

TABLE OF CONTENTS

CHAPTER 1 - INTRODUCTION	Page 1
1.1 FUNCTIONAL DESCRIPTION	Page 1
1.2 THEORY OF OPERATION	Page 2
CHAPTER 2 - BASIC OPERATION	Page 2
2.1 FRONT PANEL INDICATORS AND SWITCHES	Page 2
2.2 REAR PANEL CONNECTORS AND FUSES	Page 2
2.3 CLOCKING	Page 2
2.4 ELECTRICAL INTERFACE	Page 2
2.5 SUBCHANNEL SERVICE MODES	Page 3
2.6 ANTI-STREAMING	Page 3
2.7 CASCADING OR CONCATENATION	Page 4
CHAPTER 3 - INSTALLATION	Page 5
3.1 VOLTAGE SELECTION	Page 5
3.2 VOLTAGE SELECTION FUSES	Page 5
3.3 POWER CONNECTION	Page 5
3.4 DEFAULT CONFIGURATION SWITCH SETTINGS	Page 6
3.5 MODEM (DCE) AND TERMINAL (DTE) CONNECTION	Page 6
3.6 INTERNAL SWITCH SETTINGS	Page 6
4.0 - APPENDIX	Page 8

OPERATIONS MANUAL

DIGITAL SHARING DEVICE

V.35 INTERFACE

DSD-V35

FOR TECHNICAL SUPPORT CALL:

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15 June, 1999

Manufactured By:
East Coast Datacom, Inc.

PT # 719002-C

SAFETY WARNING

Always observe standard safety precautions during installation, operation and maintenance of this product. To avoid the possibility of electrical shock, be sure to disconnect the power cord from the power source before you remove the IEC power fuses or perform any repairs.

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CHAPTER 1 - INTRODUCTION

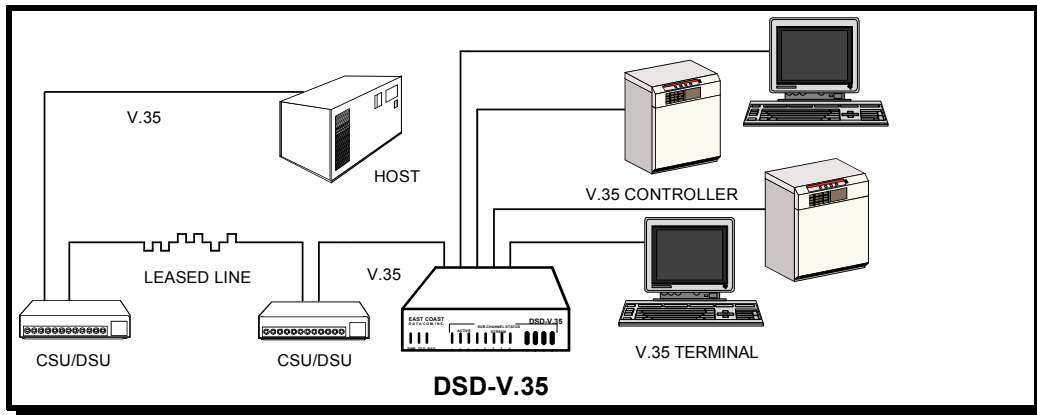
1.1 FUNCTIONAL DESCRIPTION

The Digital Sharing Device (DSD-V35) family consists of 2 and 4 port units. The DSDs provide the network manager with a cost effective means of expanding existing, leased line polled networks without adding computer ports or communications links. With the DSDs, up to four terminals can share the same port and communications link using the contention and control protocols normally resident in the host hardware and software. Once installed, system and network efficiency are increased through higher host processor utilization coupled with the significant decrease in idle time between host / terminal traffic sessions.

Ideal for either synchronous or asynchronous network environments, the DSDs are protocol transparent at data rates up to 2.048Mbps. Data arriving at the Master Port is continually broadcast to all Subchannels. The attached terminal device that raises the RTS control signal is automatically given control of the DSD until data transmission is complete. Clocking is accomplished from the attached Modem/DSU.

The DSDs incorporate optional Anti-Streaming circuitry. If enabled, Anti-Streaming will automatically remove a defective terminal from service if the Data / Control criteria is present for the user predefined clock selection period.

Housed in a sturdy metal enclosure and equipped with a 110/220 VAC switch selectable linear power supply, the DSDs will provide in excess of 100,000 hours of reliable service.



TYPICAL APPLICATION

Figure 1.1

1.2 THEORY OF OPERATION

The DSDs allow up to four DTEs (Data Terminal Equipment) to share one modem link. In a polled or contention environment. The typical DSD operation is as follows: Data arriving at the DSD's master port is continually broadcast to all of the DSDs subchannel ports. When one of the attached DTE devices answers the poll from the host site, that DTE device will raise RTS lead (Request To Send). When RTS is raised the DSDs scanner will stop and lock onto that port and allow that DTE device to talk to the modem link. The DSD will remain locked onto that port until RTS is dropped and CTS (Clear To Send) is dropped from the modem. After RTS and CTS have dropped, the DSD will automatically begin scanning the ports until another port raises RTS.

CHAPTER 2 - BASIC OPERATION

2.1 FRONT PANEL INDICATORS AND SWITCHES

A *Green* LED illuminates when AC Power has been applied. Two adjacent *Green* LEDs illuminate in union with individual *Green* subchannel port activity LEDs and identify Transmit Data (SD) and Receive Data (RD) transmissions. Yellow LEDs are provided to provide the user with a visual indication of a streaming DTE (ref. 2.6) Positive latching switches are provided for each DTE port for isolating or removing a streaming terminal. Each DTE port has its own switch and operates independently. To disable a subchannel simply push the switch. A channel is *disabled* when the switch is in the outer most position.

2.2 REAR PANEL CONNECTORS AND FUSES

Located on the back or rear of the product you will find an IEC Power receptacle. The supplied power cord plugs into this receptacle. This receptacle also contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 160ma Fuses, Part # 714000. For 220 VAC +/- 10% operation the unit is equipped with slow blow 80ma Fuses, Part # 714001. Additionally, you will find the Master and Subchannel female CCITT V.35 connectors.

2.3 CLOCKING

The DSDs derive their clocking from the attached Modem/DSU or DCE device.

2.4 ELECTRICAL INTERFACE

The DSDs are CCITT V.35 compliant using female V.35 connectors. Refer to the interface chart in the Appendix for detailed interface information.

2.5 SUBCHANNEL SERVICE MODES

The DSDs incorporate circuitry that enable the user to provide two separate modes of DTE subchannel servicing. Either mode of operation is selected upon installation via a Dip Switch located inside the housing.

2.5.1 SUBCHANNEL SCANNING MODE

The *Scanning Mode* will allow equal access to the communications link for all connected DTE devices. The subchannels are scanned in sequence (1 - 2 - 3 - 4) and the attached subchannel DTE that raises RTS will have access to the communications link. After dropping RTS the DSD will continue scanning in sequential order.

2.5.2 SUBCHANNEL PRIORITY MODE

The *Priority Mode* allows the user to have channel 1 as the highest priority channel to service the communications link. The subchannels are continually monitored. If channel 2 or 3 raises RTS and transmits data and then drops RTS, subchannel 1 will have the highest priority over the next port that raises RTS, (if subchannel 1 has information to transmit). This will allow a DTE that has more important information to send or retrieve from the host a higher priority than the remaining attached terminals.

2.6 ANTI-STREAMING

2.6.1 AUTOMATIC DTE REMOVAL

The DSDs incorporate circuitry that will (when enabled) *automatically* remove a streaming terminal from service. A streaming terminal is defined as a terminal that has RTS *high* longer than the user predefined anti-stream timer has been set. Upon installation, the user can set or actually fine tune the timer to your network requirements. Each channel has a Green and a Yellow LED to indicate subchannel activity. Green indicates an active subchannel and Yellow indicates a streaming subchannel. Once a terminal has gone into the streaming condition (RTS continually high) the DTE will automatically be removed from service until the DTE fault has been corrected by the user. All other DTE's will continue to be serviced by the DSD.

2.6.2 MANUAL DTE REMOVAL

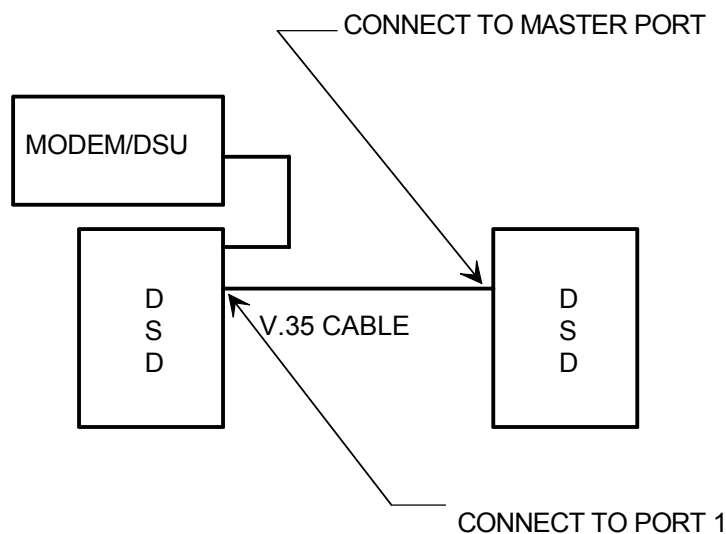
The DSDs incorporate circuitry that will (when enabled) *manually* remove a streaming terminal from service. A streaming terminal is defined as a terminal that has RTS continually *high*. With Anti-streaming disabled, the associated streaming DTE will *NOT* illuminate a Yellow LED on the front of the DSD. If the automatic anti-streaming circuitry is disabled and a streaming condition occurs, the other DTE devices will be blocked from accessing the communications link. To correct this condition, simply push the associated push-button switch for the subchannel that is streaming. All other DTE's will now continue to be serviced by the DSD. However, you still need to fix the offending DTE that has RTS continually raised.

2.6.3 UNEXPLAINED STEAMING TERMINALS

Many different types of terminals have been manufactured over the years. A typical problem that can disrupt data traffic is, "unexplained lockup or lockout problems". The most common cause is when, four terminals are running just fine and when one of the terminals is powered down, the remaining terminals are locked out of service. This may be explained by a missing or incorrect Termination Resistor that has been overlooked by your terminal manufacturer. This is the main reason that Anti-Streaming circuitry has been designed into the DSDs and we encourage the user to take advantage of this feature.

2.7 CASCADING OR CONCATENATION

The DSDs support cascading and the user simply needs to use V.35 Male to Male straight through shielded cables. *Subchannel Port 1* should be used as the concatenation port.



CASCADING DIAGRAM

CHAPTER 3 - INSTALLATION

CAUTION: Disconnect Power Before Servicing
ATTENTION: Couper Le Courant Avant l' Entretien
VORSICHT: Befor Deckung Abnehmen Mach Strom Zu

3.1 VOLTAGE SELECTION

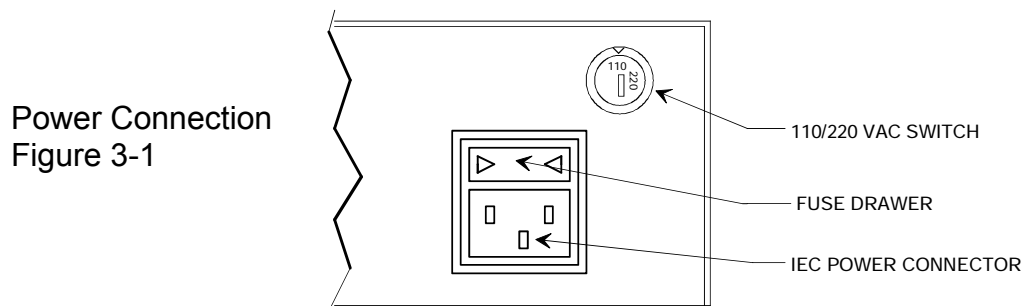
It is very important to check that the unit is set to the correct voltage setting for your application before applying AC power. Located on the rear of the unit you will find a rotary 110/220 VAC switch. Using a coin or small screwdriver, *gently* turn the switch to the appropriate power position as required for your installation (110 or 220 VAC).

3.2 VOLTAGE SELECTION FUSES

Located on the back or rear of the product you will find an IEC Power receptacle. This receptacle contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 160ma Fuses, E.C.D. Part # 714000. For 220 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 80ma Fuses, E.C.D. Part # 714001. Spare fuses may be purchased by calling East Coast Datacom or by calling the fuse manufacturer: Little Fuse at (312) 824-3024 or Shurter, Inc. at (707) 778-6311
 Little Fuse Part #'s are: 160ma = 218.160 and 80ma = 218.080
 Shurter, Inc. Part #'s are: 160ma = 034.3109 and 80ma = 034.3106

3.3 POWER CONNECTION

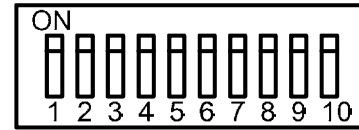
Before connecting the DSDs to an AC power source the top cover should be installed with the supplied screws. AC power is supplied to the DSDs through a 2.3m (6.6 ft) cord terminated by a grounded 3-prong plug. Select an appropriate location accessible to and within four to five feet of an AC outlet. The AC Power source *MUST* be grounded or the DSDs Warranty will be void.



3.4 DEFAULT CONFIGURATION SWITCH SETTINGS

The DSDs are configured prior to shipping with the Dip Switches set as follows:

- 1) Anti-Streaming - *Disabled* (SW1-4)
- 2) Scanning / Priority - *Priority Mode* (SW1-5)
- 3) Frame / Signal Ground - *Not Connected* (SW1-6)
- 4) RX Data - Broadcast (SW1-7)



If your system application requires one or more of the default setting to be changed, it will be necessary to remove the top cover of the DSD. Remove the AC Power source or Disconnect the AC Power **BEFORE** servicing the unit. Removal of the top cover is accomplished by using a small Philips screwdriver and removing the four outside screws. After setting the switches, replace the top cover **BEFORE** applying AC power.

3.5 MODEM (DCE) AND TERMINAL (DTE) CONNECTION

Before applying AC Power to the unit, the DCE and DTE cabling should be connected. Straight through Male to Male V.35 shielded cables, no longer than 25 feet in any direction should be used. If your cables are not shielded or over 25 feet long, transmission errors are possible.

3.6 INTERNAL SWITCH SETTINGS

3.6.1 DIP SWITCHES

The DSDs have an internal *Dip Switch* that is accessible by removing the Top Cover. Located safely inside the unit, you will find a 10 position Dip Switch. To change the settings, you may use your finger tip or a small non-conductive instrument. It is recommended NOT to use metal objects to push on the *Dip Switches*, as you may slip and damage a component trace.

3.6.2 ANTI-STREAMING

Anti-Streaming is set with Dip Switches *SW1*, positions 1-4 as shown in the chart below. To Disable *Anti-Streaming*, set dip switches *SW1-4* to the (OFF) position.

Anti-Streaming Time-out			
SW1-1	SW1-2	SW1-3	CLOCKS
OFF	OFF	OFF	1,024
ON	OFF	OFF	2,048
OFF	ON	OFF	4,096
ON	ON	OFF	16 K
OFF	OFF	ON	65 K
ON	OFF	ON	262 K
OFF	ON	ON	1 Meg
ON	ON	ON	2 Meg

3.6.3 CHANNEL SERVICE MODES

Dip Switch position *SW1*, position-5 provides the subchannel service modes (ref. section 1.3) of operation. The ON position provides *PRIORITY MODE* of the attached channels with subchannel 1 having the highest priority. The (OFF) position provides *SEQUENTIAL SCANNING*, with all users having equal access.

3.6.4 FRAME TO SIGNAL GROUND

Dip Switch position *SW1* position-6 provides the following functions:

ON, PIN # A, (Frame Ground) Connected to Pin # B, (Signal Ground).

OFF, Pin # A, (Frame Ground) Not Connected Pin # B, (Signal Ground).

3.6.5 RX DATA

Dip Switch position *SW1* position-7 provides for RX Data to be Broadcast to all subchannels simultaneously or Select. ON is the Switched Mode and OFF is the Broadcast Mode.

3.6.6 DIP SWITCH POSITIONS 8,9 and 10

Reserved for future product expansion. NOT USED

4.0 - APPENDIX**4.1 INTERFACE CHART**

CCITT V.35 INTERFACE CHART (V.35 CONNECTOR)

Pin No	CCITT Circuit No.	Circuit Name	Signal Description	From DCE	To DCE
A	101	AA	Protective Ground	---	---
B	102	AB	Signal Ground	---	---
F	103	BA(A)	Transmit Data (A)		X
S	103	BA(B)	Transmit Data (B)		X
R	104	BB(A)	Receive Data (A)	X	
T	104	BB(B)	Receive Data (B)	X	
C	105	CA	Request to Send		X
D	106	CB	Clear to Send	X	
E	107	CC	Data Set Ready	X	
H	108	CD	Data Terminal Ready		X
F	109	CF	Received Line Signal Detect	X	
U	113	DA(A)	External Transmit Timing (A)		X
W	113	DA(B)	External Transmit Timing (B)		X
Y	114	DB(A)	Transmitter Signal Element Timing (A)	X	
AA	114	DB(B)	Transmitter Signal Element Timing (B)	X	
V	115	DD(A)	Receiver Signal Element Timing (A)	X	
X	115	DD(B)	Receiver Signal Element Timing (B)	X	

4.2 ADDRESSES OF STANDARDS ORGANIZATIONS

ANSI

American National Standards Institute
1430 Broadway
New York, NY 10018
Telephone: (212) 354-3300

EIA

Electronic Industries Association
2001 Eye Street, N.W.
Washington, DC 20006
Telephone: (202) 457-4966

FED-STD

General Services Administration
Specification Distribution Branch
Building 197
Washington Navy Yard
Washington, DC 20407
Telephone: (202) 472-1082

FIPS

U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

CCITT

Outside the United States
General Secretariat
International Telecommunications Union
Place des Nations
1121 Geneva 20, Switzerland
Telephone +41 22 995111

In the United States

United States Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

Outside the United States

International Organization for Standardization
Central Secretariat
1 rue de Varembe
CH-1211 Geneva, Switzerland
Telephone +41 22 34-12-40

Inside the United States

American National Standards Institute
1430 Broadway
New York, NY 10018
Telephone: (212) 354-3300

IEEE

The Institute of Electrical and Electronics
Engineers, Inc.
345 East 47th Street
New York, NY 10017
Telephone: (212) 705-7900

NBS

National Bureau of Standards
Institute for Computer Sciences and
Technology
Technology Building, Room B-253
Gaithersburg, MD 20899
Telephone: (301) 921-2731

CCITT documents may be reached by calling
(800) 553-6847

V.35 is a CCITT specification and is
implemented per ISO 2593
The ISO documents are attainable by calling
(212) 354-3300

AT&T Bell Publications documents may be
reached by calling (800) 344-0223 or (800)
432-6600

ISO

5.0 - TECHNICAL SPECIFICATIONS

Application

Multiple sync/async terminal or DTE devices operating in a polled environment, to share one Modem/DSU

Capacity

One to four CCITT V.35 Sync/Async devices

Interface

CCITT V.35 using V.35 female connectors

Data Rates

Up to 2.048Mbps

Data Format

Data transparent at all data rates

Timing

External; from attached Modem/DSU

Anti-Streaming

Automatic...Selectable time out intervals

Disable.....Selectable via dip switch

Terminal Service Modes

Rotational sequence for equal access

Front Panel

Indicators....Power, Transmit Data, Receive Data, Channel Active, Channel Stream

Switches.....Enable/Disable of each Subchannel

RX Data Modes

Broadcast or Select

Power Source

100-120 to 200-220VAC @10%, 50/60Hz, 0.16/0.08A, external 110/220 volt select switch, IEC Power Inlet, (2) 5mm Fuses

Environmental

Operating Temperature....32° to 122° (0° to 50° C)

Relative Humidity.....5 to 95%
Non-Condensing

Altitude.....0 to 10,000 feet

Dimensions

DSD-V35/2

Height 1.75 inches (4.44 CM)

Width 9.00 inches (22.86 CM)

Length 9.00 inches (22.86 CM)

DSD-V35/4

Height 1.75 inches (4.44 CM)

Width 13.35 inches (33.09 CM)

Length 9.00 inches (22.86 CM)

Weight

DSD-V35/2, 2 pounds (0.914Kg)

DSD-V35/4, 4.5 pounds (2.1Kg)

Warranty

Three Years, Return To Factory

Approvals

UL (1950), CSA (C22.2)

ORDERING INFORMATION

Model: DSD-V35/2

Description: 2 Port Digital Sharing Device

Model: DSD-V35/4

Description: 4 Port Digital Sharing Device

INCLUDED WITH EACH UNIT:

- 1) Operations Manual
- 2) U.S.A. Grounded Power Cord, Part # 713015
- 3) Optional Power Cords
 - A) United Kingdom, Part # 713016
 - B) Continental Europe, Part # 713017
 - C) Other: Specify Country on Purchase Order

OPTIONAL ACCESSORIES

- 1) Spare Data Center Fuses
 - A) 160ma Fuse, Qty (2) Part # 714000
 - B) 80ma Fuse, Qty (2) Part # 714001

DIP SWITCH SETTINGS CHART

Anti-Streaming Time-out			
SW1-1	SW1-2	SW1-3	CLOCKS
OFF	OFF	OFF	1,024
ON	OFF	OFF	2,048
OFF	ON	OFF	4,096
ON	ON	OFF	16 K
OFF	OFF	ON	65 K
ON	OFF	ON	262 K
OFF	ON	ON	1 Meg
ON	ON	ON	2 Meg

SW1-4 ANTI-STREAMING

ON = ENABLE OFF = DISABLE

SW1-5 CHANNEL SERVICE MODE

ON = PRIORITY OFF = SCANNING

SW1-6 GROUND

ON = CHASSIS GND TO SIGNAL GND
OFF = NOT CONNECTED

SW1-7 RX DATA

ON = SWITCHED OFF = BROADCAST

SW1-8, 9 and 10

NOT USED