

# SpectraComm 521A/S DSU

## SNMP-Managed All Rate DSU

### Highlights

- Connects to DDS, DDS with Secondary Channel and 64 kbps Clear Channel.
- Capable of Point-to-Point, Multi-Point and LDM (wire-line) operation.
- Supports Receive, Internal or External Timing.
- Capable of Programmable RTS/CTS delays.
- Provides Circuit Quality Measurements for: Jitter, Receive Level, Transmit Level, Bipolar Violations and Round Trip Delay.
- Provides DTE Interface status and alarms.
- Capable of providing Sealing/Simplex current.
- Diagnostics perform Standard Loopbacks, Telco Loopbacks, V.54, and can initiate a CSU Loopback (current reversal).
- High or low density rackmount packaging for easy installation in a variety of GDC shelves and enclosures.

### Overview

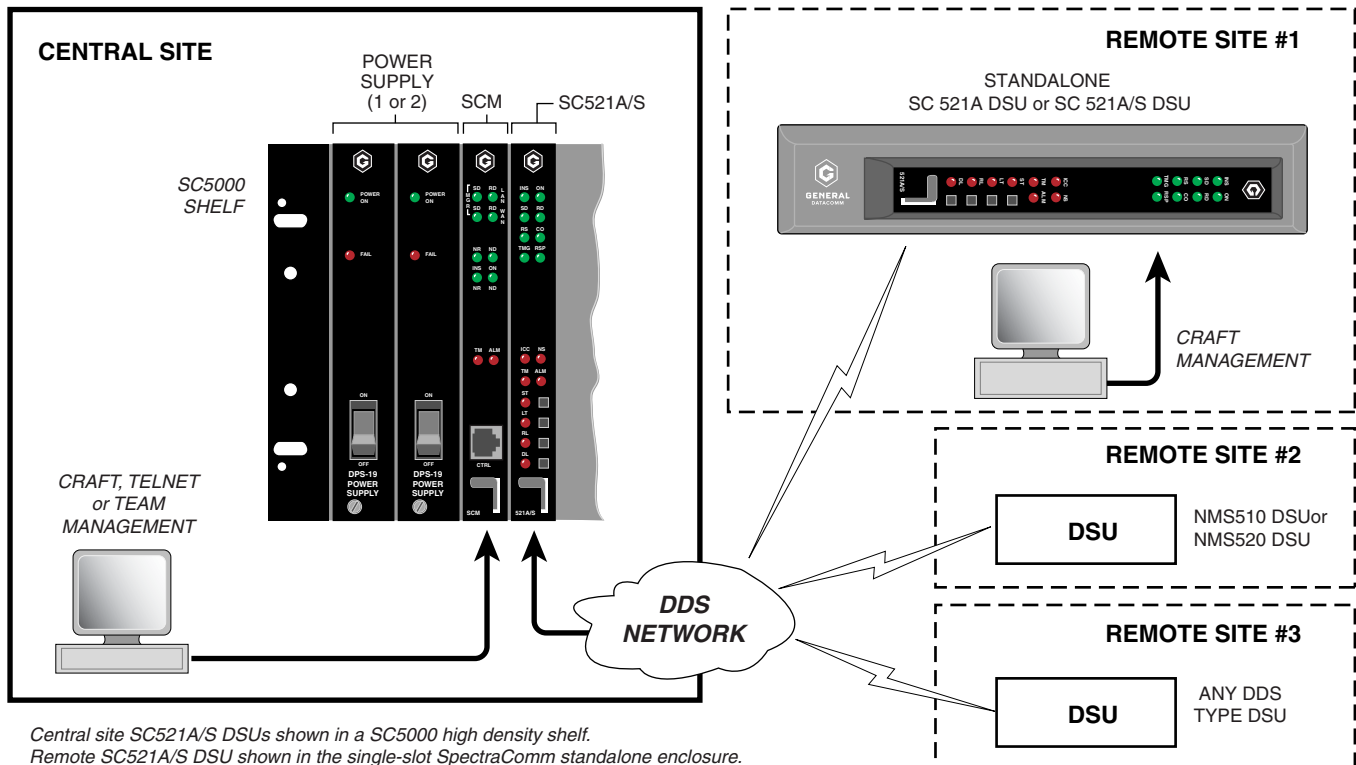
The SC521A/S DSU is a multi-rate data service unit capable of operating in standard Dataphone Digital Service (DDS) mode, DDS with a secondary channel (DDS/SC) mode, 64 kbps Clear Channel mode, and Wireline mode. The DSU can support DTE data rates of 1.2\*,1.8, 2.4, 4.8, 9.6, 19.2, 56.0, and 64.0 kbps in full duplex operation over four-wire private lines.

The SC521A/S has a Sealing/Simplex current option which provides a 4mA DC current on the network interface to keep the relay path clean. The SC521A/S also supports a craft interface when installed in a SC5000 shelf.

### Scalable and Flexible

The SC521A/S DSU is a 7-inch by 9.5-inch card (178 mm by 241 mm) that conforms to GDC SpectraComm shelf/enclosure systems. The DSU is compatible with the remote SC521A, NMS510 and NMS520 DSUs, and can pass data to any existing DDS-compatible DSU. The SC521A/S can also function as a remote to the SC5520 DSE. Remote units can be managed locally or via the SCM at the central site. *Figure 1* shows the DSU in a typical network application.

FIGURE 1: SC 521A/S Applications

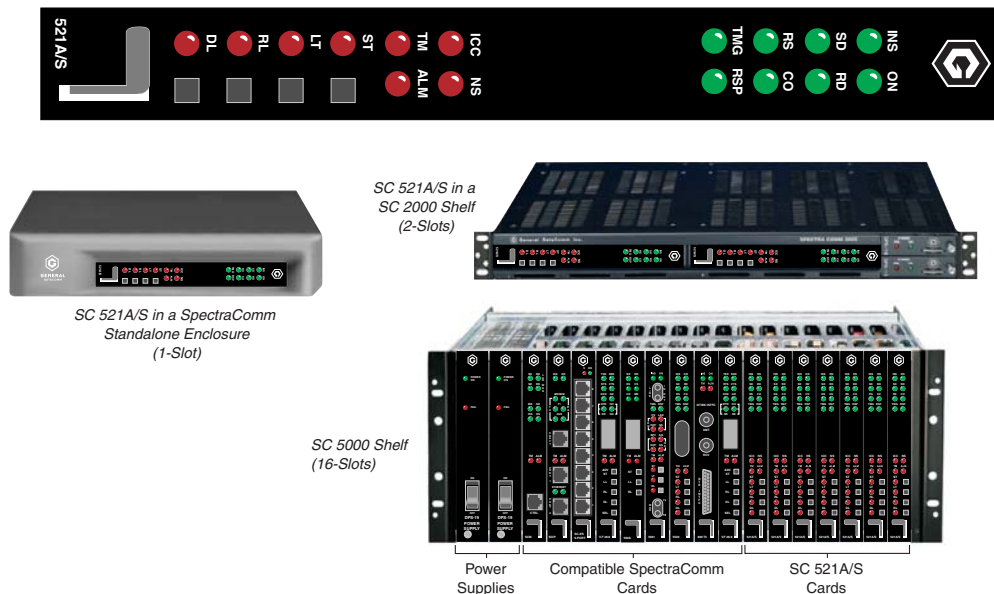


# SpectraComm 521A/S DSU

## FEATURES & BENEFITS

- Connects to DDS, DDS with Secondary Channel and 64 kbps Clear Channel.
- Capable of Point-to-Point, Multi-Point and LDM (wireline) operation.
- Supports Receive, Internal or External Timing.
- Capable of Programmable RTS/CTS delays.
- Provides Circuit Quality Measurements for: Jitter, Receive Level, Transmit Level, Bipolar Violations and Round Trip Delay.
- Provides DTE Interface status and alarms.
- Provides Sealing/Simplex current.
- Diagnostics perform Standard Loopbacks, Telco Loopbacks, V.54, and can initiate a CSU Loopback (current reversal).
- Configurable data rates via card option switch, TEAM software, or VT100
- Selectable Synchronous data rates: 64, 56, 19.2, 9.6, 4.8 and 2.4 kbps
- Selectable Asynchronous data rates: 19.2, 9.6, 4.8, 2.4 and 1.2\* kbps
- An optional Data Rate Adapter Card adapts DTE data at rates up to 192. kbps to an aggregate line rate of 56 or 64 kbps for point-to-point and multipoint applications
- Configurable as a master or remote DSU via card option switch.
- Master DSU can add remote DSUs (point-to-point operation).
- Master DSU can auto-detect remote unit type as NMS510, NMS520, SC521A, or SC521A/S.
- When DSU is installed as a remote, capable of emulating the NMS510 or NMS520.
- Capable of inband diagnostic support with the NMS520 remotes.
- Fully compatible with master SC 5520 or with remote NMS 510, NMS 520 or SC 521A.
- Virtual mapping of P, L, D in a master SC521A.
- Can be managed via TEAM, Telnet or craft connection when co-located with the SCM in the SC5000 shelf.
- Can also be managed via a craft connection at the rear panel of the SpectraComm AC or DC standalone enclosures, SC 5000 shelf or SC 2000 shelf.
- Onboard TIA/EIA-232-F and V.35 DTE interfaces.
- Supports optional EIA530 or Data Rate Adapter plug-in cards.
- Supports power supply alarms to the SCM from the SC2000 shelf.
- Supports AutoConfig via SCM.
- Permits a mixture of master and remote DSUs in the same SC 5000 shelf.
- Supports sequential or broadcast firmware downloads to master or remote DSUs in the same shelf via the co-located SCM.

FIGURE 2: Spectracommonality - One Card, Many Installation Options



# SpectraComm 521A/S DSU

## Physical Specifications

### Single-slot Blade

Width: 178 mm (7.0 in)  
 Depth: 241 mm (9.5 in)  
 Height: 21 mm (0.81 in)  
 Weight: 0.28 kg (10 oz)  
 Shipping Weight: 0.74 kg (1 lb 10 oz)

## Environmental Specifications

### Non-Operating

Temperature: -40 to 70 deg. C. (-40 to 185 deg. F.)  
 Altitude: 0 to 12,191 m (0 ft to 40,000 ft)

### Operating

Temperature: 0 to 50 degrees C (32 to 122 degrees F)  
 (Derate by 1 deg C/1000 ft above sea level)  
 Relative Humidity: 5% - 95% non-condensing  
 Altitude: 0 to 3,047 m (0 ft to 10,000 ft)

## Electrical Characteristics

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

Power Dissipation: 4 Watts per slot maximum

## Compliance

Safety: UL Approved  
 NEBS Level III Certified  
 Telco: FCC Part 68 Approved  
 Quality Assurance: ISO 9001:2000 Certified  
 USDA: RUS Accepted

## Service Specifications

Range at line data rates	Distance using 26 ga cable
2400 bps	11.5 mi (18.5 km)
4800 bps	8.7 mi (14 km)
9600 bps	6.1 mi (9.8 km)
19200 bps	5.0 mi (8.1 km)
56000 bps	3.6 mi (5.8 km)
64000 bps	3.2 mi (5.2 km)

## Operational Specifications

### Model

SC 521A/S (with sealing current option)

### Data Rates

Synchronous:  
 2400, 4800, 9600, 19200, 56000, or 64000 bps

Asynchronous:  
 1200\*, 1800, 2400, 4800, 9600 or 19200 bps

\*NOTE: The 1200 bps rate requires an installed DRA card.

### DTE Interfaces

Built-in: TIA/EIA-232-F or ITU-T V.35 interfaces

Optional: EIA-530 Interface

### DTE Line Data Rates

Data rates	RTS-CTS delay (synchronous)
2400 bps	8 ±0.4 ms
4800 bps	4 ±0.2 ms
9600 bps	2 ±0.1 ms
19200 bps	1.0 ±0.05 ms
56000 bps	0.35 ±0.02 ms
64000 bps	Constant carrier

## Operation

DDS, DDS/Secondary Channel:  
 Point-to-point (full- or half-duplex)  
 Multi-point (full duplex)

Customer-owned:  
 Point-to-point (full- or half-duplex)

Signal format:  
 Serial, synchronous or asynchronous, binary

Character format: 8 - 11 bits / character

Overspeed: 1 or 2.3%

Signal encoding: Bipolar, return to zero

Transmitter power (2400, 4800, 19200, 56000 or 64000 bps): 6.0 dBm maximum (50% duty cycle, random bipolar sequence, 135 ohm impedance)

Transmitter power (9600 bps): 0 dBm maximum (50% duty cycle, random bipolar sequence, 135 ohm impedance)

Transmit timing: Receiver (slave/network), internal (DSU) ±0.01%, or external (DTE - can accept external clock up to ±0.02%)

Receiver:  
 Dynamic range: 48 dB extended range at 56 kbps  
 Acquisition time: 200 ms maximum  
 Release time: 1 second maximum

Communication line: DDS or 4-wire, nonloaded, metallic lines (19 - 26 ga)

Terminating impedance: 135 ohms ±20%