



Application Note
0380-0241-10 Rev 1.1

Embedded Performance, Inc.
606 Valley Way, Milpitas, CA 95035
Telephone: (408) 957-0350
FAX: (408) 957-0307
e-mail: support@epitools.com
web: www.epitools.com

Using a USB Ethernet Adapter with a MAJIC® Probe

0380-0241-10 Rev 1.1

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Introduction

A MAJIC® probe can communicate to a host computer over an Ethernet link or with an RS232 serial connection. Inexpensive USB to Ethernet adapters are widely available, making it easy to connect your MAJIC® probe to the USB port on a Windows PC. Any such adapter on the market should work.

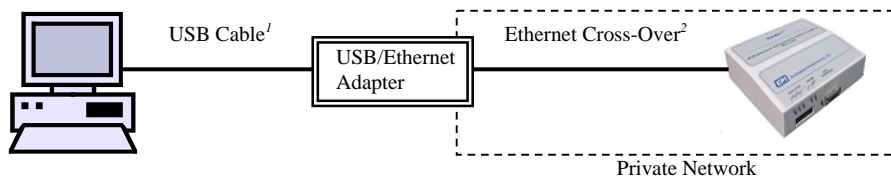
There are two main reasons why you might want to use one a USB to Ethernet adapter. The host PC you're using does not have an Ethernet port; or, it is difficult to allocate an Ethernet static IP address in your network environment. Note: The static IP issue can also be resolved by adding a second Ethernet port to your PC.

Getting Support

If you have additional questions on this or another topic, please do not hesitate to contact our technical support staff. We are committed to making sure the MAJIC® probe and EDT development environment work well for you.

How it Works

The USB to Ethernet adapter uses a Microsoft standard called NDIS to transmit MAJIC® Ethernet packets via the USB adapter. Debuggers on the host side are not aware they are using a USB port. Instead, they see it as a software based Ethernet interface. Below is a simple diagram showing the connection.



Notes:

1. The adapter can also be plugged into a USB hub used by the host computer.
2. An Ethernet “cross over” cable can be used in place of the Ethernet switch or hub, as shown here.

Recommended USB to Ethernet Adapters

Any USB to Ethernet adapter should work with a MAJIC® probe. We have tested the adapters listed below and found them to work well. Both are priced less than \$30 (US) at local electronics stores.

Company: LINKSYS, www.linksys.com
Product: Compact USB 2.0 10/100 Network Adapter.
Includes USB Type A extension cable (not pictured).

Company: Silicom Connectivity Solutions,
www.silicom.co.il
Product: USB Ethernet Adapter.
(USB 1.0 compliant)



Installation

There are several parts to the installation process. First, install the adapter and adapter software drivers. Second, configure the adapter's Ethernet interface. Third, configure the IP address of your MAJIC® probe. Lastly, you need to configure a debug environment, which is covered separately in your *MAJIC® User's Manual*.

Installing and Configuring the Adapter Software

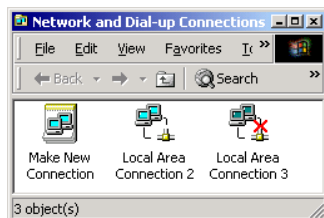
- Step 1:** Install your USB Ethernet adapter hardware and software using the directions provided by your adapter supplier.
- Step 2:** *Step 1* above created a new Ethernet Network interface on your computer. If you are setting up a private network via the USB Ethernet adapter, then you need to specify some IP Address connection information. This procedure is explained below. However, if you are using the USB Network Adapter to connect to a larger network and your MAJIC® probe is just one of the many devices on that network, then you are done with the installation covered in this manual. In a larger network you need to have your Network Administrator allocate a static IP for your MAJIC® probe. Details on this setup are covered in your *MAJIC® User's Manual* (in the section on Ethernet Setup).

You now must modify the default settings of the new interface. This is done using standard Microsoft Windows interfaces that vary slightly based on the version of Windows that you are using. The screen shots below all relate to Window 2000, but you should be able to follow along when using other Windows versions as well.

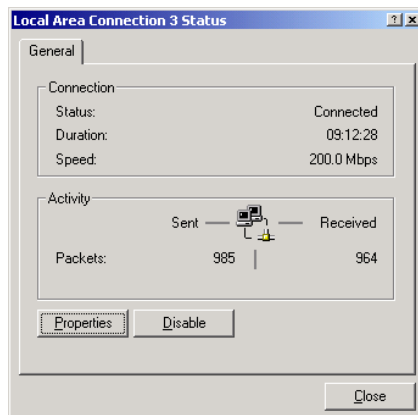
Open the Control Panel by selecting **Start->Settings->Control Panel**. Double-click on the **Network and Dial-up Connections** Icon (shown to the right).



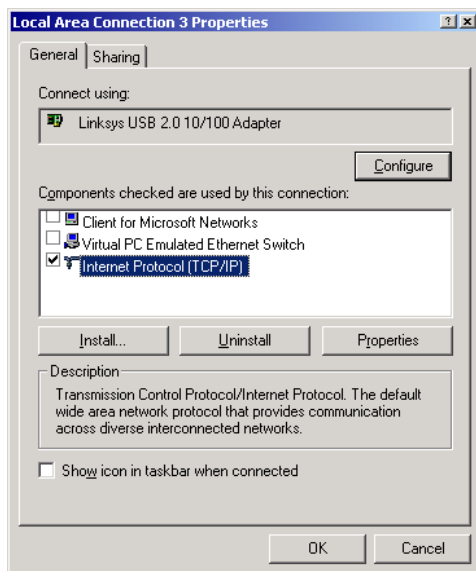
This brings up a window showing your existing network interfaces as show below. If you've just done your adapter install, the highest number connection is your adapter network interface.



- Step 3** Double-click on the connection you believe to be your USB Ethernet adapter. This brings up a dialog like you see below.

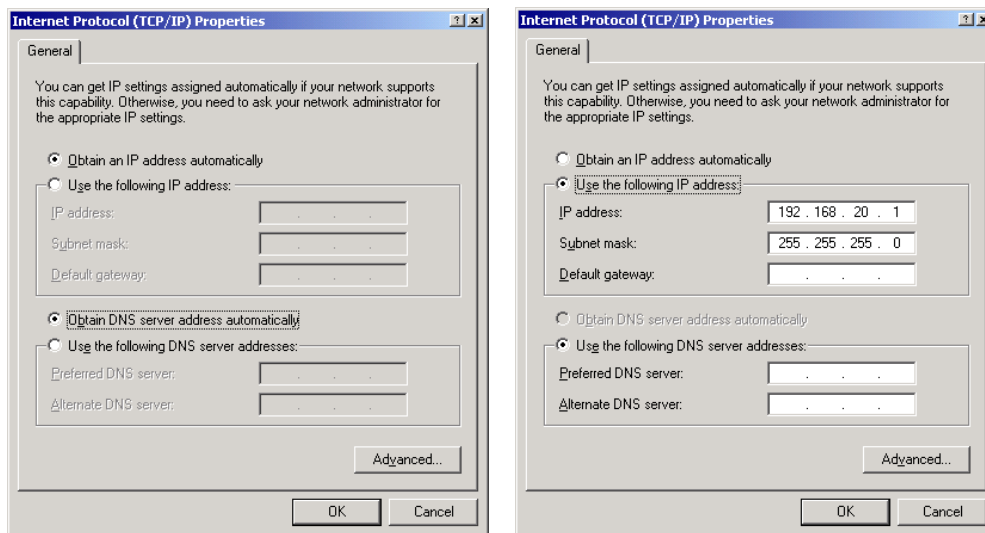


Click the [**Properties**] button, which brings up the dialog on the next page.



Step 4 Verify the **Connect using:** description box matches your USB Ethernet Adapter. If not, then go back and select a different Local Area Connection from the **Network and Dial-Up Connections** Window.

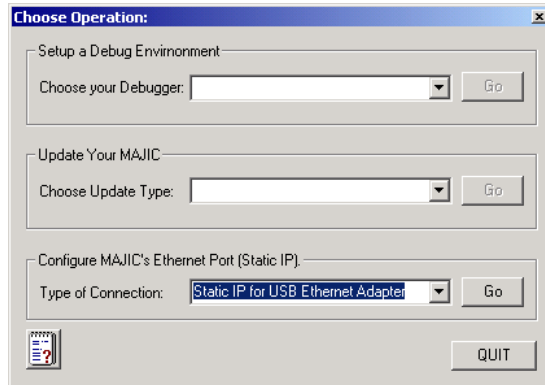
Select the **Internet Protocol (TCP/IP)** line to highlight it (see dialog above), and then click the **[Properties]** button. This brings up the following dialog box (below left). Change it to match the example (below right) dialog box and click the **[OK]** button. Note that the value you choose for the IP address must not collide with the IP range of any other network adapter you are using on your PC. If you are unsure what IP range is used within your company, then please talk with your network administrator about this issue.



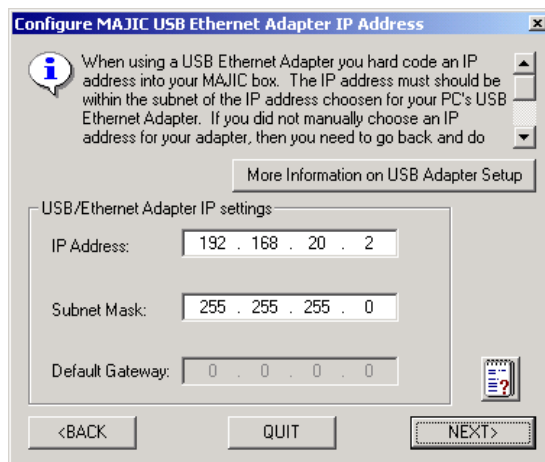
Step 5 Close the various network interface dialog boxes by clicking the **[OK]** buttons. You have now configured the USB Ethernet adapter interface. Now you must configure your MAJIC® probe to match this new network setup.

Configuring a MAJIC® Probe for a USB Ethernet Adapter Network

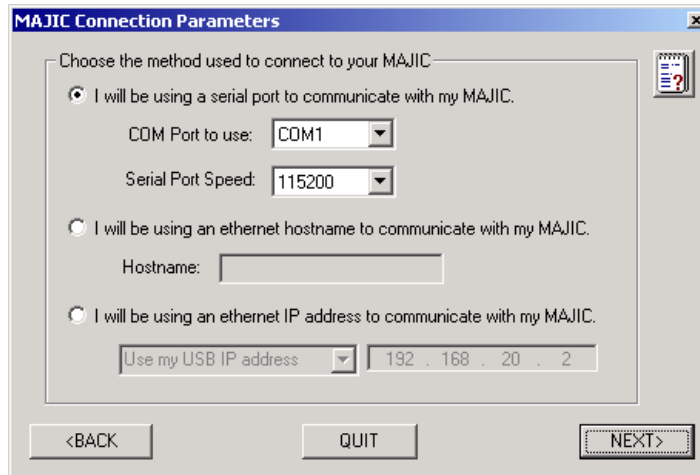
Step 1: Launch the MAJIC Setup Wizard, read the introduction, then click **[Next]** to reach the form below. Select the Static IP for USB Ethernet Adapter option as shown below and click the **[GO]** button.



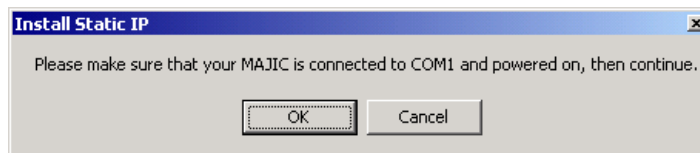
Step 2: Configure the dialog box as shown below using a similar IP address as used for the USB Ethernet Adapter setup. The rightmost IP number (range 0.255) should be different than your adapters IP number, and the other three numbers should be the same. We chose the number 2 here. Make sure the Subnet mask is set as shown here, then click the **[NEXT]** button.



Step3: Now you are ready to program your MAJIC® probe to utilize this new configuration. To do this, you typically need to connect using the supplied RS232 serial cable, since you have not yet established the ability to use Ethernet for communication. Select the communications parameters as shown in the dialog box below. If you are using COM2, then select it instead. Click the **[NEXT]** button.



Step4: Make sure your MAJIC® probe is connected to the selected COM port and click the **[OK]** button.



A Console Window pops up as shown below showing the progress of the setup.

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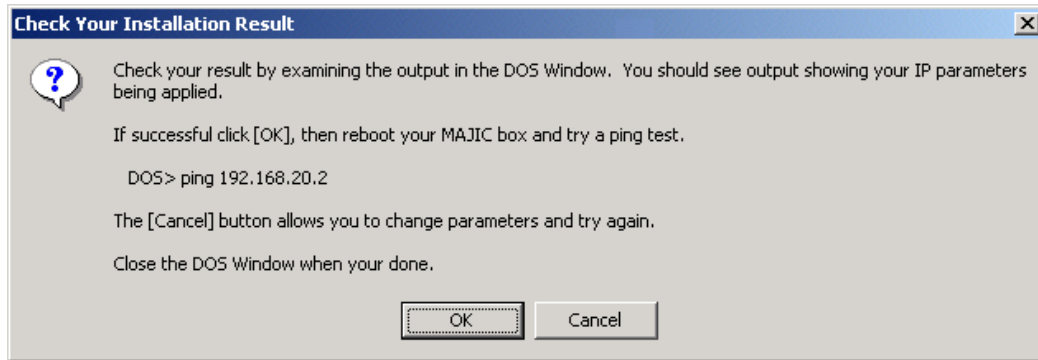
C:\WINNT\system32\cmd.exe
Reading startice.cmd file
Finished reading startice.cmd
Flash update completed successfully
Static IP address setting will take effect after emulator is rebooted

// NAME                = VALUE                DESCRIPTION
E0 tv_ip_address        = 192.168.20.2 // Static IP address for target
E0 tv_ip_gateway        = 0.0.0.0     // Static gateway IP address for target
E0 tv_ip_netmask        = 255.255.255.0 // Subnet mask for target

C:\pkg\edta\bin>_

```

You also should see this dialog box:



Step5: Follow the directions in the dialog above to confirm the configuration is applied. You now have completed setting up your MAJIC® probe to work with your USB Ethernet Adapter network.

Configuring a Debug Environment

This step is covered in Chapter 3, *Debug Environment*, in your MAJIC® User's Manual. Please refer there for details and remember to use the IP address you assigned to your MAJIC® probe when specifying the communications parameters for your debug environment.