Efficient Network Access for Subrate Applications

SC SRM-6 Subrate Mux Highlights

- Efficient, cost-effective network access by reducing additional communication lines and equipment.

- Combines synchronous and asynchronous data from up to six subrate users into one TDM payload.

- Allows users' mixed data rates in one TDM payload.

- Built-in diagnostic aggregate loopback (toward DTE)

- Operating status LEDs

- Alarm monitor and SNMP trap generation

- Supports channel alarms (one for each channel) for No RTS and No Remote CTS

- Supports aggregate alarms for No DCD and No Frame Sync

- Telnet, LAN, and ASCII/VT100 craft connections via SCM

- Multi-level password protection for console or Telnet management access; inactivity timers.

- Front Panel LEDs indicate operating status

- TFTP download for firmware upgrades

- Power requirements are less than 6 Watts per card.

- Multiple deployment options: SC5000 shelf, Dual SC2000 shelf or Single SC2000 shelf.

Overview

The SpectraComm SRM-6 is a six-channel Time-Division Subrate Multiplexer. It multiplexes up to six DTEs at the channel interface (RS-232), and connects a SpectraComm V.F28.8/33.6 modem, a SpectraComm 521A/S DDS CSU/DSU, or any RS-232 or RS-530 DCE device at the aggregate interface in point-to-point applications.
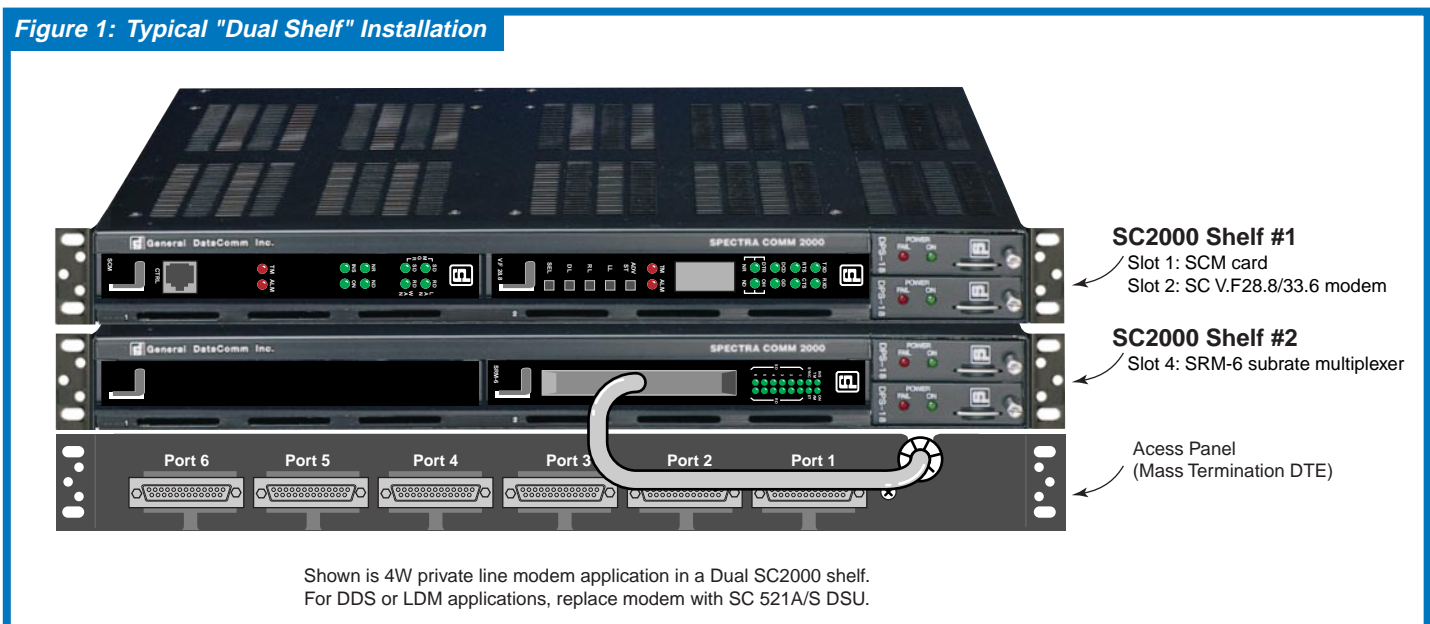
A SpectraComm Manager (SCM) card provides the Telnet and VT100 servers/agents, the Telnet/Ethernet connection, and the craft port. Field personnel can connect a VT100/ASCII terminal to the SCM craft port to provision the SRM-6, monitor alarms and status, and perform diagnostics and maintenance. The SCM also acts as an SNMP proxy agent for the SRM-6 and the modem/DSU by sending alarm traps to a trap manager.

Intended Use

The SRM-6 card and its two SpectraComm companion cards are intended for rack-mount installation in two linked (dual) SC2000 shelves *(Figure 1)*. The SpectraComm devices may also be installed in the 16-slot SC5000 shelf. When a customer-supplied DCE is used, the SRM-6 and the SCM can be deployed in a single SC2000 shelf.
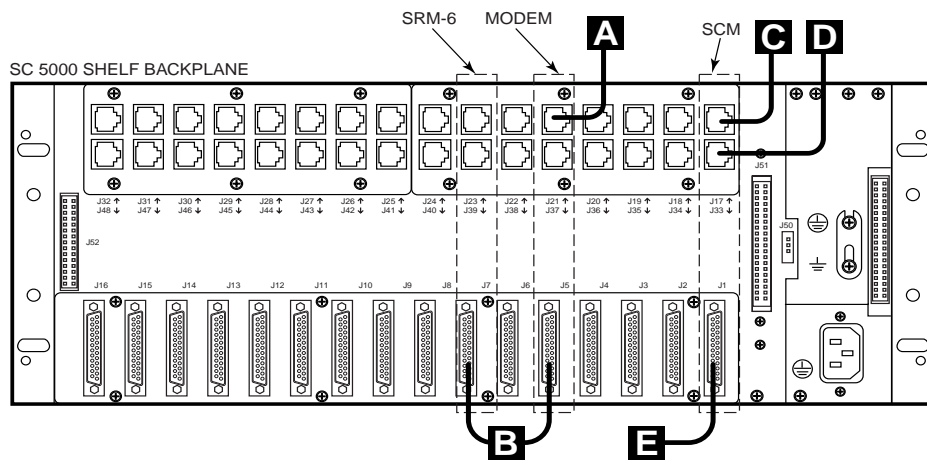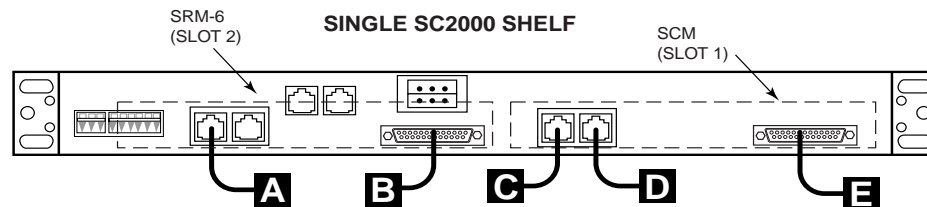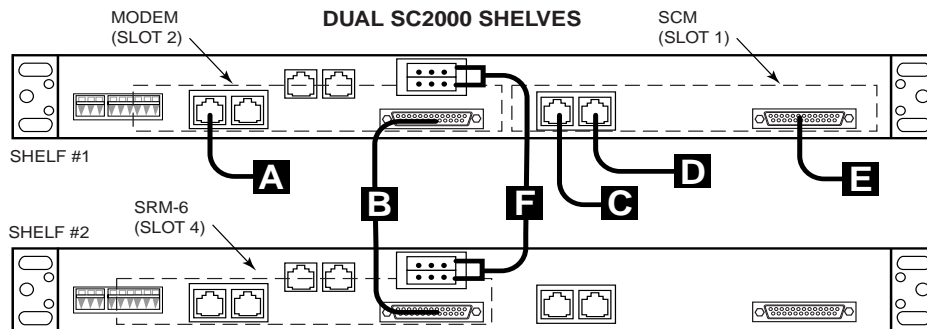
The mass termination connector at the SRM-6 front panel is cabled to an access panel which provides six EIA-232-E interfaces through DB-25 Female connectors wired as DCE. The access panel mounts onto the rear of the SC 2000 shelf or can be installed at the front of the telco rack *(Figure 2)*.

Figure 1: Typical "Dual Shelf" Installation

SC2000 Shelf #1
Slot 1: SCM card
Slot 2: SC V.F28.8/33.6 modem

SC2000 Shelf #2
Slot 4: SRM-6 subrate multiplexer

Acess Panel
(Mass Termination DTE)

Port 6   Port 5   Port 4   Port 3   Port 2   Port 1

Shown is 4W private line modem application in a Dual SC2000 shelf.
For DDS or LDM applications, replace modem with SC 521A/S DSU.

SpectraComm SRM-6

REAR PANEL CONNECTIONS

DUAL SC2000 SHELVES

MODEM (SLOT 2)

SCM (SLOT 1)

SHELF #1

A B F C D E

SRM-6 (SLOT 4)

SHELF #2

SINGLE SC2000 SHELF

SRM-6 (SLOT 2)

SCM (SLOT 1)

A B C D E

SRM-6   MODEM

A

SCM   C   D

SC 5000 SHELF BACKPLANE

J32↑ J31↑ J30↑ J29↑ J28↑ J27↑ J26↑ J25↑ J24↑ J23↑ J22↑ J21↑ J20↑ J19↑ J18↑ J17↑
J48↓ J47↓ J46↓ J45↓ J44↓ J43↓ J42↓ J41↓ J40↓ J39↓ J38↓ J37↓ J36↓ J35↓ J34↓ J33↓

J52

J51

J50

J16 J15 J14 J13 J12 J11 J10 J9 J8 J7 J6 J5 J4 J3 J2 J1

B E

ACCESS PANEL / CABLE ASSY

(MASS TERM DTE)

H

To SRM-6 FRONT PANEL

G

FRONT PANEL DETAILS

SRM-6

INS ON
TM AM
SYNC ET
1
2
3
4
5
6

SRM-6

G

DCE CHANNEL CONNECTOR (to ACCESS PANEL)

SCM

SD RD L A N
SD RD W A N

NR ND
INS ON

TM ALM

CTRL

SCM

J

CRAFT PORT

NOTES

In Dual SC2000 shelf installations, the SCM and the SpectraComm modem must be installed in the same shelf; the SRM-6 is installed in either slot of the second linked shelf.

In a SC5000 shelf, install cards in any slot.

In DDS and T1 applications, the SC21A/S or SC553 DSU replaces the modem. Refer to the corresponding manual to make rear panel connections to those devices.

In Single SC2000 installations, the SRM-6 in slot 2 is connected to a customer-supplied DCE.

See Figure 2-3 for Access Panel installation and connection details.

CONNECTOR DETAILS

A MODEM PRIVATE LINE

PIN 1

PIN 1   PIN 8

C SCM WAN

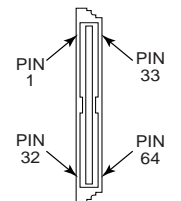**D** SCM DBU WAN

J SCM CRAFT
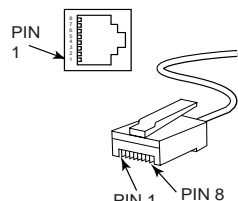
B MODEM/DSU to SRM-6 AGGREGATE PORT

E SCM LAN PORT
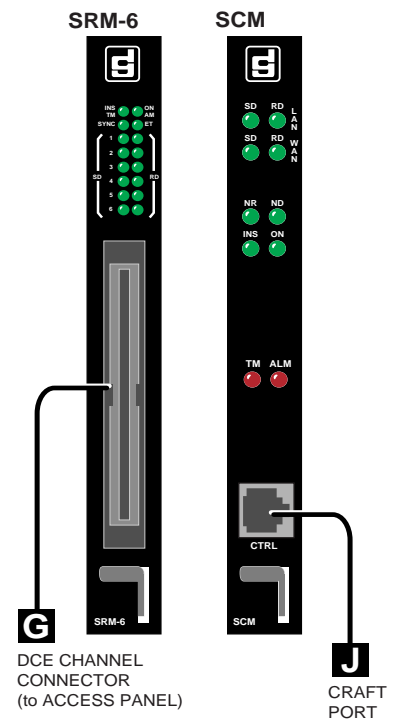
H ACCESS PANEL (WIRED DCE CHANNELS)

PIN 1
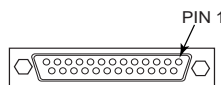
F BERG PIN CONNECTORS (Dual SC2000 shelf only)

SHELF#1
SCM 1
SCM 2
PIN 1
PIN 1
ON OFF

P1
P3

MANAGEMENT LINK CABLE

SHELF#2
SCM 1
SCM 2
PIN 1
PIN 1
ON OFF

P2
P4
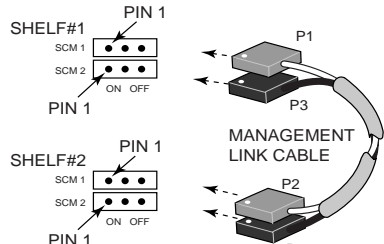
G MASS TERM DCE CHANNEL CONNECTOR

PIN 1   PIN 33
PIN 32   PIN 64

4-Wire Private Line Modem Application

The SRM-6 multiplexer is shown below with the SC V.F28.8 modem and the SCM in a typical 4-wire private line modem application *(Figure 3)*. Management is conducted via a craft or LAN/Telnet connection to the SCM.

- On the DTE side, the SRM-6 acts as a DCE, multiplexing up six DTEs into one aggregate.

- On the DCE side of the SRM-6, communication with the co-located modem is configured to one of three aggregate data rates: 19.2, 28.8, or 33.6 Kbps.

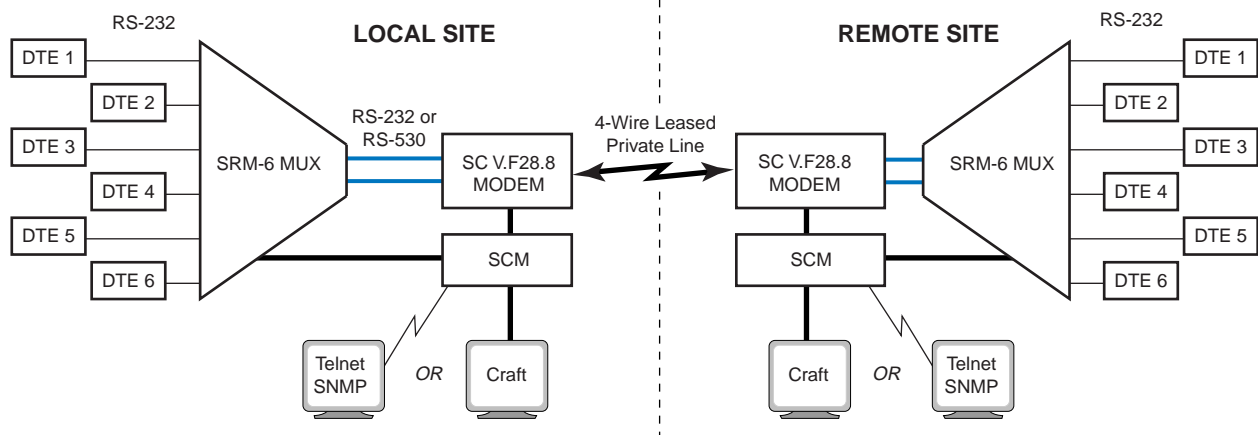- Local and remote sites are connected via the 4-wire, leased private line.

DDS Network Application or LDM Application

The SRM-6 multiplexer with the SC 521A/S DSU and the SCM can be deployed for DDS applications *(Figure 3)*. Management is conducted via a craft or LAN/Telnet connection to the SCM.
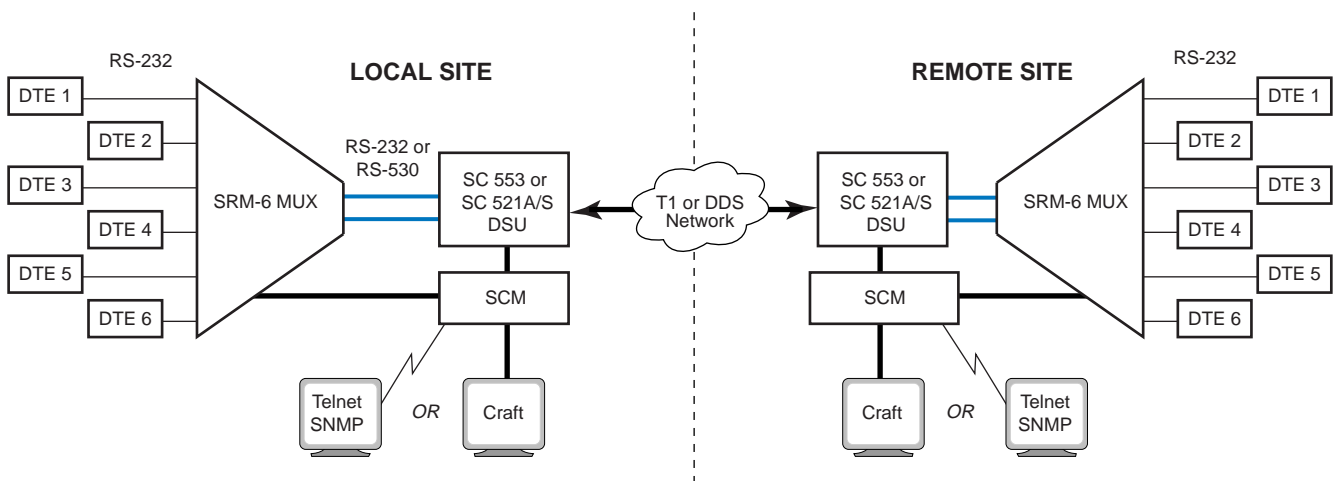
- On the DTE side, the SRM-6 acts as a DCE, multiplexing up six DTEs into one aggregate.

- On the DCE side of the SRM-6, communication with the co-located DSU is configured to one of two aggregate data rates: 56 or 64 Kbps.

- Local and remote sites are connected over the 4-wire, DDS line.


Figure 3: SRM-6 APPLICATIONS

Shown with SpectraComm DCE devices: SC V.F28.8 modem, SC553 T1 DSU or SC521A/S DDS DSU.
In applications with a customer-supplied DCE, the SCM does not manage the DCE.

SpectraComm SRM-6

Management Interfaces

The SpectraComm Manager card provides craft, Telnet, and LAN connections for SRM-6 communication, monitoring, and management functions. These functions are accessed via the SCM front panel EIA-232 craft (CTRL) port, the rear panel DB25F LAN port, and the rear panel RJ45 WAN/DBU WAN ports.
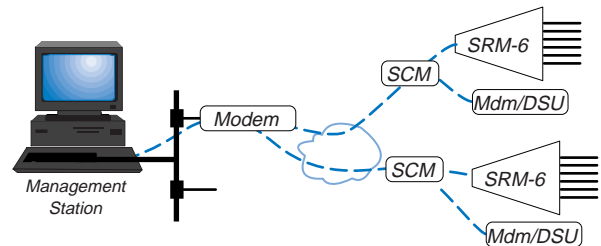
Discovery

The SCM performs network discovery of the SRM-6. The discovery function identifies compatible network elements located in the SpectraComm shelf and stores element information in its local database. Information includes the element type, configuration checksum, serial number, alarm status, and equipment status. The user can access this information by means of the SCM Management Information Base (MIB).

Alarms and Traps

After the initial Discovery, the SCM card polls the active slot addresses for alarms and statistical data on network elements and also polls one inactive slot. By reducing the frequency at which it polls inactive slots, the SCM card can continuously monitor as rapidly as possible and still discover newly installed SCM-compatible equipment. The SCM communicates continually with the SRM-6 and forwards its alarm traps to a designated controller.

Secure Connectivity

Management access at the SCM craft and terminal interfaces is protected by several security features:

- User- and Supervisor-level password protection authorizes every access attempt.
- Inactivity logoff prevents hacks through 'left on' equipment
- RADIUS authentication and/or encryption security are also available as options to the SCM or modem.

Efficient Maintainability

SRM-6 firmware can be maintained and upgraded by authorized users via TFTP downloads whenever new feature sets become available from GDC.

Cost-Effective SpectraCommonality

Figure 4 illustrates SRM-6 system devices and their capability for centralized management in the Carrier's network. From a central site or a local craft connection, the SRM-6, and the SpectraComm modem or DSU can be accessed via craft, Telnet via the SCM. The number of concurrent management sessions is determined by your workstation resources.
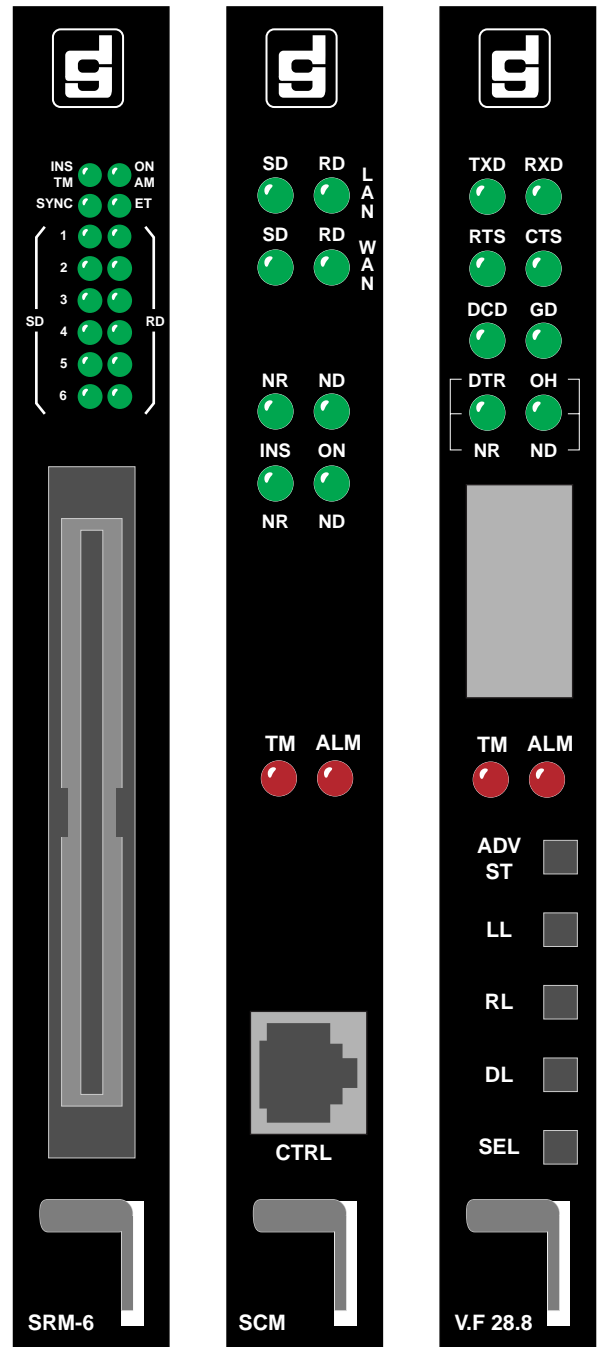

Figure 4: Front Panel Details

NOTE: In a DDS network, the SC521A is used instead of the SC V.F28.8/33.6 modem.

General DataComm
The Best Connections in the Business

SpectraComm SRM-6

Physical Specifications

SC SRM-6 Subrate Multiplexer (P/N 076P054-001)
Width: 178 mm (7.0 in.)
Height: 21 mm (0.81 in.)
Depth: 241 mm (9.5 in.)
Weight: 0.28 kg (10 oz.)
Shipping weight: 0.74 kg (1 lb 10 oz)

SpectraComm Manager Card (P/N 058P150-001)
Width: 178 mm (7.0 in.)
Height: 21 mm (0.81 in.)
Depth: 241 mm (9.5 in.)
Weight: 0.28 kg (10 oz.)
Shipping weight: 0.74 kg (1 lb 10 oz)

SC V.F28.8/33.6 Modem (060M012-001)
Width: 178 mm (7.0 in.)
Height: 21 mm (0.81 in.) or 45 mm (1.75 in. with piggyback card)
Depth: 241 mm (9.5 in.)
Weight: 0.28 kg (10 oz.)
Shipping weight: 0.74 kg (1 lb 10 oz)

SC 521A/S DSU (P/N 076P028-001)
Width: 178 mm (7.0 in.)
Height: 21 mm (0.81 in.)
Depth: 241 mm (9.5 in.)
Weight: 0.28 kg (10 oz.)
Shipping weight: 0.74 kg (1 lb 10 oz)

Environmental Specifications

Non-Operating
Temperature: -40 to 70 degrees C (-40 to 158 degrees F)
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 Requirements
Power (AC or DC), voltage, frequency, and fusing determined by your SpectraComm shelf or enclosure.

Power Dissipation
SRM-6 Card: Less than 6 Watts
SCM Card: 6 Watts
SC V.F28.8/33.6 Modem: 6 Watts
SC521A/S: 4 Watts

Compliance & Compatibility
Safety: UL Approved

EMI: FCC Part 15 (Pending)

Quality Assurance: ISO 9001: 2000 Certified

Operational Specifications

TDM Framing Format: Proprietary

Operating Mode: Point-to-Point

Channel Data Rates (Asynch or Synch):
1200, 2400, 4800, 9600, 19200 Kbps

Aggregate Data Rates (Synchronous):
19.2, 28.2, 33.6, 56, or 64 Kbps

Aggregate Interfaces:
EIA/TIA-232-E, RS-530 (wired as DTE)

Channel Interfaces:
EIA/TIA-232-E (Channels 1 through 6 wired as DCE)

Channel Async Character Format: 8 - 11 bits

Channel Async Overspeed: 1%

Tx Timing
Channel:
DCE Send Timing (ST) or DTE Terminal Timing (TT)

Aggregate:
Derived from any channel, or Aggregate ST

Diagnostics
Aggregate loopback to DTE

Front Panel Physical Interfaces
Mass termination DTE connector
(to DB25 access panel)

Alarm Reporting
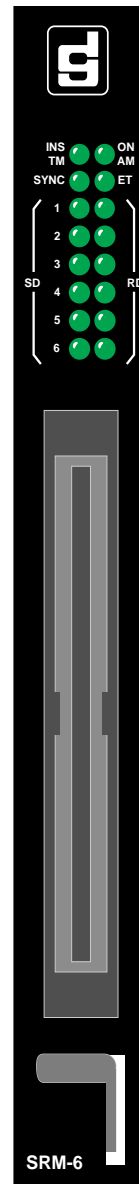Aggregate: No DCD, No Frame Sync

Channel: No RTS, No Remote CTS

Management Options (via SCM)
Menu-driven user interface via VT-100 compatible terminal

Menu-driven user interface via Telnet

Supports SNMP alarm traps

Shown:
SC SRM-6
Front Panel

USDA
RUS
Accepted

0099_scsrm6_ds04 Feb12