

LB9316A LB9316C-SC-2K LB9316C-SC-20K LB9324A

Value Managed Switches

Provides serial management in a value-priced, yet capable switch.



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FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

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 Industry Canada.

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 Industrie Canada.

> Normas Oficiales Mexicanas (NOM) Electrical Safety Statement 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.
- 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.
- Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá 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.
- 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.

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- 1. Specifications
- Buffer: LB9316A: 1.625 MB; LB9324A: 1.25 MB
- Temperature Tolerance: Operating: 32 to 131° F (0 to 55° C)
- Humidity Tolerance: Operating: 10 to 90%, noncondensing
- Filtering and Forwarding Rate: 10 Mbps: 14,880 pps; 100 Mbps: 148,800 pps
- MAC Addresses: LB9316A: 4K; LB9324A: 8 K
- Standards: IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-T, IEEE 802.3x flow control
- Switching Method: Store-and-forward
- CE Approval: Yes
- RoHS: Yes
- Connectors: LB9316A: (16) RJ-45, (1) Power; LB9324A: (24) RJ-45, (1) Power
- Indicators: LB9316A: (17) LEDs: (1) Power, (16) LINK/ACT; LB9324A: (25) LEDs: (1) Power, (24) LINK/ACT
- **Power:** Both models: 100–240 VAC, 50–60 Hz internal power supply; LB9316A: 7.5 watts maximum; LB9324A: 10 watts maximum
- Size: 1.75" (1U) x 17.3" x 8.7"D (4.4 x 44 x 22 cm)

2. Overview

2.1 Introduction

Use this basic utility switch to connect up to 16 or 24 10-/100-Mbps Ethernet devices. Manage the devices via a PC connected to the switch's console port.

2.2 Features

- Supports real-time status read/write operation
- Provides on-line link status
- Supports Auto MDI/MDI-X, so you don't need crossover cables
- Supports trunk speeds up to 800 Mbps
- Includes optional fiber optic module slot for 100BASE-FX applications

2.3 What's Included

Your package should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- (1) Value Managed Switch with DB9 connector on front panel
- (2) Optional Fiber Modules (multimode: part number LB9316C-SC-2K, single-mode: part number LB9316C-SC-20K)
- This user's manual
- 2.4 Hardware Description
- 2.4.1 Front Panel

Figure 2-1 shows the front panel of the switch. Table 2-1 describes its components.



Figure 2-1. Front panel.

Number	Component	Description		
1	DB9 connector	Console port connects to PC for ma		
2	Power LED	Lights when nower to the unit is on		

Table 2-1 Front nanel components

1	DB9 connector	Console port connects to PC for management.
2	Power LED	Lights when power to the unit is on.
3	LINK/ACT LEDs	(16) on the LB9316A; (24) on the LB9324A; indicates port activity
4	RJ-45 connectors	(16) on the LB9316A; (24) on the LB9324A; links to 10-/100-Mbps Ethernet devices
5	Optional module slot	(1) 100BASE-FX module (multimode: part number LB9316C-SC-2K, single-mode: part number LB9316C-SC-20K)

2.4.2 Back Panel

Figure 2-2 shows the back panel of the switch. Table 2-2 describes its components.



Figure 2-2. Back panel.

Table 2-2. Back panel components.

Number	Component	Description
6	Switch	Press ON to power on the switch; Press OFF to power off the switch
7	Power receptacle	Accepts 100-240 VAC, 50-60 Hz power plug

- 3. Hardware Installation
- 1. Make sure your PC and the Value Managed Switch are powered off.
- 2. Connect the cable from the PC serial port to the DB9 connector on the switch. See Figure 3-1.



Figure 3-1. Attaching a PC to the switch's console port.

NOTE: When you connect the cable from the PC serial port, remember which serial port you connected.

4. Software Configuration

Follow these steps to install the software:

Step 1: Go to Start > Programs > Accessories > Communications > HyperTerminal. See Figure 4-1.



Figure 4-1. HyperTerminal screen.

Step 2: Enter a name for a new connection, and then press "OK." See Figure 4-2.



Figure 4-2. New Connection screen.

Step 3: Choose the serial port that you connected. See Figure 4-3.

Connect To
24 Ports
Enter details for the phone number that you want to dial:
Country code: United States of America (1)
Ar <u>e</u> a code: 2
Phone number:
Connect using: Direct to Com1
OK Cancel

Figure 4-3. Connect To screen.

Step 4: Configure the COM port properties. See Figure 4-4.

The default settings are:

Bits per second: 19200 Data bits: 8 Parity: None Stop bits: 1 Flow control: None

COM1 Properties	×
Port Settings	
<u>B</u> its per second: 19200 ▼	
Data bite: 8	
Parity: None	
Stop bits: 1	
Elow control: None	
Advanced	
OK Cancel Apply	

Figure 4-4. COM1 Properties screen.

Step 5: Press any key to enter the login screen.

Initializing...initialization done.

Press any key into login screen.

Figure 4-5. Press key to enter login screen.

5. Operation: Main Menu

Main Menu

[1] Status

[2] Configuration

[3] Security

[4] Diagnostics

[5] Load Factory Defaults

[6] Save



5.1 Status

Press [1] from the Main Menu (see Figure 5-1) to select enabled status, link, speed duplex, TX bandwidth control, and flow control for each port.

5.2 Configuration

Press [2] from the Main Menu, and the Configuration Menu appears (see Figure 5-2).

Configuration Menu

[1] Port

[2] Trunking

[3] Global

[4] QoS

[5] Priotrity Tag Insert/Remove

[6] VLAN Global Control

[7] VLAN Member Setup

[8] Device Features

Figure 5-2. Configuration Menu.

[1] Port

To set port status, press the "Enter" key on the keyboard. See Figure 5-3.

Cor	ifig Port				
Port	: Enablec	l Speed	Flow Cor	ntrol Bandwi	dth
		advertisement		RX	ΤX
01	Enable	100 M Full	Enable	Non-control	Non-control
02	Enable	100 M Full	Enable	Non-control	Non-control
03	Enable	100 M Full	Enable	Non-control	Non-control
04	Enable	100 M Full	Enable	Non-control	Non-control
05	Enable	100 M Full	Enable	Non-control	Non-control
06	Enable	100 M Full	Enable	Non-control	Non-control
07	Enable	100 M Full	Enable	Non-control	Non-control
08	Enable	100 M Full	Enable	Non-control	Non-control

Figure 5-3. Config Port screen.

[2] Trunking

Press the "Enter" key on the keyboard to select trunking. See Figure 5-4.

Enable Trunking				
Trunking	Enabled			
Trunk1 (port 1, 2) Trunk2 (port 3, 4) Trunk3 (port 5, 6, 7, 8) Trunk4 (port 9, 10 ,11, 12) Trunk5 (port 13, 14, 15, 16) Trunk6 (port 17, 18 ,19, 20) Trunk7 (port 21, 22, 23, 24) Trunk8 (port 25, 26)	Disable Disable Disable Disable Disable Disable Disable Disable			

Figure 5-4. Trunking screen.

[3] Global

Configure the universal port via global configuration. See Figure 5-5.

Global Configuration	
Function	Enabled
Half Duplex Back Pressure Flow Broadcast Storm Filtering Control Loop Detect	Enable Disable Disable

Figure 5-5. Global Configuration screen.

[4] QoS

Configure QoS control and set the port priority from this screen. See Figure 5-6.

QoS Configuration	n				
Function		State			
TOS/Diff Serv. Prio 802.1p Priority Adapted Flow Con Priority Weighted Force Set High-Pri	ority ntrol Ration (H iority Port	ligh:Low)	Disable Disable Disable 16:1		
[]Port 01 []Port 05 []Port 02 []Port 06 []Port 03 []Port 07 []Port 04 []Port 08	[]Port09 []Port10 []Port11 []Port12	[]Port13 []Port14 []Port15 []Port16	[]Port 17 []Port 18 []Port 19 []Port 20	[]Port21 []Port22 []Port23 []Port24	[]Port25 []Port26

Figure 5-6. QoS Configuration screen.

[5] Priority Tag Insert/Remove

Configure ports' tag status from this screen. See Figure 5-7.

Port Tagging State	Port Tagging Control					
01 Don't touch02 Don't touch03 Don't touch04 Don't touch05 Don't touch06 Don't touch07 Don't touch08 Don't touch						

Figure 5-7. Port Tagging Control screen.

[6] VLAN Global Control

Select VLAN status from this page. See Figure 5-8.

Global Configuration	
Function	State
VLAN Function Unicast Packet Inter-VLAN Leaky ARP broadcast Packet Inter-VLAN Leaky IP Multicast Packet Inter-VLAN Leaky 802.1Q VLAN tag aware Ingress Rule for Acceptable frame types Ingress Rule for Ingress Filtering	Disable Disable Disable Disable Disable Admit all Frames Disable

Figure 5-8. VLAN Global Control screen.

[7] VLAN Member Setup

From this screen, you can select ports to be included in a VLAN group.

VLAN Entry No.	Port Based VLAN or 802.1q VLAN	VLAN Port [VLAN member] ID
	I	0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 2 2 2 2

Figure 5-9. VLAN Member Setup screen.

[8] Device Features

Device Features					
Function	State				
IGMP Snooping	Disable				
IP Multicast Router Port (Read Only) (Auto-refresh)					
None.					

Figure 5-10. Device Features screen.

5.3 Security

An authentication key prevents the connected PCs from accessing the console configuration. Figure 5-11 shows the Security screen.

Security				
Function	Value			
Management Authorized F	Port Contro	ol		
[V]Port 01 [V]Port 05 [V]Port09	[V]Port13	[V]Port 17	[V]Port21	[V]Port25
[V]Port 02 [V]Port 06 [V]Port10	[V]Port14	[V]Port 18	[V]Port22	[V]Port26
[V]Port 03 [V]Port 07 [V]Port11	[V]Port15	[V]Port 19	[V]Port23	
[V]Port 04 [V]Port 08 [V]Port12	[V]Port16	[V]Port 20	[V]Port24	

Figure 5-11. Security screen.

5.4 Diagnostics

Figure 5-12 shows the Diagnostics screen.

Fault Information	VLAN ID Port (VLAN member)			
Trunk Link Warning	Trunk1(P01,02)=>[]	Trunk5(P13,14,15,16)=>[]	
	Trunk2 (P03,04)=>[]	Trunk6(P13,14,15,16)=>[]	
	Trunk 3 (P05,06,07,0	8)=>[]	Trunk7(P13,14,15,16)=>[]	
	Trunk 4 (P09,10,11,12	2)=>[]	Trunk8(P13,14,15,16)=>[]	
Network Loop Fault	P01 P02 P03 P04 P05	5 PO6 PO7	P08 P09 P10 P11 P12 P13	
Port Detected	[][][][][][]	[][] [][] [][] [][] []	
	P14 P15 P16 P17 P18	P19 P20 P	21 P22 P23 P24 P25 P26	
	[][][][][]	[][] [][] [][] [][] []	

Figure 5-12. Diagnostics screen.

5.5 Load Factory Defaults

To set the switch back to its factory defaults, press "Y" when you are prompted.

5.6 Save

After changing a setting, you must enter the "Save" page. Press "Y" to reset the switch.

Black Box Tech Support: FREE! Live. 24/7.



Great tech support is just 60 seconds away at 724-746-5500 or blackbox.com.



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Black Box Network Services is your source for more than 118,000 networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 60 seconds or less.

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