

Clear Channel/Subrate Connections to T3 Services

SC800 T3 DSU Highlights

- NEBS Level III Certified for applications where high-quality and high-reliability are required.
- Provides an interface to T3 services through subrate HSSI port (3 to 44.2 Mbps) in 3 Mbps increments.
- Selectable line type: Long (DS3) or Short haul (DSX-3)
- Selectable transmit timing source: Network or Internal
- Provides HSSI interface
- Supports high speed router applications
- Local or remote management via craft port, SNMP manager or Telnet
- Hot-swappable cards are auto configurable with SCM
- TFTP downloadable firmware to dual-image flash memory
- Compatible with existing SpectraComm infrastructure

Product Overview

The SpectraComm 800 T3 DSU (SC800 T3) is an SNMP-managed device that connects to T3 telecommunications networks. It converts data from a standard High Speed Serial Interface (HSSI) port, typically connected to a router running at 3 to 44.2 Mbps, to a standard DS-3 port. Two BNC connectors provide the DS3 connections to the network. The SC800 T3 also supports M13 or C-bit parity framing. In the event of a board level failure, SC800 T3 DSU cards are hot-swappable so there is minimal loss of service.

Telco-Tough "SpectraCommonality"

The SC800 T3 DSU is a NEBS Level III certified solution for clear channel, fractional T3 connectivity. The DSU occupies one slot in GDC's "Telco-Tough" 2-slot SpectraComm 2000 shelf. For higher density applications, the SpectraComm 5000 houses up to 16 SpectraComm application support modules. For remote site or non-NEBS, stand-alone applications, the same SC800 T3 card installs in the single-slot SpectraComm AC or DC standalone enclosures.

Figure 1: SPECTRACommonality:

Application Support Modules & Shelf Systems

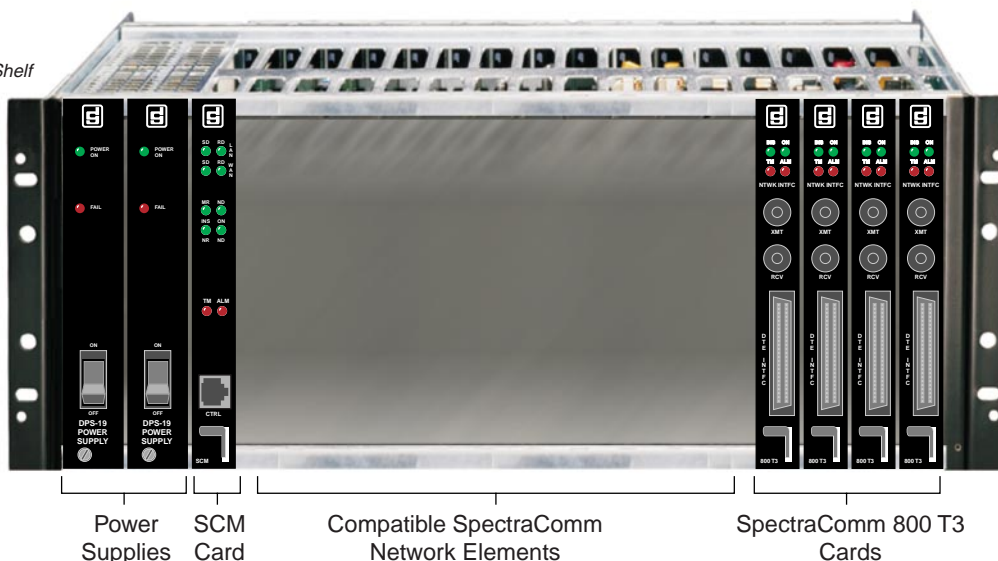


SpectraComm AC or DC Standalone Enclosure (1-Slot)



SC 2000 Shelf (2-Slots)

SC 5000 Shelf (16-Slots)



Power Supplies SCM Card

Compatible SpectraComm Network Elements

SpectraComm 800 T3 Cards



SpectraComm 800 T3

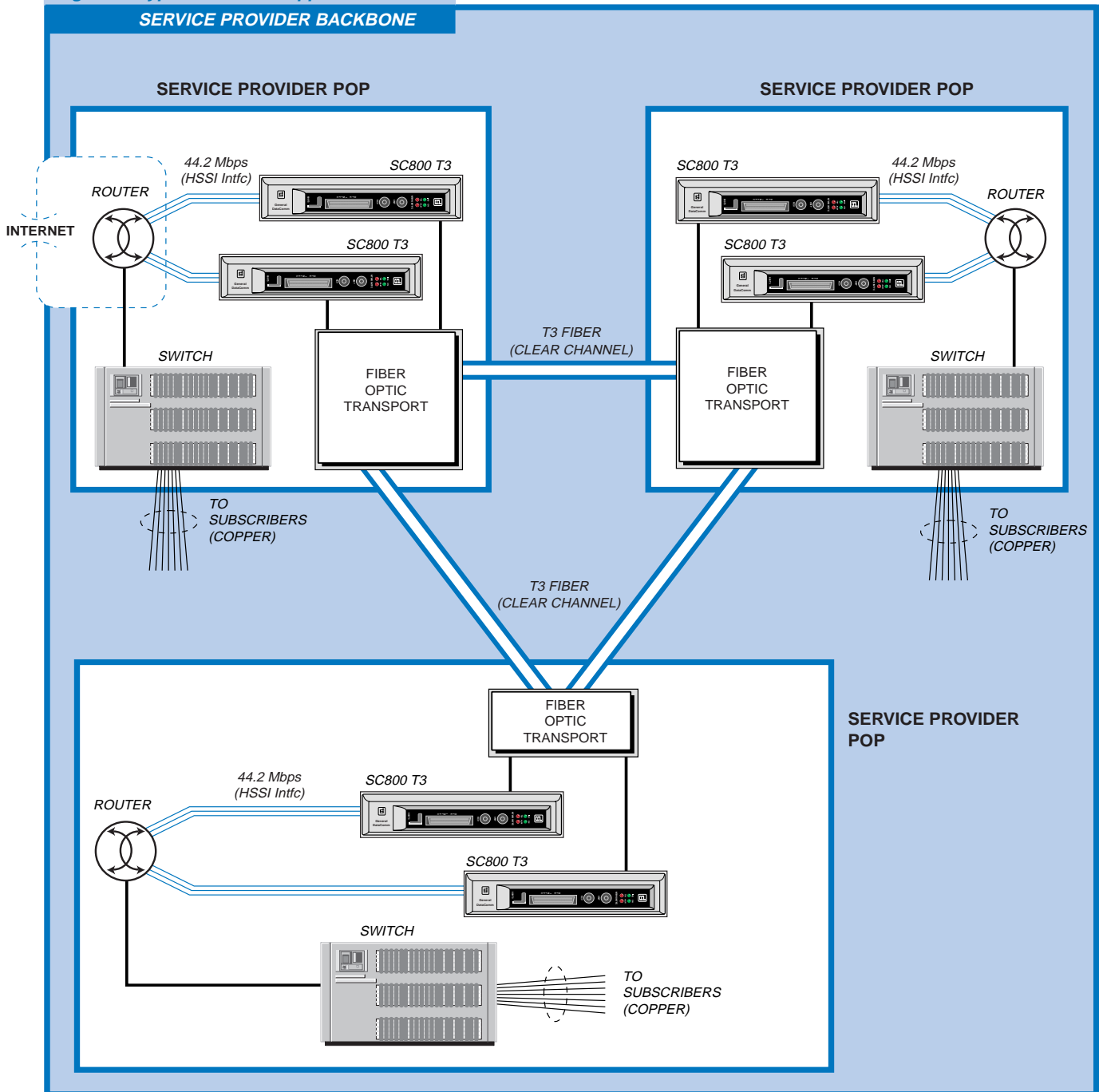
Internet Backbone Applications

Internet Service Providers (ISPs) use SpectraComm 800 T3 DSUs as the interface between switch/router HSSI ports and the DS3 lines which connect their points of presence (POPs). *Figure 2* demonstrates an ISP POP where GDC's SpectraComm 800 T3 backhauls subscriber Internet traffic to a common point for connection to the Internet.

By employing multiple and diverse data paths, the ISP benefits from a more resilient, fault tolerant network and can provide a higher level of service.

The SpectraComm 800 T3 DSU is NEBS 3 Certified, and meets or exceeds the strict standards required by deployment in central office co-location spaces.

Figure 2: Typical SC800 T3 Application:





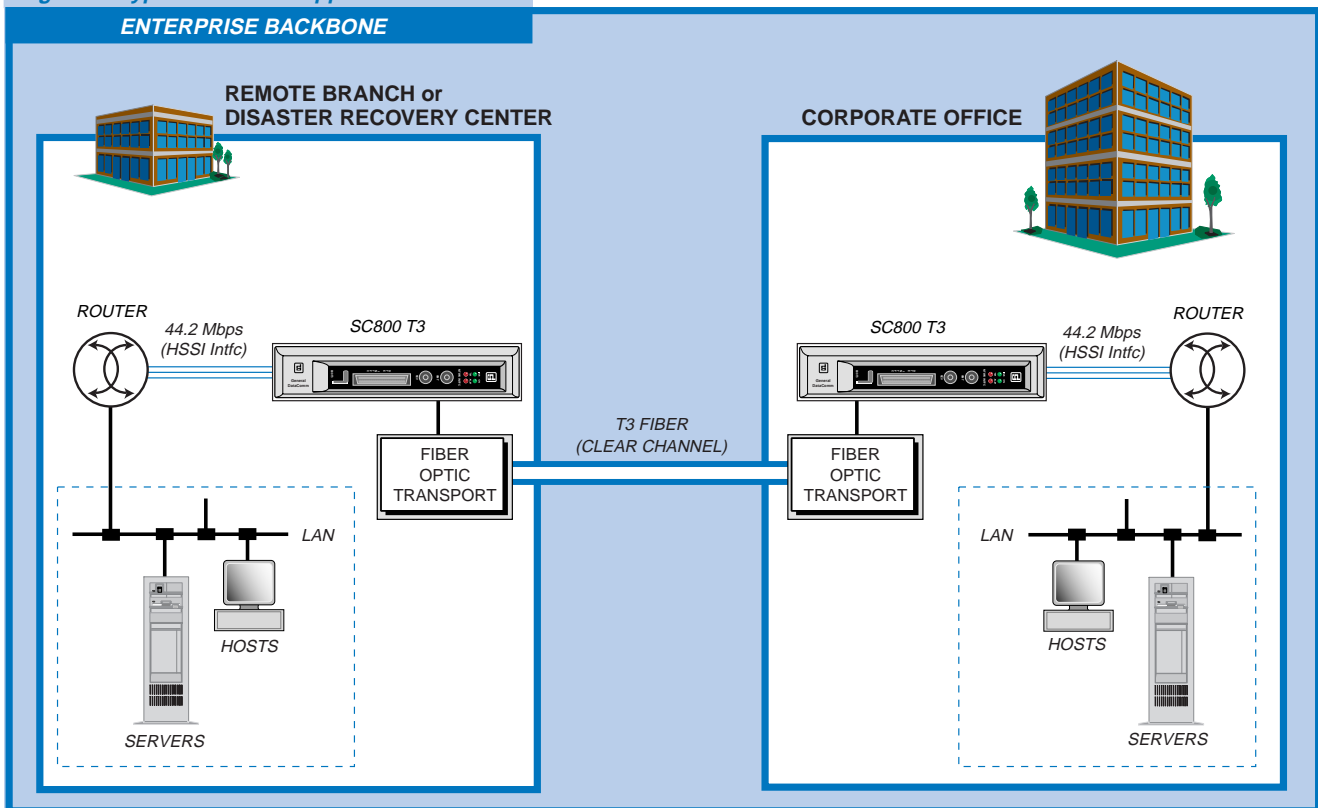
SpectraComm 800 T3

Enterprise Backbone Applications

Enterprise Mainframe-to-Mainframe communications, as well as engineering application environments, require high levels of throughput beyond that of T1 or multiple T1 services. SpectraComm 800 T3 DSUs are ideal for enterprises that require full T3 bandwidth to interconnect their LAN switch/routers or Mainframe locations.

In *Figure 3*, enterprise locations employ the SC800 T3 to connect at 44.2 Mbps over a clear channel T3 provided by the Service Provider. This connectivity guarantees a superior level of service for the end user.

Figure 3: Typical SC800 T3 Application:





SCALABLE MULTI-MEGABIT ACCESS to Frame Relay & IP Networks

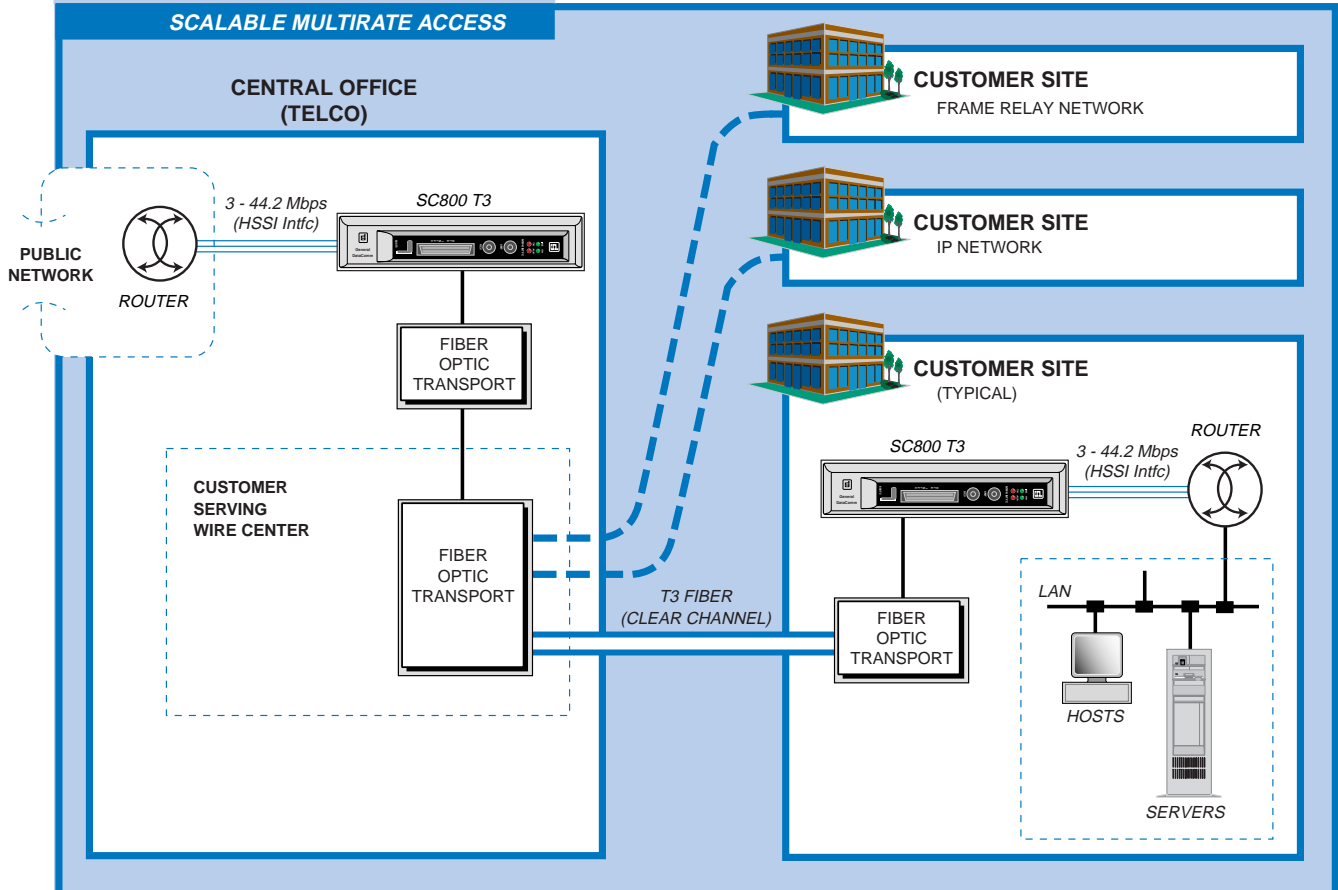
Service Providers deliver multi-megabit access to frame relay and IP network services using T3 and subrate T3 services. *Figure 4* demonstrates a service provider employing clear channel T3 as transport to the customer location.

Provisioning the services with GDC's SpectraComm 800 T3 provides a benefit to both the service provider and the enterprise customer:

- **Pay for Only the Bandwidth Needed**
At Enterprise locations, customers require increased bandwidth for high-speed applications and growing network usage. By utilizing subrate T3, customers only pay for the bandwidth they need. This scalable option lets network throughput “grow as you grow” without costly equipment upgrades and services disruptions.

- **Provide Only the Bandwidth Needed**
Service Providers can offer flexible services in line with customer needs. Since the Service Provider controls both the Central Office and customer premise (CPE) equipment, multi-megabit access to their networks is also controlled. Even though connection to the customer premise is clear channel T3, only the customer's subrate bandwidth (3-44.2 Mbps) is forwarded to the public Internet or Frame Relay network.
- **Telco-Tough Packaging from End to End**
GDC's NEBS 3 Certified packaging options for the SpectraComm 800 T3 accommodates both low- and high-density installations in Central Offices and Customer Serving Wire Centers. For single-ended, non-NEBS enterprise locations, GDC's SpectraComm 1001 enclosure provides a cost-effective, integrated packaging solution.

Figure 4: Typical SC800 T3 Application:





SpectraComm 800 T3

MANAGEMENT INTERFACES

The SpectraComm 800 T3 DSU provides comprehensive management options through which an authorized user can monitor or configure any master or remote SC800 T3 device in the network from a craft or Telnet connection.

- A craft interface for local VT100-compatible terminal or dial-up using GDC's V.34 modem
- An embedded SNMP agent, fully compliant MIB, and an integral Ethernet 10/100 BaseT interface for SNMP/Telnet management

Diagnostics and Performance Monitoring

Diagnostic testing is performed through SNMP without intervention by personnel at remote sites. The SC800 T3 supports line and payload loopbacks, remote C-bit loopbacks, as well as local and network loopbacks with diagnostic data test patterns. Tests can be performed by via the network, the network manager, or the DTE means of the HSSI port. Performance monitoring in cumulative errored seconds is supported for DS3 circuits with configurable alarm thresholds.

Secure Connectivity

Management access at craft and terminal interfaces is protected by several SC800 T3 security features:

- User- and Supervisor-level password protection authorizes every access attempt.
- Inactivity logoff prevents hacks through 'left on' equipment
- Enable/Disable of SNMP and TFTP services deters hacking through these protocols.

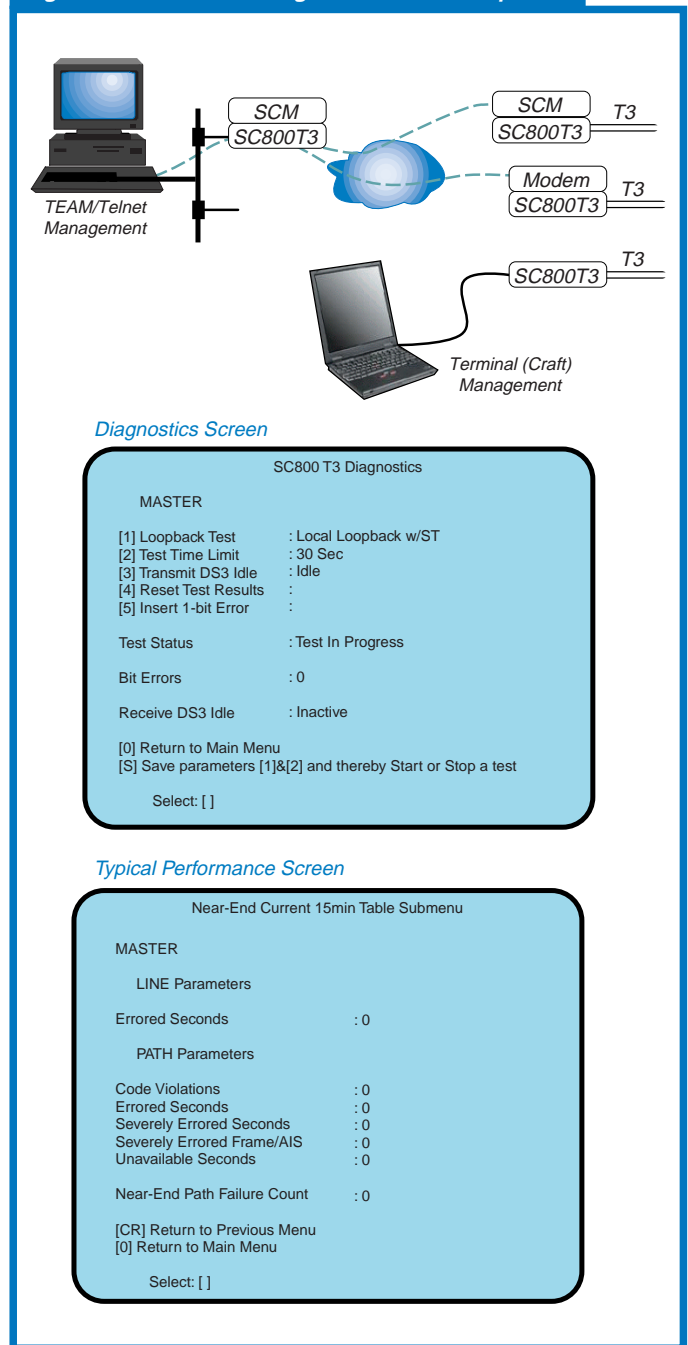
Cost Effective Maintainability

Authorized users can monitor or change SC800 T3 configuration and operation parameters from any management location in the network. In addition, SC800 T3 firmware can be maintained and upgraded via TFTP downloads whenever a new feature set becomes available from GDC. The dual image Flash memory can store two versions of operating software. Users can switch between versions without interrupting of service.

Centralized and Versatile Options

Figure 5 illustrates the SC800 T3 device and its capability for centralized management in the Carrier's network. From a central site or a local craft connection, SC800 T3 can be accessed via craft port, Telnet connection or SNMP controller. The number of concurrent management sessions is determined by your workstation resources.

Figure 5: SC800 T3 Management Interface Options



SC 800T3 Physical Specifications

Single-slot Blade

Width: 21 mm (.81 in)
Height: 178 mm (7 in)
Depth: 241 mm (9.5 in)
Weight: 0.28 kg (10 oz); Shipping weight: 0.45 kg (1 lb)

Environmental Specifications

Non-Operating

Temperature: -40 to 70 degrees C (-40 to 158 degrees F)
Derate by 1 degree C / 1000 ft above sea level)
Relative Humidity: 5% to 95%
Altitude: up to 12,191 m (40,000 ft)

Operating

Temperature: 0 to 50 degrees C (32 to 122 degrees F)
Relative Humidity: 5% - 95% non-condensing
Altitude: -60 to 3,660 m (-197 to 12,000 ft)

Electrical Specifications

Power (AC or DC), voltage, frequency, and fusing determined by your SpectraComm shelf or enclosure.

Power Dissipation: 6 Watts maximum

Compliance & Compatibility

Safety: UL Approved

NEBS Level III Certified

EMI: FCC Part 15 Class A Approved

Quality Assurance: ISO 9001: 2000 Certified

Management Options

Menu-driven user interface via VT-100 compatible terminal

Menu-driven user interface via Telnet

Fully compliant GDC MIB and TEAM 800 T3

Operational Specifications

DS3 Interface Specifications

Framing Formats:
ANSI T1.107-1995 M13 or C-bit parity

Data Rates:
T3 network interface is 44.736 Mbps;
T3 payload through the HSSI port is 3 to 44.2 Mbps
in 3 Mbps increments.

Line Code: B3ZS

Line Build-Out:
Short (0 to 100 ft.) or Long (100 to 450 ft.)

Line Impedance: 75 ohms, unbalanced

Physical Interfaces

Rear Panel Craft Port: DB25 connector

Front Panel DS3 BNC coaxial connectors (2)
Transmit/Receive)

Front Panel HSSI Interface: EIA/TIA 612 50-pin
SCSI-2 connector

Alarm Reporting

Maskable Alarms for Unit, Network and Line
conditions include:

Out of Frame (OOF) alarm

Alarm Indication Signal (AIS or Blue alarm)

Loss of Signal (LOS) alarm, Red alarm, Yellow alarm

Timing Sources

Internal Timing Source: Stratum 4E (Local Oscillator)

External Timing Source: Recovered from the network

Diagnostics & Monitoring

DS3 Monitoring for Cumulative Errored Seconds,
P-bit errors, C-bit errors, FEBE errors

Line Loopback, Payload Loopback

Local Loopback, Local Loopback with Self-Test,
DTE Loopback

Remote Linelook (Master Only)

Remote Linelook with Self-Test (Master Only)

Remote Payload Loopback (Master Only)

Remote Payload Loopback with Self-Test
(Master Only)

End-to-End Self-Test (Master and Remote)

Security Features

Username and Password verification

Multi-level permissions:

User (Read-only, Supervisor (Read-Write), or
Administrator (Read-Write and special functions)

Inactivity timeout at the terminal interface (via SCM).

