

FCC ID: MQ4FE1K-D

# Fast Ethernet PC Card DFE-650 Series User's Guide

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RECYCLABLE

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## **FCC Warning**

### **DFE-650TX FCC Class B ID MQ4FE1KD**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and 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.

Shielded interface cables must be used in order to comply with emission limits.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that cause undesired operation.

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# Introduction

Thank you for choosing D-Link DFE-650, the value leader among PC-Card Fast Ethernet adapters. This chapter provides a general description of DFE-650 Series features, with a summary of features at the end of the chapter. Installation instructions are given in Chapter 2.

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## General Description

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The D-Link DFE-650 Series Fast Ethernet PC Card is a credit-card sized Fast-Ethernet adapter for connecting a notebook PC to an IEEE 802.3 or 802.3u Ethernet network. The notebook PC must be equipped with a Type II or Type III PC Card slot.

**NOTE:** *The terms "PC Card" and "PC Card slot" are used throughout this manual to refer to those objects as defined in the Personal Computer Memory Card Industry Association (PCMCIA) standards.*

The DFE-650 automatically detects the parameters of its Ethernet environment, and automatically negotiates and determines its own speed and duplex settings as required for maximum performance in its environment.

Inside its compact PC-Card package, the D-Link DFE-650 holds an Ethernet controller, network processing interface, 64 Kb RAM data buffer, a 68-pin PC Card Standard front-end plug which connects to the notebook PC, and a 15-pin back-end receptacle for connecting

the media coupler. The DFE-650 requires no pre-installation setup – simply insert its front end into the notebook PC's PC-Card slot.

The DFE-650 is supplied with a media coupler which plugs into the back end (15-pin receptacle) of the DFE-650. The other end of the media coupler has an RJ-45 receptacle which receives the network cable. The media coupler features LED indications for linkage and activity states, and for the speed and duplex settings.

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## **About Fast Ethernet**

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Fast Ethernet is a network technology specified by IEEE Standard 802.3u. It extends the traditional 10Mbps (10 megabit/sec) Ethernet technology to achieve 100Mbps (100 megabit/sec) transmission and reception. Because Fast Ethernet retains the traditional Ethernet CSMA/CD (Carrier Sense, Multiple Access, Collision Detect) protocol, it remains wholly compatible with 10Mbps Ethernet while providing a tenfold increase in network capacity.

The Fast Ethernet standard specifies three subtypes, corresponding to three media types:

100Base-TX (using two twisted pairs in EIA 568 Category 5 UTP or STP cable)

100Base-T4 (using four twisted pairs in a Category 3, Category 4, or Category 5 UTP cable)

100Base-FX (using two fiber-optic strands).

D-Link DFE-650 Series Fast Ethernet PC Cards offer half-duplex 100Base-TX operation (in Category 5 twisted-pair cable environments). These products do not support 100Base-T4 or 100Base-FX operation. To provide for traditional 10Mbps Ethernet operation in twisted-pair cable environments, the DFE-650 series also offers 10Mbps Ethernet operation, in full-duplex and half-

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## LED Indicators

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The media coupler features three LED indicators:

1. 10/100 Indicator

Steady green indicates Fast Ethernet selected.

Dark indicates 10Mbps Ethernet selected.

2. Half /Full Indicator

Steady green indicates Full-Duplex selected.

Dark indicates Half-Duplex selected.

3. Ln/Act Indicator

Steady green indicates that there is good linkage to the network ("Linkage" state, quiescent).

Flashing green indicates that the DFE-650 is transmitting or receiving ("Activity" state). In 10Mbps mode, flashing will be regular and periodic. In 100Mbps mode, flashing may be irregular, with longer dark periods during heavy traffic activity.

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## Summary of Features

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Features of Model DFE-650TX Fast Ethernet PC Card:

- 100Mbps and 10Mbps data rates in compliance with IEEE 802.3 Ethernet standards 100Base-TX and 10Base-T
- Complies with PCMCIA V2.x, JEIDA V4.x, and 16-Bit PC Card Standards
- PC Card Standard 68-pin front-end connector
- 15-pin back-end connector for media coupler

- Built-in 64KB RAM data buffer
- Full-Duplex capable in 10Mbps mode
- Autonegotiation per IEEE 802.3u specification
- No manual setup switches -- fully automatic configuration
- Low power consumption (2 watts max.)
- Electronics miniaturization by VLSI and surface-mount fabrication technologies
- RJ-45 connector with auto-detection of network speed
- Software support:
  - Install Program
  - Diagnostic Program
  - NDIS 2.0 for Banyan
  - NDIS 2.0 for IBM Lan Support/Services
  - NDIS 2.0 for IBM Wrap Server, Lan Server, and Communication Manager 1.x
  - NDIS 2.0 for MicroSoft Lan Manager for DOS
  - NDIS 2.0 for MicroSoft Network Client 3.0 for DOS
  - NDIS 2.0 for WIN/TCP PathWay Access
  - SUN PC-NFS V5.0
  - NetWare Client32 for Windows 95
  - NetWare Client32 for DOS/Windows 3.1
  - NetWare Server 3.12
  - NetWare Server 4.x
  - NetWare DOS ODI

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# Hardware Installation

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## Unpack and Inspect

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**NOTE:** Under ordinary circumstances, the DFE-650 Series Fast Ethernet PC Card will not be affected by static charge as may be received through your body during handling of the unit. In special circum-stances where you may carry an extraordinarily high static charge, it is good practice to reduce the charge by touching a ground before handling the DFE-650.

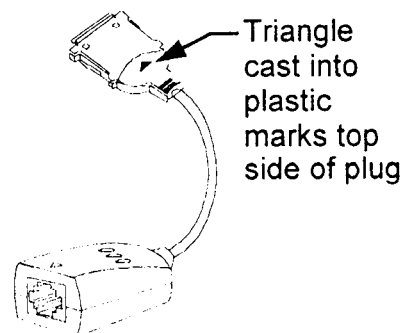
Open the shipping carton and carefully remove all items. In addition to this User's Guide, ascertain that you have:

- One DFE-650 Series Fast Ethernet PC Card
- One plastic storage bag for the PC Card
- One media coupler
- One D-Link DFE-650 Series Fast Ethernet PC Card Driver diskette

Yellow arrow  
on top side of  
PC Card points  
to front end plug



DFE-650 Series  
Fast Ethernet PC Card



Media Coupler



In the event that any item is missing, or if you find any mismatch or damage, promptly contact your dealer for correction.

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## Hardware Installation

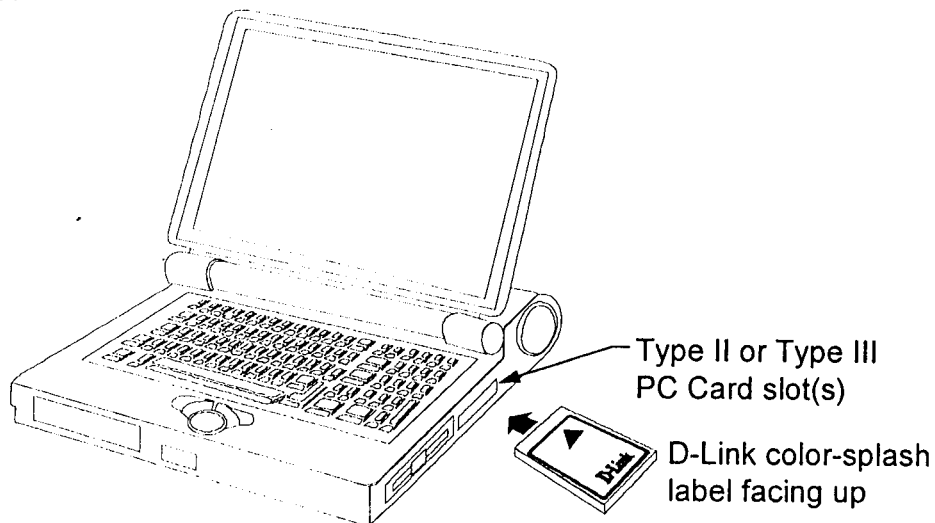
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Follow these four steps to install the DFE-650 :

### **Step 1 Insert the DFE-650**

Under the PCMCIA standard and the corresponding Japanese JEIDA standard, PC Cards may safely be "hot swapped" -- it is not necessary to switch the computer's power off before installing or removing the DFE-650, or any other PC Card.

Find/select an open Type II or Type III PC Card slot on your notebook computer's side or rear panel. Hold the DFE-650 with the colorful D-Link splash label upward. Notice that the splash label features a yellow triangle or "arrow," which points to the front end of the PC Card. Insert the front end of the PC Card into the PC Card slot, and slide the PC Card all the way into the slot until it reaches a firm stop.

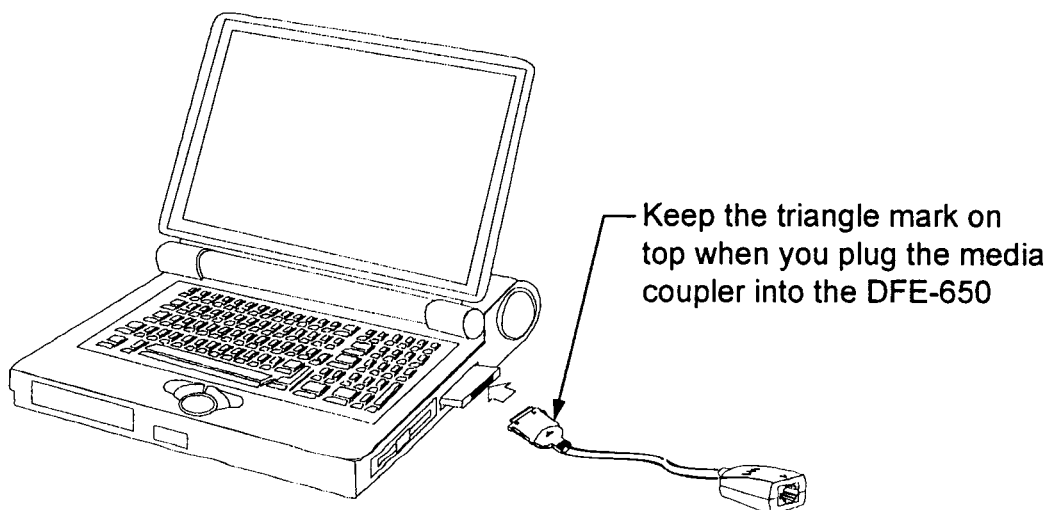


**NOTE:** Many notebook PCs feature a stacked pair of PC card slots, logically (but not physically) designated as Slot 1 and Slot 2.

*It is most usual for the lower one of the two slots in the stack to be designated Slot 1, but there are exceptions. In the subsequent procedure for DFE-650 software installation, it may be necessary for you to know whether your DFE-650 is installed in Slot 1 or Slot 2. Under Windows 95, you can check by opening the Control Panel / PC Card display. Under DOS it is also possible to make a software check, but it is more difficult. If you are unable to determine the DFE-650's slot number in advance, then you can make a trial-and-error determination later, according to instructions given in the Software Installation section of this chapter.*

## **Step 2 Attach the Media Coupler**

The back-end receptacle of the DFE-650 remains accessible (approximately flush with the case of the computer) when the DFE-650 is properly seated in its PC Card slot. Taking care to keep the top side of the media coupler plug up, insert the plug into the DFE-650's receptacle until it is firmly seated and latched. (The top side of the plug is labeled with a triangle molded into the plastic.)

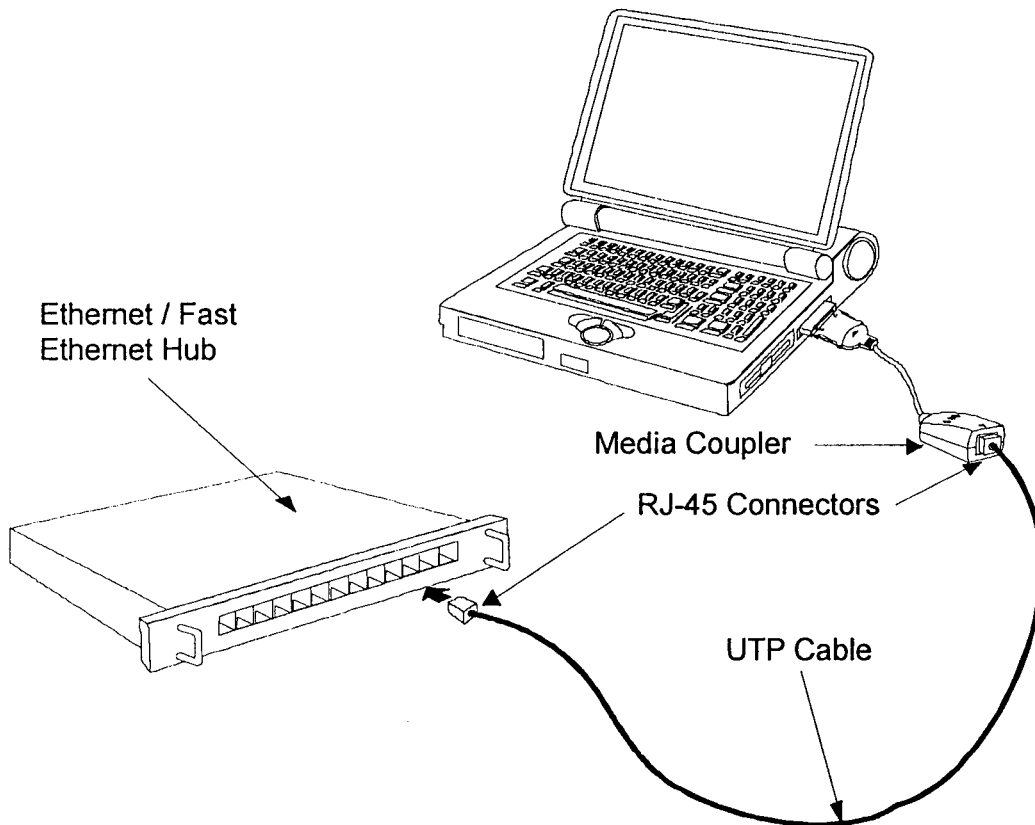


**NOTE:** *When the media coupler plug is firmly seated, it is held in place by small latching hooks at either side of the plug. To avoid damage when detaching the plug from the DFE-650, it*

is necessary to depress the latch wings of the plug. See the following section, "Remove Ethernet PC Card."

### **Step 3 Connect to the Network Medium**

Make the network connection by running a UTP cable from the supporting hub to your media coupler. Simply plug one end (RJ-45 connector) of the cable into an available hub port, and plug the other end (RJ-45 connector) into the media coupler.



**UTP cable connecting media coupler to the supporting hub**

### **Step 4 Confirm Connection (Ln/Act Indicator)**

When the notebook computer's power is ON, the DFE-650 is firmly seated in the slot connector, the media adapter plug is firmly engaged (and latched) in the back-end receptacle of the DFE-650,

**B**

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# ***DFE-650TX*** ***Specifications***

## Network Type:

- Ethernet 100Base-TX  
Ethernet IEEE 802.3u standard for 100Mbps baseband CSMA/CD local area network
- Ethernet 10BASE-T  
Ethernet IEEE 802.3 standard for 10Mbps baseband CSMA/CD local area network

## Jumperless Hardware

Autonegotiation functionality

Media interface: RJ-45

## LAN Chip Set:

- Interface controller, **DL10022A**
- Transceiver interface, **5V Single**

## EMI Certifications:

FCC Class B

VCCI Class 2

CISPR B

Canada ICES-003, Class B

## CE Certification

Host interface: ISA Bus (Bus Master)

I/O base address assigned by Plug and Play system

Interrupt Number Assigned by Plug and Play system

Physical Dimensions: 85.6 × 54.0 × 5.0 mm

Environment:

Storage: -20° to 80°C, (4° to 176° F)

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

Humidity: 10% to 90% non-condensing

Power Consumption: 2.0W

PCB Construction: 2 layers

Device Drivers\*

- NDIS 2.0 for Banyan
- NDIS 2.0 for IBM Lan Support/Services
- NDIS 2.0 for IBM Wrap Server, Lan Server, and Communication Manager 1.x
- NDIS 2.0 for MicroSoft Lan Manager for DOS
- NDIS 2.0 for MicroSoft Network Client 3.0 for DOS
- NDIS 2.0 for WIN/TCP PathWay Access
- SUN PC-NFS V5.0
- NetWare Client32 for Windows 95
- NetWare Client32 for DOS/Windows 3.1
- NetWare Server 3.12
- NetWare Server 4.x
- NetWare DOS ODI
- NetWare Lite
- Personal NetWare
- Windows 95
- Windows 95 OSR2
- Windows NT 3.51
- Windows NT 4.0
- Packet Driver for NCSA
- Packet Driver for FTP PC/TCP
- Packet Driver for IPX
- Packet Driver for Winsock

\*Check <http://www.dlink.com> for newest releases of drivers.