



# DeviceMaster™ Primo Serial Port Server Hardware Installation

Red, underscored items are links to URLs. Blue, underscored items are links within this document or to another document on the media.

**Note:** *If you copy this document from the ftp/Web or CD and do not use the procedure discussed on the CD, you will get an error message when selecting hyperlinks outside of this document.*

DeviceMaster Primo provides a data communication solution for connecting Windows and Unix/Linux hosts to asynchronous serial devices over a TCP/IP based Ethernet. You may connect your Windows NT/98/ME/2000 host to a native RS-232/422/485 serial port, or your PC-based Unix/Linux host to a fixed tty port, through a TCP/IP Ethernet. With one asynchronous serial port connection on one end, and a 10/100 Mbps Ethernet connection on the other, DeviceMaster allows any device that primarily supports the asynchronous communications protocol to attach to a network. DeviceMaster works like an add-on single-port serial board to your PC server, but with one major advantage—the TCP/IP network. Since the host communicates with the COM port on DeviceMaster over a TCP/IP network, you are able to control your asynchronous serial device from virtually any location.

Although it connects through the virtual link of the Ethernet, the port on DeviceMaster is recognized as a real COM port by Windows or a fixed tty port by Unix/Linux. DeviceMaster provides both the basic transmit/receive data functions, as well as RTS, CTS, DTR, DSR, and DCD control signals.

Other documents related to the this one are:

- [DeviceMaster Primo Serial Port Server Device Driver Installation for Windows NT \(p1pWinNT.pdf\)](#).
- [DeviceMaster Primo Serial Port Server Device Driver Installation for Windows 98/Me \(p1pWin9x.pdf\)](#).
- [DeviceMaster Primo Serial Port Server Device Driver Installation for Windows 2000 \(p1pWin2k.pdf\)](#).
- [DeviceMaster Primo Using Pair Connect and Raw Connect \(raw\\_pair.pdf\)](#).

## Hardware Connections

### Serial Connection

DeviceMaster Primo has one male DB9 serial port on the back panel. Depending on your serial device and serial interfaces, there are two options:

1. You may use a DB9 to DB9 null modem cable to connect your serial device to DeviceMaster Primo. Simply plug one end of the cable into the port on the back panel of DeviceMaster Primo and plug the other end into your serial device's serial port.
2. Using the DB9 pinout details, you can make your own serial interface cable.

### Power Connection

To connect the DeviceMaster unit's power adapter, do the following:

1. Plug the power adapter's DC plug into the DeviceMaster unit's jack labeled DC-IN.
2. Plug the power adapter into an electrical outlet.

Note that there is no on/off switch. The server automatically turns on when plugged into the outlet, and the red light labeled PWR on the DeviceMaster unit's top panel will glow to indicate that it is receiving power.

### Network Connection

There are two ways to use the 10/100BaseT Ethernet jack located on the DeviceMaster unit's front panel:

1. For most applications using DeviceMaster, you will simply plug one end of an Ethernet cable into the DeviceMaster unit's 10/100 Base-T jack, and plug the other end into a hub or directly into your network. In this case, use a regular *straight-through* Ethernet cable.
2. In some cases, such as when configuring the drivers and software used with DeviceMaster, you may connect DeviceMaster directly to your computer's Ethernet card. To do this you will need to use a *cross-over* Ethernet cable.

The light labeled Link will turn on when DeviceMaster is properly connected to a live Ethernet device or network.

**LED Indicators**

DeviceMaster’s top panel contains three LED indicators, as described in the following table.

LED Name	LED Function
<b>PWR</b>	Red indicates that the power is on
<b>Link</b>	Orange indicates a 10 Mbps Ethernet connection Green indicates a 100 Mbps Ethernet connection
<b>Ready</b>	Green indicates DeviceMaster system is ready

**Reset Button**

The reset button is located next to the Ethernet RJ-45 port on the rear panel. Press the button for three seconds to erase the password and reset the parameters back to the manufacturer’s default values.

**Settings and Configurations**

**DIP Switch Settings**

The top panel of DeviceMaster contains a table, similar to the one shown below, describing DIP switch settings for the serial port.

SW1	SW2	SW3	Interface Mode
ON	---	---	RS-232 Console
OFF	OFF	OFF	RS-232 Data Comm
	OFF	ON	RS-422
	ON	OFF	RS-485 by RTS
	ON	ON	RS-485 by ADDC

The switch labeled SW1 controls the function of the serial port (ON, or up, for RS-232 Console connection, and down for Data Communication, such as when DeviceMaster is connected to your serial device). Note that after changing the setting of SW1, you must wait a few seconds for the green light labeled Ready to turn off and on, indicating that the function of the serial port has been changed.

The switches labeled SW2 and SW3 control the serial port’s data communication Interface Mode. (Note that RTS stands for *Ready To Send* and ADDC stands for *Automatic Data Detection Control*.)

Keep the following points in mind when setting the DIP switches.

- **RS-232 Console**  
To use the serial port as a console connection, such as when using HyperTerminal Terminal Emulator software, set SW1 to ON.
- **Telnet Connection**  
Some setup procedures can be carried out through a Telnet connection, during which data is transmitted through DeviceMaster’s Ethernet port. However, **you must set SW1 to OFF to establish a Telnet connection.**

## IP Address Configuration

DeviceMaster is shipped with the following default private IP address:

Default IP address:                   **192.168.127.254**

You may choose from three convenient methods for configuring the IP address assigned to your DeviceMaster.

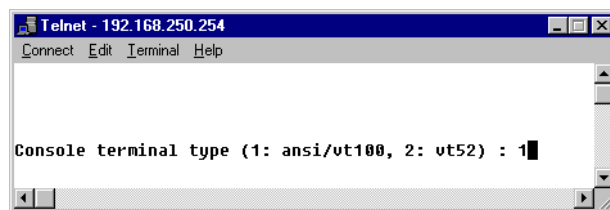
- The Telnet Console method accesses DeviceMaster through its Ethernet port.
- The Direct Console method accesses DeviceMaster through its serial port.
- It is also possible to set up the IP address by first installing the Custom Mode form of DeviceMaster Manager, which is automatically installed when installing the Windows device driver. See the Driver Installation Documentation for details.

## Telnet Console

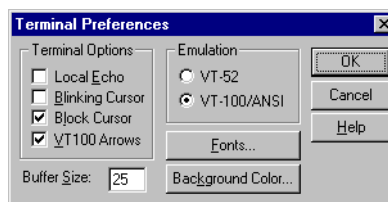
Depending on how your computer and network are configured, you may find it necessary to use network access to set up DeviceMaster's IP address. This can be done using the Telnet program for either Microsoft Windows or Unix. The following illustrates telnet in Windows NT.

**Note:** Set dip-switch SW1 to OFF to establish a Telnet connection.

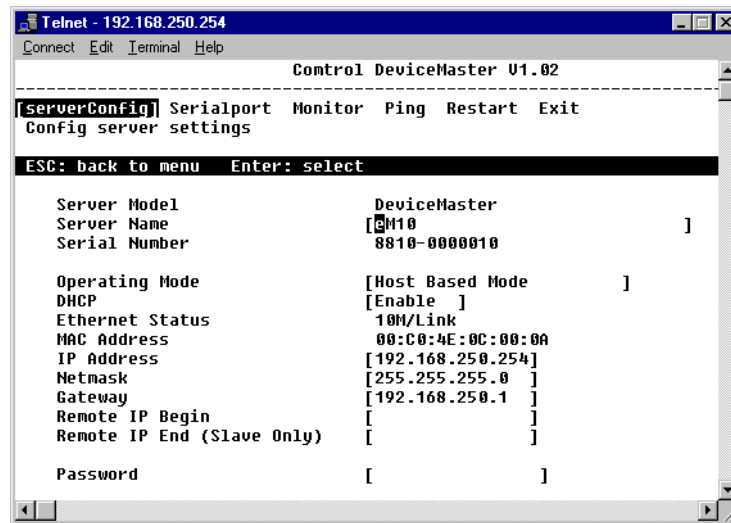
1. On the Windows toolbar, click the **Start** button, then click **Run**. The **Run** dialog box appears.
2. Type **telnet 192.168.127.254** (use the correct IP address if different from the default) in the **Open** box, and then click **OK**. The **Telnet** window appears



3. Type **1** to select ansi/vt100 for Console terminal type, and then press the **Enter** key.
4. If you are prompted for the Console password, type the password and then press the **Enter** key. A connection between your computer and DeviceMaster should now be established, and the DeviceMaster utility program will automatically start running.
5. To ensure proper operation, on the **Terminal** menu, click **Preferences**, and then make sure the **VT100 Arrows** option is selected.



- Use the keyboard arrow keys to select **[serverConfig]**, and then press the **Enter** key. The next telnet window appears.



- Since our goal in this section is to set the IP address of the server, use the keyboard arrow keys to position the cursor over the first digit of the IP address. Type in the correct IP address, and then press the **Enter** key to accept this value.
- Press the **ESC** key to return to main menu, and then select **Restart** and press the **Enter** key to activate the change.

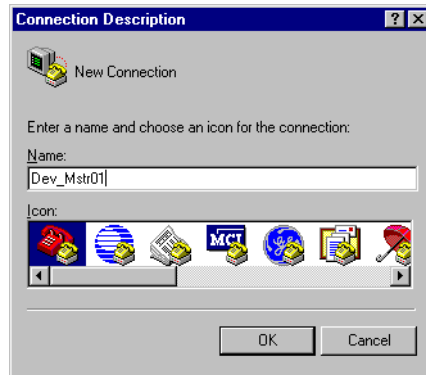
## Direct Console

You may use DeviceMaster's RS-232 console port to set up the IP address. Use a terminal emulator such as the latest version of HyperTerminal for Windows or Minicom for Linux to carry out the installation procedure. The following procedure uses HyperTerminal in Windows NT.

**Note:** Set dip-switches SW1 to ON to establish a console connection.

**Note:** Your version of HyperTerminal may or may not support every keystroke.

1. Use a **null modem** cable to plug the DeviceMaster unit's male serial port directly into your computer's male DB9 RS-232 serial port.
2. On the Window's desktop toolbar, click the **Start** button, then point to **Programs**, then **Accessories**, then **Communications**, then **Hyperterminal**, then click on a HyperTerminal session. The **HyperTerminal** window appears.
3. On the **File** menu, click **New Connection**.



The **Connection Description** dialog box appears.

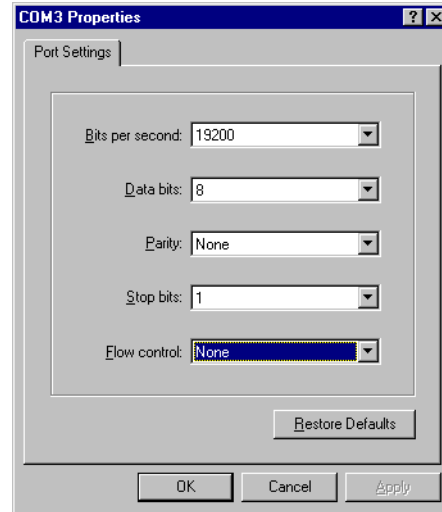
4. In the **Name** box, type the desired name and select an icon from the **Icon** list. Click **OK**. The **Connect To** dialog box appears.



5. From the **Connect using** drop-down list box, select the COM port that you are using. Click **OK**. The **Properties** dialog box appears.

6. Select the following parameters:

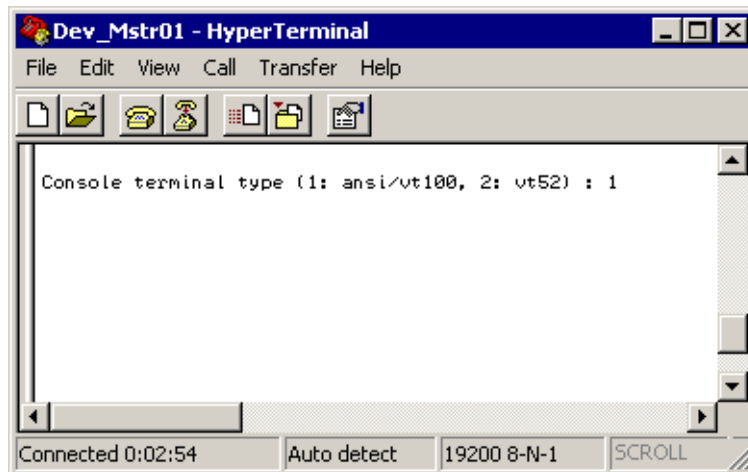
- Bits per second: 19200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow Control: None



7. Click **OK**.

The **HyperTerminal** main window appears.

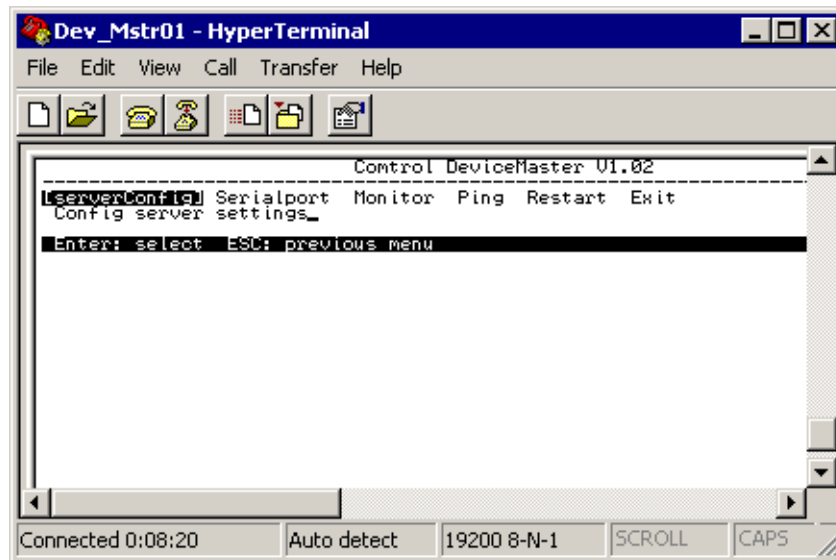
8. At the Console terminal type command line, type **1** for ansi/vt100 parameter.



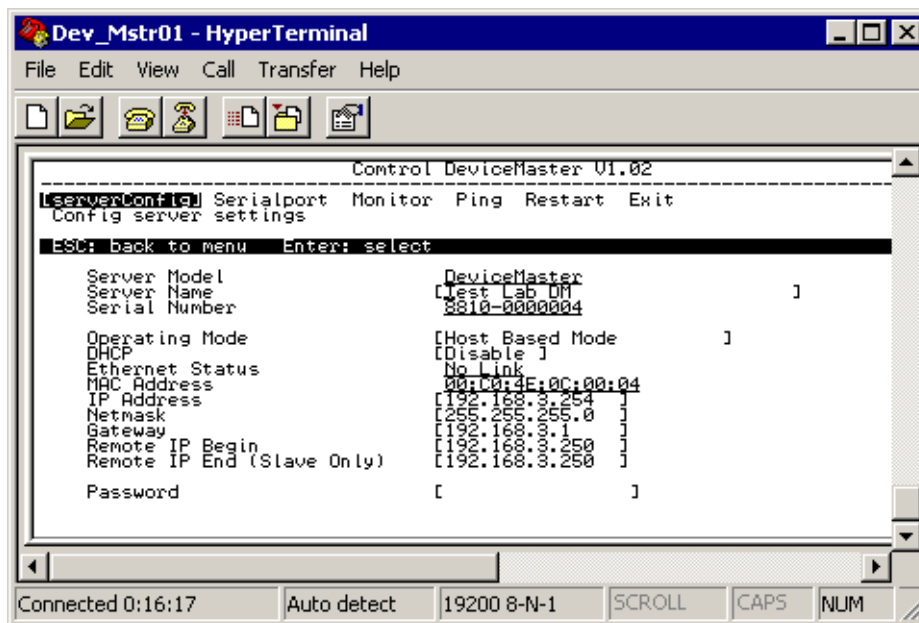
9. Press the **Enter** key.

HyperTerminal displays a configuration menu.

10. Select **[serverConfig]** from the menu.



11. Press the **Enter** key.  
Hyperterminal displays various parameters that are required to configure DeviceMaster. The parameters are enclosed in square brackets.



12. If you want to set the IP address of the server, use the keyboard arrow keys to position the cursor over the first digit of the IP address. Type in the correct IP address and then press the **Enter** key to accept this value. Press the **ESC** key to return to the main menu.  
HyperTerminal displays the previous main menu.
13. Using the arrow keys, select **Restart** from the menu.

## Replacing Hardware

Follow this procedure, to replace a DeviceMaster Primo with another DeviceMaster Primo in an existing configuration.

1. Disconnect the power from the DeviceMaster to be removed from service.
2. Remove the old unit and attach a new or spare DeviceMaster.
3. Connect the new DeviceMaster to the network hub or server NIC.
4. Connect the power source to the new DeviceMaster.
5. If necessary, change the driver to reflect the MAC or IP address of the new DeviceMaster.
6. If necessary, configure any RS-422 or RS-485 ports to match the previous unit.
7. Transfer *all* cabling from the old DeviceMaster to the new DeviceMaster.
8. *It is not necessary* to shut down and restart the server.

## Cable Information

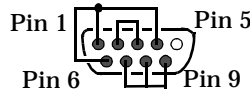
### Building Additional DB9 Loopback Plugs

*Loopback connectors* are DB9 female serial port plugs, with pins wired together as shown, that are used in conjunction with application software to test serial ports.

**Note:** *Control includes the Test Terminal (WCOM32) program on the CD for Windows 98 and Windows NT drivers. See the on-line help for WCOM32 for information about using these applications. Linux users can use MiniCom.*

Wire the following pins together to build additional plugs or replace a missing RS-232 loopback plug:

- Pins 1 to 4 to 6
- Pins 2 to 3
- Pins 7 to 8 to 9



**RS-232 Only  
(Back View)**

### Building Null-Modem Cables

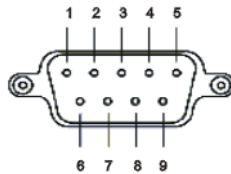
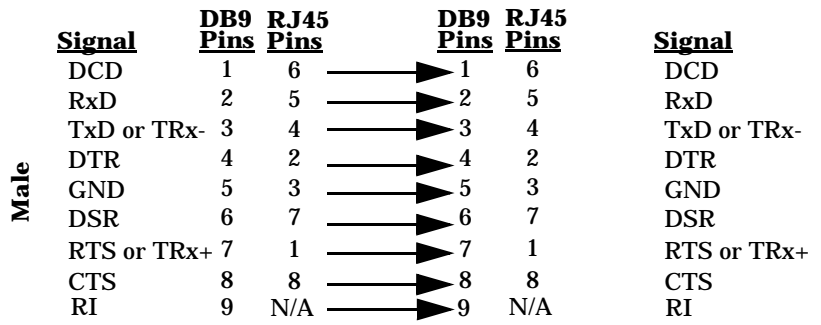
Use the following figure if you need to build a null-modem cable. A null-modem cable is required for connecting DTE devices.

**Note:** *You may want to purchase or build a straight-through cable and purchase a null-modem adapter.*

	<u>Signal</u>	<u>DB9 Pins</u>	<u>RJ45 Pins</u>	<u>DB9 Pins</u>	<u>RJ45 Pins</u>	<u>Signal</u>
Male	TxD	3	4	→	2	5 RxD
	RxD	2	5	←	3	4 TxD
	RTS	7	1	→	8	8 CTS
	CTS	8	8	←	7	1 RTS
	DSR	6	7	←	4	2 DTR
	DCD	1	6	←	1	6 DCD
	DTR	4	2	→	6	7 DSR
	GND	5	3	→	5	3 GND
	RI	9	N/A	←	9	N/A RI

### Building Straight-Through Cables

Use the following figure if you need to build a straight-through cable. Straight-through cables are used to connect DCE devices.



**DB9 Male Pinouts**

Pin	RS-232	RS-422	RS-485
1	DCD	TXDB(-)	TXDB/RXDB(-)
2	RXD	TXDA(+)	TXDA/RXDA(+)
3	TXD	RXDA(+)	
4	DTR	RXDB(-)	
5	GND	GND	
6	DSR	RTSB(-)	
7	RTS	RTSA(+)	
8	CTS	CTSA(+)	
9		CTSB(-)	

## DeviceMaster Primo Specifications

Environmental Conditions	Value
Operating temperature:	0 to 55°C
Altitude	0 to 10,000 feet
Humidity (non-condensing): System on (operational) System off (storage)	8% to 80% 20% to 80%

Electromagnetic Compliances	Status
<b>EMC:</b> (conforms to the following standards) FCC Class B EN55022: 1994 class B EN61000-3-2: 1995 class B EN61000-3-3: 1995 EN55082-1: 1997 EN61000-4-2: 1995 Contact Discharge 4kV, Air Discharge 8kV EN61000-4-3: 1995 EN61000-4-4: 1995 AC/DC Power supply 1kV, Data/Signal lines 5kV EN61000-4-5: 1995 AC/DC Line to Line 1kV, AC/DC Line to Earth 2kV EN61000-4-6: 1995 EN61000-4-8: 1993 3A/m at 50Hz EN61000-4-11: 1994	Yes
<b>Safety:</b> EN60950 UL/CUL, TUV	Yes Yes

<b>Topic</b>	<b>Specification</b>
External power supply: Line frequency Line voltage	50 - 60 Hz 100 - 240VAC
Processor type	80186
Memory	512 KB
Baud rate/port range	50 bps - 230 Kbps
Ethernet host interface (upstream and downstream)	10/100Base-T (10/100 Mbps - RJ45)
Serial interface	RS-232, RS-422, and RS-485, Dip Switch Selectable
Network protocols	TCP, UDP, ICMP, Telnet, IP, RTelnet, DHCP
Configuration: Data bits Parity Stop bits	7 or 8 Odd, Even, None 1 or 2 (with parity setting of None)
SNMP support	Monitoring only.

## Notices

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Important Safety Information

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install the power plug in wet locations.
- Use a screwdriver and other tools with insulated handles.



## Technical Support

If you need technical support, contact Control using one of the following methods.

Contact Method	Corporate Headquarters	Control Europe
E-mail	<a href="mailto:support@control.com">support@control.com</a>	<a href="mailto:support@control.co.uk">support@control.co.uk</a>
Web site	<a href="http://www.control.com">http://www.control.com</a>	<a href="http://www.control.co.uk">http://www.control.co.uk</a>
Fax	(763) 494-4199	+44 (0) 1 869-323-211
Phone	(763) 494-4100	+44 (0) 1 869-323-220
FTP site	<a href="ftp://ftp.control.com">ftp://ftp.control.com</a>	

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