



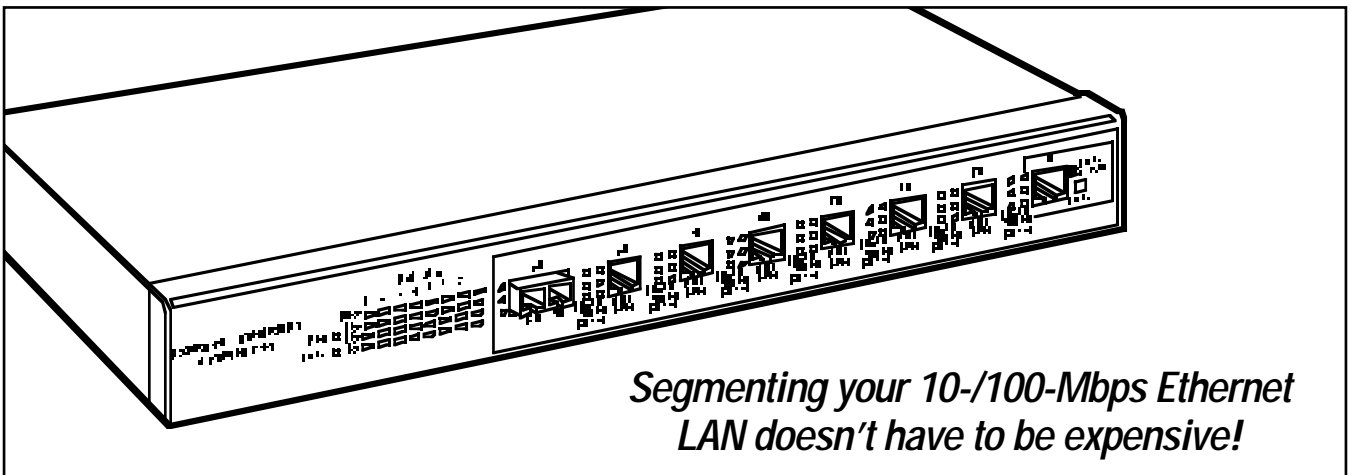
BLACK BOX[®]

NETWORK SERVICES

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EXPRESS ETHERNET SWITCHES



Segmenting your 10-/100-Mbps Ethernet LAN doesn't have to be expensive!

Key Features

- ▶ **Low-cost switching for small- or mid-sized networks.**
- ▶ **Protocol-independent, MAC-layer switching.**
- ▶ **Models for copper, fiber, copper and fibre, or copper with a fibre uplink.**
- ▶ **Fibre ports provide extra distance of over a mile.**
- ▶ **Half-/full-duplex on all RJ-45 ports.**
- ▶ **Reduce bottlenecks.**
- ▶ **Include universal power supply.**

High-speed switching technology at an affordable cost—get the best of both worlds with BLACK BOX[®] Express Ethernet Switches.

These well-engineered machines provide dedicated high-speed workgroups, plus they improve network performance and keep data moving freely and quickly.

Express Ethernet Switches enable you to put a full wire-speed switch right into a network without making a large investment. Plus they're available in a wide variety of port options, from a 2-port model for small network extension to a 24-port switch with optional fibre uplink for mid-sized networks.

Each switch provides true Layer 2 nonblocking switch architecture and a store-and-forward switching engine. With Layer 2 switching, you get the speed to handle lots of network data. The store-and-forward engine checks the integrity of

each data packet and ensures accurate throughput.

All Express Ethernet Switches have an autosensing power supply that adapts to worldwide voltages. A crossover switch makes uplinking to other switches or hubs easy. Extensive LEDs provide port status.

All RJ-45 ports operate at 10/100 Mbps in half- or full-duplex mode. The fibre ports are for 100-Mbps connections in either half- or full-duplex mode.

10-/100-Mbps Copper (LB9108A-R2, LB9019A-R2–LB9020A-R2)

These switches feature 8, 16, or 24 autosensing 10-/100-Mbps RJ-45 ports. They're perfect for rapid, inexpensive network expansion or building workgroups. The autosensing ports adjust to the speed and duplexity of each port automatically. All ports have auto MDI/MDI-X.

The 8-port model supports 16384 MAC address entries to support large numbers of end

users. It's housed in a compact, sturdy enclosure suitable for desktop use or wallmounting.

The 16- and 24-port switches each support 2048 MAC addresses with address filtering on all ports. The LB9019A-R2 also supports three QoS levels on the first six ports, inspecting IP headers and 802.1q tags before forwarding packets.

2-Port Express Ethernet Switches, Copper and Fiber (LB9002A-SC-R2, LB9002A-ST-R2)

These compact 2-port switches divide a network into a 10-/100-Mbps copper segment and a 100-Mbps fibre segment.

The 2-port switches are ideal for adding a 100-Mbps fiber island to your existing network or for extending a network long distances over fibre optic cable. To handle the heavy traffic load associated with this sort of network link, the 2-port switches support a whopping 8192 MAC address entries!

Choose from ST® or SC connectors on the 100BASE-FX side. Each switch has a push-button uplink for linking to another device. The switches can be wallmounted or used on the desktop.

5-Port Express Ethernet Switch (LB9005A-FO-R2)

This compact copper plus fibre 5-port switch is ideal for adding small workgroups to your network. The single fibre port serves as an uplink to your network. Four 10/100 autosensing copper ports feature automatic MDI-X, making it easy to connect workstations without fuss. The switch supports 2K MAC addresses.

The compact chassis is only six inches wide so you can tuck it behind a PC. You may also mount it on any horizontal or flat surface.

8-Port Express Ethernet Switches (LB9006A-SC, LB9006A-ST, LB9021A-LB9022A, LB9007A-SC-R3, LB9007A-ST-R3)

The 8-port switches are good switches for integrating 100-Mbps fibre into your existing 10-/100-Mbps network. The extra distance from fibre means you can extend network segments up to 1.2 miles (2 km). The switches support 1024 MAC address entries.

The LB9006A-SC, LB9006A-ST, LB9021A, and LB9022A models provide DIP switches for controlling port operation manually. For greater versatility, the LB9007A-R3 models have a console port that enables you to control ports and set up port-based VLANs and trunking.

Both LB9007A-R3 models support management. The management type is an ASCII console port (cable included) that provides access to a text-based menu. The menu permits basic configuration of port parameters (such as changing speed or duplex settings), and has a proprietary method for assigning the ports into VLAN and Port-Trunking groups. The LB9007A-R3 models also feature auto MDI/MDI-X.

The LB9006A-SC, LB9006A-ST, LB9021A, and LB9022A models can be rackmounted (hardware is included). The LB9007A-R3 models are intended for desktop use; if you wish to rackmount them, contact Tech Support for the appropriate hardware.

10-/100-Mbps Copper, 100-Mbps Fibre, Modular (LB9017A-R2, LB9024A) and Optional Fibre Uplink Modules (LB9017C-SC, LB9017C-ST)

These Express Ethernet Switches feature 16 or 24 autosensing 10-/100-Mbps RJ-45 ports. They're an economical way to quickly expand your 10BASE-T/100BASE-TX network with the option of adding a fibre uplink later if you need it.

Although the switches are easy to set up, they offer powerful features to help you control heavy network loads. The 2048 MAC address table handles a large number of end users.

These modular switches also include an RS-232 console port for basic management (cable included). Through the console port, you can access proprietary port-based VLAN features that enable you to segment or isolate traffic at Layer 2.

Trunking provides extra bandwidth of up to 400 Mbps between two connected switches. You can also regulate standard backpressure and auto-negotiation on individual ports. The crossover button enables you to configure one port as an uplink. These switches occupy only 1U of rack space and are easily rackmountable with the included hardware.

Both LB9017A-R2 and LB9024A support management. The management type is an ASCII console port (cable included) that provides access to a text-based menu. The menu permits basic configuration of port parameters (such as changing speed or duplex settings), and has a proprietary method for assigning the ports into VLAN and Port-Trunking groups.

100-Mbps Fibre Express Ethernet Switch (LB9008A-FO-R2)

For simplicity, speed, and distance, choose this fibre-only switch. It provides eight ports of blazing speed and distances of up to 1.2 miles (2 km) with all the security of fibre. Best of all, this entry-level switch is super simple to set up—just plug-and-play.

The switch has SC-style fibre connectors and supports 1024 MAC address entries. It has DIP switches and is easy to rack-mount with the included hardware.

Modular Express Ethernet Switch (LB9217A) and Modules (LB9213A-LB9216A, LB9218A-LB9219A, LB9220C-ST, LB9220C-SC)

For the rapidly changing and growing network, the 2½ port Modular Express Ethernet Switch offers an affordable modular solution that enables you to

customise your switch with any combination of copper and fibre ports as well as fibre uplinks.

The switch has two slots that you can fill with 8-port modules in combinations of 100-Mbps multimode fibre ports or 10/100 RJ-45 copper ports. A third “half” slot is reserved for a 1-port fiber uplink module.

The switch supports several “smart” features such as port-based VLAN and MAC-based trunking.

The 10/100 copper ports are autosensing for speed and duplex, and they support auto MDI/MDI-X. Speed and duplexity can be programmed as either fixed or auto-negotiating. Fibre ports are all 100-Mbps Fast Ethernet and come in a choice of ST or SC connectors.

The switch is rackmountable, occupying only 1U of rack space in a standard 19” rack. Rackmount ears are included.

Layer 2 switching

A switch helps provide a clear path from each workstation to its destination on demand, whether that destination is another workstation or a server. In contrast with bridges and routers (which process data packets on an individual, first-come, first-served basis), switches maintain multiple, simultaneous data conversions among attached LAN segments.

From an end-user workstation's perspective, a switched circuit appears as a dedicated connection—a direct, full-speed LAN link to an attached server or other remote LAN node. Although this technique is somewhat different from what a LAN bridge or router does, switching hubs are based on similar technologies.

Switching hubs that use bridging technologies are called Layer 2 switches—a reference to Layer 2 or the Data Link Layer of the OSI Model. These switches operate using the MAC addresses in Layer 2 and are transparent to network protocols. Layer 2 switches connect different parts of the same network, as determined by the MAC address contained in the packet. You can install a Layer 2 switch anywhere on a network without reconfiguring the LAN.

Specifications

Auto MDI/MDI-X: RJ-45 ports:
LB9108A-R2, LB9019A-R2–
LB9020A-R2, LB9005A-FO-R2,
LB9006A-SC, LB9006A-ST,
LB9021A–LB9022A,
LB9007A-SC-R3, LB9007A-ST-R3,
LB9217A

Distance (Maximum):
RJ-45 ports: 100 m (328 ft.);
Fiber Ports: 2 km (1.2 mi.)

Forwarding Rate:
14,880 pps at 10 Mbps;
148,800 at 100 Mbps

MAC Addresses:
LB9108A-R2: 16,384;
LB9019A-R2–LB9020A-R2,
LB9005A-FO-R2, LB9017A-R2,
LB9024A: 2048;
LB9002A-SC-R2, LB9002A-ST-R2,
LB9217A: 8192;
LB9006A-SC, LB9006A-ST,
LB9021A–LB9022A,
LB9007A-SC-R3,
LB9007A-ST-R3,
LB9008A-FO-R2: 1024

Standards: IEEE 802.3, IEEE 802.3u

Switching Method: Store and forward

VLAN Support: LB9007A-SC-R3,
LB9007A-ST-R3, LB9017A-R2,
LB9024A, LB9217A: Proprietary
port-based

CE Approval: Yes

Indicators: LB9108A-R2:
Per unit LEDs: (1) Power;
Per port LEDs:
(1) 100-Mbps, (1) TX,
(1) Link, (1) Full-duplex,
(1) Collision,
(1) RX;
LB9019A-R2–LB9020A-R2:
Per unit LEDs: (1) Power;
Per TX port LEDs:
(1) LINK/ACT, (1) FDX/COLL;
Ports 1–6 only: LEDs: (1) IP,
(1) VLAN;

LB9002A-SC-R2, LB9002A-ST-R2:
Per unit LEDs: (1) Power;
Per port LEDs: (1) Link,
(1) 100 Mbps, (1) TX/RX,
(1) Duplex/Collision,
(4) Utilization;

LB9005A-FO-R2 : Per unit LEDs:
(1) Power;
Per Port LEDs: (1) Link/ACT
LB9006A-SC, LB9006A-ST,
LB9021A–LB9022A,
LB9007A-SC-R3, LB9007A-ST-R3:
Per unit LEDs: (1) Power;
Per TX port LEDs: (1) 100/TX,
(1) 10/RX, (1) FDX/COLL;
Per FX Port LEDs: (1) Link,
(1) Activity, (1) Full-Duplex;

LB9017A-R2, LB9024A:
Per unit LEDs: (1) Power,
(1) Uplink, (1) Module
Enable;
Per TX port: (1) 100 Mbps/TX,
(1) 10 Mbps/RX, (1) Full-
Duplex/Collision;
LB9008A-FO-R2:
Per unit LEDs: (1) Power;
Per FX port LEDs:
(1) Link, (1) Activity,
(1) Full-Duplex;
LB9217A: Per unit (1) Power;
Per Port: (1) LNK/ACT,
(1) FDX/COL

Environmental:
Temperature:
Operating: 32 to 104°F
(0 to 40°C);
Storage: -13 to +158°F
(-25 to +70°C);
Humidity: 10 to 90%
noncondensing

Power: 100–240 VAC, 50–60 Hz,
autosensing

Size:
LB9002A-SC-R2, LB9002A-ST-R2,
LB9007A-SC-R3, LB9007A-ST-R3,
LB9108A-R2, LB9019A-R2:
1.4"H x 10"W x 5.3"D
(3.6 x 25.4 x 13.5 cm);
LB9020A-R2: 1.8"H x 10"W x 5.25"D
(4.6 x 25.4 x 13.3 cm);
LB9005A-FO-R2: 1.1"H x 6.3"W x
3.2"D (2.8 x 16 x 8.1 cm)
LB9006A-SC, LB9006A-ST,
LB9017A-R2, LB9024A:
1.75"H (1U) x 17.3"W x 8"D
(4.4 x 43.9 x 20.3 cm);
LB9021A–LB9022A,
LB9008A-FO-R2:
1.8"H x 17.3"W x 8.1"D
(4.6 x 43.9 x 20.6 cm);
LB9217A: 1.75"H (1U) x 17.3"W x
9.25"D (4.4 x 43.9 x 23.5 cm)

Weight:
LB9108A-R2, LB9008A-FO-R2:
6.5 lb. (2.9 kg);
LB9019A-R2, LB9017A-R2,
LB9024A: 5.7 lb. (2.6 kg);
LB9020A-R2, LB9007A-SC-R3,
LB9007A-ST-R3: 3.5 lb. (1.6 kg);
LB9002A-SC-R2, LB9002A-ST-R2:
2.1 lb. (1 kg);
LB9005A-FO-R2: 0.9 lb. (0.4 kg)
LB9006A-SC, LB9006A-ST,
LB9021A–LB9022A: 5.5 lb. (2.5 kg);
LB9217A: 7.5 lb. (3.4 kg)

Ordering Information

ITEM	CODE
Express Ethernet Switches	
10-/100-Mbps Copper	
(8) RJ-45.....	LB9108A-R2
(16) RJ-45.....	LB9019A-R2
(24) RJ-45.....	LB9020A-R2
10-/100-Mbps Copper, 100-Mbps Fibre	
2-Port	
(1) RJ-45, (1) SC.....	LB9002A-SC-R2
(1) RJ-45, (1) ST.....	LB9002A-ST-R2
5-Port	
(4) RJ-45, (1) SC.....	LB9005A-FO-R2
8-Port	
(2) RJ-45, (6) SC.....	LB9006A-SC
(2) RJ-45, (6) ST.....	LB9006A-ST
(6) RJ-45, (2) SC.....	LB9021A
(6) RJ-45, (2) ST.....	LB9022A
(7) RJ-45, (1) SC.....	LB9007A-SC-R3
(7) RJ-45, (1) ST.....	LB9007A-ST-R3
10-/100-Mbps Copper, 100-Mbps Fibre, Modular	
(16) RJ-45, (1) Slot for Optional Fibre Uplink.....	LB9017A-R2
(24) RJ-45, (1) Slot for Optional Fibre Uplink.....	LB9024A
100-Mbps Fibre, (8) 100BASE-FX SC....	
Uplink Modules for LB9017A-R2 and LB9024A	
100BASE-FX SC Module.....	LB9017C-SC
100BASE-FX ST Module.....	LB9007C-ST
Modular Express Ethernet Switch.....	LB9217A
Modules for LB9217A	
8-Port 100BASE-FX Fibre Modules	
ST.....	LB9214A
SC.....	LB9215A
2-Port 100BASE-FX Fibre, 6-Port 10-/100-Mbps	
RJ-45 Modules	
ST.....	LB9216A
SC.....	LB9218A
8-Port 10-/100-Mbps RJ-45 Module.....	
4-Port 100BASE-FX SC Fibre, 4-Port 10-/100-Mbps	
RJ-45 Module.....	
LB9219A	
1-Port 100BASE-FX Fibre Modules for Half-Slot	
ST.....	LB9220C-ST
SC.....	LB9220C-SC