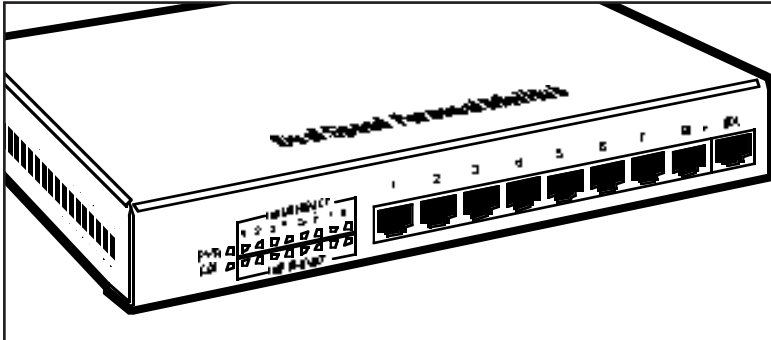# BLACK BOX®
## NETWORK SERVICES

# DUAL-SPEED PERSONAL MINIHUBS



**These Ethernet hubs support 10- and 100-Mbps devices simultaneously… and some even provide fiber connectivity!**

## Key Features

▶ **Support 10- or 100-Mbps network connections on each autonegotiating and each autosensing RJ-45 port.**

▶ **Fibre models include a 100-Mbps switched fiber port for backbone connection.**

▶ **Base model includes a ninth RJ-45 port for uplink, including cascading.**

▶ **Internal bridge chip allows all connected devices to communicate.**

▶ **LED indicators show the operating status of the unit and of each port.**

▶ **External 115- or 230-VAC power supply included.**

▶ **Plug-and-play operation.**

These Dual-Speed Personal MiniHubs offer flexibility for offices and individual workgroups that want to mix high-bandwidth 100-Mbps Fast Ethernet and fibre with more economical 10-Mbps Ethernet systems. And each unit is only about the size of a paperback book!

*Just the basics…*

The base model (LH408A) has eight shielded RJ-45 ports for network expansion and an uplink port (Port 8X) for cascading to another shared hub or switching port hub. Each port provides automatic, continuous speed sensing, so you can connect the MiniHub with any combination of 10- or 100-Mbps equipment.

Like the other ports on the base MiniHub model, the uplink port will sense the speed of the incoming device. When used to interconnect two Dual-Speed Personal MiniHubs, autosensing causes the connecting link to operate at 100 Mbps. You can then easily connect 10-Mbps hubs without adversely affecting your network.

All the Dual-Speed Personal MiniHubs support two shared traffic domains, one at 10 Mbps and one at 100 Mbps. Each port is automatically connected into the appropriate domain, depending on the speed sensed.

All models also include an internal switch or bridge chip to connect the 10- and 100-Mbps domains. All users connected to the hub, whether 10 or 100 Mbps, can communicate with each other through this bridge. It's a self-learning, store-and-forward switch that filters and selectively forwards data packets between traffic domains. The performance of each domain is maintained at its peak potential, unaffected by local traffic on the other domain. This gives your MiniHub the flexibility needed for transitioning mixed-speed networks from 10 to 100 Mbps without requiring any complex setup tasks or software configuration.
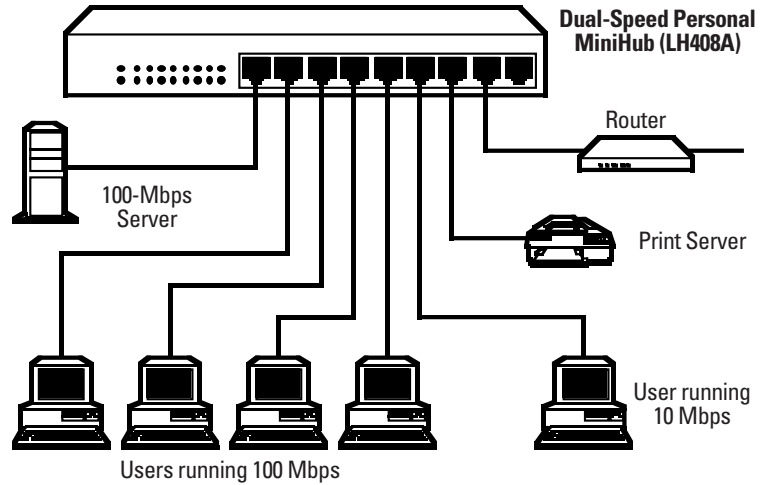
*…or with something extra…*

The Dual-Speed Personal MiniHubs with Fibre Ports (LH408A-MSC, LH408A-MST,

LH408A-SSC) add fibre functionality to the base model's flexibility. These units include six auto-negotiating, shielded, half-duplex RJ-45 ports (Ports 3–8); one auto-negotiating, manually switched (full or half duplex and straight or crossover linkage) RJ-45 port for uplink to either a central switch or a second MiniHub (Port 1); and, for Port 2, one manually switched (full or half duplex) RJ-45 port and one full-duplex, 100-Mbps fiber connector for backbone links (both ports are present, but only one can be used at a time). The fiber port can be either multimode SC or ST® or single-mode SC type.

RJ-45 ports 1 and 2 share a manual half- or full-duplex switch, and Port 1 also has a manual crossover (MDIX uplink) switch. When Port 2's fiber connector is used, Port 1 is automatically set to operate at 100 Mbps.

Each MiniHub comes with an external power supply (115 or 230 VAC), an internal cooling fan, a users' manual, and a set of metal clips and screws for secure shelf or wall mounting.

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*Use the Dual-Speed Personal MiniHub in a small office with mixed speed requirements. Some PCs operate at 100 Mbps; other PCs and print servers run at 10 Mbps. All share the same hub and communicate with each other via its internal bridge chip. Any node can change speed anytime without affecting other users.*



**Dual-Speed Personal MiniHub (LH408A)**

Router

100-Mbps Server

Print Server

User running 10 Mbps

Users running 100 Mbps

# Specifications

**Standards —** IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX (Fiber models also comply with 100BASE-FX)

**Protocol —** Transparent

**Speed —**
LH408AE: 10 or 100 Mbps, autosensing;
All others: Port 1: 10 or 100 Mbps; Port 2: 100 Mbps for fiber or 10 or 100 Mbps for RJ-45; Ports 3–8: 10 or 100 Mbps, autonegotiating

**Distance —** LH408AE: Up to 328 ft. (100 m) for 10BASE-T (UTP) or 100BASE-TX (CAT5 UTP)

**Performance —**
At 100 Mbps: Path Delay Value (PDV) is 80BT (exceeds Class II);

**Performance (cont) —**
At 10 Mbps: Partitioning after 63 consecutive collisions,

auto-reconnect after one packet error-free reception

**Interdomain Packet Processing —**
*Filtering and forwarding rate:* from 100-Mbps ports: 148,800 pps maximum; from 10-Mbps ports: 14,880 pps maximum;
*Processing type:* Store and forward (fiber models include collision-based flow control);
*Auto-learning:* 1.8K address table, shared for both traffic domains;
*Packet buffers:* 256 KB, dynamically shared on both domains;
*Latency (excluding packet time):* 100 to 10 Mbps: 5 µs; 10 to 100 Mbps: 5 µs

**Temperature Tolerance —**
Operating: 0 to 50°C; Storage: –20 to +70°C

**Relative Humidity Tolerance —**
10 to 95%, noncondensing

**Maximum Altitude Tolerance —**

Up to 3048 m

**MTBF —** 50,000+ hours

**Enclosure —** High-strength metal; metal mounting brackets included; fan-cooled (internal fan @ 5 cfm)

**CE Approval —** LH408AE, LH408AE-MSC, LH408AE-MST, LH408AE-SSC

**Connectors —**
All: (8) RJ-45 F, shielded;
LH408AE: (1) RJ-45 for uplink;
LH408AE-MSC, -SSC: (1) pair of SC (uplink);
LH408AE-MST: (1) pair of ST® (uplink)

**Indicators —** LEDs:
LH408AE:
Per unit: Power, Collision;
Per port: LINK/ACT [(8) Link/Act 10 Mbps; (8) Link/Act 100 Mbps; (16) ACT, (1) per traffic domain];

**Indicators (cont) —**
All others:
Per unit: Power, Error;

Per port: LINK/ACT; Speed (with LINK on: On for 100 Mbps, Off for 10 Mbps); Ports 1 and 2 only (full-/half- duplex switched): F/H (On for full, Off for half)

**Power —**
External supply: 5–125 VAC @ 50 Hz (200–250 VAC @ 50 Hz for AE models) with an IEC power cable connector;
Output: 5 VDC, 3 amps;
Power Consumption: 8 watts typical, 10 watts max.;
Polarity: Center positive, shell negative

**Size —** LH408A: 2.5 x 21.8 x 10.2 cm; All others: 3.3 x 17.3 x 12.7 cm

**Weight —**
LH408AE: Hub: 0.8 kg; Power supply: 0.3 kg;
All others: Hub: 0.7 kg; Power supply: 0.5 kg

# The complete package:

• (1) Dual-Speed Personal MiniHub with either a 115- or 230-Volt power supply

• (1) Set of metal clips and screws for secure shelf or wall mounting

• (1) Users' manual

# Cables you might need:

• CAT5 Solid-Conductor Cable, 568B, 4-Pair, PVC [NEC CMR] (EYN737MS-0010)

• Duplex Fibre Optic Cable, PVC, ST-ST (EFN062-CC)

# Ordering Information

| ITEM | CODE |
|---|---|
| Dual-Speed Personal MiniHub | |
| 230-Volt Power Supply | LH408AE |
| Dual-Speed Personal MiniHubs with Fiber Ports | |
| Multimode    SC | LH408AE-MSC |
|                        ST | LH408AE-MST |
| Single-Mode SC | LH408AE-SSC |

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