

## Efficient Network Access for Subrate Applications

### SC SRM-6 Subrate Mux Highlights

- Provides efficient and 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
- Support aggregate alarms for No DCD and No Frame Sync
- Telnet, LAN, and ASCII/VT100 craft connections via the 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.

### 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.

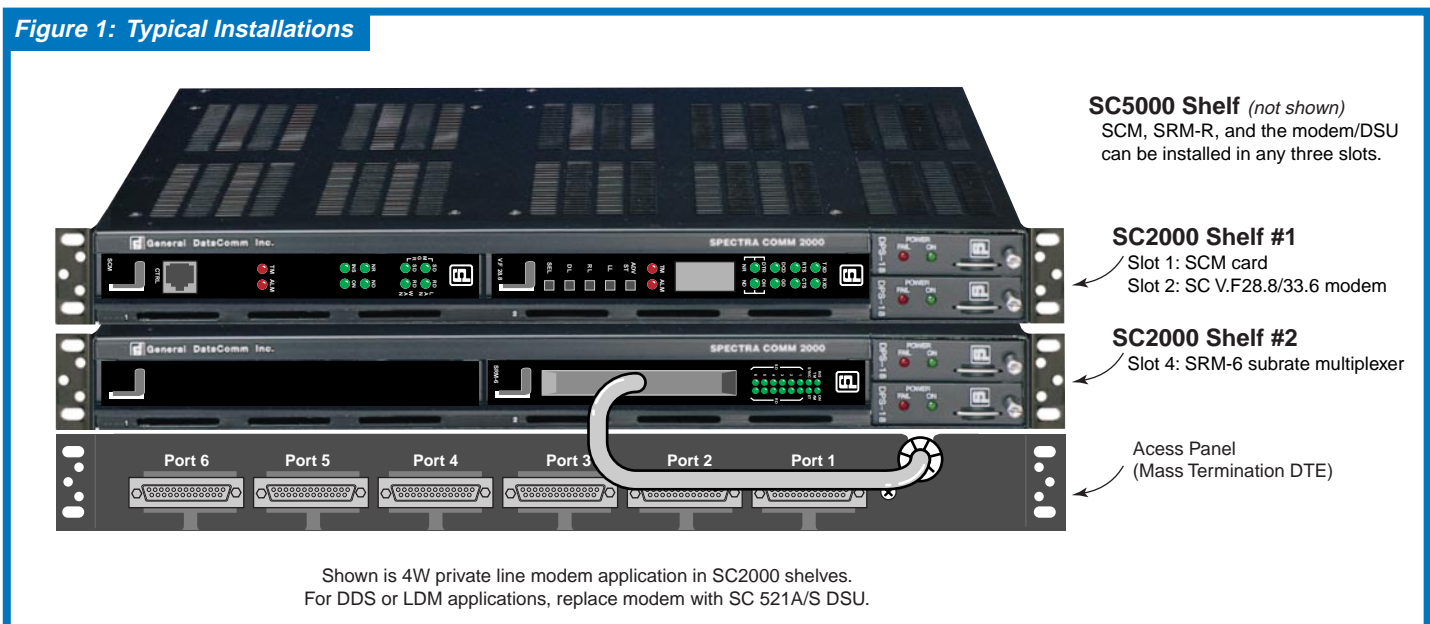
A SpectraComm Manager (SCM) card provides the Telnet and VT100 servers/agents, the Telnet/Ethernet connection, and the craft port. Field personnel can connect a VT100/ASCII terminal to the SCM craft port to provision the SRM-6, monitor alarms and status, and perform diagnostics and maintenance. The SCM 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 companion cards are intended for rack-mount installation in two linked SC2000 shelves (Figure 1). As an alternative, the devices can be installed in the high density SC5000 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).

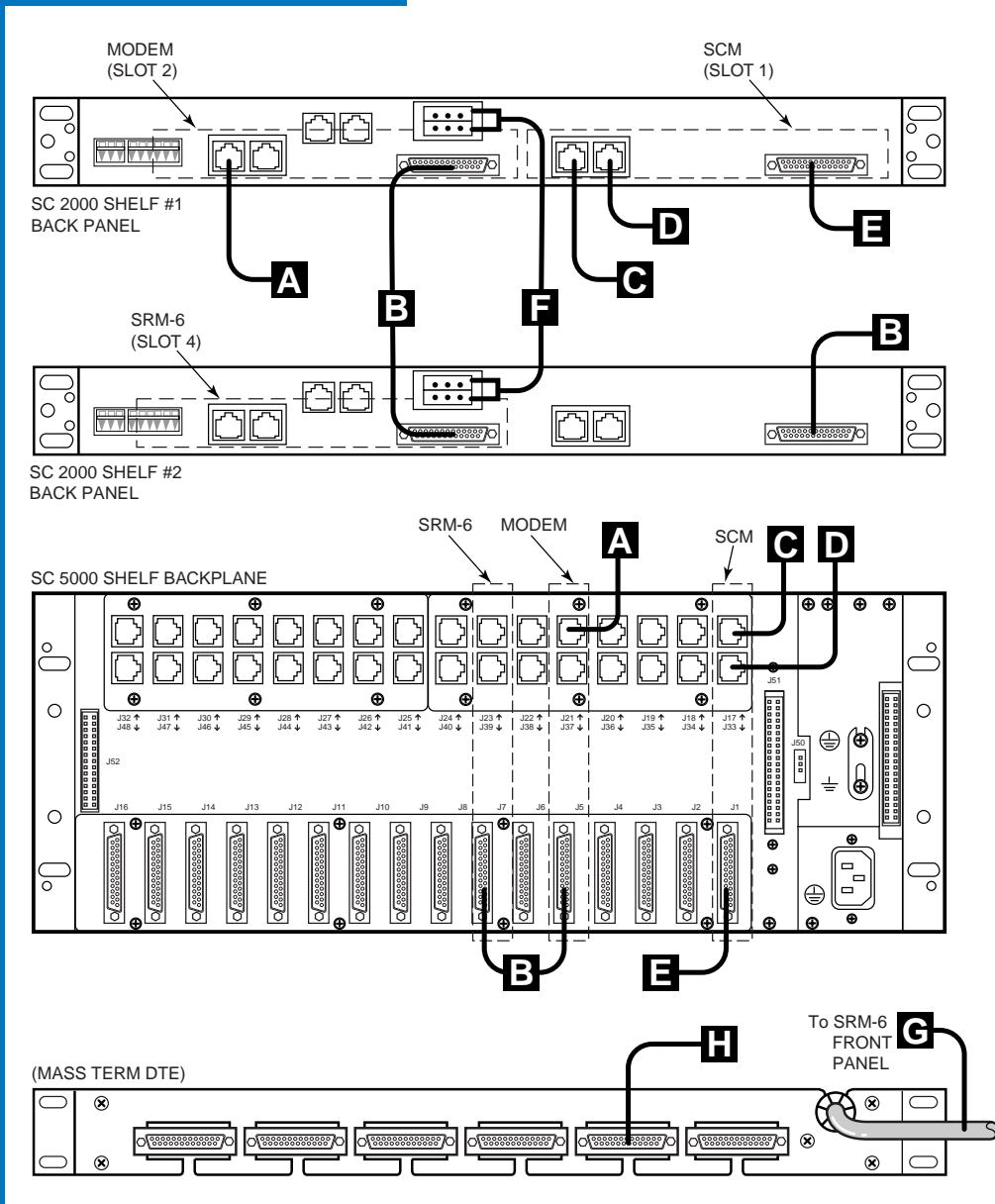
**Figure 1: Typical Installations**



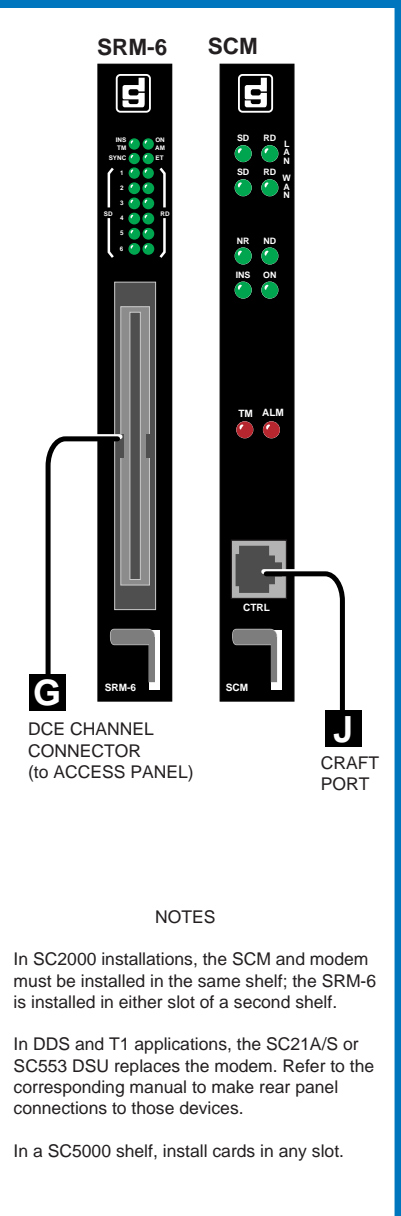
# SpectraComm SRM-6

Figure 2: CABLE CONNECTIONS

## Rear Panel Connections



## Front Panel Connections



### NOTES

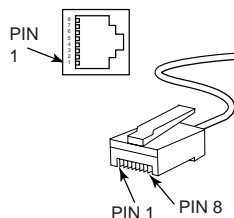
In SC2000 installations, the SCM and modem must be installed in the same shelf; the SRM-6 is installed in either slot of a second shelf.

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.

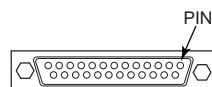
In a SC5000 shelf, install cards in any slot.

## Connector Details

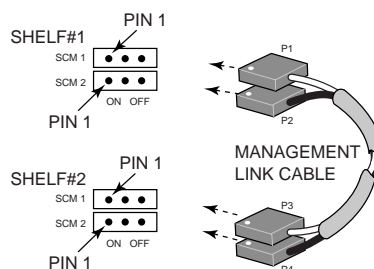
- A** MODEM PRIVATE LINE
- C** SCM WAN
- D** SCM DBU WAN
- J** SCM CRAFT



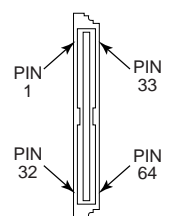
- B** MODEM/DSU to SRM-6 AGGREGATE PORT
- E** SCM LAN PORT
- H** ACCESS PANEL (WIRED DCE CHANNELS)



- F** BERG PIN CONNECTORS (SC2000 shelf only)



- G** MASS TERM DCE CHANNEL CONNECTOR



# SpectraComm SRM-6

## 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 2). 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.

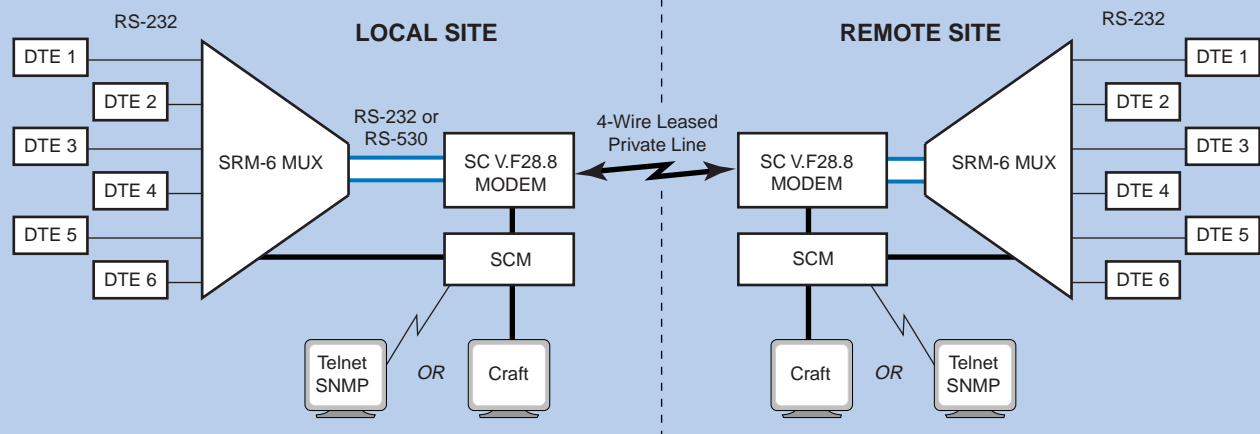
## DDS Network Application or LDM Application

The SRM-6 multiplexer with the SC 521A/S DSU and the SCM can be deployed for DDS applications (Figure 2). Management is conducted via a craft or LAN/Telnet connection to the SCM.

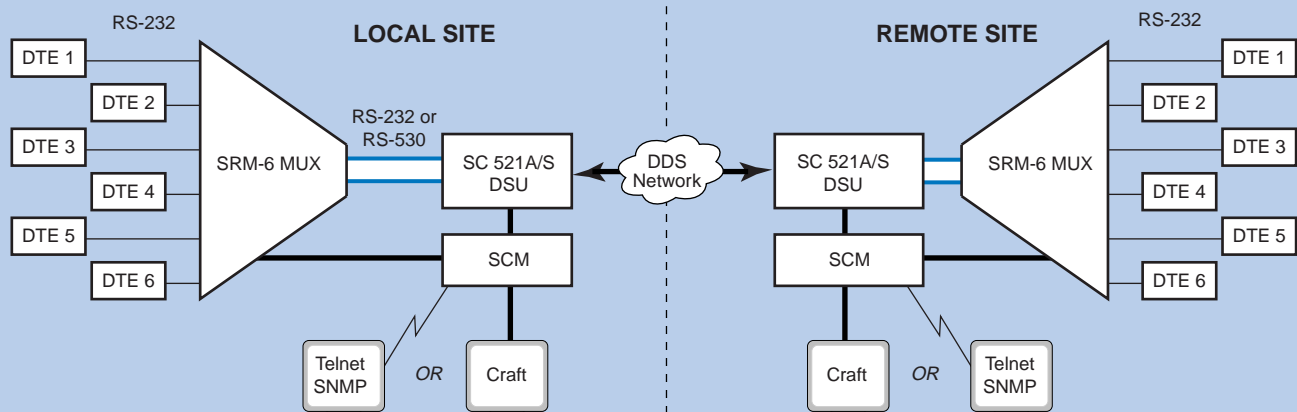
- On the DTE side, the SRM-6 acts as a DCE, multiplexing up six DTEs into one aggregate.
- On the DCE side of the SRM-6, communication with the co-located DSU is configured to one of two aggregate data rates: 56 or 64 Kbps.
- Local and remote sites are connected over the 4-wire, DDS line.

Figure 3: SRM-6 APPLICATIONS

### 4-Wire Modem Application



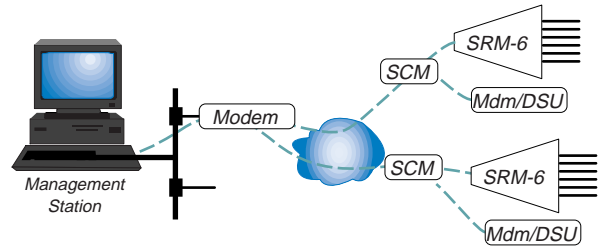
### DDS Application



# 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 the 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 modem or DSU can be accessed via craft, Telnet via the SCM. The number of concurrent management sessions is determined by your workstation resources.

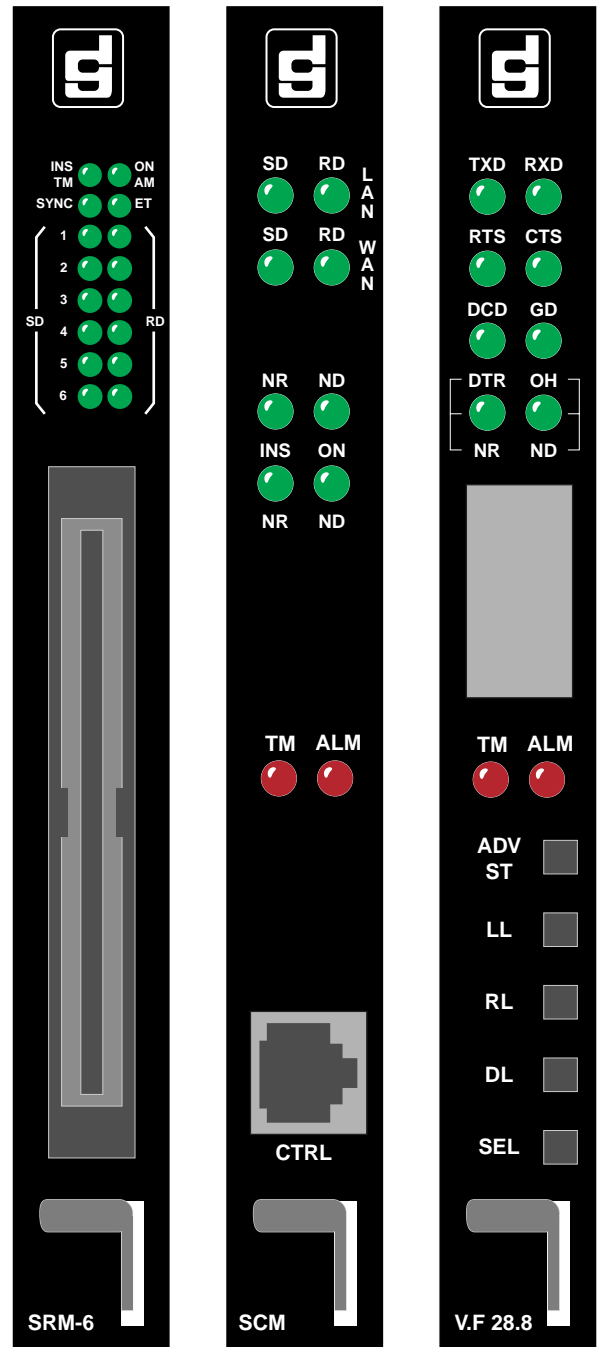


Figure 4: Front Panel Details

NOTE: In a DDS network, the SC521A is used instead of the SC V.F.28.8/33.6 modem.

## 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

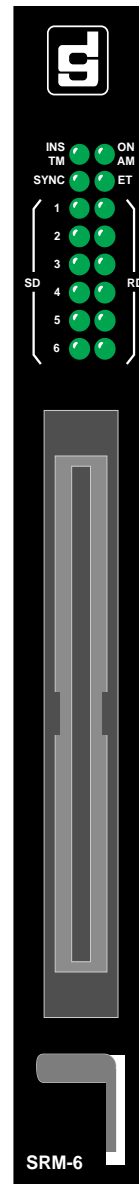
Mass termination DTE connector  
(to DB25 access panel)

### 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



SRM-6

Shown:  
SC SRM-6  
Front Panel

