September, 2003

Express
Ethernet Switches:
LB9019A-R3

CUSTOMER
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INFORMATION

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

This equipment generates, uses and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A 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 A 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.

Table of Contents

About This Manual

This manual describes how to install and use LB9019A-R3: compact 16 Ports Fast Ethernet Switch. The TX ports of the switch introduced here auto-negotiates the presence of 10/100Mbps and full/half-duplex mode and auto-MDIX.

To get the most out of this manual, you should have an understanding of networking concepts such as bridging, IEEE 802.3 10BaseT Ethernet, IEEE 802.3u 100BaseTX Fast Ethernet, and local area networks (LANs).

For more information about these topics, please refer to the Appendices.

In this manual, you will find:

- Introduction on the Switch
- Product features
- Illustrative LEDs functions
- Installation instructions
- Specifications

Product Overview

Front View

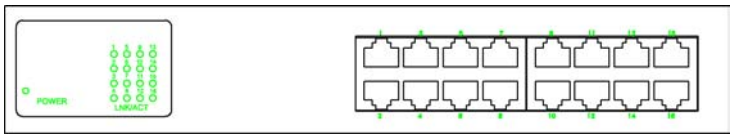

Figure 1: LB9019A-R3: Compact 16 Ports Fast Ethernet Switch

Product Features

- Provides 16 × 10/100Mbps ports using RJ-45 connectors
- Auto-negotiation for speed and duplex mode on TX ports
- Auto-MDIX for all TX ports
- True non-blocking architecture
- Full wire speed forwarding rate
- Store-and-forward mechanism
- Broadcast storm filtering control
- Back-pressure and IEEE 802.3x compliant flow control
- Supports 8K MAC addresses
- 2M bits Buffer Memory for the 16-Port Switch
- Front panel port status LEDs
- Standard 10" compact size, one-unit-height

Front Panel Display

An array of LED indicators on the front panel provides you with instant feedback on each port status, and, helps you monitor and troubleshoot the switch.

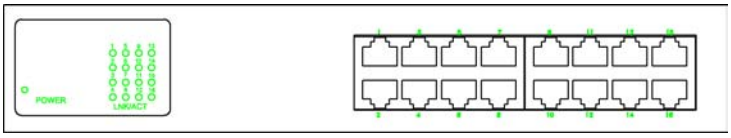

Figure 2: LB9019A-R3: Front Panel LEDs

❶ Power

This LED comes on when the switch is properly connected to power and turned on.

❷ Port Status

The RJ-45 ports numbered from 1 to 16 on the 16-Port Switch.

The LEDs are located at the left side of the switch, displaying status for each respective port. Please refer to the table below for more information.

Consult the following table for details.

ⓘ **Before you use this table for troubleshooting, make sure the switch is properly connected to power and turned on.**

Physical Ports

The compact 16 Ports Switch has sixteen or twenty-four 10/100Mbps ports using RJ-45 connectors.

Understanding Front Panel Design

Power LED		On	Power feeding in
		Off	Power switched off
			Improper connection
Port LED	LNK/ACT	On	A valid network connection LNK stands for LINK
		Flashing	Transmitting or receiving data ACT stands for ACTIVITY
		Off	No connection
	100M	On	A valid 100Mbps connection 100 stands for 100Mbps
		Off	A valid 10Mbps connection

Installation

Selecting a Site for the Equipment

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

- The ambient 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 equipment receives adequate ventilation. Do not block the ventilation holes on each side of the switch or the fan exhaust port on the side or rear of the equipment.

- The power outlet should be within 1.8 meters of the switch.

Deciding How to Install

Desktop or any flat surface

The switch can sit on desktop or any flat surface with adequate space and ventilation. If you want to place it onto a shelf, make sure the shelf can withstand the weight of the switch.

Step 1: Simply put the switch on the desired place.

Step 2: Ensure the switch receives good ventilation.

Step 3: Proceed to the "Connecting to Power" section.

Connecting to Power

Locate the supplied AC power cord.

Step 1: Connect the AC power cord to the receptacle at the back of the switch.

Step 2: Attach the plug into a standard AC outlet with a voltage range from 100~240Vac.

Step 3: The power LED on the front panel will come on then.

Figure 5: Rear view of the switch

Connecting to Your Network

Cabling

Step 1: First, ensure the power of the switch and end devices is turned off.

ⓘ It may cause electric shock or any possible harm to you if the power is not switched off.

Step 2: Prepare cable with corresponding connectors for each type of port in use.
Consult the table below for cabling requirements based on connectors and speed considerations.

Step 3: Connect one end of the cable to the switch and the other end to a desired device.

Step 4: Once the connections between two end devices are made successfully, turn on the power and the switch is operational.

Network Segmentation

Cable Specifications Table

Ethernet Standards	Connector	Port Speed Half/Full Duplex	Cable	Max. Distance
10BaseT	RJ-45	10/20 Mbps	Cat. 3, 4 or 5 UTP/STP	100 m
100BaseTX	RJ-45	100/200 Mbps	Cat. 5 UTP/STP	100 m

Technical Specifications

	Compact 16 Ports Fast Ethernet Switch
Applicable Standards	IEEE 802.3 10BaseT, IEEE 802.3u 100BaseTX
Fixed Ports	Sixteen ports for the 16 Ports Switch
Speed	100BaseTX: 200Mbps for full-duplex; 100Mbps for half-duplex
	10BaseT: 20Mbps for full-duplex; 10Mbps for half-duplex
Switching Method	Store-and-Forward
Performance	148,800pps forwarding rate per port for 100Mbps 14,880pps forwarding rate per port for 10Mbps
Chassis LED Indicators	Power For ports: LNK/ACT (1 LED)

Physical Specifications

	Compact 16 Ports Fast Ethernet Switch
Dimensions	254 × 135 × 45 mm, 10" Compact Size, 1U
Weight	Approx. 1.6kg
Power Input	100 ~ 240 Vac, 50~60 Hz
Input Fuse	2.5A
Power Consumption	8.25W Max.
Operating Temperature	0° ~ 40°C (32° ~ 104°F)
Storage Temperature	-25° ~ 70°C (-13° ~ 158°F)
Humidity	10 ~ 90%, non-condensing
Emissions	FCC part 15 Class A, CE Mark

Connector Pinouts

Pin arrangement of RJ-45 connectors:

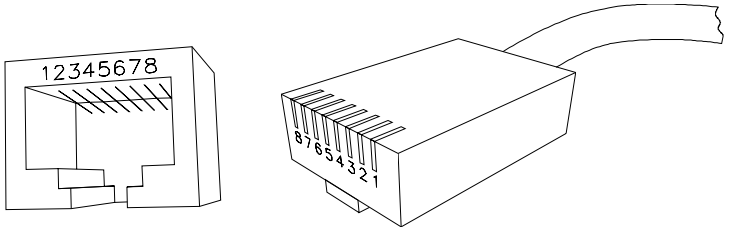

Figure 3: RJ-45 Connector and Cable Pins

The following table lists the pinout of 10/100BaseT/TX ports.

Connector Pin-Out

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

Ordering Information

16 Fixed Ports	
Cable Connector	Distance
100BaseTX: Cat. 5 UTP/STP, RJ-45	100m
10BaseT: Cat. 3, 4, or 5 UTP/STP, RJ-45	100m

ⓘ

i. The maximum node-to-node network distance is in full-duplex operation.
ii. MMF denotes Multi-Mode Fiber. SMF denotes Single-Mode Fiber.