You have accessed an older version of a Paradyne product document.

Paradyne is no longer a subsidiary of AT&T. Any reference to AT&T Paradyne is amended to read Paradyne Corporation.

AREA CODE CHANGE

Please note that the area code for Paradyne Corporation in Largo, Florida has changed from 813 to 727.

For any Paradyne telephone number that appears in this manual with an 813 area code, dial 727 instead.

COMSPHERE

3600 Series Data Service Units
Models 3610 and 3611

User's Guide

Document No. 3610-A2-GB46-40

AT&T Paradyne

Printed on recycled paper

February 1996

COMSPHERE
3600 Series Data Service Units
Models 3610 and 3611

User's Guide
3610-A2-GB46-40

5th Edition (February 1996)

Changes and enhancements to the product and to the information herein will be documented and issued as a new release.

A customer opinion card is provided at the front of this publication and your comments are appreciated. If the form has been removed, address comments to AT&T Paradyne Corporation, Technical Publications, 8545 126th Avenue North, P.O. Box 2826, Largo, Florida, 34649-2826. AT&T Paradyne may use or distribute any of the information supplied, as appropriate, without incurring any obligation whatsoever.

United States
FCC Registration number: AW292J-61661-DD-N
PSTN Ringer Equivalence number (REN):
— V.32 DBM option 0.7B
— V.34 DBM option 0.2B

Canada
V.32 Dial Backup Module
  Certification number: 230 3684 A
  DOC Load number: 7
V.34 Dial Backup Module
  Certification number: 230 6811 A
  DOC Load number: 3
2-Wire Switched 56 DBM
  Certification number: 230 5870 A
  DOC Load number: 0
ISDN Dial Backup Module
  Certification number: 230 6943 A
  DOC Load number: 0

Important Safety Instructions

1. Read and follow all warning notices and instructions marked on the product or included in the manual.
2. This product is intended to be used with a three-wire grounding type plug – a plug which has a grounding pin. This is a safety feature. Equipment grounding is vital to ensure safe operation. Do not defeat the purpose of the grounding type plug by modifying the plug or using an adapter.

   Prior to installation, use an outlet tester or a voltmeter to check the ac receptacle for the presence of earth ground. If the receptacle is not properly grounded, the installation must not continue until a qualified electrician has corrected the problem.

   If a three-wire grounding type power source is not available, consult a qualified electrician to determine another method of grounding the equipment.
3. Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these slots and openings must not be blocked or covered.
4. Do not allow anything to rest on the power cord and do not locate the product where persons will walk on the power cord.
5. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous high voltage points or other risks. Refer all servicing to qualified service personnel.
6. General purpose cables are provided with this product. Special cables, which may be required by the regulatory inspection authority for the installation site, are the responsibility of the customer.
7. When installed in the final configuration, the product must comply with the applicable Safety Standards and regulatory requirements of the country in which it is installed. If necessary, consult with the appropriate regulatory agencies and inspection authorities to ensure compliance.
8. A rare phenomenon can create a voltage potential between the earth grounds of two or more buildings. If products installed in separate buildings are **interconnected**, the voltage potential may cause a hazardous condition. Consult a qualified electrical consultant to determine whether or not this phenomenon exists and, if necessary, implement corrective action prior to interconnecting the products.

In addition, if the equipment is to be used with telecommunications circuits, take the following precautions:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Notices

WARNING

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

THE AUTHORITY TO OPERATE THIS EQUIPMENT IS CONDITIONED BY THE REQUIREMENTS THAT NO MODIFICATIONS WILL BE MADE TO THE EQUIPMENT UNLESS THE CHANGES OR MODIFICATIONS ARE EXPRESSLY APPROVED BY AT&T PARADYNE.

WARNING

TO USERS OF DIGITAL APPARATUS IN CANADA:

THIS CLASS A DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE–CAUSING EQUIPMENT REGULATIONS.

CET APPAREIL NUMÉRIQUE DE LA CLASSE A RESPECTE TOUTES LES EXIGENCES DU RÈGLEMENT SUR LE MATÉRIEL BROUILLEUR DU CANADA.

Government Requirements

Certain governments require that instructions pertaining to connection to the telephone network be included in the installation and operation manual. Specific instructions are listed in the following sections.

United States

Notice to Users of the Telephone Network

This equipment complies with Part 68 of the FCC rules. On the bottom of the equipment is a label or silk-screened text that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. If requested, please provide this information to your telephone company.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, the sum of the RENs of all devices should not exceed 5. Call your local telephone company to ascertain the maximum REN for your calling area.

If your Model 3610 or 3611 DSU with DBM causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If so, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

The DBM cannot be used on public coin-operated telephone service provided by the telephone company. Connection to party-line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

No repairs may be performed by the user. Should you experience difficulty with this equipment, refer to the *Equipment Warranty and Support* section.

For Digital Data Service (DDS) installations, inform the local telephone company of the appropriate facility interface code for the service you desire.

DDS Facility	
Interface Code	**Data Rate (bps)**
04DU5-24	2400
04DU5-48	4800
04DU5-96	9600
04DU5-19	19,200
04DU5-38	38,400
04DU5-56	56,000
04DU5-64	64,000

The DDS Service Order Number is 6.0Y. The jack configurations required are RJ48S for the Model 3610 DSU and RJ48T for the Model 3611. With the Model 3611 RJ48T configuration, you must specify the number of data lines you require. Refer to Appendix F, *Technical Specifications*.

For DBM installations, the proper service and jack must be ordered from the telephone company. Refer to the following table for this information.

DBM Jack Installation Requirements				
DBM Type	**USOC Jack (Standalone)**	**USOC Jack (Carrier-Mounted)**	**Canadian Jack (Standalone)**	**Canadian Jack (Carrier-Mounted)**
12.0 or 14.4 kbps V.32bis DBM	RJ11C Permissive RJ45C Programmable	RJ21X Permissive RJ27X Programmable	CA11A Permissive CA27A Programmable	CA21A Permissive CA27A Programmable
V.34 DBM	RJ11C Permissive	RJ21X Permissive	CA11A Permissive	CA21A Permissive
2-Wire Switched 56 DBM	SJA48	SJA48 (uses an adapter cable)	CA11 (metallic channel)	CA21A (metallic channel)
4-Wire Switched 56 DBM	SJA56	SJA57	Not available in Canada	Not available in Canada
ISDN BRI DBM	SJA11	SJA11 (uses an adapter cable)	CA-A11	CA-A11 (uses an adapter cable)

After the telephone company has installed the requested service and jack, you can connect the DSU with the cable provided. An FCC-compliant telephone cord and modular plug are provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant.

Canada

Notice to Users of the Canadian Telephone Network

The Canadian Department of Communications has certified that this equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installation, verify connectivity of this equipment to the local telecommunications company's facilities. The equipment must be connected by an acceptable method. In some cases, the telecommunications company's inside wiring associated with single-line individual service may be extended with a certified connector assembly (telephone connection cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

If you experience difficulty with this equipment and require service, refer to the *Equipment Warranty and Support* section.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may cause the telecommunications company to ask you to disconnect the equipment.

Users should ensure that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together for protection. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or an electrician, as appropriate.

The load number (LN) is labeled on the equipment. The LN denotes the percentage of the total load to be connected to a telephone loop used by this equipment. To prevent an overload, the total of the LNs of all devices attached to the loop may not exceed 100. The LN also specifies the appropriate ringing type (A or B), if applicable. For example, LN = 20A designates a load number of 20 and an A type ringer.

Equipment Warranty and Support

AT&T Paradyne's Customer Assistance Center is available 24 hours a day to help you place an installation request, report a hardware or software problem, or place a trouble report. The center provides technical support and remote diagnosis of equipment problems Monday through Friday, between the hours of 8 a.m. and 8 p.m. EST, excluding holidays. You can also call the center if you participate in the on-site support program or if you would like to request support on a time and materials basis (refer to the *Enhanced Support Services* section).

Call the following toll-free number to reach the Customer Assistance Center:

1-800-237-0016 or 1-813-531-4373

Examine the equipment carefully upon arrival. If there is an obvious defect, call the Quality Careline at 1-813-530-2273, or call 1-800-237-0016, press 0 (zero) for operator, and ask for extension 2273.

Equipment Service

To obtain service under your warranty, call the Customer Assistance Center at the number listed above. Please have the following information available before you call:

Company Name and Address
Contact Name and Telephone Number
Shipping Address, if different from the company address
Billing Address, if different than the shipping address
Model Number and Serial Number of the unit
Brief description of the problem

The Customer Assistance Center will verify that the equipment is in need of repair. You are provided a Return Materials Authorization (RMA) number to help expedite the repair request.

The RMA number must be in a visible location on the outside of the package. Once you receive an RMA number, pack the unit securely. Ship the package insured and postage prepaid to:

AT&T Paradyne Corporation
Customer Support
Attn: Repair Center
8550 Ulmerton Road, Building B
Largo, Florida 34641

Out of Warranty

If your equipment is out of warranty and you do not have a maintenance support agreement, factory repair support is available.

To send equipment to AT&T Paradyne's Repair Center, call the following toll-free number Monday through Friday, between the hours of 8 a.m. and 5 p.m. EST, excluding holidays:

1-800-772-7691 or 1-813-530-2268 (In Canada, call 1-905-709-5000)

Please have the information listed in the *Equipment Service* section ready when you call for your RMA number, then package and ship the equipment to the Repair Center address. Make sure the RMA number is visible on the outside of the package. A Purchase Order can be mailed with the equipment or faxed to the Repair Center.

Enhanced Support Services

In addition to the customer support described, AT&T Paradyne offers a wide variety of enhanced customer support programs that are designed to meet customers needs. Our high quality support programs range from equipment installation to premium on-site support, as well as network management.

For more information about our enhanced support services, contact your AT&T Paradyne representative, or call the following toll-free number, 8 a.m. to 5 p.m. EST, excluding holidays:

1-800-482-333 or 1-813-530-8623

Table of Contents

3. Front Panel Operation

4. Configuration Option Tables

Appendices

Glossary

Index

Preface

About This Guide

This user's guide provides basic information to get you started using your COMSPHERE® 3600 Series Data Service Unit (DSU). It provides a summary of the DSU's features and SNA Diagnostic Interface options.

It is assumed that you are familiar with the functional operation of data communications equipment.

How to Use This Guide

Chapter 1 gives a general overview of the 3600 Series DSU and SNA Diagnostic Interface options. Refer to this chapter for a summary of standard and optional features. A list of related documents is also included.

Refer to Chapter 2 to install and set up your Model 3610 DSU. To install a Model 3611 DSU, refer to the *COMSPHERE 3000 Series Carrier, Installation Manual*.

Chapter 3 provides an overview of the DSU's front panel, status indicators, and menu structure, with a brief description of each branch's purpose or function.

Chapter 4 provides the basics of setting or changing configuration options. Configuration option tables assist you in making appropriate selections when a change to the factory-loaded configuration options may be required.

Appendix A provides the DSU's menu structure. Refer to this aid as you proceed through the menu from the front panel or an async (asynchronous) terminal.

Appendix B provides a configuration worksheet to use during planning.

Appendix C provides async terminal operation details.

Appendix D presents SNA Diagnostics operation.

Appendix E provides troubleshooting and front panel messages.

Appendix F presents LADS connection distances tables and technical specifications.

The Glossary defines acronyms and product-specific terms used in this guide.

Product-Related Documents

For 3600-related documentation information, see Table 1-1 in Chapter 1. Also refer to Chapter 1 for reference documents and document ordering information.

Product Introduction 1

Overview

The COMSPHERE® 3600 Series Data Service Units (DSUs), Models 3610 and 3611, support communication between computers and other data processing devices by providing connections to digital data service (DDS) transmission facilities.

Standard DSU Features

The 3600 Series DSU offers the following standard features:

- **Multispeed operation.** Operates on the DATAPHONE® Digital Service network, or equivalent DDS network, at data rates of 2.4, 4.8, 9.6, 19.2, 38.4, 56, and 64 kbps full-duplex. The DSU is also compatible with the ACCUNET® Spectrum of Digital Services network (ASDS), and supports 64 kbps Clear Channel operation on a 72 kbps local loop.
- **Nondisruptive diagnostics.** In a nondisruptive diagnostic network, transmits health and status data without interruption to user-transmitted data.
- **Async/Sync conversion.** Provides point-to-point and multipoint asynchronous-to-synchronous data conversion for DTE ports for both EIA-232 and V.35. The DSU can send asynchronous data over a synchronous network.
- **User-selectable interfaces.** Two user-selectable data terminal equipment (DTE) interfaces.
  - — EIA-232-D/V.24 interface for operation at rates up to 19.2 kbps
  - — V.35 interface for rates up to 64 kbps
- **LADS operation.** Can operate as a local area data set (LADS) at 2.4, 4.8, 9.6, 19.2, 38.4, 56, or 64 kbps full-duplex (sometimes called a limited-distance modem or LDM).
- **Flexible device control.** The 3600 Series DSUs provide access to the COMSPHERE 6700 or 6800 Series Network Management System (NMS) and are compatible with DATAPHONE II System Controller, Diagnostic Console, or Network Controller.
- **Point-to-Point and Multipoint.** Supports both link configuration options.

- **External dial backup.** Provided by an external dial backup unit (DBU), such as a 3800 Series dial/lease modem, for a point-to-point DSU.
- **Front panel control.** Provides control from a front panel with a 2-line, 16-character liquid crystal display (LCD), light-emitting diode (LED) status indicators, and software-defined function keys.
  - — Model 3610 has a front panel
  - — Model 3611 has a shared diagnostic control panel (SDCP), which is mounted on the COMSPHERE 3000 Series Carrier. The SDCP can be shared by as many as 128 DSUs

  Either front panel provides:
  - — Health and Status information
  - — Modifiable configuration options
  - — Initiation of tests and commands
  - — Reports of test results
  - — Management of remote DSUs
- **Async terminal control.** Provides control from an async (asynchronous) VT-100 compatible terminal. This feature is available for a Model 3610 standalone DSU.
- **Rate adaption.** Allows the DSU to support a low-speed application on a high-speed DDS circuit. Both point-to-point and multipoint configurations support rate adaption.
- **Network interface (aggregate).** Provides an additional mode of dial backup. When Network Interface is set to aggregate switch or forced on, the DSU provides an internal aggregate data stream, including diagnostics and framing on the alternate V.35 or EIA-232-D interface of Port 1.
- **Full tributary diagnostics.** Supports an enhanced set of diagnostic tests and commands. The set of diagnostics can be addressed to tributaries from:
  - — A COMSPHERE 6700 or 6800 Series NMS workstation
  - — The front panel
  - — The async terminal of a control DSU
  - — A DATAPHONE II System Controller or Network Controller

SNA Diagnostic Interface

The 3600 Series DSU has the SNA (System Network Architecture) Diagnostic Interface option with the LPDA-2* protocol installed on the circuit card. The SNA Diagnostic Interface includes the following features:

- **Link Problem Determination Aid support.** Emulates IBM® 5822 DSUs that use the LPDA-2 protocol, allowing the 3600 Series DSU to be controlled from IBM's NetView management program. With TDM or MCMP, support for this option is on Port 1. For digital sharing, support is available on all ports.
- **Full option support.** Provides support for all other 3600 Series DSU options:
  - — Dial backup module (DBM)
  - — Time division multiplexer (TDM)
  - — Multichannel multipoint (MCMP)

Optional DSU Features

The 3600 Series DSU offers a number of optional features:

- Dial Backup Modules:
  - — ISDN DBM – BRI 1B+D with digital 2-wire 2B1Q U interface
  - — 2-wire Switched 56 DBM – digital access
  - — 4-wire Switched 56 DBM – digital access
  - — V.32bis DBM – 14.4 kbps modem
  - — V.34 DBM – 28.8 kbps modem
- TDM
- MCMP
- Digital Bridging

See Table 1-1 for other 3600-related documentation that provides more details on these optional features.

* LPDA-2 (Link Problem Determination Aid, Release 2) diagnostics are part of IBM's NetView™ management system.

DBM Common Capabilities

Integrated dial backup modules (DBMs) ensure continuity of service if the DDS connection fails. A DBM childboard is attached to the DSU circuit card. The DBM option offers the following features:

- **Automatic backup and restoration.** When configured for automatic operation, the DSU/DBM detects a network failure, performs the dial backup, and restores the data path to the DDS circuit when the network returns to service.
- **Interoperability.** Provides DBM compatibility:
  - — The ISDN DBM, 2-wire Switched 56 DBM, and 4-wire Switched 56 DBM can communicate with each other at 56 kbps.
  - — A V.34 DBM can operate in V.32 DBM mode. The V.32 and V.34 DBMs can communicate with each other.
- **Independent operation.** Although the DSU and DBM are functionally integrated, you can configure each separately and run most tests independently.
- **Security.** Provides multiple levels of call setup security. Prevents unauthorized access and invalid calls to the DBM.
- **Flexible device control.** Provides control of the DBM from an NMS, the DSU's front panel, an async terminal, or automatically by the DSU/DBM. DBMs support a comprehensive set of diagnostics, tests, and commands.
- **Dial backup support.** Provides DBM support of TDM or MCMP networks.
- **Non-interfering testing.** Allows data to be sent on a DDS facility while performing a test on the active DBM core over the dial backup facility without disrupting data on the DDS line.
- **V.13 operation.** Provides pseudo-switched carrier operation from the tributary to the control.
- **Bridging.** Orderable from the factory as a DBM-*X** for Model 3611. The configuration option Primary Core is set to Yes and the DBM is available for digital bridging. Does not function as a DSU.
- **Installation choices.** Orderable from the factory, either as:
  - — One unit with the dial backup option installed on the DSU.
  - — A DBM field-installable upgrade.

V.32bis DBM

The V.32bis 14.4 kbps DBM childboards offer the following features:

- **Multispeed point-to-point backup.** Provides point-to-point service over the 2-wire dial network at a customer-specified rate at full-duplex.
- **Data rates.** Provides DBM speeds up to 14.4 kbps using standard dial lines.

V.34 DBM

The V.34 28.8 kbps DBM childboard offers the following features:

- **Retraining and negotiation.** In addition to multispeed point-to-point backup, provides retraining by the DBM to the maximum rate based on line conditions. Additional port rates are available for the DBM with three user-selectable speeds.
- **Data rates.** Provides DBM speeds up to 28.8 kbps using standard dial lines.

2-Wire Switched 56 DBM

The 2-wire Switched 56 DBM childboards provide dial backup capability through the switched 56 kbps digital service. The Switched 56 DBM offers the following features:

- **Network compatibility.** Provides 2-wire Switched 56 DBM service restoration of failed DDS circuits over compatible switched 56 kbps services from the Local Exchange Carrier (LEC) or long distance carrier for:
  - — Northern Telecom's DataPath™ 2-wire Service
- **Data rates.** Operates at 56 kbps full-duplex and uses proprietary rate adaption to support data rates that are less than 56 kbps.

* *X* = either a DBM-D, DBM-F, DBM-I, DBM-S, or DBM-V.

4-Wire Switched 56 DBM

The 4-wire Switched 56 DBM childboards provide dial backup capability through the switched 56 kbps digital service. The Switched 56 DBM offers the following features:

- **Network compatibility.** Provides 4-wire Switched 56 DBM service restoration of failed DDS circuits over compatible switched 56 kbps services from LEC or long distance carrier for:
  - — AT&T's ACCUNET Switched 56 kbps Service
  - — MCI's 56 kbps Switched Digital Service
  - — US SPRINT's VPN56
- **Data rates.** Operates at 56 kbps full-duplex and uses proprietary rate adaption to support data rates of less than 56 kbps.

ISDN DBM

The ISDN DBM childboards offer the following features:

- **ISDN digital service restoration.** Provides backup capability if the DDS private line fails. The ISDN DBM operates on a digital 2-wire 2B1Q (U interface). The basic rate service operates with a 64 kbps B-channel and a D-channel for signaling (1B+D). Supports the following protocols and switches:
  - — AT&T 5ESS®
  - — DMS-100
  - — NI-1 (National ISDN-1)
  - — NI-2 (National ISDN-2)
- **Data rates.** Operates at 64 or 56 kbps full-duplex and uses proprietary rate adaption to support data rates of less than 56 kbps.

TDM, MCMP, and Digital Bridge Capabilities

TDM capability allows up to six independent ports to share one standard digital point-to-point facility. MCMP capability allows up to six ports to share one standard 56 kbps multipoint facility. Digital bridge is available with either TDM or MCMP. Similar features are:

- **Async/Sync conversion.** Provides up to six ports configurable for asynchronous-to-synchronous operation.
- **FEP port sharing.** Provides a method of connecting a front-end processor (FEP) to two consecutive ports to broadcast the same message over the network and the shared ports.
- **Elastic store per port.** Provides a transmit elastic store buffer for each port to support extended circuits. Supports both digital and analog extensions.
- **Switched-carrier emulation.** Provides optional switched-carrier emulation for each port for both the inbound and outbound directions.

TDM Capability

Additional TDM capability includes the following features:

- **Port capacity.** Allows up to six independent ports to share one standard digital point-to-point facility. Provides Port 1 on the DSU and five EIA-232 or V.35 ports on the TDM circuit card.
- **Models.** TDM is available as DSD, standard, and TDM/Flex. There are two versions of the Model 3610 standalone TDM/Flex:
  - — 2-port TDM/Flex
  - — 6-port TDM/Flex

  With either flex model, each port can be set independently as either an EIA-232 or V.35 interface.
- **Digital sharing.** Allows two groups of consecutive ports to share the same TDM channel. All ports in a digital-sharing group operate at the same speed and receive the same data.
- **Digital bridge.** Performs digital bridge functions and supports many applications, including dedicated multipoint dial backup and multipoint LADS operation.
- **Flexible device control.** Provides the same diagnostic capabilities as a point-to-point 3600 Series DSU without the TDM option. Allows control of the TDM option from the front panel, or from a 6700 or 6800 Series NMS.
- **Point-to-point backup.** Allows a DSU with TDM to have a DBM installed for point-to-point dial backup.

MCMP Capability

Additional MCMP capability includes the following features:

- **Channel capacity.** Allows up to six virtual multipoint circuits over one standard DDS multipoint facility.
- **Models.** MCMP is available as DSD, standard, and MCMP/Flex. There are two versions of the Model 3610 standalone MCMP/Flex:

  — 2-port MCMP/Flex

  — 6-port MCMP/Flex

  With either flex model, each port can be set independently as either an EIA-232 or V.35 interface.
- **Number of addressable devices.** Supports up to 40 tributary DSUs or 20 tributary DSUs with DBMs, each equipped with an MCMP circuit card.
- **Digital sharing.** Allows up to three digital-sharing groups at each tributary site by assigning channels to more than one port. All ports operate at the same speed and receive the same data.

  MCMP capability allows digital sharing and multiplexing simultaneously at any tributary site.
- **Multipoint dial backup.** Provides multipoint service restoration with extended bridges using the Network Interface configuration option to allow for dial backup.

Digital Bridge Capability

Digital bridging is primarily used for dedicated multipoint dial backup. The ISDN, dial, or Switched 56 kbps network provides backup support.

The digital bridge capability is dedicated to a single DSU. The DTE connected to the DSU is usually the controlling DTE of a multipoint network. Configure either the TDM or MCMP option to provide the digital bridge capability.

Digital bridging, when used to support dedicated multipoint dial backup, includes the following features:

- **Number of tributaries.** Provides dedicated multipoint dial backup for up to 20 tributary DSUs.
- **Partial and full backup.** Provides multipoint dial backup for both partial and full backup on DDS multipoint circuits.
- **Restoration.** When the DSU rate equals the DBM rate, preconfigured tributary DSUs can automatically drop the backup connection and switch back to the DDS facility when the DDS network is restored.

Product-Related Documents

Table 1-1 lists 3600-related documentation.

Reference Documents

- ANSI X3.64 – 1979 (Reaffirmed 1990)
- ANSI T.410
- ANSI T1.601 – 1992
- AT&T Technical Reference 41458
- AT&T Technical Reference 61330
- AT&T Technical Reference 62310 – 1987
- Bell Canada DCTE Specifications
- Bell Communications Research Technical Reference Publication 41028
- Bellcore Special Report SR-NWT-001953
- DATAPHONE II 2600 Series Data Service Units User’s Manual
- EIA-232-D/V.24 (ISO 2110)
- Integrated Network Corporation Compatibility Bulletin CB-INC-101
- ITU-TSS (CCITT) V.35 (ISO 2593)
- Northern Telecom NIS S204-2© 1986
- Pacific Bell PUB L-780035-PB/NB
- Pacific Bell PUB L-780036-PB/NB

Document Ordering

To order AT&T Paradyne documentation, please call 1-800-545-2354, extension 2222, or 1-813-530-8777.

To order AT&T documentation, please call 1-800-432-6600 or 1-317-322-6572.

Table 1-1
COMSPHERE 3600 Series Product-Related Documentation

Document Name	Document Number	Description
COMSPHERE 3600 Series Data Service Units, Models 3610 and 3611, Time Division Multiplexer, Multichannel Multipoint, and Digital Bridge Options Supplement	3610-A2-GB48	Supplement to this User's Guide. Ships with all standalone 3610 DSUs with TDM, MCMP, or Digital Bridge options or upgrades. Provides descriptions of TDM, MCMP, and Digital Bridge features, installation instructions, front panel operation, configuration options and worksheets, troubleshooting, messages, and specifications.
COMSPHERE 3600 Series Data Service Units, Models 3610 and 3611, Dial Backup Module Options Supplement	3610-A2-GB49	Supplement to this User's Guide. Ships with all standalone 3610 DSUs with Dial Backup Modules or upgrades. Provides descriptions of DBMs, features, installation instructions, front panel operation, configuration options and worksheets, troubleshooting, messages, and specifications.
COMSPHERE 3600 Series Data Service Units, Models 3610 and 3611, Technical Reference Manual	3610-A2-GH30	Orderable. Provides detailed information on the DSU, DBM, SNA Diagnostic Interface, TDM, MCMP, and Digital Bridge features, specifications, configuration scenarios, async terminal operation, pin assignments, NMS operations, messages, and an equipment list.
COMSPHERE 3600 Series Data Service Units, Models 3610 and 3611, Documentation Replacement	3610-A2-GB43	Orderable for every unit that does not require a manual. Includes safety instructions, government requirements, technical specifications, and network connection instructions.
COMSPHERE Model 3610 2-port or 6-port TDM/Flex or MCMP/Flex Upgrade Installation Instructions	3610-A2-GZ51	Ships with field-installable TDM/Flex or MCMP/Flex upgrades. Contains Model 3610 Flex MUX installation procedures.
COMSPHERE 3600 DBM Option Installation Instructions	3610-A2-GZ52	Ships with field-installable dial backup upgrades. Contains installation procedures for all Model 3610 and 3611 DBM types.
COMSPHERE 3000 Series Carrier, Installation Manual	3000-A2-GA31	Ships with every carrier. Contains installation procedures for the carrier and its components, options, and operation.
COMSPHERE –48 Vdc Central Office Power Unit, Installation Guide	3000-A2-GB41	Ships with every –48 Vdc power unit. Includes descriptions of features, installation instructions, troubleshooting, specifications, and an equipment list.
COMSPHERE 3600 Series Data Services Units, Models 3610 and 3611, Secondary Channel Applications Supplement	3610-A2-GB42	Orderable. Provides details on DSUs equipped with the Secondary Channel option. Provides descriptions of features, DSU operation, configuration examples, worksheets, and an equipment list.
COMSPHERE 6800 Series Network Management System, Communications Products Support Command Reference Manual	6800-A2-GB31	Ships with software. Provides descriptions of device commands for interaction between 6800 Series NMS and other product lines.
COMSPHERE 6700 Series Network Management System, User's Guide	6700-A2-GY31	Ships with software and is orderable. Provides descriptions of NMS features, installation instructions, configuration setup, display and statistics options, reports generation, online help conventions, and input forms.

Model 3610 Installation 2

Overview

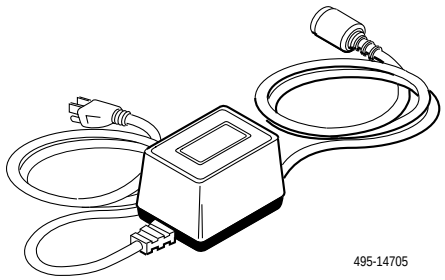
The Model 3610 DSU is delivered with default hardware strap settings and factory-installed software options.

The DSU is ready to connect to the network. No on-site assembly is required.

Before You Begin

Before connecting any cables to your DSU, verify the following:

- There is a dedicated grounded ac outlet within 6 feet that is protected by a circuit breaker. Label the circuit breaker that protects the ac outlet and ensure that the circuit breaker is set to ON.
- Your installation site is clean, well-lit, ventilated, and free from environmental extremes.
- You have contacted the telephone company to coordinate installing your DSU to the DDS network. The DSU can only operate at the data rate provided by the DDS network. The DBM, if enabled, should also be connected to the dial network.
- Your package contains a power cord with table-top ac transformer.



CAUTION

Only use the power transformer designed for the Model 3610 DSU. Using other transformers may result in personal injury or damage to the equipment.

Installation Process

- Installing the DSU
- Verifying the Hardware Strap Setting
- Powering Up the DSU
- DDS Network Connection
- Network Verification Testing
- DTE Connection

Installing the DSU

The Model 3610 DSU is designed for desktop operation.

- Place the DSU in the planned location.
- Allow 1 to 2 feet of clearance for cable connections, space for the ventilation slots on the sides, and clearance at the rear for the cable connections.
- Verify hardware strap S1-2 as indicated below.

Verifying the Hardware Strap Setting

HANDLING PRECAUTIONS FOR STATIC-SENSITIVE DEVICES

AT&T Paradyne products are designed to protect sensitive components from damage due to electrostatic discharge (ESD) during normal operation. When performing installation procedures, however, take proper static control precautions to prevent damage to equipment. If you are not sure of the proper static control precautions, contact the nearest AT&T Paradyne Customer Support office.

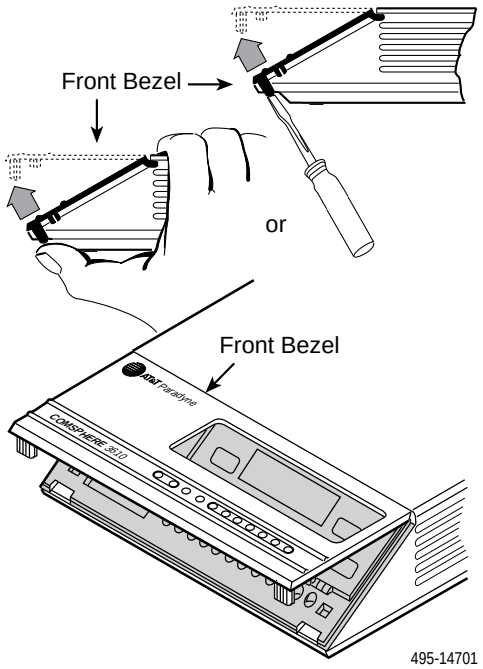
The Model 3610 DSU has a switch located behind the front panel. This switch contains two straps:

- S1-1 sets the permissive or programmable services for a V.32 DBM. See Document No. 3610-A2-GB49 for DBM information.
- S1-2 selects the frame ground to signal ground connection.

To access the front panel:

Procedure

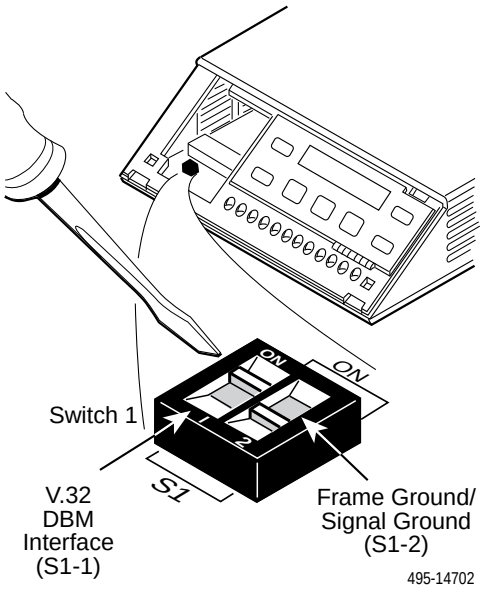
1. Place a small screwdriver or your thumbs under the two tabs on the outside edges of the front bezel. Firmly press upward to separate the bezel from the tabs.



2. Swing the front bezel up and set aside.
3. Refer to the table below to make sure switch S1-2 is in the default position.

Switch	Setting	Function
S1-2	ON	Frame ground (FG) connected to signal ground (SG)
	OFF (default)	FG connected to SG through 100 ohm resistor
ON is to the rear as you face the front of the DSU. OFF is to the front.		

4. If needed, use a small instrument and change the position of the switch. Do not use a pencil.



5. Reinsert the front bezel's hinge tabs into position at the top and swing the bezel down. Snap the bezel back into place.

Powering Up the DSU

CAUTION

The power cord and ac transformer have a 3-wire grounding-type plug with a grounding pin. This is a safety feature. Grounding of the unit is vital to ensure safe operation. Do not defeat the purpose of the grounding plug by modifying it or by using an adapter.

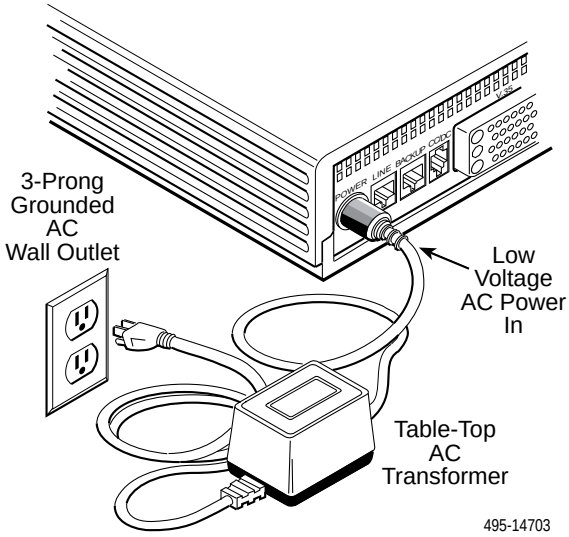
Prior to installation, use an outlet tester or voltmeter to check the ac receptacle for earth ground. If the power source does not provide a ground connection, consult an electrician to determine another method of grounding the unit before proceeding with the installation.

NOTE

Before connecting the DSU to any network, ensure that approved primary protectors have been installed on the circuit in accordance with Article 800 of the National Electric Code, NFPA 70, in the United States and Section 60 of the Canadian Electric Code, Part 1, in Canada.

☞ Procedure

1. At the rear of the DSU, insert the round end of the power cable into the receptacle labeled POWER.

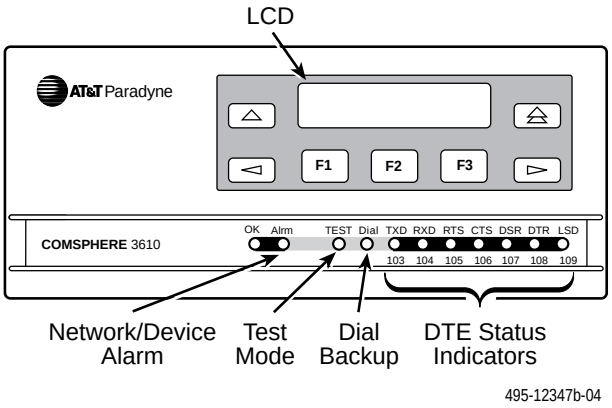


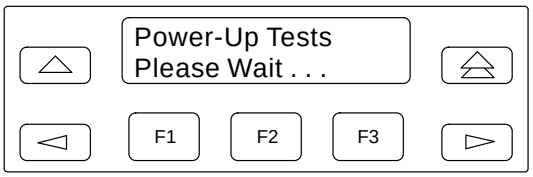
2. Connect the 3-prong plug at the other end of the cable to an ac outlet.

Power-Up Routine

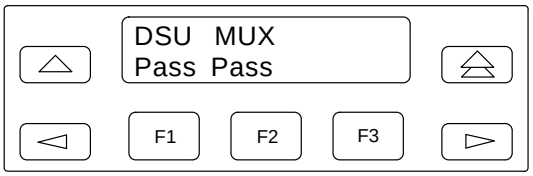
When you apply power, the DSU performs a power-up routine and:

- Determines what hardware options are installed, if any. This may include DBM, MUX, TDM, and MCMP.
- Automatically runs a Device Test on itself and each installed hardware option. All front panel lights flash on and off.





3. Watch the liquid crystal display (LCD) during the tests. The results of each test display briefly as Pass, Fail, or Abrt. The tests take about 20 seconds to complete. You are looking for successful test results.



4. Continue if you receive successful messages. If a Fail message appears or an installed hardware option does not appear, refer to Appendix E, *Troubleshooting and Front Panel Messages.*

Saving and Changing Configuration Options

For Model 3610 and Model 3611 DSUs, change configurations options from either:

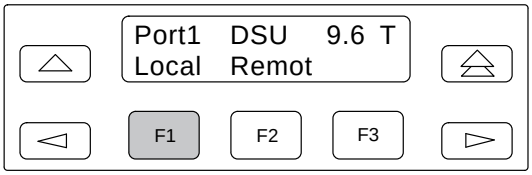
- A front panel
- A 6700 or 6800 Series NMS
- An async terminal (3610 standalone only)

Appendix B provides a Basic Configuration Worksheet, which is a summary of configuration option sets. Use the worksheet, the menu tree in Appendix A, and Chapter 4, *Configuration Option Tables*, for reference.

For additional Configuration Option tables, refer to Chapter 4 of both the TDM, MCMP, Digital Bridging Supplement, Document No. 3610-A2-GB48, and the DBM Supplement, Document No. 3610-A2-GB49.

The Model 3610 is preconfigured at the factory with default settings for a point-to-point circuit. Set the speed to match the central office switch. If you have a point-to-point link configuration, enable one unit as the control and the other as the tributary.

Pressing the ⩓ key (double-up arrow) on the front panel changes the display to the Home screen. The following is an example of the Home screen display:



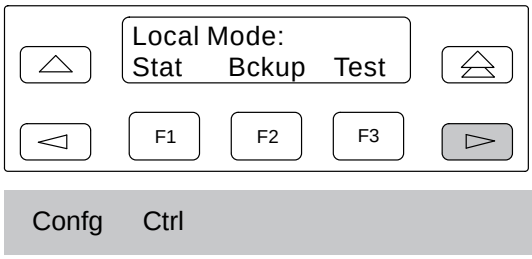
- Port 1 = Port being monitored by DTE status indicators
- DSU = Operating mode
- 9.6 = Line speed in kbps
- T = Network position of DSU (tributary in this example)

In the following LCD examples, the shaded area below the front panel shows the additional options that appear when the ▻ key is pressed.

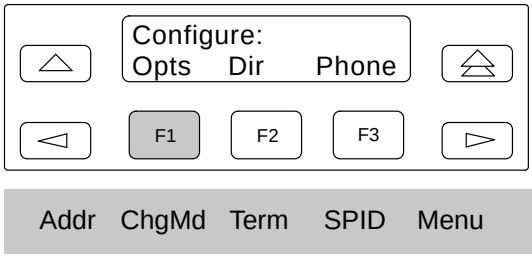
To save and change options:

☞ Procedure

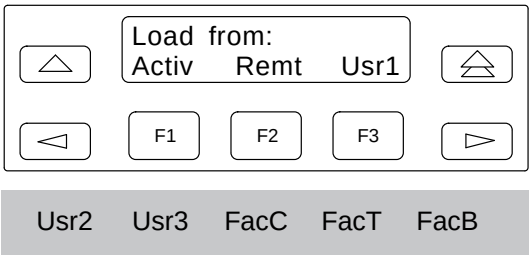
1. From the Home screen, as shown above, select Local (F1). The following screen appears on the LCD.



2. To access the Configuration (**Confg**) branch, press the ▷ key until Confg appears. Press the function key below Confg. The following screen appears.



3. Select **Opts** (for Configuration Options). The following screen appears.

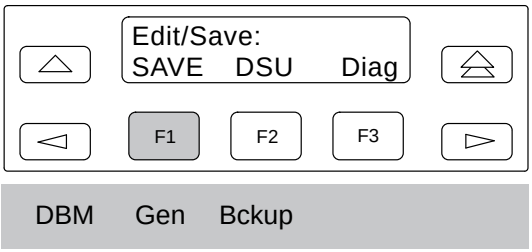


4. The selections on the screen are configuration option sets stored in the DSU's memory. Table 2-1 lists the **Load from** menu selections and their source.

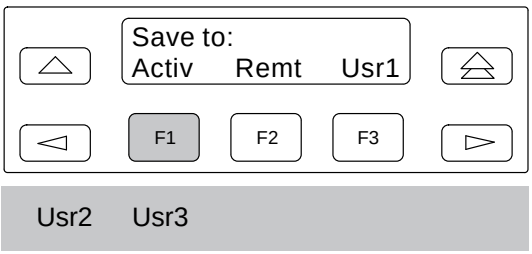
   Before changing any configuration options, you are advised to first save the factory default settings to store a set of working configuration options.

   If you select Activ, Usr1, Usr2, Usr3, FacC, FacT or FacB from the **Load from** menu, a complete set of configuration option values is loaded into a working buffer.

5. Once the values are loaded into the DSU, the Edit/Save screen appears. You must select SAVE for changes to take effect. If SAVE does not appear, press ↑ until SAVE appears.



6. After selecting SAVE, the following screen appears.



   When you select from the **Save to** screen, the DSU performs a verification routine to ensure that the configuration options chosen are compatible.

From this point, you can edit and save additional configuration options. Refer to Chapter 3 and Appendix E for details regarding configuration of your unit. Use the Appendix B worksheet for recording configuration option changes stored in Usr1, Usr2, or Usr3.

Table 2-1
Default Configuration Option Sets

Menu Selection	Source Of Configuration Options
Activ	Currently active configuration options for the addressed DSU; use to change and save configuration options.
Remt	Configuration options that can be retrieved from a selected tributary DSU; these will be from the tributary's Active set and appear based on local hardware. The selected option set can then be displayed, edited, and saved back to the same tributary, another tributary, or the control DSU.
Usr1	User-defined option sets.
Usr2	User-defined option sets.
Usr3*	User-defined option sets, and factory default settings for a DBM-*X* (DBM-D, DBM-F, DBM-I, DBM-S, and DBM-V).
FacC	Control DSU factory default settings.
FacT	Tributary DSU factory default settings.
FacB	Central-site bridge factory default settings.
*If configuring a DBM-D, DBM-F, DBM-I, DBM-S, or DBM-V, do not SAVE to Usr3.	

DDS Network Connection

NOTE

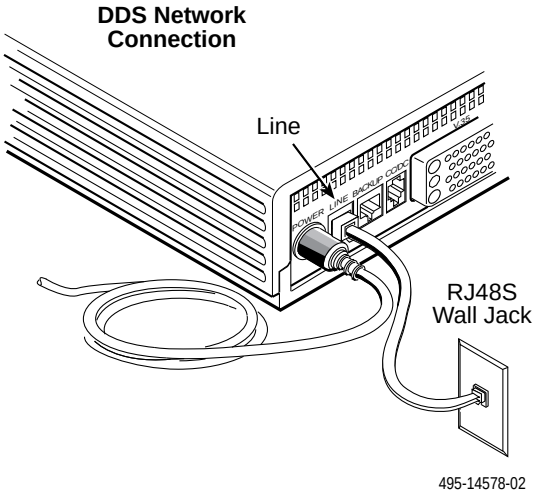
Before connecting the DSU to the DDS network, ensure that approved primary protectors have been installed on the circuit in accordance with Article 800 of the National Electric Code, NFPA 70, in the United States and Section 60 of the Canadian Electric Code, Part 1, in Canada.

To connect the DSU to the DDS network:

☞ Procedure

1. Plug the DDS network interface RJ48S cable into the DSU jack labeled **LINE**.

2. For Canada, plug the 6-pin cable end (feature number 3600-F1-006) into the wall jack.



If a remote DSU is also connected to the network, the:

- DSU's green **OK** indicator lights
- **Alrm** indicator goes off
- Health and Status screen no longer displays a **No Signal** message

If connecting the DSU to a LADS network, there are distance limitations that govern the use of DSUs on the network. See Appendix F for LADS connection distances.

Network Verification Testing

Perform verification testing after any installation.

Procedure

1. For a *multipoint link* configuration, request a device Identity report to ensure that the DSU is addressed properly (**ID** from the Status branch).

> **NOTE**
>
> The Model 3610 is delivered with its network address set to **254**.

2. For a *point-to-point* link or *multipoint* configuration, verify the port speed, and

3. From the control, perform a Digital Test on the DDS circuit to ensure that the network is functioning (**DT** from the Test branch).

DTE Connection

The distance between the DSU and its DTE must be within EIA-232-D/V.24 or V.35 limits, depending upon the interface selected.

- For the EIA-232 connector:
  - — The typical maximum distance is 50 feet at speeds no greater than 19.2 kbps.
  - — For distances greater than 50 feet or speeds higher than 19.2 kbps, use high quality, low capacitance cable.
  - — As specified in EIA-232-D, ensure that the distance is not greater than 50 feet and the effective shunt capacitance of the circuit does not exceed 2500 picofarads. Calculate the cable capacitance per foot and multiply by the number of feet of cable.
- For the V.35 connector:
  - — The maximum distance recommended between the DSU and the DTE is 1000 feet.

To install the DTE:

Procedure

1. Connect the plug end of the DTE cable to the proper port on the back panel of the DSU. Tighten the two holding screws, if present, to secure the connector.

2. Connect the other end of the cable to the appropriate port on the DTE. Tighten the two holding screws, if present.

> **NOTE**
>
> If connecting the DTE to the V.35 connector, set the DTE Port in General Configuration Options to **V.35** so the DSU can communicate with the DTE. The default for this configuration option is EIA232 (Table 4-4).

3. Perform a Local Loopback (LL) and a DTE Loopback. Refer to the *Test Branch* section of Chapter 3.

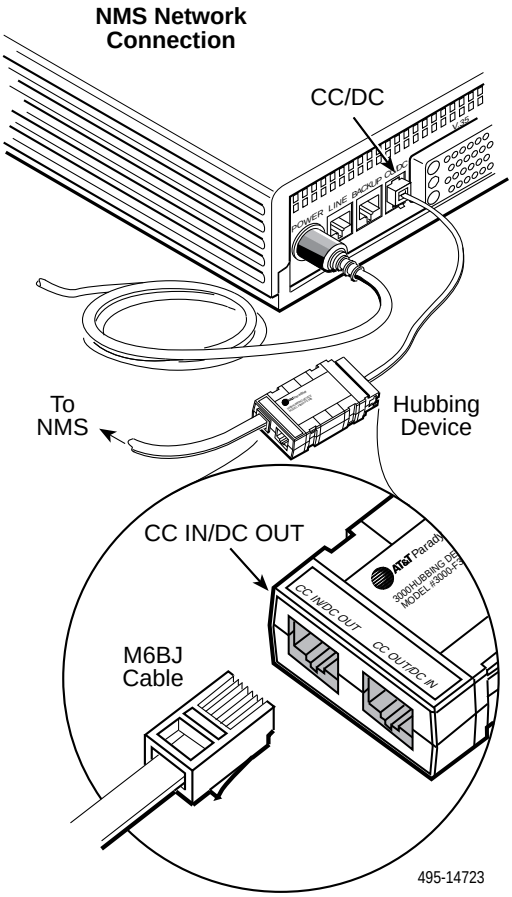
Network Diagnostic Connection

You need a hubbing device and an M6BJ cable to connect the control DSU to a 6700 or 6800 Series NMS. The hubbing device provides two 8-pin modular jacks for diagnostic channel (DC) and control channel (CC) connections.

> **NOTE**
>
> When installing 3600 Series DSUs and 3400 Series or DATAPHONE II modems on the same diagnostic channel, install the DSU ahead (upstream) of the modems. This ensures that the DSU maintains contact if the modem loses power.

Procedure

1. Plug the 4-pin modular plug of the hubbing device into the modular jack labeled **CC/DC** and located on the rear of the DSU.



2. Plug one end of the 6-pin cable into the hubbing device jack labeled **CC IN/DC OUT**.

3. Plug the opposite end of the M6BJ cable into the appropriate 6700 or 6800 Series NMS jack.

Refer to your COMSPHERE 6700 or 6800 Series NMS documentation to control and configure the DSU from the NMS.

SNA Diagnostic Interface Verification

To use the SNA Diagnostic Interface feature:

Procedure

1. Enable the LPDA option (refer to Table 4-5).

2. Send a **DSU/CSU** and **Line Status** test from the IBM NetView console to the control DSU and each tributary.

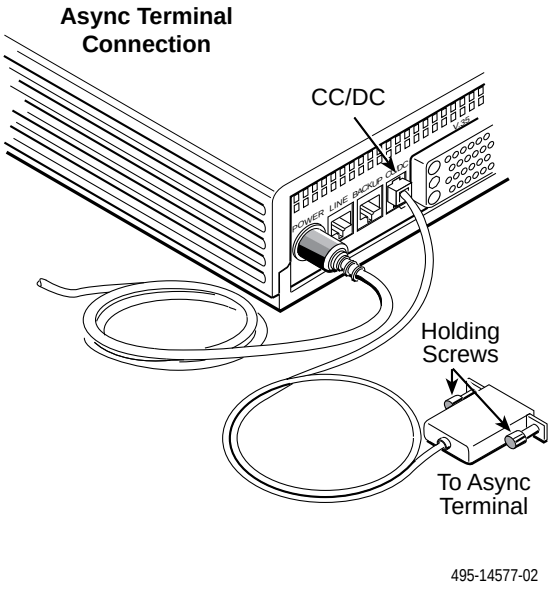
3. As the status for each DSU is returned to NetView, check the network address. If the address is correct, the verification procedure is complete. Refer to Appendix D for additional configuration information.

Async Terminal Connection

Use a CC-to-DB25 cable to connect an async terminal to a DSU. This feature is available for the Model 3610 standalone unit only.

Procedure

1. Plug the 4-pin modular plug of the DSU CC-to-DB25 cable (feature number 3600-F3-504) into the DSU jack labeled **CC/DC**.



2. Connect the EIA-232 (DB25) end of the cable to the async terminal.

3. Tighten the holding screws.

4. To enable the async terminal, see Appendix C, *Async Terminal Operation*.

Front Panel Operation 3

Overview

You can manage a 3600 Series DSU from:

- The front panel
- An async terminal
- An NMS

This chapter describes how to manage the DSU using the front panel. Refer to Appendix C for async terminal operation.

The menus are organized as a branching hierarchy or menu tree. Appendix A contains this menu tree. Appendix B contains a Configuration Worksheet. Refer to these reference materials as you proceed through the DSU's menus.

Refer to your COMSPHERE 6700 or 6800 Series NMS documentation to control and configure the DSU from the NMS.

Front Panels

The front panel is the user interface to the DSU. There are two types of front panels:

- The front panel on the Model 3610 (Figure 3-1)
- The shared diagnostic control panel (SDCP) used with the Model 3611 (Figure 3-2) in a COMSPHERE 3000 Series Carrier

The front panel for both models provides a 2-line, 16-character liquid crystal display (LCD) and keypad for accessing menus to:

- Monitor health and status
- Initiate dial backup operations
- Initiate diagnostic tests
- Set, change, and save configuration options
- Enable/disable the DSU's transmitter
- Display/change status of external DTE leads

The front panel's LCD displays the result of any command initiated from the front panel. Front panel basic operation does not vary with the addition of DSU options (DBM, TDM, MCMP, or SNA Diagnostic Interface). However, menu or selection displays vary based on installed options.

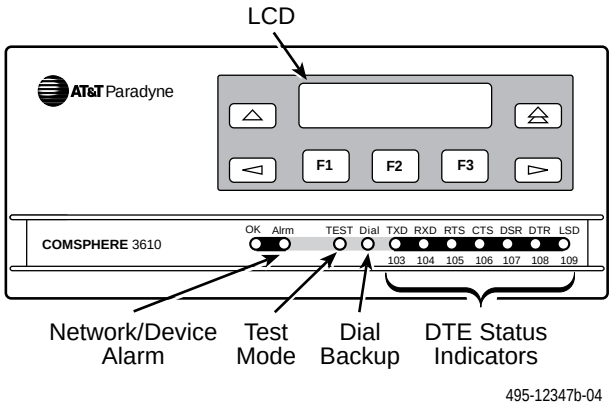


Figure 3-1. Model 3610 Front Panel

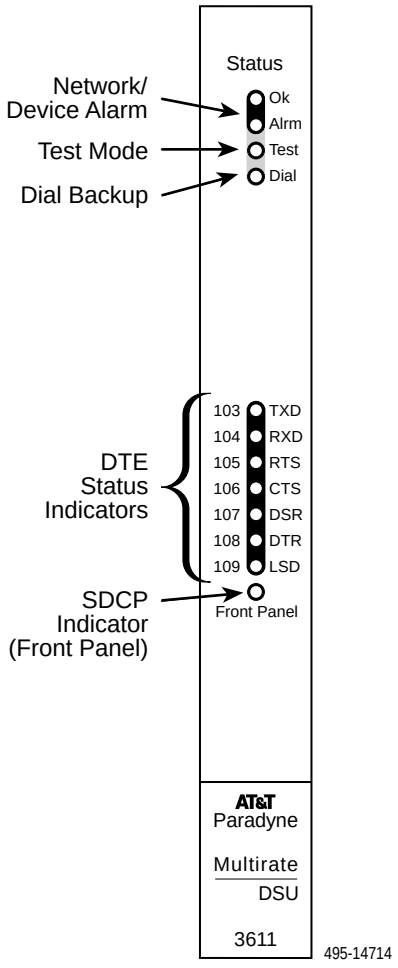


Figure 3-2. Model 3611 DSU Faceplate

LCD

The 2-line, 16-character LCD on the front panel displays the following kinds of information:

- **Menus:** The menu structure is provided in Appendix A.
- **Input Screens:** Used to enter information such as a customer ID, the network address of a remote DSU, telephone numbers for DBM use, or test durations.
- **Display Screens:** Provide configuration information and test results.

Keypad

There are seven keys on the front panel of the standalone Model 3610.

- The ⏢ key returns you to the top-level menu and terminates any work in progress.
- The ⏢ key returns to the previous display, one level up from the current display. Use this key to terminate a data entry display without making a change.
- The ◅ and ▻ keys scroll menus or other displays to the left or right, respectively. On display screens, these keys scroll additional information into view. On input screens, these keys move the cursor one character to the left or right to allow entry of one digit or character at a time.

  All menus wrap around. Scrolling to the right from the last selection takes you to the first selection of the menu, and scrolling left from the first selection takes you to the last selection of the menu.
- The F1, F2, or F3 (function) keys select the item displayed directly above the key on the LCD.

On input screens requiring entry of a number, such as test run time, the field that can be changed appears with a blinking cursor. On this type of display, the functions keys are labeled as follows:

F1 ↑ – Each key press increments the number being entered, usually by 1 (some fields change by different increments).

F2 ↓ – Each key press decreases the number being entered by the appropriate amount.

F3 – One of the following appears, depending on the purpose of the current display:

- **Enter** – To select the value displayed.
- **Undo** – To void any changes made on the current display and leave the value unchanged.
- **Dial** – To dial the telephone number shown on the first line of the display (only available with DBM installed).
- **Disab** – To disable options.
- **Enab** – To enable options.
- **Displ** – To check EIA leads.

Status Indicators

Status indicators continuously provide information on the current operating condition of the DSU.

- The Model 3610 DSU status indicators appear on its front panel.
- The carrier-mounted Model 3611 status indicators appear on the SDCP.

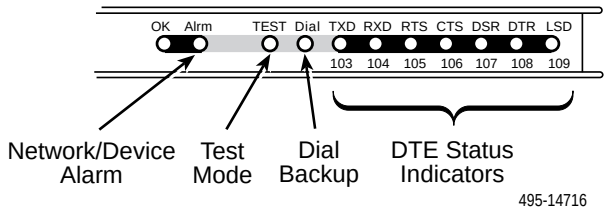


Table 3-1 describes all status indicators on the Model 3610's front panel and the Model 3611's faceplate.

Table 3-1
DSU Status Indicators

Label	Color	Description
OK	Green	Health and status indicator: DSU operation is normal. The DSU has not detected any alarm listed under **Alrm,** below. This **OK** indicator flashes two times per second if a message from the NMS is present.
Alrm	Red	Health and status indicator: there is an alarm in the local or remote DSU, DBM, or DDS facility, or a corrupted configuration. For a DSU with TDM or MCMP, the alarm may be in the communications path between the DSU and TDM or MCMP circuit card. The following alarms at the local or remote DSU cause the **Alrm** status indicator on the affected DSU to light: Configuration Corrupt, Device Fault, Dial Tone Test Failure, DTR Alarm, Facility Alarm, MUX Failure, No Response, Out-of-Frame Threshold, Redundant Power Alarm, Streaming Terminal, and Subnetwork Alarm. Refer to Table E-5, *Device Health and Status Messages*, for further details.
Test	Yellow (when active core is being tested)	The active DSU or DBM device is either performing a test or other DSUs or DBMs are in Test mode. The DSU or DBM is automatically put into Test mode when a remote DSU or DBM is performing a disruptive test. A DSU or DBM in Test mode has the DTE interface turned Off. For a DSU with TDM or MCMP, any test involving the TDM or MCMP also involves the DSU. The test is integrated into the DSU's Health and Status report. When the active core is being tested, any port included in the active core is also tested.
Dial	Yellow	DBM is active. Rapid flashing: Call setup in progress Slow flashing: Call established but in Standby mode Steady ON: Backup call established and active
TXD, RXD, RTS, CTS, DSR, DTR, LSD	Green	Internal lead states at the DSU/DTE interface for circuit designations: Control circuit active (CTS, DSR, DTR, LSD, and RTS) *or* Data circuit spacing (RXD and TXD) For a DSU with TDM or MCMP, the circuit external lead states for any TDM or MCMP ports can be selected through the front panel's Control branch. For a 3610 DSU, the monitored port is displayed on the front panel LCD. For a 3611 DSU with TDM or MCMP: The TDM or MCMP faceplate indicates the monitored port with port LED lit. DTR always on. Refer to DTE Status on front panel for DTR status.
Front Panel (Model 3611 only)	Yellow	The currently selected DSU at the SDCP; the SDCP addresses one DSU at a time. For a 3611 DSU with TDM or MCMP, the TDM or MCMP circuit card has the same address as the associated DSU and is also selected.

Async Terminal Operation

You can use an async terminal to manage a standalone Model 3610 DSU. When enabled, the async terminal interface:

- Supports a VT-100 compatible terminal
- Is set to to 9.6 kbps, 8 bits, 1 stop bit, and no parity
- Emulates the front panel

Menus and selections are the same as when operating the unit from the front panel. However, the async terminal is not limited to three selections per screen, as with the front panel. An entire range of selections or information is presented on one screen. If connecting a modem for remote access, refer to Appendix C, *Async Terminal Operation*.

Menu Structure

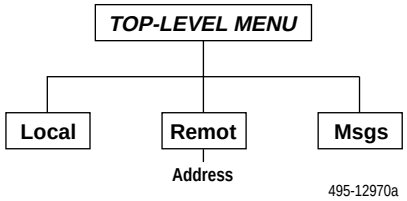
You access the menu tree, a representation of the DSU's menu structure, via the front panel. Use the menu, shown in Appendix A, as a guide as you proceed through the branches of the DSU.

The menus that appear depend upon the DSU's function within the network (i.e., control or tributary) and the hardware options that are installed (e.g., a DBM).

A Model 3610 DSU comes from the factory configured as a tributary, while the Model 3611 DSU comes configured as a control. Refer to Chapter 4 before changing or customizing these settings.

Top-Level Menu

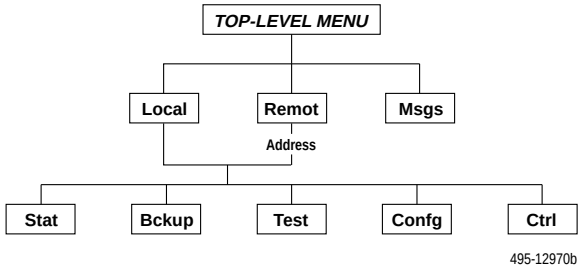
Access to all network management tasks begins at the top-level menu, the head of the menu hierarchy.



The top-level menu contains the:

- **Local** selection for a DSU that is used for a control DSU.
- **Remote** selection for a DSU that is used for control of a remote DSU.
- **Messages** selection that appears only if an NMS message has been received and not cleared. An asterisk (*) appears at the far right on the front panel to indicate NMS activity. Once messages are cleared, the Msgs selection and asterisk disappear.

Local/Remote Menu Branches



The Local menu has five branches; the Remote menu has four (Bckup is not available):

- Status (**Stat**) branch
- Backup (**Bckup**) branch
- **Test** branch

> **NOTE**
>
> If the **Test** branch does not appear, the DSU is in Display mode. The front panel is locked and values can be read, but not changed. Only authorized persons can change configuration option values for the DSU. Contact your System Administrator for further information.

- Configuration (**Confg**) branch
- Control (**Ctrl**) branch

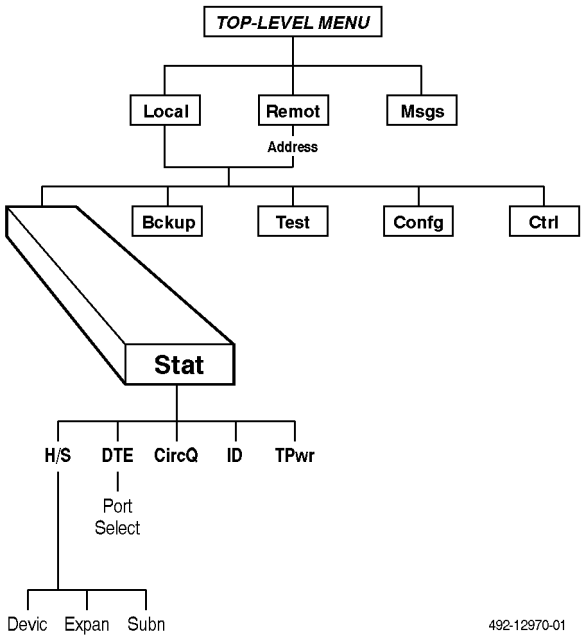
Each selection leads to submenus.

Status Branch

The Status (**Stat**) branch reports on the:

- Health and status of the DSU and DBM
- DTE interface
- Quality of the PSTN connection
- Identity of the DSU (see Table 3-3)
- Terminal's power (status of voltage on the DTE's RTS lead)

Refer to Appendix E for Health and Status messages.



Health and Status

Health and Status (**H/S**) displays the health and status of the DSU, and if installed, DBM H/S. DSU and line conditions are automatically scanned for normal limits.

There are three types of Health and Status reports:

- **Devic** (Device Health and Status)
- **Expan** (Expanded Health and Status)
- **Subn** (Subnetwork Health and Status)

All alarm and status conditions appear for the specified DSU at the time H/S is selected. For a:

- Local DSU, the alarm and status conditions are updated every 2 seconds.
- Remote DSU, displays the current alarm and status conditions at the time of access.

Device Health and Status

Device Health and Status (**Devic**) reports health and status information for a selected DSU. See Appendix E for Health and Status messages.

> **NOTE**
>
> After 15 minutes without a key press, the Device Health and Status reappears on the front panel.

When the digital circuit is the active link,

- The *first line* on the LCD displays a running normal-operation timer (hhh:mm:ss) to reflect the length of time the condition has existed. This timer displays until 254:59:59 appears and then displays MAX.
- The *second line* displays the DSU's operating rate and can also display one or more test or alarm messages.
- A right arrow (→) appears if there is more than one status.

Expanded Health and Status

Expanded Health and Status (**Expan**) appears during an automatic backup for the local DSU when there is:

- A dialing attempt failure.
- An unrequested disconnect after a successful connection.

Subnetwork Health and Status

Subnetwork Health and Status (**Subn**) displays status information from a DSU's subnetwork of all DSUs and DBMs assigned to that DSU's active poll list. The downstream network addresses and their current status are listed.

To page through the tributary addresses from the front panel:

- Press the F1 key for the next highest network address.
- Press the F2 key for the next lowest address.

DTE Status

DTE status is a snapshot display showing the status of the external DTE interface of the local or remote DSU/DBM. If more than one port is active, a port number selection screen appears.

- For the local DSU status, the display is updated every 2 seconds.
- For the remote DSU status, only one set of states is returned based upon a monitoring period of approximately 3 seconds.

From the front panel, the DTE interface statuses appear in sets. Use the ◁ or ▷ key to view each set of lead statuses into view.

Circuit Quality

Circuit Quality (**CircQ**) is a display showing the level and quality of the signal being received from the network for V.32bis and V.34 DBMs.

Identity

Identity (**ID**) displays a report listing the DSU's model number, serial number, software/firmware version, network address, DDS rate and installed options.

Table 3-3 lists the Identity information provided for the DSU and its options. One field appears at a time. Press the ▷ key to display the next field.

If the control DSU software version is less than 6.21 but greater than 1.10, the configuration option changes shown in Table 3-2 will need to be made.

Table 3-2
Firmware Version Control

If Control DSU is:		If Tributary DSU is:		Set Tributary DSU's SW Ver. to:
Rel.	FW Ver.	Rel.	FW Ver.	
2	3.xx	3	4.xx	3.20
2	3.xx	3.1	5.xx	3.21
3	4.xx	3.1	5.xx	4.40
2	3.xx	3.2/3.3	6.xx	3.22
3	4.xx	3.2/3.3	6.xx	4.41
3.1	5.xx	3.2/3.3	6.xx	Normal
3.2	6.2x	3.2	6.2x	Normal
3.3	6.33 - 6.99	3.3	6.33 - 6.99	Normal
3.4	7.xx	3.4	7.xx	Normal

Terminal Power

Terminal Power (**TPwr**) is a display showing the status of the connected DTE's EIA-232 and V.35 interface. The DSU checks the state of the RTS lead and reports the DTE powered ON if the voltage is less than –3V or greater than +3V for both the EIA-232-D and V.35 interfaces.

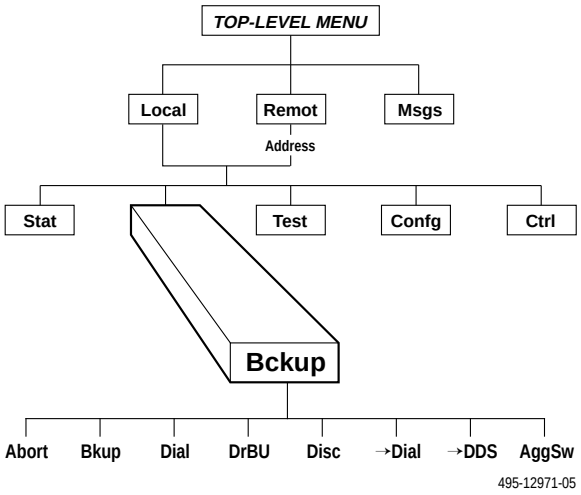
- If power is detected on the RTS lead, the second line displays **On.**
- If no power is detected on the RTS lead, the second line displays **Off**.

Table 3-3
Identity Descriptions

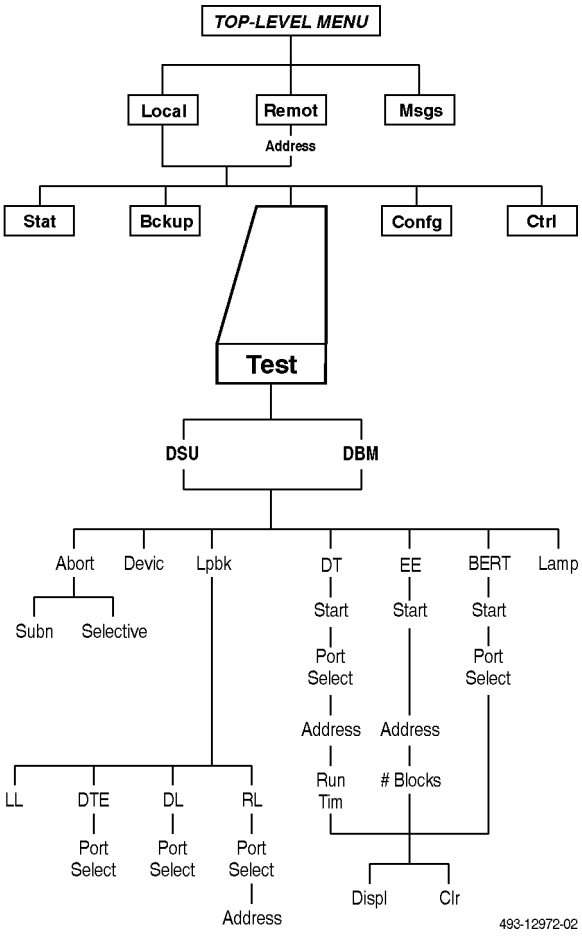
Field Name	Information Displayed
Model:	3610 or 3611.
S#:	Unit serial number.
DSU SW ver:	Software/firmware version residing on DSU.
Netwrk Addr:	Using ADp protocol, the ADp network address appears. Using DPII protocol, the DATAPHONE II address appears.
DSU Rate:	Value set for DSU Rate(Kbps) configuration option. This does not appear for a DBM-*X*; Primary core is set to Yes or a DBM-D, DBM-F, DBM-I, DBM-S, or DBM-V is installed.
DBM SW ver:	The software/firmware version residing on the 2-wire or 4-wire Switched 56, ISDN, V.32, or V.34 DBM.
DBM Rate: (Appears if DBM installed)	Value set for DBM Rate(Kbps) configuration option; the rate is the DBM's aggregate speed.
DBMtyp: *xxx yy.y z* (Appears if DBM installed)	Type of DBM installed: *xxx* can be: **F** (V.34 or DBM-F), **I** (ISDN or DBM-I), **V** (V.32 or DBM-V), **2wS** (2-wire Switched 56 or DBM-D), or **4wS** (4-wire Switched 56 or DBM-S) *yy.y* indicates the DBM's maximum speed *z* indicates the DBM Primary Core option is enabled; displays **P** if the Primary Core is enabled.
MUX Card:	TDM or MCMP. The type of circuit card installed.
MUX App:	Currently configured application of TDM or MCMP. Possible values are: TDM, MCMP, CBrdg (central-site bridge), EBrdg (extended bridge), and None (TDM or MCMP circuit card disabled)
MUX SW ver:	Software version residing on the TDM or MCMP circuit card.
App Modul:	ASPEN. Allows Single-Port Async/Sync operation.
	CISC or 64CC. **CISC** when the Clear Channel with Integrated Secondary Channel chip is present. **64CC** when the CISC chip is not present.
	LPDA-2. Appears when the SNA Diagnostic Interface option is enabled.
	XLOOP. Provides enhanced DDS mode.

Backup Branch

The Backup (**Bckup**) branch appears when the configuration option Network Interface (**NetIntf**) is set to AggSw. The DSU provides an internal aggregate data stream for diagnostics and framing on the alternate V.35 or EIA-232 interface of Port 1. The aggregate port can be connected to an external dial backup unit (DBU).



For additional use of the Backup branch, refer to the TDM/MCMP/Digital Bridge Options Supplement, Document No. 3610-A2-GB48, and the DBM Options Supplement, Document No. 3610-A2-GB49.



Test Branch

The **Test** branch provides extensive testing capabilities for the DSU, the DDS circuit, the DBM, and the backup circuit. When the tributary DSU receives a test request from the control DSU, the DSU aborts any locally initiated test in progress.

For Test branch functions with a DBM installed, see the DBM Supplement, Document No. 3610-A2-GB49.

> **NOTE**
>
> Running a test can affect your application data or may cause your application session to be dropped depending upon the protocol, front-end processor, and time-out parameters. No data or acknowledgment messages will be transmitted while the test is in progress.

Abort

Abort allows you to stop a test that is running. The DSU is not allowed to run any other test until the test in progress is aborted.

There are two selections for aborting a test:

- **Subn** (Subnetwork) displays only at the control DSU. This selection terminates any test running at the control DSU or at a tributary DSU or DBM associated with the control.
- **Selective** terminates whatever test is in progress at the local DSU.

After selecting either Selective or Subn, the test terminates and the front panel displays **Command Complete**.

Device Test

Device (**Devic**) Test is an internal self-test. If a DBM is installed, the DBM must be in Idle mode.

If a network loopback is in effect when you initiate a Device Test, the test will not run and **Abort** appears on the second line on the front panel.

If the DSU fails the test,

- The second line displays **Fail**.
- The Alarm (**Alrm**) status indicator lights.
- The failure appears in the DSU's Health and Status report.

The Alarm indicator remains lit and the failure appears in the DSU's Health and Status report until a Device Test ends with **Pass**. Until then, you can proceed but you must be aware that the DSU may not function properly.

Loopback

Loopback (**Lpbk**) provides four loopback tests:

- Local Loopback (LL)
- DTE Loopback (DTE)
- Digital Loopback (DL)
- Remote Digital Loopback (RL)

Figures 3-3 and 3-4 show where each loopback occurs on the circuit. All loopbacks are labeled based on the control DSU. Refer to the figures as you read about loopbacks.

Local Loopback

Local Loopback (**LL**) is session-disruptive; performing the test disrupts data. In Local Loopback, the DTE may run a test to determine if the DTE to DSU connection and the DSU itself are functioning properly. The DSU must be connected to the DTE, but the network connection to the DSU is not required for this test.

Once the loopback test begins, the message **Command Complete** appears. When a Local Loopback is requested of an inactive core, it has no effect since the data from the DTE port is routed through the active core.

While the DSU is in Local Loopback, any data transmission from the DTE is returned as received data. An operator can send a test pattern and verify correct reception of the test. The DSU does not monitor this testing.

DTE Loopback

DTE Loopback (**DTE**) loops back the data path at the DTE/DCE interface on a per-port basis without affecting the operation of the remaining ports. Once the loopback test begins, the message **Command Complete** appears.

Digital Loopback

Digital Loopback (**DL**) allows manual testing of the remote end of the circuit. For example, a Digital Loopback may be required to complete an external bit error rate test (BERT) from the remote DSU. The local DSU receives test data, loops it back to the transmitter before the DTE interface, and returns it to the network.

Digital Loopback can also be initiated by receiving a V.54 pattern that starts a Digital Loopback. For point-to-point configurations, enable configuration options V.54 Lpbk (V.54 Loopback – Table 3-2) and RespondRDL (Respond to Remote Digital Loopback – Table 4-4).

Once the loopback test begins, the message **Command Complete** appears. The control DSU can send a Digital Loopback to a multipoint tributary and perform a Remote Digital Loopback on the multipoint tributary. A Digital Loopback cannot be initiated from a multipoint tributary.

Remote Digital Loopback

Remote Digital Loopback (**RL**) supports testing by an external device, such as a protocol analyzer connected to the local DSU's DTE interface. Data input is sent to the remote DSU and returned for error detection.

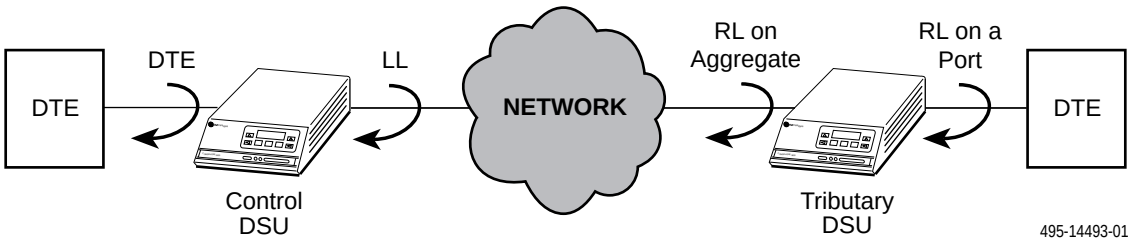


Figure 3-3. Loopbacks, Example 1

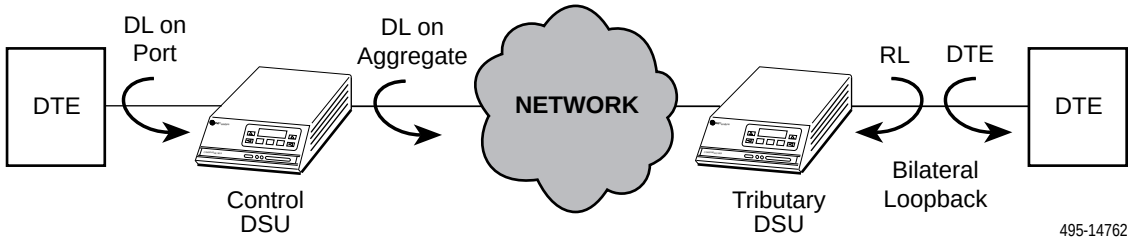


Figure 3-4. Loopbacks, Example 2

In Remote Digital Loopback, the local DSU (control or tributary) puts the remote DSU into Digital Loopback. A control DSU can originate Remote Digital Loopback on a point-to-point or multipoint network. A tributary DSU can originate Remote Digital Loopback in a point-to-point network only.

When a DSU (control or tributary) originates Remote Digital Loopback, both the originating DSU and the targeted DSU enter Test mode. No other test can be run at the originating DSU or the targeted DSU until the Remote Digital Loopback is aborted.

The Remote Digital Loopback command is not available when the LPDA-2 configuration option is enabled. Once the loopback test begins, the message **Command Complete** appears. The DSU does not generate the results of the test.

Bilateral Loopback

Bilateral Loopback combines Digital Loopback and DTE and operates simultaneously in the same DSU. For point-to-point configurations, use the Bilateral Loopback (Bilat Lpbk) configuration option from the General (Gen) configuration option set (Table 4-4).

Once the loopback test begins, the message **Command Complete** appears. If the Bilateral Loopback configuration option is activated, requesting a Remote Digital Loopback (RL) or Digital Test (DT) automatically initiates a DTE Loopback. A Digital Test (DT) starts a Remote Loopback which causes a Bilateral Loopback at a remote site.

Digital Test

The Digital Test (**DT**) checks the functionality of a pair of DSUs or DBMs and the data circuit between them.

The Digital Test uses the local DSU's test pattern generator. In a multipoint network (where only a control DSU can originate a Digital Test), tributary DSUs not involved in the test are placed in Test mode for the duration of the test.

The Digital Test command is not available when the LPDA-2 configuration option is enabled.

To review the results of the test, press ↑ and select Display (Dspl). When using the front panel, press the ▻ key to scroll through the results shown in Table 3-4. The Clear (Clr) selection resets the counter to zero.

Table 3-4
Digital Test Results

Results	Information Displayed
Time:	Running test timer.
Tot Error:	Running count of bits in error. Max displays if the maximum error count of 64000 has been reached.
Err Secs:	Running count of errored seconds.
Run on:port *nn*	The port number displays if this test was not run on an aggregate data path.

The local DSU transmits the test pattern over the network to the remote DSU; the user inputs the length of time.

During the test, the TXD, RXD, and RTS LED indicators show the states of the leads at the DTE interface. At the conclusion of the test, the local DSU releases the remote DSU from Digital Loopback.

When the test is complete, the top line displays **Final** instead of **Active**.

End-to-End Test

The End-to-End (**EE**) test analyzes a control and a tributary DSU or DBM and the network circuit between them in both directions independently. It transmits fixed packets (or blocks) of data between DSUs or DBMs.

The test determines the direction of the data transmission problem if the circuit is the cause. If an End-to-End test is run, the in-band secondary channel transport communications are disrupted.

To review the results of the test, press ↑ and select Display (Dspl). When using the front panel, press the ▻ key to scroll through the results shown in Table 3-5.

When the test is over, the top line displays **Final** instead of **Active**. The Clear (Clr) selection resets the timer to zero.

Table 3-5
End-to-End Test Results

Results	Reported By*	Information Displayed
Time:	Local and remote DSU/DBM	Running test timer.
Tot Block:	Local and remote DSU/DBM	Number of blocks completed.
Rx Blk err:	Local and remote DSU/DBM	Number of incoming blocks with errors detected, indicating a fault in the incoming transmission path.
Tx Blk err:	Local and remote DSU/DBM	Number of blocks with errors detected at the remote DSU, indicating a fault in the outgoing transmission path.
Rx TimOuts:	Local DSU/DBM only	Number of blocks that were not received or acknowledged by the remote DSU or DBM.
* Local refers to the test initiator.		

Bit Error Rate Test

The Bit Error Rate Test (**BERT**) is a session-disruptive test that transmits a pseudo-random pattern (set for Standard or AT&T). It is used to analyze the network circuit. The results can be monitored by simultaneously executing a BERT in the local and remote DSUs. The Bit Error Rate Test is designed for point-to-point networks only; use the Digital Test for multipoint networks.

The test continues until aborted from the front panel or NMS. This test can be run on an aggregate or per-port basis. When run on an aggregate basis, in-band secondary channel transport communications are disrupted.

To display the results of the test, press ↑ and select Display (Dspl). The results are shown in Table 3-6. To clear the results of the test and clear the counters to zero, select Clr.

Table 3-6
Bit Error Rate Test Results

Results	Information Displayed
Time:	Running test timer.
Tot Error:	Running count of bits in error; Max, if the maximum error count has been reached, which is 64000.
Err Secs:	Running count of errored seconds. Errored second is at least one error is detected during a 1-second time period.
Run on:port *nn*	Port selected for testing.

Lamp Test

The **Lamp** test is a test of the status indicators (LEDs) and the LCDs. Any indicator that does not flash is not functional.

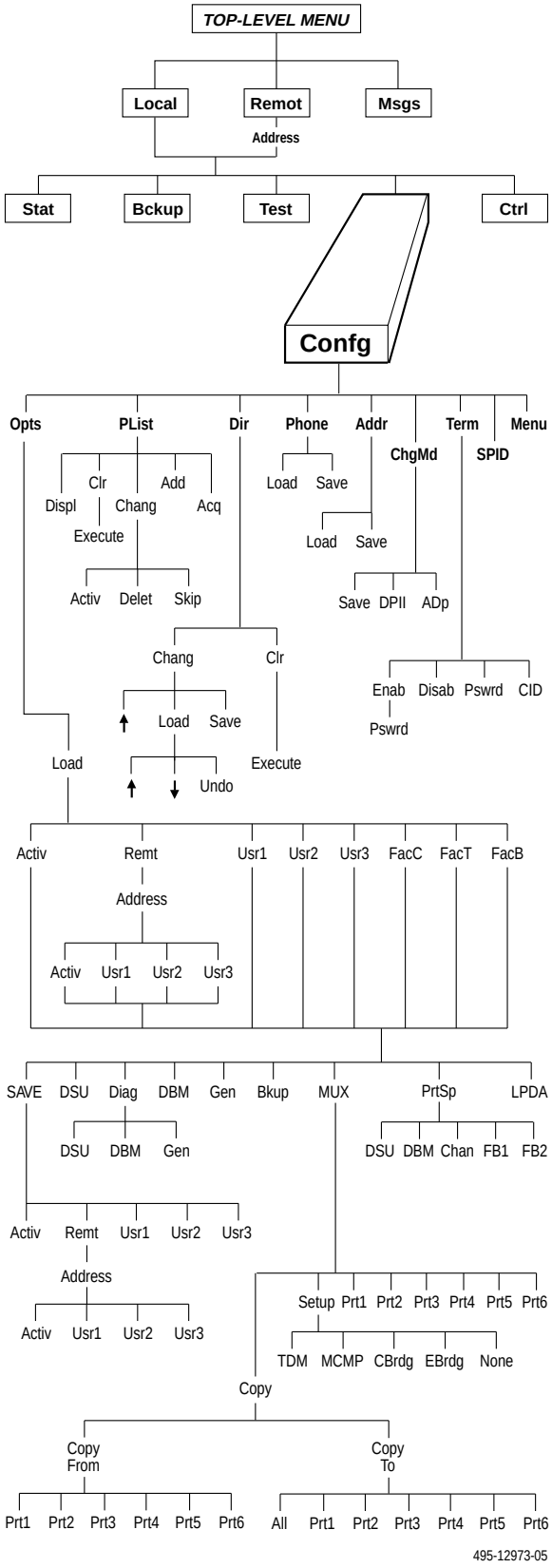
- If all the indicators on the Model 3610 front panel are flashing, then all LEDs are functioning.
- In a COMSPHERE 3000 Series Carrier, the indicators on the SDCP remain ON.
- The LCD on the front panel or SDCP alternately flashes solid blocks, followed by a character set display.

Pressing any key ***except*** the ⏏ key stops the LCD portion of the Lamp test and returns you to the DSU Test menu to abort the test. Once the test aborts, the LCD and LEDs stop flashing.

Configuration Branch

The Configuration (**Confg**) branch allows you to configure or customize the DSU and its options to:

- Fit site requirements.
- Enter and change telephone numbers (if a DBM is installed).
- Specify the protocol used by a connected NMS.



Options

Options (**Opts**) allows you to save, copy, and/or change DSU, Diagnostic, DBM, General, Backup, MUX, and LPDA-2 configuration options.

The selections on the **Load from** menu are sets or libraries of configuration options stored in the DSU's memory. See Table 2-1 in Chapter 2 for default configuration option set content descriptions.

From the **Load from** menu, if you select FacC, FacT, FacB, Activ, Usr1, Usr2, or Usr3:

- Configuration option values load into a working buffer ready to be modified.
- The **Edit/Save** submenu then appears. If SAVE is not displayed, press ↑ until SAVE appears. Select SAVE if you want the option set run through a verification routine. The result is a configuration error message or the message **Command Complete**.

Refer to Table E-4 for Configuration Error Messages.

Usr1, Usr2, and Usr3 are storage areas for user-defined configuration option sets. Use these storage areas to:

- Maintain predetermined option sets for specified DSU, Diag (DSU, DBM, and Gen), DBM, Gen, Bkup, and LPDA configurations.
- Permit the rapid loading of an entire configuration option set after changes have been saved for reuse.
- Save the time required to change each individual configuration option.

Selecting Remt from the **Load from** menu results in configuration options appearing based on hardware installed at the remote location.

Remt requires a remote address. The remote address selections range from 1 to 255 (1 to 80 for DPII protocol). If you want to save configuration options to all of your remote devices, select the broadcast address (**192**). The configuration options changed are broadcast to the entire network once the configuration options are saved.

When downloading configuration options, it is recommended that the control and tributary DSUs have the same firmware version, or that the control has the highest version.

Poll List

Poll List (**PList**) maintains or changes a DSU's poll list. A poll list identifies all DSUs or DBMs one level downstream in the network.

- A control DSU includes its tributary DSUs, or DSUs and DBMs, in its poll list.
- A tributary DSU includes any extended control DSUs, DBMs, or APL modems that are attached to the diagnostic channel.

Poll List is only available in the Local branch and only to a DSU with nondisruptive or mixed diagnostics. A poll list can be:

- Displayed (**Displ**)
- Cleared (**Clr**)
- Changed (**Chng**) – Activate, delete, or skip.
- Added (**Add**) – Adds the local address to the poll list; for NonDisruptive MCMP only.
- Acquired (**Acq**) – Automatically generated using the Acquire Poll List (acpl) command. Abort is available to stop the Acq command.

Command Complete appears when the poll list is completed.

Directory

Directory (**Dir**), the DSU's dial backup directory, can store up to ten telephone numbers (dial strings) so the DBM can call other DBMs or modems. Refer to Document No. 3610-A2-GB49 for more DBM information.

Phone

Phone (**Phone**), the local telephone number feature, stores the local DBM's telephone number. The local telephone number is available in the Local branch only if a DBM is installed. It is always available in the Remote branch, even though the remotely addressed DSU may not have a DBM installed.

Network Address

Network address (**Addr**) is the network address of the local DSU, and is available from the Local branch. The DSU's network address is a number. The DBM automatically acquires an address equal to the DSU's plus 1; it is recommended that you assign odd numbers to DSUs.

Change Protocol Mode

Change Protocol Mode (**ChgMd**) allows you to select the network management protocol from the front panel. The protocol selections are:

- Advanced Diagnostic (ADp) used by the 6700 and 6800 Series NMSs
- DATAPHONE II (DPII) used by the 6800 Series NMS and DATAPHONE II System Controller, Diagnostic Console, and Network Controller

ChgMd is not available to a tributary DSU or DBM configured for disruptive or no diagnostics (Diag Type = Disr or None), or a single-port multipoint tributary DSU.

Both the control and tributary DSUs must be configured for the same protocol. In a carrier-mounted configuration, the SDU must be configured for the same protocol as the DSU.

Async Terminal

Async Terminal (**Term**) is available for the Model 3610 standalone DSU with firmware version 6.3*x* or greater. The async terminal feature allows you to manage the DSU through full menu and selection displays.

Once enabled, the async terminal operates exactly as the front panel, but without the limitation of the 2-line, 16-character LCD. Refer to Appendix C, *Async Terminal Operation.*

SPID

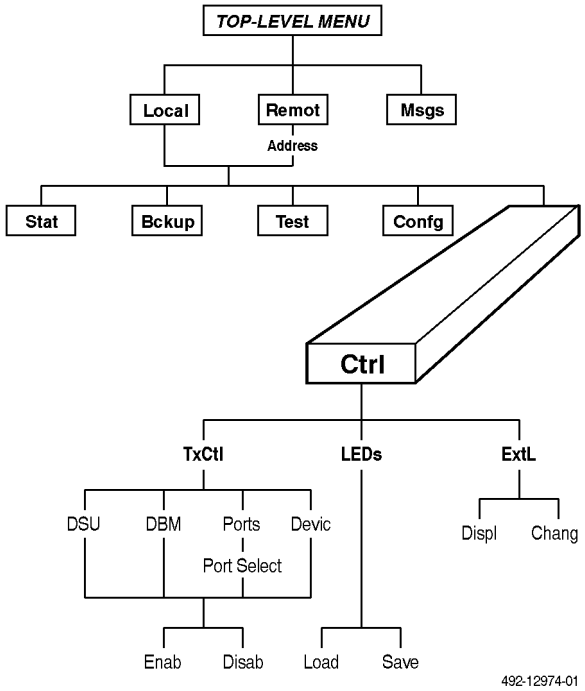
Service Profile Identifier Screen (**SPID**) provides access to two Bearer Access Channels: B1 and B2. This feature applies only to the ISDN DBM.

Menu

Menu (**Menu**) allows you to disable Full mode. Full mode displays all menu selections based on installed and user-configured configuration options. When disabled, an abbreviated set of selections appears. Refer to Appendix B, *Configuration Worksheet.* The rows of shaded configuration options on the worksheets do not display when Full mode is disabled.

Control Branch

The Control (**Ctrl**) branch allows you to enable or disable the DSU's transmitter, as well as the DBM's, and to display/change the status of the general purpose external DTE leads. A DBM can be disabled if it is addressed from the Remote branch.



Transmitter Control

Transmitter Control (**TxCtl**) allows you to enable or disable the DSU's transmitter (DDS core).

When the DSU transmitter is disabled:

- A disabled DSU responds to tests. Aborting a test clears the test but the unit remains disabled.
- A DSU in test clears the test when it receives a disable or enable command.
- If an enable command is sent to a control from the NMS or the local front panel, all disabled tributaries are enabled; all tributaries in test are restored to Data mode.

When the local DBM is disabled, the DBM does not originate or answer any calls until enabled.

LEDs

The **LEDs** selection is only available from the Local branch. This selection allows you to monitor any port or the aggregate data stream at any given time. The selected port's lead activity is reflected in the front panel status indicators, including TXD and RXD.

External Leads

External Leads (**ExtL**) allows you to display the state of four general-purpose leads on the EIA-232-D/V.24 Port 1 interface:

- Pins 12 and 13 for output (control leads)
- Pins 19 and 23 for input (alarm leads)

If the configuration option External Leads (Ext Leads) is set to ExtLd, you can change the state of the two output leads from the front panel or a 6700 or 6800 Series NMS. When the DSU's diagnostic protocol is ADp and the CCN by External Leads (CCN by EL – Table 4-4) configuration option is enabled, a control DSU reports any changes to the four leads to the 6700 or 6800 Series NMS as part of its health and status poll response.

Displaying External Leads

Display (**Displ**) allows you to view the external lead states. When you select Display, the External Leads status report appears showing the current status of the general-purpose external leads on the EIA-232-D/V.24 interface.

- Input leads A (Pin 23) and B (Pin 19):

  Off (_) when voltage on lead is less than +0.8V.

  ON (‾) when voltage on lead is more than +2.2V.

- Output leads A (Pin 12) and B (Pin 13):

  Off (_), –12V is applied to lead.

  ON (‾), +12V is applied to lead.

Change (**Chang**) allows you to change the state of the two output leads. Examples include changing a lead to signal a console operator or resetting a remote computer.

Remote Branch

The Remote (**Remot**) branch allows front panel access to remote units.

- Point-to-point configuration: access DSU at the other end.
- Multipoint configuration: enter DSU remote addresses and access each unit.

When the Remote branch is accessed, the front panel displays the local menu tree with the remote unit's data. When changing configuration options:

- At the **Load from** menu, select **Activ** to obtain the remote unit's active configuration.
- From the **Edit/Save** menu, press **Save to** and then select **Activ**.

The remote end starts responding after SAVE is pressed. After selecting SAVE, the responding message is Pass or Fail. Use the Remote branch to run tests or communicate with a tributary. Refer to the *Options* section in this chapter for further details.

Front Panel Security

NOTE

This section can be removed to prevent unauthorized persons from learning about security access levels and their selection.

The Model 3610 front panel and Model 3611 shared diagnostic control panel (SDCP) have two levels of security access, as shown in Table 3-7. Refer to Appendix A to view the functions on the menu tree.

Table 3-7
Security Access Levels

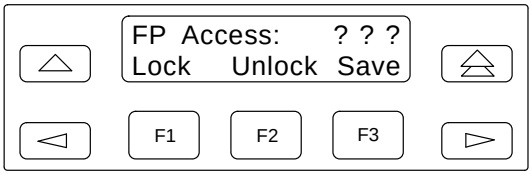
Security Access Level	Functions Available
Unlock	All
Lock (Read Only)	Local branch only: • Status branch • Configuration branch displays • Control branch: Display External Leads only

The 3600 Series DSUs are shipped from the factory with the security level set to Unlock. When the front panel is locked, only the Local branch appears on the control DSU.

NOTE

To lock or unlock the front panel, the async terminal must be disabled.

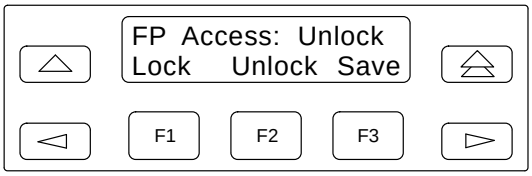
If the security has not been set on the front panel before, the following appears:



To select the security level:

Procedure

1. Press the ⏢ key to go to the top-level menu.
2. Press the ◅ and ▻ keys simultaneously for three seconds. The following menu appears:



3. Select the security level:

   Lock – To restrict control (F1)

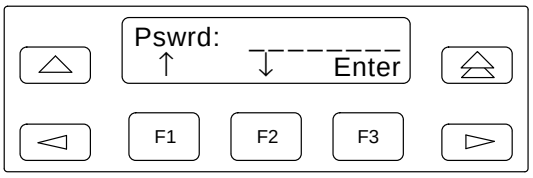
   Unlock – To provide full access (F2)

4. Press **Save** (F3).

Terminating Async Terminal Control

To return control of the DSU to the front panel when async terminal (**Term**) is enabled:

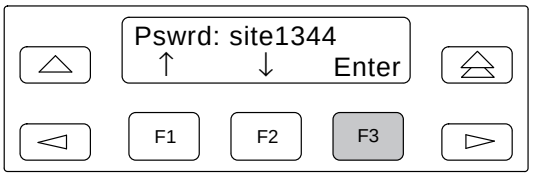
1. Press the ◁ and ▷ keys simultaneously for three seconds. The following menu appears:



2. Enter the password. See Appendix C, *Async Terminal Operation*, for valid password characters.

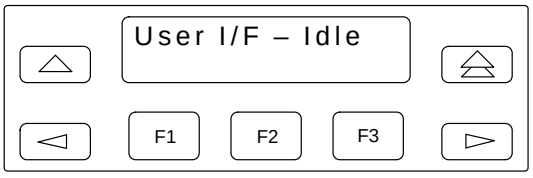
   Enter the password characters by using the F1 (↑) and F2 (↓) keys to select available characters, and the ◁ and ▷ keys to move the cursor to the left or right. For this example, site1344 is the password.

> **NOTE**
>
> Any alpha character entered in the password field must continue to be entered with the same upper- or lowercase.

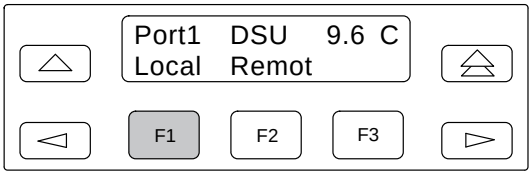


3. Select **Enter** (F3).

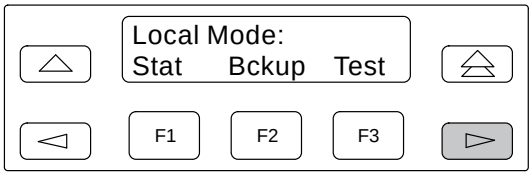
   If you enter an *invalid* password, the following screen appears.



   If a *valid* password is entered, the front panel returns to the top-level menu.

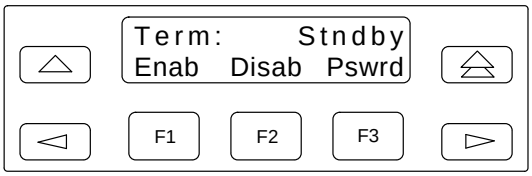


4. Press F1 for Local.



5. Press the ▷ key until Confg appears; select **Confg**.

6. Press the ◁ key until Term appears; select **Term**. The following screen appears.



7. Select **Disab**.

   If no key is pressed for 5 minutes, the front panel redisplays **User I/F – Idle** and the keypad locks again.

> **NOTE**
>
> To terminate the Async Terminal connection, select Disab. The speed changes from 9.6 kbps to the NMS interface of 1.2 kbps.

Configuration Option Tables 4

Overview

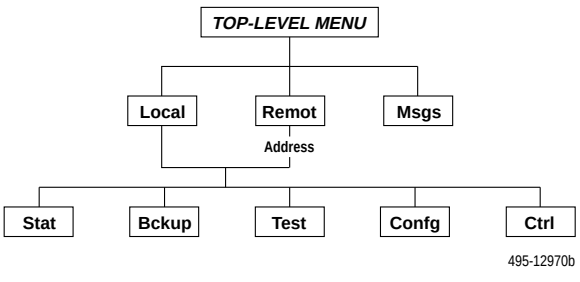
After the DSU and any options are installed, set the software configuration options by accessing the Configuration (**Confg**) branch of the menu. Refer to the menu tree in Appendix A and the worksheet in Appendix B while planning configurations.

> **NOTE**
>
> Configuration options appear or are filtered based on hardware installed and options selected.

Load and save a set of factory defaults before changing any configuration options. Refer to the *Saving and Changing Configuration Options* section in Chapter 2.

After changing configuration options, save the changes to Usr*n*. For additional details, refer to:

- Table 2-1, Default Configuration Option Sets.
- Table E-4, Configuration Error Messages, for messages that may appear after pressing SAVE.



Configuration Option Tables

This section contains a configuration option table for each functional group or option set within the Configuration (**Confg**) branch of the menu that is specific to DSU and SNA Diagnostic Interface applications. Each table lists all the configuration options available in the option set. The tables are in the order in which they appear on the Confg branch of the menu.

- DSU Configuration Options (Table 4-1)
- Diagnostic DSU Configuration Options (Table 4-2)
- Diagnostic General Configuration Options (Table 4-3)
- General Configuration Options (Table 4-4)
- LPDA-2 Configuration Options (Table 4-5)

For configuration options supporting TDM, MCMP, and digital bridging, refer to Document No. 3610-A2-GB48.

Configuration options supporting DBMs are in Document No. 3610-A2-GB49.

Configuration Option Tables Format

The tables show the following configuration option information:

- Name of the configuration option followed by a colon (:) and the factory default setting.
- All selectable options.
- Description of the configuration option.
- Description of each selectable setting.

Table 4-1
(1 of 3)
DSU Configuration Options

Rate(Kbps): 9.6 **Next 64CC 64L 56 38.4 19.2 9.6 4.8 2.4 Prev**
DSU Data Rate.[1] Data rate in kbps on the digital circuit. Sets the data rate of the DDS circuit interface. Not valid with EBrdg. **NOTE:** Control and tributary DSUs set to 64CC or 64L must be set to the same rate. **64CC** – 64 kbps Clear Channel on a 72 kbps circuit. **64L** – 64 kbps LADS operation. **56 to 2.4** – Selects a DSU data rate between 56 and 2.4 kbps.
PrtSp(Kbps): 9.6 **Next 64 56 48 38.4 32 28.8 26.4 24 21.6 19.2 18.8 18 16.8** **14.4 12 9.6 9.2 8.4 7.2 4.8 4.4 4 2.4 2 1.2 Disab Prev**
Port Speed.[2] Sets the speed of the DTE port interface. The port speed may be set to any value less than or equal to the Rate(Kbps) configuration option value. If the value is set less than the DDS rate, the DSU performs rate adaption. **NOTE:** When the Async→Sync configuration option is enabled, the following port speeds will not appear: 32, 26.4, 24, 18.8, 18, 9.2, 8.4, 4.4, 4, and 2 kbps. **64 to 1.2** – Selects the DTE's port speed. **Disab** – Sets the port speed to 0 (zero) bps.
TxClkSource: DDS **Next Int RXC Ext Prt1 Prt2 Prt3 Prt4 Prt5 Prt6 DDS Prev**
Transmit Clock Source.[3] Specifies the transmit timing source for the DSU. Not valid with EBrdg. **Int** – Internal clock source. Timing is provided by the DSU. **RXC** – Receive clock source. The DSU generates transmit timing from the receive data signal. This choice is provided for LADS configurations and differs from the DDS selection when running tests. **Ext** – External clock source. The DSU is timed by the external Transmit Timing lead on Port 1 only. **Prt1 to Prt6** – Selects Ports 1 through 6. The DSU is timed by the external Transmit Timing lead on the selected port. **DDS** – DDS Network. The DDS network is the timing source for the DSU.
[1] If operating in MCMP mode (MUX Funct is set to MCMP), the Rate(Kbps) default is 56. [2] Port speed does not appear if TDM or MCMP hardware is installed and MUX Funct is set to TDM, MCMP, EBrdg, or CBrdg. Instead, this entry is made in the Port Speed (PrtSp) Configuration Options for DSU with TDM or MCMP. [3] In TDM and MCMP mode, the External clock source is replaced with Ports 1 – 6. Selecting a port number results in the TDM operating with timing provided by the DTE at the selected port (EIA-232 Pin 24 or V.35 Pins U and W). For CBrdg mode in full backup and EBrdg mode, timing is set using the Bridge Timing configuration option.

Table 4-1
(2 of 3)
DSU Configuration Options

Msg Clamp: Enab **Next Enab Disab Prev**
Message Clamping. Controls the data leads when disruptive diagnostic tests and commands are received from the remote DSU. This configuration option applies to both the DSU and DBM. When Disr Type is set to 3600e (see Table 4-2), as required for 64CC service, and Msg Clamp is set to Enab, the DSU sends the escape header portion of a diagnostic message to the DTE before detecting an escape header and invalid data. However, the DSU does clamp the ensuing command portion of the message. **Enab** – Received Data (RXD) is held to MARK and LSD is turned Off during diagnostic exchanges. This prevents diagnostic messages from reaching the DTE interface. **Disab** – DSU passes diagnostic messages to the DTE interface. Use the Disable setting if the remote DSU is configured for switched RTS (RTS Control set to DTE, Table 4-4).
TxElasStor: Disab **Next Enab Disab Prev**
Transmit Elastic Store.[4] Elastic store hardware consists of a transmit buffer on the DSU's transmitted data (TXD) lead. Serial data from the extended circuit is clocked into the DSU's elastic store using a clock provided by the DTE's receive clock lead. The DSU uses its own system timing to clock data out of the buffer. **Enab** – Enable this configuration option if you have an extended data network. Transmit Elastic Store resets upon power-up, overflow, or after the request-to-send lead makes an Off-to-ON transition. Use TxElasStor to minimize the effects of clocking differences from different sources. **Disab** – Disable this configuration option if you do not have an extended data network.
RxElasStor: Disab **Next Enab Disab Prev**
Receive Elastic Store. Receive Elastic Store hardware consists of a receive buffer on the DSU's received data (RXD) lead. The Receive Elastic Store configuration option is supported in single port DSUs configured for disruptive diagnostics. **Enab** – Enable this configuration option if you have an extended network, and when interfacing to a DTE or DCE that provides its own clock source and supports the Transmit Elastic Store configuration option. **Disab** – Disable this configuration option if you do not have an extended network.
19.2 PowrLvl: +6 **Next +6 0 –10 Prev**
19.2 kbps Power Level. Selects the appropriate power level, in decibels, for operation at 19.2 kbps. This configuration option appears when Rate(Kbps) is set to 19.2 kbps. **+6** – For DDS network service. **0** – For alternate DDS service. **–10** – For LADS operation.
[4] In TDM or MCMP mode, the DSU's Transmit Elastic Store settings are ignored; instead, this configuration option is selected on a per-port basis in the MUX submenu. In Bridge mode, MUX Funct is set to CBrdg, the Transmit Elastic Store configuration options for Port 1 are ignored (automatically disabled).

Table 4-1
(3 of 3)
DSU Configuration Options

64KScramblng: Off **Next On Off Prev**
64 kbps Scrambling. Controls the data scrambler used with 64 kbps Clear Channel operation. Data scrambling suppresses the possible simulation of network control codes by application data. This configuration option appears when Rate(Kbps) is set to 64CC, and must be the same at both the local and remote DSUs. **On** – Enables data scrambling. **Off** – Disables data scrambling.
64KLatchLpbk: On **Next On Off Prev**
64 kbps Latching Loopback. Controls the DSU's response to the network latching loopback sequence on 64 kbps Clear Channel operation. This configuration option appears when Rate(Kbps) is set to 64CC. **On** – DSU responds to the network latching loopback command. ON is required for compliance with AT&T Technical Reference 62310 – 1987. **Off** – DSU ignores the network latching loopback command.
NetIntf: Disab **Next AggSw Forc Disab Prev**
Network Interface. When set to AggSw, the DSU bridges aggregate data over the alternate Port 1. If the DTE Port configuration option is set to EIA-232 (Table 4-4), the aggregate data is bridged to the V.35 interface. If the DTE Port configuration option is set to V.35, the aggregate data is bridged to the EIA-232 interface. Not valid with digital bridging. **AggSw** – Enable for aggregate switch backup. Data can be sent over alternate Port 1 and the DDS line simultaneously. An installed DBM must be disabled to select this configuration option. When Answer External Dial Backup is enabled (Table 4-4), the alternate port is active and the DDS line is inactive. **Forc** – Forces Aggregate Switching to ON. **Disab** – Alternate Port 1 not in use.
NetI Timing: NetI **Next Int NetI Prt1 Prt 2 Prt3 Prt4 Prt5 Prt6 Prev**
Network Interface Switch Timing. If NetIntf is set to AggSw or Forc with AnswerExtBU enabled this configuration option determines where timing is obtained. Not valid with EBrdg. **Int** – Timing is generated internally by the DSU. **NetI** – Timing is taken from the network. **Prt1 to Prt6** – Timing is taken from the port. Not available in MCMP mode. Ports 2 through 6 are available for TDM mode, if installed.
V.54 Lpbk: Disab **Next Enab Disab Prev**
V.54 Loopback. Enables V.54 Loopback operation. This configuration option is supported for point-to-point configurations. The V.54 sequences are generated and detected on Port 1. **Enab** – Enable if the DTE generates V.54 loopback sequences or if the 3600 Series DSU is communicating with a non-AT&T DSU that supports V.54 signaling. **Disab** – Disable if the DTE does not support V.54 signaling or other DSUs do not support V.54 signaling.

Table 4-2
(1 of 2)
Diagnostic DSU Configuration Options

Diag Type: Disr
Next NonD Disr Mixed None Prev

Diagnostic Type. Defines the diagnostic interaction between the control and tributary DSUs. All DSUs on the same circuit must be the same.

NonD – Nondisruptive Diagnostics. An in-band secondary channel transport carries diagnostics data between the control and the tributary DSUs.

Disr – Disruptive Diagnostics. The same (primary) channel that carries user-transmitted data between the control and the tributary DSUs also carries diagnostic data. Select this mode for compatibility with earlier releases that use disruptive diagnostics. Valid for EBrdg.

Mixed – Mixed mode supports nondisruptive health and status updates. User-initiated commands are sent disruptively. Mixed should only be selected in single-port multipoint configurations; not valid for point-to-point, EBrdg, or MCMP.

None – No diagnostic communications with remote devices; only allows local diagnostics.

2nd Ch(bps): 400
Next 100 400 800 1200 1600 Prev

In-band Secondary Channel Diagnostic Speed (in bps). Determines the DSU's diagnostic speed when you select NonD (nondisruptive diagnostics) and no excess bandwidth is available for in-band secondary channel transport operation. This configuration option only appears when Diag Type is set to NonD.

The selection entered here also allocates a portion of the DSU port bandwidth to the in-band secondary channel transport. For example:
- DSU port speed and DDS line speed are both set to 9.6 kbps (9600)
- Diagnostic Type entered is NonD with diagnostic speed set to 400
- Diagnostic speed of 400 is subtracted from the original 9600. In this example, the DSU port speed is 9.2 kbps (9200).

100 to 1600 – Refer to the following list for valid diagnostic speeds.

NOTE: When the TDM is operating at a line speed **greater than** 19.2 kbps or with a multipoint configuration, 100 bps is **not** a valid in-band secondary channel transport rate.

If the DSU Rate(Kbps) is equal to Port Speed, or underspeed port speed and sum of the TDM ports is equal to the aggregate speed on the DSU:	Valid diagnostic speeds are:
1.2	100, 400
2	100, 400
2.4	100, 400, 800
4	100, 400, 800
4.8	100, 400, 800, 1200, 1600
7.2	100, 400, 800, 1200
8.4	100, 400, 1600
9.6	100, 400, 800, 1200, 1600
12	100, 400, 800, 1200
14.4	100, 400, 800, 1200, 1600
16.8	100, 400, 800, 1200
18	100, 400, 1200
19.2	100, 400, 800, 1200, 1600
28.8	100, 400, 800
32	100, 400, 800, 1600
38.4	100, 400, 800, 1200, 1600
48	100, 400, 800, 1200, 1600
56	100, 400, 800, 1600
64	100, 400, 800, 1600

Table 4-2
(2 of 2)
Diagnostic DSU Configuration Options

Disr Type: 3600e **Next 2500 2600 3600s 3600e Br56 Prev**
Disruptive Diagnostic Type.[1] Defines the diagnostic interaction between the control and tributary DSUs. It must be set consistently for all DSUs on the same circuit when Diag Type is set to Disr, NonD, or Mixed. Regardless of the diagnostic type enabled, aggregate tests are still sent disruptively. **NOTE:** If the DSU Rate(Kbps) is set to 64CC, the DSU defaults to Disr Type 3600e and no other configuration options will appear for this configuration option set. **2500** – Only for point-to-point circuits when the control is either a 2500 or 3500 Series DSU, or the tributary is a 2500 Series DSU. Digital Loopback and Digital Test commands are sent using the 2500 signaling. All other remote commands use 2600 signaling. When 2500 is selected and AutoRestor is enabled, RespondRDL (Table 4-4) must be enabled for automatic restoration to work. **2600** – Used in mixed networks when the control is a 2600 Series DSU and the tributaries are 2600/3500/3600 Series DSUs, or when the control is a 3600 Series DSU and at least one tributary is a 2600 or 3500 Series DSU. This selection is not available when a Switched 56 DBM is installed. **3600s**[2] – Used in circuits containing only 3600 Series DSUs. This configuration option performs full 3600 diagnostics between control and tributary DSUs. It utilizes Switched CMI/DMI mode (control mode idle/data mode idle) signaling to ensure protocol independence with primary data and to trap diagnostic messages in DSUs. It is recommended that this mode be used when the control and tributary DSUs are configured for RTS Cntrl: FrcOn (Table 4-4). Switched-carrier operation can be supported; Msg Clamp (Table 4-1) must be disabled. This selection is host protocol independent, but not as fast as 3600e described below. This selection is not available when a Switched 56 DBM is installed. **3600e** – An alternate diagnostic protocol for circuits containing only 3600 Series DSUs. It is the diagnostic type protocol used on 64 kbps CC and backup PSTN links. This configuration option performs full 3600 diagnostics between control and tributary DSUs. An escape mode signaling (special data pattern) is utilized for minimum disruptive effect, or when the network does not support CMI network codes. **Br56** – Required for aggregate switching and digital bridge configurations when a Switched 56 DBM or ISDN DBM is installed or a V.34 DBM is set to a data rate greater than 14.4 bps.

[1] In Bridge mode, the Disr Type configuration option is forced to 3600e.

[2] Do not use 3600s if you have a point-to-point tributary with disruptive diagnostics, no rate adaption, and RTS configured with DTE.

Table 4-3
(1 of 3)
Diagnostic General Configuration Options

Position: Cntrl or Trib **Next Cntrl Trib G2Trb Prev**
Network Position.[1] Determines the DSU's position in the network, and defines its test and diagnostic capabilities. **Cntrl** – Control. Digital bridge must be set to Cntrl. **Trib** – Tributary. **G2Trb** – This selection appears only in a DPII protocol mode. In a DATAPHONE II network, configure the outbound tributary as a G2Trb and have one DSU on its poll list. Configure other tributaries as Trib.
LinkConfig: Pt-Pt **Next Pt-Pt M-Pt Prev**
Link Configuration.[2] Determines a point-to-point or multipoint circuit. This configuration option is required for proper operation, testing, dial backup procedures, and nondisruptive diagnostics. **Pt-Pt** – Point-to-point configuration. **M-Pt** – Multipoint configuration.
Resp Period: 1 **Next 1 2 10 Prev**
Response Period. Determines how frequently the DSU sends health and status information. This applies to RTS/CTS Delay diagnostics, which is used for single-port multipoint configuration if the Diagnostic Type configuration option is set to NonD or Mixed. Although this configuration option determines how often the health and status message is transmitted, an extended RTS/CTS delay occurs each time the DTE raises or lowers RTS. Applicable to tributary DSUs and DBMs only. **1** – Tributary DSU responds with health and status information each time the DTE raises RTS. **2** – Tributary DSU responds with health and status information every other time the DTE raises RTS. **10** – Tributary DSU responds with health and status information every tenth time the DTE raises RTS.
TribTimOut: 0:10 **Next Chang Prev**
Tributary Time-out. The time (in minutes and seconds) that a DSU waits for a tributary health and status report before generating a Tributary Time-out alarm. This setting can be from 5 seconds to 10 minutes. Use this configuration option for single-port multipoint configurations when the Diagnostic Type is set to NonD or Mixed (Table 4-2). **Chang** – Set this configuration option to greater than or equal to the maximum amount of time it takes for the front-end processor (FEP) to complete its polling cycle on that circuit, multiplied by the value entered in Resp Period.
Diag Conn: CC **Next CC DC Prev**
Diagnostic Connection. Set this value to match the connection set up for the 3600 Hubbing Device connected to this DSU. Refer to the *Network Diagnostic Connection* section in Chapter 2. This configuration option is only available for a Model 3610 DSU configured as a control. **CC** – Control Channel. Set Control Channel for CC IN/DC OUT connection as the first link from NMS. **DC** – Diagnostic Channel. Set Diagnostic Channel for CC OUT/DC IN connections from the remaining tributaries.
[1] In Bridge mode, the only value available is Cntrl. [2] For a DSU loaded from FacB, or a DSU with MCMP installed and loaded from FacT or FacC, the default is M-Pt (multipoint).

Table 4-3
(2 of 3)
Diagnostic General Configuration Options

Link Delay: 0s
Next 0s 1s 2s 5s 10s 20s 50s Prev

Link Delay. Controls the additional time in seconds that a DSU or DBM waits for a response from a device one level downstream. This configuration option does not appear for a multipoint single port device.

NOTE: This configuration option only appears when Diag Type is set to NonD (Table 4-2).

If diagnostic time-outs are occurring during polling or DATAPHONE commands, increase the link delay to the next higher value.

0s to 50s – Sets the number of seconds the DSU or DBM waits for a downstream device response.

Network Delay: 0s
Next 0s 1s 2s 5s 10s 20s 50s Prev

Network Delay. Controls the additional time in seconds that a DSU or DBM waits for a response from a multilink channel. The amount of delay should be set to at least 1 second if the downstream link is MCMP.

NOTE: This configuration option only appears when Diag Type is set to NonD and only applies to ADp mode (Table 4-2).

Increase the network delay when receiving timeouts from NMS when the Fast Select configuration option is disabled, or a tributary is two or more units downstream from the control.

0s to 50s – Sets the time the DSU or DBM waits for a multilink channel response.

Packet Delay: 0s
Next 0s 1s 2s 5s Prev

Packet Delay. Controls the time in seconds that a DSU or DBM waits for a packet to complete from an NMS. This configuration option only appears for a DSU configured as a control.

NOTE: Must be used when the Model 3600 DSU's diagnostic channel operates over packet switch, satellite communications, or other facilities that provide extended throughput delays.

0s to 5s – Sets the time the DSU or DBM waits for the NMS to complete its command.

Extend Chan: No
Next Yes No Prev

Extend Main Channel.[3] For an extended network, specifies whether there is main channel connectivity between the DTE port of the tributary DSU and the DTE port of the extended control DSU. If set to Yes, DSUs propagate Test mode conditions across multiple links. Test mode does not propagate over a circuit configured for disruptive diagnostics.

Yes – Set this configuration option to Yes to extend main channel connectivity between the DTE ports of the tributary and extended DSU in an extended network. A tributary DSU sends Test mode conditions downstream, and a control DSU receives/accepts the Test mode condition.

No – Set this configuration option to No if you do not have an extended network. A control DSU does not receive/accept the Test mode condition; the condition is ignored.

[3] When in TDM mode or MCMP mode, using a multipoint single-port device, or Diag Type is set to Disr or None, this configuration option does not appear. Instead, it is displayed in the MUX Port configuration options under Port 1. Ports 2 – 6 must be set independently. See Document No. 3610-A2-GB48-40 for MUX Configuration Options.

Table 4-3
(3 of 3)
Diagnostic General Configuration Options

Upstrm Port:Prt1 **Next Prt1 Prt2 Prt3 Prt4 Prt5 Prt6 Prev**
Upstream Port.[4] If an extended control DSU has its DTE interface connected to the tributary DSU or APL modem and the configuration option Extend Chan is set to Yes, set this configuration option to the upstream port number. Select Prt1 if the tributary DSU is operating in single-port mode. This configuration option has an effect only if Diag Type is set to NonD. **Prt1 to Prt6** – Selects the upstream port number.
M-PtSymPrt:Disab **Next Enab Disab Prev**
Multipoint Symmetrical Port. This configuration option enables rate adaption in the tributary DSU to control direction on a multipoint circuit. This configuration option will not appear for a point-to-point circuit or when operating in MCMP mode. Enable this configuration option when performing multipoint rate adaption (e.g., the port speed is less than the line speed). Also enable for single-port multipoint nondisruptive diagnostics if the transmit data rate is required to match the receive data rate. This is generally the case in extended circuit applications and in multipoint applications where the tributary DSU is configured as a digital-sharing device. **NOTE:** Enable this configuration option for the control DSU and the tributaries. **Enab** – Enable this configuration option when performing multipoint rate adaption or when a multipoint network is configured for nondisruptive diagnostics and a symmetric port speed is required for proper DTE operation. **Disab** – Disables multipoint rate adaption on data from the tributary to the control DSU.
Fast Sel: Enab **Next Enab Disab Prev**
Fast Select. Fast Select is a technique used by ADp protocol or the 6700 or 6800 Series NMS. When enabled, the DSU transfers a message to a downstream device in a character-by-character format. When disabled, the DSU transfers the message to the downstream device in packet or block format. The 3800 Series Dial Modem does not support Fast Select; therefore, you must disable Fast Select in all 3600 Series DSUs between the NMS and a 3800 Series Dial Modem on an extended circuit. This configuration option does not appear if the DSU is a multipoint single-port device, if the protocol used is DPII, or if Diag Type is set to Disr or None. **Enab** – Enables the Fast Select feature. **Disab** – Disables the Fast Select feature. When disabled, all devices on the same level of the circuit must be disabled.
[4] When in TDM or MCMP mode, this configuration option does not appear. Instead, it is displayed in the MUX Port configuration options under Port 1. Ports 2 – 6 must be set independently.

Table 4-4
(1 of 6)
General Configuration Options

DTE Port: EIA232 **Next EIA232 V.35 Prev**
DTE Port. Selects the active DTE interface. The other port is the alternate Port 1. Refer to the AnswExtBU configuration option in this table and NetIntf configuration option (Table 4-1). **EIA232** – The EIA-232-D connector is typically used for data rates up to 19.2 kbps. Operation at speeds up to 64 kbps is dependent upon cable length, cable quality, and the local environment. Connector type should match the DTE. **V.35** – For all available rates at distances up to 1000 feet.
RTS Cntrl: DTE **Next FrcOn DTE Prev**
Request-to-Send Control. If set to FrcOn, the DSU is always in data mode and never sends control mode idle (CMI) as the RTS lead is forced ON. If set to DTE, the DSU sends CMI whenever RTS is Off, and data mode idle (DMI) when RTS is ON. This configuration is forced ON internally for point-to-point configurations with nondisruptive diagnostics or rate adaption. Set this configuration option to DTE for multipoint tributaries performing nondisruptive or mixed diagnostics, rate adaption, or when configuration option M-PtSymPrt is enabled. **FrcOn** – Forced On. Default for factory-loaded tributary (FacT) DSU. Keeps the RTS ON continuously, regardless of whether RTS at the DTE interface is ON or Off. Control DSUs with LPDA-2 enabled must have RTS Cntrl forced ON and CTS Cntrl set to =RTS. **DTE** – Factory-loaded control (FacC) DSU responds to RTS from the DTE. Does not appear for CBrdg or EBrdg.
CTS Cntrl: Std **Next Std =RTS Prev**
Clear-to-Send Control. Controls the CTS lead when RTS is received. **Std** – Standard. CTS follows RTS with a delay. Factory-loaded control (FacC) and factory-loaded tributary (FacT). CTS is normally controlled by the DTE's RTS lead. However, the CTS lead can be affected by the response to abnormal conditions such as no signal or test mode, as determined by the following configuration option settings: RTS Cntrl, CTS Lead, and Circ Assur. **=RTS** – Request-to-Send. CTS follows RTS with no delay. This configuration option is required for a control DSU with LPDA enabled, or a tributary DSU with LPDA enabled when in an FEP-to-FEP configuration. RTS Cntrl is set to FrcOn. In point-to-point configurations where LPDA is disabled and RTS Cntrl is forced ON, CTS Cntrl can also be forced ON if the DTE interfaces require no delay between RTS Cntrl and CTS Cntrl (0 ms), but does not require an RTS-to-CTS transition. If MUX Funct is set to TDM, MCMP, EBrdg, or CBrdg, CTS will not be affected by network alarms.
AntiStream:Disab **Next Chang Prev**
AntiStreaming. Antistreaming provides circuit protection against a streaming DTE by clamping the RTS lead of the tributary DSU. A streaming DTE has its RTS lead constantly turned ON. In TDM or MCMP mode, the DSR FrcOn and DSR on Tst configuration options are not displayed; rather, you select these configuration options on a per-port basis in the MUX submenu. If the tributary DTE turns ON RTS longer than the time specified for the AntiStreaming configuration option, the tributary DSU turns on its alarm indicator and clamps RTS to Off. Although the tributary DTE is not allowed to send, the DSU can still respond to commands and is capable of being tested or disabled. Upon detecting that RTS is no longer turned ON, the DSU turns off its alarm, resets the streaming timer, and allows the DTE to send data. This configuration option only applies to a DSU configured with RTS Control set to DTE. It is disabled when RTS Control is set to FrcOn. **Chang** – Set timer to Disab, or any value from 1 to 100 second(s) in increments of 1. When you select Disab, streaming terminal detection is not provided. For async terminal, enter 0 (zero) for Disable.

Table 4-4
(2 of 6)
General Configuration Options

LSD Lead: Std **Next Std Delay FrcOn Prev**
Line Signal Detect Lead. Controls behavior of the Line Signal Detect lead. **Std** – LSD lead goes Off in response to a control mode idle (CMI) signal from the DDS network or DDS failure. **Delay** – LSD does not go Off in response to a network alarm condition or CMI. LSD goes Off only after repeated call attempts fail and the Tries Time-out configuration option expires. Enable Auto Bckup to use this selection. **FrcOn** – Keeps LSD on as long as the DSU has power.
CTS Lead: Std **Next Std Delay FrcOn Prev**
Clear-to-Send Lead. Controls the Clear-to-Send lead. Appears when CTS Cntrl configuration option is set to Std. The Std and Delay selections are ignored if RTS Control is set to DTE, CTS Control is set to =RTS, or Circuit Assurance is enabled. **Std** – CTS is determined by the combination of the RTS Control and CTS Control configuration options. **Delay** – CTS does not go Off in response to a network alarm condition or CMI. CTS goes Off only after repeated call attempts fail, the Tries Time-out configuration option expires, and the call is dropped. Only use this selection if Auto Bckup is enabled. **FrcOn** – Forced On. Keeps CTS on as long as the DSU has power.
DSR FrcOn: Enab **Next Enab Disab Prev**
Data Set Ready Forced On. Provides the ability to override any other options controlling the Data Set Ready lead. In TDM, MCMP, CBrdg, or EBrdg mode, the DSR FrcOn and DSR on Test configuration options are not displayed. Select these configuration options on a per-port basis from the MUX submenu. **Enab** – DSR remains ON as long as the device is working regardless of tests and network alarms. **Disab** – DSR functions as an active lead reflecting various test and alarm conditions and other options.
SystemStat: Enab **Next Enab Disab Prev**
System Status. Controls the behavior of the DSR lead in response to a No Signal, Out-of-Service, or Out-of-Frame alarm from the network. **Enab** – Network alarm turns Off DSR. **Disab** – Network alarm does not affect DSR. For a DBM-D, DBM-F, DBM-I, DBM-S, or DBM-V, network interface aggregate switching, or when the DSU is in Bridge mode, this configuration option should be set to Disab.
DSR on Tst: Enab **Next Enab Disab Prev**
Data Set Ready On in Test. Controls the behavior of the DSR lead during testing. In TDM, MCMP, CBrdg, or EBrdg mode, the DSR FrcOn and DSR on Test configuration options are not displayed. Select these configuration options on a per-port basis from the MUX submenu. **Enab** – DSR is ON continuously during testing, allowing a DTE that relies on DSR being ON to send test messages to the DSU. **Disab** – DSR is Off during testing.

Table 4-4
(3 of 6)
General Configuration Options

Circ Assur: Disab **Next Enab Disab Prev**
Circuit Assurance. Controls the CTS lead in response to a data signal from the network. This configuration option is ignored if rate adaption in effect or RTS Cntrl is set to ON at other end. Used for single-port applications only. When enabled, Diag Type should not be set to NonD and rate adaption should not be in effect. A DDS Facility Alarm condition turns Off the CTS lead, regardless of the Circuit Assurance setting. **Enab** – The DSU turns Off the CTS lead if the DSU receives control mode idle (CMI) from the network. **Disab** – The CTS lead is not affected by the receipt of CMI.
Tst Pattern: Std **Next AT&T Std Prev**
Test Pattern. Selects the test pattern generator and comparator used by the DSU in disruptive testing. This configuration option only applies to aggregate tests. **AT&T** – Must be selected by a 3600 Series DSU when exchanging test patterns with 2500, 2600, and 3500 Series DSUs. **Std** – The ITU (CCITT) standard 511-bit pattern; used with external test equipment.
RespondRDL: Disab **Next Enab Disab Prev**
Respond to Remote Digital Loopback. Determines whether the DSU responds to a 2500 or V.54 Remote Loopback request. **Enab** – Performs a Digital Loopback. **Disab** – Ignores the Loopback command.
LL by DTE: Disab **Next Enab Disab Prev**
Local Loopback by DTE. Whenever this lead is ON, the Local Loopback overrides any other diagnostic tests run by the network. **Enab** – The DTE forces the DSU into Local Loopback when the signal on Pin 18 of the EIA-232-D/V.24 interface or Pin L of the V.35 interface is turned ON. Local Loopback ends when the signal is dropped. **Disab** – The DTE will not initiate Local Loopback in response to the signal.
RL by DTE: Disab **Next Enab Disab Prev**
Remote Digital Loopback by DTE. For this configuration option, Link Configuration must be set to Pt-Pt. **Enab** – The DTE forces the DSU to request a Remote Digital Loopback when the signal on Pin 21 of the EIA-232-D/V.24 interface or Pin N of the V.35 interface is turned ON. Remote Digital Loopback ends when the signal is dropped. **Disab** – The DTE cannot initiate Remote Digital Loopback.
Bilat Lpbk: Disab **Next Enab Disab Prev**
Bilateral Loopback. If this configuration option is enabled, a DTE Loopback occurs when a Digital Loopback occurs. **Enab** – When enabled, a Digital Loopback causes a DTE Loopback. **Disab** – Disables Bilateral Loopback.

Table 4-4
(4 of 6)
General Configuration Options

Ext Leads: Rate **Next ExtLd Rate RPowr Prev**
External Leads. Controls the use of the general-purpose leads on the EIA-232-D/V.24 interface for Port 1 except when Rate is selected. These leads can be controlled and monitored from the front panel or a 6700 or 6800 Series NMS. **ExtLd** – Enables Pins 12 and 13 as output (control) and Pins 19 and 23 as input (alarm) leads. When enabled, Pins 12 and 13 output +12V when ON and –12V when Off. Pins 19 and 23 recognize voltages from +2.2V to +12V as ON (reported as an External alarm) and –12V to +.8V as Off. **Rate** – If the TDM or MCMP option is installed, use Pin 12 on each port to control speed selection and make an extended modem change speed to match the backup port speed. Pin 12 on all ports turns Off at the same time to indicate that the TDM is in fallback. If a port does not fall back and remain at the same speed, then the fallback feature in the DCE connected to that port should not be enabled. **RPowr** – Functions similarly to ExtLd, but the inputs report power failure or fan alarms when a redundant power supply is installed in the COMSPHERE 3000 Series Carrier.
CCN by EL: Disab **Next Enab Disab Prev**
Configuration Change Notification by External Leads. Controls the use of the general-purpose output leads to set an CCN event. This configuration option only has an effect if Ext Leads is set to ExtLd and the protocol is ADp. **Enab** – Change in state of a general-purpose lead signals CCN to the NMS. **Disab** – General-purpose lead changes do not set a CCN event.
DTR Alarm: Disab **Next Enab Disab Prev**
Data Terminal Ready Alarm. Causes the DSU to generate an alarm if DTR is Off for more than 30 seconds. The front panel displays DTR Alarm and reports the alarm to the NMS. **Enab** – If DTR lead turns Off for 30 seconds, the DSU generates an alarm. **Disab** – No alarm is generated when DTR lead is Off.
SW Vers: Normal **Next 3.23 4.42 Normal Prev**
Software Version of the DSU. Forces the DSU's software/firmware version to be reported to the NMS through the Identity (ID) command in the **DSU SW vers** field. This configuration option supports NMS compatibility for a tributary DSU with a control DSU with an older software version. It applies when Diag Type is set to Disr or when a multipoint DSU configured for Mixed or NonD diagnostics is **not** operating in MCMP mode. When the control DSU's software version is 5.15 or greater, it will be compatible with any tributary 3600 Series DSU, regardless of its software version. To ensure optimal functioning of the DSU, both the control and tributary DSU's SW Vers configuration option must be set to **Normal,** and the tributary DSU's set to **Normal** or **No**. **NOTE:** Refer to Firmware Version Control, Table 3-2. If the control DSU's software version is less than 5.15, the following configuration option changes need to be made: **3.23** – Set 3.23 for a tributary DSU when the control DSU's software version is 3.13 or less, and the tributary DSU's software version is 5.15 or greater. No setting change is required for the control DSU; the DSU SW Vers configuration option is not available to the control. **4.42** – Set 4.42 for the tributary DSU when the control DSU's software version is 4.25 or 4.28 and the tributary DSU's software version is 5.15 or greater. For the control DSU, set the 3.20 DSU SW Vers (the name of the configuration option in an older firmware version) configuration option to **No**. **Normal** – Select Normal for both the tributary DSU and control DSU when both DSU software versions are 5.15 or greater.

Table 4-4
(5 of 6)
General Configuration Options

AnswExtBU: Disab **Next Enab Disab Prev**
Answer External Dial Backup. This configuration option is an aggregate switch on-demand feature that allows dial backup for a point-to-point 3600 Series DSU using an External dial backup unit (DBU). The 3600 Series DSU is forced to switch the aggregate data to the alternate DTE connector which is an interface connected to the aggregate data path rather than to the DTE (alternate Port 1, either the V.35 or EIA-232-D interface). Control of the aggregate switch can be automated in several ways. When the remote site is to initiate a dial backup session, enable AnswExtBU. With this type of automated control, the DSU monitors the data terminal ready (DTR) lead on the aggregate port. When the External DBU has established a call and has turned ON the data set ready (DSR) lead, the DSU switches the aggregate data from the DDS line to the aggregate port via a crossover cable between the External DBU and the DSU. When the External DBU drops the call and the DTR signal turns Off, the DSU switches the aggregate data back to the DDS line. Note that when you select enable, the front panel Backup (Bkup) and Drop Backup (DrBU) and NMS Standby Facility commands are ignored. When a dial backup session is initiated at the local site, disable AnswExtBU so that the DSU controls the DSR lead on the aggregate port. By selecting the Backup command from the front panel (Bkup) or Standby Facility command from the NMS, data is routed from the External DBU through the network interface (NetIntf) switch to the DTE. As a result, the DSR signal turns ON, which then turns on the DTR signal at the External DBU. If configured for DTR call-control, the External DBU places the call. Data switches back to the DDS line when the front panel Drop Backup (DrBU) or NMS Standby Facility command is issued. This turns the DSR signal Off on the alternate port and, if the External DBU is configured correctly, the DBU drops the dial connection. **NOTE:** If an Internal DBM is installed and active or NetIntf is not set to AggSw (Table 4-1), this configuration option will not appear. **Enab** – Activates the DSU to automatically switch the aggregate data stream to the alternate port when the DTR signal turns ON. The DSU configuration option NetIntf must be set to AggSw. **Disab** – Allows the local DSU to control the call setup and take-down on an external DBU via the DSU's front panel or the NMS. The DSU configuration option NetIntf must be set to AggSw.
RLSD in MCMP: No **Next Yes No Prev**
Receive Line Signal Detect in Multichannel Multipoint. Defines whether switched RLSD is required for shared backup with MCMP to support RLSD detection. This configuration option only appears when an ISDN or Switched 56 DBM is installed. **Yes** – Switched RLSD is required. **No** – Switched RLSD is not required.
Async→Sync: Disab **Next Enab Disab Prev**
Asynchronous-to-Synchronous Conversion. Sets Port 1 of the DSU DTE interface for asynchronous or synchronous operation. This configuration option only appears when the Single-Port Async/Sync feature is installed (ASPEN chip only). **Enab** – Configures Port 1 as asynchronous (asynchronous-to-synchronous conversion takes place). **Disab** – Configures Port 1 as synchronous.
AsyncBit/Char: 8 **Next 6 7 8 9 10 Prev**
Asynchronous Bits per Character. Specifies the length of a character, including the parity bit but excluding the start and stop bits. This configuration option only appears when the Single-Port Async/Sync feature is installed and the Async→Sync configuration option is enabled. **6 to 10** – Selects the asynchronous bits per character. When Stop Bits is set to 2, 10 will not appear.

Table 4-4
(6 of 6)
General Configuration Options

Stop Bits: 1 **Next 1 2 Prev**
Stop Bits. Specifies the number of stop bits in an asynchronous character. This configuration option only appears when the Single-Port Async/Sync feature is installed and the Async→Sync configuration option is enabled. **1 to 2** – Selects the number of stop bits to be used. When the AsyncBit/Char configuration option is set to 10, 2 will not appear.
Overspeed: 2.3 **Next 1.0 2.3 Prev**
Overspeed. Selects the overspeed percentage of the asynchronous-to-synchronous converter. This configuration option only appears when the Single-Port Async/Sync feature is installed and the Async→Sync configuration option is enabled. **1.0** – Selects the basic overspeed range. Basic range provides 1.0% overspeed in the DTE asynchronous data rate. **2.3** – Selects the overspeed percentage for extended range. Extended range provides 2.3% overspeed in the DTE asynchronous data rate.

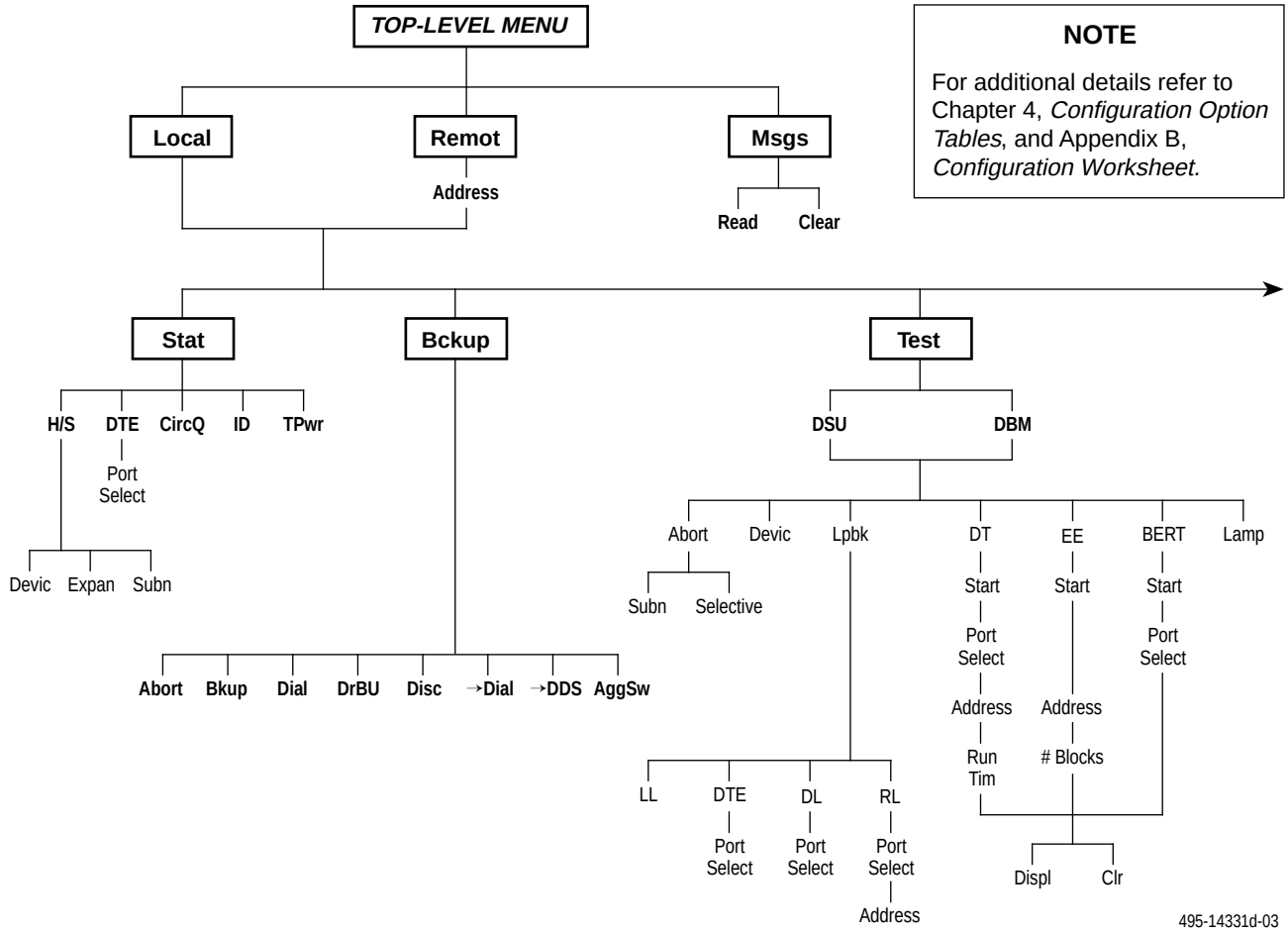
Table 4-5
(1 of 2)
LPDA-2 Configuration Options

LPDA-2: Disab **Next Enab Disab Prev**
LPDA-2 Operation. Allows the DSU to respond to LPDA-2 commands issued from NetView. This configuration option must be enabled at the control DSU and each tributary DSU for SNA Diagnostic Interface operation. When a disruptive test is running at the control DSU, the FEP reports Test in Progress to the NetView operator when the operator issues an LPDA-2 command. If the Test Mode (TM) jumper at the control DSU is disabled, the control DSU may respond to an LPDA-2 command while running a test initiated by the NMS or front panel. The LPDA-2 command cannot propagate any farther than the control. If the control DSU is performing a Device Test or an End-to-End test, it ignores any NetView-initiated command. **Enab** – The 3600 Series DSU responds to LPDA-2 commands. When enabled, it is recommended that DSR FrcOn be set to Enab and CTS Cntrl set to RTS. **Disab** – The 3600 Series DSU does not respond to LPDA-2 commands.
LPDA Address: 001 **Next Chang Prev**
LPDA Address. Allows the LPDA-2 address used by NetView to be set. Choices are 1 through 255, in decimal. The following rules apply to control DSU address assignment: 1. Link Segment Level 1 (Primary Circuit). The control DSU closest to the NetView host is typically assigned the address **1**. 2. Link Segment Level 2 (Extended Circuit). The extended control DSU is typically assigned the address **2**. The following rules apply to tributary DSU address assignment: 1. Valid Addresses: Tributary DSUs range from 1 to 255. 2. Single DTE: The tributary DSU address is set to the Physical Unit (PU) address of the attached terminal device; required by NetView. 3. Extended Circuit: For configurations having extended circuits, the tributary DSU in the primary circuit is set to 253. Address 253 (FD hex) is the broadcast LPDA-2 address.

Table 4-5
(2 of 2)
LPDA-2 Configuration Options

SNA Backup:Disab **Next Enab Disab Prev**
SNA Backup. Allows the DSU to respond to the NetView commands for establishing and dropping a dial backup command (Call Out and Disconnect). When the SNA Backup configuration option is disabled, backup can still be controlled from an AT&T Paradyne NMS; SNA Backup only needs to be enabled at the control DSU. For extended circuit configurations, the extended circuit link can also be configured to respond to the Netview dial backup command by turning on SNA Backup at the extended control DSU. This feature is not supported in multipoint configurations. **Enab** – The 3600 Series DSU control responds to the NetView dial backup command. **Disab** – The 3600 Series DSU control sends a Request Not Supported by DCE message to NetView upon receiving a dial backup command.
Code 1: 582210 **Next Chang Prev**
Code 1. Determines the DSU type and model reported to NetView for the DSU/CSU and Line Status test and Transmit/Receive Test commands. The default values are the type (5822) and model (10) of the IBM 5822, which the standalone 3610 DSU emulates for LPDA-2 monitoring. The default values are 5822 and 18 for the carrier-mounted 3611 DSU. This value can be changed, but NetView may report an error if the value is not a known IBM model number.
Code 2: 5822101 **Next Chang Prev**
Code 2. Determines the DSU type and model reported for the Call Out and the Disconnect commands. This configuration option is normally set to the same value as Code 1. The last digit in the configuration option is used to tell NetView that the DSU is either calling itself a DSU (1) or an APL modem (0) when responding to a NetView Dial Backup command. It is needed because the NetView dial backup commands are meant for APL devices and a particular release of NetView may not expect a DSU device to respond to an APL specific command.

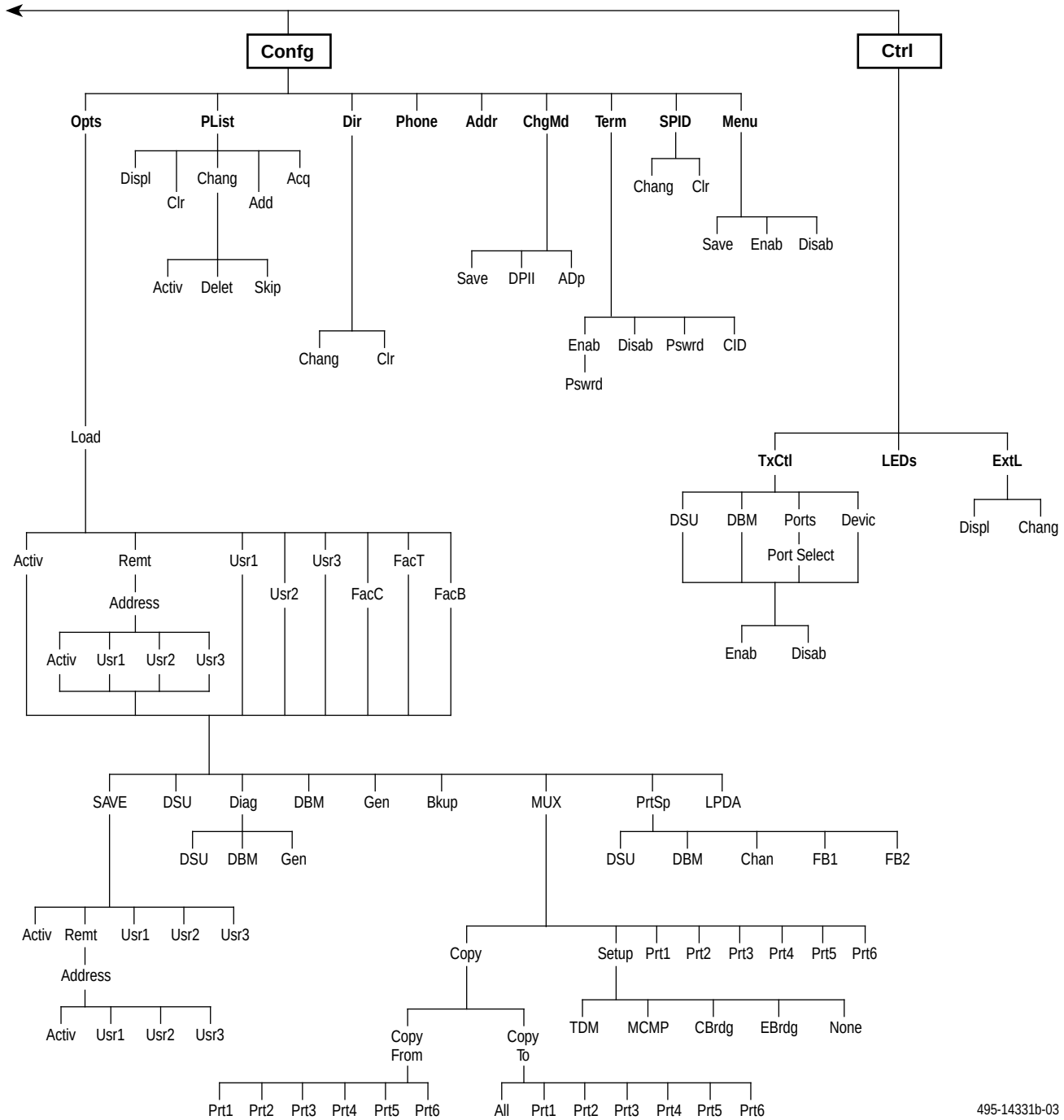
Data Service Unit Menu A



NOTE

For additional details refer to Chapter 4, *Configuration Option Tables*, and Appendix B, *Configuration Worksheet.*

ABBREVIATIONS		Ctrl	Control	EBrdg	Extended Bridge	MCMP	Multichannel Multipoint
→ DDS	Switch to DDS Path	DBM	Dial Backup Module	Enab	Enable	Msgs	Messages
→ Dial	Switch to DDD Path	DDS	Digital Data Service	Expan	Expanded Health and Service	MUX	Multiplexer
Acq	Acquire	Devic	Device	Extl	External Leads	Opts	Configuration Options
Addr	Address	Diag	Diagnostic	FacB	Factory Bridge	PList	Poll List
ADp	Advanced Diagnostic protocol	Dir	Directory	FacC	Factory Control	PrtSp	Port Speed
AggSw	Aggregate Switch	Disab	Disable	FacT	Factory Tributary	Pswrd	Password
Bckup	Backup	Disc	Disconnect	FB1	Fallback 1	Remot	Remote Mode
BERT	Bit Error Rate Test	Displ	Display	FB2	Fallback 2	RL	Remote Loopback
CBrdg	Central-Site Bridge	DL	Digital Loopback	Gen	General	SPID	Service Profile Identifier
Chan	Channel to Port	DPII	DATAPHONE II	H/S	Health and Status	Stat	Status
ChgMd	Change Mode	DrBU	Drop Backup	ID	Identity	Subn	Subnetwork Health and Status
CID	Customer Identifier	DSU	Data Service Unit	LEDs	Light Emitting Diodes	TDM	Time Division Multiplexer
CircQ	Circuit Quality	DT	Digital Test	LL	Local Loopback	Term	Async Terminal
Clr	Clear	DTE	Data Terminal Equipment	Lpbk	Loopback	TPwr	Terminal Power
Confg	Configure	EE	End-to-End Test	LPDA	Link Problem Determination Aid	TxCtl	Transmitter Control


Confg
Ctrl
Opts
PList
Dir
Phone
Addr
ChgMd
Term
SPID
Menu
Displ
Chang
Acq
Clr
Add
Activ
Delet
Skip
Chang
Clr
Save
DPII
ADp
Enab
Disab
Pswrd
CID
Enab
Pswrd
Chang
Clr
Save
Enab
Disab
Load
TxCtl
LEDs
ExtL
DSU
DBM
Ports
Devic
Port Select
Enab
Disab
Displ
Chang
Activ
Remt
Usr1
Usr2
Usr3
FacT
FacC
FacB
Address
Activ
Usr1
Usr2
Usr3
SAVE
DSU
Diag
DBM
Gen
Bkup
MUX
PrtSp
LPDA
DSU
DBM
Gen
DSU
DBM
Chan
FB1
FB2
Activ
Remt
Usr1
Usr2
Usr3
Address
Activ
Usr1
Usr2
Usr3
Copy
Setup
Prt1
Prt2
Prt3
Prt4
Prt5
Prt6
TDM
MCMP
CBrdg
EBrdg
None
Copy From
Copy To
Prt1
Prt2
Prt3
Prt4
Prt5
Prt6
All
Prt1
Prt2
Prt3
Prt4
Prt5
Prt6
495-14331b-03

Configuration Worksheet B

Overview

The Basic Configuration Worksheet contains Basic mode configuration options. Included are option sets for the DSU and the SNA Diagnostic Interface options.

The worksheet presents the options sets with configuration options and values. You can use the worksheet for:

- Reference
- Recording changes to options
- Planning changes to default settings

Use this worksheet along with Chapter 4, *Configuration Option Tables*, and Appendix A, *Data Service Unit Menu.*

Configuration Worksheet for Basic DSU Mode

Date:_____

Device:_____

Serial Number:_____

Location:_____

Local Address:_____

Tributary Network Address:_____

Local Phone Number: ( )_____

☐ DBM Installed

☐ SNA Diagnostic Interface (LPDA-2) Installed

DSU Configuration Options	Value
Rate(Kbps)	64CC, 64L, 56, 38.4, 19.2, 9.6, 4.8, 2.4
PrtSp(Kbps)‡	64, 56, 48, 38.4, 32, 28.8, 26.4, 24, 21.6, 19.2, 18.8, 18, 16.8, 14.4, 12, 9.6, 9.2, 8.4, 7.2, 4.8, 4.4, 4, 2.4, 2, 1.2, Disab
TxClkSource	Int, RXC, Ext, Prt1, Prt2, Prt3, Prt4, Prt5, Prt6, DDS
Msg Clamp	**Enab, Disab**
TxElasStor	Enab, Disab
RxElastStor	**Enab, Disab**
19.2 PowrLvl	**+6, 0, –10**
64KScramblng	**On, Off**
64KLatchLpbk	**On, Off**
NetIntf	**AggSw, Forc, Disab**
Netl Timing	**Int, Netl, Prt1, Prt2, Prt3, Prt4, Prt5, Prt6**
V.54 Lpbk	**Enab, Disab**

ChgMd Configuration Options	Value
Mode	DPII, ADp

Hardware Straps	Value
DDD Interface ★	Permissive, Programmable
Frame Ground/Signal Ground	Connected, Disconnected
Test Mode Indication	Enabled, Disabled

Diagnostic DSU Configuration Options	Value
Diag Type	NonD, Disr, Mixed, None
2nd Ch(bps)	**100, 400, 800, 1200, 1600**
Disr Type	2500, 2600, 3600s, 3600e, Br56

LPDA-2 Configuration Options	Value
LPDA-2	Enab, Disab
LPDA Address *(Chang)*	(1 – 256)
SNA Backup	Enab, Disab
Code 1 *(Chang)*	
Code 2 *(Chang)*	

Diagnostic General Configuration Options	Value
Position	Cntrl, Trib, G2Trb
LinkConfg	Pt-Pt, M-Pt
Resp Period	**1, 2, 10**
TribTimOut *(Chang)*	**sec to min (5 sec to 10 min)**
Diag Conn	CC, DC
Link Delay	**0s, 1s, 2s, 5s, 10s, 20s, 50s**
Network Delay	**0s, 1s, 2s, 5s, 10s, 20s, 50s**
Packet Delay	**0s, 1s, 2s, 5s**
Extend Chan	**Yes, No**
Upstrm Port	**Prt1, Prt2, Prt3, Prt4, Prt5, Prt6**
M-PtSymPrt	**Enab, Disab**
Fast Sel	**Enab, Disab**

General Configuration Options	Value
DTE Port	EIA232, V.35
RTS Cntrl	FrcOn, DTE
CTS Cntrl	Std, =RTS
AntiStream *(Chang)*	**Disab, 1 – 100 sec (async terminal = 0 – 100)**
LSD Lead	**Std, Delay, FrcOn**
CTS Lead	**Std, Delay, FrcOn**
DSR FrcOn	**Enab, Disab**
SystemStat	**Enab, Disab**
DSR on Tst	**Enab, Disab**
Circ Assur	**Enab, Disab**
Tst Pattern	**AT&T, Std**
RespondRDL	**Enab, Disab**
LL by DTE	**Enab, Disab**
RL by DTE	**Enab, Disab**
Bilat Lpbk	**Enab, Disab**
Ext Leads	**ExtLd, Rate, RPowr**
CCN by EL	**Enab, Disab**
DTR Alarm	**Enab, Disab**
SW Vers	**3.23, 4.42, Normal**
AnswExtBU	**Enab, Disab**
Async→Sync	Enab, Disab
AsyncBit/Char	6, 7, 8, 9, 10
Stop Bits	1, 2
Overspeed	1.0, 2.3

‡ When the Async→Sync configuration option is enabled, the following PrtSp(Kbps) settings will not appear: 32, 26.4, 24, 18.8, 18, 9.2, 8.4, 4.4, 4, and 2 kbps

★ V.32 DBM only

Note: Shaded configuration options do not appear when Full mode is disabled.

Async Terminal Operation C

Overview

Async Terminal (**Term**) is available for the Model 3610 standalone DSU with firmware version (DSU SW ver) 6.3*x* or greater. The async terminal feature emulates front panel operation. You can manage the DSU from an async terminal as if using the front panel, but without the limitation of the 2-line, 16-character LCD. An entire menu or submenu, test result, or range of configuration options appears on a single screen.

An async terminal is connected to the Model 3610 DSU with a CC-to-DB25 cable. See the *Async Terminal Connection* section in Chapter 2 for further information.

Async Terminal Start-Up

Upon delivery, the **Term** feature is available, but disabled. **Disab** is the factory-loaded setting. Enabling the Term feature establishes async terminal access.

You can use an async terminal to manage a standalone Model 3610 DSU. When enabled, the async terminal:

- Supports a VT-100 compatible terminal interface
- Supports to 9.6 kbps, 8 bits, 1 stop bit, and no parity
- Emulates the front panel

The network interface needs to be set for the same speed of 9.6 kbps before enabling the async terminal. If you are accessing the DSU through an external modem, the interface should have V.42bis/MNP error correction enabled.

The default Term password configured on the DSU is <null>. Upon establishing async terminal access from the front panel, press carriage return <CR> on the terminal to display the Password Access Menu. Enter the configured password and press carriage return <CR> again.

Password Security

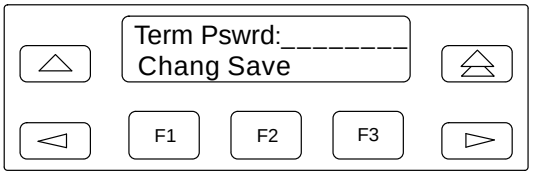
Use the Term password to secure entry into front panel functions from the async terminal. Also use this password to enable the async terminal feature and to gain access to the front panel once Term is enabled.

The Term password can be modified at the async terminal or the front panel. See the section *Password Change* in this appendix for more details.

To set up password security at the front panel:

☞ Procedure

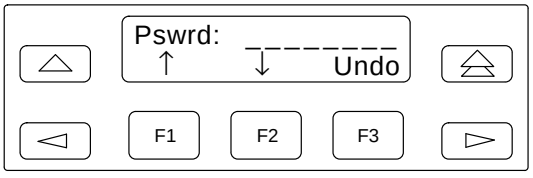
1. Go to the **Confg** branch. Use the ◁ or ▷ key to display the Term selection.
2. Select **Term**.
3. Select **Pswrd**; the Term Pswrd screen appears.



4. Select **Chang** (change); use the function keys (F1 and F2) to select available characters. Use the ◁ or ▷ key to move the cursor position to the left or right.

   To access the terminal without a password, press **F2** for Save. After the async terminal is enabled, press **Enter** to access the top-level menu.

5. Enter the password into the system by pressing the △ key; select Save.
6. If you do not want to save the password entered, select **Undo**.

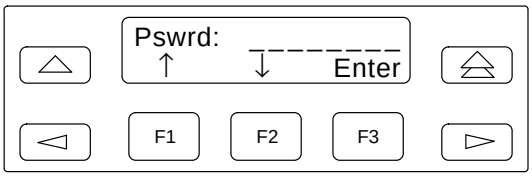


Enabling the Async Terminal

To enable the async terminal:

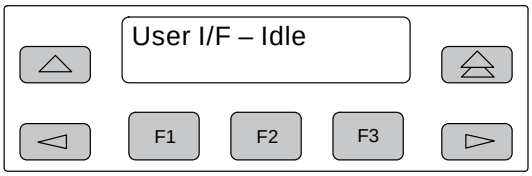
☞ Procedure

1. Ensure that the terminal is connected physically to the DSU.
2. Go to the **Confg** branch. Use the ◁ or ▷ key to display the Term selection.
3. Select **Term**.
4. Select **Enab**; the following screen appears.

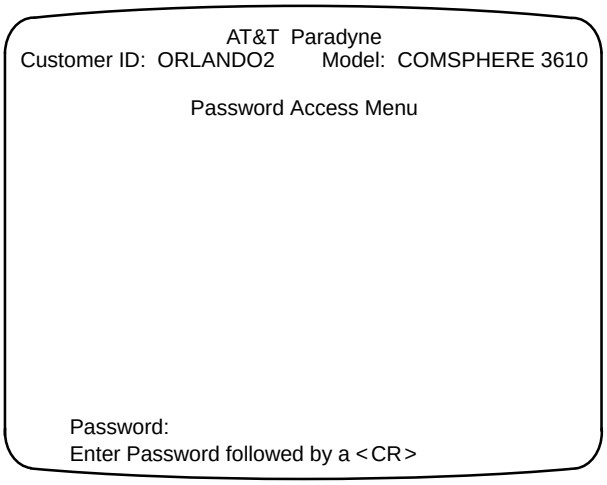


5. Enter the previously configured password and press **F3**. The async terminal is now enabled and the front panel is disabled (locked). The LCD displays **User I/F – Idle**.

   If you need to see the password, follow the *Password Security* section to access **Chang**. Press **F1** for Change and the password is displayed.

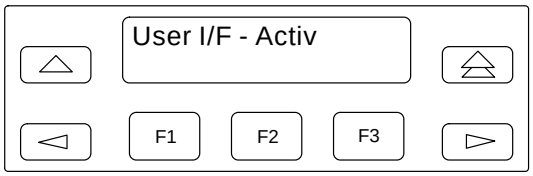


6. From the terminal, press the carriage return <CR> and the Password Access Menu screen appears.



To activate the async terminal, enter the configured password and <CR> at the async Password Access Menu screen.

If the password is valid, the DSU's top-level menu appears on the async terminal. At the same time, the LCD's message changes to:



If the password is invalid, the Password Access Menu screen reappears. The async terminal feature is considered activated when the Top-Level Menu screen appears (see the *Selection Screens* section).

Async Terminal to Front Panel Usage Differences

Menu tree sequences and functions are the same for the front panel and the async terminal. For example, when any test is started at the async terminal, the DSU's LED lights will display the same as when activated through the front panel. However, there are a few areas with slight differences.

From a selection or display screen, pressing the carriage return <CR> key at any time during a session refreshes the async terminal's screen.

NOTE

When no entries are made for 5 minutes, the async terminal session terminates and a blank screen appears. When you press the carriage return <CR> key, the Password Access Menu screen is appears.

Some symbols appearing on an async terminal screen differ from the front panel keypad as shown in Table C-1 below. The first two table entries represent front panel function keys. The remainder of the table relates to front panel to async screen displays. For keypad function details, refer to the *Keypad* section of Chapter 3.

Table C-1
Front Panel Keypad to
Async Terminal Symbols Translation

Front Panel	Async Terminal
↑ (F1)	^
↓ (F2)	v
↕	*
—	^
—	v
⇆	*
→	>
←	<

Screen Types

There are three types of async terminal screens:

- Selection screens
- Input screens
- Display screens

Some functions operate the same throughout the async terminal interface. These functions are the following:

- *To return to the top-level menu from any selection screen* or from anywhere within the menu hierarchy, enter **T** (or **Ctrl-T**). This is the same as pressing the ⏢ key from the front panel. (The **t** can be upper- or lowercase.)
- *To return to the previous menu*, enter **U** (or **Ctrl-U**). This is the same as pressing the △ key from the front panel. (The **u** can be upper- or lowercase.)
- *To view Health and Status*, enter **V** (or **Ctrl-V**). See Chapter 3 for Health and Status access using the front panel. (The **v** can be upper- or lowercase.)
- *To terminate a session*, enter **Ctrl-x**. Refer to the *Terminating a Session* section of this appendix for additional information.

Selection Screens

Selection screens display the selections available through the menu tree. After password access, the Top-Level Menu screen appears on the async terminal as shown below. The unit's current configuration is displayed below the line with Customer ID and Model. This example identifies a Control DSU with Port 1 operating at the port speed of 9600 bps.

To select from the menu, enter the number (or letter) that corresponds with your desired selection (e.g., enter **1** to select the Local branch). No carriage return <CR> is required.

```
                                AT&T Paradyne          LED Status
Customer ID: ORLANDO2  Model: COMSPHERE 3610      Alarm  Bkup  Test

                          Port 1 DSU 9.6 C

1 – Local                                  T/Ctrl–T=Top Menu
2 – Remote                                 U/Ctrl–U=Up Menu
                                           V/Ctrl–V=View H/S




PRESS Desired Selection Key:
                                           Ctrl–x = Disconnect
```

Every configuration option selection screen presents Previous as selection 1. From the front panel, the sequence is Next as the first choice and Prev (Previous) as the last choice.

The Top-Level Menu screen displays LED status for Alarm, Backup, and Test for the active core if a condition exists on the interface. Each status only appears if the front panel LED is lit or blinking.

When you press **1** – Local, the Second-Level Menu screen appears. The third line on the screen changes to **Local Mode** and the options follow the menu tree shown in Appendix A.

```
                          AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                          Local Mode:

1 – Stat                                   T/Ctrl–T=Top Menu
2 – Bckup                                  U/Ctrl–U=Up Menu
3 – Test                                   V/Ctrl–V=View H/S
4 – Confg
5 – Ctrl




PRESS Desired Selection Key:
                                           Ctrl–x = Disconnect
```

To access the Configure branch:

PRESS: **4** – Confg

tThe Configure Menu Selection screen appears and is comparable to selecting **Confg** from the front panel.

```
                    AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                      Configure:

1 – Opts                          T/Ctrl–T=Top Menu
2 – PList                         U/Ctrl–U=Up Menu
3 – Dir                           V/Ctrl–V= View H/S
4 – Phone
5 – Addr
6 – ChgMd
7 – Term

PRESS Desired Selection Key:
                                  Ctrl–x = Disconnect
```

Changing External Leads

The External Leads configuration option must be set before external leads can be displayed or changed. To set external leads, select ExtLd from General Configuration Options (Table 4-4). After External Leads is enabled:

☞ Procedure

1. From the Second-Level Menu screen:

   PRESS: **5 –** Ctrl

2. The Control Function Menu selection screen appears.

   PRESS: **3 –** ExtL

3. The External Leads Menu selection screen appears.

   PRESS: **2** – Chang

```
                    AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                    External Leads:

1 – Displ                         T/Ctrl–T=Top Menu
2 – Chang                         U/Ctrl–U=Up Menu
                                  V/Ctrl–V=View H/S

PRESS Desired Selection Key:
                                  Ctrl–x = Disconnect
```

4. The External Leads Input screen appears. The OutA or OutB field will be highlighted. To change the value of the bolded field:

   PRESS: **1** – Toggle

   The highlighted field will change from high to low or vice versa for on and off. At the front panel, use the ↑↓ keys instead. To move between the OutA and OutB fields, use the <Tab> key on the keyboard. At the front panel, use the ◅ or ▻ key.

```
                    AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                    OutA:^  OutB:_

1 – Toggle                        T/Ctrl–T=Top Menu
2 – Save                          U/Ctrl–U=Up Menu
                                  V/Ctrl–V=View H/S

PRESS Desired Selection Key; <TAB> to go between fields
                                  Ctrl–x = Disconnect
```

5. If the value of either field is changed:

   PRESS: **2** – Save

Input Screens

Input screens require data input followed by the carriage return <CR> key. The options to enter **T** for top menu, **U** for up one menu, and **H** for Health and Status do not appear. They are disabled for input screens; **Ctrl-T**, **Ctrl-U** and **Ctrl-V** continue to be available.

Customer ID (CID)

The Customer ID field appears on the second line of every screen.

☞ **Procedure**

1. From the Configure Menu Selection screen, to enter or change the Customer ID:

   PRESS: **6** – Term

2. The Async Terminal Menu screen appears with Term: Enab as the third line. To access the Customer ID:

   PRESS: **4** – CID

```
                    AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                      Term: Enab

1 – Enab                          T/Ctrl–T=Top Menu
2 – Disab                         U/Ctrl–U=Up Menu
3 – Pswrd                         V/Ctrl–V=View H/S
4 – CID

PRESS Desired Selection Key:
                                  Ctrl–x = Disconnect
```

3. From the Customer ID Menu screen, to set up or change the Customer ID:

   PRESS: **1** – Chang

4. The Customer ID input screen appears. The Customer ID can be up to 8 characters (see Table C-2).

Table C-2
Valid Customer ID Entries

Input	ID Entry
Alpha	**a** to **z**; upper- or lowercase accepted. Display always uppercase.
Numeric	**0** to **9**
Characters	**#** (pound sign) **–** (dash) **.** (period) ***/*** (backslash)

   If you enter an *invalid* character, the entry is ignored. If the terminal is set up for sound, the terminal beeps when there is an invalid entry.

5. After entering the Customer ID (CID), press the carriage return <CR>. The Customer ID menu screen reappears.

   PRESS: **2** – Save

When the confirmation message **Command Complete** appears after saving the CID to memory, the CID will appear on every screen and you can access other menus.

Password Change

Password security protects access to the DSU. When password security is already set up at the front panel, the password must be entered at the async terminal **exactly** as originally input, including upper- or lowercase alpha characters. For example, entering 234abc originally and then entering 234ABC would not be accepted as a valid password.

To set up or change the password:

☞ **Procedure**

1. Select **Pswrd** from the Async Terminal Menu screen; the Password Menu Screen appears.

   PRESS: **1** – Chang

2. The Password input screen appears. The password can be up to 8 characters (see Table C-3).

Table C-3
Valid Password Entries

Input	Password Entry
Alpha	**a** to **z**; upper- or lowercase
Numeric	**0** to **9**
Characters	**#** (pound sign) **–** (dash) **.** (period) **/** (backslash)

If you enter an *invalid* password character, the entry is ignored. If the terminal is set up for sound, the terminal beeps when there is an invalid entry.

3. After entering the desired password, press the carriage return <CR>. The Password Menu screen appears.

PRESS: **2** – Save

The confirmation message **Command Complete** appears after saving the password to memory.

Amount of Time Input Fields

Three input screens have an amount-of-time prompt for specific user input. The input field must be fully populated. The three screens are:

- Digital Test Run Time
- Configuration Diagnostic Tributary Time Out (TribTimOut)
- Configuration Backup Network Time Out (NtwkTimOut)

Digital Test

Access Digital Test from the second-level menu of the Test branch. Diagnostics (**Diag**) must be set to None from the **Confg** branch first. To set the amount of time for the Digital Test (**DT**):

☞ Procedure

1. Select **DSU** from the DSU or DBM selection screen; the DSU Tests selection screen appears.

   PRESS: **4** – DT

2. The DSU Digital Test selection screen appears.

   PRESS: **1** – Start

3. The Port Number selection screen appears.

   PRESS: **2** – Prt1

4. The DSU Digital Test Run Time input screen appears. The hhh:mm:ss must be fully populated as shown below.

```
                    AT&T  Paradyne
Customer ID:  ORLANDO2      Model:  COMSPHERE 3610

                    Run Tim: 0:00:00

                                    Ctrl–T=Top Menu
                                    Ctrl–U=Up Menu
                                    Ctrl–V=View H/S




ENTER Input Form of (hhh:mm:ss):000:08:00
                                    Ctrl–x = Disconnect
```

5. Enter the run time for the Digital Test and press the carriage return <CR>. The following message appears on the screen: **Please wait**.

6. The Digital Test completion screen appears.

For further information on Digital Test, refer to the *Digital Test* section of Chapter 3.

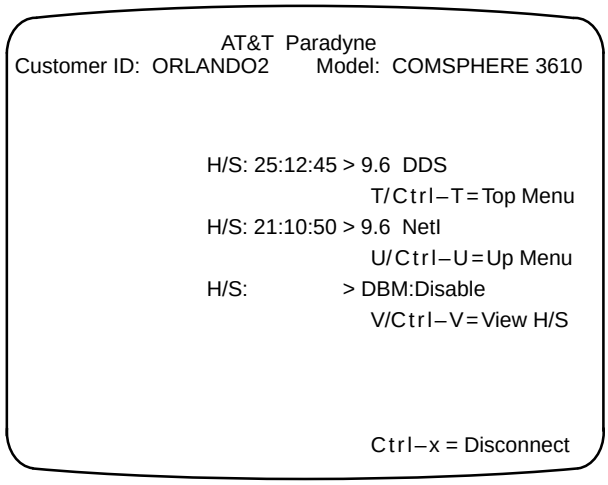
Display Screens

Display screens provide configuration information and results of performance and device-specific tests. All information is presented on one async terminal screen.

Health and Status Display

The Health and Status display shown below can be accessed by:

- Using selection screens and the menu tree path
- Ctrl-V from input screens
- V from all other screens



Terminating a Session

To terminate the async terminal session from any screen, press **Ctrl-x**. The logs off and returns to the Password Access Menu screen. Enter a valid password to reactivate the async terminal session.

You can return control to the front panel by disabling the async terminal. Access **Term** from the Confg menu and select Disab or contact your System Administrator for additional information.

When you terminate async terminal control, the async terminal must be reactivated from the front panel. Refer to *Enabling the Async Terminal* section of this appendix.

NOTE

When you terminate the async terminal connection, the speed changes from 9.6 kbps to the NMS interface of 1.2 kbps.

SNA Diagnostics D

SNA Diagnostic Interface

The SNA Diagnostic Interface option is compatible with IBM's LPDA-2 (Line Problem Determination Aid, Revision 2) protocol. Management of 3600 Series DSUs by LPDA-2 can be enabled from:

- The front panel
- COMSPHERE 6700 or 6800 Series NMS

This feature is compatible with all other options available to the 3600 Series DSUs: DBM, TDM, and MCMP. However, the SNA Diagnostic Interface option is supported via Port 1 on a TDM or MCMP circuit card.

The 3600 Series DSUs operating with the SNA Diagnostic Interface option emulate IBM 5822 DSUs. The 3600 Series DSUs are data compatible, but they are not diagnostically compatible with IBM 5822 DSUs. A mixture of 3600 Series and IBM 5822 DSUs will not support LPDA-2 diagnostics. The SNA Diagnostic Interface option must be installed in each control and tributary DSU.

The 3600 Series DSUs respond to commands from an NMS or NetView on a first-come, first-served basis. The NetView operator can monitor DSU parameters and line status and can initiate tests from NetView. DSU configuration options cannot be changed (a NetView constraint). An operator of a 6700 or 6800 Series NMS can change network configuration options as well as perform tests.

The SNA Diagnostic Interface firmware can be installed in the carrier-mounted Model 3611 DSU or the standalone Model 3610 DSU. Either model may be configured as the control of a circuit that is to be managed by the NetView management system.

The LPDA-2 option must be enabled from the Configuration branch (Table 4-5).

LPDA-2 Addressing

The addressing scheme for LPDA-2 establishes a relationship between the link segments (primary circuit and extended circuit) and the remote DSUs populating the circuit. It allows you to target a link segment or a particular control-tributary DSU pair in the circuit for diagnostic testing.

The LPDA-2 address is independent of the DSU network address associated with an NMS or front panel command, although you may choose to assign the same value to each.

The following rules apply to assigning the LPDA-2 address to control DSUs (Figure D-1):

- **Link Segment Level 1.** The control DSU closest to the NetView host is the first level control and assigned the address 1.
- **Link Segment Level 2.** An extended control DSU, is the second level control and assigned the address 2.
- **Valid Addresses.** Valid addresses for control DSUs range from 1 to 255.

The following rules apply to assigning the LPDA-2 address for tributary DSUs:

- **Valid Addresses.** Valid addresses for tributary DSUs range from 1 to 255.
- **Single DTE.** The tributary DSU address is set to the physical unit address of the attached terminal device. This constraint is imposed by NetView.
- **Extended Circuit.** For configurations having extended circuits, the backbone tributary DSU in the primary circuit must be set to 253 and configured as a point-to-point circuit. Address 253 (FD hex) is the broadcast LPDA-2 address.

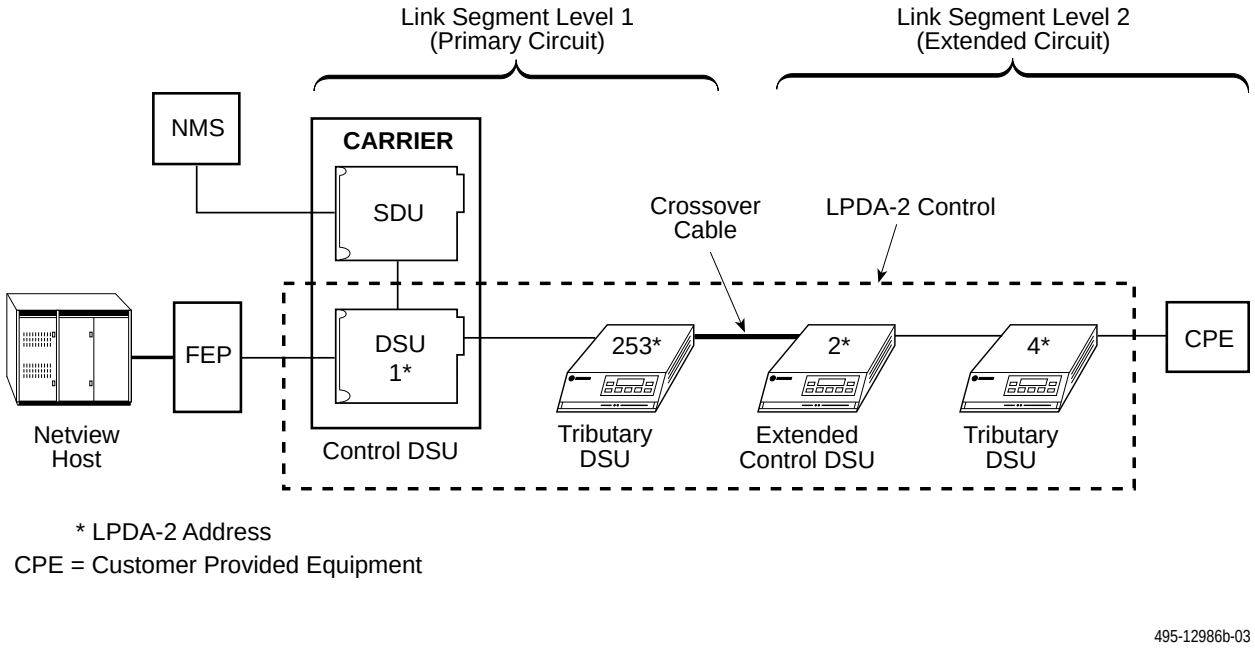


Figure D-1. LPDA-2 Addressing Example

Troubleshooting and Front Panel Messages

E

Troubleshooting

Confirm the installed hardware options. You receive a power-up message for each hardware option type; for example:

- DSU Pass
- MUX Pass (TDM or MCMP)
- DBM Pass

If a fail message appears or a hardware option does not appear, go to the Configuration (Config) branch, load, and save a factory-set configuration (FacC or FacT).

If the DSU is not connected to the network yet, the:

- Red **Alrm** indicator is lit
- LCD displays **DDS F:No Signal**, indicating a facility alarm
- LCD displays Health and Status information

☞ Procedure

If the DSU fails the power-up test:

1. Go to the Test branch.
2. Re-execute the Device Test (Devic). If the test passes, continue operating the DSU.

If the device test fails again, return the DSU to the AT&T Paradyne Repair Center as described in the *Equipment Warranty and Support* section of this guide.

Messages

This section describes the informational messages that may appear on the DSU's front panel when:

- Using the Async Terminal feature
- Executing a command
- An error condition prevents execution of a command

The messages listed here do not include menus, data entry displays, or specific test results; they do give the condition for the message and any action to perform.

For configuration error messages supporting TDM, MCMP, and digital bridging, refer to Document No. 3610-A2-GB48.

For configuration error, progress, and health and status messages supporting DBMs, refer to Document No. 3610-A2-GB49.

- Table E-1 identifies and describes front panel to Async Terminal messages.
- Table E-2 lists command progress messages.
- Table E-3 includes command error messages.
- Table E-4 contains configuration error messages that may appear when the verification routine runs after pressing SAVE.
- Table E-5 lists device health and status messages.
- Table E-6 presents subnetwork health and status messages.

Messages Format

The following screen shows the message format.

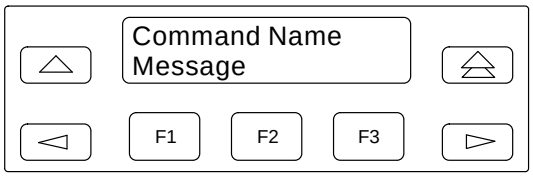


Table E-1
Front Panel to Async Terminal Messages

Message	Condition
User I/F – Idle	Async terminal is enabled; the front panel is locked.
User I/F – Activ	Async terminal is enabled and a session is started.
Term: Stndby *(appears under the Term submenu)*	Async terminal is enabled but inactive. Front panel access has been initiated and a valid password entered. The async terminal is in Standby mode. If no key is pressed for 5 minutes, the DSU reverts to **User I/F – Idle**.

Table E-2
Command Progress Messages

Message	Condition
Command Complete	Command successfully completed.
Command Failed	Command was not executed.
Please wait . . .	Command is taking more than 2 seconds to complete.

Table E-3
Command Error Messages

Message	Condition	Action
Command Failed	Command could not execute and none of the error messages below apply.	If problem cannot be corrected, call your AT&T Paradyne representative.
Conflict w/Envir	Command conflicts with test in progress, configuration inappropriate for this command, or configuration option settings are not compatible.	1. Check for a test in progress. 2. If there is a test in progress, either wait for the test to finish or abort the test. 3. If there is no test in progress, check configuration option settings.
Inval Selection: No Valid Choices	Invalid menu selection based upon previous selections that caused a menu to display with no selectable options.	Press any key to return to the top-level menu.
No Response	Invalid remote address or remote device not powered, connected to network, or enabled.	Check remote address and status.
Not in Menu	NMS command not in supported set of commands for NMS.	Use a valid NMS command.

Table E-4
(1 of 2)
Configuration Error Messages

Message	Condition	Action
AgSw Req SymPrt	Network Interface is set to aggregate switch or forced on for a multipoint network with port speed not equal to DDS speed, and multipoint symmetric mode is disabled.	Symmetric port is required when configuration option NetIntf is set to AggSw or Forc. Enable configuration option M-PtSymPrt.
AgSw&Trib Incmpt	A tributary is incompatible with Network Interface set to aggregate switch.	Disable the configuration option NetIntf if aggregate switching is not used.
All Ports Disabled	The port is disabled and diagnostic type is not set to NonDisruptive; there is nothing to transmit.	Enable a port by selecting a port speed using the configuration option PrtSp(Kbps) or set Diagnostic configuration option Diag Type to NonDisruptive.
Br56&SpeedIncmpt	DDS Speed must be 56 kbps for Br56 diagnostics.	Set configuration option Disr Type (disruptive diagnostic type) to Br56, or set PrtSp(Kbps) to 56 kbps.
Circ Assur Inval	Circuit Assurance enabled with port speed not equal to DDS speed. Circuit Assurance is invalid with rate adaption.	Circuit Assurance requires configuration option PrtSp(Kbps) set to the DDS speed.
CTS Ctrl&DiagTyp	CTS Control is =RTS with Mixed or NonDisruptive diagnostics for a multipoint tributary.	Set configuration option CTS Cntrl to Std (standard) or set configuration option Diag Type to Disr or None.
DSU Agg Exceeded	The aggregate port speeds exceed the DDS speed. The sum of the port speeds cannot exceed the DDS Speed.	Set configuration option PrtSp(Kbps) to be equal to or less than the DDS Rate(Kbps).
DSU AsyncUndersp	A port configured for asynchronous operation cannot be the underspeed port and bit robbing for NonDisruptive diagnostics is not allowed.	Use configuration option Async→Sync to set one port to synchronous and underspeed, or lower the asynchronous port speed, or set Diag type to Disr, Mixed, or None.
Elast Not Valid	Receive Elastic Store is not allowed if the port speed does not equal the DDS Speed or if the diagnostic type is set to NonDisruptive.	Set configuration option PrtSp(Kbps) to match the DDS speed. When configuration option RxElasStor is enabled, Diag Type must be set to Disr (disruptive).
Incmpt DDS Speed	Incompatible DDS speed. DDS-SC enabled and DDS speed not 2.4, 4.8, 9.6, 19.2, or 56 kbps.	Set the configuration option Rate(Kbps) to a valid speed.
Incmpt Diag mode	Incompatible diagnostic mode: • Point-to-point configuration is not compatible with Mixed diagnostics. • Disruptive diagnostic type 2500 or 2600 is not compatible with NonDisruptive diagnostic type. • DDS-SC is enabled without CISC chip.	 • For point-to-point, set configuration option Diag Type to Disr, NonD, or None. • Change configuration option Diag Type to Disr, Mixed, or None, or change Disr Type to a setting other than 2500 or 2600. • Change configuration option Diag Type to Disr, Mixed, or None.
Invalid Port Spd	Disruptive diagnostic type 2500 or 2600 is being used with rate adaption.	Set the configuration option PrtSp(Kbps) to match the Rate(Kbps) to eliminate rate adaption.

Table E-4
(2 of 2)
Configuration Error Messages

Message	Condition	Action
Inval RTS Cntrl	Multipoint tributary device with RTS Control forced on.	Set configuration option RTS Cntrl to DTE.
Inval 2ndChanSpd	DSU port speed with Diag Type set to NonDisruptive. Use configuration option In-Band Secondary Channel Diagnostic Speed when no excess bandwidth is available.	Refer to configuration option 2nd Ch(bps) for valid diagnostic speeds.
LPDA&PrtSPIncmpt	LPDA enabled is incompatible with Port 1 speed set to less than 4.8 kbps with: • A digital DBM and diagnostic type set to NonDisruptive, or multipoint with symmetric mode disabled and port speed is less than DDS speed, or MCMP. • Disruptive diagnostic type set to Br56 and diagnostic type set to NonDisruptive, or multipoint with symmetric mode disabled and port speed is less than DDS speed, or MCMP.	• Change configuration option PrtSp(Kbps) to 4.8 kbps or higher, or change Diag Type, or enable M-PtSymPrt, or change MUX Funct to not equal MCMP. • Change configuration option Disr Type to Br56, or set PrtSp(Kbps) to the DDS speed, or enable M-PtSymPrt. MCMP is not available with symmetric mode and multipoint.
SC Scram Inv MP	DDS-SC and Secondary Channel Scrambler enabled. Multipoint configuration with rate adaption is not valid with SC Scrambler enabled.	Set configuration option PrtSp(Kbps) to match the DDS speed; turn off 64KScramblng.
10BPC & 2 Stops	Two stop bits not available when number of bits per character is set to 10. Need one start bit; the maximum size of asynchronous character is 12 bits (ASPEN chip).	When the configuration option AsyncBit/Char is set to 10, set the configuration option Stop Bits to 1.
V.54&2500 Incmpt	Disruptive diagnostic type set to 2500 is incompatible with V.54 Loopback enabled.	Set configuration option Disr Type for any value but 2500, or disable configuration option V.54 Lpbk.

Table E-5
(1 of 4)
Device Health and Status Messages

Message	Condition	Action
AggSw Active	Aggregate switching is active.	Aggregate switching can be disabled using the configuration option NetIntf.
AggSw Inact	Aggregate switching is not active.	To make active, use configuration option NetIntf.
AggSw w/DDS	Aggregate switching in partial backup.	DDS clock source is set by configuration option TxClkSource.
AggSw w/o DDS	Aggregate switching in full backup.	Clock source is set by configuration option NetI Timing.
Brdge with DDS	Multipoint circuit in partial backup with digital bridging.	DDS clock source is set by configuration option TxClkSource.
Brdg w/o DDS	Multipoint circuit in full backup with digital bridging.	Clock source is set by configuration option Brdg Timing.
Config Corrupt	Configuration is corrupt.	Reset all configuration options from one of the factory-loaded option sets: FacC, FacT, or FacB. Refer to Table 2-1.
nn.n DDS	Indicates the data rate (*nn.n*) of the active core (DSU or DBM) when there are no alarms.	Data rate set by configuration option Rate(Kbps).
DDS F: *alarm*	Digital facility alarm; *alarm* is one of the following network alarms: 1. AbnStatCod — Abnormal Station Code 2. BiplrViol — Excessive Bipolar Violations 3. Fac Alarm — Facility Alarm 4. No Signal — No signal received 5. OutofServc — Out-of-Service condition	1. Rate(Kbps) set to 64CC or DDS-SC enabled and remote not detected. 2. Line speeds do not match or network trouble. 3. Control mode idle (CMI) notification. 4. Local problem; check DDS line from rear of DSU and from wall for network connection. 5. Rate(Kbps) set to 56 kbps or less and remote not detected.
Dial Tone:Fail	Dial tone test was enabled and test failed.	Try another piece of equipment on the line. Line may be out of order.
DSU:Device Fail	Internal failure in the DSU is detected.	Initiate a Device self-test (Devic) from the Test branch. If message continues, call the Customer Assistance Center.
DSU:Disable	DSU transmitter is disabled.	To enable the DSU, use Control branch's control option TxCtl.

Table E-5
(2 of 4)
Device Health and Status Messages

Message	Condition	Action
DSUTst: *test*,*init*	The DSU is running a test, initiated from *init*. *test* is one of the following tests: BERT — Bit Error Rate Test BiL — Bilateral Loopback Dev — Device Test DL — Digital Loopback DT — Digital Test DTE — DTE Loopback E-E — End-to-End Test Lamp — Lamp Test LL — Local Loopback NetL — Network Loopback RL — Remote Digital Loopback TM — Test Mode *init* is one of the following initiators: DCP — Diagnostic Control Panel (front panel) DTE — Data Terminal Equipment LPDA — NetView-initiated test NMS — Network Management System Ntwk — Network Remt — Remote DSU	Refer to the *Test Branch* section of Chapter 3 for details regarding each test. Many tests require no action. NetL (network loopback) test may appear if the Service Provider is testing the line; they should notify you of the testing. Could also be a problem with crossed pairs needing repair.
nn.n EBrdg	Indicates the Bridge Rate (*nn.n*) of the active core (DSU or DBM) when there are no alarms.	The bridge rate is set with the MUX Setup configuration option.
External Alarm A	The DSU detects a positive voltage on Pin 23.	Refer to configuration option Ext Leads.
External Alarm B	The DSU detects a positive voltage on Pin 19.	Refer to configuration option Ext Leads.
Inactiv Brdg	Digital bridge is not active.	Status message.
Invalid Address	A DSU was powered up with an invalid address. Invalid addresses are: 0 — Reserved for the SDU 192 — Reserved for the broadcast address 191 — Invalid for a DSU with a DBM because of the reserved **192** broadcast address 255 — Invalid for a DSU with a DBM >80 — Addresses greater than 80 are not valid for DPII protocol	Change the configuration option Network Address.
MCMP CommunicFail	No reply from MCMP circuit card. The DSU periodically polls the MCMP circuit card for health and status. When the DSU does not receive a response, this message appears.	The problem could be temporary while retraining is in progress. If message continues, initiate a Device self-test (Devic) from the Test branch. If failure continues, call Customer Assistance Center.
MUX CommunicFail	No reply from TDM circuit card. The DSU periodically polls the TDM circuit card for health and status. When the DSU does not receive a response, this message appears.	The problem could be temporary while retraining is in progress. If message continues, initiate a Device self-test (Devic) from the Test branch. If failure continues, call Customer Assistance Center.

Table E-5
(3 of 4)
Device Health and Status Messages

Message	Condition	Action
MUX Device Fail	Internal failure of TDM or MCMP is detected.	Initiate a Device self-test (Devic) from the Test branch. If failure continues, call Customer Assistance Center.
nn.n NetI	Network Interface speed when configuration option NetIntf is set to Forc.	Informational message.
NetI F:No Signal	No signal from Network Interface alternate port.	The configuration option NetIntf is set to Forc for aggregate switching.
OutofFrame Thresh	For DSUs operating on a single port (rate adaption or nondisruptive), TDM, or MCMP, the local DSU has detected a continuous MUX Out-of-Frame condition.	The alarm clears when a local DSU synchronizes with a remote DSU. Both DSUs need to have the same port speeds.
P*nn*Tst: *test,init*	The DSU is running a test on port *nn* (01—06), initiated from *init*. *test* is one of the following tests: BERT — Bit Error Rate Test DL — Digital Loopback DT — Digital Test DTE — DTE Loopback RL — Remote Digital Loopback *init* is one of the following initiators: DCP — Diagnostic Control Panel (front panel) DTE — Data Terminal Equipment LPDA — NetView-initiated test NMS — Network Management System Remt — Remote DSU TM — Test Mode	Refer to the *Test Branch* section of Chapter 3 for details regarding each test. Many tests require no action.
Port*nnn* DTR Alarm	The DTR lead at port *nnn* (01—06, All) has been Off for more than 30 seconds.	Check DSU power connection and DTE operation.
Prt*nnn* Disable	Transmitter at port *nnn* (01—06, All) is disabled.	Use the Control branch's control option TxCtl to enable the port.
Prt*nnn* Stream Term	Streaming terminal. DTE at port *nnn* (01—06, All) has its RTS lead turned ON longer than the predefined time.	Refer to configuration option AntiStream. Verify DTE operation.
Redun Fan Alarm	Indicates a problem with the fan on the –48 Vdc Central Office Power Unit.	Check NMS adapter cable connection to –48 Vdc power supply cable connections. If okay, call Customer Assistance Center.
Redun Pwr Alarm	Indicates a problem with the power on the –48 Vdc Central Office Power Unit.	Check NMS adapter cable connection to –48 Vdc power supply cable connections. If okay, call Customer Assistance Center.
Subnetwrk Alarm	A major alarm was set Off by one of the devices in your subnetwork.	Check the Subnetwork Health and Status report and Table E-6.

Table E-5
(4 of 4)
Device Health and Status Messages

Message	Condition	Action
Sub-normal Speed	The DBM is operating at a dial backup speed less than the DSU and the DDS network speed.	Set the configuration option DBM Rate(Kbps) to the DDS network data rate.
Subtree Truncat	Downstream health and status information has been truncated because of an overflow of the system limits.	Clear any alarms to decrease the amount of information reported.

Table E-6
Subnetwork Health and Status Messages

Message	Condition	Action
Devic	Device Failure. One of the following major alarms is in effect: • Configuration Corrupt • Device Test Failure • MUX Device Failure	See Table E-5 for conditions and action.
DialBU	Dial BackUp Mode.	Indicates DBM is active.
DialCN	Dial Connect.	Indicates DBM is in Standby mode.
DialTn	Dial Tone Test failure.	Check the DBM facility.
Disab	Indicates DSU, DBM, or Port *nn* is disabled (*nn* = 1–6).	Check status of address.
DTR	DTE alarm.	Data Terminal Ready lead is Off.
ExtLd	External lead alarm A or B.	See External Alarm A message in Table E-5.
Facil	DDS facility alarm. Indicates a network facility alarm.	When facility working, remote status address is available.
MAJOR	Indicates a major alarm from a DATAPHONE II device.	Verify DPII connection.
MUX	MUX (TDM or MCMP) failure.	See MCMP or MUX CommunicFail message in Table E-5.
NoResp	No response. The active poll list member did not respond.	Probable cause: facility problem, remote DSU problem, or poll list incorrect.
Normal	Active poll list member reports no alarm or status.	Status message.
RPower	Redundant power supply alarm.	See Redun Pwr Alarm message in Table E-5.
Stndby	Dial standby.	Status message.
Stream	Streaming terminal.	See Prt*nnn* Stream Term message in Table E-5.
SubSpd	Subnormal operating speed.	See Sub-normal Speed message in Table E-5.
Test	Test mode. DSU test, DBM test, or Port *nn* test (*nn* = 1–6).	Status message.
Thresh	Threshold exceeded.	See OutofFrame Thresh message in Table E-5.
TribTm	Tributary time-out.	Multipoint configuration with no response.
Trunc	Subtree truncation.	See Subtree Truncat message in Table E-5.

Technical Specifications F

Technical Specifications

The 3600 Series DSUs can be used as a Local Area Data Set (LADS) to provide a point-to-point link between two devices. The network facility is a direct 4-wire crossover connection without using a digital service.

Tables F-1 through F-4 list the technical specifications for the following:

- LADS maximum connection distance requirements (Table F-1)
- 3600 Series DSU (Tables F-2 and F-3)
- 3600 Hubbing Device for use with a Model 3610 DSU only (Table F-4)

Table F-1
LADS Connection Distances

Data Rate (kbps)	Wire Diameter (AWG)			
	19 Gauge (.0359″ or .9122 mm)	22 Gauge (.0253″ or .643 mm)	24 Gauge (.0201″ or .511 mm)	26 Gauge (.0159″ or .404 mm)
2.4	20.0 mi (32.2 km)	16.6 mi (26.7 km)	12.7 mi (20.5 km)	9.4 mi (15.1 km)
4.8	19.4 mi (31.2 km)	12.7 mi (20.5 km)	9.6 mi (15.4 km)	7.1 mi (11.5 km)
9.6	15.2 mi (24.5 km)	9.7 mi (15.6 km)	7.3 mi (11.7 km)	5.6 mi (9.0 km)
19.2*	11.8 mi (19.0 km)	7.5 mi (12.1 km)	5.7 mi (9.2 km)	4.2 mi (6.8 km)
38.4	11.2 mi (18.0 km)	6.5 mi (10.5 km)	4.6 mi (7.4 km)	3.2 mi (5.1 km)
56	9.2 mi (14.8 km)	5.4 mi (8.7 km)	3.8 mi 6.2 km)	2.8 mi (4.5 km)
64	9.2 mi (14.8 km)	5.4 mi (8.7 km)	3.8 mi (6.2 km)	2.8 mi (4.5 km)

* Power level is –10 dBm.

Table F-2
(1 of 3)
General COMSPHERE 3600 Series Technical Specifications

Specifications	Criteria
AC POWER FUSE	
Model 3610/3611 DSU	No accessible fuse
3000 Series Carrier	4-amp fuse, AT&T Paradyne part number 190-0037-0431 (two spares supplied with carrier)
AC POWER REQUIREMENTS	
3610 DSU 3610 DSU with DBM	24 Vac (CT), 60 Hz ±3 (0.093 amp, 5.8 watts at 115 Vac) 24 Vac (CT), 60 Hz ±3 (0.114 amp, 9.5 watts at 115 Vac)
3611 DSU 3611 DSU with DBM	24 Vac (CT), 60 Hz ±3 (0.029 amp, 4.5 watts at 115 Vac) 24 Vac (CT), 60 Hz ±3 (0.080 amp, 8.0 watts at 115 Vac)
DBM (V.32 or Switched 56)	24 Vac (CT), 60 Hz ±3 (0.024 amp, 2.0 watts at 115 Vac)
3000 Series Carrier (16 DSUs with DBMs plus SDU and fan module)	90—132 Vac, 60 Hz ±3 (1.650 amp, 165 watts at 115 Vac)
APPROVALS	
FCC Part 15 FCC Part 68	Class A digital device AW292J-61661-DD-N
UL 3610 DSU 3611 DSU, 3000 Series Carrier	 Listed UL 1950 Recognized Component UL 1950
CSA Safety 3610 DSU 3611 DSU, 3000 Series Carrier Emissions	 Certified CSA 22.2, No. 220-M1986 Certified Component CSA 22.2, No. 950-M89 Class A digital apparatus
Bell Canada	"DCTE Specifications," July 1989, Issue 1
DTE INTERFACE	
3610 and Non-modular 3611 DSUs 25-pin D-subminiature connector 34-pin connector	 EIA-232-D / ITU (CCITT) V.24 (ISO 2110) ITU (CCITT) V.35 (ISO 2593)
Modular 3611 DSU 25-Pin V.35 Interface	EIA-232-D / ITU (CCITT) V.24 (ISO 2110) ITU (CCITT) V.35 (ISO 2593)
Uses a Rear Connector Plate with two 25-pin D-subminiature connectors.	A modular DSU V.35 interconnect cable is required to use the V.35 connector. The cable provides an interface between the DSU's 25-pin D-type connector and the DTE cable's V.35 connector.
ENVIRONMENT	
Operating Temperature	32° to 122° F (0° to 50° C)
Storage Temperature	–4° to 158° F (–20° to 70° C)
Relative Humidity	5%—95% (noncondensing)
Shock and Vibration	Withstands normal shipping and handling

Table F-2
(2 of 3)
General COMSPHERE 3600 Series Technical Specifications

Specifications	Criteria
HEAT DISSIPATION (MAX.) AT 115 VAC	
3610 DSU 3610 DSU with DBM	22.16 Btu/hr. 29.00 Btu/hr.
3611 DSU 3611 DSU with DBM	22.16 Btu/hr. 27.30 Btu/hr.
3000 Series Carrier (16 DSUs with DBMs plus SDU and fan module)	563.00 Btu/hr.
NMS COMPATIBILITY	DATAPHONE II System Controller, Diagnostic Console, or Network Controller COMSPHERE 6700 Series NMS, Release 4.0 or greater for full support COMSPHERE 6800 Series NMS, Release 4.1.5 or greater for full support NetView, Version 1, Release 3 or greater
ASYNC TERMINAL	ANSI X3.64/VT-100 compatibility Rate: 9.6 kbps 8 bits per character, 1 stop bit, no parity
DATA RATES	Primary channel rates: 64, 56, 38.4, 19.2, 9.6, 4.8, and 2.4 kbps Async/Sync rates: 64, 56, 48, 38.4, 32, 19.2, 18.8, 18.0, 16.8, 14.4, 12.0, 9.6, 9.2, 7.2, 4.8, 4.4, 2.4, 2.0, and 1.2 kbps Other asynchronous rates (e.g., 150, 300, 600, and 1800 bps) can be obtained through oversampling Asynchronous rates support ITU (CCITT) V.14 extended rate range at 8 to 12 bits per character, including the *start* and *stop* bit (+2.3, –2.5 percent overspeed/underspeed compensation at 10 bits per character)
PHYSICAL DIMENSIONS	
3610 DSU	
Height	2.13 inches (5.4 cm)
Width	7.63 inches (19.4 cm)
Depth	12.13 inches (30.8 cm)
3611 DSU (non-modular or modular)	
Height	7.13 inches (18.1 cm)
Width (thickness)	0.90 inch (2.3 cm)
Depth	13.40 inches (34.0 cm)
Rear Connector Plate (2-port)	
Height	5.24 inches (13.3 cm)
Width	0.88 inch (2.2 cm)
Depth (25-Pin V.35 Interface)	1.00 inch (2.5 cm)
3000 Series Carrier	
Height	10.50 inches (26.7 cm)
Width	19.00 inches (48.3 cm)
Depth	14.00 inches (35.6 cm)

Table F-2
(3 of 3)
General COMSPHERE 3600 Series Technical Specifications

Specifications	Criteria
WEIGHT	
3610 DSU 3610 DSU with DBM	3.70 pounds (1.68 kg) 4.10 pounds (1.86 kg)
3611 DSU (modular) 3611 DSU (modular) with DBM	0.91 pound (0.41 kg) 1.34 pounds (0.61 kg)
3611 DSU (non-modular) 3611 DSU (non-modular) with DBM	1.05 pounds (0.48 kg) 1.50 pounds (0.68 kg)
Rear Connector Plate (2-port) 25-Pin EIA-232/25-Pin V.35	0.13 pound (0.06 kg)
3000 Series Carrier (16 DSUs with DBMs plus SDU and fan module)	70.00 pounds (31.8 kg)

Table F-3
DSU Technical Specifications

Specifications	Criteria
APPLICATION	Full- or half-duplex data transmission via point-to-point or multipoint DDS network, or local area data channel
COMMUNICATION LINE	Leased or private 4-wire DDS line
DATA RATES	
Digital Services (DDS, ASDS)	2.4, 4.8, 9.6, 19.2, 38.4, 56, and 64CC kbps
LADS	2.4, 4.8, 9.6, 19.2, 38.4, 56, and 64 kbps
Clear Channel[1]	64 kbps (on a 72 kbps circuit) with the *64KScrambling* configuration option enabled
When timing is external (provided by the DTE), the DTE's clock must be within these ranges.	64CC kbps ±11 bps 56 kbps ± 9 bps 38.4 kbps ± 4 bps 19.2 kbps ± 5 bps 9.6 kbps ± 1 bps 4.8 kbps ± 0 bps 2.4 kbps ± 0 bps
DDS NETWORK INTERFACE	
3610 DSU	8-pin modular jack, USOC RJ48S
3611 DSU	(One or two) 50-pin connector, USOC RJ48T
DIAGNOSTIC INTERFACE	
3610 DSU	Requires 3600 Series Hubbing Device which provides two 8-pin modular jacks
3611 DSU	Via the SDU in the COMSPHERE 3000 Series Carrier or DC-OUT via NMS adapter cable (for a tributary in the carrier)
NETWORK COMPATIBILITY	
ANSI T1.410 –1992 and AT&T Technical Reference 62310 – 1987	2.4, 4.8, 9.6, 56, and 64 kbps
Integrated Network Corporation Compatibility Bulletin CB-INC-101 and Pacific Bell publications PUB L-780035-PB/NB and PUB L-780036-PB/NB	19.2 kbps loop at levels of +6, 0, or –10 dBm
DSU COMPATIBILITY	
Primary Channel	All AT&T Paradyne digital products and other products that are compliant with AT&T Technical Reference 62310 – 1987
Diagnostic Channel	
Point-to-Point or Multipoint:	3600 Series — enhanced 3600 diagnostics (nondisruptive or disruptive) 3500 Series — 2600 diagnostics 2600 Series — 2600 diagnostics
Point-to-Point Only:	2500 Series — 2500 loopbacks

[1] If a 3600 Series DSU is not used on both ends of the circuit or if the scrambler configuration option (64KScrambling) is not enabled, the customer's DTE must provide for the primary data's ones (1s) density.

Table F-4
3600 Hubbing Device Technical Specifications

Specifications	Criteria
APPLICATION	Diagnostic interfaces for the Model 3610 DSU
NETWORK MANAGEMENT INTERFACES NMS	 Two 8-pin modular jacks *(Note that the 3600 Hubbing Device has a 6-inch attached cable that terminates in a 4-pin modular plug.)*
PHYSICAL DIMENSIONS Height Width (thickness) Depth	 1.9 inches (4.8 cm) 0.9 inches (2.3 cm) 3.4 inches (8.6 cm)
WEIGHT	0.13 pounds (0.06 kg)

Glossary

active core	The core that is transmitting data. For example, the DBM is the active core when the unit is in Backup mode. In the case of a DBM-D, DBM-F, DBM-I, DBM-S, or DBM-V, the primary core and the active core are the same.
ADp	Advanced Diagnostic protocol. An enhanced diagnostic communication protocol used with the 6700 and 6800 Series NMS and with certain front panel diagnostic functions.
alternate port	The unused Port 1, either the V.35 or the EIA-232-D interface, provides an aggregate data path for an external dial backup unit.
apl	Analog Private Line. Dedicated private line; not available for dialing.
ASDS	ACCUNET® Spectrum of Digital Services. An AT&T network service offering the alternatives of fractional T1, 9.6, 56 or 64 kbps (clear channel) digital, and analog access to a digital core network.
ASPEN	Asynchronous-to-Synchronous with Prism ENhancements chip. This is a chip upgrade that includes an async/sync converter to support the Single-Port Async/Sync feature, which also supports the same functionality as earlier versions of the 3600 Series DSU.
Async Terminal	This feature allows a device to be controlled from an async (asynchronous) terminal like an ASCII terminal. When enabled, the async terminal menus emulate the front panel without being limited by the 2-line, 16-character liquid-crystal display (LCD), which can accommodate only three selections per screen.
auto backup	A function of the dial backup module (DBM) or carrier-mounted dial backup unit, whereby the DSU activates the DBM to reestablish a line automatically when a facility alarm is detected from the DDS network.
auto restoral	A function of the DBM whereby the DSU automatically returns to the DDS network when service is restored over the private line. On point-to-point circuits, the DSU test the integrity of the DDS network before switching data back to the private line.
backbone network	The main circuit that carries the data before it is split into extended circuits going to their final destination.
bandwidth	The range of electrical frequencies a device is capable of handling.

B-channel	Bearer Channel. ISDN 64 kbps bearer channel used for voice, circuit, or packet switched data.
BERT	Bit Error Rate Test. A test used to analyze the network circuit. Both the control and tributary devices must be connected to the network.
bis	See V.32bis.
BRI	Basic Rate Interface. ISDN interface consisting of B-channel for information transfer and D-channel for control and signaling.
bridge mode	All ports are assigned to one digital-sharing group.
callback directory pointer	The directory entry in an originating DBM consists of the answering DBM's telephone number, a delimiting character, and a callback pointer. The pointer identifies the originating DBM's telephone number in the answering DBM's Backup Directory.
carrier	The rack mounting that contains 17 slots: 1 control slot and 16 device slots.
carrier-mounted	A Model 3611 DSU that is designed for installation in a COMSPHERE 3000 Series Carrier and used at central-site operations. Up to 16 DSUs can be installed per carrier, with 6 carriers per cabinet.
CBrdg	Central-site digital bridge.
CC	Control Channel. The diagnostic interface between an NMS and the SDU.
CCITT	Consultative Committee on International Telegraphy and Telephony. An advisory committee established by the United Nations to recommend communications standards and policies. See ITU-TSS.
channel	A bidirectional DS0, voice, or data path, for electrical transmission between two or more points. Also called a circuit, line, link, path, or facility.
cluster controller	A device that controls communications processing for multiple terminals.
CMI	Control Mode Idle. A control signal sent over the DDS line to indicate that no data is being sent.
connector module	An interface that is shipped with a modular DSU with TDM or MCMP and installed onto the rear of the COMSPHERE 3000 Series Carrier. The module contains six EIA-232 connectors, one for each port. The module also has a 26-pin high-density D-type connector located at the top to the module for V.35 operation on Port 1 or an aggregate data path.
control	A device that is, for diagnostic purposes, at the logical head of a hierarchical network. It is the unit from which tests and commands are issued to other units on the same circuit. There is only one control per link.
core	A function of the circuit card that provides data transmission capability. With 3500 and 3600 Series DSUs, there are two cores: one for the DSU and one for the DBM. The data can be transmitted through either (also see active core).
CSA	Canadian Standards Association.

CTS Clear to Send. A signal indicating that the device is ready for the DTE to transmit data.

D-channel The ISDN channel that carries signaling information to Control call setup.

DBM The optional Dial Backup Module for the 3600 Series DSU. This module provides an alternate data path in case of failure of the digital connection. Five types of DBMs are available: V.32 14.4 kbps and V.34 28.8 kbps DBMs for backup through the PSTN, 2-wire Switched 56 DBM for digital backup service, 4-wire Switched 56 DBM for digital backup service, and ISDN DBM for digital backup service with one 64 kbps B-channel for data and voice and one D-channel for signaling information. The 4-wire Switched 56 DBM is only available for use in the U.S.

dBm A decibel referenced to one milliwatt. This unit measures relative signal power.

DBM-D A carrier-mounted dial backup unit that provides automatic dial backup and service restoration of failed digital circuits using 2-wire access over 56 kbps switched digital services. The unit functions as a DBM instead of a DSU.

DBM-F A carrier-mounted V.34 kbps dial backup unit that provides automatic dial backup and service restoration of failed digital circuits over the PSTN. The unit functions as a DBM instead of a DSU.

DBM-I A carrier-mounted dial backup unit that provides automatic dial backup and service restoration of failed digital circuits using an ISDN U-interface with two digital channels.

DBM-S A carrier-mounted dial backup unit that provides automatic dial backup and service restoration of failed digital circuits using 4-wire access over 56 kbps switched digital services. The unit functions as a DBM instead of a DSU.

DBM-V A carrier-mounted V.32 dial backup unit that provides automatic dial backup and service restoration of failed digital circuits over the PSTN. The unit functions as a DBM instead of a DSU.

DBU Dial Backup Unit. A device used for establishing a data channel on the public telephone network and for switching data traffic there during a failure of the private line data channel.

DC Diagnostic Channel. The diagnostic interface between two network devices, used to extend the NMS diagnostics to downstream devices.

DCP Diagnostic Control Panel. The front panel of a device that continuously provides status information about the device's operation and allows an operator to manage its operation. This is a generic term used for both the standalone and carrier-mounted models.

DDD Direct Distance Dialing. Telephone exchange service, the public switched telephone network (PSTN) that enables a telephone service user to access telephone lines without operator assistance.

DDS Digital Data Service, such as DATAPHONE Digital Service or ACCUNET Spectrum of Digital Services, that provides digital (not dial) communication circuits.

dedicated backup	A dial backup module (DBM) assigned to a particular DSU that is continually available for service restoration. The DBM switches to Dial Backup mode automatically when the DDS line fails; no switching is required. An external dial backup unit can also provide dedicated backup.
diagnostic path extension	A method used by an NMS to extend diagnostic control to devices other than a tributary 3610 DSU at a remote location. It uses one multiplexed channel to provide an external 1200 bps asynchronous transparent path for the NMS's control channel.
dial network	See PSTN.
dial string	A sequence of up to 36 characters that the DBM can send into the dial network to establish a call to a remote backup device. It consists of a telephone number and may include other information, such as a callback directory pointer.
digital bridging	Provides the ability for dial backup of a multipoint configuration by bridging the signal on the digital side of the front end panel.
digital sharing	Sharing device enabled allows TDM to backup MCMP use digital-sharing groups.
DIP switch	Dual In-line Package switch.
DMI	Data Mode Idle. Refers to a sequence of 1s transmitted or received on the DDS or switched 56 kbps network. When the General (Gen) branch configuration option RTS Cntrl is set to FrcOn, the DSU will transmit DMI whenever RTS is Off. Data Mode Idle operation is recommended for point-to-point applications. DMI is also used for switched 56 kbps call set up signaling.
DPII	DATAPHONE II. The name of both a family of AT&T DCE and NMS products (SC, DC, and NC), and the network management protocol used by these products.
DSD	Digital sharing device.
DSR	Data Set Ready. A signal from the modem to the DTE that indicates the modem is turned ON and connected to the DTE.
DSU	Data Service Unit. Data communications equipment that transmits digital data over a private line. Also used for limited distance communications over the PSTN when a high-speed modem is not needed.
DTE	Data Terminal Equipment. The equipment, such as computers and printers, that provides or creates data.
DTR	Data Terminal Ready. A signal from the DTE to the modem, sent via Pin 20 of the EIA-232 interface, that indicates the DTE is turned ON and connected to the modem.
EBrdg	Extended digital bridge.
EIA	Electronic Industries Association. This organization provides standards for the data communications industry to ensure uniformity of interface between DTEs and DCEs.
EPROM	Erasable programmable read-only memory.

errored second	A performance measurement reported during Digital Test or Transmit Test Pattern that is defined as a second in which at least one error has been detected.
extended network	The extension of a circuit where the tributary DCE is connected to a downstream (extended) control DCE.
FA	Facility Alarm. A failure condition reported to the NMS when there is a break in communication with one or more tributary.
fast select	An extended data field used on some packet types for x.25 facility.
fallback	Retraining at a lower rate or speed.
FCC	Federal Communications Commission. Board of Commissioners that regulates all U.S. interstate, intrastate, and foreign electrical communication systems that originate from the United States.
FEP	Front-End Processor. A communications computer associated with a host computer that manages the lines and routing of data through the network.
flex	The flex option is available for TDM or MCMP. When installed, each port can be set independently as either an EIA-232 or V.35 interface.
framing	A control procedure used with multiplexed digital channels where bits are inserted so the receiver can identify time slots allocated to each sub channel.
full-duplex	The capability to transmit in two directions simultaneously.
IEC	InterExchange Carrier. A company that provides inter-LATA (local exchange carrier) telecommunication services, like AT&T, MCI®, and SPRINT®. Access to these services can be provided through DDS dedicated channels, T1.5 dedicated access channel, or digital switched access (DSA) channels.
IOC	ISDN Ordering Code.
ISDN	Integrated Services Digital Network. Provides capability to carry voice and data while sending signaling on the D-channel.
ITU-TSS	International Telecommunications Union Telecommunications Standardization Sector. An advisory committee established by the United Nations to recommend communications standards and policies and allocate transmission frequencies. Before March, 1993, it was called CCITT.
LADS	Local Area Data Set is used to provide a point-to-point link between two devices (also called LDM).
LATA	Local Area Transport Area. A region served by a local exchange carrier (LEC) that consists of one or more area codes.
LCD	Liquid Crystal Display. Thin glass plates containing liquid crystal material. When voltage is applied, the amount of light able to pass through the glass plates is altered so that messages can be displayed.
LDM	Limited Distance Modem.

LEC	Local Exchange Carrier. A company that provides intra-LATA (local exchange carrier) telecommunication services, like NYNEX or Bell South.
LED	Light Emitting Diode. A light or status indicator that glows in response to the presence of a certain condition (e.g., an alarm).
link-level address	NMS communications are directed to a tributary via a link-level address. It takes the form of control network address/tributary network address (e.g., 157/04 — DSU control address of 157 and tributary address of 04).
LN	Load Number. Percentage of total load to be connected to a telephone loop used by the labeled equipment.
LPDA	Link Problem Determination Aid. A series of testing procedures used in NetView that are initiated by the network control program (NCP) that provides the status of modems and attached devices, and the overall quality of the link.
LSD	Line Signal Detect. A signal between the DTE and the device indicating energy exists on the transmission circuit.
MCMP	Multichannel Multipoint. A circuit card that enables the support of up to six independent applications over a single multipoint digital facility. The MCMP capability can support up to 40 tributary DSUs, each optioned with an MCMP card.
MNP	Microcom Networking Protocol. Levels 4–2 of this protocol, similar to CCITT V.42, detect and correct data errors caused by poor telephone line conditions. Level 5, similar to CCITT V.42bis, includes data compression.
modular circuit card	A circuit card that contains gold finger contacts on the rear edge of the circuit card. A modular circuit card can be removed from the front of the carrier without disturbing DTE cables.
Modular DSU	A DSU circuit card that contains gold finger contacts and is used with a rear connector plate. This circuit card type is easily removed from the front of the carrier without disconnecting the DTE cables.
multiplex	To combine many low-speed data sources into a single, high-speed serial data stream. The data is coded at transmission, and decoded at reception. Some multiplexing techniques include Frequency Division Multiplexing (FDM), Time Division Multiplexing (TDM), and Statistical Multiplexing (Stat MUX).
multipoint circuit	A special type of circuit where one control device communicates in a broadcast mode with one or more tributary devices. Communication from a tributary device is always directly to the control device, and not to any of the other tributary devices.
MUX	Multiplexer. A device that enables the simultaneous transmission of multiple independent data streams into a single high-speed data stream.
NMS	Network Management System. A set of diagnostic and configuration management tools for a data communication network, consisting of software programs and dedicated computer hardware.
non-disruptive diagnostics	Diagnostics that are transmitted over the in-band secondary channel or routed through a DBM in Standby mode so that primary data is not affected.

non-disruptive session Executing the command will not disrupt primary data.

option sets Sets of configuration options (or libraries) that are related and fulfill a specific function. For example, the Diagnostic (Diag branch) configuration options allow you to configure the DSU for performing diagnostic functions. This option set (or library) contains 16 configuration options related to the DSU's or DBM's diagnostic operation.

permissive interface A dial modem operating mode characterized by a fixed output power level of –9 dBm.

point-to-point circuit A data network circuit with one control and one tributary.

port sharing FEP port sharing allows transmissions and controls received by the first port to be sent to the second port in the port sharing group.

primary core The circuit card that is normally running when power is supplied to the unit. In the case of a DBM-D, DBM-F, or DBM-I, DBM-S, or DBM-V, the primary core and the active core are the same.

PSTN Public Switched Telephone Network. A network shared among many users who can use telephones to establish connections between two points.

rate adaption Used when the DSU or DBM operates at a speed greater than the DTE. This capability is enabled automatically when the port speed is set lower than the line speed.

rear connector plate Used with modular devices, a connector plate is installed onto the rear of the COMSPHERE 3000 Series Carrier. It contains two DTE connectors and functions as an interface between the modular device and the DTE.

REN Ringer Equivalence Number. Number of wires that can be connected to a telephone line.

RMA Return Material Authorization. Provided by customer assistance center for equipment return.

RTS Request to Send. A signal from the DTE to the modem, sent via Pin 4 of the EIA-232 interface, that states the DTE has data to send.

RXD Received Data. Pin 3 of the EIA-232 interface that is used by the DTE to receive data from the modem. Conversely, the modem uses Pin 3 to transmit data to the DTE.

SDCP Shared Diagnostic Control Panel. A feature that allows carrier-mounted devices to share the same diagnostic control panel. Installed into one COMSPHERE 3000 Series Carrier, it controls and monitors the devices in all the carriers in the cabinet. A single SDCP can control up to 8 carriers, with a total of 128 devices.

SDU Shared Diagnostic Unit. A circuit card installed in Slot 0 of the COMSPHERE 3000 Series Carrier that provides an interface between an optional SDCP and/or network management system and the devices in the carrier.

session disruptive	Application data may be disrupted when running a test, or running the test may cause the application session to be dropped or terminated. The result depends upon the protocol, the front-end processor, the time-out parameters, etc.
session-nondisruptive diagnostics	Diagnostic messages with a duration of .5 seconds or less that are sent over the primary data channel. These messages may interrupt customer data, causing errors requiring retransmission of data blocks. They should not, however, cause termination of the communication session.
SNA	Systems Network Architecture. A description of the logical structure, formats, protocols, and operation sequences that transmit information and that control the configuration and operation of an IBM network.
SPI	Service Profile Identifier. Local telephone company provides this information. Must be stored in DSU permanent memory.
standalone	A device designed for desktop operation. A standalone device can be configured as either a control or a tributary.
switched 56 kbps digital service	A service provided by local exchange and interexchange carriers (LECs and IECs) that allow customers to use high-speed switched digital data capability without having to subscribe to private network services.
switched mode	Used in networks containing only 3600 Series DSUs, it is a mode of operation using control mode idle (CMI) and data mode idle (DMI) signaling in order to ensure protocol independence of primary data while trapping diagnostic data in the DSU.
System Controller	An AT&T NMS that uses the DATAPHONE II (DPII) protocol.
TDM	Time Division Multiplexer. A device that enables the simultaneous transmission of multiple independent data streams into a single high-speed data stream by simultaneously sampling the independent data streams and combining these samples to form the high-speed stream.
training	A process where two modems try to establish a connection over the telephone line.
tributary	A device that receives commands from other devices in the network.
TXD	Transmit Data. Pin 2 of the EIA-232 interface that is used by the DTE to transmit data to the modem. Conversely, the modem uses Pin 2 to receive data from the DTE.
U-Interface	Marks the demarcation line between the customer-provided equipment and the local telephone company. Interface provides basic rate access.
USOC	Universal Service Ordering Codes. Generic telephone company service ordering codes.
V.32bis	An ITU standard for full-duplex transmissions with asynchronous or synchronous data over dial or leased telephone lines at rates up to 14.4 kbps.
Vac	Volts alternating current.
VT-100	Terminal emulation mode used for asynchronous communications.

winkback detection — In telephone switching systems, a momentary signal state change from control mode idle (CMI) to data mode idle (DMI), and back to CMI (sometimes referred to as a “wink start’’).

6-port connector module — A module that is installed on the COMSPHERE 3000 Series Carrier that contains six 25-pin EIA-232-D DTE connectors. In addition, a 26-pin high-density D-type connector is located at the top of the connector module to provide the V.35 interface for either Port 1 or an aggregate data path.

6700 Series Network Management System — An AT&T Paradyne automated network management system that allows an operator to monitor network conditions, analyze problems, and take restorative measures from a single personal computer (PC) workstation. This NMS operates in a Microsoft® Windows™ graphic environment.

6800 Series Network Management System — An AT&T Paradyne automated network management system that allows an operator to monitor network conditions, analyze problems, and take restorative measures.

Index

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W

Numbers