# BLACK BOX®
## NETWORK SERVICES

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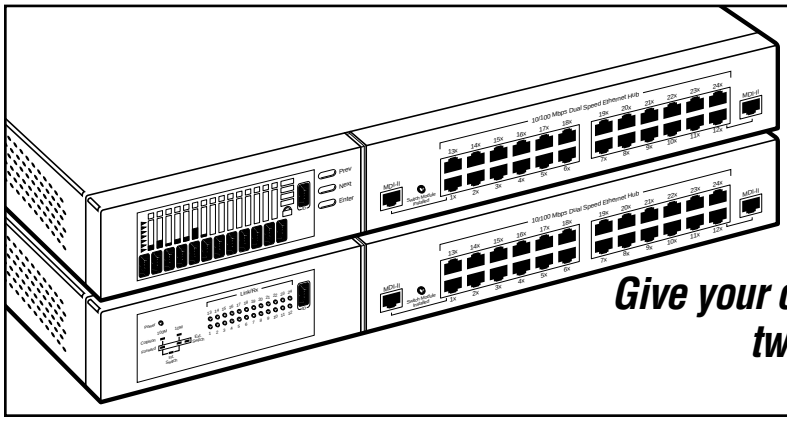
# MANAGED DUAL-SPEED STACKABLE HUBS



***Give your company scalable 10/100-Mbps twisted-pair connectivity.***

## Key Features

- ***Support up to 6 hubs per stack for a total of 144 ports!***
- ***Master hub offers Web-based, SNMP, Telnet, and local management.***
- ***Two MDI-II uplink ports per unit.***
- ***Three scalable speeds for each port: 10 Mbps, 100 Mbps, and autosensing.***
- ***Add ports with slave hub units.***
- ***Include rackmount kit.***
- ***Switch module provides transparent bridging between 10/100 segments.***

Lay the foundation for future growth with the Managed Dual-Speed Stackable Hubs from Black Box.

Designed for scalability, the hubs can accommodate your network's bandwidth, migration, and growth demands.

Their versatile master/slave architecture provides you with the means to build a system that will satisfy your needs both now and in the future.

Each hub offers performance, speed, and manageability in a single, economical unit. Available with 12 or 24 autosensing ports (in both master and slave versions), the hub automatically supports either 10- or 100-Mbps dedicated client connections. All ports incorporate user-definable speed and mode functions that you can set to operate at either 10 or 100 Mbps. In autosensing mode, the hub automatically detects the transmission speed and sets its ports accordingly.

You also get two MD-II ports that share Ports 1 and 12 on each master or slave hub and provide support for backbone uplinks.

In addition, all hubs are equipped with a switch module expansion slot. For added versatility and/or extended-distance capabilities, be sure to order one of our hot-swappable modules (featured on page 2).

The master unit comes with a network management unit (NMU) and a mini-console. It's used to manage and configure other hubs in a stack while also supplying the stack with extra ports (12 or 24) and an additional expansion-module slot. You can even employ the master unit as a standalone intelligent hub. It offers numerous management capabilities (see page 2). You don't even have to buy any management software.

Slave models feature an LED panel and can be managed by a master hub. The units can be positioned above or below the master hub. They, too, supply the stack with additional ports and an additional expansion module slot. They just can't be used in any management role—even though they can function as unmanaged standalone hubs.

One master and up to five slaves can make up a stack. And, because the master can be positioned anywhere in the stack, you can add to a stack without having to reposition the hubs. Each hub is automatically identified and assigned an ID number according to its stack position.

Up to six hubs can be stacked and linked together with cascade cables in a standard 19-inch rack. Or, if you prefer, set them on a desk. Either way, it's a simple task. In fact, cascading your hubs with cables to create a managed stack is as simple as connecting the Up Port of one hub with the Down Port of another.

The hubs can isolate one or both segments form the other hubs in the stack. When a segment is isolated, it doesn't repeat to the other segments in the hub or to other segments in the stack.

Each hub is shipped with a rackmount bracket and related hardware, rubber feet, a cascade cable, a power cord, and a user manual.

# Management capabilities and other features:

The Managed Dual-Speed Stackable Hubs offer extensive management functions.

The master hub features three front-panel keys and a high-definition mini-console display to help you easily manage its ports and each device in a stack. Using these tools, you're able to monitor for traffic, collision, and error rate.

Want to manage the hub from afar? With the Managed Dual-Speed Stackable Hub, it's possible. You can manage it from anywhere—on any platform—using a standard Web browser. Embedded in its hardware is a complete Web server that integrates HTML forms and Java™ applets and supports standard Web-server password security.

The hub features many Remote Network Monitoring (RMON) functions, including those that enable you set up statistic, alarm and event groups.

And it's easy to use, too. The point-and-click interface makes configuring and monitoring easy. In-band and out-of-band management can be conducted while using standard SNMP applications. You can also use a VT-100 terminal emulator for local console or remote Telnet management.

The managed hub also features:

• Address Tracking Capability, which you can use to diagnose network problems, such as intrusion. It records the source MAC address of each data packet received by the port and provides the filter for further analysis. Up to 15 source MAC addresses can be detected on each port.

• Source Address Search Capability, which is used to watch for a specific MAC address. In turn, you can map your network's topology. Up to eight MAC addresses can be searched at one time.

• Security Intrusion Control Capability, helps prevent unauthorized nodes for accessing the network. You can even program the hub to take various actions when a violation is detected, such as sending a trap message.

• Broadcast Storm Detection and Protection Capability, which periodically monitors the broadcast counters of each port for broadcast storms. If one is detected, the hub can be set to automatically partition the port and send a trap to the network manager.

• Redundant Link Capability, which allows you to configure your links so that if one port fails, it has another as a backup.

# Modular options:

The Managed Dual-Speed Stackable Hubs accept slide-in expansion modules, so you can plug in added power and versatility at any time.

For instance, our 2-Port 10/100 Switch Module (**LH8100C-2TX**) can be used as either an internal bridge for easy access across internal 10/100 segments or as an external 10/100BASE-TX distance extender with MDI-X and MDI-II interfaces using an RJ-45 cable. Save space by eliminating the need for an external switch!

Please note: You must install a bridge module in order to link 10- and 100-Mbps collision domains.

We also offer three other hot-swappable modules:

• The **LH8100C-3TX**, which is (1) a three-port bridge module with a two-port internal bridge for bridging 10/100 domains and (2) an external 10/100BASE-TX distance extender. You can even use both functions at the same time (in contrast to the LH8100C-2TX, which allows only one function enabled at a time). In fact, the distance extender is always enabled.

• The **LH8100C-2FX** module provides you with either a two-port internal bridge for bridging 10- and 100-Mbps segments or a 100BASE-FX distance extender with SC® type connectors for fiber optic cable.

• The three-port **LH8100C-3FX** module includes a two-port internal bridge for bridging 10/100 segments and a 100BASE-FX distance extender with SC type connectors for fiber.

On all modules, you can use the internal bridge function for bridging the two segments in a hub or a stack. The external bridge function, though, greatly extends the distance between 100-Mbps hubs or stacks. For example, with TX modules, you're able to support distances up to 328 ft. (100 m) over RJ-45. FX modules using fiber optic cable support even greater distances—up to 1.2 miles (2 km)!

All modules support up to 16K of MAC addresses.

# Specifications

**Compliance —** CUL (UL® & CSA) ; CE certified; FCC Part 15, Class A; VCCI Class 1; EN60950 (safety); EN55022 Class A (emissions); EN50082-1 (immunity)

**Standards —** IEEE 802.3, 10BASE-T, 10BASE5 Ethernet; IEEE 802.3u 100BASE-TX Ethernet

**Indicators —** Master hub: Vacuum fluorescent display (VFD) for network information; Slave: LEDs: Link/Rx per port; forwarding indicator for both 10/100-Mbps segments; Collision indicator for both 10/100-Mbps segments; 10/100-Mbps indicators with internal/external switch module activities

**Connectors —** LH8112A: (12) RJ-45, (2) DB25 (cascade), (1) DB9 (RS-232);
LH8124A; (24) RJ-45, (2) DB25 (cascade), (1) DB9 (RS-232);
LH8112A-S: (12) RJ-45, (2) DB25 (cascade);
LH8124-S: (24) RJ-45, (2) DB25 (cascade);
LH8100C-2TX, LH8100C-3TX: (1) RJ-45 (MDI-X), (1) RJ-45 (MD-II);
LH8100C-2FX, LH8100C-3FX: (1) SC pair

**Power —** 100–240 VAC, 50/60 Hz, internal universal power supply

**Humidity —** Operating: 8 to 80% noncondensing

**Temperature —**
Storage: -13 to +158°F (-25 to +70°C);
Operating: 50 to 104°F (10 to 40°C)

**Size —** Hubs: 2.2"H x 17.3"W x 8.7"D (5.6 x 43.9 x 22.1 cm);
Modules: 9.9"H x 6.6"H x 3.3"D (2.3 x 16.8 x 8.4 cm)

**Weight —** 6.3 lb. (2.8 kg)

# Application considerations:

Ports on the Managed Dual-Speed Stackable Hubs accept Category 3, 4, and 5 cables with RJ-45 connectors for 10-Mbps connections and Category 5 cables with RJ-45 connectors for 100-Mbps connections. The maximum length of cables between hubs and workstations is 328 feet (100 m); between hub and hub is 16.4 feet (5 m) for 100-Mbps connections and 328 feet (100 m) for 10-Mbps connections. All ports are hot-pluggable.

## Connecting to workstations:

- You'll have to install either a 10BASE-T or 100BASE-TX Fast Ethernet Network Interface Card (NIC) in each workstation if one is not already installed. Using a UTP/STP cable, you connect the Ethernet NIC in the workstation to a hub port.

## Connecting Ethernet hubs or devices:

- You connect 10-Mbps devices using UTP/STP Category 3, 4, or 5 cable with RJ-45 connectors, enabling the sending and receiving to or from other 10-Mbps devices. By default, each port is set to work in autosensing mode, so the hub can detect a 10BASE-T device and transmit and receive information to and from it.

## Connecting Fast Ethernet switching hubs:

- To connect 100-Mbps devices, like switching hubs, you use UTP/STP Category 5 cable with RJ-45 connectors. The maximum cable length is 16 ft. (5 m). Each port, by default, is set to autosense a connected 100BASE-TX device and transmit and receive data to and from it. The distance between switching hubs can be extended up to 1.2 miles (2 km) by connecting two hubs through switch modules (LH8100C-2FX, LH8100C-3FX) using fiber cable.

## Connecting to other dual-speed hubs:

- You can connect other dual-speed hubs to the ports of our Managed Dual-Speed Stackable Hubs. Each port can autosense the connected port speed and set its speed to match the connected port. The maximum distance between devices is 16 feet (5 m) using Category 5 UTP/STP cable. But to increase the distance between dual-speed hubs, you must first use fiber cable and connect a switch module.

# *Ordering Information*

**ITEM** **CODE**

Managed Dual-Speed Stackable Hubs
- Master Hub with Network Management Unit
  - 12-Port.....LH8112A
  - 24-Port.....LH8124A
- Managed Slave Hub
  - (Order up to 5 for Each Master Hub)
  - 12-Port.....LH8112A-S
  - 24-Port.....LH8124A-S
- Optional Modules
  - 2-Port 10/100 Switch Module.....LH8100C-2TX
  - 2-Port 100BASE-FX Switch Module .....LH8100C-2FX
  - 3-Port 10/100 Switch Module.....LH8100C-3TX
  - 3-Port 100BASE-FX Switch Module .....LH8100C-3FX

*If you need a switch, then order…*

3Com® SuperStack II Switch 3900, 24-Port ....3C390324
(Other models available. *Call us!*)

*If you need network interface cards, then order…*

3Com® Fast EtherLink 10/100 Adapters,
XL PCI TX.....3C3905B-TX
(Other NICs available. *Call us!*)

*For optimum performance and savings, order…*

Category 5 Patch Cable, 100-MHz, 4-Pair,
Crossover, PVC, Beige, 10-ft. (3-m)
.....EVMSLO5-0010
(Other lengths and colors available. *Call us!*)