
USER'S MANUAL

**Ethernet 10/100
Transceiver
*Series DL221/DL221A***

June 1999

ETHERNET 10/100 TRANSCEIVER INSTRUCTION MANUAL SERIES DL221/DL221A

INTRODUCTION

Thank you for purchasing the Radiant Communications *Series DL221/DL221A* fiber optic transceiver. We hope that this manual will help you quickly and easily install your transceiver. If you still need help installing or troubleshooting your transceiver after reading this guide, please call our tech support department at 1-800-969-3427.

This manual details the installation procedures, specifications, and trouble shooting guidelines for the Radiant Communications *Series DL221/DL221A* family of fiber optic transceivers.

CONTENTS OF SHIPPING CONTAINER

The shipping container should contain the following items:

- One (1) Series DL221/DL221A transceiver
- One (1) Power Cord
- One (1) CAT5 straight cable
- This manual

WARRANTY

Radiant Communications Corporation warrants that at the time of shipment, the products manufactured by Radiant Communications will be free from defects in material and workmanship, and will conform to the specifications furnished and approved by Radiant Communications Corporation.

Should any defects appear within one year from date of shipment, Radiant Communications Corporation shall, at its sole discretion, repair or replace the defective unit. Defected units shall not be accepted for return or repair without prior authorization from Radiant Communications.

Return shipments to Radiant Communications Corporation shall be at the buyer's expense. Radiant Communications will return repaired or replacement equipment prepaid via best way.

This warranty excludes all other expressed or implied warranties of merchantability, fitness, or otherwise. Items manufactured by suppliers other than Radiant Communications Corporation used with the equipment covered by this document are not eligible under the terms of this warranty. Radiant Communications assumes no responsibility for the performance or reliability of third-party products.

Radiant Communications Corporation will not be liable for any special or consequential damages, nor for loss, damages, or expenses directly or indirectly arising from the improper use of the products, either as standalone devices or used in conjunction with other equipment and material.

This warranty does not extend to any products manufactured by Radiant Communications which have been subjected to misuse, neglect, accident, improper installation, an act of God, or in violation of the instructions furnished by Radiant Communications.

SPECIFICATIONS

Standard Compliance: IEEE802.3u, 100BaseTx, 100BaseFx, 10BaseT

100BaseTx Port

- RJ-45 connector
- Half/full duplex support via auto-negotiation or manual
- 100m over UTP/STP 100 ohm cat.5 cable
- Auto-polarity correction
- MDI-II/MDI-X selection
- 10BaseT (switch selected)

100BaseFx Port

- 1300nm SC connectors. Optional Single Fiber (DL221A)
- Distance: > 100 km (DL221/SMSP)
- Full/half duplex switch selected

Diagnostics

Per Channel

- Full duplex, Link, Activity - 100BaseFx side

Per System

- Power (dual, if redundant PS present)

Controls

Fiber side: FDX/HDX

Copper side: 10/100 Mbps, FDX/HDX, Autosensing disable/enable

Environmental/Physical

Power supply: 100/240 VAC.50/60 Hz
Power consumption: 5 W max.
Operating temperature: 0-45°C (32-113°F)
Storage temperature: -30-65°C (22-149°F)
Humidity: 10-90% non-condensing

NOTE: Specifications subject to change without prior notice.

GENERAL DESCRIPTION

The Radiant Communications *Series DL221/DL221A* transceivers are used to connect two active ethernet network components together over a fiber optic cable. Radiant's unique technology allows the same transceiver to be used for connecting 10BaseT or 100BaseT components together. The Radiant Communications *Series DL221/DL221A* transceivers allow for extended fiber transmission distances -- in many cases greater than 100 KM. In addition, the Series DL221A transceivers allow for bi-directional, full duplex transmission between ethernet components over a single optical fiber.

It is convenient to think of the *Series DL221/DL221A* transceivers as having two sections -- an electrical section, which interfaces to the ethernet component; and an optical section, which interfaces to the fiber optic cable.

The electrical section is capable of interfacing with any 10BaseT or 100BaseT RJ-45 twisted pair port. If the ethernet port supports auto negotiation, the *DL221/A* can be set to auto negotiate for optimum performance. If the ethernet port does not support auto negotiation, or if a fixed data rate and/or fixed half or full duplex configuration is desired, the *Series DL221/DL221A* transceivers can be forced into 10BaseT or 100BaseT mode, and forced into half or full duplex mode. In addition, a crossover switch is provided, which allows the *Series DL221/DL221A* transceivers to directly connect to either a standard or a crossover ethernet port.

The optical section is a 100BaseFX connection at all times. The *DL221* family of transceivers supports bi-directional transmission over two single mode fibers. The *DL221A family* of transceivers supports bi-directional transmission over a single mode fiber. In both cases, Radiant’s technology allows for extended transmission distances beyond the ethernet standard.

Problem	Indication	Corrective Action
Improper network traffic	Runt and late collision	On the “setup mode switches”, move S6 to the DOWN position, and move it back to the UP position after one second.
		Check the channel configuration on the “mode setup switches”.
		Check that both ends of the fiber optic link are set to the same mode (Half Duplex or Full Duplex)
		Check that both sides of the UTP connection are in the same mode (10 Mbps Half duplex or 10 Mbps full duplex or 100 Mbps Half Duplex or 100 Mbps full duplex).

If the problem persists after carrying out the procedure, do the following: exchange two different channels with one another (both copper and fiber connections), and re-perform the requested setup. If the problem still persists, there is probably some sort of general network failure. Contact the Radiant Communications technical support department for assistance.

Tel: (908) 757-7444 or (800) 969-3427

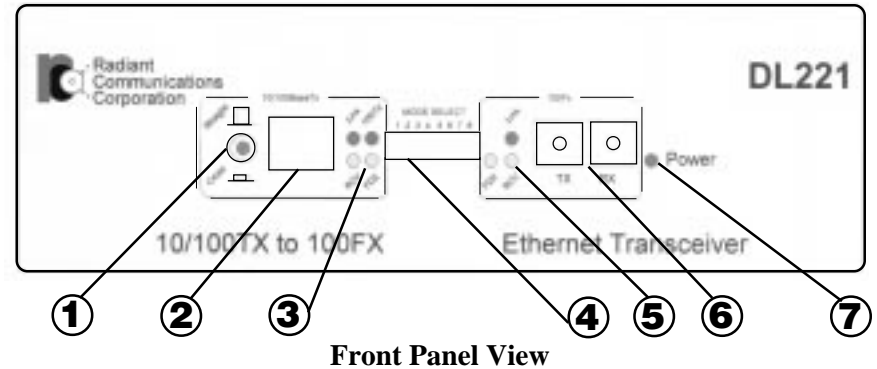
Fax: (908) 757-8666

E-mail: radiant3@ix.netcom.com

Problem	Indication	Corrective Action
The DL221 full duplex is not working when the DL221 is connected to the full duplex without NWAY capability (copper side)	FDX LED not lit	On the “setup mode switches,” check that S1 is UP and S3 is DOWN.
		On the “setup mode switches,” move S6 to the DOWN position, and move it back to the UP position after one second.
The DL221 half duplex is not working when the DL221 is connected to the NWAY capability (copper side).	FDX LED lit	On the “setup mode switches,” check that the S1 is DOWN OR S1 is UP and S3 is UP.
		On the “mode setup switches,” move S6 to the DOWN position, and move it back to the UP position after one second.
		Check that the connected device is half duplex only.
		Check the interconnection between the DL221 and the device.
Fiber link not working	Link LED (100BaseFx) not lit	Check that the receive fiber is properly connected to the transmit port of the remote fiber device and the transmit port to the receive port of the remote device.
		Check that the fiber optic power is higher than -30 dbm on the receive fiber connector at the DL221 end (-26dBm for DL221A)
		Check the remote device’s receive port is properly connected to the transmit fiber optic port of the DL221.

FRONT PANEL CONNECTIONS & INDICATORS

All connections (except power) to the *DL221/DL221A* are made at the front panel. Below is a picture of a *DL221* Front Panel. The *DL221A* is identical, except that the duplex fiber connector is replaced with a single fiber connector. Please familiarize yourself with the front panel before attempting to configure the transceiver.



1. Straight/Crossover selector (MDI-II/MDI-X)
2. 10/100BaseTX Connector
3. Twisted Pair Status LEDs
 - LINK – twisted pair link present
 - RCV – receive data on twisted pair port
 - 100TX– Twisted pair is working at 100Mps (off = 10Mps)
 - FDX – Full duplex operation (off = half duplex)
4. Mode Select Switches
5. 100BaseFX (fiber optic) Status LEDs
 - LINK – fiber optic link present
 - RCV – receive data on fiber optic port
 - FDX – Full duplex operation (off = half duplex)
6. Optical Connectors. Typically SC connectors (other options are available).
 - DL221 – TX on left, RX on right
 - DL221A – TX and RX combined onto one fiber
7. Power LED

INSTALLATION

- Connect the Cat5 cable to between the ethernet port and the *Series DL221/DL221A* transceiver's 10/100BaseT port.
- Connect the fiber optic cable(s) to the *Series DL221/DL221A* transceiver's fiber optic port(s). The optical patch cord(s) sent with the unit may be used if needed.
- Configure the *Series DL221/DL221A* transceiver using the configuration chart on page 7.
- Attach the power cord provided with the unit to the power inlet on the back of the transceiver. Connect the other end of the power cord to the AC line voltage source. Verify that the "power" LED is lit green. Verify the configuration status using the front panel LEDs

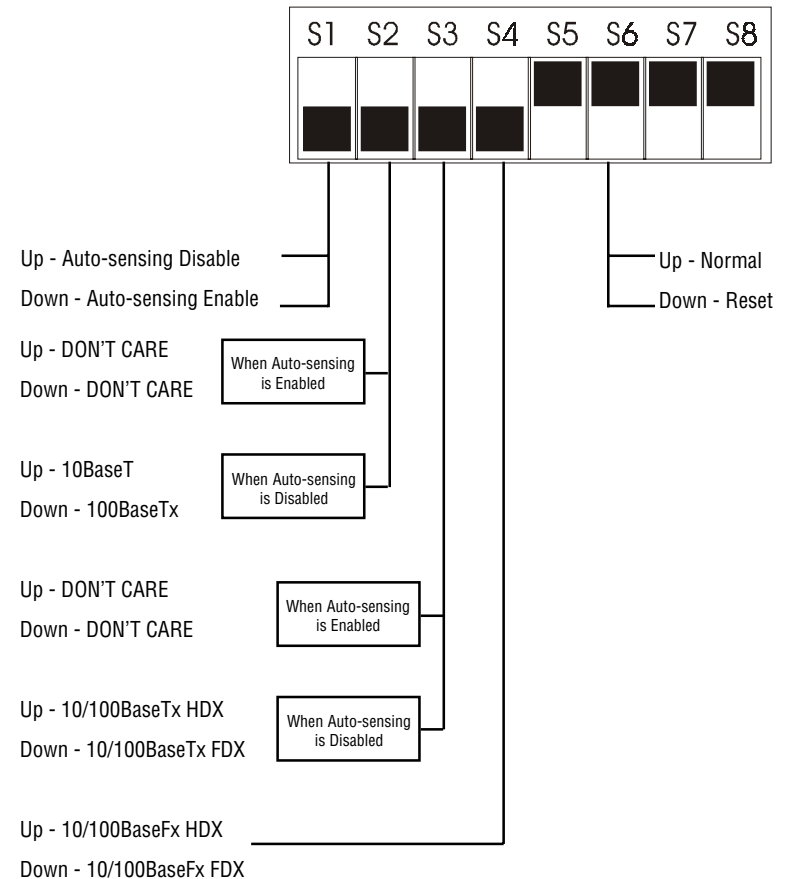
Problem	Indication	Corrective Action
Copper link not working at 100M when the DL221 is connected to 100 Mbps or 10/100 Mbps device	Both Link LED and 100 BaseTX LED not lit	On the "setup mode switches," check that S1 is DOWN or S1 is UP and S2 is DOWN.
		On the "setup mode switches," move S6 to the DOWN position, and move it back to the UP position after one second.
		Check if the connected device is working properly at 100 Mbps.
		Check the interconnection between the DL221 and the device.
Copper link not working at 10M when the DL221 is connected to 10M device (copper side).	Link LED not lit	On the "setup mode switches," check that the S1 is DOWN OR S1 is UP and S2 is UP.
		On the "mode setup switches," move S6 to the DOWN position, and move it back to the UP position after one second.
		Check that the connected device is working properly 10 Mbps.
		Check the interconnection between the DL221 and the device.
The DL221 is not recognizing full duplex when DL221 connected to NWAY full duplex (copper side).	FDX LED not lit	On "setup mode switches," check that S1 is DOWN.
		On the "mode setup switches," move S6 to the DOWN position, and move it back to the UP position after one second.
		Check that the connected device is NWAY and full duplex cable.
		Check the interconnection between the DL221 and the device.

TROUBLESHOOTING

Problem	Indication	Corrective Action
No power	Main power LED not lit	Check that the power supply cable is firmly connected to the main power supply and rackmount power source.
		Check that the AC input power source is between 100 and 240 VAC.
Network problems	No communication on network	On the "mode setup switches," move S6 to the Down position and move it back to the UP position after one second.
Copper link not working at all	Link LED not lit	Check that straight/cross is OUT for a switch or a hub.
		Check that straight/cross in IN for a STATION or an up-link port.
		On the "mode setup switch," move S6 to the DOWN position, and move it back to the UP position after one second.
		Check that the connected device is working properly at 100 Mbps or 10 Mbps.
		Check that the connection cable is well connected at both ends.

CONFIGURATION OF THE DL221/DL221A

The DIP switches on the front panel are used to configure the *DL221/DL221A*. Use a flat head miniature screwdriver (or equivalent) to set the DIP switches to the desired setting. Use the following tables to determine the proper switch settings for the desired configuration:



Note:

After each configuration change, move S6 to down position and ***move up back*** after one second.

TYPICAL SETTINGS FOR ETHERNET SERVICE TYPES

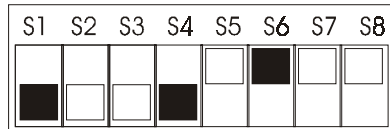


Set

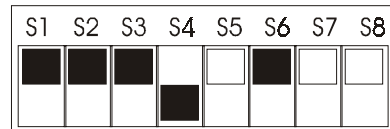


Don't Care

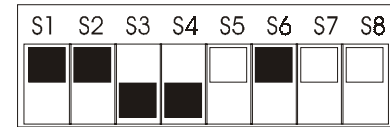
NWAY (Auto-Negotiation)
(FACTORY DEFAULT)



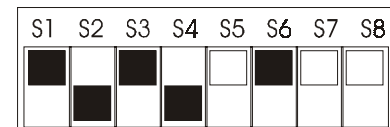
10 Mbps Half Duplex



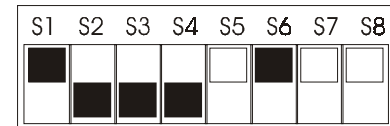
10 Mbps Full Duplex



100 Mbps Half Duplex



100 Mbps Full Duplex



FIBER OPTIC PORT CONFIGURATION

NOTE:

Once the DIP switches have been set to the desired settings, the configuration must be locked into the unit. This is accomplished using DIP switch #6. After each configuration change, move S6 to the “down” position, leave it there for at least one second, and then move S6 to the “up” position. This locks the configuration into the *Series DL221/DL221A* transceiver. When the “reset” DIP switch (#6) is down, the system will not operate. Be sure to return S6 to the “up” position.