



# **CATC<sup>TM</sup> NetMate<sup>TM</sup> USB/Ethernet Link User's Manual**



**Version 1.51**

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**Note 1:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note 2:** Shielded interface cables must be used in order to comply with the emissions limits.

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An electronic copy of this manual can be downloaded at <http://www.catc.com/>

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## 1. Introduction

The CATC NetMate USB/Ethernet Link (a Universal Serial Bus-to-Ethernet adapter) makes it easy to connect any USB-equipped notebook, portable, or desktop computer to an Ethernet local area network. The product consists of a small plastic enclosure incorporating both USB and 10BaseT (RJ45 TP) Ethernet ports, plus the associated software.

Windows applications that communicate via an Ethernet card will also work with the CATC NetMate Link (simply referred to as the *Link*). The Link offers a *Plug and Play* solution for network connectivity, eliminating the need to insert cards or shut down the system at connection time.



**Figure 1-1. CATC NetMate USB/Ethernet Link**

The Link, which conforms to both USB and Ethernet specifications, functions as a full-speed USB device. In addition, the hardware includes an Ethernet controller, appropriate memory buffers, and on-board non-volatile memory for network configuration. The unit requires no external power supply; it is powered directly by the Universal Serial Bus.

The provided software supports the Windows® 98, 98SE, ME, 2000, and XP operating systems. The CATC software drivers provide a bridge between the existing network layer protocols and the USB protocol stack, hiding the details of the USB interface from the application programs.

This manual explains how to connect and use the CATC NetMate USB/Ethernet Link hardware and software with your PC and network environment.

## 1.1 USB Overview

The Universal Serial Bus (USB) is an open industry standard, providing a simple and inexpensive way to connect up to 127 devices to a single computer port. Keyboards, mice, tablets, digitizers, scanners, bar-code readers, modems, printers, and more can all run at the same time. USB devices plug into any platform that supports the standard—from notebooks to desktop PCs to workstations.

USB is a dynamically reconfigurable serial bus with an elementary data rate of 12,000,000 bits/second, based on off-the-shelf, low-cost microcontroller technology. Its modular layered software protocol supports sophisticated device drivers and application programs.

Please refer to the USB Specifications for details on the USB protocol. The USB specifications are available from the USB Implementers Forum at:

USB IF  
M/S JF2-51  
2111 NE 25th Avenue  
Hillsboro, OR 97124

Telephone: +1/ 503.264.0590  
Fax: +1/ 503.693.7975  
Web: <http://www.usb.org/>

## 2. CATC NetMate USB/Ethernet Link

### 2.1 System Setup

The NetMate Link works with any computer that has a standard USB port. The USB line powers the Link directly; an additional power supply is not required. The USB cable is provided; you provide the network cable.

**Caution:** If you choose to use a USB hub, the hub must be externally powered. You cannot use a bus-powered hub.

In order to use the Link, you must install drivers in the USB host PC, as described in the following sections. In addition, you need to configure the network parameters.

### 2.2 Supplied Components

The following components are included with the Link:

- CATC NetMate USB/Ethernet Link device  
(Specifications are outlined in Section 6.)
- USB cable
- Software installation diskette
- *CATC NetMate USB/Ethernet Link User's Manual* (this manual)

### 2.3 In addition...

You will need a network (Ethernet) cable, and the original CD for Windows 95, 98, 98SE, ME, 2000, or XP.

You should be familiar with using Microsoft Windows folders, dialogs, and forms. If you need to review this information, consult your Microsoft Windows documentation.

You should be familiar with your required network configuration procedures and how to specify valid IP addresses and Subnet Masks.

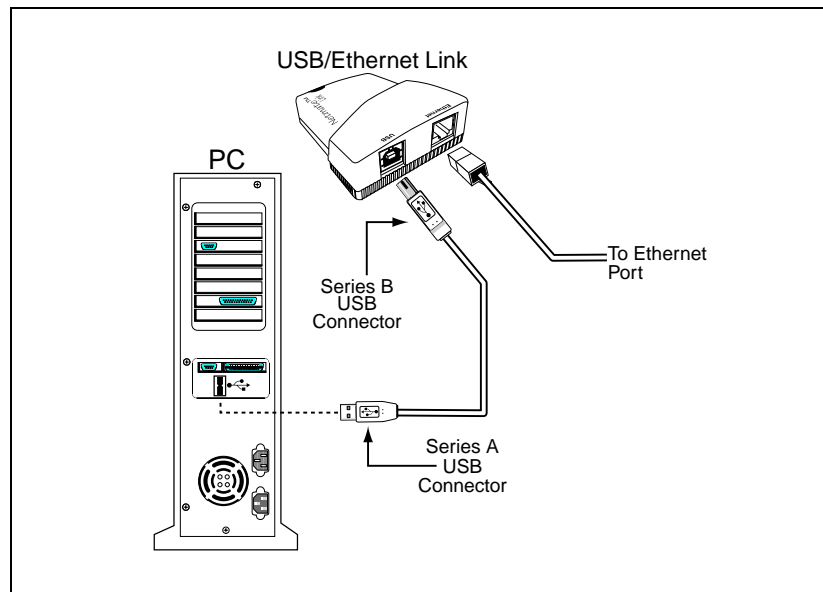
## 2.4 Supplied Software

The software installation diskette contains all of the installation and utility files required for the CATC NetMate Link.

## 2.5 Cable Connections

Figure 2-1 illustrates the provided USB cable connection from the PC (rectangular *Series A* connector) to the Link (square *Series B* connector), and a standard 10BaseT Ethernet cable connection from the RJ45 connector on the Link to an Ethernet port.

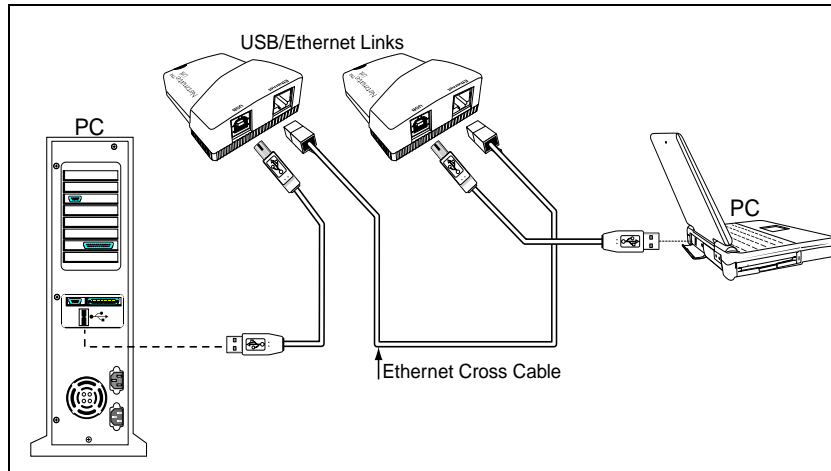
Make connections as illustrated below. For Windows 95 and Windows 98 do not connect the USB cable to the host until asked for by the Setup Program included in the diskette. For Windows 2000 and later releases use Windows install procedure to add a new USB device.



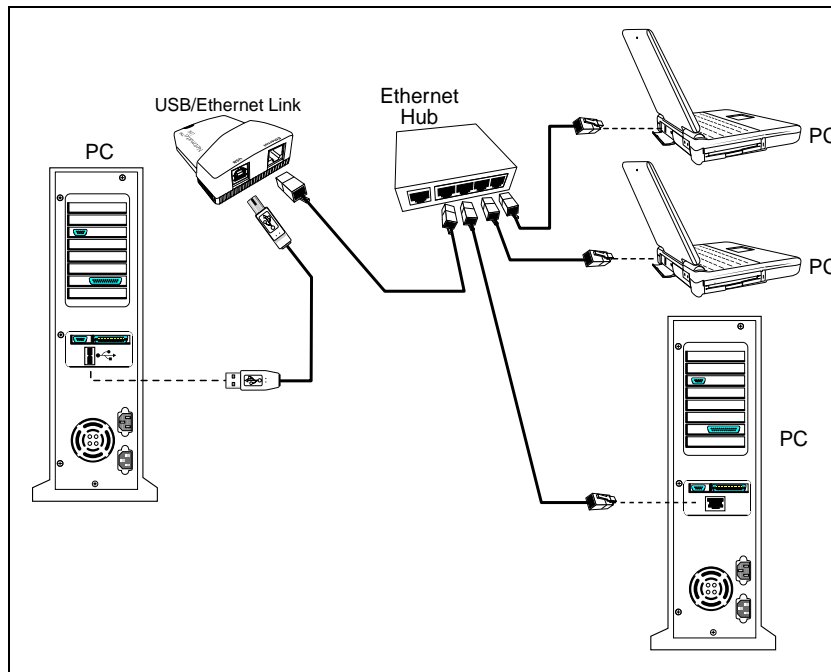
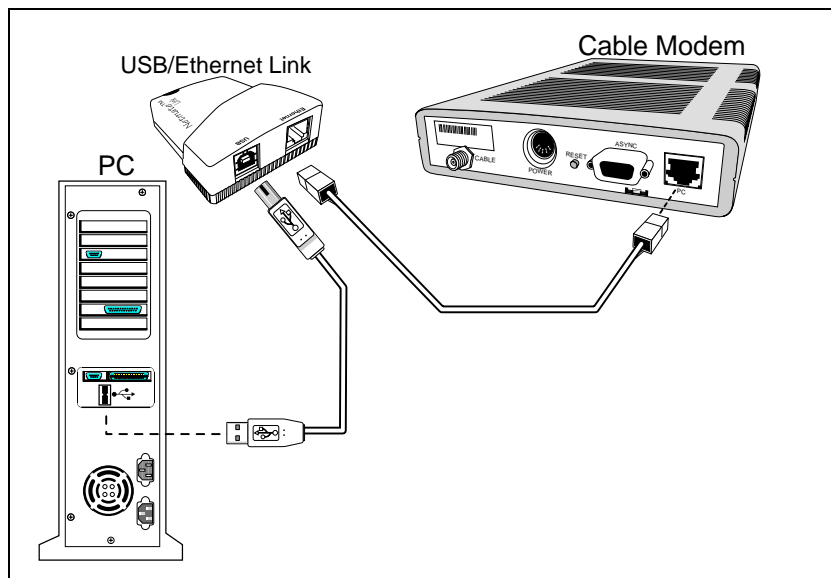
**Figure 2-1. Basic PC-to-Ethernet Port Connections**

This document makes several references to an Ethernet port, used to connect the Link to an Ethernet environment. Such a port might be an Ethernet hub, network wall socket, peripheral device, etc.

Figures 2-2, 2-3, and 2-4 illustrate sample applications for the CATC NetMate USB Ethernet/Link.



**Figure 2-2. PC-to-PC Direct Connections**

**Figure 2-3. PC-to-Ethernet Network Connections****Figure 2-4. PC-to-Cable Modem Connections**



### 3. Installation

Your particular environment may require drive letters or folder names different than those mentioned here. You may be asked to specify file locations on the Windows CD, or on the software installation diskette. For example:

- Windows might look on the A:\ drive for a file that is on a CD. In this case, you would specify a search such as D:\WIN95\OSR2\SETUP.

#### 3.1 Automatic Installation: Windows 95 and 98 Systems

This section outlines the quick and easy, automatic installation procedure for the NetMate Link drivers.

**Note:** The installation program automatically detects if your computer is properly configured and initialized for USB installation. If the installation program aborts, see the *Troubleshooting* section. You may need to upgrade your computer.

Make connections *when requested in the installation procedure*, illustrated in Figure 2-1.

The installation procedure assumes that this is a *new driver installation* on a Windows system. The installation program automatically recognizes if your operating system is Windows 95 and 98.

1. Close any Windows applications that may be running on your computer.
2. Insert the software installation diskette in the floppy disk drive.
3. Connect the USB cable to your computer. **Do not connect the USB cable to the Link.**
4. Connect the network cable to the network port and to the Link.
5. From the Windows Taskbar, select *Start / Run*.

6. In the *Run* dialog, type A:\SETUP.
7. Click **OK**.

The system displays Setup and Welcome screens.
8. Click **Next**.
9. Read the on-screen messages. Make the connection as requested.
10. A *New Hardware Found* form appears with the message: *CATC USB/Ethernet Link*. The system builds the driver information database and completes the installation.
11. Click **Finish**.
12. Read, then close, the Notepad message confirming the installation. It describes the requirements for configuring the appropriate Ethernet connections and specifying the TCP/IP (or other) protocol parameters. Turn to Section 4 in this manual for additional information.

### 3.2 Installation on Windows 2000 and Later Versions of Windows

For Windows 2000 and later versions of Windows operating systems, use the windows installation process "Add Hardware." For details, refer to the document *install.txt* in the root directory of the supplied software.

### 3.3 Uninstalling the Link Software

If you wish to remove the CATC NetMate USB/Ethernet Link component from your computer, do the following:

1. Disconnect the USB cable from the Link.
2. Select *My Computer / Control Panel / Add/Remove Programs*.
3. In the *Install/Uninstall* tab, select *CATC USB Ethernet Link*.
4. Click **Add/Remove**.
5. Click **Yes**.

The software program will be automatically removed by Windows.

## 4. Specifying the TCP/IP Parameters

This configuration procedure is identical to that of other NICs, for example, a 3COM Ethernet card. The following sections describe two basic setups using the TCP/IP protocol.

### A. When the CATC USB/Ethernet Link is the only installed NIC.

Select *My Computer / Control Panel / Network*.

The *Network Configuration* form appears. In this form, the *CATC USB/Ethernet Link NIC* icon should be visible.

Additionally, a new protocol icon with the title *TCP/IP* should be visible. To specify the TCP/IP parameters, use the procedure described below.

### B. When another NIC is already installed in the system.

Select *My Computer / Control Panel / Network*.

The *Network Configuration* form appears. In this form, the *CATC USB/Ethernet Link* icon should be visible.

If the TCP/IP protocol was previously installed, a network connection icon with the title *TCP/IP -> CATC USB/Ethernet Link* should also be visible. To specify the TCP/IP parameters, use the procedure described below.

#### To specify the TCP/IP parameters:

1. Select *TCP/IP*, (or *TCP/IP -> CATC USB/Ethernet Link*, if more than one NIC is installed).
2. Click **Properties**.
3. Select *Specify an IP Address*.
4. Enter a valid *IP address* and *Subnet Mask*, per the instructions of your local System Administrator.
5. Click **OK**.

6. Select the *Identification* tab and verify / modify the computer name and workgroup.
7. Click **OK**. You will see the option to restart your computer if you made changes.
8. Remove any diskette that might be in the floppy drive.
9. Click **Yes** to restart the computer.

## 5. Troubleshooting

If you encounter difficulties when installing or using the CATC NetMate USB/Ethernet Link, use the following table to troubleshoot the problem.

Problem	Suggested Solution / Comments
The installation procedure produces the message: <i>Hardware and software support for USB was not found.</i>	<p>The program detected that your computer is not configured for proper USB support. There are four main conditions to check:</p> <ol style="list-style-type: none"> <li>1. Your Windows 95 version may not have the OSR2.1 extension. The solution is to upgrade to OSR2.1.</li> <li>2. You do not have a USB connection on the motherboard. The solution is to upgrade your motherboard or add a USB controller card.</li> <li>3. It is possible that you do have the proper OS, but there is no connection between the motherboard and the USB connectors on the bracket.</li> <li>4. It is possible that you do have the proper OS, but the controller on the motherboard is malfunctioning.</li> </ol>
The LED is off.	There are two main possibilities:

- 
1. The host computer might be in standby mode, and not supplying full power to its devices.
  2. The Link did not properly *enumerate*. Enumerate is a USB term meaning the system has identified and configured the device and given it a unique address.
-

<b>Problem</b>	<b>Suggested Solution / Comments</b>
The LED is blinking.	The Ethernet port connection might be inoperable. Check the Ethernet connection. Replace the Ethernet cable.
You require additional information about adding or removing network drivers.	Consult the appropriate Windows documentation, or contact your System Administrator.
The system does not respond when connecting the Link <i>under Windows 95</i> (for example, the hourglass cursor remains on the screen).	Remove and reinstall the USB support component of the operating system (typically, the OSR2.1 extension).
The system installation appears to be slow.	Be patient when Windows is installing the Link (or any other USB device). <i>Plug and Play</i> operations in Windows can sometimes take up to 30 seconds or so between apparent activities.
When reconnecting the USB device, the system seems to take a long time.	Be patient when <i>reconnecting</i> a USB device. Wait at least 20 seconds between disconnecting and connecting devices.
You cannot find the other computer (on the Ethernet side of the network connection).	Use the Windows <i>Find Computer</i> option.
<b>Problem</b>	<b>Suggested Solution / Comments</b>

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<p>The Link does not work when connected through a bus-powered USB hub.</p>	<p>The Link is a (USB) bus-powered product. Current versions are considered <i>high power</i> devices (that is, they consume more than 100 mA when in operating mode). Thus, they cannot be used downstream of <i>bus-powered hubs</i>, which deliver only 100 mA per port. The Link will enumerate correctly, but the operating system will not allow it to come up to full power.</p>
<p>You replaced the Link with a new Link and it does not work.</p>	<p>Each CATC NetMate Link has a unique encoded Ethernet identifier. Unplugging a Link from the Windows machine, and <i>plugging a different Link into the same port</i>, will cause a problem in the protocol software. The original device should first be completely uninstalled.</p>

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## 6. Specifications

### Package

Dimensions:  $9.2 \times 6.7 \times 2.7$  cm ( $3.6 \times 2.6 \times 1.1$  in.)

Connector (Ethernet): RJ45

Connector (USB): Series B

Weight: 70 g (2.5 oz)

### Power Requirements

5 V, 200 mA (powered via the USB connection)

### Data Transfer Rate

approaches 6 Mbits/s (depending on the computer, operating system, and communication protocol)

### Environmental Conditions

Operating Range: 0 to 55 °C (32 to 131 °F)

Storage Range: -20 to 80 °C (-4 to 176 °F)

Humidity: 10 to 90%, non-condensing

### LED

Flashes when the USB connection is operational.

Remains steady on when both the USB and Ethernet connections are active.

### Memory Size

32K  $\times$  8-bit SRAM for IN and OUT data buffers

1024-bit non-volatile configuration storage

### Certification

FCC, Class B

CE Mark

### Software Compatibility

The CATC NetMate USB/Ethernet Link works with any standard Ethernet protocol. The supplied drivers for Microsoft Windows 95, 98, 98SE, ME, 2000, and XP support the following protocols: TCP, IPX, and NetBEUI.

## 7. How to Contact CATC

Type of Service	Contact
Call for technical support...	US and Canada: +1/ 800.909.2282 Worldwide: +1/ 408.727.6600
Fax your questions...	Worldwide: +1/ 408.727.6622
Write a letter...	Computer Access Technology Corp. Customer Support 2403 Walsh Avenue Santa Clara, CA 95051-1302
Send e-mail...	support@catc.com
Visit CATC's web site...	<a href="http://www.catc.com/">http://www.catc.com/</a>