D-Link

D-Link DFE-550FX

100Mbps Fiber-optics Adapter with SC Connector User's Guide

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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 may cause undesired operation.

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Introduction

Thank you for choosing the D-Link DFE-550FX Fiber-optics 100 Mbps Adapter. This introduction provides a general description of the newer networking technologies found on the DFE-550FX.

ACPI Power Management

The DFE-550FX adapter complies with the Advanced Configuration and Power Interface 1.0 (ACPI) specifications. ACPI is a new open industry specification providing power management support systems through hardware and operating system cooperation. ACPI specifies how a computer's BIOS, operating system, and peripherals coordinate power usage. With ACPI, the operating system reduces motherboard and peripheral device power needs by activating devices only when they are needed.

802.3x Flow Control

The DFE-550FX implements IEEE 802.3x compliant flow control for full duplex, which provides traffic management functions for full duplex operation. Flow control allows for enhanced full duplex operation with switches. If the switch's data buffer is about to overflow when operating at full duplex, a Pause frame will be transmitted to the DFE-550FX. The ensuing idle time keeps the buffer from overflowing and prevents data from being lost. This enhancement can improve network throughput and prevent lost data, helping the network achieve optimal performance.

In order for 802.3x Flow Control to operate, your switch or hub must support this feature. In addition, some adjustments to the switch or hub settings may be needed.

IEEE802.1p Priority Tagging

With the growing number of network applications, local area networks (LANs) must deliver data for a wide variety applications. Email, file transfers, database queries, voice over IP (VoIP), videoconferencing and multimedia must all be delivered to the enduser's. Some of the traffic, such as video-conferencing, is timecritical. A slight delay in packet delivery can result in noticeable degeneration of video and audio quality, while other traffic, such as Email will not be noticeably affected by tiny delays. The large number of programs run over today's networks can impede the ability to deliver time-critical data. Even if available bandwidth is not usually a problem on your network, during peak hours bursts in network traffic can result in the delay of time-critical traffic.

IEEE802.1p defines eight levels of prioritization for Ethernet packets. High priority packets will be sent through a network using 801.2p-compliant switches first. Lower priority packets will be transferred when bandwidth is available. When properly setup, this ensures that time-critical data arrives on time and is not affected by other traffic.

IEEE802.1Q VLANs

The IEEE802.1Q VLAN can help improve network performance and security by segmenting the network into different VLANs. IEEE802.1Q VLANs can limit broadcast traffic to a single VLAN which prevents the effects of broadcast storms and provides additional security for your network.

To set up GVRP VLANs, which supports dynamic registration, the adapter should be connected to a switch with GVRP VLAN capability.

For VLANs to function, the computer in which this NIC is installed must be using Windows 95 or later.

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Product Features

Designed for high performance and versatility, the DFE-550FX Adapter provides the following features:

- Plug and Play installation.
- Complies with the IEEE802.3u/100Base-FX Ethernet standards.
- PCI Bus Master direct memory access for high throughput and low CPU utilization.
- ACPI 1.0 power management compliant.
- IEEE 802.3x Flow Control enabled with full duplex operation, allowing enhanced operation when directly connected to a switch.
- IEEE 802.1Q/VLAN Tagging compliant
- VLAN dynamic registration using IEEE802.1Q GVRP standard
- IEEE 802.1p compliant
- D-Link in-house 32-bit intelligent Ethernet controller.
- Built-in FIFO buffers.
- Three LED indicators: Link, Activity, Full-duplex
- Driver support for all leading Network Operating Systems.
- Auto-assignment of IRQ, I/O addresses.
- PCI 2.1 specification compliant
- Transmission distance of 412m at half-duplex mode and 2000m at fullduplex.
- 100Mbps Fast Ethernet data transfer rate.
- Built-in SC connector.

Installation

Installation of the DFE-550FX 100 Mbps Adapter requires installing the hardware first. Once the interface card has been installed into the host computer, the software can be installed.

Unpacking

CAUTION: Under ordinary circumstances, a DFE-550FX interface card will not be affected by static electricity. However, it is good practice to eliminate static charges by touching a sizable metal object before handling the adapter card.

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

- One DFE-550FX Adapter.
- DFE-550FX Software Diskette.

Installing the Adapter

- 1. Shut down the computer, unplug its power cord, and remove the cover.
- 2. If your order does not include the Boot ROM option, go ahead to Step 3. If your order includes the Boot ROM option, then install the Boot ROM Chip by plugging the chip into the Boot ROM Socket on the DFE-550FX card. The notched end of the Boot ROM Chip must be aligned with the notched end of the Boot ROM Socket. Opposite alignment will destroy the Boot ROM Chip!
- 3. Firmly insert the contact edge of the DFE-550FX card into any
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available PCI Bus expansion slot.

- 4. Install the bracket screw to secure the card to the computer chassis.
- 5. Replace the computer cover.
- 6. Reconnect the computer power cord, and switch the computer power on. If the BIOS section of your computer boot program is Plug and Play compliant, then at power-up the BIOS will automatically configure itself for the newly installed DFE-550FX adapter.
- NOTE: Due to a fault in some Plug-n-Play BIOS programs, it happens occasionally that a newly installed adapter is assigned an IRQ Number which is already assigned to another device. In such a case, the conflicting IRQ Numbers (IRQ numbers must be unique) will cause faults in the behavior of both devices. If this happens, it is necessary to run the CMOS Setup utility, and manually assign a nonconflicting Interrupt Number to the DFE-550FX.

Connecting the Network Cable

Multimode ($62.5/125\mu$ m or $50/125\mu$ m) fiber cabling with an IEEE recommended SC connector is required for the adapter. Observe the correct relationship between the receive (Rx) and transmit (Tx) ports on the adapter and repeater. If there is a need to monitor the adapter's faceplate LEDs, make the rear of the PC or workstation accessible and leave sufficient clearance for cabling and service. The maximum length of fiber cable between any station and its supporting hub is 2,000 meters at full-duplex and 412 meters at half-duplex.

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Software Installation

On account of the great variety of network environments in which the DFE-550FX may be used, the instructions for software installation are given as README files on the DFE-550FX Software Diskette. Review the root directory and locate the subdirectory containing the appropriate software for use with your network operating system. Access the README file for overview information. For full installation details, see the README file and the referenced instruction files in the sub-directory.

Verification/Diagnostic Program

This test program verifies configuration of the DFE-550FX as set by the installation procedure, and assists with isolation of any faults in operation. Verification and testing procedures are optional, and will only be useful in the unusual event that there is a fault, such as an interrupt number conflict among your computer expansion cards. If your installation provides normal operation, you might choose to skip these procedures.

The Verification/Diagnostic Program provides two levels of testing: adapter function testing and network operation testing. Adapter testing includes a variety of diagnostic procedures.

Adapter testing does not require substitution of a loopback cable. All procedures of the Adapter test may be carried out with the network cable connection in place.

For the network operation test, the cable connecting your station with its supporting hub must be in place. Network testing involves the broadcast transmission of test packets from the primary station. The test cannot be fully implemented unless a second station on the LAN is available to the network operation test, in order to return the test packets to the primary station.

To run the Verification/Diagnostic Program, proceed with these steps:

Adapter Function Test

1. Insert the DFE-550FX Software Diskette in an available drive (here shown as drive A). At the DOS prompt (here shown as >), key in:

> A:\DIAG.EXE

and <RETURN>. The opening screen of the Verification/ Diagnostic program will appear.

NOTE: *Read the* README.TXT, *on the diskette, to choose the appropriate diagnostic program for your operating system.*



- 2. Review the reported configuration data before proceeding to Step 3.
- 3. The Configuration Data screen also features a Diagnostic Menu. Follow the cues at the foot of the screen to select and run the Adapter Basic Diagnostic program. The adapter function test results will appear onscreen. In the Loopback test, test signals are intercepted and reflected at the MAC level without reaching the network cable. If the results are normal, then go ahead to the Network Operation test, starting with Step 4.

Network Operation Test

- 4. If you have access to a second station on the LAN, then skip ahead to Step 5. If you do not have access to a second station on the LAN, then the network test will be limited to blind transmission of test packets (none of which will be returned to the primary station). Follow the cues at the foot of the screen to select and run the Network Diagnostic program. Observe the *Packets Sent* line to see a steadily and rapidly increasing packet count. This will indicate normal transmission onto the LAN, and will be the end of your Verification/Diagnostic run. Skip the remaining steps shown below.
- 5. Remove the DFE-550FX Software Diskette from your station's (the primary station's) diskette drive, and insert it into an available drive of a second station on your LAN. At the DOS prompt (here shown as >), key in:

> A:\DIAG.EXE

and <RETURN>. The opening screen of the Diagnostic program will appear onscreen at the second station. Follow the cues at the foot of the screen to select and run the Network Test program at the second station. The second station then begins broadcasting test packets, and at the same time is also ready to receive and return test signals transmitted from the primary station newly installed DFE-550FX.

6. Return to the primary station and follow the cues at the foot of the screen to select and run the Network Diagnostic program. Observe the *Packets Sent* and *Packets Received* lines to see that they track together (always showing equal count numbers), which verifies normal network operation.

The most likely causes of failure for any of the diagnostic tests are incorrect options settings, option settings that conflict with the settings of other boards or improper installation. In the event of any failure in diagnostic tests, refer to the *Troubleshooting* section of this guide.

Troubleshooting

If you experience any problems with the adapter, first verify that the appropriate driver is loaded, that the proper grade of cable is employed for the network connection, and that the supporting hub is functioning properly.

- 1. Ascertain that the adapter card is fully and firmly seated in the slot connector.
- 2. Check the length and rating of connecting cables.
- 3. Ascertain that the adapter PCI slot is not deactivated at the BIOS level. The CMOS Setup utility in PCI computers ordinarily provides the option to activate or deactivate PCI slots.
- 4. Replace the adapter in question with a verified adapter and run NIC (software) diagnostic tests.
- 5. Install the questioned adapter in another PCI computer and run the tests again.

Remove all other PCI adapters from the computer and run the tests again. If the verification/diagnostic run is then normal, then there is probably an interrupt number conflict which will have to be resolved manually by a CMOS Setup utility run after you have reinstalled all of the expansion cards.

The DFE-550FX Adapter features three LED indicators to assist in network diagnostics:

• LINK

Steady green indicates good linkage between the DFE-500FX and the supporting network device.

ACTIVE

Flashing green indicates activity (transmitting or receiving) within the adapter.

• FULL (duplex) Indicator

This LED is ON for full duplex connections and OFF when connected at half duplex.

D-Link DFE-550FX Adapter

Spec	ifica	tions
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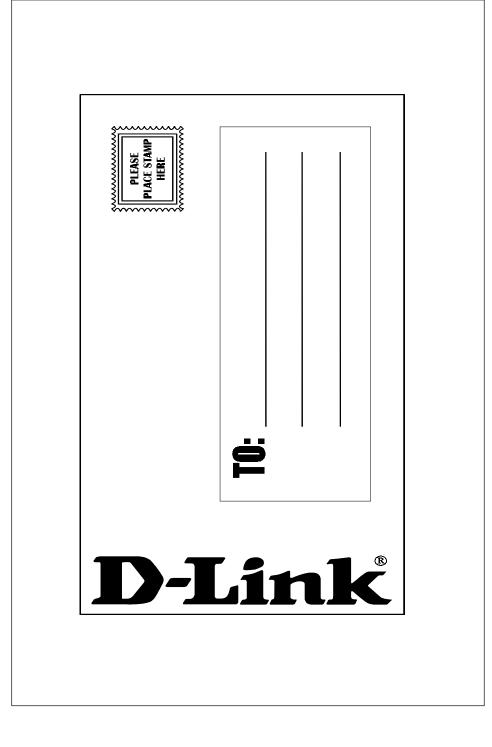
Network Type: IEEE 802.3u standard 100Mbps Ethernet 100Base-FX • Media interface: SC LAN Chip Set: Interface controller: D-Link DL10050A • EMI Compatibility: FCC Class B VCCI Class B CE Class B • C-Tick ٠ BSMI • Host interface: PCI 2.1 Bus (Bus Master) Physceiver: AMD Am79C874 Optical Transceiver: Siemens V23809-C8-C10 Physical Dimensions: 120mm x 73mm Environment: Storage: -25° ~ 55°C (-13° ~ 131°F) $0^{\circ} \sim 50^{\circ}C (32^{\circ} \sim 122^{\circ}F)$ Operating: Humidity: 10% to 90% non-condensing Power Consumption: 3 Watts max ESD: 8 KV min PCB: 4 layers Device Drivers (Check http://www.dlink.com for newest release of drivers.) Software drivers for: Microsoft Windows 95 /98 ٠ Novell Netware Server 3.12 Microsoft Windows 2000 • Novell Netware Server 4.1X ٠ Microsoft NT 4.0 Novell Netware Server 5.X ٠ • NDIS 3 driver ٠ Linux : kernel v2.0.x, kernel v2.2.x ٠ NDIS 4 driver • • Diagnostic NDIS 5 driver 10

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