January, 2005

LB9002A-SC-R3
LB9002A-ST-R3

Express Ethernet Switches

CUSTOMER SUPPORT INFORMATION

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FEDERAL COMMUNICATIONS COMMISSION AND
CANADIAN DEPARTMENT OF COMMUNICATIONS
RADIO FREQUENCY INTERFERENCE STATEMENT

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular 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. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one 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 an experienced radio/TV technician for help.

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

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Normas Oficiales Mexicanas (NOM)
INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

Preface

This manual describes how to install and use the provided Ethernet switch, which features two ports that automatically sense the presence of 100Mbps or 10Mbps Ethernet networks. 100BASE-FX fiber ports are also available for this product series.

To get the most out of this manual, you should have an understanding of networking concepts such as bridges, IEEE 802.3 10BASE-T Ethernet and 100BASE-TX Fast Ethernet, and local area networks (LANs).

Table of Contents

Introduction

Product Features

This switch provides following features:

- 1x 10/100TX and 1x 100FX port
- Full-duplex and half-duplex capability on TX ports.
- Auto-negotiation for speed and Auto-MDIX on TX port.
- Compliance with IEEE802.3, 10Base-T, IEEE802.3u, 100Base-TX and 100Base-FX standards.
- Comprehensive array of LED indicators that communicate the status of the switch and troubleshooting information.
- Features store-and-forward architecture with wire-speed filtering and forwarding rates.
- Dynamic learning mode automatically adjusts to the network configuration.
- Runt and CRC filtering eliminates erroneous packets to optimize network bandwidth.
- Full compatibility with standard Ethernet applications, internetworking systems and client-side adapters to minimize migration costs.

Packing List

When you unpack the switch, you should find the items listed below. Please inspect the contents, and report any apparent damage or missing items immediately to your authorized reseller.

- The two-port Ethernet switch
- User's Manual
- AC power cord

Front Panel

The front panel of this switch has two ports and an array of LED indicators to provide you with instant feedback on the switch status.

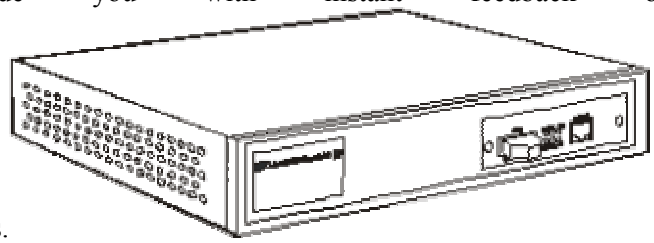

Figure 1: Front panel of the 10/100TX and 100FX Switch

Ports

The TX port of this switch is capable of accepting either a 10BASE-T or a 100BASE-TX network. It automatically senses and adapts itself to the presence of either network standard. The fiber port on the Ethernet switch is capable of accepting 100Base-FX connections only.

Cable Length

The maximum distance between a node and a directly connected switch port on a 100BASE-TX network is 100 meters with Category 5 shielded twisted-pair (STP) cable or unshielded twisted-pair (UTP) cable. On a 10BASE-T network, it may range up to 100 meters with Category 3, 4, or 5 STP/UTP cable.

As for the length of fiber connection between a switch and a Data Terminal Equipment, it is capable of spanning at most 2 kilometers (1.24 miles) using 62.5/125 μm multi-mode fiber-optic cable or up to 75 kilometers using 10/125 μm single-mode fiber optic cable.

Table 3: Cable Specifications

Speed	Connector	Port Speed Half/Full Duplex	Cable
100BaseTX	RJ-45	100/200 Mbps	100 m, Category 5 STP/UTP
10BaseT	RJ-45	10/20 Mbps	100 m, Category 3, 4, or 5 STP/UTP
100BaseFX Multi-mode	SC, ST, MT-RJ, VF-45, or LC	100/200 Mbps	Up to 2km, 50 or 62.5/125µm Multi-mode fiber cable
100BaseFX Single-mode	SC	100/200 Mbps	Up to 75km, 9 or 10/125µm Single-mode fiber cable

LEDs

The array of LED indicators on the front panel conveys status and configuration information to help you monitor and troubleshoot the switch.

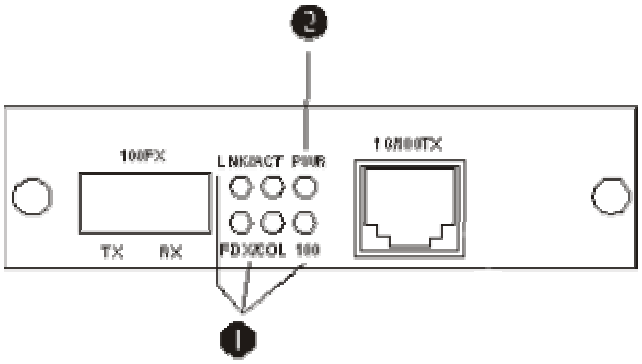

Figure 2: LED Indicators

❶ Port Status

There are two LED (LNK/ACT, FDX/COL) for 100Base-FX port and three LED (LNK/ACT, FDX/COL, SPEED) for 10/100Base-TX port to show status information. The LEDs are identified by a corresponding array of captions located above and below the LEDs on the front panel.

LNK/ACT:
There are two LNK/ACT LEDs on the front panel:

The LED next to TX port indicates status on TX port, and the one next to FX port indicates status on FX port.

When the LED is illuminating whenever the port is connected to another working networked device and flashing when the port is transmitting or receiving data.

FDX/COL:
There are two FDX/COL LEDs on the front panel:
The LED next to TX port indicates status on TX port, and the one next to FX port indicates status on FX port.
The LED is illuminating when the port is operating in full-duplex mode. The LED is off when the port is operating in half-duplex mode.
The LED is flashing when the switch detects packet collisions on the port.

100:

The low-right LED is illuminating whenever the switch detects the TX port is connected to a 100BASE-TX segment. The LED is off when the TX port is connected to a 10BASE-T segment.

❷ **Power**

This LED will be on when the switch is connected to a power supply and turned on.

Rear Panel

The power cord receptacle and on/off switch is located on the rear panel of the switch.

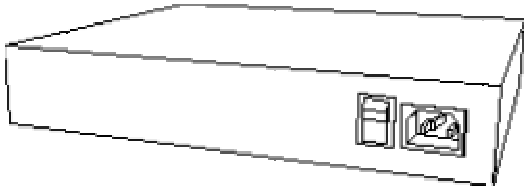

Figure 3: Rear Panel

Installation

This chapter presents step-by-step installation instructions for the two-port switch.

Selecting a Site for the Switch

As with any electronic device, you should place the switch where it will not be subjected to extreme temperatures, humidity, or electromagnetic interference. Specifically, the site you select should meet the following requirements:

- The room temperature should be between 32 and 104 degrees Fahrenheit (0 to 40 degrees Celsius).
- The relative humidity should be less than 90 percent, non-condensing.
- Surrounding electrical devices should not exceed the electromagnetic field (RFC) standards for IEC 801-3, Level 2 (3V/M) field strength.
- Make sure that the switch receives adequate ventilation. Do not block the ventilation holes on the side of the switch or the fan exhaust port at the rear of the switch.
- The power outlet should be within 1.8 Meters of the switch.

Detailed specifications may be found on page 11.

Connecting to Power

Connect the supplied AC power cord to the receptacle on the back of the switch, and then plug the cord into a standard AC outlet with a voltage range from 100 to 250 AC.

Turn the Ethernet switch on by flipping the ON/OFF switch on the rear of the unit to the **I** (ON) position. The **O** position is OFF.

Connecting to Your Network

Connect cables to computers or network segments into the RJ-45 ports on the front of this switch. The non-fiber ports support 10BASE-T or 100BASE-TX with full or half duplex. The fiber port on the switch supports 100BASE-FX with full or half duplex.

The cable for RJ-45 ports must be a Category 5 unshielded twisted-pair (UTP) cable for 100BASE-TX, or Category 3, 4, or 5 UTP cable for 10BASE-T. The cable for fiber port must be a 62.5/125 micron fiber-optic cable for 100BASE-FX.

Specifications

Applicable Standards:

IEEE 802.3 for 10Base-T
IEEE 802.3u for 100Base-TX, 100Base-FX

Ports

one 10/100TX auto-negotiation port and one 100Base-FX port

Speed

100BASE-TX: 200Mbps full-duplex, 100Mbps half-duplex
10BASE-TX: 20Mbps full-duplex, 10Mbps half-duplex
100BASE-FX: 200Mbps full-duplex 100Mbps half-duplex

Performance

148,800pps forwarding rate per port for 100Base TX
148,800pps forwarding rate per port for 100BaseFX
14,880pps forwarding rate per port for 10Base TX

LED Indicator

Per Unit-Power Status
Per Port- LNK/ACT, FDX/COL 2LED for 100FX port
LNK/ACT, FDX/COL, 100 3LED for 10/100TX port

Dimensions: 252 x 133x 35mm (L x W x H)

Weight: 0.95kg (2.1lb)

Power Input: 100 ~ 250 VAC, 50/60 Hz, 0.3A

Power consumption: 7W

Operating Temperature: 0° ~ 40°C (32° ~ 104°F)

Humidity: 10%~90%, non-condensing

Altitude: 10,000ft (3048 m)

Emissions: FCC part 15 Class A, CE Mark, VCCI-Class A

Safety: UL

Appendix A - Connector Pinouts

Pin arrangement of RJ-45 connectors for most switches.

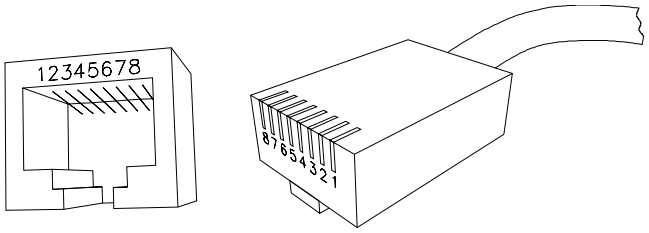

Figure 7: RJ-45 Connector and Cable Pins

The following table lists the pin out of the 10/100BASE-T/TX ports on your switch.

Pin	Regular Ports	Uplink port
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
4	NC	NC
5	NC	NC
6	Output Transmit Data -	Input Receive Data -
7	NC	NC
8	NC	NC