Installing the DeviceMaster 500 and the SICK LMS Scanner (Windows)

This document contains an overview of installation procedures to set up the DeviceMaster 500 and LMS scanner at *500K baud* in Windows. You can use this document to set the DeviceMaster 500 and SICK LMS scanner to other baud rates that may use an RS-232 cable.

Optionally, refer to the *DeviceMaster 500 Installation and Configuration Guide* for the following information:

- Hardware installation
- Installing PortVision Plus
- Configuring the network information
- Checking (and if necessary, updating) SocketServer
- Device driver installation, configuration, and COM port configuration

    Note: *Optionally, refer to the* NS-Link User Guide for Windows *for detailed driver installation and configuration procedures or the help system.*

- Managing the DeviceMaster 500
- Troubleshooting procedures

Installation Requirements

The following hardware is required for the installation:

- SICK LMS scanner
- DeviceMaster 500
- RS-422 cable that maps the DeviceMaster 500 connector to the SICK LMS scanner

The following software is required for the installation, which is located on the *Software and Documentation CD* shipped with the DeviceMaster 500:

- PortVision Plus
- NS-Link device driver for Windows 2000, Windows XP, Windows Server 2003, and Windows Vista
- Comtrol Utility Package (WCom2 - Test Terminal and PMon2 - Port Monitor)
- SICK MST Demo Software (optional for other baud rates)

Installation Overview

The first step is installing the DeviceMaster 500. There are several DeviceMaster 500 models, which have different installation procedures.

Use the appropriate procedure for your DeviceMaster 500 model.

- *1-Port Enclosed (99439-8) Installation* on Page 2
- *1-Port Custom Embedded Bulk (99474-9) Installation* on Page 4
- *4-Port Installation (99444-2)* on Page 8

1-Port Enclosed (99439-8) Installation

Use the following procedure to install the 1-port enclosed DeviceMaster 500 and LMS scanner at 500K baud.
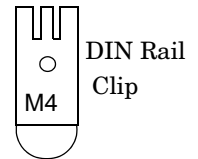
Before installation, record the serial number and MAC address from the back of the DeviceMaster 500 on the provided customer service label. You may need the MAC address, which starts with **00 C0 4E**, during device driver configuration.

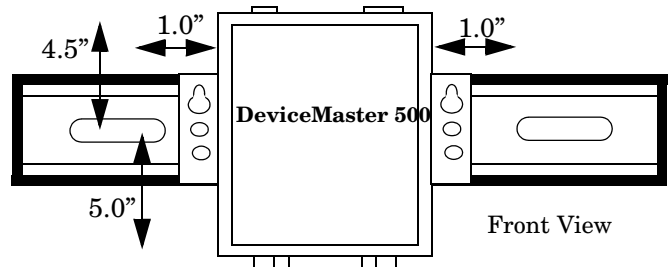Use the following procedure to install the DeviceMaster 500 1-Port.

1. Use the appropriate procedure:

    - *Not DIN Rail Mounted*; skip to Step 3,

    - *DIN Rail Mount*

        - Pick up the DeviceMaster 500 so that the front is facing you.

        - Pick up a DIN rail clip. (The three tines should be on top and the **M4** label should face you.)

        - Slide the DIN rail clip behind the DeviceMaster 500 and line it up with one of the screw holes on the DeviceMaster 500.

        - Insert a screw into the hole and tighten with a Phillips screwdriver.

        - Repeat the above steps with the second DIN rail clip. Make sure the screws on both DIN rail clips line up.

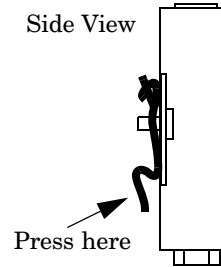   - Attach the DeviceMaster 500 to the DIN rail.

For optimal operation, verify that the DeviceMaster 500 is mounted in a vertical orientation with a minimum of 1.0" space on either side and a minimum of 4.5" clearance from the center of the rail to any device or wire trough above the unit and a minimum of 5.0" below.

If you need to remove the DeviceMaster 500 from the DIN rail, exert

pressure on the backside of the tabs at the bottom of both DIN rail clips.
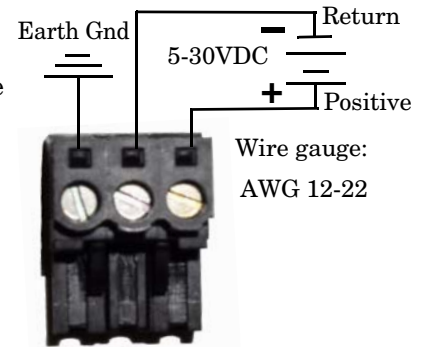
Side View

Press here

2. Connect the DeviceMaster 500 port labeled **10/100 Ethernet** to the *same Ethernet network segment as the host PC* using a standard Ethernet cable.

   Note: Comtrol Technical Support recommends connecting the DeviceMaster 500 to a PC/laptop running Windows during initial configuration.

   Do not connect the scanner until the port interface type has been configured in the NS-Link driver. The default serial port setting is RS-232.

   Caution

3. Apply power to the DeviceMaster 500 using the following steps.

   a. Connect the screw terminal power connector to the wires on the power supply as displayed. The power supply must conform to the specifications for the DeviceMaster 500.

   Earth Gnd   Return   5-30VDC   Positive

   Wire gauge: AWG 12-22

Power Supply†	Specifications
Output voltage Current Power	5-30VDC 100 mA (Min.) @ 24VDC 2.5 W
† *Any power supply that meets current consumption, voltage, power, and connector pinouts requirements can be used.*	

   Observe proper ESD techniques when connecting and disconnecting the DeviceMaster 500.

   Caution

   b. Use a small flat head screw to lock the wires into place.

   c. Plug the power terminal connector into the DeviceMaster 500.

      Note: Align the power plugs properly. The scalloped side of the screw terminal power connector should be aligned with the scalloped side of the power jack on the DeviceMaster 500.

   d. If necessary, connect the appropriate power cable to the power supply.

   e. Connect the power supply to the power source.

4. Verify the **Status** LED has completed the boot cycle and network connection for the DeviceMaster 500 is functioning properly using the table below.

LED Descriptions 1-Port Enclosed	
100	If the **100** LED is lit, it indicates a working 100 MB Ethernet connection (100 MB network, only). If the LED is not lit, it indicates a 10 MB Ethernet connection.
Tx/Rx	Displays transmit and receive activity.
Link/Act	When lit, it indicates a working Ethernet connection. The LED blinks several times during the boot cycle.

LED Descriptions 1-Port Enclosed	
Status	If the LED is lit, it indicates that the DeviceMaster 500 has power and it has completed the boot cycle. *Note:* *The Status LED flashes while booting and it takes approximately 15 seconds for the Bootloader to complete the boot cycle. When the Bootloader completes the cycle, the LED has a solid, steady light that blinks approximately every 30 seconds.*

Go to *Software Installation* on Page 9 to complete the installation.
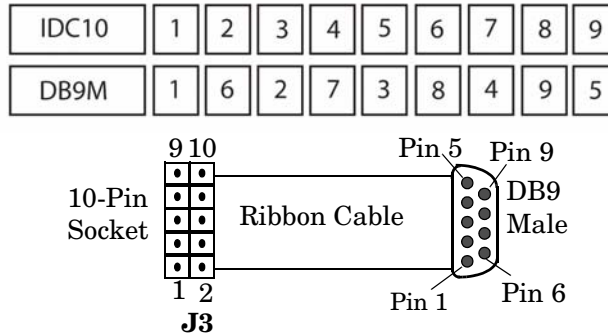
1-Port Custom Embedded Bulk (99474-9) Installation

Use the following procedure to set up the 1-port custom embedded bulk DeviceMaster 500 and LMS scanner at 500K baud.

• If necessary, build the serial ribbon cable.

• Mount the DeviceMaster 500 and optionally install light pipes (Page 5).

• Attach the network and serial cables (Page 6).

• Connect the power and verify installation (Page 7).

Building the Serial Ribbon Cable

Use the following information to build a DB9 serial ribbon cable to connect to the DeviceMaster 500 1-Port embedded IDC10 connector (**J3**).

IDC10	1	2	3	4	5	6	7	8	9
DB9M	1	6	2	7	3	8	4	9	5

J3 Header	RS-232	RS-422	RS-485
1	CD	Not used	Not used
2	DSR	Not used	Not used
3	RxD	RxD-	Not used
4	RTS	TxD+	TRX+
5	TxD	TxD-	TRX-
6	CTS	RxD+	Not used
7	DTR	Not used	Not used
8	RI	Not used	Not used
9	GND	Not used	Not used
10	Not connected		

Installing the DeviceMaster 500 and the SICK LMS Scanner (Windows): 2000472 Rev. C
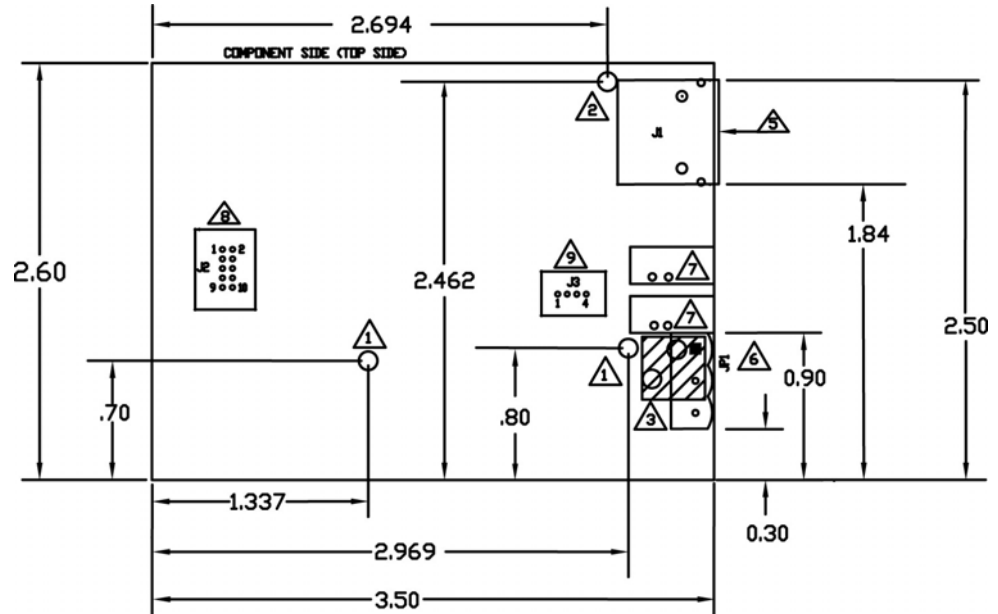
Mounting the DeviceMaster 500

Use the following procedure to mount the DeviceMaster 500 1-Port embedded.

1. Carefully remove the DeviceMaster 500 from the anti-static bag, following standard electrostatic device handling procedures.

    Note: *Write down the MAC address located on a label on the bottom (solder side) center of the DeviceMaster 500 because you may need it during configuration.*

2. Mount the DeviceMaster 500 for your environment using 1/4" stand-offs to separate the DeviceMaster 500 from the base.

1. Non-plated/non-grounded mounting holes 0.116" diameter (+/-0.003").

2. Plated/chassis grounded mounting hole 0.116" diameter (+/-0.003").

3. WARNING: Holes in hatched area are not mounting holes.

4. Maximum component height above board is 0.55".

5. Ethernet connection J2: J2 overhangs board edge by 0.14" and the height is 0.55".

6. Power connector; the mating connector is Weidmuller P/N: 1526510000

7. LED light pipe mounting holes. The LED light pipes are not provided.

8. Serial port connector J3: 0.1" pin spacing, 0.025" square pin diameter, and 0.230" pin height.

9. Debug port connector J4: 0.1" pin spacing, 0.025" square pin diameter, and 0.230" pin height.

3. Use one of the following methods to ground the DeviceMaster 500.

   - Through the **power supply** by connecting the ground wire on the power cable using plastic or metal stand-offs.

   - Through the **chassis**, using metal stand-offs. If plastic stand-offs are used to mount the board, then you must ground the DeviceMaster 500 using the power cable.

   Note: *The maximum diameter of the metal stand-offs should be 0.175" with a 4-40 machine screw. Metal stand-offs are not provided with the DeviceMaster 500.*
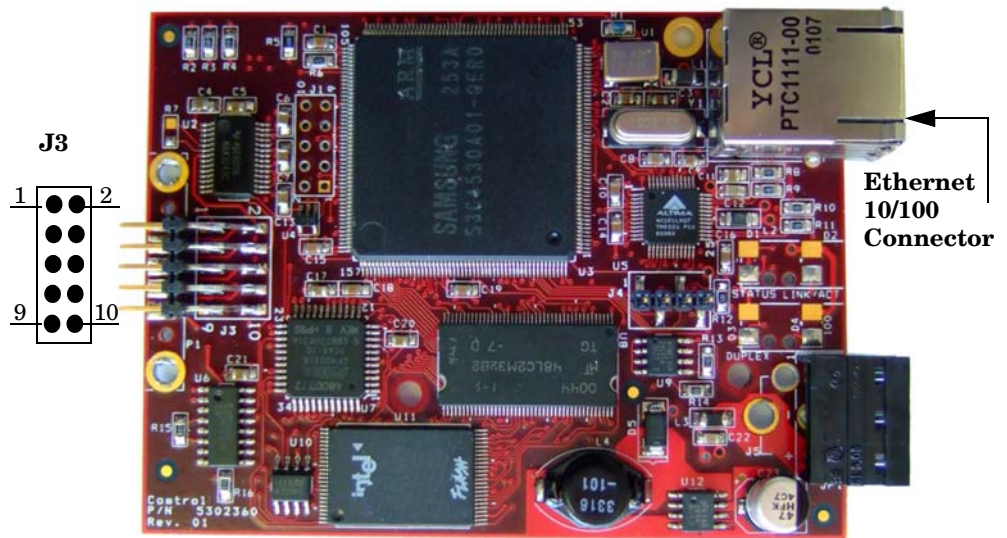
4. Optionally, attach the light pipes. The following light pipes have been tested and found to function; Bivar, Inc. (P/N:LP-230) and Ledtronics, Inc. (P/N:LTP003-0CW-001).

After mounting the DeviceMaster 500, you are ready to connect the cables.

Attaching the Network and Serial Cables

Use the following procedure to attach the serial ribbon and Ethernet cables.

1. If using a ribbon cable, attach the cable built in *Building the Serial Ribbon Cable* on Page 4 to the header labeled **J3**.

2. Connect a standard Ethernet cable from the RJ45 port on the DeviceMaster 500 to your Ethernet hub or a crossover cable to a server NIC.

   The NS-Link device driver's default port setting is RS-232. Make sure that you do not connect RS-422/485 devices until the appropriate port interface type has been configured in NS-Link.

Use the next subsection to wire the power terminal connector and verify the hardware installation.

⚠️
Caution

Connecting the Power and Verifying Installation

Use the following procedure to wire the power terminal connector and connect the DeviceMaster 500 to a power source.
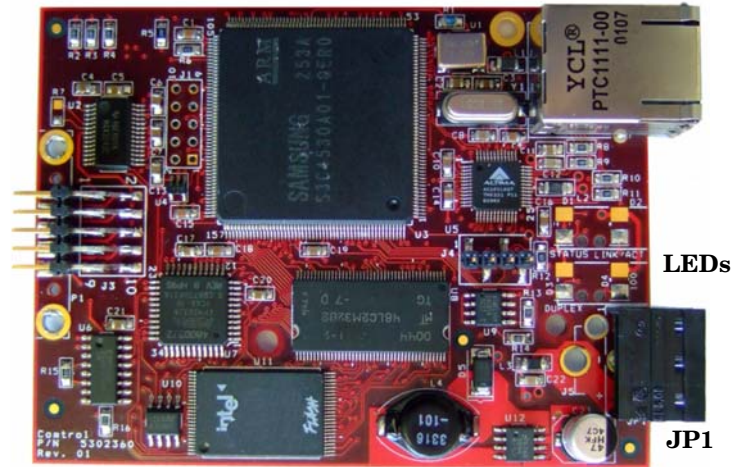
1. Connect the screw terminal power connector to the wires on the power supply as displayed. The power supply must conform to the specifications for the DeviceMaster 500 embedded.

Power Supply†	Specifications
Output voltage Current Power	5-30VDC 100 mA (Min.) @ 24VDC 2.5 W

† Any power supply that meets current consumption, voltage, power, and connector pinouts requirements can be used.

Observe proper ESD techniques when connecting and disconnecting the DeviceMaster 500.

⚠️ **Caution**

2. Use a small flat head screw to lock the wires into place.

3. Plug the screw terminal power connector into **JP1** on the DeviceMaster 500 by aligning the scalloped sides.

4. Apply power to the DeviceMaster 500.

5. Verify the **Status** LED has completed the boot cycle and network connection for the DeviceMaster 500 is functioning properly using the table below.

LEDs

JP1

The LEDs are located between the RJ45 connector and the power terminal block.

LED Descriptions	
Status	When lit, the **Status** LED (**D1**) on the DeviceMaster 500 indicates the devices is fully powered and has completed the boot cycle. ***Note:*** *The Status LED flashes for approximately 15 seconds while booting. When the bootloader completes the cycle, the LED has a solid, steady light. When the Bootloader completes the cycle, the LED has a solid, steady light that blinks approximately every 30 seconds.*
Link/Act	When lit, the **Link/Act** LED (**D2**) indicates a working Ethernet connection.
Duplex	When lit, the **Duplex** (**D3**) LED indicates full-duplex activity.
100	When lit, the **100** (**D4**) LED indicates a working 100 MB Ethernet connection (100 MB network, only). If the LED is not lit, it indicates a 10 MB Ethernet connection.

Go to *Software Installation* on Page 9 to complete the installation.

4-Port Installation (99444-2)

Use the following procedure to set up the 4-port DeviceMaster 500 and LMS scanner at 500K baud. Install the DeviceMaster 500 hardware using the following procedure:

1. Record the MAC address, model number, and serial number of the DeviceMaster 500 on the customer service label provided.

2. Connect the DeviceMaster 500 to the same Ethernet network segment as the host PC using one of the following methods:

   - *Ethernet hub or switch (10/100Base-T)*: Connect to the port labeled UP on the DeviceMaster 500 using a standard Ethernet cable.

   - *Server NIC (10/100Base-T)*: Connect to the port labeled DOWN on the DeviceMaster 500 using a standard Ethernet cable.

   Note: *Do not connect scanner until RS-422 has been configured for that port in the driver. The NS-Link default port setting is RS-232.*

3. Apply power to the DeviceMaster 500 by connecting the AC power adapter to the DeviceMaster 500, the appropriate power cord for your location to the power adapter, and plugging the power cord into a power source.

4. Verify the **Status** LED has completed the boot cycle and network connection for the DeviceMaster 500 is functioning properly using the table below.

LED Descriptions	
PWR	LED on the front panel of the DeviceMaster 500 is lit, indicating you have power and it has completed the boot cycle. ***Note:*** *The PWR LED flashes while booting and it takes approximately 15 seconds for the bootloader to complete the cycle. When the Bootloader completes the cycle, the LED has a solid, steady light that blinks approximately every 30 seconds.*
LNK ACT	The **LNK ACT** LED is lit, indicating that you have a working Ethernet connection.
COL	If the **COL LED** is lit, there is a network collision.
100	If the **100** LED is lit, it indicates a working 100 MB Ethernet connection (100 MB network, only). If the LED is not lit, it indicates a 10 MB Ethernet connection.

10/100 NETWORK
LNK
ACT
COL
100
UP   DOWN

Software Installation

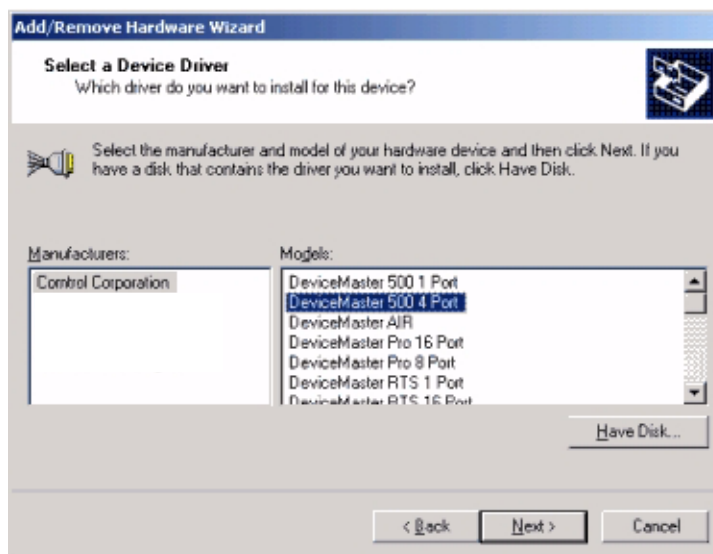Use the following procedure to install the software for the DeviceMaster 500.

Optionally, refer to the *DeviceMaster 500 User Guide* for more detailed installation procedures. This Software installation

1. Install PortVision Plus from the CD or download the latest version.

2. Optionally, install the Comtrol Utility Package from the CD.

    Note: *PortVision Plus contains an embedded version of the utilites that you can use.*

3. Extract and install the NS-Link device driver from the CD or download the latest version.

    If necessary, use the NS-Link help system, the *NS-Link User Guide* on the CD, or download the latest version for configuration procedures.

4. Configure the appropriate COM port on the DeviceMaster 500 to use RS-422 mode.

    Note: *If you do not require 500K baud and you are using an RS-232 cable, do not configure the port to use RS-422 mode.*
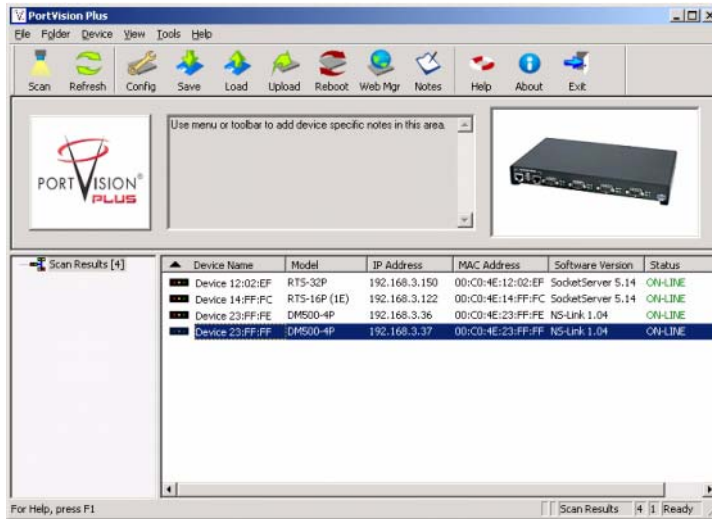
5. Connect the LMS Scanner to the DeviceMaster 500 port that you configured using the RS-422 cable (or optionally the RS-232 cable if you do not want to use the 500K rate) to the scanner.

    Note: *Do not connect the power on the LMS scanner at this time.*
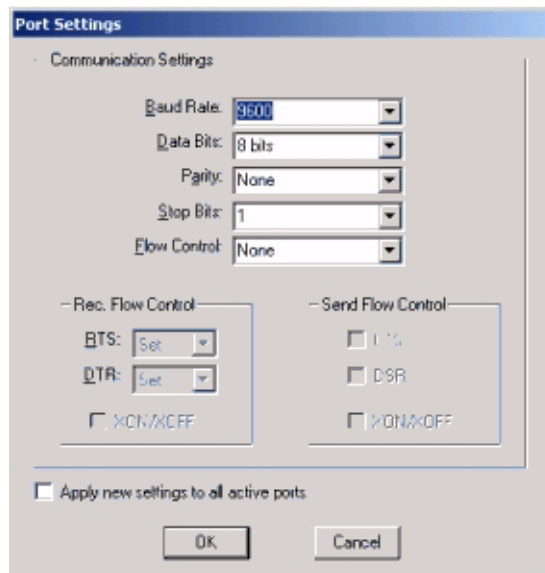
6. Open PortVision Plus (**Start/Programs/Comtrol/PortVision Plus/PortVision Plus**).

7. Select **Scan** and verify that the DeviceMaster 500 is connected to the network and it running NS-Link.

8. Launch WCOM2 - Test Terminal from PortVision Plus by selecting **Tools/ Applications/Test Terminal (WCom2)**.

9. Open the DeviceMaster 500 COM port that you configured for the scanner by selecting the appropriate port from the **File/Open** menu.

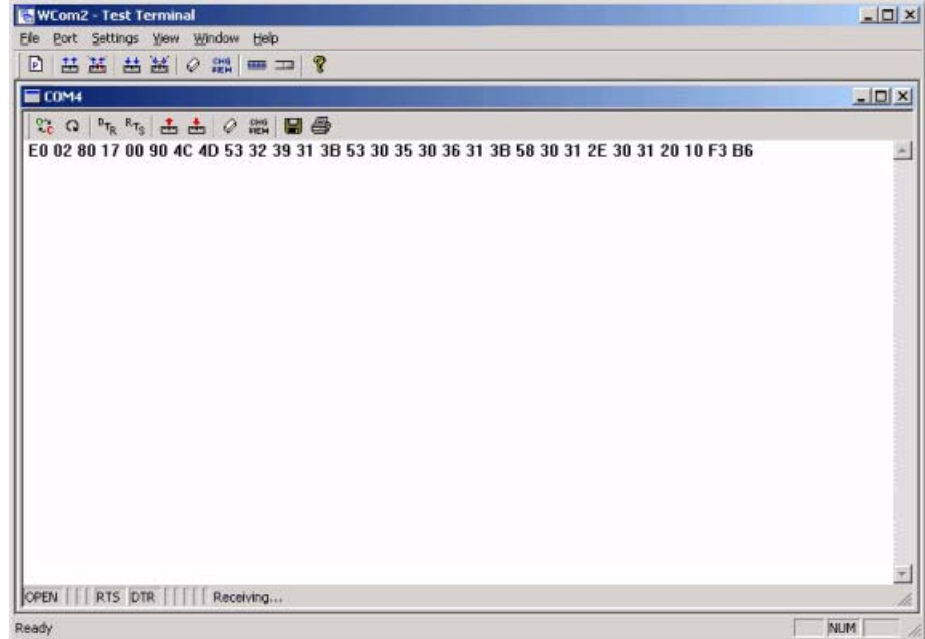10. Set the COM port to 9600 baud by using the **Settings/Port Settings** menu.

Note: The default baud rate for the scanner is 9600. Every time you power cycle the scanner you must reset this baud rate to communicate with the scanner.

11. Set WCOM2 to view Hex data by selecting the **View/Hex Display** menu option. **Hex Display** displays a check when selected.
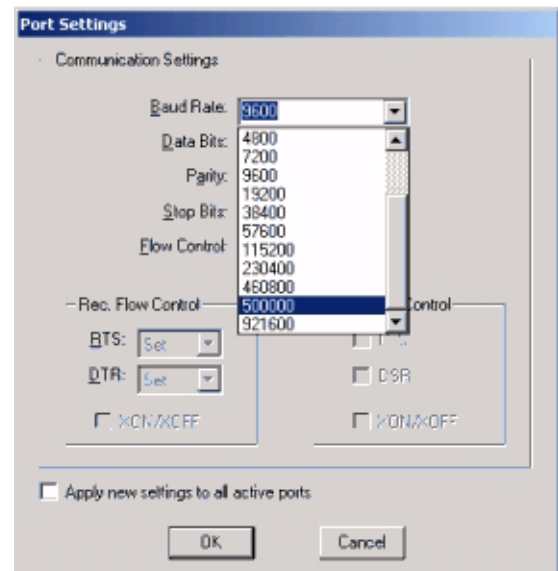
Note: All the communications with the scanner are in Hex format.

12. Connect the power cord of the scanner to a power source. When the scanner displays a green light, you should see a message on the WCom2 window.

13. Use the **Port/Send ASCII / HEX String** menu to send the appropriate hex commands using LMS scanner manual to perform these steps:

    a. Send a request to the scanner to start measuring.

    b. Send a request to the scanner to stop measuring.

    c. Send a request to the scanner to set the baud rate to 500K.

    d. After you get the confirmation, change the COM port setting in WCOM2 to 500K by using the **Settings/Port Settings** menu.

    e. Repeat Steps a and b to make sure that the scanner is working at 500K.

    Note: *You can use this step for any baud rate.*

Technical Support

Refer to the *DeviceMaster 500 Installation and Configuration Guide* or the *NS-Link User Guide for Windows*, which are also located on the *Software and Documentation CD* for troubleshooting information. Optionally, the CD also contains a troubleshooting area.

If you need technical support, contact one of the support facilities below:

SICK AG Hotline

Auto Ident

Schiessstr. 56

D-40549 Duesseldorf

Phone: +49 (0) 211 5301 270

Email: info@sick.de

Web: http://www.sick.com

SICK, Inc. US

6900 W. 110th Street

Bloomington, MN 55438

Phone: 952.829.4823

Email: don.alexander@sick.com

Trademark Notices

Comtrol, NS-Link, and DeviceMaster are trademarks of Comtrol Corporation.

Microsoft and Windows are registered trademarks of Microsoft Corporation.

Portions of SocketServer are copyrighted by GoAhead Software, Inc. Copyright © 2001. GoAhead Software, Inc. All Rights Reserved.

Other product names mentioned herein may be trademarks and/or registered trademarks of their respective owners.

Third Edition, November 3, 2008