Lucent Technologies

DEFINITY® Extender
1101 Remote Module

User's Guide

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Comcode 108315250
Issue 1
June 1998

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Notice
Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

Your Responsibility for Your System's Security
Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use.

Lucent Technologies Fraud Intervention
If you *suspect that you are being victimized* by toll fraud and you need technical support or assistance, call the Lucent Technologies National Customer Care Center at 1 800 643-2353.

Federal Communications Commission Statement
This equipment has been tested and found to comply with the limits for a Class B 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 residential 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. However, there is no guarantee that interference will not occur in a particular installation. For further FCC information, see "Customer Support Information" later in this manual.

Industry Canada (IC) Interference Information
This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.
Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class B préscrites dans le reglement sur le brouillage radioélectrique édicté par le ministère le ministère des Industrie Canada.

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DEFINITY and CALLMASTER are a registered trademark of Lucent Technologies in the US and other countries.

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Issue 1, June 1998

For more information about Lucent Technologies documents, refer to the section entitled “Related Documents” in “About This Book”

Support Telephone Number

In the continental US, Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at 1 800 242-2121 or your Lucent Technologies authorized dealer if you need assistance when installing programming, or using your system. Outside the continental US, contact your local Lucent Technologies representative.

Warranty

Lucent Technologies provides a limited warranty on this product. Refer to “Limited Warranty” in “Customer Support Information.”

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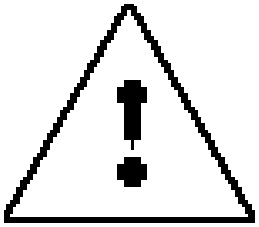

The exclamation point in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT SAFETY INSTRUCTIONS

To reduce the risk of fire, electrical shock, and injury to persons when installing telephone equipment, always follow basic safety precautions including:

- Read and understand all instructions.
- Follow all warnings and instructions marked on or packed with the product.
- Never install this unit or the telephone wiring for it during a lightning storm.
- Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone wiring has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Use only Lucent Technologies-manufactured DEFINITY® Enterprise Communications Server (ECS) circuit packs, carrier assemblies, and power units in the DEFINITY ECS control unit.
- Use only Lucent Technologies-recommended/approved DEFINITY ECS accessories.

- Do not install this product near water, for example, in a wet basement location.
- Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Unplug the product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use cleaners or aerosol cleaners.
- Do not operate the system if chemical gas leakage is suspected in the area. Use telephones located in some other safe area to report the trouble.

WARNING:

DO NOT open the Remote Module. There are no user serviceable parts inside the unit. Only an authorized technician should open the unit for required maintenance or upgrading purposes.

SAVE THESE INSTRUCTIONS

Customer Support Information

Support Telephone Number

In the USA only, Lucent Technologies provides a toll-tree customer Helpline (1 800 242-2121) 24 hours a day. If you need assistance when installing, programming, or using your system, call the Helpline, or your Lucent Technologies authorized representative.

Outside the USA, if you need assistance when installing, programming, or using your system, contact your Lucent Technologies authorized representative.

Security of Your System: Preventing Toll Fraud

As a customer of new telephone equipment, you should be aware that there is an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, or breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.

Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

To minimize the risk of unauthorized access to your DEFINITY ECS:

- When possible, restrict the off-network capability of off-premises callers, using calling restrictions, Facility Restriction Levels, and Disallowed List capabilities.
- When possible, block out-of-hours calling.
- Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.
- Limit Outcalling to persons on a need-to-have basis.

The DEFINITY ECS, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, telephone numbers and authorization codes can be compromised when overheard in a public location, lost through theft of a wallet or purse containing access information, or when treated carelessly (writing codes on a piece of paper and improperly discarding them).

Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, to evaluate and administer the various restriction levels, and to protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

Lucent Technologies Fraud Intervention

If you *suspect you are being victimized* by toll fraud and you need technical support or assistance contact your Lucent Technologies authorized representative, or in the USA, call the Lucent Technologies National Customer Care Center at **1 800 242-2121**.

Limited Warranty

Lucent Technologies Inc. warrants this equipment to be free of defects in materials and workmanship for a period of one year from the date of shipment. All defects within this time will be repaired without charge upon return of the unit to the factory.

This warranty is null and void if the manufacturer determines that any modifications have been made to the unit, or the unit has been subjected to physical or electrical stress.

This warranty covers parts and labor only, and does not include shipping costs, travel expenses, or travel time.

Installation of the equipment is the sole responsibility of the purchaser. The manufacturer, its agents, or its distributors accept no responsibility for malfunction or damage caused by improper treatment or connection of the unit.

The manufacturer, its agents, or its distributors are not liable for any losses incurred through use or malfunction of the equipment or any losses or damages incurred by the use of the equipment in any means whatsoever.

This warranty is limited to the repair of the equipment to its normal functioning capability.

This warranty is complete as stated and all other warranties, expressed or implied, are invalid.

The DEFINITY Extender 1101 System should be installed only by qualified personnel. No user-serviceable parts are contained within the units. Installation or programming should not begin prior to review of all sections of this manual.

FCC Notification and Repair Information

This equipment is registered with the FCC in accordance with Part 68 of its rules. In compliance with those rules, you are advised of the following:

- **Means of Connection.** Connection of this equipment to the telephone network shall be through a standard network interface jack, USOC RJ11C. These USOCs must be ordered from your telephone company.

- **Party Lines and Coin Telephones.** This equipment can not be used with party lines or coin telephone lines.

- **Notification to the Telephone Companies.** Before connecting this equipment, you or your equipment supplier must notify your local telephone company's business office of the following:

  — The telephone number(s) you will be using with this equipment.

  — The appropriate registration number and ringer equivalence number (REN) for the DEFINITY Extender 1101 System is 2.

  — For each jack, the sequence in which lines are to be connected, the line types, the Facility Interface Code (FIC), and the Ringer Equivalence Number (REN) by position when applicable.

- **Ringer Equivalence Number (REN).** The REN is used to determine the number of devices that can be connected to the telephone line. Excessive RENs on the line can result in the devices not ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed five (5.0). The DEFINITY Extender 1101 System REN is 2.

- **Disconnection.** You must also notify your local telephone company if and when this equipment is permanently disconnected from the line(s).

Installation and Operational Procedures

This manual contains information about installation and operational procedures.

- **Repair Instructions.** If you experience trouble because your equipment is malfunctioning, the FCC requires that the equipment not be used and that it be disconnected from the network until the problem has been corrected. Repairs to this equipment can be made only by the manufacturers, their authorized agents, or others who may be authorized by the FCC. In the event repairs are needed on this equipment, contact your authorized Lucent Technologies dealer or, **in the USA only**, contact the Lucent Technologies National Customer Care Center at 1 800 242-2121.

- **Rights of the Local Telephone Company.** If this equipment causes harm to the telephone network, the local 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 also be informed of your right to file a complaint with the FCC.

- **Changes at Local Telephone Company.** Your local telephone company may make changes in its facilities, equipment, operations, or procedures that affect the proper functioning of this equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

- **New Network Area and Exchange Codes.** The DEFINITY ECS software does not restrict access to any new area codes or exchange codes established by a local telephone company. If the user has established toll restrictions on the system that could restrict access, then the user should check the lists of allowed and disallowed dial codes and modify them as needed.

- **Equal Access Codes.** This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modifications of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

Federal Communications Commission (FCC) Electromagnetic Interference Information

This equipment has been tested and found to comply with the limits for a Class B 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 residential 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. However, there is no guarantee that interference will not occur in a particular installation.

About This Book

Intended Audience

This book is intended to help in the installation, system administration, and maintenance of the DEFINITY Extender 1101 System. It is intended for use as a reference by anyone needing such information, including system managers, support personnel, sales representatives, and account executives. It is also intended for technicians who are responsible for system installation, maintenance, and troubleshooting.

Terms and Conventions

The DEFINITY Extender 1101 System will henceforth be referred to as the Remote Module.

The DEFINITY Extender 1100 System will henceforth be referred to as the Switch Module.

Throughout this document, toll fraud security hazards are indicated by an exclamation point inside a triangle and the words Security Alert.

Security Alert:

Security Alert indicates the presence of toll fraud security hazard. Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party (e.g., persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf). Be sure to read "Your Responsibility for Your System's Security" on the inside front cover of this book and "Security of Your System: Preventing Toll Fraud" in Customer Support.

Typographical Conventions

Certain type fonts and styles act as visual cues to help you rapidly understand the information presented:

Example	Purpose
Do *not* recycle old passwords.	Italics indicate emphasis.
If you do not want to disconnect, *go to Step 3.*	Italics also tell you instructions about what to do next in a procedure.
2:OK 3:Next	Italics indicate text that appears on the telephone display.
Press the **DROP** or **REDIAL** button four times.	The names of fixed-feature, factory-imprinted buttons on a telephone appear in bold.
At the *Go Online* screen, press **3** until the following screen appears:	A number in bold print is used to designate a dialpad key on your telephone.

How to Use This Book

This book is organized into chapters that give information on procedures necessary for the proper installation and administration of your DEFINITY Extender 1101 System.

“Related Documents,” later in this section, provides a complete list of system documentation, together with ordering information.

If you have problems with your Remote Module, contact your system administrator. If the problem can not be solved by the system administrator, in the continental US, your system administrator will call our toll-free Helpline, available 24 hours a day, at 1 800 242-2121. Outside of the continental US, contact your Lucent Technologies representative or local Authorized Dealer.

Product Safety Labels

Throughout this document, hazardous situations are indicated by an exclamation point inside a triangle and the word *Caution* or *Warning*.

WARNING:

Warning indicates the presence of a hazard that could cause death or severe personal injury if the hazard is not avoided.

CAUTION:

Caution indicates the presence of a hazard that could cause minor personal injury or property damage if the hazard is not avoided.

Related Documents

The documents listed below are part of the DEFINITY ECS documentation set. These documents can be ordered from the Lucent Technologies Publications Center.

Call: Lucent Technologies Publications Center

Voice 1 800 457-1235
Fax 1 800 457-1764

International Voice 765 361-5353
International Fax 765 361-5355

Write: Lucent Technologies Publications Center

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Document No.	Title
	DEFINITY® Enterprise Communications Server (ECS) System Documents
555-230-833	*CD-ROM for Maintenance and Installation Documents.*
	Toll Fraud Security
555-025-600	*BCS Products Security Handbook*
	DEFINITY® Enterprise Communications Server (ECS) Telephone User Support
555-230-201	*Terminals and Adjuncts Reference Manual (on CD-ROM 555-230-833)*
555-230-763	*8410 Voice Terminal User's Guide*
555-230-765	*8434 Voice Terminal User's Guide*
555-230-792	*CALLMASTER® II and CALLMASTER® III User's Guide*
555-015-168	*CALLMASTER® II and CALLMASTER® III Voice Terminal Installation and Use*
555-015-171	*CALLMASTER® IV Voice Terminal User and Installation Instructions*
555-015-172	*CALLMASTER® II, CALLMASTER® III, AND CALLMASTER® IV Voice Terminal Instructions for Programming the Options*
555-015-162	*CALLMASTER® VI Voice Terminal Version 1.0 Installation and User's Manual*
555-230-739	*6400 Series Multi-Line Telephone User's Guide*

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We welcome your comments, both positive and negative. Please use the feedback form on the next page to let us know how we can continue to serve you. If the feedback form is missing, write directly to:

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Basking Ridge, NJ 07920-2332

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Title: **DEFINITY® Extender 1101 System**

Document No.: **555-025-115** Issue: **1** Date: **June 1998**

1. Please rate the effectiveness of this book in the following areas:

	Excellent	Good	Fair	Poor	Not Applicable
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Clarity					
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Examples					
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Introduction

1

An overview of the functioning and specifications of the DEFINITY® Extender 1101 System

The DEFINITY® Extender 1101 System enables DEFINITY® Enterprise Communications Server (ECS) telephone users to be a fully functional part of the DEFINITY ECS telephone system with a digital telephone located any distance off-premise. The DEFINITY Extender 1101 System is transparent to the user and retains access to the features and functions of the DEFINITY ECS. In addition, an RS-232D data port extension is incorporated, allowing the user to connect off-premise RS-232D equipment to equipment at the DEFINITY ECS location.

System Operation and Configuration

The DEFINITY Extender 1101 System is designed for use with a DEFINITY ECS of Release 3, Version 3 or later. The DEFINITY Extender 1100/1101 System consists of two modules. One module, identified as the Switch Module, connects to your DEFINITY ECS. The other module, identified as the Remote Module, connects to your DEFINITY ECS telephone at your off-premise location. Figure 1-1 shows the DEFINITY Extender 1100/1101 System configuration.

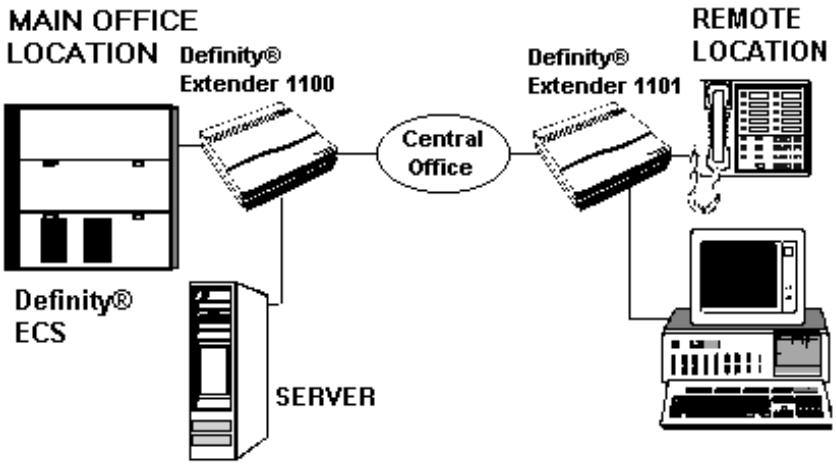

Figure 1-1. System Configuration

The modules communicate via a single analog telephone line, which can extend your DEFINITY ECS telephone to virtually unlimited distances. See “Specifications” later in this chapter for detailed circuit specifications.

The Switch Module emulates your telephone, and the Remote Module emulates your DEFINITY ECS. Each module features a V.34 internal modem for the transmission of all signals between the two modules. With the use of Lucent Technologies’ DEFINITY Extender 1101 System, the features and capabilities of your on-premise telephones are extended to those off-premise.

Security Alert:
Using the Remote Module gains access to the features of the DEFINITY ECS, including access to WATS lines, FX lines, etc., which are subject to toll fraud. Guard passwords carefully!

Equipment List

Your Remote Module package should include:

- One Remote Module (identified on the top of the unit)
- One 7-foot standard telephone line cord
- One AC adapter
- DEFINITY *Ext*ender 1101 *Remote Module User's Guide*

NOTE:
A DEFINITY ECS telephone and its associated telephone cord are not supplied with the Remote Module and must be ordered separately. Contact your system administrator or Lucent Technologies representative for information. The Switch Module(s) is also ordered and shipped separately.

You must supply the following for installation:

- DEFINITY ECS display telephone
- Telephone cord
- If you use an 8434D telephone, an 1151A1 power supply
- If you are connecting the Remote Module to a 240 VAC outlet, an adapter to convert to 120 VAC.

- Power and central office line suppresser. Lucent Technologies recommends the 147C AC/CO Line Surge Protector (#8310-006). Contact your Lucent Technologies representative for ordering instructions.
- RS232D Serial Cable if you will be using the DEFINITY Extender 1101 System for remote data applications

NOTE:
Save your packing materials. Even though the Remote Module is a reliable product, it may be necessary to return it for maintenance. When returning the module, use the original package.

Compatibility

While the DEFINITY Extender 1101 is not compatible with the original analog DEFINITY Extender, Model 846, it is compatible with the following commercial two-wire DEFINITY ECS display telephones.

- 8410DR
- 6408D+
- 6424D+
- 6416D+
- 8434D
- CALLMASTER® III
- CALLMASTER® IV
- CALLMASTER® VI

NOTES:

1. The Class B 8410DR which is identical to the 8410D but is FCC Class B for residential use. The CALLMASTER® VI and the CALLMASTER® IV are also FCC Class B.

2. The 6400 series telephones and the CALLMASTER® VI require DEFINITY Release 3, Version 6.

Options

You can order a wall-mounted metal bracket with a slide-in style sleeve for use with the Remote Module. Contact your Lucent Technologies representative for ordering information.

Specifications

The DEFINITY Extender 1100/1101 Systems have been tested under transmission line conditions specified in TSB-37A. The specification calls for checking modem operation over the equivalent of 95% of the identified analog line types in North America. This means that the DEFINITY Extender 1100/1101 Systems should operate properly over nearly all telephone line conditions. However, the actual connect rate will vary based on the quality of the telephone line.

Connecting at rates greater than 19,200 bps over a lesser quality line will cause a high bit error rate which could result in breakups in the audio. A 19,200 bps connect rate is more than adequate to sustain proper audio quality and can be sustained on most line conditions. Any connect rate greater than 19,200 bps improves data performance through the RS-232D port of the DEFINITY Extender 1100/1101 Systems, but has no impact on voice quality. If you are not using the DEFINITY Extenders 1100/1101 Systems for data, there is no reason to connect higher than 19,200 bps.

If you are still having audio breakup problems when you connect at 19,200 bps, you can lower the connection as low as 14,400 bps with little or no impact on audio quality. If you are still getting a high bit error rate even after lowing the connect speed to 14,400, you should contact the provider of your telephone line for support.

The DEFINITY Extender 1100 and 1101 Systems use a V.34 modem internally. Network configurations that support V.34 modems should work well. Your telephone line may not support V.34 modems. Although custom network configurations may work fine, it is up to the end user to verify that the configuration will work.

LUCENT TECHNOLOGIES IS NOT RESPONSIBLE FOR MAKING THESE CONFIGURATIONS WORK.

Table 1-1 shows the specifications of the DEFINITY Extender 1101 System.

NOTE:
Specifications are subject to change without notice as technological or manufacturing changes warrant.

Table 1-1. Remote Module Specifications

Specification	Description
Size	8.0" x 8.0" x 1.50" (205 mm x 205 mm x 40 mm)
Weight	1.5 pounds (0.68 kilograms)
Power Requirements	12 vdc supplied by 120 VAC adapters. 800 mA maximum
Communication	
Data Type	V.34 modem
Data Impedance	600 Ohms
Data Tx Level	–15 dBm (+1 dBm/–3 dBm)
Data Rx Sensitivity	–40 to 0 dBm
User Data Port	
Data Type	RS-232D
Data Rate Setting	115.2 kbps, 57.6 kbps, 38.4 kbps, 19.2 kbps, 9.6 kbps, 4.8 kbps, 2.4 kbps
Parity Setting	None, Even, Odd
Data Bits Setting	7, 8
Stop Bits Setting	1 or 2

Considerations

Keep the following in mind when you use the DEFINITY Extender 1101 System:

- The DEFINITY Extender 1101 System is to be used with a DEFINITY ECS of Release 3, Version 3 or later.
- No custom calling features, such as Call Waiting or Call Forwarding, should be ordered for the line to which you connect the Remote Module.

NOTE:
A Call Waiting tone causes an interruption in the call, and the Remote Module will begin the reconnect sequence.

- Use of the speakerphone on the DEFINITY ECS telephone connected to the Remote Module may degrade voice quality.
- When you use voice and data simultaneously on the Remote Module, the voice transmission will have priority over the data transmission.
- Authorized connections require a password 8 to 10 digits in length.

Security Alert:

Using the Remote Module gains access to the features of the DEFINITY ECS, including access to WATS lines, FX lines, etc., which are subject to toll fraud. Passwords should be as long as allowed. Passwords should be hard to guess and therefore should not contain:

- *all the same numbers (for example, 88888888)*
- *sequential characters (for example, 987654321)*
- *character strings associated with you or with the remote user or with your business. These include:*
  - *Names*
  - *Birthdays*
  - *Business name*
  - *Telephone number*
  - *Social security number*
- *Words and commonly used names*

Passwords should use as wide a variety of characters as possible. Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

Installation

2

How to install the DEFINITY Extender 1101 System.

Installing the Remote Module involves choosing a proper location and plugging in the requited cables and power cords.

Location Requirements

To ensure successful operation of the DEFINITY Extender 1101 System, place the Remote Module within 400 feet (120 meters) of the DEFINITY ECS telephone. The Remote Module may be mounted in any position or may be wall-mounted by using the optional wall-mount bracket. Install the module's power supply and cabling away from high-power/high-RF noise devices such as computers, fans, fluorescent ballasts, and power supplies.

Electrical Requirements

Use only the AC adapters provided with the DEFINITY Extender 1101 System. The DEFINITY Extender 1101 System has been designed to operate from 120 VAC, 60 Hz.

CAUTION:

Do not apply power to the Remote Module *until specifically instructed in the installation procedures.*

Connecting the Remote Module

All connections to the Remote Module are done via the back panel (see Figure 2-1). The current back panel elements are:

- **Telco Line** is the connection between the Remote Module and the central office line for transmission of the signaling information to the Switch Module.
- **Phone/Switch** is the connection between the DEFINITY ECS telephone and the Remote Module.
- **RS-232D** provides for simultaneous RS-232D communication between equipment at the off-premise site and equipment at the on-premise site.
- The DIP switch under **Option Switch** is used for system configuration.
- **+12VDC** is the connection for the A/C adapter.

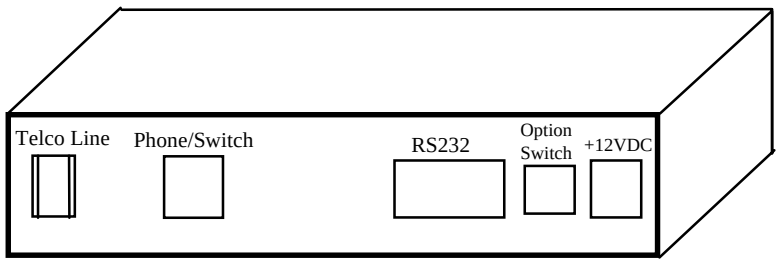

Figure 2-1. Remote Module Back Panel

In addition to the back panel connections, a three-color light-emitting diode (LED) is visible through the top of the unit and provides information about the status of the equipment.

Installation Procedure

Installing the Remote Module involves connecting the line cords, the telephone cord, the power cord, and, at your option, the RS-232D cable. The line cord, power cord, and an AC adapter are supplied with your Remote Module, and the telephone cord and any power cords required for the operation of the telephone are supplied with the display telephone.

Follow these steps to install the Remote Module:

CAUTION:
Do not plug the A/C adapters into the electrical outlets until instructed to do so in the following procedure.

CAUTION:
In the following procedure, use extreme caution to be sure that you are matching the correct cord/cable to the correct port on the back of the Remote Module. Incorrect matching of the cable/cord with the port will result in irreversible damage to the module that is not covered under warranty or maintenance agreement.

1. Ensure that the module has the proper DIP switch configuration (see Table 2-1).

Table 2-1. DIP Switch Configuration

Switch #	OFF	ON
1	μ Law companding	A Law companding
2	Normal operation	Reserved
3	Normal operation	Reserved
4	Normal operation	Test mode

NOTE:
You should not change the factory-set DIP switches; they should all be set in the "Off" position. Check with your system administrator before making any changes.

2. Connect one end of the line cord provided with the Remote Module to the telephone company phone jack and the other end to the TELCO LINE jack of the Remote Module.

3. Connect the DEFINITY ECS telephone to the PHONE/SWITCH jack of the Remote Module by using the cord provided with the telephone.

CAUTION:
Do not plug the line cord provided with the Remote Module into the PHONE/SWITCH jack of the Remote Module. Damage to circuits may result.

4. Connect the AC adapter provided with your system to the Remote Module. Plug the adapter into a standard 120 VAC electrical outlet.

CAUTION:
Do not plug the A/C adapters into a 240 VAC outlet because you will damage the adapter and the module. You must first obtain an adapter to convert 240 VAC to 120 VAC.

The Remote Module begins self-diagnostics. The LED at the top left corner of the module flashes a pattern of yellow, red, and green blinks. When the Remote Module completes self-diagnostics, the LED flashes three green blinks if the module has been correctly installed. If there is a problem installing the module, or if there is a problem installing the Remote Module itself, the LED flashes a combination of red or yellow blinks after power-up. (See “LED Sequences” in Troubleshooting chapter.)

5. The display on the telephone initializes and *Go Online*? is shown.

Connections for Data Transmission

The RS-232 port on the Remote Module can be used for data communications with the RS-232 port on the Switch Module. Your system administrator should provide you with information about the computer connections at the Switch Module. At the Remote Module, you will need to connect your Personal Computer (PC) or data terminal to the RS-232 port on the Remote Module. A 9-pin straight through cable will work for PCs. You will need an adapter if your equipment does not have a 9-pin connector. The glossary lists the pin-out for the 9-pin female connector on the back of the Remote Module.

The data settings for the PC's COM port and the Remote Module's RS-232 port must be the same. Your system administrator should also provide you with the data settings on the Switch Module's RS-232 port. The factory data settings for RS-232 on the Remote Module are 38.4 kbps, 8, N, 1. You should check that the setting of your Remote Module's RS-232 port matches the settings of the Switch Module's RS-232 port provided by your system administrator.

NOTE:
For more information on RS-232D, please refer to the Glossary.

Hardware Flow Control

The Switch and Remote Modules use the CTS line for flow control. If the hardware flow control is not enabled on the PC, or if a cable without the CTS line connected is used, characters can be lost when the buffer is full.

Programming

3

How to program the operating parameters for the DEFINITY Extender 1101 System

Before you can use the Remote Module, you must program the operating parameters, such as the telephone number, the type of dialing, and the baud rate of communication.

Using the Telephone for Programming

Use the DEFINITY ECS telephone to program the operating parameters at the remote location. Prompts will appear on the telephone display. To respond to the prompts, press the dial pad keys and some functions keys on the telephone. Table 3-1 shows the keys used to move to or select programming options.

Table 3-1. Telephone Keys Used in Programming

Telephone Key	Function
1	Allows you to move backward through programming menu.
2	Allows you to select a parameter for programming.
3	Allows you to move forward through programming menu.
DROP	Allows you to accept parameters when programming passwords, telephone numbers, logout code, and timeout period. Used on 84XX series and CALLMASTER® series telephones.
REDIAL	Allows you to accept programming passwords, telephone numbers, logout code, and timeout period. Used on 64XX series telephone.
CONF	Allows you to backspace entered characteristics when programming telephone numbers, logout code, and timeout periods.

Before programming the Remote Module, make sure that the DEFINITY ECS telephone display shows:

Go Online?

To begin programming:

Press **3** to gain access to the Main Menu.

If your system administrator preprogrammed your Remote Module, press **2** to begin system operation (see Chapter 4, Operating the DEFINITY Extender 1101 System.)

NOTE:
The display returns to the *Go Online?* Menu from most menus, if no key has been pressed for 60 seconds.

The Main Menu

The following parameters can be programmed or viewed from the Main Menu:

- Set Dial Numbers?
- Set Modem Parameters?
- Set COD Parameters? (Call On Demand)
- Set REM COM Port? (Remote COM Port)
- Set Misc Parameters?
- Diagnostics Menu?
- View Serial No?
- View S/W Version

To maneuver through specific Remote Module menus:

- Press **3** to move through the menu options
- Press **1** to move backwards through the menu options
- Press **2** to access the current menu.

Setting Dial Numbers

Press **3** to go forward through the messages if the display reads *Go Online?,* or **1** to go backwards if you go past the "Set Dial Numbers?" option. Press **2** to access.

Accessing the Set Dial Numbers menu allows you further access to these sub-menus:

- Set PBX Phone Number?
- Set REM Phone Number?(REMote)
- Set Dialback?

Setting the PBX Phone Number

The PBX telephone number must be programmed for proper operation. If your system administrator has not preprogrammed this telephone number for your Remote Module, follow the steps below to set the PBX telephone number. The PBX telephone number is the number of the Switch Module's Telco line connection. Ask your system administrator for the PBX telephone number.

1. Press **2** to select this parameter, press **3** to set the REM Phone number, or press **1** to return to Set Dial Numbers? Menu.

   If you select **2**, either a screen appears showing the current stored number or a blank screen appears if no number has been programmed.

2. To change an existing number or to enter a new number, dial the required digits by using the telephone keys (0 to 9). You can use the **CONF** button to backspace and erase erroneously entered characters.

3. Press the **DROP** or **REDIAL** button on the display telephone to accept the number and return to the *Set PBX Numbers?* menu.

Setting the Remote Telephone Number

This parameter is used to program the telephone number that is used to call the Remote Module and is required for proper operation in COD and Dialback modes. The Remote Telephone Number is the telephone number of the Remote Module's Telco line connection. Ask your system administrator for the telephone number to program

1. Press **2** to select this parameter, press **3** to advance to the next programming option, or press **1** to return to the previous menu option.

   If you select **2**, either a screen appears showing the current stored number or a blank screen appears if no number has been programmed.

2. To change an existing number or to enter a new number, dial the required digits by using the telephone keys (0 to 9). Use the **CONF** button to backspace and erase erroneously entered characters.

3. Press the **DROP** or **REDIAL** button on the display telephone to accept the number and return to the *Set REM Phone Numbers?* menu.

Setting Dialback

Enabling this parameter directs the Switch Module to disconnect, and then dial back to your Remote Module after a connection has been successfully completed. Dialback enables the majority of long distance to be billed to the telephone line connected to the Switch Module.

1. Press **2** to select this parameter or press **1** to return to the previous programming option.

   Selecting **2** displays an *Enable dialback?* or *Disable dialback?* message.

2. Press **2** to accept the message, or press **3** to return to the *Set Dialback?* menu making no change. Selecting **2** displays *Now Disabled*, or *Now Enabled* and the screen returns to the *Set Dialback?* menu.

   NOTE:
   When Call On Demand (COD) is enabled, Dialback is not operational. If your application requires Dialback, ensure you have disabled COD.

   If you enable Dialback and COD is already enabled, *Disable COD to allow Dialback* is shown on the display telephone.

Setting Modem Parameters

Selecting *Set Modem Parameters* from the Main Menu allows you access to the following sub-menus that allow you to set modem parameters:

- Set Speaker Mode?
- Set Max Connect Rate?
- Set COM Access?
- Set Compression?
- Set Pulse Dial?

Setting Speaker Mode?

Set Speaker Mode? enabled gives sound to the remote module as it connects. Select the desired modem speaker level to hear the modem's dialing connection-sounds

1. Press **2** to select this parameter, or press **3** to advance to the next programming option.
2. Press **2** to accept the speaker's current setting. Press **3** to advance through the speaker's setting options. The options are: Low, Med, High and Off.
3. Press **2** to accept the speaker mode displayed.

Setting Max Connect Rate

Enabling Max Connect Rate sets up the modem's connect rate. By default the Max Connect Rate is set to auto which equals 19.2 kbps. The maximum supported rate is 33.6 kbps.

NOTE:
Although audio quality is usually good, in instances it may degrade slightly. It may be caused by an excessive number of bit errors on the line. You can verify this by accessing the Diagnostics Menu on the phone. An excessive number of 135A errors will tell if this condition is true. You may need to reduce your modem connect speed if it is set at a speed higher than the default 19.2 kbps.

Setting COM Access

Set COM Access? enabled allows the Remote Module to act as an external modem when offline with the Switch Module. Connect an RS-232D serial cable to COM port on the remote module and the cable to an available COM port on the computer. Please refer to your computer's documentation for information on using an external modem.

1. Press **2** to select this parameter, **3** to advance to the next programming option, or press **1** to return to the *Set Max Connect Rate* menu.

Setting Compression

This parameter enables the modem's data compression protocol. Enable Compression if you are using the Remote Module's COM port for data access to a terminal server connected to the Switch Module's COM port, and if the data client does not support its own form of data compression. Enabling modem compression will increase the performance of your data connection, but may degrade the voice quality of your extender.

1. Press **2** from the *Set Compression?* menu. Press **2** to enable or disable compression or press **3** to make no change and return to the *Set Compression?* menu.

   If you press **2** to enable or disable compression, a message displays either "Now Enabled" or "Now Disabled"

Setting Pulse Dial

The default dialing method is Tone Dial. Enable this parameter if Tone Dial is not supported on the telephone line connected to the Remote Module.

1. Press **2** to select this parameter. Press **2** to display either *Enable pulse dial?* or *Disable pulse dial?.*

2. Press **3** to return to the Set Pulse Dial? Menu.

   A message displays either *Now Enable*, or *Now Disabled* and the screen returns to *Set Pulse Dial?* menu.

Setting Call On Demand Parameters

Selecting *Set COD Mode* from the Main Menu allows you to access the following sub-menus that allow you to configure Call On Deman (COD) parameters:

- Set COD mode
- Set Call Timeout
- Set Connect Timeout
- Set ACD Tone
- Set Data Monitor

Setting COD Mode

Call On Demand (COD) reduces line costs by establishing a connection only when a call occurs. COD needs to be set in one of three modes: Disabled, Ring and Lamp. The user can also specify how much time must pass after a call is terminated before entering COD Waiting.

NOTE:
When Call On Demand (COD) is enabled, Dialback is not operational. If your application requires Dialback, ensure you have disabled COD.

If you enable COD, and Dialback is already enabled, *No Dialback with COD Enabled* is shown on the telephone display.

Disabled COD mode keeps the line up at all times, which also means COD remains disabled. When COD is disabled, the remaining COD parameters do not require programming. Select Disabled COD mode if you are charged a flat monthly rate for your service and if you do not have long distance charges connected with your Switch Module.

Ring Mode is when a ring command from the PBX, or an on-hook/off-hook command at the remote site, causes the remote telephone to leave COD Waiting and re-establishes the connection between the Switch and Remote Modules.

Lamp Mode should be used when you are operating in a non-forced ACD queue and/or using a headset. This parameter controls the activation of COD by detecting telephone use by lamp activity. Choose the lamp mode when you are using a headset connected to your display telephone to make and receive calls. When you choose this mode, the COD timer starts when the first five green DN LEDs are off (identified as ***a***, ***b***, ***c***, ***d***, and ***e***). When the COD timer reaches the value you program for the Call Timeout parameter, the ISDN line is disconnected and your ISDN Remote Module enters COD Waiting.

1. Return to the Main Menu by pressing **1** until *Go Online?* is displayed.
2. Press **3** until the *Set COD Parameters?* menu is displayed.
3. Press **2** to access the *COD* menu.
4. Press **2** to set the COD mode.
5. Press **1** or **3** to advance through mode options.
6. Press **2** to select the displayed mode and return to the Set COD Mode? Menu.

Setting Call Timeout

Call Timeout is the period of time that must pass with no activity occurring on the remote telephone for the DEFINITY Extender 1101 System to enter Call On Demand.

1. Press **3** from the Set COD Mode? Menu to access the Set Call Timeout? Menu.

2. Press **2** to enter a Call Timeout value. The display shows the current timeout in seconds. Enter the new value (from 10-300 seconds). Use **CONF** key to backspace and erase erroneously entered characters.

3. Press **DROP** or **REDIAL** to accept the new timeout value, and return to the *Set Call Timeout?* menu.

Setting Connect Timeout

Since most long distance companies charge for a minimum duration call, it would be cost efficient to stay online for that time period. Setting Connect Timeout would force the modules to stay online for the timeout period

NOTE:
By default, the Connect Timeout period is set to 60 seconds which corresponds with the billing scheme of most of the long distance providers (per one minute.).

1. Press **3** from the Set Call Timeout? Menu to access the *Set Connect Timeout?* menu.

2. Press **2** to enter a Connect Timeout value. The display shows the current timeout in seconds (from 10-300 seconds). Enter the new value from 10-300 seconds if required. Use **CONF** key to backspace and erase erroneously entered characters.

3. Press **DROP** or **REDIAL** button to accept the new value and return to the *Set Timeout?* menu.

Setting ACD Tone

ACD (Automatic Call Distribution) Tone provides a tone to the telephone when the modules are in COD Waiting and a call is incoming to the Remote Module.

1. Press **3** at the *Set Connect Timeout?* menu to access the *Set ACD Tone?* menu.

2. Press **2** to access the *Enable ACD Tone?* menu and the *Disable ACD Tone?* menu.

3. Press **2** to enable or disable ACD Tone or press **3** to make no change to the ACD Tone.

   If you press **2**, *ACD Tone now disabled* or *ACD Tone now enabled* is shown on the telephone display. You are then returned to the Set ACD Tone? menu.

Setting Data Monitor

Data Monitor, when enabled, allows the COM port on either the Remote Module or the Switch Module to keep the modules online if there is data to communicate. Also, when in Call On Demand Waiting, the COM port will wake up the system if there is data to communicate.

1. Press **3** from the Set ACD Tone? menu to access the Set Data Monitor? menu.

2. Press **2** to enable or disable the data monitor. If *Yes* is displayed, press **3** to have the display automatically change to *No*. If *No* is displayed, press **3** to have the display automatically change to *Yes*.

3. Press **2** to accept the currently displayed option and to return to the *Set Data Monitor?* menu.

Setting the COM RS-232D Port

You must set the data rate, data bit, parity and stop bits for the COM RS-232D port on the Remote Module. These are the settings at which data will be transmitted to and from your remote terminal device, usually a computer.

All four parameters must be programmed one after another. After programming the stop bits, the display will return to the Set REM COM Port? Menu.

1. At the *Go Online*? screen, press **3** until screen reads *Set REM COM Port?*

2. Press **2** to access the REM COM Port settings.

Setting the Data Rate

The current Data Rate is displayed. Use **1** and **3** to move through the options.

1. Press **2** to accept the displayed data rate, or press **3** to advance through the choices of data rates and then press **2** to accept. The choices are 2.4, 4.8, 9.6, 19.2, 38.4, 57.6 and 115.2 kbps.

Setting Data Bits

1. Press **3** until the display shows the number of data bits you want. The options are 7 or 8.

2. Press **2** to accept the displayed data bits and to advance to the *Set Parity?* menu.

Setting Parity

1. Press **3** until the display shows the parity you want. Your choices are None, Odd & Even.

2. Press **2** to accept the choice and to advance to the *Stop Bits* menu.

Setting Stop Bits

1. Press **3** until the display shows the number of stop bits you want. Your choices are 1 and 2 stop bits.
2. Press **2** to accept the displayed stop bits and to return to the *Set REM COM Port?* menu.

Setting Miscellaneous Parameters

At the *Go Online*? screen, press **3** until *Set Misc. Parameters* appears. Press **2** to access the *Set Misc Parameters?* menu.

Selecting the Set Parameters? menu allows you to access the following sub-menu that allow you to configure miscellaneous parameters:

- Set Logout Code
- Set Feature Code
- Set User ID

Setting the Logout Code

The Logout Code is the sequence of commands that is sent to the DEFINITY ECS when you disconnect your Remote Module (go offline) when you no longer want to be connected to the DEFINITY ECS. (Refer to the “Disconnecting” section later in this manual.) Check with your System Administrator for the proper logout code sequence for your system. The Logout Code parameters can be set from the *Set Misc Parameters/Set Logout Code* menu item in the *Go Online?* menu.

The following keys are active when in Logout Code:

- Digits 0 to 9
- **CONF** Key = Backspace
- **Hold** = , (the comma represents a 2 second delay)
- #0 = D (Press hook switch)
- #1 = U (Release hook switch)
- ## = #

1. At the *Set Logout Code?* menu prompt, press **2** to select this parameter, or press **1** to return to the *Set Misc Parameters?* menu.

   If you press **2**, either a screen appears showing the current stored code, or a blank screen appears if no code has been programmed.

2. To change an existing code or to enter a new code, dial the required digits by using the telephone keys 0 to 9, **HOLD** button, combination of # and 1, 0. You can use **CONF** button to backspace and erase erroneously entered digits. A maximum of 14 digits can be entered.

3. Press the **DROP** or **REDIAL** button on the display telephone to accept the code.

   Example: U1234,,, 12D - When disconnecting, the Switch Module releases the hook switch, dials 1234, waits 6 seconds, and then presses the hook switch.

Setting the Feature Code

Future software releases will contain either new features, improvements on your existing software version, or both.

In that case, your System Administrator will provide you with a specific 8 to 10 digit code that will enable you to upgrade and activate these pending features.

1. Press **2** from the *Set Misc Parameters?* menu, and then **3** and **2** to access the *Set Feature Code?* menu.

2. Enter the code and press either the **DROP** or **REDIAL** button to accept. If the code is invalid, you automatically return to the *Set Feature Code?* menu. If the code is accepted the telephone display prompts you to restart the unit.

   NOTE:
   If you change your feature code, you must restart your Remote Module so that all features are enabled. Please wait while the unit restarts.

3. Press **2** to accept. The unit restarts and returns to the *Go Online?* menu.

4. Press **3** to return to the *Set Feature Code?* menu.

User ID Menu

The User ID feature is reserved for future use, and is not required to be programmed.

Viewing Diagnostics

Viewing Diagnostics provides you with the ability to troubleshoot the system if required.

1. From the Go Online? Menu, press **3** until *Diagnostics Menu?* is displayed and press **2** to select this parameter.

2. Press **3** to advance through, and press **2** to access the following sub-menus:

- View Connection Speed?
- Initialize Modem?
- ViewRemote Stats?
- View Switch Stats?
- Reset Stats?

View Connection Speed? menu option allows you to view the current or previous Connect Speed, if the system is online.

Initialize Modem? Menu option provides you with the ability to set the modem to default settings. This option should not be used for normal operation.

View Remote Stats? and *View Switch Stats?* menu options allow you to view error status at the Remote and Switch Modules. Refer to Table 3-2 for a detailed description of each error message.

Reset Stats? menu enables you to reset all error statistics on the entire system to allow better control when troubleshooting.

Table 3-2 Error Codes Displayed in the Diagnostics Menu

Code	Description
A	Could occur regularly. A common error that should not directly impair module operation. *Example: Out of sequence user data packets.*
B	Should not occur often. *Example: Something has been unplugged, or if it goes online without the DEFINITY ECS connected, get a V42 error.*
C	Should not occur at all. Probably the result of a hardware problem (or failure). *Example: Number of times the DSP communication failed.*

Continued on next page

Table 3-2 Error Codes Displayed in the Diagnostics Menu, *continued*

Error Codes	
Error Code	**Description**
104A	Number of Received modem Packets that contained an Invalid V42 Address.
105A	Number of Rejected Received modem Signaling packets because they were out of sequence.
106B	Number of times maximum number of Signaling Packet re-transmissions exceeded (Caused Digital Port Data to be lost).
107B	Number of times Signaling channel had to be re-synchronized.
108B	Number of times Signaling channel had no data for 16 consecutive seconds.
109A	Number of times Signaling channel timed out waiting for packet acknowledgment.
110C	Number of times Signaling channel transmit locked up (transmit buffers full when no data to send).

Continued on next page

Table 3-2 Error Codes Displayed in the Diagnostics Menu, *continued*

Error Code	Description
111A	Number of Rejected Received User Data packets because they were out of sequence.
112B	Number of times Maximum number of User Data Packet re-transmissions were exceeded.
113B	Number of times User Data channel had to be re-synchronized.
114A	Number of times User Data channel timed out waiting for packet acknowledgment.
115B	Number of times User Data channel discarded data due to receive overflow (probably because host did not observe flow control).
116B	Number of times carrier detect lost from Terminal Adapter.
117C	Number of times Terminal Adapter check failed.
118C	Number of times communications to DSP failed.
119B	Number of times Digital port link re-activated.

Continued on the next page…

Table 3-2 Error Codes Displayed in the Diagnostics Menu, *continued*

Error Code	Description
120B	Number of times Digital port connection was lost or de-activated.
121A	Number of times Digital port data was re-transmitted.
122B	Number of times IVP (V42) link failed.
123A	Number of times User disconnected by pressing HOLD key 4 times and then disconnecting.
124C	Number of times Synchronous Communications Controller IC transmit locked up.
125B	Number of fatal errors that caused unit to restart (caused by errors 124C, 118C, and 120B).

Error codes 101 to 125 are directly compatible with 2000 error codes.

Table 3-2 Error Codes Displayed in the Diagnostics Menu, *continued*

Exclusive Error Codes	
Error code	**Description**
126C	Invalid Length of SCC Tx packet
127B	SCC Transmit Busy
128A	SCC Rx Status Error
129A	SCC Tx Status Error
130A	Invalid Voice Packet ID detected
131A	Number of Times all user data Buffers were in Use
132A	Number of Times user data packet too long
133A	Number of Times all Signaling Buffers were in Use
134A	Number of Times Signaling packet too long
135A	Bad frame checksum (FCS). Related to poor analog line conditions.
136A	Serial transmit buffers overflow to modem
137A	Serial Receive buffers overflow to modem.
138B	V42 RX Timeout - Modem Retrain

Viewing Serial Number

Viewing the serial number of your Switch and Remote module may be required from the Technical Support Center.

1. Press **3** from the Go Online? Menu until View Serial No? Menu is displayed.

2. Press **2** to view the Remote and Switch Modules' serial numbers.

NOTE:
Switch Module's serial number can be viewed only if it is online or has been online with the Remote Module. Otherwise, "?" would be displayed.

Viewing Software Version

Viewing the software version of your Switch and Remote Module may be required from the Technical Support Center.

1. Press **3** from the Go Online? Menu until *View S/W Version?* Menu is displayed.

2. Press **2** to view the Remote and Switch Modules' software version. If the Remote Module has gone online, the Switch Module software version is displayed as *Rem V1.02,0.9* and *Swt V1.02,0.9.* However, if the Remote Module has not gone online, the Switch Module software version is displayed as V?.??,?.??.

Exiting Programming

To exit the programming mode, press **1** until the *Go Online?* appears on the telephone screen.

Operating the Remote Module

4

Operating the DEFINITY Extender 1101 System.

Once you have installed and programmed the Remote Module, you are ready to use it. After you have established a connection with the Switch Module, and consequently the DEFINITY ECS, you can use your DEFINITY ECS telephone as you would any other telephone on the system.

Starting the Operation

You start the operation of the Remote Module by a process similar to logging in on other systems. Follow these steps to start the operation of the Remote Module:

1. At the *Go Online*? screen, press **2** to start the operation of the DEFINITY Extender 1101 System.

2. At this point, the Remote Module dials the Switch Module at the programmed number (see “Setting the Telephone Number” in Chapter 3, Programming). Figure 4-1 shows the sequence of messages that appear on the telephone display during connection of the DEFINITY Extender 1101 System.

   To terminate the connection process and return to the Go Online? Menu, press **DROP** or **REDIAL** (refer to table 3-1) button three times while the screen displays *Connecting.*

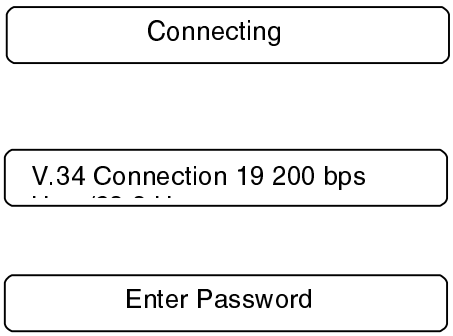

Figure 4-1. Connect Sequence for the Remote Module

Note:
19200 bps is a default connect speed. Depending on the line condition, the connection speed could be:

- 14 400 bps
- 16 800 bps
- 19 200 bps (default)
- 21 600 bps
- 24 000 bps
- 26 400 bps
- 28 800 bps
- 31 200 bps
- 33 600 bps

NOTE:
There is no improvement to the voice quality at connection speeds higher than 19 200 bps.

3. At the *Enter Password* screen, enter your password and press the **DROP** or **REDIAL** button on the display telephone. A valid password must be entered to allow the telephone to be connected to the DEFINITY ECS.

NOTE:
You must enter your current valid password. The first time you use your Remote Module, the password is be the one initially assigned to you by your system administrator. A valid password contains 8 to 10 digits.

4. If a valid password has been entered, the Remote Module completes the connect sequence and the telephone is operational. If an invalid password has been entered, you are prompted to re-enter the password. If after three attempts you do not enter a valid password, the Remote Module disconnects and *Connect Error Password Not Verified* is displayed followed by the *Go Online?* prompt.

   Check your current password with your system administrator; as necessary, reset your password and repeat the procedure from Step 1.

Dialback

If the Dialback feature is enabled (see Section 3 - Programming), immediately after the password is entered, the modules disconnect and the screen displays *Dialback Waiting*.

The Switch Module then calls the Remote Module, the modules connect and the remote telephone is operational.

Call On Demand

If the COD feature is enabled, the modules disconnect and enter COD Waiting if the remote telephone is not being used for the Call Timeout period. (See Section 3 - Programming). Once in COD Waiting, the screen will display *COD Waiting*.

To recover from COD Waiting, begin making a call. The Remote Module reconnects to the Switch Module and your call is connected. While in COD Waiting, the Switch Module may also connect to the Remote telephone is receiving an incoming call.

If Data Monitor is enabled, the modules recover from COD if either the Switch Module or Remote Module have data to send using the COM port. After the data has been sent, the modules return to COD Waiting after the Call Timeout period.

Connect Timeout

If the Connect Timeout Value (see Section 3 - Programming) is set to a value greater than the COD Timeout value, it overrides the COD Timer.

The following example is based on default 60 second and 15 second values for Connect Timeout and Call Timeout periods.

Example:

After the modules connect, either by selecting *Go Online?* or by recovering from COD Waiting, no activity on the telephone will cause the modules to enter COD Waiting after 60 seconds (Connect Timeout period). If the telephone was used for 60 seconds after the connection, the module will enter COD Waiting 15 seconds (Call Timeout period) after the call finishes.

This means the modules enter COD Waiting when Call Timeout and Connect Timeout has expired. When this occurs, Call Timeout resets to the programmed value after any telephone event, such as pressing a button on the display telephone, and also resets to the programmed value after *Going Online?* or recovering from *COD Waiting.*

Disconnecting

To discontinue operation of the DEFINITY Extender 1101 System, follow these steps:

1. Press the **HOLD** button on the display telephone four times.

   Disconnect? Is shown on the telephone screen. This *Disconnect* screen allows you to change your mind before totally disconnecting.

2. To disconnect, press **2**. The disconnect sequence appears on the display; after a few seconds the *Go Online?* screen appears. This indicates you are disconnected.

CAUTION:

Be sure that you have completely logged off by waiting for the Go Online? screen to appear. If you do not completely log off, the Remote Module may continue to try to re-establish the connection, and you will be liable for any applicable toll charges incurred.

3. If you do not want to disconnect, press **3** at the "Disconnect" screen. The telephone screen displays *Re-connect?*

4. Do one of the following:

   - Press **1** to return to the *Disconnect* screen and disconnect the system. The *Go Online?* screen appears, indicating that the DEFINITY Extender 1101 System is no longer connected.
   - Press **2** to retain connection.
   - Press **3** to go to the *Change Password* screen.

Changing a Password

Follow these steps to change your password.

1. If you are not connected to the Switch Modul.e, follow the steps in “Starting the Operation” above to connect to the Switch Module.

2. Once you are connected, press the **HOLD** button on the telephone four times. The telephone screen displays *Disconnect?*

3. Press **3** and the telephone screen displays *Re-connect?*

4. Press **3** and the telephone screen displays *Change Password?*

   NOTE:
   If you press **3** and the Diagnostics Menu appears, check with your system administrator. This indicates that you cannot change your own password. The system administrator can lock out password changes by assigning the user a password with a nine in the third digit.

5. Press **2** and the telephone screen displays *Enter Old Password?*

6. Enter your current password. An “*” will appear for each digit entered. Press the **DROP** or **REDIAL** button to accept (refer to Table 3-1). The telephone screen prompts you to enter your new password.

   NOTE:
   If the old password is correct, a prompt for the new password appears. Enter the new password (8 to 10 digits).

If the old password is not correct, the message *Invalid Password* appears and you are returned to the *Change Password?* screen. Check your password, and repeat Step 5. If you continue to have problems, check with your system administrator.

7. Enter your new 8-10 digit password. Be sure the new password includes the first two digits of your old password since the first two digits identify your user number. An "*"appears for each digit entered. Press either the **DROP** or **REDIAL** button (refer to Table 3-1) to accept. The message on the telephone screen prompts you to enter your new password again.

8. Re-enter your new password and press **DROP** or **REDIAL** to accept. If the re-entered password matches the one previously entered, the message on the telephone screen prompts you to confirm the password change.

   If passwords do not match, the telephone screen advises you of that, and then asks you to repeat the entire password changing process again.

   Follow steps 1-8 to change password. Remember your new password as only the system administrator can recover lost or changed passwords.

Security Alert:

Using the Remote Module gains access to the features of the DEFINITY ECS, including access to WATS lines, FX lines, etc., which are subject to toll fraud. Passwords should be as long as allowed. Passwords should be hard to guess and therefore should not contain:

- *all the same numbers (for example, 88888888)*
- *sequential characters (for example, 987654321)*
- *character strings associated with you or with your business. These include:*
  - *Names*
  - *Birthdays*
  - *Business name*
  - *Telephone number*
  - *Social security number*
- *Words and commonly used names*

Passwords should use as wide a variety of characters as possible. Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

NOTES:

1. The system administrator (user 0) can change all user passwords (see “Changing Passwords” in the “Programming” chapter in the *DEFINITY Extender 1100 System User's Guide*). The remaining users can change only their own passwords (for example, user 1 can change only the password which begins with 01). The new password also must begin with 01).

2. In some cases your system administrator may have disabled your ability to change your password. Check with your system administrator if you have problems.

Setting PBX COM Port

This option allows you to configure the COM port of the Switch Module while the system is on-line. You may need to do that when connecting serial off-premise equipment to the off-premise communication link server. You will be required to match COM RS-232D port settings of the Switch and Remote Modules. You must be logged on as System Administrator to have this menu appear.

The default settings of the Switch Module's COM port are:

- Data rate: 38.4
- Data bits: 8
- Parity: none
- Stop bits: 1

1. If the system is not already on-line, go on-line by pressing **2** at the *Go Online?* prompt.

   If the system is Online, press **HOLD** button four times, and then press **3** until the telephone screen displays *Set PBX COM Port?*

2. Press **2** to accept the menu option. Data Rate: xx.x appears on the telephone screen.

   ** xx.x - Current data rate at the Switch Module*

3. Press **1** and **3** to move through the options. The choices are:

   - 2.4 kbps
   - 4.8 kbps
   - 9.6 kbps
   - 10.2 kbps
   - 38.4 kbps
   - 57.6 kbps
   - 115.2 kbps

4. Press **2** to accept the displayed Data Rate. The telephone screen will then display *Data Bits: 8.*

5. Press **1** and **3** to move through the options. The choices are 7 and 8.

6. Press **2** to accept the displayed Data Bits option. The telephone screen displays *Parity: None*

7. Press **2** to accept the displayed Parity. The telephone screen displays *Stop Bits: 1.*

8. Press **1** and **3** to move through the options.

9. Press **2** to accept the displayed Stop Bits.

Checking System Software

You can check the system software version used for the Switch Module and the Remote Module. Follow these steps to check the software version.

1. If you are not connected to the PBX, follow the steps in *"Starting the Operation"* above to connect to the PBX.

2. Press the **HOLD** button on the display telephone four times. The telephone screen will display *Disconnect?*

3. Press **3** until the *View S/W Version?* Appears on the telephone screen.

4. Press **2** and *Rem Vx.xx, x.x*[*] appears on the telephone screen followed by Swt Vx.xx,x.x[*].

[*] x.xx,x.x – version of software installed on a module.

Troubleshooting

5

Troubleshooting, LED Activity, and Error Messages

As with all equipment of a sophisticated nature, occasionally an error in connection or transmission may occur. The DEFINITY Extender 1101 System provides indication of any errors via light-emitting diodes (LEDs) on the Remote and Switch Modules and by error messages on the display telephone connected to the Remote Module.

Troubleshooting

1. When an error occurs in the operation of the Remote Module, you should check for malfunctions in an organized manner. Follow these steps when troubleshooting the Remote Module:

2. Verify that the programmed telephone numbers are correct.

3. Check all interconnecting cables to ensure that they are properly seated.

4. Verify that the DIP switches are set correctly. Unless your system administrator tells you otherwise, all DIP switches should be OFF by default.

5. Check the circuits to ensure that they are free of noise and meet the specifications listed in Chapter 1, Introduction.

6. Verify that the LEDs on the top of the Remote Module are illuminated.

7. If you cannot locate the source of the problem, contact your system administrator and describe the problem.

LED Sequences

During the power-up sequence, the DEFINITY Extender 1101 System performs a self-test, indicated by a sequence of 1 yellow, and 8 red flashes, followed by 1 green flash, fast blinking red flashes for about 6 seconds, 3 green flashes and 1 red flash. That series of flashes is followed by 3 sets of 8 yellow flashes.

Table 5-1 and Table 5-2 illustrate a detailed description of the LED sequences.

Table 5-1. LED Power Up Sequences

LED Sequence	Description
No LED blinks	Error with hardware or AC adapter.
First blink: Red or Green	LED is not functioning properly as units should blink Yellow.
Yellow	EPROM Checksum test failed. Faulty EPROM or Board problem.
Yellow & 1 Red	SRAM, Data test failed
Yellow & 2 Red	SRAM Address test failed
Yellow & 7 Reds & 1 Green	Passed all hardware tests

Table 5-2. LED Power Up Verification Sequences

LED Sequence	Description
Rapidly blinking Red during process and then 1 Green to indicate process is complete.	6 - 10 seconds. FLASH code is being verified and if valid will be executed. 15-25 seconds FLASH code is invalid EPROM code copied to FLASH.
3 Reds or 3 Greens followed by a Red.	Red - Running EPROM code, FLASH write failed. Contact Customer Service. Green - FLASH load passed, running FLASH code.
3 sets of 8 Yellow blinks	Access terminal configuration menu by typing 'MENU'.

Table 5-3 shows the LED flashes that may be observed on the Remote Module

Table 5-3. Module LED Blink Sequence

LED Sequences		Operational Status
1 Green	Online, the Remote Module is connected to the Switch Module	Normal operation
2 Green	The system is in COD Waiting mode	Normal operation
3 Green	Idle	Normal operation
1 Red	DSP offline	Try to power cycle the Extender. If DSP is still offline, contact Customer Support.
2 Red	The DEFINITY ECS display telephone is not plugged in to the PHONE/SWITCH jack on the DEFINITY Extender 1101 System.	Check cabling and type of telephone used. If problem persists, contact Customer Support.
3 Red	Modem error	Power cycle. If problem persists, contact Customer Support.
1 Yellow	Modem is trying to connect	Normal operation.

Error Messages

If a problem has been encountered during the connection process, an error message appear on the display telephone. Table 5-4 shows the error messages and the suggested actions to take.

Table 5-4. Error Messages

Message	Cause	Action
No Dial Tone	The Remote Module is not properly connected to the local telephone company.	Connect a regular telephone to the telephone company jack, and listen for dial tone. Make sure the line is properly connected to the jack on the Remote Module. If you still do not hear dial tone, contact your system administrator.
Line Busy	The line that the Switch Module is connected to is already in use.	Contact your system administrator, and verify that the correct telephone number has been programmed and that no one else is using the Switch Module you are trying to call.
No Answer Tone	The Switch Module is not responding. The Remote Module does not receive a Ring-Back tone or an Answer Back tone.	Report the problem to your system administrator, and verify that the correct telephone number has been programmed.

AT Command Set Summary

A

The DEFINITY Extender 1101 System can be used as a standalone analog modem when the DEFINITY Extender 1101 System is off-line with the Switch Module. In this case, off-premise s data terminal equipment (DTE) that supports RS-232D serial data communications can use the modem to dial out and establish a data link. The modem supports 56k Flex technology. Refer to your DTE documentation, AT Command Set Summary, S-register Summary (Ch. 7), Results Codes (Ch. 8) to configure and troubleshoot the system.

Table A-1 Basic AT Commands

Command	Function
A/	Re-execute command.
A	Go off-hook and attempt to answer a call.
B0	Select V.22 connection at 1200 bps.
B1	Select Bell 212A connection at 1200 bps.
C1	Return OK message.
Dn	Dial modifier.
E0	Turn off command echo.
E1	Turn on command echo.
F0	Select auto-detect mode (equivalent to N1). (RC144)
F1	Select V.21 or Bell 103. (RC144)
F2	Reserved. (RC144)
F3	Select V.23 line modulation. (RC144)
F4	Select V.22 or Bell 212A 1200 bps line speed. (RC144)
F5	Select V.22 bis line modulation. (RC144)

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
F6	Select V.32 bis or V.32 4800 line modulation. (RC144)
F7	Select V.32 bis 7200 line modulation. (RC144)
F8	Select V.32 bis or V.32 9600 line modulation. (RC144)
F9	Select V.32 bis 12000 line modulation. (RC144)
F10	Select V.32 bis 14400 line modulation. (RC144)
H0	Initiate a hang-up sequence.
H1	If on-hook, go off-hook and enter command mode.
I0	Report product code.
I1	Report pre-computed checksum.
I2	Report OK.
I3	Report firmware revision, model, and interface type.
I4	Report response programmed by an OEM.
I5	Report the country code parameter.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
I6	Report modem data pump model and code revision.
I7	Reports the DAA code (W-class models only).
L0	Set low speaker volume.
L1	Set low speaker volume.
L2	Set medium speaker volume.
L3	Set high speaker volume.
M0	Turn speaker off.
M1	Turn speaker on during handshaking and turn speaker off while receiving carrier.
M2	Turn speaker on during handshaking and while receiving carrier.
M3	Turn speaker off during dialing and receiving carrier and turn speaker on during answering.
N0	Turn off automode detection.
N1	Turn on automode detection.
O0	Go online.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
O1	Go online and initiate a retrain sequence.
P	Force pulse dialing.
Q0	Allow result codes to DTE.
Q1	Inhibit result codes to DTE.
Sn	Select S-Register as default.
Sn?	Return the value of S-Register n.
=v	Set default S-Register to value v.
?	Return the value of default S-Register.
T	Force DTMF dialing.
V0	Report short form (terse) result codes.
V1	Report long form (verbose) result codes.
W0	Report DTE speed in EC mode.
W1	Report line speed, EC protocol and DTE speed.
W2	Report DCE speed in EC mode.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
X0	Report basic call progress result codes, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER and ERROR.
X1	Report basic call progress result codes and connections speeds (OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX, and ERROR.
X2	Report basic call progress result codes and connections speeds, i.e., OK, CONNECT, RING, NO CARRIER (also, for busy, if enabled, and dial tone not detected), NO ANSWER, CONNECT XXXX, and ERROR.
X3	Report basic call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, and ERROR.
X4	Report all call progress result codes and connection rate, i.e., OK, CONNECT, RING, NO CARRIER, NO ANSWER, CONNECT XXXX, BUSY, NO DIAL TONE and ERROR.
Y0	Disable long space disconnect before on-hook.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
Y1	Enable long space disconnect before on-hook.
Z0	Restore stored profile 0 after warm reset.
Z1	Restore stored profile 1 after warm reset.
&C0	Force RLSD active regardless of the carrier state.
&C1	Allow RLSD to follow the carrier state.
&D0	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q5, &Q6 - The modem ignores DTR &Q1, &Q4 - The modem hangs up &Q2, &Q3 - The modem hangs up
&D1	Interpret DTR ON-to-OFF transition per &Qn: &Q0, &Q1, &Q4, &Q5, &Q6 Asynchronous escape. &Q2, &Q3 The modem hangs up.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
&D2	Interpret DTR ON-to-OFF transition per &Qn: &Q0 through &Q6 The modem hangs up.
&D3	Interpret DTR ON-to-OFF transition per &Qn:. &Q0, &Q1, &Q4, &Q5, &Q6 The modem performs soft reset. &Q2, &Q3 The modem hangs up.
&F0	Restore factory configuration 0.
&F1	Restore factory configuration 1.
&G0	Disable guard tone.
&G1	Disable guard tone.
&G2	Enable 1800 Hz guard tone.
&J0	Set S-Register response only for compatibility.
&J1	Set S-Register response only for compatibility.
&K0	Disable DTE/DCE flow control.
&K3	Enable RTS/CTS DTE/DCE flow control.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
&K4	Enable XON/XOFF DTE/DCE flow control.
&K5	Enable transparent XON/XOFF flow control.
&K6	Enable both RTS/CTS and XON/XOFF flow control.
&L0	Select dial up line operation. * Serial interface operation only.
&M0	Select direct asynchronous mode.
&M1	Select sync connect with async off-line command mode. *
&M2	Select sync connect with async off-line command mode and enable DTR dialing of directory zero. *
&M3	Select sync connect with async off-line command mode and enable DTR to act as Talk/Data switch. *
&P0	Set 10 pps pulse dial with 39%/61% make/break.
&P1	Set 10 pps pulse dial with 33%/67% make/break.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
&P2	Set 20 pps pulse dial with 39%/61% make/break.
&P3	Set 20 pps pulse dial with 33%/67% make/break.
&Q0	Select direct asynchronous mode.
&Q1	Select sync connect with async off-line command mode.
&Q2	Select sync connect with async off-line command mode and enable DTR dialing of directory zero. *
&Q3	Select sync connect with async off-line command mode and enable DTR to act as Talk/Data switch. *
&Q4	Select Hayes AutoSync mode.
&Q5	Modem negotiates an error corrected link.
&Q6	Select asynchronous operation in normal mode.
&R0	CTS tracks RTS (async) or acts per V.25 (sync).
&R1	CTS is always active.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
&S0	DSR is always active.
&S1	DSR acts per V.25.
&T0	Terminate any test in progress.
&T1	Initiate local analog loopback.
&T2	Returns ERROR result code.
&T3	Initiate local digital loopback.
&T4	Allow remote digital loopback.
&T5	Disallow remote digital loopback request.
&T6	Request an RDL without self-test.
&T7	Request an RDL with self-test.
&T8	Initiate local analog loop with self-test.
&V	Display current configurations.`
&V1	Display connection statistics
&W0	Store the active profile in NVRAM profile 0.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
&W1	Store the active profile in NVRAM profile 1.
&X0	Select internal timing for the transmit clock.
&X1	Select external timing for the transmit clock.
&X2	Select slave receive timing for the transmit clock.
&Y0	Recall stored profile 0 upon power up.
&Y1	Recall stored profile 1 upon power up.
&Zn=x	Store dial string x (to 34) to location n (0 to 3).
%E0	Disable line quality monitor and auto retrain.
%E1	Enable line quality monitor and auto retrain.
%E2	Enable line quality monitor and fallback/fall forward.
%L	Return received line signal level.
%Q	Report the line signal quality.
%7	Plug and Play serial number

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
%8	Plug and Play vendor ID and product number * Serial interface operation only.
\Kn	Controls break handling during three states:
When modem receives a break from the DTE:	
\K0,2,4	Enter on-line command mode, no break sent to the remote modem.
\K1	Clear data buffers and send break to modem.
\K3	Clear buffers and send break to remote modem. Send break to remote modem immediately.
\K5	Send break to remote modem in sequence with transmitted data.
When modem receives \B in on-line command state:	
\K0,1	Clear buffers and send break to remote modem.
\K2,3	Send break to remote modem immediately.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
\K4,5	Send break to remote modem in sequence with transmitted data.
When modem receives break from the remote modem:	
\K0,1	Clear data buffers and send break to DTE.
\K2,3	Send a break immediately to DTE.
\K4,5	Send a break with received data to the DTE.
\N0	Select normal speed buffered mode.
\N1	Select direct mode.
\N2	Select reliable link mode.
\N3	Select auto reliable mode.
\N4	Force LAPM mode.
\N5	Force MNP mode.
\V0	Connect messages are controlled by the command settings X, W, and S95.
\V1	Connect messages are displayed in the single line format.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
+MS	Select modulation.
+H0	Disable RPI/Video Ready Mode.
+H1	Enable RPI and set DTE speed to 19200 bps.
+H2	Enable RPI and set DTE speed to 38400 bps.
+H3	Enable RPI and set DTE speed to 57600 bps.
+H11	Enable RPI+ mode.
+H16	Enable Video Ready Mode
**0	Download to flash memory at last sensed speed.
**1	Download to flash memory at 38.4 kbps.
**2	Download to flash memory at 57.6 kbps.
-SDR=0	Disable Distinctive Ring.
-SDR=1	Enable Distinctive Ring Type 1.
-SDR=2	Enable Distinctive Ring Type 2.
-SDR=3	Enable Distinctive Ring Type 1 and 2.

Continued on next page

Table A-1 Basic AT Commands, *continued*

Command	Function
-SDR=4	Enable Distinctive Ring Type 3.
-SDR=5	Enable Distinctive Ring Type 1 and 3.
-SDR=6	Enable Distinctive Ring Type 2 and 3.
-SDR=7	Enable Distinctive Ring Type 1, 2, and 3.

Table A-2 ECC Commands

Command	Function
%C0	Disable data compression.
%C1	Enable MNP 5 data compression.
%C2	Enable V.42 bis data compression.
%C3	Enable both V.42 bis and MNP 5 compression.
\A0	Set maximum block size in MNP to 64.
\A1	Set maximum block size in MNP to 128.
\A2	Set maximum block size in MNP to 192.
\A3	Set maximum block size in MNP to 256.
\Bn	Send break of n x 100 ms.

Table A-3 MNP-10 Commands

Command	Function
-K0	Disable MNP 10 extended services.
-K1	Enable MNP 10 extended services.
-K2	Enable MNP 10 extended services detection only.
-SEC=0	Disable MNP10-EC.
-SEC=1,[<tx level>]	Enable MNP10-EC and set transmit level <tx level> 0 to 30 (0 dBm to -30 dBm).

Table A-4 W-CLASS Commands

Command	Function
*B	Display list of permanently blacklisted numbers.
*D	Display list of delayed numbers.
*NCn	Change country to one of eight in NVRAM.

Table A-5 CALLER ID Commands

Command	Function
#CID=0	Disable Caller ID.
#CID=1	Enable Caller ID with formatted presentation.
#CID=2	Enable Caller ID with unformatted presentation.

Table A-6 FAX CLASS 1

Command	Function
+FCLASS=n	Service class.
+FAE=n	Data/fax auto answer
+FRH=n	Receive data with HDLC framing.
+FRM=n	Receive data.
+FRS=n	Receive silence.
+FTH=n	Transmit data with HDLC framing.
+FTM=n	Transmit data.
+FTS=n	Stop transmission and wait.

AT Commands S-Register Summary

B

Table B-1 S-Register Summary

Register	Function	Range	Units	Saved	Default**
S0	Rings to Auto-Answer	0-255	rings	*	0
S1	Ring Counter	0-255	rings		0
S2	Escape Character	0-255	ASCII	*	43
S3	Carriage Return Character	0-127	ASCII		13
S4	Line Feed Character	0-127	ASCII		10
S5	Backspace Character	0-255	ASCII		8

Continued on next page

Table B-1 S-Register Summary, *continued*

Register	Function	Range	Units	Saved	Default**
S6	Wait Time for Dial Tone	2-255	s	*	2
S7	Wait Time for Carrier	1-255	s	*	50
S8	Pause Time for Dial Delay Modifier	0-255	s	*	2
S9	Carrier Detect Response Time	1-255	0.1 s	*	6
S10	Carrier Loss Disconnect Time	1-255	0.1 s	*	14
S11	DTMF Tone Duration	50-255	0.001 s	*	95
S12	Escape Prompt Delay	0-255	0.02 s	*	50
S13	Reserved	-	-		-
S14	General Bit Mapped Options Status	-	-	*	138 (8Ah)
S15	Reserved	-	-		-
S16	Test Mode Bit Mapped Options Status (&T)	-	-		0
Register	Function	Range	Units	Saved	Default**
S17	Reserved	-	-		-

Continued on next page

Table B-1 S-Register Summary, *continued*

Register	Function	Range	Units	Saved	Default**
S18	Test Timer	0-255	s	*	0
S19	AutoSync Options	-	-		0
S20	AutoSync HDLC Address or BSC Sync Character	0-255	-	*	0
S21	V.24/General Bit Mapped Options Status	-	-	*	52 (34h)
S22	Speaker/Results Bit Mapped Options Status	-	-	*	117 (75h)
S23	General Bit Mapped Options Status		-	*	62 (3Dh)
S24	Sleep Inactivity Timer	0-255	s	*	0
S25	Delay to DTR Off	0-255	s or 0.01 s		5
S26	RTS-to-CTS Delay	0-255	0.01 s		1
S27	General Bit Mapped Options Status	-	-	*	73 (49h)

Continued on next page

Table B-1 S-Register Summary, *continued*

Register	Function	Range	Units	Saved	Default**
S28	General Bit-Mapped Options Status	-	-	*	0
S29	Flash Dial Modifier Time	0-255	10 ms		70
S30	Disconnect Inactivity Timer	0-255	10 s		0
S31	General Bit-Mapped Options Status	-	-	*	194 (C2h)
S32	XON Character	0-255	ASCII		17 (11h)
S33	XOFF Character	0-255	ASCII		19 (13h)
S34-S35	Reserved	-	-		-
S36	LAPM Failure Control	-	-	*	7
S37	Line Connection Speed	-	-	*	0
S38	Delay Before Forced Hangup	0-255	s		20
S39	Flow Control Bit Mapped Options Status	-	-	*	3

Continued on next page

Table B-1 S-Register Summary, *continued*

Register	Function	Range	Units	Saved	Default**
S40	General Bit-Mapped Options Status	-	-	*	104 (68h)
S41	General Bit-Mapped Options Status	-	-	*	195 (C3h)
S42-S45	Reserved	-	-		-
S46	Data Compression Control	-	-	*	138
S48	V.42 Negotiation Control	-	-	*	7
S82	LAPM Break Control	-	-		128(40h)
S86	Call Failure Reason Code	0-255	-		-
S91	PSTN Transmit Attenuation Level	0-15	dBm		10 (Country dependent)
S95	Result Code Messages Control	-	-	*	0

* Register value may be stored in one of two user profiles with the &W command.

** Default values may be modified using Configure ACE.

AT Commands - Result Codes

C

Table C-1 Result Codes

Short Form	Long Form	n Value in ATXn Command				
		0	1	2	3	4
0	OK	x	x	x	x	x
1	CONNECT	x	x	x	x	x
2	RING	x	x	x	x	x
3	NO CARRIER	x	x	x	x	x
4	ERROR	x	x	x	x	x
5	CONNECT 1200	1	x	x	x	x
6	NO DIALTONE	3	3	x	x	x
7	BUSY	3	3	3	x	x
8	NO ANSWER	x	x	x	x	x
9	CONNECT 0600	1	x	x	x	x
10	CONNECT 2400	1	x	x	x	x
11	CONNECT 4800	1	x	x	x	x
12	CONNECT 9600	1	x	x	x	x

Continued on next page

Table C-1 Result Codes, *continued*

Short Form	Long Form	n Value in ATXn Command				
		0	1	2	3	4
13	CONNECT 7200	1	x	x	x	x
14	CONNECT 12000	1	x	x	x	x
15	CONNECT 14400	1	x	x	x	x
16	CONNECT 19200	1	x	x	x	x
17	CONNECT 38400	1	x	x	x	x
18	CONNECT 57600	1	x	x	x	x
19	CONNECT 115200	1	x	x	x	x
20	CONNECT 230400	x	x	x	x	x
22	CONNECT 75TX/1200RX	1	x	x	x	x
23	CONNECT 1200TX/75RX	1	x	x	x	x
24	DELAYED	4	4	4	4	x
32	BLACKLISTED	4	4	4	4	x
33	FAX	x	x	x	x	x
35	DATA	x	x	x	x	x
40	CARRIER 300	x	x	x	x	x
44	CARRIER 1200/75	x	x	x	x	x
45	CARRIER 75/1200	x	x	x	x	x
46	CARRIER 1200	x	x	x	x	x
47	CARRIER 2400	x	x	x	x	x
48	CARRIER 4800	x	x	x	x	x
49	CARRIER 7200	x	x	x	x	x
50	CARRIER 9600	x	x	x	x	x
51	CARRIER 12000	x	x	x	x	x

Continued on next page

Table C-1 Result Codes, *continued*

Short Form	Long Form	n Value in ATXn Command				
		0	1	2	3	4
52	CARRIER 14400	x	x	x	x	x
53	CARRIER 16800	x	x	x	x	x
54	CARRIER 19200	x	x	x	x	x
55	CARRIER 21600	x	x	x	x	x
56	CARRIER 24000	x	x	x	x	x
57	CARRIER 26400	x	x	x	x	x
58	CARRIER 28800	x	x	x	x	x
59	CONNECT 16800	1	x	x	x	x
61	CONNECT 21600	1	x	x	x	x
62	CONNECT 24000	1	x	x	x	x
63	CONNECT 26400	1	x	x	x	x
64	CONNECT 28800	1	x	x	x	x
66	COMPRESSION: CLASS 5	x	x	x	x	x
67	COMPRESSION: V.42 bis	x	x	x	x	x
69	COMPRESSION: NONE	x	x	x	x	x
70	PROTOCOL: NONE	x	x	x	x	x
77	PROTOCOL: LAPM	x	x	x	x	x
78	CARRIER 31200	x	x	x	x	x
79	CARRIER 33600	x	x	x	x	x
80	PROTOCOL: ALT	x	x	x	x	x
81	PROTOCOL: ALT-CELLULAR	x	x	x	x	x

Continued on next page

Table C-1 Result Codes, *continued*

Short Form	Long Form	n Value in ATXn Command				
		0	1	2	3	4
84	CONNECT 33600	1	x	x	x	x
91	CONNECT 31200	1	x	x	x	x
150	CARRIER 32000	x	x	x	x	x
151	CARRIER 34000	x	x	x	x	x
152	CARRIER 36000	x	x	x	x	x
153	CARRIER 38000	x	x	x	x	x
154	CARRIER 40000	x	x	x	x	x
155	CARRIER 42000	x	x	x	x	x
156	CARRIER 44000	x	x	x	x	x
157	CARRIER 46000	x	x	x	x	x
158	CARRIER 48000	x	x	x	x	x
159	CARRIER 50000	x	x	x	x	x
160	CARRIER 52000	x	x	x	x	x
161	CARRIER 54000	x	x	x	x	x
162	CARRIER 56000	x	x	x	x	x
165	CONNECT 32000	x	x	x	x	x
166	CONNECT 34000	x	x	x	x	x
167	CONNECT 36000	x	x	x	x	x
168	CONNECT 38000	x	x	x	x	x
169	CONNECT 40000	x	x	x	x	x
170	CONNECT 42000	x	x	x	x	x
171	CONNECT 44000	x	x	x	x	x
172	CONNECT 46000	x	x	x	x	x
173	CONNECT 48000	x	x	x	x	x
174	CONNECT 50000	x	x	x	x	x
175	CONNECT 52000	x	x	x	x	x
176	CONNECT 54000	x	x	x	x	x
177	CONNECT 56000	x	x	x	x	x
+F4	+FCERROR	x	x	x	x	x

Programming Menu Hierarchy

D

This appendix contains a programming menu hierarchy that you can use as a guide while programming your Remote Module.

Glossary

+12 vdc
12 volt direct current.

120 VAC
120 volt alternating current (North American standard electrical supply).

B

Baud Rate
The speed in kbps at which digital data can be transmitted.

C

COD
Call on Demand

D

Dedicated Subscriber Lines
Communication lines (usually twisted pair) that are used to connect on-premise telephone equipment (such as a PBX) to the Central Office. Also referred to as direct lines.

Dial Line
A telephone line which is part of the Public Switched Telephone Network and is accessed through the DEFINITY Extender 1100 System's automatic dial-up function.

E

ECS
Enterprise Communication Server.

F

Facility
Transmission facilities. Usually a two metallic pair set of cords, but can be telephone company carriers, T-1, microwave or dial-up telecommunications lines.

L

LED
Light-emitting diode. A semiconductor diode which emits light when a current is passed through it, indicating that the power is on.

O

On-premise Lines
Communication lines (usually twisted-pair) that are used to connect the PBX to the DEFINITY ECS telephone.

P

PBX
Private Branch Exchange.

R

Remote Module
The DEFINITY Extender 1100 System that connects to the remote DEFINITY ECS telephone.

RS-232D (EIA/TIA-574 Interface Circuits)

PIN	EIA DESIG	CCITT DESIG	DESCRIPTION	DIRECTION
1	CF 9RLSD)	109	Received Line Signal Detector	Output
2	BB (RD)	104	Received Data	Output
3	BA (SD)	103	Transmitted Data	Input
4	CD (DTR)	108/2	DTE Ready	Input
5	AB (SG)	102	Signal Ground	Common
6	CC (DSR)	107	DCE Ready	Output
7	CA (RTS)	105	Request to Send	Input
8	CB (CTS)	106	Clear to Send	Output
9	CE (RI)	125	No Connection	NA

9 Position Non-Synchronous Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data InterchangeANS/EIA/TIA-574-90)
(Sept., 1990)

S

Switch Module
The DEFINITY Extender 1100 System that connects to the DEFINITY ECS.