Lucent Technologies
Bell Labs Innovations

Telecommuter Module
User Guide

Notice

While reasonable efforts were made to ensure that the information in this document was complete and accurate at the time of printing, AT&T can assume no responsibility for any errors. Changes and corrections to the information contained in this document may be incorporated into future reissues.

Your Responsibility for Your System's Security

You are responsible for the security of your system. AT&T 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. AT&T will not be responsible for any charges that result from such unauthorized use. Product administration to prevent unauthorized use is your responsibility and your system administrator should read all documents provided with this product to fully understand the features available that may reduce your risk of incurring charges.

Federal Communications Commission Statements

Part 15: Class A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

Part 68: Network Registration Number.

This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AHHUSA 67638 OT E. This registration number and the ringer equivalence number (1 .OB), if requested by the telephone company, must be reported. The sum of ringer equivalence numbers for all devices connected to a single telephone line should not exceed 5.0 for reliable operation. This device must not be installed on coin operated telephone lines or party lines. Repair work on this device must be done by AT&T or an authorized representatbve.

Before installing this equipment, ensure that it is permissible to connect it to the facilibes of the local telecommunications company. Use an acceptable method of connection to install the equipment. In some cases, your inside wiring for single line, individual service can be extended by a certihed connector assembly (phone extension cord). Be aware that compliance with the above conditions may not prevent degradabon of service in some situations.

Any repairs or alterations you make to this equipment, or any equipment malfuncbons that occur, may give the telecommunications company cause to request disconnection of the equipment. Ensure for your own protection that the electrical ground connections of the power ublity, phone lines, and internal metallic water pipe system, if present, are connected together. This precaubon may be particularly important in rural areas

Warning: do not try to make such connections yourself; instead contact the appropriate electric inspecbon authority or an electrician, as appropriate.

The load number (LN) assigned to each terminal device denotes the percentage of the totaHoad to be connected to a phone loop used by the equipment to prevent overloading. The termination on a loop can consist of any combination of equipment, subject only to the need that the total of the load numbers of all the equipment does not exceed 100. The load number assigned to the ATT-OL1 is 8.

The Canadian Department of Communications (DOC) label identifies certified equipment. This means that the equipment meets certain telecommunications network protecbve, operabonal, and safety requirements. The Department does not guarantee that the equipment will operate to the user's sabsfaction.

DOC COMPLIANCE NOTICE: This digital apparatus does not exceed the Class A limits for radio noise emissions for digital apparatus as set out in the Radio Interference Regulations of the Canadian DOC.

DOC AVIS DE CONFORMATION: Le present apparell numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class A prescrites dans le Reglement sur le brouiliage radioelectriques edicte par le ministere des Communications du Canada.

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DEFINITY is a registered trademark of AT&T. In this document, DEFINITY Communications System Generic 2 and 3 are often abbreviated to DEFINITY G2 and G3.

Comments

To comment on this document, return the comment card at the front of the document.

Important Safety Instructions

When using this product, take basic safety precautions to reduce the risk of fire, electric shock, and injury to people:

- Read and understand all instructions.

- Follow all warnings and instructions marked on the product.

- Operate this product only from the kind of power source shown on the marking label.

- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by people walking on it.

- Do not spill liquid of any kind on the product.

- To reduce the risk of electric shock, do not disassemble this product. Opening or removing oovers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the product is used again.

- Adjust only the controls that are detailed in the operating instructions.

- Unplug this product from the power source and call in a qualified technician under the following circumstances:
    - If the power supply cord or plug is damaged or frayed
    - If liquid has been spilled into the product
    - If the product has been exposed to rain or water
    - If the product does not work normally according to the operating instrucbons
    - If the product has been dropped

How to Use This Book

The customer: turn to Chapter 1, "Getting Started". These are your preparation, installation, and quick-start programming instructions. You can install the AT&T Telecommuter Module yourself or request installation by AT&T.

The installer: turn to Chapter 1, "Getting Started". These are your installation and quick-start programming instructions.

The system administrator: turn first to Chapter 1, "Getting Started". These are your installation and quick-start programming instructions. Turn next to Chapter 3, "Customizing the Module". These are your instructions for programming additional options to tailor the module to your application. A programming quick reference is in Appendix E. Keep it handy while you work.

The telecommuter: your quick reference is supplied with this book. Ask your department head or system administrator to give it to you.

1. **"Getting Started"**

   This chapter tells you how to prepare for and install the module, and gives you quick-start programming instructions

2. **"Handling Calls"**

   This chapter tells you how to make a call, receive a call, transfer a call, and set up a conference call, to use per-call connection, and to use the module in a call center

3. **"Customizing the Module"**

   This is a reference chapter; it tells you about the programming format and lists the module's programmable functions

4. "Troubleshooting"

This chapter tells you how to solve problems with the module and how to get help from AT&T

A. "Warranty and Returns"

B. "Programming Worksheet"

C. "Specifications"

D. "Sample Call Records"

E. "Quick Reference"

"Index"

Getting Started

1

Many companies now have corporate telecommuting programs that permit employees to work at home one or two days a week. Some of the reasons for telecommuting are:

- to finish an important project in a setting free of interruptions

- to conform to county or state commuting guidelines that limit corporate travel

- to stay productive while recovering from illness or injury

- to solve office space problems during periods of peak employment

The AT&T Telecommuter Module supplies the vital phone connection to customers, managers, and co-workers. The module affords telecommuting employees remote access to system features such as voice mail, conference, and transfer. They can dial out on the phone system and have the system forward incoming calls to them at home. When the phone rings at home and telecommuters lift the handset, they know by the ringing tone (called *ringback*) that it is a business call. They can log on and off the system as needed, and forward their calls to a new location—for example, if they go from home directly to a customer site.
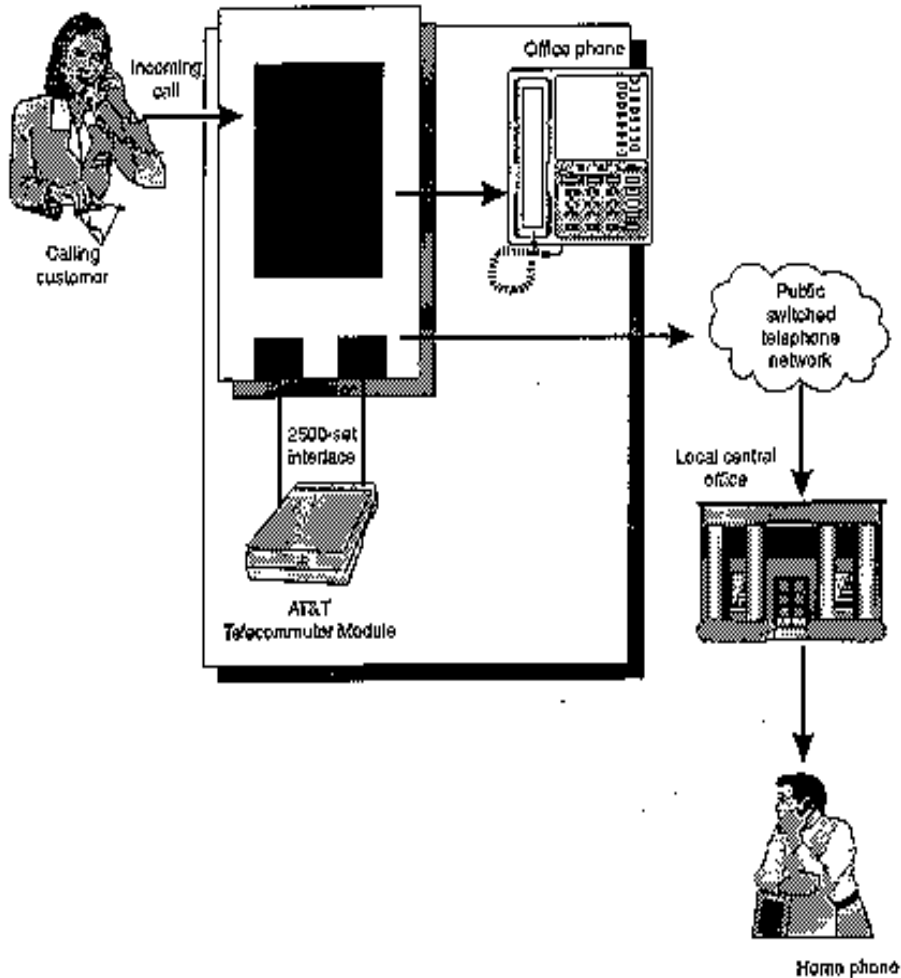
Figure 1-1.   How the Module Works

These are your instructions for adding the modules to your office phone system. Before you install and program the modules, you have some choices to make, listed below.

Prepare for the module

■ How do you want the system set up and what hardware do you have to order and install in addition to the modules? If your module setup is loop configuration, calls *loop* through the phone system using system trunk and line ports. If your module setup is traverse configuration, calls *traverse* the system using system trunk and line ports, and go to and from the telecommuter on a separate (nonsystem) business line. This line has *forced disconnect*—the line automatically disconnects after a specified amount of time.

For the loop configuration, you assign two analog extension numbers per module, line A and line B. The telecommuter dials into line A to log on to the module. The module accesses line B to the office phone system when the telecommuter makes a call. On the other hand, calls forward from the telecommuter's office phone to the module on line B. Consider putting line B in the coverage path for the telecommuter's office phone. The module uses line A to dial back through the phone system and extend the call from office to home.

For the traverse configuration, you assign one analog extension number per module, line B. You supply a separate, two-way business line with forced disconnect and label it line A. The telecommuter dials into line A to log on to the module. The module accesses line B to the office phone system when the telecommuter makes a call. On the other hand, calls forward from the telecommuter's office phone to the module on line B. Consider putting line B in the coverage path for the telecommuter's office phone. The module uses line A to extend the call from office to home.

■ How do you want the module to be accessed by the telecommuter? Depending on your system setup, your choices are (1) a direct inward dialing (DID) extension, (2) a live attendant, (3) an autoattendant, or (4) a separate (nonsystem) business line.

■ What calling mode do you want to use? Your choices are (1) per call connection, in which the connection from the module to the telecommuter is made for each call, or (2) per-session connection, in which the connection from the module to the telecommuter is made for each logon session and stays up for as long as the telecommuter is logged on. Depending on geographic location and phone rates, per call connection is more economical for intermittent call traffic and per-session connection is more economical for heavy call traffic.

■ What security precautions do you want? Both the phone system and the module offer choices. On the phone system you can have (1) restrictions on telecommuters for long distance dialing or (2) restrictions on telecommuters for all outside calls. On the module you have passwords, the Prevent feature, and dialback options.

■ How do you want to install the modules? Your choices are to (1) install it yourself or (2) request installation by AT&T.

In Figure 1-2, "Loop Configuration", and Figure 1-3, "Traverse Configuration", below, lines A and B have these properties:

— Line A always connects the module to the home phone

■ The connection could be back through the office phone system (loop configuration)

■ The connection could be on a separate (nonsystem) business line (traverse configuration)

— Telecommuters call the module from home on line A

— Telecommuters get calls from the office on line A

— Line B always connects the module to the office phone system

— Calls arrive at the module over line B and complete to telecommuters over line A

— When telecommuters place a call through the module to the office phone system by entering #*, they hear a dial tone from line B
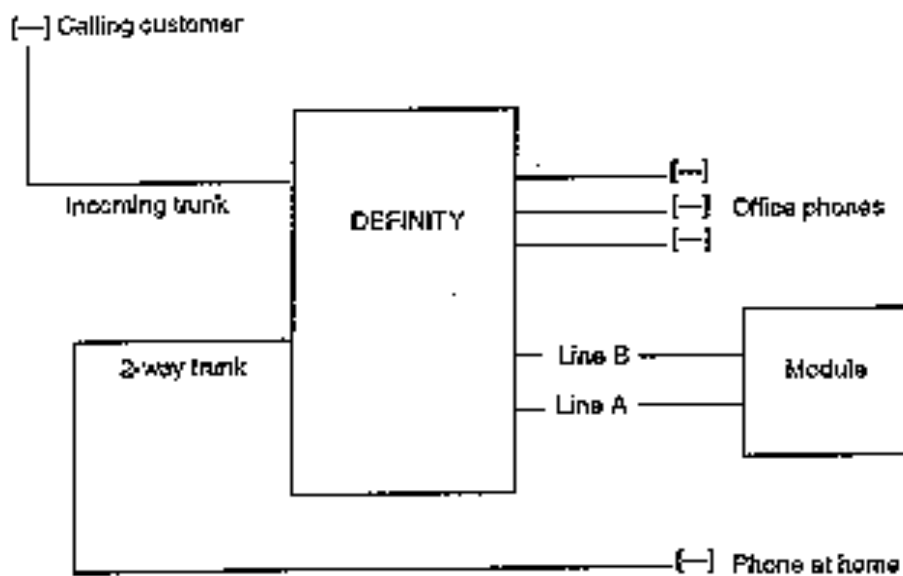

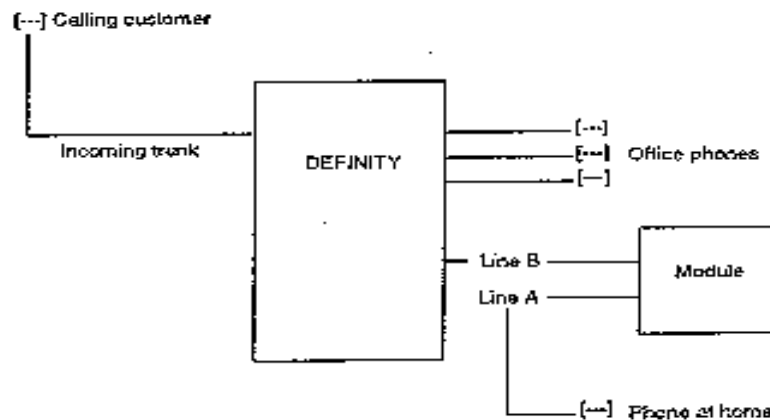
Figure 1-2.   Loop Configuration

Figure 1-3.   Traverse Configuration

What you need for installation

Before you install the module, you or the installer have to do the following:

1. Order from AT&T one Telecommuter Module (PEC 8308-001) for each *simultaneous* telecommuter. An AC transformer and power cord, and two 7-ft mounting cords are included in each module package. Return to AT&T any items that are damaged, using the instructions in Appendix A.

2. Check that you have AC power at the location where the modules will be installed.

3. Equip the phone system with the appropriate number of trunks and analog line ports.

4. Install modular jacks for connecting the analog line ports.

5. Program the analog line ports as touch-tone 2500 phone sets.

Note that the module has an RS-232-C port for connecting a customer-supplied printer or PC. AT&T does not offer equipment or technical support for these devices so expect to do this yourself if you plan to use them. Appendix D shows a printout of call records produced by the module. See your phone system documentation for information on call records produced by the phone system.

Install the module

⚠ **WARNING:**

Important operating and maintenance instructions follow.

- Never install phone wiring during a lightning storm.
- Do not install phone jacks in wet locations unless the jacks are specifically designed for wet locations.
- Do not touch uninsulated phone wires or terminals unless the phone lines have been disconnected at the network interface.
- Use caution when installing or modifying phone lines.

Use the steps listed next to install the module.

1. Connect the AC transformer's power cord between the module and a 120-VAC outlet. On the front panel of the module, the unlabeled green power light will flash. Be sure that the switch next to it says READY.

2. Connect phone line A to one end of a mounting cord and connect the other end of the cord to the A jack on the back of the module. Write the line-A number in this space:_____ .

3. Connect phone line B to one end of a mounting cord and connect the other end of the cord to the B jack on the back of the module. Write the line-B number in this space:_____ .

Take security precautions

Your phone system and the module offer several ways to discourage toll fraud:

- phone system restrictions on telecommuters for long-distance calls
- phone system restrictions on telecommuters for outside calls
- use of the module's Prevent feature to guard against hackers
- use of passwords to call the module, for example:
  - choose the maximum length of 10 digits
  - avoid numbers that can be guessed by association such as personal or company phone numbers, names, or license plates
  - change telecommuters' passwords often (twice a year at the minimum)
  - never share the system administrator password

— do *not* enable remote programming: when remote programming is enabled, the telecommuter dialback numbers that you may have preprogrammed as a security measure are less secure. For example, if a hacker were the remote programmer, the module would be dialing back not to a telecommuter but to the hacker!

More security precautions

In addition to the security precautions listed in Chapter 1, AT&T recommends setting the answer tone to the lowest value (-16 dB). Authorized telecommuters know that they should enter a password when ringing stops but a hacker may not. Checking the volume of calls on the system every day can also be a clue to unauthorized use.

AT&T recommends that you retain the default values for the Prevent function. After five consecutive, invalid, password attempts, any password is rejected, even a valid one, for 20 minutes. A hacker doesn't know that Prevent is activated and, after dialing the right password and getting no answer, assumes that the password is bad.

You can reprogram the module to respond to invalid password attempts either by ignoring all passwords, responding with an error tone, or failing to answer.

Other measures are decreasing the number of invalid password attempts from five (the default) to three and keeping the ignore period at the default setting of 20 minutes.

Programming quick start

Next are the programming steps to get started using the module right away. If you follow these steps, the module will be working in a few minutes and telecommuters can access all the phone system options available to onsite users who have an analog 2500 phone set. You can tailor the module to your application at any time by consulting the numbered list of options (called *functions* in this book) in Chapter 3. You can tailor the module for use in a call center by adjusting the commands according to the information under "Special cases: timeout and DEFINITY call center" in Chapter 2.
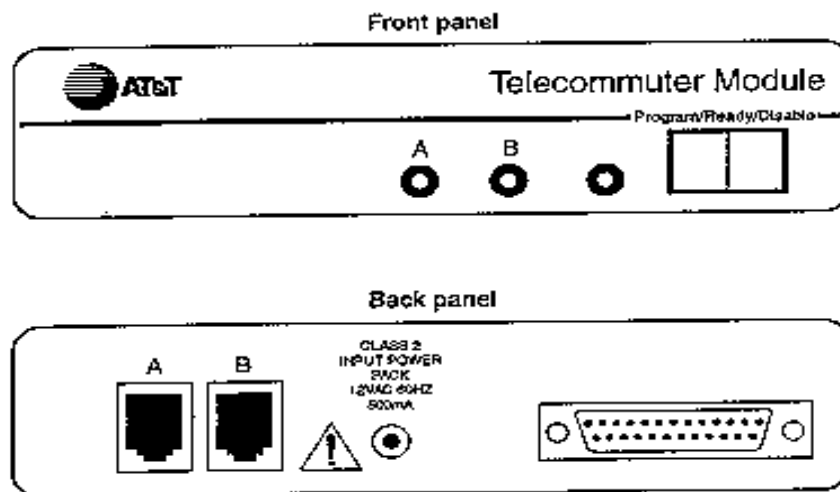

Figure 1-**4.** **Front and Back Panels**

Here are the quick-start steps:

1. Set the front panel switch to PROGRAM until the unlabeled green power light shown in Figure 1-3, below, flashes quickly. The switch is the toggle type and has three positions:

   a. READY = flashing green light

   b. PROGRAM = quickly flashing green light

   c. DISABLE = green light turned off

Figure 1-4 also shows lights A and B, the red, *in use* lights for lines A and B. They light steadily when one or both lines are being used.

The module remains in programming mode until you either enter **##**, hang up, let 2 minutes pass without entering any digits, or enter ***88#** to go into command mode. Remember that when you are programming the module, you are disconnected if 2 minutes go by and you haven't entered a digit. The front panel switch goes back to READY when you exit programming mode.

2. Enter the module's line-A phone number and listen for a confirmation tone of three beeps.

3. The system administrator might or might not be at the same location as the module—for example, in another room (remote) or at another location (offsite). If you need to program the module remotely or from an offsite location, ask someone who is onsite to press the front panel switch to PROGRAM. Enable remote programming by entering ***98*1#**

Once the module is in programming mode and you have enabled remote programming, you can access the programming function remotely at any time. Note that for security, you have to weigh the convenience of remote programming against the increased risk of toll fraud. AT&T does not recommend using the remote programming function.

4. Assign a unique, 8- , 9- , or 10- digit user-1 password for the system administrator by ***entering *1*1*NN...N#*1*1*NN...N#***, as shown here. (In these instructions, the system administrator and the telecommuters are called *users* for convenience.) Choose the maximum length of 10 digits. The longer the password, the more secure the system. Do not end a password with 000.

5. Listen for a confirmation tone of three beeps signaling that the password was accepted; then choose one of the following:

    a. If you entered the password successfully, continue with Step 6.

    b. If you misdial and have not yet entered #, cancel the entry by entering **000#**. (The module does not respond until you enter **#**.) When you hear an error tone, return to Step 4.

6. Check the password by entering:

    *77*1*1#

Listen for the word *one*, then beep *<the rest of the digits in the password> beep beep beep*. (When you make a query, you hear a recording of the human voice say the word for each digit.) To delete the user-1 password for any reason, enter ***1*1*#*1*1*#**

7. Choose one of the following:

    a. If the password *does* match what you want, continue with Step 8.

    b. If the password *does not* match what you want, repeat Steps 4 through 6.

8. Assign a unique, 8- , 9- , or 10-digit user-2 password by entering ***1*2*NN...N#**

9. Listen for a confirmation tone of three beeps signaling that the password was accepted; then choose one of the following:

    a. If you entered the password successfully, continue with Step 10.

    b. If you misdial and have not yet entered #, cancel the entry by entering 000#. (The module does not respond until you enter **#**.) When you hear an error tone, return to Step 8.

10. Check the user-2 password by entering ***77*1*2#**

    Listen for the word *two, then beep <the rest of the digits in the password> beep beep beep.* To delete the user-2 password for any reason, enter ***1*2*#**

11. Exit programming mode by entering the control command ## to disconnect. Listen for a confirmation tone of three beeps, then hang up. If you don't enter **##** in programming mode before you hang up, the module automatically disconnects after a specified amount of time. But if you routinely enter **##** before hanging up, you don't have to wait for the forced disconnect before you can redial the module.

12. The module is ready to use. Enter the module's line-A phone number, listen for a 2-second answer tone and, within 15 seconds after the answer tone stops, enter a telecommuter (user-2) password, followed by # Listen for two beeps signaling that the password was accepted and then a beep every 5 seconds. You are in command mode.

13. Make a call by entering the control command for connect #* (the default), wait for a dial tone, and enter a phone number. *When you enter control commands, the digits you enter must follow each other within the programmed time period (the default is 1 second) or the module ignores the code.*

14. Enter the control command **##** to hang up the outgoing line. Listen for two beeps. The green A light stays lit and the red B light turns off.

15. Hang up. The A light turns off in about 20 seconds.

    Now you and your office's telecommuters can start using the module!

Getting help if you need it

If you have problems, repeat the steps to install and program the module. If you still have problems, see Chapter 4, ''Troubleshooting''.

Handling Calls

2

This chapter tells you how to handle calls as a telecommuter. It also helps you answer telecommuters' questions about how the module works. When you installed the module, you noted on the telecommuter quick reference any functions for which you changed the default values. Telecommuters should have gotten their quick reference when their passwords were assigned.

Calling the module

1. Enter the module's line-A phone number.

2. Listen for a 2-second answer tone.

3. Enter your password followed by **#** within 15 seconds after the answer tone stops.

Listen for two beeps signaling that the password was accepted and then a beep every 5 seconds. You are in command mode. If you are using the module in a call center, see "Special cases: timeout and DEFINITY call center'" later in this chapter.

Receiving a call

1. When you're in command mode, incoming calls are signaled by a ringing tone through your handset or headset. Enter **#*** to connect to the caller.

2. When you finish the call, enter **##** to go back to command mode.

Making a call

1. Enter **#*** to get a dial tone.

2. When you finish the call, enter **##** to go back to command mode.

If the call doesn't go through, try again, pressing firmly on the buttons in the keypad. If the call still does not go through, see function 12 in Chapter 3.

Transferring a call

To transfer a call, you must make a call or already be on a call, then:

1. Enter ***#** (switchhook flash) to put the current call on Hold and get a dial tone.

2. Enter the number of the person you want to transfer to.

3. When the person answers, enter **##** (disconnect) to complete the transfer and disconnect yourself.

Conferencing

To set up a conference, you must make a call or already be on a call to the first conferee, then:

1. Enter ***#** (switchhook flash) to put that conferee on Hold and get a dial tone.

2. Enter the number of the third conferee.

3. Enter ***#** (switchhook flash) to connect all the conferees and complete the conference.

Disconnecting from a call

1. Enter **##**

Disconnecting from the module

1. Enter **##** and listen for one beep.

2. Hang up.

Per-call connection for the system administrator

Per-call connection allows telecommuters to connect to the module for each call, whereas per-session connection allows telecommuters to stay connected to the module for the period in which they are logged in. When per-call connection is turned on, telecommuters hang up after each call. When per session connection is turned on, telecommuters stay connected: *if they hang up, they end the logon session.* Telecommuters must have permission from the system administrator to turn on per-call connection.

When per-call connection is enabled for a telecommuter either directly or through the dialback function, both the A and B module ports disconnect until the B port rings. Then the module connects on the A port and sends the call to the telecommuter. If the telecommuter forgets to turn off per-call connection, the system administrator has to access the module in programming mode and enter ***200#**. Otherwise the same telecommuter has to redial the module and turn off per-call connection by entering ***200#**.

Note that some long-distance carriers may take longer than others to handle a call. Before you use per-call connection, check that your carrier doesn't cause delays when the module calls the telecommuter's offsite phone number.

- To allow per-call connection, enter ***51*1#**

- To disallow per-call connection, enter ***51*0#**

- To turn on per-call connection using dialback, enter ****50*UU*DD*...D#*** where UU = the user number and DD...D = the per-call connection/dialback number. Note that you enter the same number for both dialback and per-call connection if both functions are in use.

- To check the per-call connection/dialback number, enter ****77*50*UU#*** Listen for a recorded voice saying the programmed number.

- If per-call connection is enabled, you hear a low high tone instead of a beep when you disconnect and you hear two beeps for the command-mode reminder tone.

- To allow telecommuters to program their own number, enter ***53*1#**

Note that since per-call connection and dialback use the same number, allowing telecommuters to program their own per-call connection number also allows them to program the dialback number. For security, this is not recommended.

Per-call connection for the telecommuter

The instructions given next are also in the telecommuter quick reference.

Turning on per-call connection

If you have permission to turn on per-call connection:

1. Enter the module's phone number and enter ***100#** Listen for two beeps.

2. Enter **##** Listen for a low high tone.

Programming your dialback number for per-call connection

1. Enter the module's phone number and enter ***50* *<your phone number>#***

Checking the number

1. Enter ***77*50#** and listen for a recorded voice saying your phone number.

Turning off per-call connection

1. Enter the module's phone number and enter ***200#** Listen for two beeps.

2. Enter **##** and listen for a short tone.

Dialback for the system administrator

You can administer the module to dial back

- to a number you preprogram for each telecommuter
- to one number for all telecommuters
- to a number entered by the telecommuter

Passwords are needed for all three modes.

Using dialback to a number preprogrammed for the telecommuter

1. Enter the module's phone number and listen for a 2-second answer tone.

2. Enter your password within 15 seconds after the answer tone stops. Listen for two beeps every 5 seconds signaling that your password was accepted.

3. Enter **##** to disconnect.

4. When the module calls you back, enter **5** to answer the module. Listen for two beeps every 5 seconds or for a dial tone. You can now make or receive calls.

Using dialback to one preprogrammed number

1. Enter the module's phone number and let it ring once. (This is the default. You can change the number of rings using function 17 in Chapter 3.) Hang up.

2. When the module calls you back, enter **5** to answer the module.

3. Listen for a 2-second answer tone and enter your password within 15 seconds after the answer tone stops. Listen for two beeps every 5 seconds or for a dial tone. You can now make or receive calls.

Using dialback to a number entered by the telecommuter

1. Enter the module's phone number and listen for a 2-second answer tone.

2. Enter your password within 15 seconds after the answer tone stops and listen for two beeps signaling that your password was accepted.

3. Enter your phone number, followed by **#**, and listen for two beeps signaling that the phone number was accepted. Hang up.

Special cases: timeout and DEFINITY call center

- Timeout

  — If telecommuter connection time to the module is limited by a timeout period, listen for a warning tone 16 seconds before you are disconnected. (This is the default value. You can change the value by using function 4 in Chapter 3.) If you haven't finished your call, you need to redial the module.

- DEFINITY call center

  — Note that analog 2500 automatic call distribution (ACD) phone sets are not recommended for DEFINITY call center because they do not have the feature buttons and displays that agents typically use to navigate among work modes (auto-in, manual-in, after-call work, auxiliary work). These same limitations apply to agents who work at home through the module (the best system for remote agents is actually the AT&T Home Agent®). Nonetheless, the module affords remote agents adequate capabilities.

To use the module in a DEFINITY G2 call center:

- Administer line B on the switch as a 2500 ACD station. (See your call-center documentation for more on ACD stations.)

- Using proc 010 word 1 field 20, input **yes** for ACD agent.

- Using proc 010 word 1 field 13, input **yes** for permanent data protection. This frees the line immediately on disconnect.

- Note that DEFINITY G2 doesn't allow zip tone on a 2500 set.

These are the steps for operating as a DEFINITY G2 remote agent:

1. Enter the module's line-A phone number, listen for a 2-second answer tone. Within 15 seconds after the answer tone stops, enter your password followed by **#** Listen for two beeps signaling that your password was accepted and then a beep every 5 seconds.

2. Enter **#*** to get a dial tone, then enter the ACD logon feature access code (FAC). Enter your logon ID. Enter your logon ID again. Listen for a confirmation tone from the switch. Enter **##** to return to command mode. Listen for a beep every 5 seconds.

3. Enter **#*** to get a dial tone, then enter the ACD auto-in FAC. Listen for a confirmation tone from the switch. Enter **##** to return to command mode. Don't hang up unless you have activated per session connection (function 100). Otherwise you are disconnected from the module and logged off the ACD.

4. A fluttering ring in your headset signals that you are receiving an ACD call. Enter **#*** to connect to the caller. When you finish the call, enter **##** to go back to command mode. If the caller hangs up first, you must still enter **##** to go back to command mode. You are ready to receive the next call.

5. To log off call-center operation, enter **#*** to get a dial tone, then enter the logoff FAC. Enter **##** to return to command mode.To disconnect from the module, enter **##** and listen for one beep. Hang up.

To use the module in a DEFINITY G3 call center:

■ Administer line B on the switch as a 2500 automatic call distribution (ACD) station. (See your call-center documentation for more on ACD stations.) We recommend using manual-answer mode, which supplies ringing and needs the agent to answer the call.

■ To administer manual-answer mode, the station screen for line B must show NONE in the auto answer field. On DEFINITY G3 version 1.1 or later, you may want to turn on redirection on no answer (RONA). In a nonvectoring environment, RONA enables an unanswered call to follow the hunt group's coverage path. In a call vectoring environment, an unanswered call redirects to the top of the queue for this hunt group to present to another agent. Line B is put in auxiliary work mode.

These are the steps for operating as a DEFINITY G3 remote agent in manual-answer mode:

1. Enter the module's line A phone number, listen for a 2 second answer tone. Within 15 seconds after the answer tone stops, enter your password followed by **#**. Listen for two beeps signaling that your password was accepted and then a beep every 5 seconds.

2. Enter **#*** to get a dial tone, then enter the ACD logon feature access code (FAC). Enter the split number, then enter your logon ID. Listen for a confirmation tone from the switch. Enter **##** to return to command mode. Listen for a beep every 5 seconds.

3. Enter **#*** to get a dial tone, then enter the ACD auto in FAC. Enter the split number. Listen for a confirmation tone from the switch. Enter **##** to return to command mode. Don't hang up unless you have turned on per session connection (function 100). Otherwise you are disconnected from the module and logged off the ACD.

4. A fluttering ring in your headset signals that you're receiving an ACD call. Enter **#*** to connect to the caller. When you finish the call, enter **##** to return to command mode. If you don't enter **##** within 5 seconds, you hear a dial tone. This is an error message. Clear the error by entering ## to return to command mode. You're ready for the next call.

5. To log off call center operation, enter **#*** to get a dial tone, then enter the logoff FAC and the split number. Enter **##** to return to command mode.To disconnect from the module, enter **##** and listen for one beep. Hang up.

Customizing the Module

3

The module offers a substantial set of programming functions. Some of these, covered in Chapter 1, are needed for the module to work. Others offer options for using the module in special applications such as a call center. Still others are technical and rarely used because they adjust how the module works in unusual environments such as a local central office that doesn't supply forced disconnect.

This is a reference chapter and doesn't need action on your part unless you have special applications or unless recommended by the troubleshooting instructions in Chapter 4. Table 3-2 shows you each function's default at a glance; some specifics on the format for the programming commands follow next.

Table 3-1. Summary of Commands and Defaults

Function	Command	Parameters	Default
passwords	*1*1*NN...N# *1*1*NN...N# *1*UU*NN...N#	UU = 2 to 25	no users
answer tone	*2*1#, *2*0#	enable; disable	enable
tone levels	*3*L#	L= level; L1 = 16 ± 2 dBm; L2 = -10 ± 2 dBm; L3 = -4 ± 2 dBm	L=2
timeout	*4*0*TT#, *4*UU*TT; *4*0*0#, *4*UU*0#	enable all users, 0 to 99 min.; enable specific users 0 to 99 min.; disable all users; disable specific users	TT = 0
reseize-disconnect time	*6*TT#	no. of sec in 10th of sec TT = 0, 5 to 30	0
idle detect time	*8*TT#	TT = 1 to 99 min; 0 = disable	disable
dial-tone detect time	*9*TT# = specify time *9*0# = disable	TT = 0.5 to 20 sec; 0 = disable	disable
amplifier gain	*10*NN#	NN = gain in dB, 0 to 15	NN = 5
amplifier sensitivity	*11*S# = turn on threshhold	S = 0, no bits set; S = 1, + for A, - for B; S = 2, - for A, + for B; S = 3, + for A and B; S = 4, + for A; S = 5, + for B	S = 0
amplifier direction control	*12*D# = on & off	D = 0, disable; D = 1, enable, off after 1st digit or voice, on after 3-sec dial tone; D = 2, on when digit detected, off after each digit; D = 3, on after ringtrip, switchhook flash, reseize, entering command mode; off at #	D = 1
modem detect	*13*1#, *13*0#	1 = enable; 0 = disable	disable
standard ringing only	*16*1# = enable *16*0# = disable	1 = enable; 0 = disable	disable
number of rings	*17*RR#	RR = number of rings, 1 to 16	RR = 1
busy/reorder disconnect	*18*TT#	TT = 0, disable; TT = 1 to 4, invalid; TT = 5 to 20 sec, set interval	TT = 0
initial access mode	*19*D#	D = 0, 1, or 2	0
Prevent	*25*1#; *25*0#	enable; disable	enable
Prevent's response	*26*R#	R = 0, ignores passwords; R = 1 doesn't respond; R = 2, error tone	0 = ignore passwords
number of invalid passwords	*27*NN#	NN = 1 to 20 attempts	NN = 5
Prevent's duration	*28*MM#	MM = min, 1 to 20	MM = 20
reseize	*34*N*DDD#	N = no. of digits; DDD = 0, 2, or 3, 0 to 9 or * or #; N = 0, disable	DDD = 0
switchhook flash	*35*N*DDD#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #; N = 0, disable	*#
tone elimination	*36*N*DDD#	N = no. of digits, 2 or 3, 0 to 9 or * or #	**
disconnect	*37*N*DDD#	N = no. of digits, 9 to 0 or * or #; N = 0, disable	##
tone pass-through	*38*N*DDD#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #	#*

Continued on next page

Table 3-1. Summary of Commands and Defaults — *Continued*

Function	Command	Parameters	Default
go to command mode	*88#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #	##
milliwatt test	*40*NNN# = enable; *40*0# = disable	NNN = 0 to 300	
interdigit time	*41*DD#	DD = 1 to 20	0
reminder tone	*42*DD#	5 = enable, 4 to 60	DD = 5
per-call connection/ dialback number	*50*UU*DD#	DD...D = PCC/DB number	
per-call connection	*51*1#, *51*0# = disable	0 = disable; 1 = enable	disable
dialback	*52*D#	D = 1, not used; D = 2, calls dialback no. for logged-on user; D = 3, calls dialback no. for any user; D = 4, calls dialback no. entered by user	disable
per-call connection/ dialback permission	*53*0#, *53*1#	0 = 0, disable; D = 1, enable	D = 0
programming query	*77*FF# = value *77*FF*UU# = value & user no.	ask for function value	none
test tones	*80*D# = produce test tone; *81*D# = produce 20-sec answer tone	D = 1 to 9 for 20 sec; D = 10, 0; D = 11, *; D = 12, #	none
go to command mode	*88#	none	none
version query	*90#	none	none
remote programming	*98*0#, *98*1#	0 = disable, 1 = enable	disable
restore defaults	*99#*99#	none	none
start per-call connection	*100#	none	none
stop per-call connection	*200#	none	

Table 3-2.

Function	Command	Parameters	Default
passwords	*1*1*NN...N# *1*1*NN...N# *1*UU*NN...N#	UU = 2 to 25	no users
answer tone	*2*1#, *2*0#	enable; disable	enable
tone levels	*3*L#	L= level; L1 = 16 ± 2 dBm; L2 = -10 ± 2 dBm; L3 = -4 ± 2 dBm	L=2
timeout	*4*0*TT#, *4*UU*TT; *4*0*0#, *4*UU*0#	enable all users, 0 to 99 min.; enable specific users 0 to 99 min.; disable all users; disable specific users	TT = 0
reseize-disconnect time	*6*TT#	no. of sec in 10th of sec TT = 0, 5 to 30	0
idle detect time	*8*TT#	TT = 1 to 99 min; 0 = disable	disable
dial-tone detect time	*9*TT# = specify time *9*0# = disable	TT = 0.5 to 20 sec; 0 = disable	disable
amplifier gain	*10*NN#	NN = gain in dB, 0 to 15	NN = 5
amplifier sensitivity	*11*S# = turn on threshhold	S = 0, no bits set; S = 1, + for A, - for B; S = 2, - for A, + for B; S = 3, + for A and B; S = 4, + for A; S = 5, + for B	S = 0
amplifier direction control	*12*D# = on & off	D = 0, disable; D = 1, enable, off after 1st digit or voice, on after 3-sec dial tone; D = 2, on when digit detected, off after each digit; D = 3, on after ringtrip, switchhook flash, reseize, entering command mode; off at #	D = 1
modem detect	*13*1#, *13*0#	1 = enable; 0 = disable	disable
standard ringing only	*16*1# = enable *16*0# = disable	1 = enable; 0 = disable	disable
number of rings	*17*RR#	RR = number of rings, 1 to 16	RR = 1
busy/reorder disconnect	*18*TT#	TT = 0, disable; TT = 1 to 4, invalid; TT = 5 to 20 sec, set interval	TT = 0
initial access mode	*19*D#	D = 0, 1, or 2	0
Prevent	*25*1#; *25*0#	enable; disable	enable
Prevent's response	*26*R#	R = 0, ignores passwords; R = 1 doesn't respond; R = 2, error tone	0 = ignore passwords
number of invalid passwords	*27*NN#	NN = 1 to 20 attempts	NN = 5
Prevent's duration	*28*MM#	MM = min, 1 to 20	MM = 20
reseize	*34*N*DDD#	N = no. of digits; DDD = 0, 2, or 3, 0 to 9 or * or #; N = 0, disable	DDD = 0
switchhook flash	*35*N*DDD#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #; N = 0, disable	*#
tone elimination	*36*N*DDD#	N = no. of digits, 2 or 3, 0 to 9 or * or #	**
disconnect	*37*N*DDD#	N = no. of digits, 9 to 0 or * or #; N = 0, disable	##
tone pass-through	*38*N*DDD#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #	#*
go to command mode	*88#	N = no. of digits; DDD = 2 or 3, 0 to 9 or * or #	##

Table 3-2.   — *Continued*

Function	Command	Parameters	Default
milliwatt test	*40*NNN# = enable; *40*0# = disable	NNN = 0 to 300	
interdigit time	*41*DD#	DD = 1 to 20	0
reminder tone	*42*DD#	5 = enable, 4 to 60	DD = 5
per-call connection/ dialback number	*50*UU*DD#	DD...D = PCC/DB number	
per-call connection	*51*1#, *51*0# = disable	0 = disable; 1 = enable	disable
dialback	*52*D#	D = 1, not used; D = 2, calls dialback no. for logged-on user; D = 3, calls dialback no. for any user; D = 4, calls dialback no. entered by user	disable
per-call connection/ dialback permission	*53*0#, *53*1#	0 = 0, disable; D = 1, enable	D = 0
programming query	*77*FF# = value *77*FF*UU# = value & user no.	ask for function value	none
test tones	*80*D# = produce test tone; *81*D# = produce 20-sec answer tone	D = 1 to 9 for 20 sec; D = 10, 0; D = 11, *; D = 12, #	none
go to command mode	*88#	none	none
version query	*90#	none	none
remote programming	*98*0#, *98*1#	0 = disable, 1 = enable	disable
restore defaults	*99#*99#	none	none
start per-call connection	*100#	none	none
stop per-call connection	*200#	none	

- ■ Begin each command with an asterisk (*) and end it with a pound sign (#). Note that the first 1 to 2 digits surrounded by asterisks in every command are the function number. When the user number is part of the command as in the password command, that number follows the function number, also surrounded by asterisks. (In these instructions, *telecommuters* are called *users.*)

- ■ For functions that are assigned to all telecommuters, use the format:

  <function number><value you want for that function>#

- ■ For functions that are assigned to individual telecommuters, use the format:

  <function number><user ID number>*<value you want for that function>#

■ For example, to assign passwords for users 2 through 25, you would enter: *1*UU*NN...N# where UU is the user number, in this case 2 through 25, and NN...N is the unique password of 8, 9, or 10 digits. After you enter a command, wait for a confirmation tone of three beeps. An error tone instead means that you have entered an invalid command.

■ Variables are: D = digits, F = function, L = level, M = minutes, R = response or rings, S = sensitivity, T = time, U = user.

■ Programming worksheets are supplied for your convenience. Fill out one worksheet for each telecommuter with the values you have chosen for each function. (An example of a filled-out worksheet is shown in Table 3-3, next.) Keep the worksheets for your own reference, storing them in a safe place away from the module.

Table 3-3. Programming Worksheet

Line-A phone number _____
Line-B phone number _____

User ID	Password	PCC/DB number	Timeout
1	047551709	91 201 957 4331	
2	5031066830	91 718 529 2060	
3	1640147265	91 212 766 8141	
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Function 1: passwords

Purpose: Passwords for telecommuters are necessary for security. Although the default is that no passwords are assigned, if you don't assign passwords, *the module denies access to all telecommuters.* User 1 is reserved for remote programming (if it is activated, using function 98).

A password can be any unique sequence of 8, 9, or 10 digits (the maximum number,10, is recommended for security). You can assign up to 25 passwords for telecommuters, beginning with user 2.

Parameters: UU = 2 to 25

Commands: *1*1*NN...N#*1*1*NN...N# = assign a password for user 1; *1*UU*NN...N# = assign passwords for users 2 to 25

Function 2: answer tone

Purpose: This function signals telecommuters that they can enter a password; you can disable the answer tone to confuse hackers.

Parameters: enable or disable

Commands: *2*1# = enable answer tone (default); *2*0# = disable answer tone

Function 3: tone levels

Purpose: This function sets the volume for the answer tone, voice responses, and ringing produced by the module.

Parameters: level 1 = -16± 2 dBm; level 2 = -10 ± 2 dBm (default); level 3 = -4 ± 2dBm

Command: *3*L#

Function 4: timeout

Purpose: This function sets a limit on the time telecommuters can be logged in to the module.

Parameters: 0 to 99 minutes

Commands:

*4*0*TT#* = enable for all users; *4*UU*TT#* = enable for specific users

*4*0*0#* = disable for all users; *4*UU*0#* = disable for specific users

Function 6: reseize-disconnect time

Purpose: This function is used to set the module's disconnect time to match the switch's requirement.

Parameters: the number of seconds allowed, measured in 10ths of seconds, after you disconnect and until you reconnect—for example, *6*18# = 1.8 seconds, the recommended value

Command: *6*TT# (TT = 0, default, 5 to 30)

Function 8: idle detect time

Purpose: This function prevents line A from getting "hung"—not disconnecting, which locks out the next telecommuter to call the module. This happens if you hang up without entering ## and your local central office doesn't supply forced disconnect. (See also functions 9 and 18.)

Parameters: TT = 1 to 99 minutes; 0 = disable (default, number of minutes of silent time on the line before you are disconnected)

Command: *8*TT#*

Function 9: dial tone detect time

Purpose: This function automatically disconnects after dial tone has been present for a specified time. In some installations, including those in which line A is loop start and your local central office doesn't supply forced disconnect, the module may not be able to disconnect without this function. (See also functions 8 and 18.)

Parameters: TT = 0.5 to 20 seconds; disable = 0 (default)

Commands: *9*TT# = specify time; *9*0# = disable

Function 10: amplifier gain

Purpose: Use the default gain value for this function unless telecommuters complain of low volume. Then increase the value by 3 until you get the right level without causing dialing errors. If necessary, fine tune by 1 -dB increments.

Parameters: NN = gain in dB, 0 to 15; default = 5

Command: *10*NN#

Function 11: amplifier sensitivity

Purpose: This function sets the typical threshholds at which the amplifier tums on. Use it if low-level signals are not strong enough. First enable function 10.

Parameters: You can lower typical thresholds for either or both the A and B sides. For example, the amplifier turns on when transmission levels for either the A or the B sides are -44 dBm or lower (S = 0). Setting the level to S = 1 increases sensitivity from the A side (-48 dBm) and decreases sensitivity from the B side (-42 dBm).

      S = 0, no sensitivity bits set (default)

      S = 1, + for A, - for B

      S = 2, - for A, + for B

      S = 3, + for A and B

      S = 4, + for A

      S = 5, + for B

Command: *11*S# = threshold at which amplifier turns on

Table 3-4. Amplifier Sensitivity Options

Option	Typical 1-kHz turn-on levels (dBm)		Change in typical turn-on levels (dB)	
	Module A	Module B	Module A	Module B
0	-44	-44	-	-
1	-48	-42	-4	+2
2	-42	-48	+2	-4
3	-49	-49	-	-
4	-53	-47	-4	+2
5	-47	-53	+2	-4

Function 12: amplifier direction control

Purpose: This function ensures that the amplifier doesn't raise the level of the dial tone and attenuate the level of the dialed digits. It raises the level only on the A side while the telecommuter is dialing, then turns off and lets the amplifier work normally.

Change the value of this function if needed to break dial tone. First enable function 10.

Parameters:

■   Direction control is turned on after any of the following:

— ringtrip

— switchhook flash

— sending a connect command from command mode

— reseizing

■   When set to 1, direction control turns off automatically when voice is detected; it turns on after 3 seconds of dial tone

- Direction control also turns on when 3 seconds of busy or reorder tone are detected; it doesn't turn off until you flash the switchhook or go into command mode

- Change the value of this function if you have trouble breaking dial tone; the default is enabled

  — D = 0, disable

  — D = 1, enable (default), turns off after the first digit ends or when voice is detected, and turns on after 3 seconds of dial tone; this works in most cases where direction control is needed

  — D = 2, turns on when a digit is detected and turns off after each digit ends

  — D = 3, turns on after a ringtrip, a switchhook flash, a reseize, and when you enter command mode; turns off when you enter **#**

Command: *12*D# = turn direction control on and off

Function 13: modem detect

Purpose: This function allows the module to detect a 2225-Hz modem tone and disable the amplifier to prevent interference with data transmission.

Parameters: 1 = enabled; 0 = disable (default)

Commands: *13*1# = enable; *13*0# = disable

Function 16: standard ringing only

Purpose: Use this function to program the module so that it responds to the standard ring of 2 seconds on and 4 seconds off and ignores any calls that don't match this pattern; this function is automatically disabled when the module is in programming mode.

Parameters: 1 = enable; 0 = disable (default)

Commands: *16*1# = enable: *16*0# = disable

Function 17: number of rings

Purpose: This function sets the number of rings needed before the module answers; when you set the front panel switch on the module to PROGRAM, the first call after you set it is answered on the first ring. (See also function 52.)

Parameters: RR = number of rings,1 to 16; default = 1

Command: *17*RR#

Function 18: busy/reorder disconnect

Purpose: This function specifies the number of seconds (5 to 20) that a busy or reorder tone lasts before the module disconnects. (See also functions 8 and 9.)

Parameters:

TT = 0 disables the function (default)

TT = 1 to 4 are invalid; the telecommuter hears an error tone

TT = 5 to 20 enable the function and set the interval before the disconnect; 1 0 is the suggested value

Command: *18*TT#

Function 19: initial access mode

Purpose: This function lets you choose how the module works (the mode) when you enter a valid password:

- in mode 0 (default), you enter command mode and hear *beep beep* every 5 seconds

- in mode 1, you hear a dial tone from the switch; you can place calls with tone elimination enabled; this mode is seldom used

- in mode 2, you hear a dial tone from the switch; you can place calls with tone pass-through enabled; this is the mode needed for using the module in a call-center environment

 Parameters: D = 0, 1, or 2

Command: *19*D#

Function: call center

See ''Special cases: timeout and DEFINITY call center'' in Chapter 2.

Function 25: Prevent

Purpose: This function prevents all telecommuters from calling the module after repeated tries to enter an invalid password, as specified in functions 26, 27, and 28. If Prevent is enabled and you keep the default values for functions 26, 27, and 28, whenever the module gets five consecutive invalid passwords it blocks further access by any telecommuter for 20 minutes by ignoring all passwords.

Parameters: enable (default) or disable (this is not recommended)

Command: *25*1# = enable (default); *25* 0# = disable

Function 26: Prevent's response

Purpose: This function specifies the response to callers when function 25 is activated.

Parameters:

R = 0, module ignores passwords (default)

R = 1, module doesn't respond

R = 2, module responds with an error tone

Command: *26*R#

Function 27: number of invalid passwords

Purpose: This function sets the number of consecutive invalid passwords attempted before function 25 is activated

Parameters: NN = 1 to 20 attempts; default = 5

Command: *27*NN#

Function 28: Prevent's duration

Purpose: This function sets the number of minutes Prevent is active; longer intervals mean more security

Parameters: MM = number of minutes, 1 to 20; default = 20

Command: *28*MM#

Function 34: reseize

Purpose: This function creates one control command that combines the functions of disconnecting from one call (##) and getting a dial tone to start a new call (#*). Function 6 sets the interval during which the line is disconnected.

Parameters: N = number of digits in command; DDD = 0, 2, or 3 digits; valid entries are 0 to 9 or * or #; default = 0; if N = 0, the function is disabled

Command: *34*N*DDD#

Function 35: switchhook flash

Purpose: This function changes the default command for switchhook flash.

Parameters: N = number of digits in control command; DDD = 2 or 3 digits, valid entries are 0 to 9 or * or #; default = *#; if N = 0, the function is disabled

Command: *35*N*DDD#

Function 36: tone elimination

Purpose: This function changes the default command for tone elimination.

Parameters: N = number of digits in control command; DDD = 2 or 3 digits, valid entries are 0 to 9 or * or #; default = **

Command: *36*N*DDD#

Function 37: disconnect

Purpose: This function changes the default command for disconnect.

Parameters: N = number of digits in control command, valid entries are 9 to 0 or * or #: default = ##; if N = 0, the function is disabled

Command: *37*N*DDD#

Function 38: tone pass through

Purpose: This function changes the default command for tone elimination.

Parameters: N = number of digits in control command; DDD can be 2 or 3 digits, valid entries are 0 to 9 or * or #; default = #*

Command: *38*N*DDD#

Function 39: go to command mode (command)

Purpose: This function changes the default command to "go to command mode."

Parameters: N = number of digits in control command; DDD = 2 or 3 digits; valid entries are 0 to 9 or * or #; default = ##

Command: *39*N*DDD#

Function 40: milliwatt test

Purpose: This function causes the module to connect, then disconnect, after hearing 1004 Hz for the specified number of seconds (0 through 300). Enable this function if the module can't release a line in response to a milliwatt test number.

Parameters: NNN = 0 to 300; default = 15

Command: *40*NNN# = enable; *40*0# = disable

Function 41: interdigit time

Purpose: This function changes the interdigit time for control commands.

Parameters: DD = 1 to 20

Command: *41*DD#

Function 42: reminder tone

Purpose: This function causes the module to beep once at a specified interval (4 to 60) while you are in command mode. If per-call connection is enabled and a telecommuter is logged in, the module beeps twice at the specified interval.

Parameters: 5 = enable (default), 4 to 60

Command: *42*DD#

Function 50: per-call connection/dialback number

Purpose: This function programs the per-call connection/dialback number (the number at the telecommuter's location)

Parameters: DD...D = PCC/DB

Command: *50*UU*DD#

Function 51: per-call connection

Purpose: This function allows the module to forward office calls to the telecommuter, one call at a time. In this way, telecommuters hang up after each call to reduce network facility expense. If you enable this function, telecommuters can activate per-call connection with function 100 and deactivate it with function 200.

Parameters: 0 = disable (default); 1 = enable

Command: *51*1#

Function 52: dialback

Purpose: This function allows the system administrator to choose a dialback mode for telecommuters. The module can dial back to a number you set for each telecomuter, to one number for all users, or to a number entered by the telecommuter. Passwords are always needed.

Parameters:

D = 0, disable

D = 1, not used

D = 2, module calls dialback number for a logged on telecommuter, administered using function 50

D = 3, module calls one dialback number for any telecommuter administered using function 50

D = 4, module calls dialback number entered by a telecommuter, using function 50, if allowed by the system administrator, using function 53

Commands: *52*D#

Function 53: per-call connection/dialback permission

Purpose:

This function grants or denies permission for telecommuters to change their PCC/DB number.

Parameters: D = 0, disable (default); D = 1, enable

Command: *53*D#

Function 77: programmmg query

Purpose: This function allows you to ask for the value of any function you have programmed and get a recorded voice response.

Commands: *77*FF# = value; 77*FF*UU# = value and user number

Functions 80 and 81: test tones

Purpose: Use this function to listen to and test the tones for each digit entered and the answer tone.

Parameters:

> D = 1 to 9, DTMF tones for 20 seconds
>
> D = 10, 0
>
> D =11, *
>
> D = 12, #

Commands: *80*D# = produce a test tone; *81# = produce a 20-second answer tone

Function 88: go to command mode

Purpose: This function allows you to go right from programming mode to command mode.

Parameters: none

Command: *88#

Function 90: version query

Purpose: This function checks the version number of the software installed.

Parameters: none

Command: *90#

Function 98: remote programming

Purpose: This function enables you to program the module from a remote location such as another room or offsite. The module has to be in programming mode. (For security, disabling this function is recommended.)

Parameters: 0 = disable (default); 1 = enable

Command: *98*1# = enable remote programming; *98*0# = disable remote programming

Function 99: restore default values

Purpose: This function erases all your values and resets the functions to the default values programmed at the factory. *Are you sure you want to do this?*

Parameters: none

Command: *99#*99#; 3 beeps confirm the change

Function 100: start per-call connection

Purpose: This function allows the telecommuter to activate per-call connection if you have enabled function 51.

Parameters: none

Command: *100# (telecommuter)

Function 200: stop per-call connection

Purpose: This function allows the telecommuter to deactivate per-call connection.

Parameters: none

Command: *200# (telecommuter)

Troubleshooting

4

Here are some steps to take if you have problems with the module. If these steps don't work, call AT&T at:

Technical Service Center (TSC)

800-242-2121

National Service Assistance Center (NSAC)

800-628-2888

Problem: The module doesn't answer.

Solution: Check the unlabeled green power light on the front panel of the module.

- If the green light does not flash:

    — Check that the front panel switch is set to READY.

    — Check that the module is plugged in.

    — Ask a qualified technician to unplug the power cable from the wall and check that there are 120 VAC ±10% at the wall receptacle and, if the wall receptacle is on a switched outlet, that the switch is on.

- If this voltage is not present, the problem is an open circuit breaker or faulty building wiring: get it fixed.

- If this voltage is present, check that there are a minimum of 12 VAC at the power cable connector and reconnect the module.

- If the green light still doesn't flash, the module is defective: return it to AT&T.

■ If the green light does flash:

— Unplug line A from the module and plug it into an analog phone instead.

— Enter the line-A phone number from another phone.

■ If this phone doesn't ring, check the number and redial.

■ If the phone still doesn't ring, the problem is in the wiring: get it fixed.

■ If the phone does ring, answer it to check the connection. The problem is not in the wiring. Unplug the phone and reconnect the module.

— Press the front panel switch to PROGRAM until the green light flashes quickly (programming mode) and enter the module's line-A phone number within 5 minutes.

■ If the module doesn't answer in programming mode—the red light (light A) doesn't light or you don't hear a confirmation tone of three beeps—the module is defective: return it to AT&T.

■ If the module does answer in programming mode—the red light (light A) lights and you hear a confirmation tone of three beeps—query function 16, standard ringing only, by entering *77*16# to check that it is disabled. If you hear a recorded voice say *zero*, the module is defective in normal mode: return it to AT&T.

Problem: the module answers but doesn't respond with an answer tone.

Solution: query function 2, answer tone, to check that it is enabled. If it is enabled, set the answer tone to the loudest value (level 3).

Problem: the module does not seize line B.

Solution: check that line B supplies a dial tone.

■ If the red light (light B) doesn't light when you try to make a call by entering #*, the module is defective: return it to AT&T.

■ If the red light (light B) does light but you don't hear a dial tone, unplug line B from the module and plug it into an analog phone instead. Use this phone to make a call. If you get a dial tone, the module is defective: return it to AT&T.

Problem: the red light (light A) flashes and immediately fades.

Solution: loop current on the incoming line may be low. Ask a qualified technician to test the line. Disconnect the module and connect a phone to the module's line A with an ammeter in series. Lift the handset and check for at least 20 mA. If at least 20 mA are present, the module is defective: return it to AT&T.

Problem: when you make a call, the dial tone doesn't stop after you enter the first digit.

Solution: check line B and function 10, amplifier gain.

- Unplug line B from the module and plug it into an analog phone instead.

- Use this phone to make a call. When you get a dial tone, try to make a call. If the dial tone doesn't stop, repair the phone line. If you can make a call successfully, use function 10, amplifier gain, to increase the gain value by several dBm. If the problem persists, the module is defective: return it to AT&T.

Warranty and Returns

A
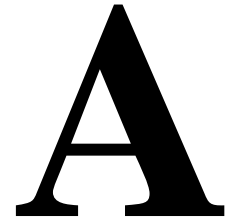
- **Warranty:** AT&T warrants this product to be free from defects in material and workmanship for a period of 12 months from the date of purchase, given proper installation and use. At its sole discretion, AT&T will repair or replace free of charge any module found to be defective during the warranty period. Modules found to be defective beyond the warranty period will be repaired or replaced at a flat rate.

- **Toll fraud disclaimer:** while the module is designed to be reasonably secure from intrusions by fraudulent callers, it is by no means invulnerable to fraud. Therefore, AT&T makes no express or implied warranty against such fraud.

- **Returns:** if a module is found to be defective, contact your AT&T account executive. Note that the phone company may ask you to disconnect the module from the network until the problem has been corrected or until you are sure that the module is not malfunctioning. If you need more information, call AT&T at:

  Technical Service Center (TSC)

  800-242-2121

  National Service Assistance Center (NSAC)

  800-628-2888

Programming Worksheet

B

Line-A phone number _____
Line-B phone number _____

User ID	Password	PCC/DB number	Timeout	Notes
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Specifications

C

Main Board

⚠ **WARNING:**

Important operating and maintenance instructions:

Power needs (use only with class-2 power source rated 120-VAC, 60-Hz, 10W input; 12-VAC, 500-mA output):

Input	120 VAC ± 10%
Output	12V, 500 mA nominal

Operation During Power Loss

EEPROM	all programmed settings are kept in nonvolatile EEPROM during power loss no batteries are needed

Ringing Voltage Detection

With standard ringing only disabled	40-150 VRMS at 16-66 Hz applied to T-R for > 400 ms
With standard ringing only enabled	40-150 VRMS at 16-66 Hz applied to T-R with cadence of 2000 ±220 ms on, 4000 ± 440 ms off (6 sec needed to answer call)

Insertion Loss

With amplifier (set for 0 dB gain)	< 2.5 dB for 300-3500 Hz
Longitudinal balance	> 60 dB for 200-1000 Hz > 50 dB for 1000-4000 Hz

Loop Limitations

Input port	loop start
Output port	loop start
Seizure	≥20 mA minimum ≤100 mA maximum
Maximum break duration with no loss of seizure	< 350 ms (input port only)

DTMF Receive Detect

Tone duration	must accept > 40 ms must reject < 20 ms
Tone level composite signal	must accept ≥ 25 dBm must reject ≤ 37 dBm
Twist	±6 dB
Frequency deviation	must accept ± 1/5% + 2 Hz of nominal must reject ± 3.5% + 2 Hz of nominal

DTMF Transmit Signals

Tone duration	70 ±5 ms
Interdigit time	70 ±5 ms
Tone level	-6 ±4 dBm
Minimum break for guaranteed loss of seizure	> 550 ms (input port only)

Input Impedance

DC	210 ±30 ohms (after seizure)
AC	925 ±75 ohms (before password and with outgoing line split)

Output Impedance

DC	210 ±30 ohms (after seizure)
AC	925 ±75 ohms (with the A side open)

Passwords

Passwords (8-10 digits, any combination of DTMF digits 0-9)	detects and accepts (see "DTMF receive detect"); # at end of password must be entered within 16 sec of answer tone (if enabled) or unit disconnects; error tone is returned 16 sec after the last DTMF digit entry

Seizure of Outgoing Line

< 250 ms after valid password entered

Control Commands

Connect mode signal	takes unit out of command mode and into connect mode (defaults = tone pass-through, #*, or tone elimination **)
Disconnect	in command mode, causes unit to disconnect (default = ##)
Switchhook flash	opens outgoing line for 550 ±50 ms (default = * #)
Command mode	outgoing line is on-hook and user is connected to A port (default = ##)
Reseize	sends an on-hook signal to B port (default = disabled)
Disconnect timer	programmable for 1 to 99 minutes; timer starts at cut through; warning tone 16 sec before disconnect

Call-Progress Tone Detection

Dial tone detect	zero crossing detector finds presence of tones from 305 to 640 Hz with level > -27 dBm and rejects all signals below -27 dBm
1000 Hz tone detect	zero crossing detector finds presence of 1000 Hz tone; must accept 1000 ±50 Hz at level > -27 dBm; must reject tone < 900 Hz and tone > 1100 Hz and any tone below -37 dBm
Voice response vocabulary	digits 0 to 9 (to verify current programming)

Data disable detect from amplifier	microprocessor sets gain to 0 after detecting 2225 Hz ±100 Hz for 350 ±100 ms; gain remains at 0 until module is reset or output line is dropped and reseized
Test tone detect	normally disabled; when enabled, unit disconnects on detection of 1000-Hz tone for 1 to 300 sec
Idle detect	normally disabled; when enabled, unit does switchhook flash on detecting no activity on line for programmable period of 1 to 99 min, then looks for tone of 305 to 640 Hz for 5 sec, then disconnects incoming and outgoing lines; must accept 305 < sig < 640; must reject 300 > sig > 645
Error tone	alternates high and low tones for 2 sec (notifies user of error in programming or password)
Answer tone	none
With answer tone disabled	none
With answer tone enabled	begins 2.0 ±0.1 sec after ring trips; lasts 2.0 ±0.1 sec; level (programmable) at -4 ±2 dBm, 10 ±2 dBm (factory setting), or -16 ±2 dBm, frequency 440 ±10 Hz
Confirmation tone	3 short beeps, 250 ms duration
Warning tone	500-ms answer tone

Voice Amplifier

Gain software	selectable in 1 -dB increments from 0 to 15 dBm ±1 dB, measured with input -30 dBm
Maximum output with gain	with input signal below -9 dBm: -9 dBm with input signal above -9 dBm: tracks input signal level
Gain between 500 and 330 Hz	±1 dB of gain at 1000 Hz
Gain at 300 Hz	does not deviate by more than -3 dB from gain at 1000 Hz
Data disable signal	microprocessor detects disable tone and disables amplifier; amplifier stays disabled until unit is reaccessed or a retrial is initiated on the outgoing line; must detect 2225 Hz ±21 Hz lasting 350 ±100 ms + signal > - 30 dBm; must reject 2450 < signal < 2000 Hz
Voltage sensitivity thresholds	see function 11, amplifier sensitivity
Longitudinal balance, as measured by IEEE Standard 455-1976	> 60 dB for 200-1000 Hz > 50 dB for 1000-4000 Hz
Singing point	unconditionally stable
Overload	does not occur until signal on output is +9 dBm at 1 kHz
Harmonic distortion	< 1 % between 500 and 3300 Hz with signal and source-load impedances of 900 ohms, input signal at 0 dBm, and gain set to +7 dBm
Turn-on time	< 5 ms when input signal of 1 kHz at -30 dBm is applied and unit gain is set for +7 dB
Lightning protection	complies with FCC Part 68 requirements specified in Section 68.302, Environment Simulation

Mechanical Specifications

Unit dimensions	1.5" x 5.5" x 9"
Indicators and controls	3 LEDs on front panel: A is red when incoming line is seized; B is red when outgoing line is seized; power light is flashing green when module is enabled, quickly flashing green when in programming mode, off when disabled; 3-position switch on front panel enables or disables module or puts it in programming mode
Power and line connections	2 RJ-11C jacks on back panel connect incoming and outgoing lines; an AC power jack and an RS-232-C port connect a printer for recording calls
Line needs	line-port B to switch is loop start; line-port A to telecommuter is loop start with forced disconnect
Polarity	line-ports A and B are protected against polarity: if T and R are reversed, the module still works

Environmental Specifications

Temperature	0-55°C
Relative humidity	operates at 55°C and 85% relative humidity (noncondensing) for 72 hr with no degradation of performance

Regulatory Compliance

AT&T Telecommuter Module meets U.S. Federal Communications Commission (FCC) Parts 15 and 68, Canadian Department of Communications (DOC), Canadian Standards Association (CSA), and Underwriters Laboratories (UL) requirements

Sample Call Records

D

Table D-1.   Sample Call Records

Field 1	Field 2	Field 3	Field 4	Explanation
NO CODE,	,	ONHOOK,		User called the module, got an answer tone, and hung up
NO CODE,	,	DTMF T/O,		User called the module, didn't enter digits, and after 16 sec the module disconnected
DENIED,	,	,		User called the module, entered invalid password digits, and the module disconnected
PROGRAM	##,			Module was accessed for programming by the user-1 password or the PROGRAM switch, and the control command ## (disconnect) was used
USER 02,	5551212,	ONHOOK	,00:00:15	User 2 entered 555-1212 and hung up after 15 sec
USER 02,	5551212##,		,00:00:15	User 2 entered 555-1212 and entered ## to go to command mode

Table D-1.   Sample Call Records — *Continued*

Field 1	Field 2	Field 3	Field 4	Explanation
USER 02,	5551212**,		,00:00:15	User 2 entered 555-1212 entered **, and the module disconnected after 15 sec
USER 02,	5551212,	TIMEOUT	,00:20:15	User 2 entered 555-1212 and the module disconnected when timeout was exceeded
USER 25,	5551212,	IDLE T/O	,00:05:15	User 25 entered 555-1212 and the module disconnected when the idle detect time elapsed
USER 25,	5551212,	REORDER T/O	,00:02:05	User 25 entered 555-1212, the module got a reorder tone and disconnected
USER 25,	5551212,	BUSY T/O	,00:00:05	User 25 entered 555-1212, the module got a busy tone and disconnected
USER 25,	5551212,	DIALTONE T/O	,00:00:45	User 25 entered 555-1212, the module got a dial tone and disconnected when the dial-tone-detect time elapsed

Table D-2.   Printer Interface

Pin No.	RS-232-C Code	Description
1	AA	Protective ground (common with signal ground)
2	BA	RXD receive data (inactive)
3	BB	TXD transmit data
6	CC	DSR data set ready (always high)
7	AB	Signal ground
8	CF	DCD data carrier detect (high when incoming line is off-hook)
22	CE	RI ring indicator (high when ringing is present on incomming line)

The module provides a 1200-bps serial RS-232-C interface with an 8-bit data word and no parity; it is configured as DCE and its connecting jack is DB-25S.

Quick Reference

E

These are your instructions for telecommuting through the AT&T Telecommuter Module.

Calling the module

1. Enter the module's phone number.

2. Listen for a 2 second answer tone and enter your password within 15 seconds after the answer tone stops.

3. Listen for two beeps signaling that your password was accepted, then one beep every 5 seconds.

Receiving a call

1. When you're in command mode, incoming calls are signaled by a ringing tone through your handset or headset. Enter **#*** to connect to the caller.

2. When you finish the call, enter **##** to go back to command mode.

Making a call

1. Enter **#*** to get a dial tone

2. Enter the number you want to call.

3. When you finish the call, choose one of the following:

    —   If per call connection is turned on, enter **##** and hang up or stay on the phone to use other features.

    —   If per session connection is turned on, enter **##** but don't hang up or you are logged off the module.

Transferring a call

To transfer a call, you must make a call or already be on a call, then:

1. Enter ***#** to put the current call on Hold and get a dial tone.

2. Enter the number of the person you want to transfer to.

3. When the person answers, enter **##** to complete the transfer and disconnect yourself.

Conferencing

To set up a conference, you must make a call or already be on a call to the first conferee, then:

1. Enter ***#** to put that conferee on Hold and get a dial tone.

2. Enter the number of the third conferee.

3. Enter ***#** to complete the conference and connect all the conferees.

Disconnecting from a call

1. Enter **##**

Disconnecting from the module

1. Enter **##**

2. Hang up.

Turning on per-call connection

You must have permission from the system administrator to turn on per-call connection.

1. Enter the module's phone number and enter ***100#** Listen for two beeps.

2. Enter **##** Listen for a low high tone.

Programming your dialback number
for per-call connection

You must have permission from the system administrator to turn on per call connection.

1. Enter the module's phone number and enter ***50*_\<your phone number\>_#**

Checking the number

1. Enter ***77*50#** and listen for a recorded voice saying your phone number.

Turning off per-call connection

1. Enter the module's phone number and enter ***200#** Listen for two beeps.

2. Enter **##** and listen for a short tone.

Using dialback to a number
preprogrammed for you

1. Enter the module's phone number and listen for a 2 second answer tone.

2. Enter your password within 15 seconds after the answer tone stops. Listen for two beeps every 5 seconds signaling that your password was accepted.

3. Enter **##** to disconnect.

4. When the module calls you back, enter **5** to answer the module. Listen for two beeps every 5 seconds. Now you can make or receive calls.

Using dialback to one preprogrammed number

1. Enter the module's phone number and let it ring once. Hang up.

2. When the module calls you back, enter **5** to answer the module.

3. Listen for a 2-second answer tone and enter your password within 15 seconds after the answer tone stops. Listen for two beeps every 5 seconds. You can now make or receive calls.

Using dialback to a number you enter

1. Enter the module's phone number and listen for a 2-second answer tone.

2. Enter your password within 15 seconds after the answer tone stops. Listen for two beeps signaling that your password was accepted.

3. Enter your phone number, followed by **#**, and listen for two beeps signaling that the phone number was accepted. Hang up.

Table E-1.   Programming Quick Reference

Password programming commands			Password query commands			Responses	
Func	**Usr**	**Password**	**Query**	**Func**	**Usr**	**Usr**	**Password**
*1	*1	*_____#	*77	*1	*1#	1 (b)	_____(bbb)
*1	*2	*_____#	*77	*1	*2#	2 (b)	_____(bbb)
*1	*3	*_____#	*77	*1	*3#	3 (b)	_____(bbb)
*1	*4	*_____#	*77	*1	*4#	4 (b)	_____(bbb)
*1	*5	*_____#	*77	*1	*5#	5 (b)	_____(bbb)
*1	*6	*_____#	*77	*1	*6#	6 (b)	_____(bbb)
*1	*7	*_____#	*77	*1	*7#	7 (b)	_____(bbb)
*1	*8	*_____#	*77	*1	*8#	8 (b)	_____(bbb)
*1	*9	*_____#	*77	*1	*9#	9 (b)	_____(bbb)
*1	*10	*_____#	*77	*1	*10#	10 (b)	_____(bbb)
*1	*15	*_____#	*77	*1	*15#	15 (b)	_____(bbb)
*1	*25	*_____#	*77	*1	*25#	25 (b)	_____(bbb)

Table E-2.   Programming Quick Reference

Timeout assignment commands			Timeout query commands			Responses	
Func	**Usr**	**Password**	**Query**	**Func**	**Usr**	**Usr**	**Password**
*4	*1	*_____#	*77	*4	*1#	1 (b)	_____(bbb)
*4	*2	*_____#	*77	*4	*2#	2 (b)	_____(bbb)
*4	*3	*_____#	*77	*4	*3#	3 (b)	_____(bbb)
*4	*4	*_____#	*77	*4	*4#	4 (b)	_____(bbb)
*4	*5	*_____#	*77	*4	*5#	5 (b)	_____(bbb)
*4	*6	*_____#	*77	*4	*6#	6 (b)	_____(bbb)
*4	*7	*_____#	*77	*4	*7#	7 (b)	_____(bbb)
*4	*8	*_____#	*77	*4	*8#	8 (b)	_____(bbb)
*4	*9	*_____#	*77	*4	*9#	9 (b)	_____(bbb)
*4	*10	*_____#	*77	*4	*10#	10 (b)	_____(bbb)
*4	*15	*_____#	*77	*4	*15#	15 (b)	_____(bbb)
*4	*25	*_____#	*77	*4	*25#	25 (b)	_____(bbb)

Table E-3.   Programming Quick Reference

Function Number	Function Name	Value
1	passwords	
2	answer tone	
3	tone levels	
4	timeout	
6	reseize-disconnect interval	
8	idle detect time	
9	dial-tone detect time	
10	amplifier gain	
11	amplifier sensitivity	
12	amplifier direction control	
13	modem detect	
16	standard ringing only	
17	number of rings	
18	busy/reorder disconnect	
19	initial access mode	
25	Prevent	
26	Prevent's response	
27	number of invalid passwords	
28	Prevent's duration	
34	reseize	
35	switchhook flash	
36	tone elimination	
37	disconnect	
38	tone pass-through	
39	go to command mode (command)	
40	milliwatt test	
41	interdigit time	
42	reminder tone	
50	PCC/DB number	
51	per-call connection	
52	dialback	
53	PCC/DB permission	
77	programming query	
80 and 81	test tones	
88	go to command mode	
90	version query	
98	remote programming	
99	restore default values	
100	start per-call connection	
200	stop per-call connection	

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