

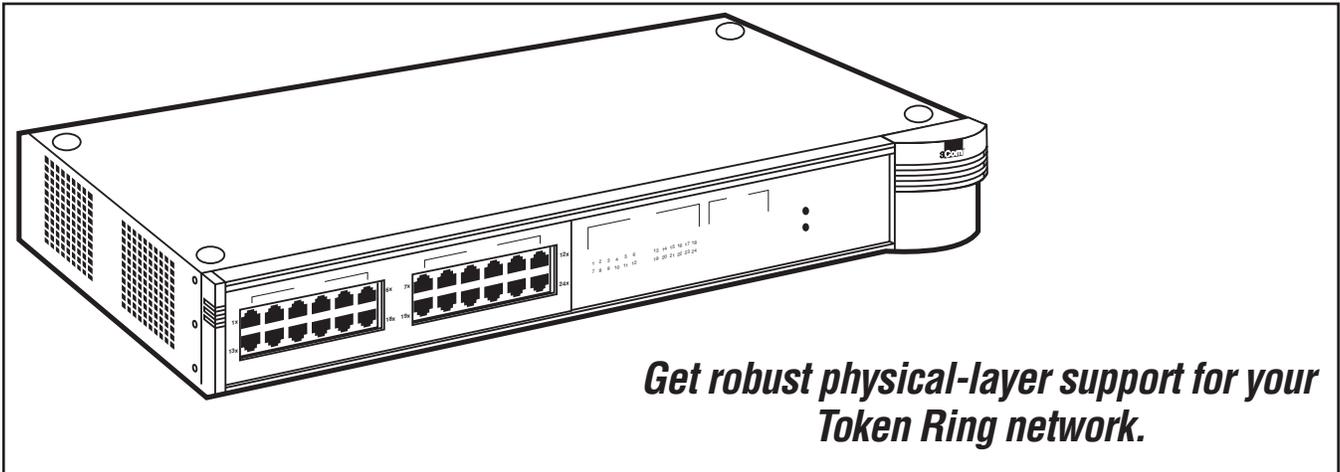


© 2000. All rights reserved.  
Black Box Corporation.

# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### 3COM<sup>®</sup> SUPERSTACK II HUB TR



## Key Features

- ▶ **Stack up to 20 hubs to link up to 260 users on a single Token Ring LAN.**
- ▶ **Slide-in modules provide SNMP RMON management and RI/RO expansion.**
- ▶ **Supports fiber, UTP, and STP wiring plus both 4-Mbps and 16-Mbps Token Ring.**
- ▶ **Each port includes a PLL ASIC, ensuring maximum signal strength for extended distances throughout your entire network.**
- ▶ **ZDL insulates your network by detecting and locking out faulty stations.**
- ▶ **Roving RMON provides flexible SNMP management in switched environments.**
- ▶ **Available in 12- or 24-port models.**

If you need an affordable, expandable platform for mission-critical Token Ring applications, then you can't go wrong with a SuperStack II TR Hub from 3Com.

The hubs combine RMON-based management with the most advanced physical-layer support. You get advanced error-recovery and fault-isolation technology, jitter-cancellation and retiming mechanisms, and advanced SNMP RMON network management.

Add that to their stacking capability and you get robust, scalable 4/16-Mbps Token Ring connectivity for standalone workstations and floor-distribution LAN configurations.

And they're reliable, too. The hubs react to a variety of network failures and correct them before they can affect your network's efficiency. Phase-Locked Looped (PLL) retiming circuits kick in when operating conditions diminish. This self-correction circuitry helps the hub overcome environmental and cable deficiencies, providing you with stable operation and dependable, accurate transmissions over long distances.

The hubs are available in 12- and 24-port models. You can even stack up to 20 hubs to connect up to 260 users on a single Token Ring LAN.

Both hub models offer slide-in modules for supporting fiber, UTP, and shielded twisted-pair (STP) wiring using fiber and/or copper Ring-In/Ring-Out (RI/RO) expansion modules.

*(continued on page 2)*

(continued from page 1)

In addition, you can get Simple Network Management Protocol (SNMP) RMON-based management with the slide-in RMON Management Agent Module (3C510502) or the Advanced RMON Management Agent Module (3C510505). A single SNMP RMON module inserted into one hub provides SNMP management for your entire stack. What's more, the Roving RMON feature maximizes your management in switched environments.

For connectivity in a central wiring closet, order the Cascade Cables to link up to 20 hubs in one rack. We offer a 1-Foot Expansion Cascade Cable (3C510507) (included with your hub package), for ring expansion in the same wiring closet or rack; a 1.2m Cascade Cable (3C510509); and an 2.4m Redundant Ring Cascade Cable (3C510504), for redundant connections within the same rack.

The redundant cable directly connects the stack's top hub to the bottom hub. That way, if one of the hubs or cables fails, there's a backup path to carry the load.

You can also order slide-in RI/RO expansion modules to make main-ring connections to 20 hubs in separate locations. To accommodate most any wiring configuration, we offer the RI/RO modules in either fiber (3C510503), copper (3C510504), and combination copper/fiber (3C510506) models.

## Technically Speaking

Along with PLL, the SuperStack II Hubs include several other features that enhance your Token Ring performance:

**Zero-Delay Lockout (ZDL)**—Stations often connect to networks with faulty or misconfigured interface cards. When that happens, you get hard errors that can halt your ring and significantly hamper your network's productivity.

To counter this, the SuperStack II Hubs use ZDL to safeguard your Token Ring. ZDL secures the integrity of your network by instantly locking out any station that exhibits an error condition. This is done before it can enter the ring and curb your network's traffic.

**Distributed Recovery Intelligence**—DRI is a proprietary algorithm built into every SuperStack II Hub to locally isolate hard errors, which can be generated by devices already on the network. Unchecked, the errors can cause a station to

beacon and stop the network. When DRI isolates the faulty link, hard errors originating on both station (lobe) ports and main ring connections are automatically resolved.

The bottom line: DRI, combined with ZDL, provides "bullet-proof" protection from hard errors. Both ZDL and DRI function in both unmanaged and managed environments.

Each hub is also equipped with Advanced Distributed Recovery Intelligence (ADRI), which improves recovery time in stacks with management agents.

### Analyse the Ring

With the slide-in RMON Agency modules on both the 12- and 24-port models, you get built-in analyzer capabilities for your mission-critical Token Ring network.

This analyser function follows the SNMP RMON MIB standard. RMON supplies a variety of statistics and services that provide network managers with

the necessary tools to fully control remote sites. Specifically, the RMON functions allow you to:

- Maintain performance-summary tables;
- Capture and filter packets for later analysis;
- Generate alarms when predefined thresholds are breached.

The performance-summary tables describe network traffic, error rates and types, active user addresses, and user activity. A history tool logs this information for each station locally in the agent. You can then upload the historical analysis information from an network management station—even after a fault occurs.

By capturing and storing LAN-analysis statistics in the agent, a remote manager can selectively filter and review packet traffic from the managed network. Captured traffic then can be uploaded to the manager and saved for further analysis.

And, by setting thresholds and parameters, you can use alarms to warn of potential problems in

any network location. The alarms are issued by management agents from local and remote sites.

### RMON Capabilities

As noted earlier, a single RMON Management Module can be used to manage a stack of SuperStack II Hubs. This is done with the help of Cascade Cables.

To enable the Roving RMON feature, you use Cascade Cables to connect the hubs, and isolate the cascade interfaces via software using the RS-232 port of a RMON Agent Management Module.

The Advanced RMON Management Agent Module provides all the MAC-layer capabilities of the RMON Management Agent Module, plus additional RMON features such as Host Top N Table, Matrix, and Protocol Decoding. Only one Advanced RMON Module is required per ring (up to 260 users) to get the added management functionality for the entire ring.

# Specifications

**Protocols** — Communication:  
 RFC 826 ARP, RFC 791 IP,  
 RFC 792 ICMP,  
 RFC 768 UDP,  
 RFC 793 TCP,  
 RFC 1055 SLIP,  
 RFC 1298 SNMP over IPX;  
 Communication Applications:  
 RFC 854 telnet, RFC telnet  
 options, RFC 856 telnet  
 binary option, RFC 857  
 telnet echo option, RFC 858  
 telnet suppress go-ahead  
 option, RFC 859 telnet  
 status option;  
 Management:  
 RFC 1157 SNMP, RFC 1213  
 MIB-2, RFC 1271 RMON,  
 RFC 1513 Token Ring  
 RMON, RFC 1215 Traps

**Maximum Distance** —  
 Category 5 UTP: 4 Mbps:  
 400 m (1,320 ft.);  
 16 Mbps: 200 m (660 ft.);  
 Type 1: 4 Mbps: . 600 m  
 (2,000 ft); 16 Mbps: . 300 m  
 (1,000 ft);  
 Fibreoptic: 4/16 Mbps:  
 2,000 m (6,600 ft)

**Indicators** — 3C510510B, 3C510511:  
 LEDs: power status (per unit),  
 packet detection (per unit), error-  
 packet detection, link status (per  
 port), cascade status (per  
 cascade connect), trunk status  
 (per trunk connect), management  
 (per unit), data rate (per unit),  
 trunk phantom (per trunk  
 connect)

**MTBF** — 3C510510B, 3C510511:  
 125,000 hours;  
 3C510502, 3C510505:  
 400,000 hours;  
 3C510503, 3C510506, 3C510504:  
 500,000 hours

**Heat Dissipation** —  
 3C510510B,  
 3C510511B: 136 BTU;  
 3C510502: 51 BTU;  
 3C510505: 68 BTU;  
 3C510504: 12 BTU;  
 3C510503, 3C510506: 18 BTU

**Temperature** — 3C510510B,  
 3C510511:  
 Operating: 5 to 50° C  
 (41 to 122° F)  
 Storage: 5 to 50° C  
 (41 to 122° F)

**Humidity** — 3C510510B, 3C510511:  
 Operating: Up to 90%  
 (noncondensing);  
 Storage: 10 to 90%  
 (noncondensing)

**Connectors** — 3C510510B:  
 (13) RJ-45, (2) DB15;  
 3C510511B:  
 (25) RJ-45, (2) DB15;  
 3C510502, 3C510505:  
 (1) DB9 RS-232 port;  
 3C510504: (2) RJ-45 ports;  
 3C510503: (2) fibre ST ports;  
 3C510506: (1) RJ-45 port,  
 (1) fibre ST port

**Power** — 90–264 VAC, 47–63 Hz

**Power Consumption** — 3C510510B:  
 40 W; 3C510511B: 55 W;  
 3C510502: 15 W;  
 3C510505: 20W;  
 3C510504: 3.5 W;  
 3C510503, 3C510506: 5 W

**Fuse Protection** — 4 A

**Size** — 3C510510B, 3C510511B:  
 6.6H x 44.1W x 30.4D cm  
 (2.6"H x 17.3"W x 12"D);  
 3C510502, 3C510505:  
 2.5H x 19W x 26.6D cm  
 (1"H x 7.5"W x 10.5"D);  
 3C510503, 3C510504, 3C510506:  
 2.5H x 12.7W x 30.4D cm  
 (1"H x 5"W x 12"D)

**Weight** — 3C510510B, 3C510511B:  
 4.4 kg;  
 3C510502, 3C510505:  
 0.34 g;  
 3C510503, 3C510504, 3C510506:  
 0.113 kg

# Typical Application

The stackable architecture of the hubs make them ideal for dynamic LAN environments that require fast and easy reconfiguration.

# What the Package Includes

- The 3Com SuperStack II Hub TR.
- (1) 0.3-m (1-ft.) Expansion Cascade Cable.
- Hardware for mounting on a standard 19-inch rack.
- A users' manual.

# Ordering Information

ITEM	CODE
3Com Superstack II Hub for Token Ring	
12-Port Hub .....	3C510510B
24-Port Hub .....	3C510511B
3Com Superstack II Token Ring Modules	
RMON Agent .....	3C510502
Advanced RMON Agent.....	3C510505
Fiber RI/RO .....	3C510503
Copper RI/RO .....	3C510504
Copper/Fiber RI/RO .....	3C510506
SuperStack II TR Cascade Cables	
0.3m. Expansion .....	3C510507
1.2m Expansion .....	3C510509
2.4m Redundant Ring.....	3C510508