftp.comtrol.com/html/default.htm> to locate the latest driver and driver installation documentation.

Overview

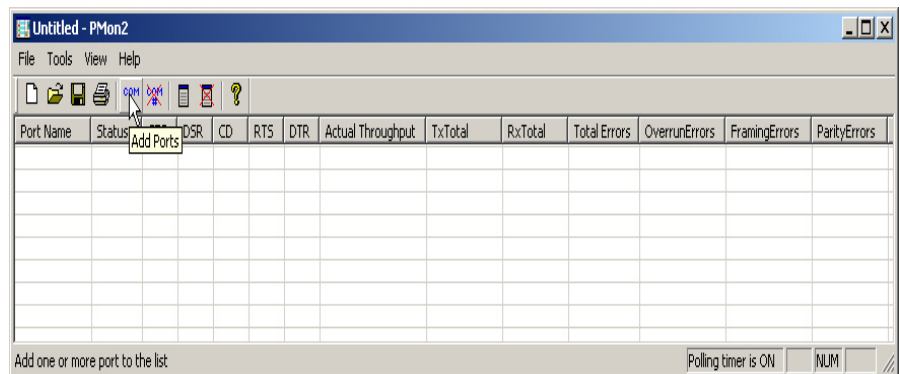
This procedure will check whether the RocketPort, RocketModem IV, or DeviceMaster can:

- Communicate through the Comtrol device driver
- Determine if a port is open with an application

Testing Control COM Ports

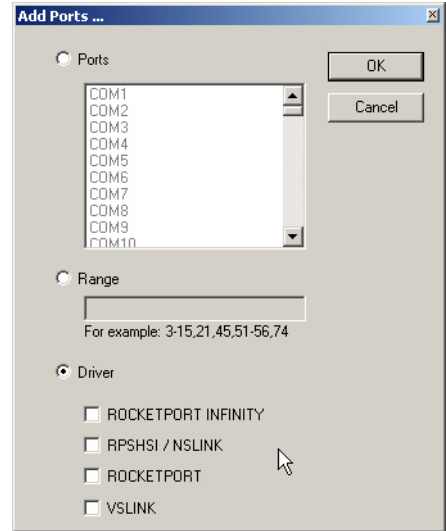
If necessary, use [Comtrol Utility](#) on Page 9 or [PortVision DX](#) on Page 13 to install Port Monitor.

1. Start Port Monitor.
 - **DeviceMaster:**
 - If necessary, start PortVision DX. From the **Start** menu, select **Programs > Control > PortVision DX > PortVision DX** or click the desktop shortcut.
 - Select **Tools > Applications > Port Monitor (PMon2)**.
 - **RocketPort or RocketModem IV:** From the **Start** menu, select **Programs > Control > Utilities > Port Monitor (PMon2)**.
2. Click **Add Ports** using the icon or **Tools > Add Ports**,



3. Click **Driver**, the appropriate product (or products), and click **Ok**.
 - *RocketPort EXPRESS, RocketPort EXPRESS SMPTE, and INFINITY*: click **ROCKETPORT INFINITY**
 - *DeviceMaster*: click **RPSHSI/NSLINK**
 - *RocketPort Universal PCI* (all models) and *RocketModem IV*: click **ROCKETPORT**

4. If the RocketPort, RocketModem IV, or DeviceMaster is communicating with the device driver for Windows, Port Monitor should display **CLOSED** status. If a port is open for an application, it displays as **OPEN**, and displays **Actual Throughput**, **TxTotal** and **RxTotal** statistics.



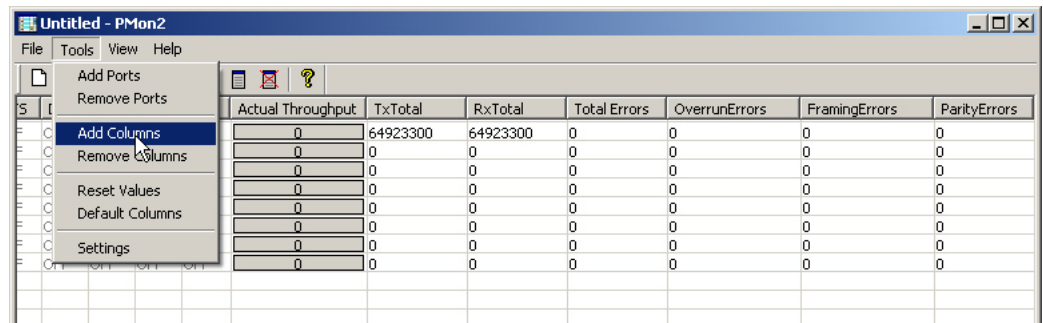
Port Name	Status	CTS	DSR	CD	RTS	DTR	Actual Throughput	TxTotal	RxTotal	Total Errors	OverrunErrors
COM11	OPEN	ON	ON	ON	ON	ON	114600	205891	205638	0	0
COM12	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM13	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM14	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM15	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM16	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM17	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0
COM18	CLOSED	OFF	OFF	OFF	OFF	OFF	0	0	0	0	0

Normally, there should be no data errors recorded or they should be very small. To find out what the actual errors are, scroll to the right. You will see three columns: **Overrun Errors**, **Framing Errors**, and **Parity Errors**.

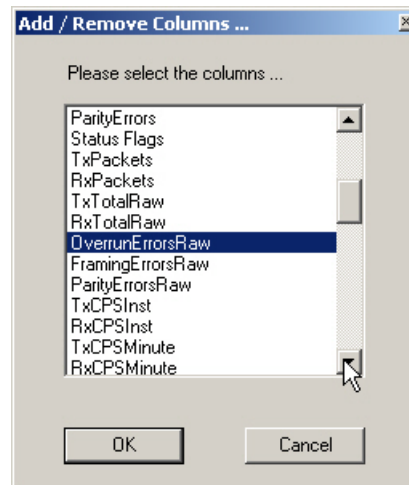
If the errors are:

- **Overrun Errors** represent receive buffer overflow errors. If this is the case, you will have to configure either software or hardware handshaking to control the flow of data. The most common errors are Overrun errors.
- **Framing Errors** indicate that there is an synchronization error between the beginning of a data frame and the end of the data frame. A frame usually consists of a start bit, 8 data bits, and a stop bit or two. The framing error occurs if the stop bit is not detected or it occurs in the wrong time frame. Most causes for framing errors are electrical noise on the data lines, or differences in the data clocks of the RocketPort, RocketModem IV, or DeviceMaster and the connected device.
- **Parity Errors** occur when parity is used and the parity bit is not what is expected. This can also be caused by noise on the data lines.

5. You can view additional statistics to Port Monitor by adding columns. Click **Tools** and **Add Columns**.

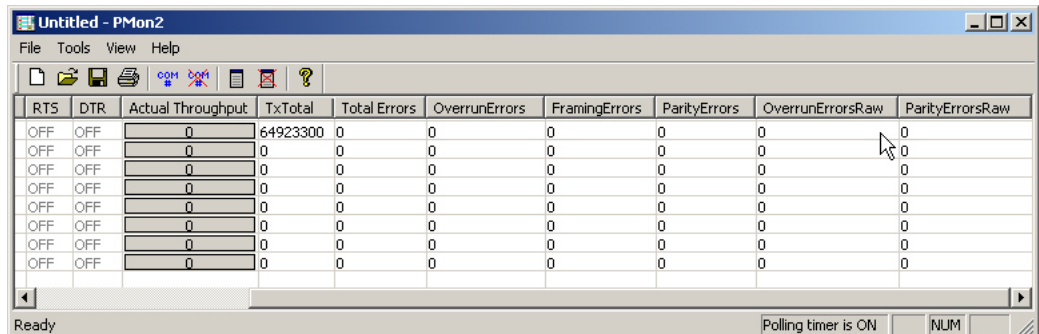


6. Highlight or shift-click to add multiple statistics and click **Ok**.




Note: See the Port Monitor help system if you need an explanation of a column.


7. Scroll to the right to view the new columns.



8. If you want to capture this session, you can save a current session as a report. To do this, select one of the following save options:

- **File > Save As**
- **File > Save** - if the report already exists in an older format
- **Save Active Session**  button

Reports can be opened, viewed and re-used when needed. To open and view a report:

- a. **Select File > Open** or the **Open Existing Session**  button. The *Open Session* dialog appears.
 - b. Locate the session (table), you want to open and click the **Open** button. Optionally, if you want to continue monitoring for an existing session, you need to activate the *Polling Interval*.
 - **Select Tools > Settings** to access the PMon2 *Settings* dialog
 - Change the **Polling Interval** field to a value other than zero (0)
9. Leave Port Monitor open so that you can review events when using *Test Terminal* to test a port or ports.

Using Test Terminal

You can use the following procedure to test COM ports. If you need to install the RocketPort, RocketModem IV, or DeviceMaster device driver, go to <ftp://ftp.comtrol.com/html/default.htm> to locate the latest driver and driver installation documentation.

The following procedures require a loopback plug to be placed on the port or ports that you want to test. A loopback plug was shipped with your product. If you need to build a replacement or additional loopback plugs, refer to the appropriate User Guide for your RocketPort, RocketModem IV, or DeviceMaster. See [Locating Control Tools and Product Documentation](#) on Page 6 if you need to build loopback plugs.

Overview

Test Terminal (WCom2) allows you to open a port, send characters and commands to the port, and toggle the control signals. This application can be used to troubleshoot communications on a port-by-port basis.

- **Send and Receive Test Data:** This sends data out the transmit line to the loopback plug, which has the transmit and receive pins connected thus sending the data back through the Rx line to Test Terminal, which then displays the received data in the terminal window for that port. This test is only testing the Tx and Rx signal lines and nothing else. This test works in either RS-232 or RS-422 modes as both modes have transmit and receive capability. A failure in this test will essentially prevent the port from working in any manner.
- **Loopback Test:** This tests all of the modem control signals such as RTS, DTR, CTS, DSR, CD, and RI along with the Tx and Rx signals. When a signal is made HI in one line the corresponding signal line indicates this. The Loopback Test changes the state of the lines and looks for the corresponding state change. If it successfully recognizes all of these changes, the port passes.

A failure on this test is not necessarily critical as it will depend on what is connected and how many signal lines are in use. For example, if you are using RS-232 in 3-wire mode (Transmit, Receive and Ground) a failure will cause no discernible issue since the other signals are not being used. If the port is configured for use as either RS-422 or RS-485 this test will fail and is expected to fail since RS-422 and RS-485 do not have the modem control signals that are present in RS-232 for which this test is designed.

Opening Ports

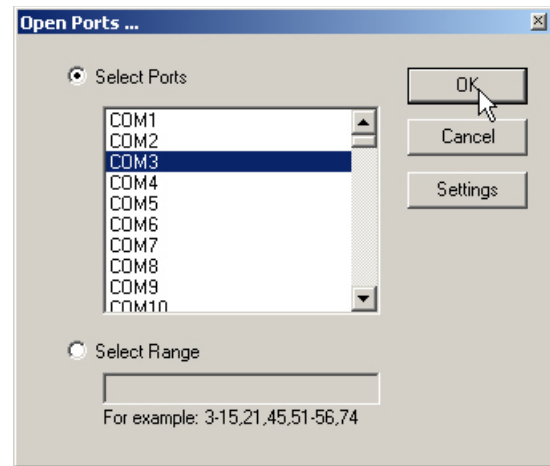
The following procedure shows how to use **Test Terminal** to send and receive test data to the serial ports. If necessary, use [Control Utility](#) on Page 9 or [PortVision DX](#) on Page 13 to install Test Terminal.

1. Stop all applications that may be accessing the ports such as RRAS or any faxing, or production software. See the appropriate help systems or manuals for instructions on stopping these services or applications.
If another application is controlling the port, then **Test Terminal** will be unable to open the port and an error message will be shown.
2. Start Test Terminal (WCom2).
 - **DeviceMaster:**
 - If necessary, start PortVision DX. From the **Start** menu, select **Programs > Control > PortVision DX > PortVision DX** or click the desktop shortcut.
 - Select **Tools > Applications > Test Terminal (WCom2)**.
 - **RocketPort or RocketModem IV:** From the **Start** menu, select **Programs > Control > Utilities > Test Terminal (WCom2)**.
3. Select **File > Open Port**, the appropriate port (or ports) from the *Open Ports* drop list and **Ok**.

***Note:** If you left Port Monitor open from the previous subsection, you should show that the port is open.*

Go to the appropriate procedure to send and receive test data.

- [Sending and Receiving Test Data \(RS-232/422/485: 4-Wire\)](#) on Page 25
- [Sending and Receiving Data \(RS-485: 2-Wire\)](#) on Page 26



Sending and Receiving Test Data (RS-232/422/485: 4-Wire)

You can use this procedure to send and receive test data through the RS-232/422/485 (4-wire, full-duplex) port or ports that you want to test.

1. If you have not done so, perform [Steps 1](#) and [2](#) on Page 24.
2. Install the loopback plug onto the port (or ports) that you want to test.
See [Locating Control Tools and Product Documentation](#) on Page 6 if you need to build loopback plugs.
3. Select **Port > Send and Receive Test Data**.

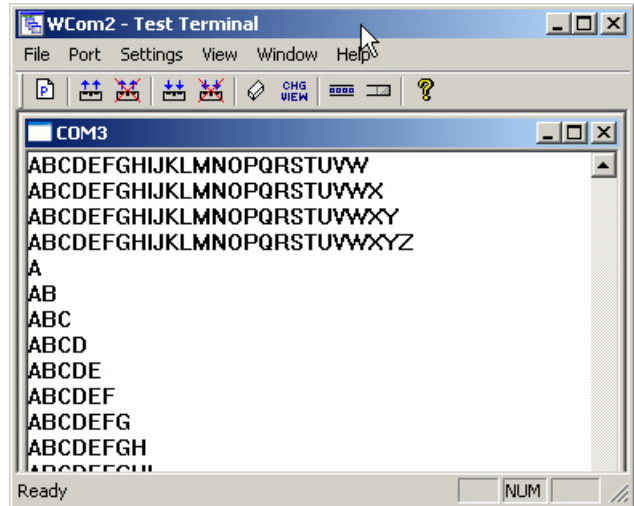
You should see the alphabet scrolling across the port. If so, then the port installed properly and is operational.

Note: *If you left Port Monitor running, it should show data sent and received and show the average data throughput on the port.*

4. Select **Port > Send and Receive Test Data** to stop the scrolling data.
5. You can go to the next procedure to run the *Loopback Test* on Page 26 if this is an RS-232 port.

If this test successfully completed, then the port is operational as expected.

Note: *Do NOT forget to restart the communications application.*



Loopback Test (RS-232)

The **Loopback Test** tests the modem control (hardware handshaking) signals. It only has meaning in RS-232 mode on serial connector interfaces with full RS-232 signals. If performed under the following conditions, the test will always fail because full modem control signals are not present:

- RS-422
- RS-485
- RJ11 connectors

Use the following steps to run the Loopback Test.

1. If necessary, start Test Terminal (Page 24, [Steps 1](#) and [2](#)).
2. Click **Port > Loopback Test**.

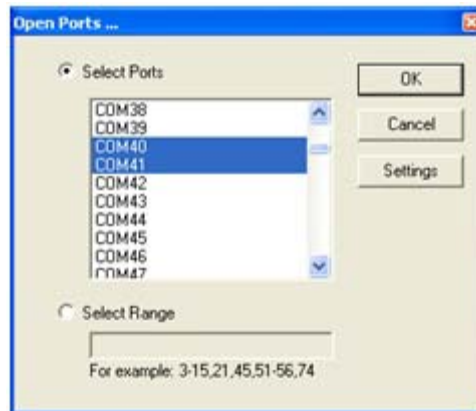
This is a pass fail test and will take a second or two to complete. Repeat for each port that needs testing.

If the Loopback Test and the Send and Receive Test Data tests successfully complete, then the port is operational as expected.

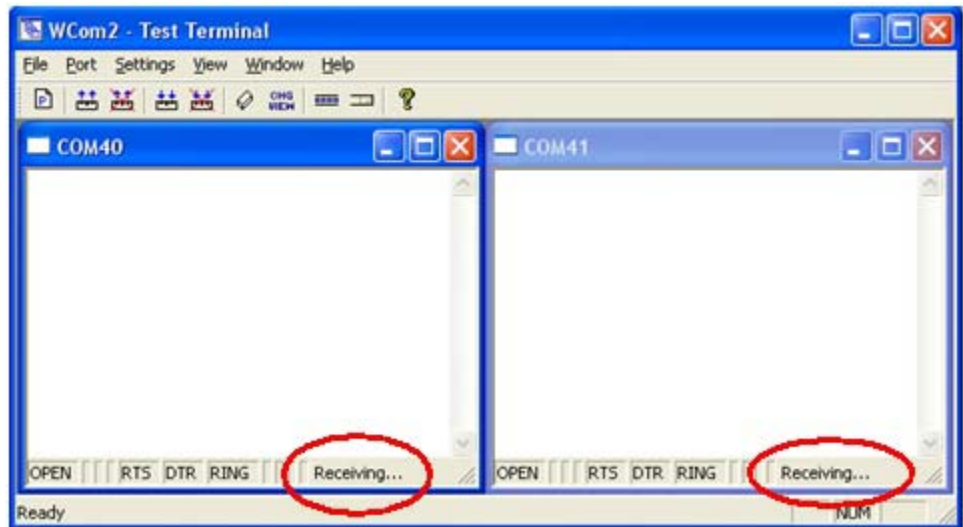
Sending and Receiving Data (RS-485: 2-Wire)

This procedure shows how to use Test Terminal (WCom2) to test two RS-485 (2-wire, half-duplex) ports.

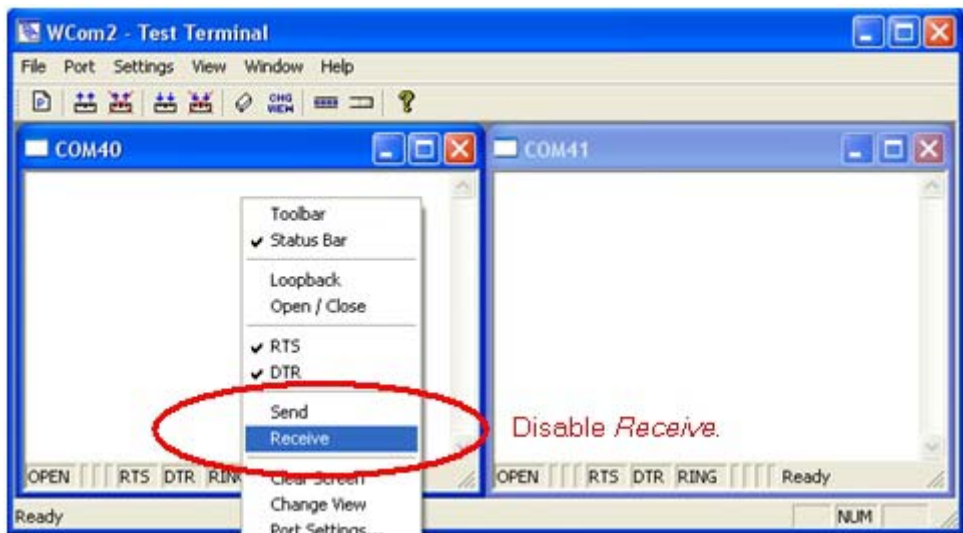
1. Start Test Terminal.
2. Open two ports RS-485 ports. This example uses COM40 and COM41.



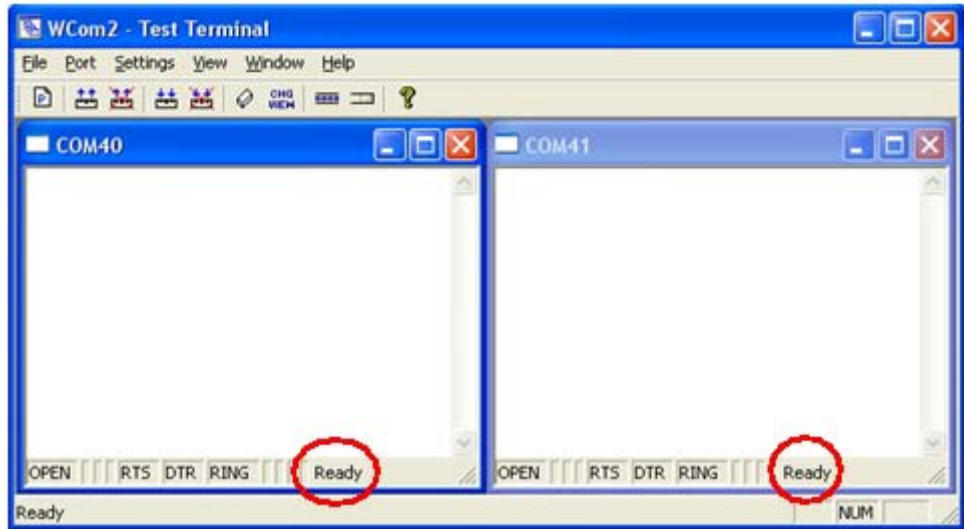
Test Terminal will open two windows, note that both ports show *Receiving* on the status bar.



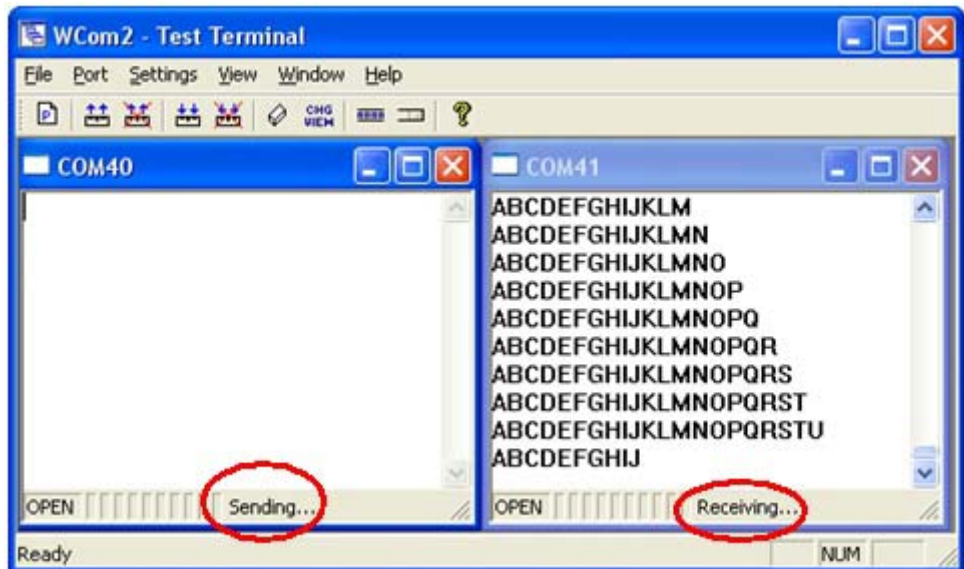
3. Right-click in both COM windows and remove the check mark for **Receive**.



Both COM ports show *Ready* on the status bar.



4. Right-click in ONE window and select the **Receive** option from the pop up.
5. Right-click the OPPOSITE window and click **Send**.



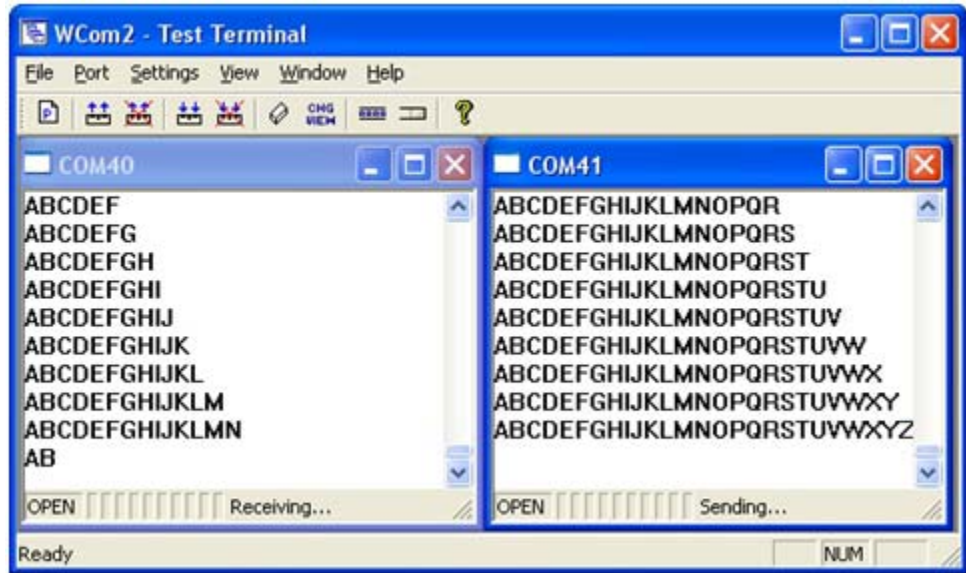
The *Status* line shows *Sending* or *Receiving*.

In this case, COM40 is sending data and COM41 is receiving the data which is visually confirmed by the data scrolling across the COM41 window.

Note: *If you do not see the data being received it MAY be necessary to also disable the RTS and DTR options from the right-click pop-up menu in each COM port.*

6. Right-click and remove the check mark on the *Sending* COM port.

- Right-click and remove the check mark on the *Receiving* COM port.



Neither COM port is sending or receiving data but shows *Ready* on the *Status* bar.

- Reverse the sending/receiving windows one at a time. Set the **Receive** option first, then in the opposite window, select the **Send** option.

The *Status* line shows *Sending* or *Receiving* in the reverse windows.

Data is now scrolling in the COM40 window. COM41 is static as it is not receiving data but transmitting data.

