

All Rate Clear Channel Data Service Unit

Highlights

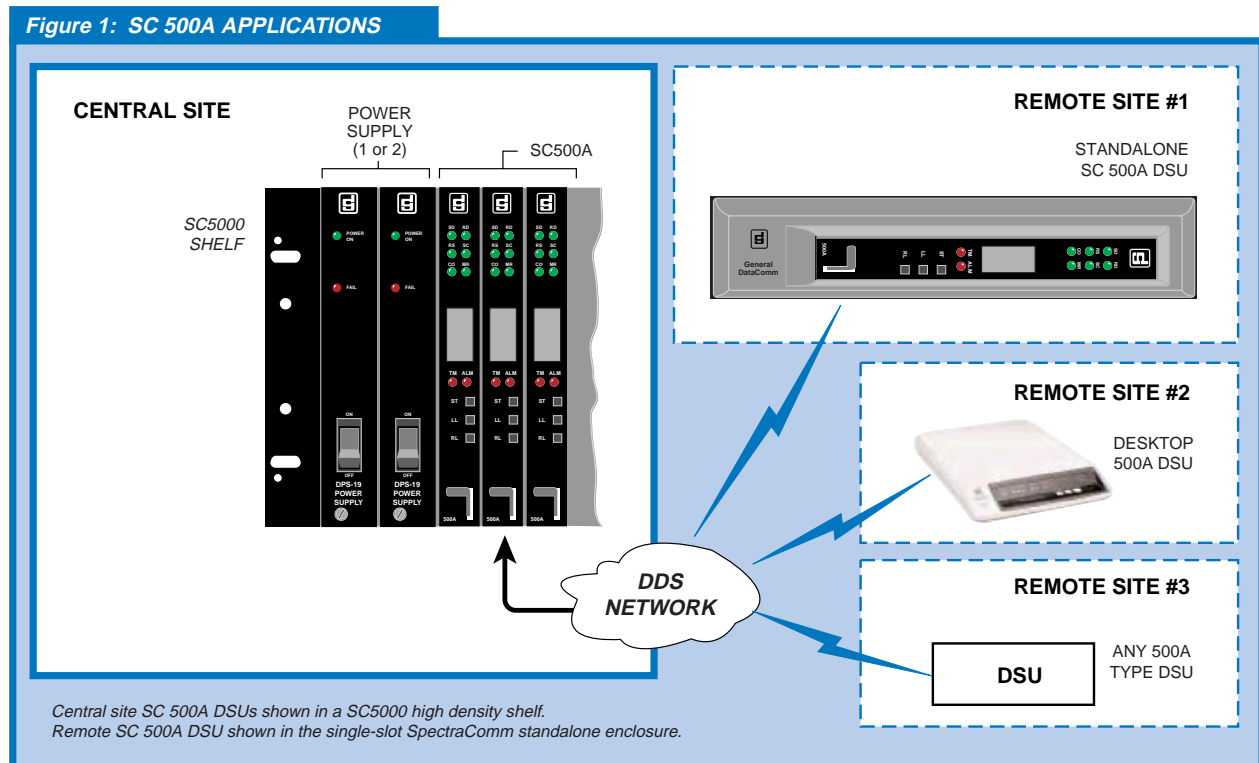
- Supports all Dataphone Digital Service (DDS) speeds (from 2.4 kbps to the 64 kbps clear channel rate), and Generic Digital Service, for greater flexibility.
- Automatic data rate selection for easy service upgrades.
- Provides built-in EIA/TIA-232-E and CCITT V.35 business equipment interfaces; Supports an optional EIA-530 Interface Card.
- An optional Data Rate Adapter Card adapts DTE data at rates up to 19.2 kbps to an aggregate line rate of 56 or 64 kbps for point-to-point and multipoint applications.
- Extended Dynamic Range feature for trouble-free clear channel operation.
- Anti-lockup feature protects against remote DSU or OCU lockup on 64 kbps circuits due to data signals that look like in-band loopback command codes.
- Powerful diagnostic tests for rapid fault isolation and system restoral.
- Low heat dissipation for reliable performance and longer component life

Introduction

The SpectraComm 500A DSU is a universal rate DSU for central sites in digital service networks. It operates synchronously from 2.4 to 64 kbps or asynchronously from 1.2 to 19.2 kbps, supporting all standard DDS subrates, and both the 56 kbps and 64 kbps (clear channel) high speed rates. The SpectraComm 500A automatically selects the data rate for transparent service upgrades between subrates, as well as upgrades from sub-rate to high speed (56/64 kbps) operation, by adjusting its rate to match that of the incoming network signal (*Figure 1*).

The SC500A provides a built-in EIA/TIA-232-E and IUT-T V.35 interface. An optional plug-in on the SC500A base card supports the EIA-530 DTE interface. An optional Data Rate Adapter plug-in on the SC500A base card allows the DSU to adapt synchronous and asynchronous DTE data at rates up to 19.2 kbps to an aggregate line rate of 56 or 64 kbps. Data rate adaptation is used in point-to-point and multipoint applications.

The SC500A DSU is a 7-inch by 9.5-inch (178 mm by 241 mm) printed circuit card that conforms to GDC's SpectraComm format and installs in any high or low density GDC shelf or enclosure (*Figure 2*).





SpectraComm 500A

Features & Benefits

- Supports all Dataphone Digital Service (DDS) speeds from 2.4 kbps to the 64 kbps clear channel rate.
- Supports Generic Digital Service (GDS), for greater applications flexibility.
- Automatic data rate selection for easy service upgrades.
- Supports optional Data Rate Adapter card or optional EIA-530 Interface card.
- Circuit Assurance option turns OFF the Clear to Send lead during reception of an Out of Service code from the DDS network or during the idle state.
- System Status option turns OFF the Data Set Ready lead during reception of the Out of Service code or during a No Signal condition.
- Extended Dynamic Range for the best performance possible.
- Anti-lockup feature for trouble-free clear channel operation.
- Can determine whether the network's transmit and receive pairs are transposed.
- Provides the Error Free Seconds (EFS) test which allows you to confirm whether the service is performing to telco-guaranteed specifications.
- Front panel pushbutton-control of diagnostic tests, with easy-to-read Electronic Display Window to displays the results.
- Powerful diagnostic tests for rapid fault isolation and system restoral: GDC Remote Loopback, CCITT V.54 and PN127 Remote Loopbacks, Self-Test and Line Loopback test.
- Supports the following telco Serving Test Center (STC) diagnostics: CSU Loopback (current reversal), DSU Loopback (alternating pattern) and DSU Latching Loopback at 64 kbps.
- Can be housed in a variety of AC-or DC-powered SpectraComm shelf/enclosures (*Figure 2*).

**Figure 2: SPECTRACOMMONALITY:
One Card - Many Installation Options**

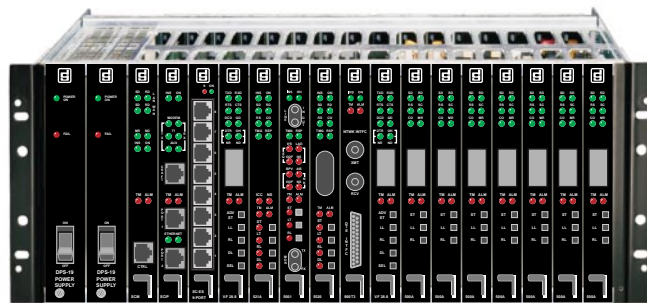


SC 500A in a SpectraComm Standalone Enclosure (1-Slot)

SC 500A in a SC 2000 Shelf (2-Slots)



SC 5000 Shelf (16-Slots)



Power Supplies

Compatible SpectraComm Cards

SC 500A Cards

SC500A Physical Specifications

Single-slot Blade

Width: 178 mm (7.0 in)
 Depth: 241 mm (9.5 in)
 Height (SC 500A card only): 21 mm (0.81 in)
 Height (SC 500A with 530 card): 45 mm (1.75 in)
 Weight (SC 500A card only): 0.28 kg (10 oz)
 Shipping Weight (SC 500A only): 0.74 kg (1 lb 10 oz)

Environmental Specifications

Non-Operating

Temperature: -40 to 85 degrees C (-40 to 185 degrees 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

Internal on-board power supply: 22 VAC, 60 Hz, 24 VA

Power Dissipation: 6 Watts per slot maximum

Compliance & Compatibility

Safety: UL Approved

NEBS Level III Certified

EMI: FCC Part 15 Class A Approved

Telco: FCC Part 68 Approved

Bell Pub. 62310 and ANSI T1.410 standards compliant

Quality Assurance: ISO 9001:2000 Certified

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

Operating Mode

Conventional DDS (Full-duplex, point-to-point, multi-point)

64 kbps DDS (Full duplex, point-to-point)

Data Rates

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

Asynchronous:
 600, 1200, 1800, 2400, 4800, 9600 or 19200 bps

DTE Interfaces

Built-in: EIA/TIA-232-E or CCITT V.35

Optional: EIA-530

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
Extended	45 ms nominal

Operation

Conventional DDS (Point-to-point, full- or half-duplex)

64 Kbps DDS (Multi-point, full duplex)

Customer-owned:

Point-to-point (full- or half-duplex)

Data format:

Synchronous (binary, serial)

Asynchronous (binary, serial; 8-11 bits/character (CCITT V.14 compliant)

Overspeed: 1 or 2.3%

Data encoding: Bipolar, return to zero

Transmit power:

1.2, 1.8, 2.4, 4.8, 19.2, 56 and 64 kbps; 6.0 dBm maximum (50% duty cycle, random bipolar sequence, 135-ohm impedance)
 9.6 kbps; 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

Line requirement: 4-wire, nonloaded, metallic lines (19 - 26 ga)

Line impedance: 135 ohms ±20% nominal

