GORDON KAPES | INC.

Model 125 Site Monitor

Master Reference Guide

Covering Installation, Configuration, Operation, and Technical Reference Topics

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

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Model 125 Site Monitor
Read Me First

This page is designed to assist you, the system administrator, in getting started with accessing, using, and configuring the Model 125.

The Model 125 is shipped with the open-operator-menu mode enabled. Configured system-level and administrator passwords as shipped from the factory are *#####*.

For correct operation your terminal or personal computer must be configured for VT100 compatibility.

System Defaults

The system defaults for Port 3 are:

- Configured as maintenance port
- Baud rate 9600
- Format 8-None-1

The modem defaults are:

- Auto answer after 1 ring
- Baud rate 2400 bits-per-second, with automatic fall down to 1200 and 300 baud
- Format 8-None-1

Configuring the Model 125

Plug the Model 125 into a suitable outlet. Wait two minutes after AC power up before attempting to logon to the Model 125. The delay allows the Model 125 to check itself as the internal-software program begins. Logging on before two minutes have expired will result in a request by the Model 125 to wait a moment for the software to start. After two minutes have passed the following message is displayed:

*** Model 125 application program is now operational ***

Access the Operator Menu as follows:

1. Access the Model 125 from Port 3 or remotely using the modem.

   Accessing from Port 3: Connect your terminal or personal computer to Port 3. Press ¿ to bring up the Operator Menu.

   Accessing from the modem: Use your terminal or personal computer and a modem to call the Model 125. After modem carrier is established, the Operator Menu will display automatically.

   Note: When connecting with either Port 3 or a modem, pressing ¿ can sometimes cause inadvertent connection to Port 1. When this happens the following message is displayed:

   Connected to Port 1 (Port 2). Type ***###*** to again access menu.

   Type ***###*** to return to the Operator Menu.

2. At the Operator Menu, type **system**.

   The system displays the System-Level Password screen.

3. Type the system-level password (default is ***#####***), then press ↵.

   The system displays the System Menu.

4. From the System Menu you may access the Configuration Menu or the Administrator Menu.

   To access the Configuration Menu from the System Menu, press **4**.

   To reach the Administrator Menu from the System Menu, type **admin**.

5. The system displays the Administrator-Level Password screen. Type the administrator-level password (default is ***#####***), then press ¿.

   The system displays the Administrator Menu.

6. From the Administrator Menu press **3** to access the Configure Access Security screen. Now is an excellent time to change passwords from the factory defaults to the ones you desire.

   Note: If you change to the name-password security mode, the default user name is **guest** and the default password is **guest**. Remember that the name and password are case sensitive.

Once you have successfully accessed the System Level and Administrator Level menus, you should use the Master Reference Guide for details on configuring the unit. If you have questions or comments about the Model 125, please call Gordon Kapes, Inc. technical support at 847|676-1750 or E-mail us at support@gkinc.com.

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Foreword
Words from the Large Cheese
(aka Gordon Kapes)

Yes, there actually is someone named Gordon Kapes! That's me and after more than three years of effort I'm pleased to introduce you to the Model 125 Site Monitor. Upon starting this project I never thought the unit would end up being so powerful. With the large array of resources included in one small unit, you'll quickly find the Model 125 an indispensable addition to your arsenal of tools.

Every feature on the Model 125 was designed, tested, redesigned, and tested again until I felt it was the way you'd like to see it. While there are literally dozens of parameters to configure, I think you'll find having this amount of control very useful. With some planning and experimentation you can turn the Model 125 into *your* product, making it perform the way you want it to.

With past products I was able to write all the technical documentation myself. While I like being able to communicate with you in my own words, the Model 125 had so many issues to document that it required outside help. Ace technical writer Bill Beaman answered my call, producing a fine manual. He wrote the bulk of the guide and I was able to put my "two-cents-worth" into it. Throughout this guide you'll find shaded boxes, referred to as Gordon's sidebars, that contain my notes and comments. These will give you my personal feelings about the Model 125, and how I envision it being used.

Lots of people helped make the Model 125 a reality. These include Fred Roeck, Carrie Gage, Joe Urbanczyk, Mitch Budniak, Al Lux, Steve Malott, Barbara Govednik, Jim McGuire, Larry Leviton, and Jim Jay. Thanks for your help guys!

I think the Model 125 is a great product and hope you do too! I Please contact your system administrator to obtain any additional documentation that you require. Also, remember that Gordon Kapes, Inc. welcomes your questions, comments, or suggestions. We can be reached by voice at 847 | 676-1750, fax at 847 | 982-0747, or via the Internet @ www.gkinc.com.

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Chapter One
Understanding the Model 125

Introduction

Today rapid and effective communications activities depend more and more upon the use of telecommunications and data systems equipment. As dependency upon this equipment increases, so does the need to provide immediate, cost-effective, and secure troubleshooting and maintenance.

The *Model 125 Site Monitor* is a compact, multi-functional device designed to help support personnel by enabling rapid access to maintenance software resident within such equipment, to ensure access security to that equipment, and to implement the automatic monitoring and reporting of various physical and electrical conditions in the equipment room itself.

Intended to be mounted on the wall of an equipment room, the Model 125 is powered by a 120Vac outlet, with power failure backup provided by a built-in battery.

Flexibility

The Model 125 features a host of resources including a 2400 bits-per-second modem, three serial communications ports, eight contact inputs, an internal temperature sensor (along with provision for connecting an external temperature sensor), two DC-voltage-monitoring inputs, and two relay-contact outputs.

The Model 125's processing power is provided by a microprocessor, a real-time multi-tasking operating system, and RAM-based program software. The program software can be remotely updated, ensuring that upgrades are easily performed. The Model 125's internal *menu system* enables you to configure and operate the Model 125 with ease. This provides the flexibility to meet both site-specific requirements and global maintenance goals.

Figure 1-1 illustrates the major hardware components of the Model 125 as installed in a typical PBX-system site.

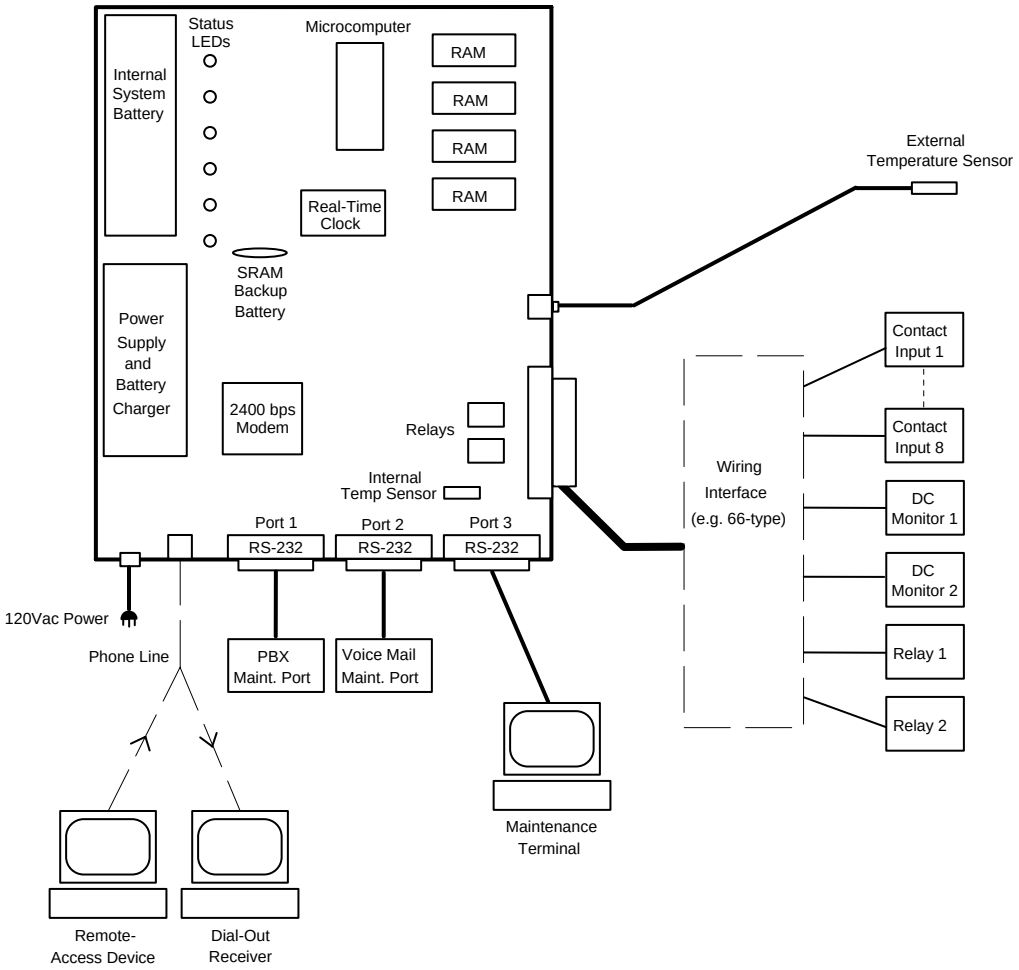

Figure 1-1. Model 125 Installed in a Typical PBX-System Site

Major Purposes

The Model 125 serves two major purposes. First, as an intelligent “front end,” it provides rapid, secure access to devices connected to the three serial communications ports. Extensive password protection and access logging maintains the integrity of the connected equipment.

Second, the Model 125 monitors various site conditions. Both real-time and historical records of the conditions are available for review. In addition, alarm conditions can be defined so that the system will generate automatic dial-out alarm reports. These reports, which are in the form of text-based data, can be transmitted to multiple receiver locations using the Model 125’s internal modem. In addition, alarm conditions can cause the unit to call a pager.

Feature Highlights

- Rapid, Secure Access to Three Serial Ports
- Configurable Access and Security Parameters
  Multiple, Unique Name-Password Combinations
  Logging of User Access
  Intruder Detection, Lock Out, and Reporting
- Monitors On-Site Equipment-Room Conditions
- Serial Port Monitoring and Message Capture
- Automatic Reporting of Alarms
- Real-Time Display of System Conditions
- Maintains Log of Site and System Activity
- Relay Functions
- Menu System for Rapid Model 125 Operation

Provides Rapid, Secure Access to Equipment

The Model 125 contains three RS-232 serial ports. These are designed to allow communications with up to three serial ports located on telecommunications or other types of data equipment.

A typical configuration might consist of a PBX telephone system's maintenance port connected to Port 1 on the Model 125. The maintenance port on an associated voice-mail system would be connected to Port 2. Although a third device can be connected to Port 3, this port is generally reserved for an on-site maintenance terminal.

On-Site Access

Using an on-site terminal or personal computer connected to Port 3, you can access the serial port on either connected device by simply selecting a software menu option. You do not need to connect a cable to one device, then remove it to connect to the other device. The cables are already in place! Nor do you need to change communications settings such as data format or baud rate when switching from one port to another. The Model 125's smart routing capability automatically performs any needed protocol conversion.

Remote Access

In addition to on-site access, you may choose to access the Model 125 from a remote location as well. Integral to the Model 125 is a 2400 bits-per-second modem. Connect the unit to a phone line and you are ready to use all Model 125 resources. A remote-access device can be as simple as a modem and a terminal or a modem and a personal computer running communications software that supports VT100 emulation. (The Model 125 also provides limited functionality with a TTY-compatible terminal.)

The Model 125's internal modem enables you to access the Model 125 from a variety of remote locations, or to access many Model 125s from a single location. The Model 125 eliminates the need for more than one phone line and more than one on-site modem.

When you access the Model 125 from a remote site, you enjoy the same capabilities provided through on-site access. You can connect to Ports 1 and 2 on the Model 125, and, if it is not configured for use with an on-site maintenance terminal, to Port 3 as well. You can also access the Model 125's menu system to view an audit trail of events and "alarms" reported by the Model 125 (described later in this chapter), or to configure and test the system. You can even configure the system to allow you to perform special functions remotely, such as using one of the two relays to perform a reset of malfunctioning equipment.

The advantages of remote-access monitoring are self-evident to all involved with equipment maintenance—whether they provide services to many clients, maintain equipment in several locations on a corporate campus, or simply wish to continue site monitoring when most personnel are "off duty." With the Model 125 there is no need to spend time traveling to a site unless you know a potential problem exists.

Configurable Access and Security Parameters

Although the Model 125 provides you rapid, easy access to the devices connected to the three serial ports, it in no way trades these advantages for system security. On the contrary, the Model 125 contains a multi-functional access security system designed to give you the right amount of security for meeting your specific needs.

The Model 125 enables you to configure access security using two different modes. These are the open-operator-menu mode and the name-password mode. *Open-operator-menu* provides basic security suitable for use with

connected devices that contain good internal security, while the *name-password* mode offers advanced features designed for maximum protection. This mode is especially attractive to those using equipment with minimal security features on their serial ports.

Multiple, Unique Name-Password Combinations

The name-password mode is a user privilege system where preregistered users must enter a valid name-and-password combination to gain access to the Model 125. Alternately, you can configure the Model 125 to call back an authorized user at a predetermined telephone number before entry to the system is granted. The Model 125 can store up to 15 name-password combinations. Each user name and password can consist of up to 15 characters, with letters, numbers, and punctuation marks acceptable. For additional protection, the Model 125 discriminates between upper and lower case letters.

Logging of User Access

All attempts to access the Model 125, whether successful or unsuccessful, result in an entry being made to the System Activity Log. This information provides system administrators with a time-stamped history of Model 125 use.

Intruder Detection, Lock Out, and Reporting

The Model 125 provides numerous options and possibilities for configuring access security. The number of times a user can enter a name-password combination can be set. Should the number of password attempts be exceeded, the system goes into an access restriction mode. Three methods of access restriction can be selected from, each of which prevents access for up to 99 minutes. In addition, should someone attempt and fail to gain access to the Model 125 repeatedly (as defined by you), an alarm is generated. This alarm sends a message to the internal log and, if configured, causes a dial-out report to be sent to the destinations you define. Thus within a few minutes of someone attempting to “hack” a system, the Model 125 can send an alert message to a service or maintenance center, or even call a pager!

Monitors On-Site Equipment-Room Conditions

In addition to its functions as a secure front end and “smart router” for access to serial communications ports on connected equipment, the Model 125 monitors a variety of equipment-room and system-specific conditions. These monitoring functions can enable you to quickly spot operating trends. These may require immediate remediation or further analysis with more expensive equipment, which the Model 125 enables you to use in a more strategic and cost-effective manner.

The Model 125 provides these monitoring capabilities:

- Open-or-closed state monitoring for as many as eight contact inputs
- Temperature monitoring for room-ambient temperature and, using an optional temperature sensor, a second location
- Voltage-level monitoring for as many as two DC-power sources
- AC-line monitoring including voltage, sag, and impulse conditions
- DTR-pin status monitoring for the three serial ports
- Model 125 backup battery condition monitoring

The following paragraphs provide details about the monitoring capabilities.

Contact-Input Monitoring

The Model 125 provides eight general-purpose contact inputs which allow monitoring of the open-or-closed state of various hardware points. You can connect these contact inputs to equipment alarms or a variety of sensors.

Temperature Monitoring

Built into the Model 125 is a sensor that monitors ambient temperature in the equipment room where the Model 125 is installed. An optional external sensor kit is available from Gordon Kapes, Inc. You can use this kit to measure the temperature for a specific piece of equipment or location either within or near the equipment room.

DC-Power Monitoring

With the Model 125 you can monitor DC-voltage levels from as many as two DC-power sources. These could be a PBX battery backup system, the power source for a paging system, or the status of a logic signal.

AC-Line Monitoring

The Model 125 performs extensive monitoring of the AC-line that powers the unit. Line-to-neutral voltage is measured and displayed in real-time. High-speed circuits detect voltage sags (temporary low-voltage conditions) and high voltage impulses (spikes). These features allow power problems to be recognized, reported, and corrected.

DTR Monitoring

The Model 125 monitors the state of the DTR lead (pin 20) on each of its serial ports. This function is used to detect accidental disconnection of the three serial ports.

Internal Battery Monitoring

The Model 125 tests and reports the condition of its internal lead-acid battery once every 168 hours (one week). This helps you ensure that Model 125 battery backup operation is always ready should an AC-power failure occur.

Serial Port Monitoring and Message Capture

Using its ASCII-data-matching function, the Model 125 can monitor both Port 1 or Port 2 for specific ASCII data that may be present. This feature is valuable when the Model 125 is used with communications systems generating critical alarm and status messages from serial ports. You can configure the Model 125 to activate its own alarms when it detects specified messages emitted from the connected equipment. As configured by you, each alarm can include a name and message as well as the actual data string emitted by the connected equipment. Each alarm is sent either to the System Activity Log or to both the log and a dial-out alarm report.

Message ignore characters can be included in the specified messages so that historical records of messages stored in an internal database can be accessed without causing duplicate alarms.

Automatic Reporting of Alarms

The Model 125 reports conditions and alarms to the System Status screen, the System Activity Log, and dial-out alarm reports.

Dial-Out Reports

The Model 125 can automatically send a dial-out alarm report to up to three receiver locations. A dial-out alarm report is a list of the one or more alarms the Model 125 transmits, through the internal modem, to a database, personal computer, or printer set up as a dial-out alarm receiver. (Software is available from Gordon Kapes, Inc. to implement a personal-computer-based receiver system.) In addition to the alarm data, each dial-out report contains an opening and closing message that has been specifically configured for each receiver destination—primary, backup, and secondary. Opening and closing messages can be used for several purposes since they can contain machine-readable codes as well as human-readable text.

As an alternative to calling a modem and leaving text alarm reports, the Model 125 can be configured to call a pager. Using a pager allows the Model 125 to automatically alert field service personnel that a system problem may exist.

Real-Time Display of System Conditions

The Model 125 reports the current condition for each entity monitored on the System Status screen, which is a part of the menu system. The System Status screen displays values that are updated in real time. It also displays whether each entity is currently in a normal or alarm state. Figure 1-2 shows a screen capture of page 1 taken from a configured Model 125.

You determine the values that constitute an alarm. For example, if you determine that 95 degrees Fahrenheit is an alarm condition for room ambient temperature, the System Status screen displays the state of Temperature 1 as “alarm.” The System Status screen enables you to review current conditions at a glance, and to perform needed troubleshooting and diagnosis of the system.

```
Gordon Kapes, Inc.                Model 125           16:01:32 UTC 15-MAR-1994
Skokie, Illinois USA
                            System Status - Page 1
Status        State        Function
ENABLED       NORMAL       Contact 1 - Major Alarm - PBX System
NOT CONFIG                 Contact 2
NOT CONFIG                 Contact 3
NOT CONFIG                 Contact 4
NOT CONFIG                 Contact 5
NOT CONFIG                 Contact 6
NOT CONFIG                 Contact 7
NOT CONFIG                 Contact 8
ENABLED       NORMAL   75F Temperature 1 - Equipment Room Ambient
NOT CONFIG                 Temperature 2
SLEEP 005:40  ALARM   <+1V DC Volts 1 - Emergency Lighting 12V Power Supply
NOT CONFIG                 DC Volts 2
ENABLED       NORMAL  117V AC-Line Volts - Phase 1 of PBX Power Source
ENABLED       NORMAL       AC-Line Sag - Phase 1 of PBX Power Source
ENABLED       NORMAL       AC-Line Impulse - Phase 1 of PBX Power Source
DISABLED      ALARM        Port 1 DTR - PBX 9000
DISABLED      ALARM        Port 2 DTR - Phone Mail
NOT CONFIG                 Port 3 DTR - Maintenance
                  Press Space Bar to select then <Enter>
 Up/Down Arrow, <F1> for help, <F2> to exit, <F3> previous page, <F4> next page
```

Figure 1-2. Page 1 of the System Status Screen

Maintains Log of Site and System Activity

Alarms generated by Model 125 functions are reported to the System Activity Log. The contents of the *System Activity Log* can be displayed or downloaded to another device by accessing the Model 125's menu system. The Model 125 also reports many other events as they occur within the Model 125 itself, making the log a useful audit trail of both alarms and operating events.

Relay Functions

You can configure the Model 125 to energize two built-in relays making it possible for the system to automatically operate devices such as a cooling fan or warning light. The system can energize a relay when configured alarm conditions are encountered, when an alarm is reported for battery failure, when the Model 125 switches to battery power, or when it fails to connect with primary, backup, or secondary dial-out report destinations. You can also trigger either relay manually to perform an operation such as resetting equipment from a remote location.

Menu System

The Model 125's internal menu system enables you to configure and operate the Model 125 with ease. The menu system is organized into three major levels—operator, system, and administrator. Each level has its own main and sub menus. The three levels make it possible for you and other personnel to operate, configure, and test Model 125 functions within the rights granted by the access security system.

From the Operator-level menu you can:

- Directly access the three serial communications ports
- View the System Status screen
- View or download the System Activity Log
- Exit the Model 125

From the System-level menu you can:

- View the System Status screen
- View or download the System Activity Log
- Perform System Tests
- Configure a multitude of system operating parameters

From the Administrator-level menu you can:

- View the System Status screen
- View, download, or clear the System Activity Log
- Configure Access Security, a comprehensive system to control and monitor access to the Model 125 and the serial communication ports

VT100 and TTY Terminal-Emulation Capabilities

Although the Model 125 is intended for use with terminals or personal computers running communications software configured for VT100 emulation, it does provide limited functions when used with terminals configured for TTY.

The capabilities provided by the Model 125 in TTY mode enable you to connect to each of the three serial ports and to exit from the Model 125.

Consequently, TTY mode may be adequate for field engineers or others whose responsibilities are limited to these tasks, and for whom a VT100 terminal is not currently available.

VT100 mode, however, enables you to make full use of the menu system. You must use VT100 mode to access the System Status screen and the System Activity Log from the Operator Menu, and to access *all* of the functions available from the system and administrator levels of the menu system. As a result, you cannot configure the system, test it, or access the System Status screen or System Activity Log unless you are using a terminal set to VT100.

The limited functions provided by TTY mode are included to aid organizations where a VT100 terminal is not available for each person using the Model 125. If you can make VT100 emulation available to everyone, you should probably do so. You can then disregard all references to TTY in this guide, since the Model 125 is shipped from the factory configured for use with VT100.

If you intend to use both VT100 and TTY terminals, however, you should pay close attention to the notes concerning TTY operations in Chapter Four and other sections of this guide. You should also carefully read "Customizing Operator-Menu Options and Terminal Emulation" in Chapter Five, which explains TTY access fully. This section also explains configuring a screen prompt helping each operator specify his or her terminal emulation prior to using the Model 125.

Model 125 Applications

The Model 125 is appropriate for use in virtually every PBX-system site. In addition, it should find wide application in data and other specialized communication and computer settings.

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Chapter Two
Planning for the Model 125

Overview

This chapter provides information intended to help you make several necessary decisions and do some simple planning before you actually begin installing your Model 125. If you read this chapter with care and follow its suggestions, you will undoubtedly make installation a much quicker and more efficient process.

Upon receiving your Model 125, you should inspect it for damage immediately. Should damage be found, file a claim with the shipper. Save the original carton and packing materials for later inspection. If necessary, order a replacement Model 125 from Gordon Kapes, Inc.

Make sure your Model 125 includes an installation kit containing four #8 pan-head screws (¾-inch long) and a modular-to-modular telephone cable.

If the Model 125 is intact and in good shape, please place it aside until after you have read this chapter. Then read Chapter Three “Installing the Model 125,” as you actually perform the installation.

This chapter discusses the following topics:

- Selecting Mounting Location
- Planning Serial Port Use & Preparing Cables
- Testing Modem Telephone Line
- Procuring a 25-Pair Cable & Interconnecting Assembly
- Selecting Contacts to Monitor
- Planning for DC-Voltage-Monitoring Inputs
- Planning for Relay Contacts
- Planning for External Temperature-Sensor Assembly

Selecting Mounting Location

Since the Model 125 is intended for wall mounting only, you must find a suitable position on the equipment room wall. Two major factors come into play as you select the “perfect” mounting location: air flow and proximity to an AC outlet on the desired power circuit.

Ensure Proper Air Flow

To enable the Model 125 to accurately measure room temperature with its internal temperature sensor, the mounting location needs to provide a free flow of room air around and through the Model 125 cabinet. As long as air can flow into the bottom vents and exit from the slots in the left and right sides of the cabinet, the sensor will provide an accurate reading.

Take care not to mount the cabinet near the ceiling since this might cause too high a reading and prevent the desired air flow. Mounting the Model 125 near the floor, on the other hand, might result in a reading that is too low. Use this simple rule of thumb: if the selected mounting location allows you to easily observe the Model 125’s status lights then a correct temperature reading should result.

Locate Correct AC Outlet

The Model 125 measures the AC power (voltage, sags, and impulses) entering its own power cord. Since you want these measurements to accurately represent the general condition of a communication system’s AC power, select an outlet on the same electrical circuit as that equipment.

Selecting an outlet is not a trivial matter. It may be desirable for you to consult with an electrician or other power expert. Remember, accurate monitoring is possible only when the Model 125 is powered in common with the equipment that you are interested in!

Planning Serial Port Use & Preparing Cables

The Model 125 contains three serial communication ports. They are implemented as data communications equipment (DCE) under the RS-232-C standard. The three serial ports use individual 25-pin D-subminiature female connectors. You must first decide how you are going to use these ports and then obtain or prepare the proper cables.

Guidelines for Using Ports

As you decide how you intend to use the three serial ports, keep the following guidelines in mind:

The first two ports, labeled Port 1 and Port 2, are intended to be connected to serial ports on equipment such as PBX telephone systems and voice mail systems.

The third port, named Port 3, can be configured using the menu system to operate in one of several modes. In the standard mode, Port 3 functions in the same way as Ports 1 and 2. As such, it is intended to connect to the serial port of an associated piece of equipment.

When Port 3 is set to operate in the maintenance mode (which is the default mode), the port is intended for use by an on-site piece of equipment. This can be a terminal or personal computer with VT100 emulation, which you use to access Ports 1 or 2, or the Model 125's menu system. (You can also use a TTY-compatible terminal to access Ports 1 and 2, but not the full menu system.)

Preparing Serial Interconnection Cables

Proper operation of the serial ports depends on careful planning for and preparation of serial interconnecting cables. For detailed information about preparing the serial cables, refer to Appendix G. The technical specifications for the ports, along with specific cabling examples are provided in this appendix.

Once you have the required cables prepared, lay them aside for now. Chapter Three contains instructions for connecting the cables.

Testing Modem Telephone Line

A central office loop-start telephone line should be provided for use by the Model 125's modem. It is recommended that you test the telephone line. Use an industry-standard single-line telephone when conducting this test. To test the line, take the following steps:

1. First, ensure the telephone line is terminated with an RJ11 jack. Then connect the RJ11 jack to the telephone using the modular cable included in the Model 125 installation kit.
2. Take the telephone off hook and verify that you hear a "clean" dial tone. If you do not hear a dial tone, check the RJ11 wiring, and confirm the line is set for loop start. Often in a PBX setting a line will be set for ground start by default.
3. Test the line for its ability to make outgoing calls. If the line is set for touch-tone dialing, make certain you test with touch tones.
4. Test the line for incoming calls. This confirms the telephone number, and ensures that ringing voltage is coming in.

When the telephone line has passed these tests, it should be ready for use with the Model 125.

Procuring 25-Pair Cable & Interconnecting Assembly

During installation, you will make contact input, DC-voltage input, and relay-contact connections using the 25-pair plug P1 on the Model 125. This plug is standard to the telephone industry.

You must provide a 25-pair cable with female connector attached, to mate with plug P1. Refer to Appendix H for details about the connections made using P1.

You should also obtain the interconnecting assembly of your choice, such as a 66-type block, for terminating the various functions to the 25-pair cable.

Selecting Contacts to Monitor

The Model 125 has eight contact inputs that can be used for monitoring various functions. These inputs are designed to be connected to a variety of different relay contacts, switches, sensors, and other similar devices.

Exactly how you choose to use the contact inputs depends upon the needs of your organization and your own imagination. Here are some ideas to get you started:

An application that could use one or more of the contact inputs is a PBX telephone system. The PBX may provide signals such as *Major Alarm*, *Software Alarm*, and *System Failure*, which you can connect to the contact inputs.

As another example, you might connect the status signal from a backup power supply to a contact input. Environmental monitors, such as water or humidity sensors can also be connected.

When selecting monitoring applications, keep these guidelines in mind: Signals compatible with the Model 125's contact inputs can be either normally open (not shorted) or normally closed (shorted). A signal must be in the form of an isolated contact or a contact that closes (shorts) or opens (removes short) in reference to earth ground. An isolated contact provides two leads, neither of which is connected to ground.

The Model 125 can detect a change in contact state when the signal changes and holds the new state for a minimum of 1 second. This time period allows the Model 125's real-time operating system to correctly detect the change.

Once you have connected contact inputs to the specified signals as described in Chapter Three, configure each contact monitoring function. This is described in Chapter Seven.

Planning for DC-Voltage-Monitoring Inputs

The Model 125 enables you to monitor two low-voltage DC signals. Circuitry in the Model 125 converts the DC to a digital signal, allowing the operating software to display the voltage and generate software alarms in response to DC-voltage changes.

The Model 125 can accurately measure DC voltages in the range of 1 to 59Vdc. The Model 125 measures DC voltage differentially, without regard to earth ground. In this manner DC signals that are floating (isolated from ground), positive in reference to earth ground, or negative in reference to earth ground can be correctly monitored.

The DC measuring circuits have been carefully designed so they do not load the DC sources. The input impedance is approximately 2 megohms, resulting in input currents of less than 30 micro amps.

DC monitoring is most commonly used with a backup power supply associated with a communications system. Other uses include monitoring the voltage of batteries associated with an emergency lighting system, detecting state changes with 5V or 12V logic signals, or monitoring power supply voltages.

As you select the DC voltages to be monitored, you must adhere to the following requirements:

- The voltage sources must be limited to 1/10 amp maximum current. This provides sufficient current for accurate monitoring while ensuring that a shorted connecting cable does not cause harm to personnel or equipment. A fuse, located at the source of the DC voltage, is the recommended means of limiting the current.
- DC voltage must not exceed 59Vdc.
- The DC voltage must not rapidly vary in value. The Model 125 measures the voltage approximately every 10 seconds. Consequently, it will not correctly monitor a voltage that quickly drifts or “jumps.”

Once you have connected the monitoring inputs to the specified DC voltage sources, use the Model 125's menu system to configure the specifics of how the system will respond. Configuring DC-voltage monitoring is described in Chapter Nine. A software configuration parameter allows the value displayed on the Model 125's menu system to be displayed as either positive or negative. This aids technicians with quickly understanding the type of DC voltage that is being monitored.

Planning for Relay Contacts

The Model 125 provides two sets of general purpose relay contacts. Each set consists of a normally open (not shorted) and a normally closed (shorted) contact. The relay contacts change state in response to software configured parameters.

Exactly how you choose to use the relay contacts depends upon the needs of your organization and your own imagination. Refer to Chapter Twelve, "Configuring Relay Functions" for further details and some ideas about how you might use the relay contacts.

Planning for External Temperature-Sensor Assembly

The Model 125 allows you to monitor the temperature at two locations. The first location is fixed inside the Model 125's cabinet. Here a sensor monitors the ambient temperature of the equipment room in which the Model 125 is mounted.

You determine the second location, which is external to the Model 125. Use the optional temperature sensor assembly kit available from Gordon Kapes, Inc. to monitor temperature at this location. The sensor assembly consists of a precision sensor secured inside a housing, with an attached 50-foot interconnecting cable and 3.5 mm plug. Also included is a set of mounting hardware.

The external temperature sensor can be used for monitoring temperature at a variety of points. Sometimes backup batteries are located in a room separate from the equipment room. This is done so that the batteries can be kept warm for proper operation. The external sensor can be mounted on the wall of that room. Another application would be to place the external sensor inside the cabinet of a critical piece of equipment.

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Chapter Three
Installing the Model 125

Overview

This chapter explains how to install the Model 125.

Efficient installation requires some planning. Consequently, it is strongly recommended you read and follow the guidelines presented in Chapter Two, “Planning for the Model 125,” before beginning installation as described in this chapter.

Words of Caution

As with any product, installing the Model 125 requires a safety first approach. Please read and comply with the following warning before you begin the installation:

Never install telephone wiring during a lightning storm. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Use caution when installing or modifying telephone lines.

Recommended Installation Procedure

The following steps outline the recommended installation procedure. This chapter explains each step in detail.

1. Check for damage.
2. Locate the installation kit.
3. Mount the Model 125.
4. Connect to the serial ports.
5. Install and terminate the 25-pair connecting cable.
6. Connect to the contact inputs.
7. Connect to the DC-voltage-monitoring inputs.
8. Connect to the relay contacts.
9. Install the external temperature-sensor assembly.
10. Connect the telephone line.
11. Connect to AC power.
12. Review the installation.

Check for Damage

If you have not done so, inspect the Model 125 for damage. If you find damage, file a claim with the shipper. For later inspection, store the damaged unit in the original carton and packing material. If necessary, order a replacement from Gordon Kapes, Inc.

Locate the Installation Kit

Locate the installation kit included in the Model 125 shipping carton. The kit contains four #8 pan-head screws (type A, ¾-inch long) and a modular-to-modular telephone cable.

Mount the Model 125

Before mounting the Model 125, ensure you have selected the correct mounting location. (Refer to “Selecting Mounting Location,” in Chapter Two.)

Mount the Model 125 using the four screws supplied (#8 pan head, ¾-inch long). These screws are intended for use with a wooden-backboard surface (minimum thickness ¾ inch). The Model 125’s cabinet is outfitted with four keyhole screw slots. Use one screw per slot and securely fasten the unit to the backboard.

Do not connect the AC-line cord at this time. You will be instructed to do so later in this chapter.

Connect to the Serial Ports

Connect the serial port cables you have prepared to the appropriate Model 125 ports. (If you have not prepared serial port interconnecting cables, refer to “Planning Serial Port Use & Preparing Cables,” in Chapter Two.)

Use the screws on the mating plugs to ensure the cables are secured to the Model 125’s connectors.

Install & Terminate the 25-Pair Connector Cable

Install the female connector mounted on the 25-pair cable into plug P1. Secure it using the fastener strap that is attached to the plug. Terminate the 25-pair cable in the interconnection assembly you prepared for this purpose.

Connect to the Contact Inputs

Once you have selected the functions you want to monitor (relay contacts, switches, sensors, and so forth), connect them to the Model 125. (For selection guidelines, refer to “Selecting Contacts to Monitor,” in Chapter Two.)

The eight contact inputs are accessible through the 25-pair plug P1. Refer to Appendix H for a detailed description of P1. If your signal provides an isolated contact, connect its leads to the pair associated with the desired contact input. If your signal is referenced to earth ground, connect the contact to the positive (+) connection, and earth ground to the ground connection of the desired contact input.

Connect to the DC-Voltage-Monitoring Inputs

The DC voltages connected to the Model 125's inputs must come from a fuse-protected source. Do not connect wires directly across a battery or battery stack. A 1/10 amp fuse must be used to protect equipment and personnel from short circuits and other wiring errors.

Once you have selected the DC-voltage sources you want to monitor, proceed with connecting them to the Model 125. (Refer to "Planning for DC-Voltage-Monitoring Inputs," in Chapter Two for more information.)

The two inputs are accessible through the 25-pair plug P1. Refer to Appendix H for a detailed description of P1. The monitor input measures voltages differentially, without regard to which lead is common, earth ground, or system ground. For correct operation, follow this simple rule: Connect the more positive lead to the "+" input connection and the more negative lead to the "–" input connection.

In certain telecommunications applications you may encounter a voltage source with its positive lead connected to earth ground and the "hot" or negative battery lead being nominally –48Vdc. In this case simply connect earth ground to the "+" terminal and –48Vdc to the "–" terminal.

If your DC voltage is floating (isolated) from ground, connect the positive lead to the "+" input and the negative lead (which may be referred to as common, ground, or minus) to the "–" terminal. If your system has a negative ground, connect ground to "–" and the positive lead to the "+" input.

Warning: Reversing the polarity of the DC inputs will cause the Model 125 to make erratic readings of all analog measurements, including the DC voltage, AC mains voltage, battery voltage, and temperature. Make sure you connect the most positive lead to the "+" terminal.

Connect to the Relay Contacts

As discussed in “Planning for Relay Contacts,” in Chapter Two, the Model 125 provides two sets of general purpose relay contacts. Each set consists of a normally open (not shorted) and a normally closed (shorted) contact. The relay contacts change state in response to software configured parameters. (Refer to Chapter Twelve, “Configuring Relay Functions.”)

The relay contacts are accessible via 25-pair plug P1. Refer to Appendix H for a detailed description of P1. Since the exact use of the contacts is site dependent, connection details cannot be reviewed in this document.

The relay contacts are designed only to control low-voltage, low-current electrical signals. Do not use the contacts to switch AC-line (120Vac) voltage.

Install the External Temperature-Sensor Assembly

Installation of the temperature-sensor assembly is very simple. Insert the sensor assembly’s plug into the jack on the right side of the Model 125’s cabinet. Then place the actual sensor, located at the end of the 50-foot connecting cable, at the point to be monitored. Use the fasteners included with the sensor assembly to secure the sensor in place and “dress” the interconnecting cable.

Connect the Telephone Line

A standard central office loop-start telephone line should be provided for use by the Model 125’s modem. Test the telephone line as described in Chapter Two (“Testing the Modem Telephone Line”). Then, using the cable included with the Model 125, connect the RJ11 jack to the modular jack on the Model 125.

Connect to AC Power

Previously, you mounted the Model 125 on the wall of the equipment room. As part of the planning process, you made sure access was available to a 120Vac outlet meeting certain characteristics.

Now plug the Model 125’s power cord into the designated AC outlet. Leave the AC power cord free hanging. Do not secure it to the wall.

The Model 125 begins operating as soon as you plug in the power cord. (The unit does not contain a power switch.) The top LED, labeled POWER, lights. As the unit begins operation, several other LEDs may momentarily light.

Review the Installation

At this stage, you should have made all connections to the Model 125. Carefully review that all cables have been secured to the Model 125 as required.

Proceed to Chapter 4, “Getting Started with the Menu System.” In addition to configuring the various monitoring functions described in Part III of this guide, you can use the software to test the inputs and outputs you have connected to the Model 125.

Chapter Four
Getting Started with the Menu System

Overview

The Model 125 contains menu-driven software called the menu system. The menu system enables you to configure and customize the monitoring functions provided, to test dial-out and other functions, and, of course, to operate the Model 125.

The menu system and other software components for the Model 125 are loaded into memory at the factory. Since the Model 125 is continually powered by either an AC-line power source or an internal battery, the software is maintained in memory "permanently."

This chapter provides basic information you need before using the Model 125 menu system. It explains

- How to access the menu system
- How to exit the menu system and disconnect from the Model 125
- How to select menu options and enter or select information
- How to use online help

The Model 125 menu system is extremely easy to use and quite similar to other menu-driven software widely used with IBM-compatible personal computers.

Conventions

This guide provides a detailed procedure for each task you can accomplish with the menu system. To help you read and understand these procedures easily and quickly, this guide uses several special terms, symbols, and type faces. The following explains these conventions:

Term	Meaning
menu	A numbered list of options displayed on a screen. To accomplish a task, you display the needed menu and then select the option corresponding with the task.
cursor	A highlighted box or small line which may or may not blink depending upon the terminal or personal computer you are using and how it is set up. The cursor marks the location on the screen where the information you type or select is displayed. As you move from field to field by pressing keys, the cursor moves along with you to show you where you are.
field	An area on the screen where you enter or select information or where information is displayed. In general, each field has a title displayed next to it for easy identification.

Type style	Purpose
bold	Used to indicate words you must type exactly as they appear, and to indicate the names of keys you must press.
italic	Used to highlight a name or subject not previously mentioned in the guide. Also used in Appendix B, “Alarm Codes” to indicate information either you or the system provides.
Condensed	Used to indicate information exactly as it is displayed on a screen.
Condensed Bold	Used to indicate field titles.

Symbol	Purpose
↵	Used to indicate the Enter key on the keyboard. Press ↵ after entering or selecting information.
↓	Used to indicate the down-arrow key. Press ↓ to move from field to field on a screen.
↑	Used to indicate the up-arrow key. Press ↑ to move from field to field on a screen.

The menu system consistently uses specific function keys to perform the following operations:

Function Key	Purpose
F1	Press to display Online Help available on a separate screen.
F2	Press to exit a screen and return to the previous menu.
F3	Press to display the previous page of a multi-page screen.
F4	Press to display the next page of a multi-page screen.

Accessing the Menu System

Although accessing the menu system is a simple procedure, the steps involved vary by two factors. These are

- Whether you are using a remote-access device or an on-site-access device
- The access-security mode configured for your Model 125

Consequently this guide offers several alternate procedures for accessing the menu system.

There are two types of devices that can access the Model 125.

- A *remote-access device* is a terminal or personal computer connected to the Model 125 through a modem and a telephone line
- An *on-site-access device* is a terminal or personal computer connected directly to Port 3 configured as a maintenance port

Note: You must use a terminal set for either VT100 or TTY emulation. Use a terminal set to VT100 if you wish to use the full capability of the menu system. Using a TTY-compatible terminal enables you to connect with serial ports and exit the system only.

The Model 125 can be configured using two different access-security modes:

- With *Open-Operator-Menu* mode you are given password-free access to the Operator Menu, but you must use a password to access the System or Administrator Menus.
- With *Name-Password* mode you must enter a user name and password before you are given access to any part of the menu system. Depending upon how your user profile has been configured, the Model 125 may call you back to grant you access when you are using a remote-access device.

Based upon your device (remote or on-site access) and your access security mode, choose the appropriate procedure among those in the following sections of this chapter. If you are not sure, ask your system administrator if the device you are using is configured as remote access or on-site access. Also find out which access-security mode is configured for your Model 125.

Accessing the Menu System Using a Remote-Access Device

In this section we will describe the three scenarios you may encounter when accessing the menu system using a remote-access device (a terminal or personal computer and modem). The three situations you may encounter depend on how the access-security mode has been configured in the Model 125 to be accessed.

Possibilities are:

- Open-Operator-Menu mode
- Name-Password mode with user name configured for callback
- Name-Password mode with user name not configured for callback

Once you access the Model 125, it connects you directly to either the Operator Menu, shown in Figure 4-1, or one of the serial ports. This is called the initial connection and is configured for your system.

```
Gordon Kapes, Inc.                Model 125          16:03:22 UTC 15-MAR-1994
Skokie, Illinois USA
                                 Operator Menu

               1. Connect to Port 1 - PBX 9000
               2. Connect to Port 2 - Phone Mail
               3. Connect to Port 3 - Not Available
               4. Display System Status
               5. Display or Download System Activity Log

               9. Exit Menu System and Disconnect









            Enter 1-5, 9 or press Up/Down Arrow then <Enter>
                                <F1> for help
```

Figure 4-1. Configured Operator Menu Showing Sample Serial Port Information

To access the menu system, you must use a terminal or personal computer that can emulate the keyboard commands for a VT100 terminal. (Refer to Appendix F for terminal emulator requirements.)

If you are using a terminal with a built-in emulator, set the emulator to VT100. If you are using a personal computer, you may need to acquire terminal emulator software capable of emulating VT100. The communications program PROCOMM PLUS by DATASTORM TECHNOLOGIES, INC. provides excellent VT100 emulation (they refer to it as VT100/102).

Note: You can also use a terminal set for TTY emulation. However, using a TTY-compatible terminal enables you to connect with serial ports and exit the system only.

If You Have Problems with Garbage on the Screen

Should you access the Operator Menu using inappropriate terminal emulation, the screen may appear filled with "garbage." If need be, access your terminal emulator and implement the correct terminal emulation. Then type **###** to refresh the screen if you are using VT100 emulation. (Type **%%%** to refresh the screen when using a TTY terminal.)

Notes: Since incorrect terminal emulation is only one reason why a screen might appear filled with "garbage," or work incorrectly in some other way, you may wish to verify that your terminal is set for VT100 emulation.

To verify VT100 emulation, take the following steps:

1. Type **%%%** to display the Operator Menu designed for use with a TTY-compatible terminal.
2. Press **F1**.

   If your terminal is set for VT100 emulation, the screen displays the message:

   You have pressed the VT100-compatible F1 Function Key

   (The screen displays similar responses when you press **F2**-**F4**, ↑, ↓, ←, →, or **Backspace**.)

   If the terminal is not set for VT100, the screen does not respond when you press F1.

For example, you set terminal emulation to TTY, then inadvertently access the VT100 Operator Menu by typing **###** and the System Status screen by pressing **4**. Since the System Status screen requires VT100 emulation, it appears as garbage. Furthermore, you cannot press **F2** to return to the Operator Menu because F2 requires VT100 emulation.

When the Connected Device Requires a Different Emulation

Should the software resident in the device connected to a serial port require a different emulation, you must implement the required emulation immediately after connecting with the port. Then, after exiting the device software, reimplement the VT100 (or TTY) emulation.

Ensure Matching Data Format Settings

The data format settings (data bits, parity, and stop bits) for your modem must match the dial-in settings for the Model 125's internal modem. (Refer to "Configuring the Modem for Dial-In," in Chapter Six.) If your modem has not been set up, ask your system administrator for the correct settings. A modem supporting 2400 baud is recommended.

Remote Access under Open-Operator-Menu Mode

Use the following procedure to access the menu system if you are using:

- A remote-access device (a terminal or personal computer and modem)
- Open-Operator-Menu mode access security

Before You Begin

Before you begin the procedure, ensure you have done the following:

- Confirmed that your remote-access device is equipped with a correctly configured modem connected to a telephone line as described earlier in this chapter
- Obtained the telephone number for the desired Model 125
- Learned how to dial the telephone number using your specific hardware and software
- Learned how to set your communications software to VT100 (or TTY) mode if this is not the default mode
- Obtained system- or administrator-level passwords if you intend to access these menu levels
- Obtained logon or other access information required by each device connected to a Model 125 serial port whose software you intend to access and use

If necessary, consult with your system administrator for needed information or advice.

Procedure

To access the Model 125, take the following steps:

1. With your remote-access device correctly configured and in VT100 (or TTY) mode, dial the Model 125.

   Your modem calls the Model 125 and establishes a connection.

2. Do one of the following:

If:	Take this Action:
The system displays a prompt asking if your terminal is VT100 compatible	Press ↵ if your terminal is set to VT100. Press **N**, then ↵ if your terminal is set to TTY.
No prompt is displayed	Proceed to step 3.

3. Do one of the following:

If:	Take this Action:
The system displays the Operator Menu	Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
The system connects you with one of the serial ports	Proceed to step 4.
The screen displays the message: Model 125 is currently in use by the maintenance port the Model 125 is being accessed by another user	Try again later when the Model 125 is free.

4. Do one of the following:

If:	Take this Action:
Your intention is to use the software resident in the device connected to the port on the Model 125	Enter logon or other access information required by the device. Use the software resident in the connected device. To get to the Operator Menu, log off and type **###** if using a VT100 terminal. (Type **%%%** if TTY.) Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
You want to immediately display the Operator Menu	Type **###** if using a VT100 terminal. (Type **%%%** if TTY.) Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.

Remote Access under Name-Password Mode with User Name Configured for Callback

Use the following procedure to access the menu system if you are using:

- A remote-access device (a terminal or personal computer and modem)
- Name-Password access security
- A user name configured for callback

Before You Begin

Before you begin the procedure, ensure you have done the following:

- Confirmed that your remote-access device is equipped with a correctly configured modem connected to a telephone line as described earlier in this chapter
- Obtained the telephone number for the Model 125
- Learned how to set your communications software to VT100 (or TTY) mode if this is not the default mode
- Learned how to dial the telephone number using your specific hardware and software
- Learned how to set your modem to auto answer
- Obtained a valid user name and password
- Obtained logon or other access information required by each device connected to a Model 125 serial port whose software you intend to access and use

If necessary, consult with your system administrator for needed information or advice.

Procedure

To access the menu system, take the following steps:

1. With your remote-access device correctly configured and in VT100 (or TTY) mode, set the modem to auto answer.

2. Dial the Model 125.

   Your modem calls the Model 125 and establishes a connection.

3. Do one of the following:

If:	Take this Action:
The system displays a prompt requesting your user name	Proceed to step 4.
The screen displays the message: Model 125 is currently in use by the maintenance port the Model 125 is being accessed by another user	Try again later when the Model 125 is free.

4. Type your user name exactly as given. Press ↵. (Remember the system is case sensitive. If you do not enter your user name within 20 seconds, the system disconnects you. Return to step 2.)

   The system displays a prompt requesting your password.

5. Type your password exactly as given. (Remember the system is case sensitive. If you do not enter your password within 20 seconds, the system disconnects you. Return to step 2.)

   The system displays a message stating it will call you back in 15 seconds, then disconnects.

6. If you have not done so, enable your modem to auto answer.

   The system dials your modem after 15 seconds has elapsed. Your modem answers and the system displays the VT100-compatibility prompt, if enabled, or takes you to the configured initial connection. The initial connection is either the Operator Menu or one of the serial ports.

7. Do one of the following:

If:	Take this Action:
The system displays a prompt asking if your terminal is VT100 compatible	Press ↵ if your terminal is set to VT100. Press **N**, then ↵ if your terminal is set to TTY.
No prompt is displayed	Proceed to step 8.

8. Do one of the following:

If:	Take this Action:
The system displays the Operator Menu	Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
The system connects you with one of the serial ports	Proceed to step 9.

9. Do one of the following:

If:	Take this Action:
Your intention is to use the software resident in the device connected to the port	Enter logon or other access information required by the device. Use the software resident in the connected device. To get to the Operator Menu, log off and type **###** if using a VT100 terminal. (Type **%%%** if TTY.) Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
You want to immediately display the Operator Menu	Type **###** if using a VT100 terminal. (Type **%%%** if TTY.) The system displays the Operator Menu. Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.

Remote Access under Name-Password Mode with User Name Not Configured for Callback

Use the following procedure to access the menu system if are using:

- A remote-access device (a terminal or personal computer and modem)
- Name-Password access security
- A user name not configured for callback

Before You Begin

Before you begin the procedure, ensure you have done the following:

- Confirmed that your remote-access device is equipped with a correctly configured modem connected to a telephone line as described earlier in this chapter
- Obtained the telephone number for the Model 125
- Learned how to set your communications software to VT100 (or TTY) mode if this is not the default mode
- Learned how to dial the telephone number using your specific hardware and software
- Obtained a valid user name and password
- Obtained logon or other access information required by each device connected to a Model 125 serial port whose software you intend to access and use

If necessary, consult with your system administrator for needed information or advice.

Procedure

To access the menu system, take the following steps:

1. With your remote-access device correctly configured and in VT100 (or TTY) mode, dial the Model 125.

   Your modem calls the Model 125 and establishes a connection.

2. Do one of the following:

If:	Take this Action:
The system displays a prompt requesting your user name	Type your user name exactly as given. Press ↵. (Remember the system is case sensitive. If you do not enter your user name within 20 seconds, the system disconnects you. Return to step 1.) The system displays a prompt requesting your password. Proceed to step 3.
The screen displays the message: Model 125 is currently in use by the maintenance port the Model 125 is being accessed by another user	Try again later when the Model 125 is free.

3. Type your password exactly as given. (Remember the system is case sensitive. If you do not enter your password within 20 seconds, the system disconnects you. Return to step 1.) Press ↵.

   The system displays the VT100-compatibility prompt, if enabled, or takes you to the configured initial connection. The initial connection is either the Operator Menu or one of the serial ports.

4. Do one of the following:

If:	Take this Action:
The system displays a prompt asking if your terminal is VT100 compatible	Press ↵ if your terminal is set to VT100. Press **N**, then ↵ if your terminal is set to TTY.
No prompt is displayed	Proceed to step 5.

5. Do one of the following:

If:	Take this Action:
The system displays the Operator Menu	Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
The system connects you with one of the serial ports	Proceed to step 6.

6. Do one of the following:

If:	Take this Action:
Your intention is to use the software resident in the device connected to the Model 125's port	Enter logon or other access information required by the device. Use the software resident in the connected device. To get to the Operator Menu, log off and type **###** if using a VT100 terminal. (Type **%%%** if TTY.) Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
You want to immediately display the Operator Menu	Type **###** if using a VT100 terminal. (Type **%%%** if TTY.) The system displays the Operator Menu. Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.

Accessing the Menu System Using an On-Site-Access Device

In this section we will describe the two scenarios you may encounter when accessing the menu system using an on-site-access device (a terminal or personal computer connected to Port 3 configured for maintenance mode). The situation you encounter depends on how the access-security mode has been configured in the Model 125 to be accessed.

Possibilities are:

- Open-Operator-Menu mode
- Name-Password mode

When you access the Model 125 using VT100, it connects you directly to the Operator Menu, shown in Figure 4-2.

To access the menu system, you must use a terminal or personal computer that can emulate the keyboard commands for a VT100 terminal. (Refer to Appendix F for terminal emulator requirements.)

```
Gordon Kapes, Inc.                Model 125          16:03:22 UTC 15-MAR-1994
Skokie, Illinois USA

                                Operator Menu

               1. Connect to Port 1 - PBX 9000
               2. Connect to Port 2 - Phone Mail
               3. Connect to Port 3 - Not Available
               4. Display System Status
               5. Display or Download System Activity Log

               9. Exit Menu System and Disconnect









               Enter 1-5, 9 or press Up/Down Arrow then <Enter>
                                <F1> for help
```

Figure 4-2. Configured VT100 Operator Menu Showing Sample Serial Port Information

If you are using a terminal with a built-in emulator, set the emulator to VT100. If you are using a personal computer, you may need to acquire terminal emulator software capable of emulating VT100. The communications program PROCOMM PLUS by DATASTORM TECHNOLOGIES, INC. provides excellent VT100 emulation.

Note: You can also use a terminal set for TTY emulation. However, using a TTY-compatible terminal enables you to connect with serial ports and exit the system only.

If You Have Problems with Garbage on the Screen

Should you access the Operator Menu using inappropriate terminal emulation, the screen may appear filled with "garbage." If need be, access your terminal emulator and implement the correct terminal emulation. Then press **###** to refresh the screen if you are using VT100 emulation. (Press **%%%** to refresh the screen when using a TTY terminal.)

Notes: Since incorrect terminal emulation is only one reason why a screen might appear filled with "garbage," or work incorrectly in some other way, you may wish to verify that your terminal is set for VT100 emulation.

To verify VT100 emulation, take the following steps:

1. Type **%%%** to display the Operator Menu designed for use with a TTY-compatible terminal.
2. Press **F1**.

   If your terminal is set for VT100 emulation, the screen displays the message:

   You have pressed the VT100-compatible F1 Function Key

   (The screen displays similar responses when you press **F2**-**F4**, ↑, ↓, ←, →, or **Backspace**.)

   If the terminal is not set for VT100, the screen does not respond when you press F1.

   For example, you set terminal emulation to TTY, then inadvertently access the VT100 Operator Menu by typing **###** and the System Status screen by pressing **4**. Since the System Status screen requires VT100 emulation, it appears as garbage. Furthermore, you cannot press **F2** to return to the Operator Menu because F2 requires VT100 emulation.

When the Connected Device Requires a Different Emulation

Should the software resident in the device connected to a Model 125 serial port require a different emulation, you must implement the required emulation immediately after connecting with the port. Then, after exiting the device software, reimplement the VT100 (or TTY) emulation.

Connect your terminal to Port 3 on the Model 125 with a 25-pin serial cable. (Refer to Appendix G, “Serial Port Connections.” Port 3 has a female connector and requires a male connector on the cable.)

Ensure Matching Data Format Settings

The data format settings (data bits, parity, and stop bits) and baud rate for your terminal must match the settings for Port 3 configured as a maintenance port on the Model 125. (Refer to “Configuring Serial Ports,” in Chapter Six.) If your terminal has not been set up, ask your system administrator for the correct settings.

On-Site Access under Open-Operator-Menu Mode

Use the following procedure to access the menu system if you are using:

- An on-site-access device (a terminal or personal computer connected to Port 3 configured for maintenance mode)
- Open-Operator-Menu mode access security

Before You Begin

Before you begin the procedure, ensure you have done the following:

- Confirmed that your on-site-access device is correctly configured as described earlier in this chapter
- Learned how to set your communications software to VT100 (or TTY) mode if this is not the default mode
- Obtained system- or administrator-level passwords if you intend to access these menu levels
- Obtained logon or other access information required by each device connected to a serial port whose software you intend to access and use

If necessary, consult with your system administrator for needed information or advice.

Procedure

To access the menu system, take the following steps:

1. With your on-site-access device correctly configured and in VT100 mode, press ↵.

2. Do one of the following:

If:	Take this Action:
The system displays a prompt asking if your terminal is VT100 compatible	Press ↵ if your terminal is set to VT100. Press **N**, then ↵ if your terminal is set to TTY.
No prompt is displayed	Proceed to step 3.

3. Do one of the following:

If:	Take this Action:
The system displays the Operator Menu	Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.
The screen displays the message: Model 125 is currently in use by the modem the Model 125 is being accessed by another user	Try again later when the Model 125 is free.

On-Site Access under Name-Password Mode

Use the following procedure to access the menu system if you are using:

- An on-site-access device (a terminal or personal computer connected to Port 3 configured for maintenance mode)
- Name-Password mode access security

Before You Begin

Before you begin the procedure, ensure you have done the following:

- Confirmed that your on-site-access device is correctly configured as described earlier in this chapter
- Learned how to set your communications software to VT100 (or TTY) mode if this is not the default mode
- Obtained a valid user name and password
- Obtained logon or other access information required by each device connected to a serial port whose software you intend to access and use

If necessary, consult with your system administrator for needed information or advice.

Procedure

To access the menu system, take the following steps:

1. With your on-site-access device correctly configured and in VT100 mode, press ↵.

   The system accesses the Model 125.

2. Do one of the following:

If:	Take this Action:
The system displays a prompt requesting your user name	Type your user name exactly as given. Press ↵. (Remember the system is case sensitive. If you do not enter your user name within 20 seconds, the system disconnects you. Return to step 1.) The system displays a prompt requesting your password. Proceed to step 3.
The screen displays the message: Model 125 is currently in use by the modem the Model 125 is being accessed by another user	Try again later when the Model 125 is free.

3. Type your password exactly as given. (Remember the system is case sensitive. If you do not enter your password within 20 seconds, the system disconnects you. Return to step 1.) Press ↵.

   The system displays either the VT100-compatibility prompt, if enabled, or the Operator Menu.

4. Do one of the following:

If:	Take this Action:
The system displays a prompt asking if your terminal is VT100 compatible	Press ↵ if your terminal is set to VT100. Press **N**, then ↵ if your terminal is set to TTY. The system displays the Operator Menu.
The system displays the Operator Menu	Locate the chapter of this guide describing the task you want to accomplish. Follow the procedure described in that chapter.

Exiting the Menu System and Disconnecting

To exit the menu system and disconnect from the Model 125, select Exit Menu System and Disconnect from the Operator Menu.

To exit and disconnect, take the following steps:

1. At any screen in the menu system, press **F2** until the system displays the Operator Menu.
2. At the Operator Menu, press **9** to select Exit Menu System and Disconnect.

   The Model 125 disconnects and returns you to your communications software.

Selecting Menu Options

To select an option from a menu, either press the key with the number of the option or press ↓ or ↑ to highlight the option, then press ↵. (You cannot highlight an option when displaying the Operator Menu with a terminal set to TTY.)

Entering and Selecting Information

When configuring the Model 125, you must enter text or select a value in specific fields displayed on a configuration screen.

To enter text, move to the field by pressing ↑, ↓, or ↵. Type the text, then press ↵. To delete entered text, press **Backspace**.

To select a value in a field, move to the field by pressing ↑, ↓, or ↵. To display possible values, press the spacebar. Display the value you want to select, then press ↵.

Using Online Help

The menu system displays brief operating instructions at the bottom of each screen. These instructions, which can change as you move from field to field, tell you how to make an entry or select a value in the highlighted field.

Many screens in the menu system provide additional online help using separate screens, which supplement the information available in this guide. <F1> for help displayed at the bottom of a screen indicates additional help is available. Press **F1** to display the online help screen.

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Chapter Five
Configuring General Parameters

Overview

The software resident in the Model 125 enables you to quickly and easily configure the system for use within your specific environment.

This and the seven chapters that follow explain how to configure monitoring and other operational functions of the Model 125. These tasks include the following:

- Setting general parameters such as entering site-identification text, entering time and date, and customizing the Operator Menu
- Making required communications settings for both serial ports and the internal modem
- Configuring monitoring functions for serial ports, contact inputs, temperature, and AC and DC voltages
- Entering telephone numbers and other dial-out parameters and conditions
- Configuring auxiliary relays

To configure the Model 125 access-security modes and passwords, refer to Chapter Fourteen, “Configuring Access Security.”

The menu-driven software has been designed for maximum simplicity and ease of use. However, if this is your first experience, you may want to review Chapter Four, “Getting Started with the Menu System.”

Note: To perform all configuration tasks you must use a terminal set for VT100 emulation.

Appendix A contains a set of master worksheets designed to aid you with the configuration process. These worksheets are similar to the data entry screens you use with the software. Photocopy the master worksheets and use the copies as you plan and gather needed data for your system configuration.

Once you have recorded the necessary information on a worksheet, use it to quickly make entries on a specific screen. Save completed worksheets after using them for data entry since they make an excellent record of your total system configuration. To set configuration parameters, first access the System Menu and then the Configuration Menu.

Select the option you want on the Configuration Menu. Setting each group of parameters is described in detail in the following chapters of this guide.

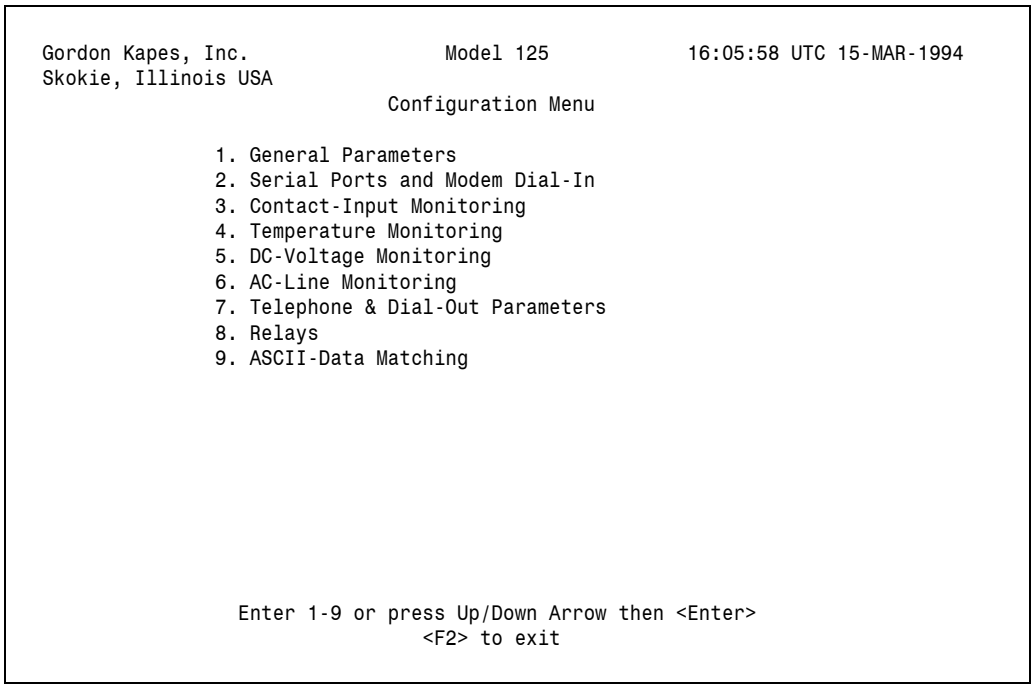

Figure 5-1. Configuration Menu

Configuring General Parameters

Configure general parameters on an as-needed basis. These parameters enable you to enter site-identification text, enter time and date, customize the Operator Menu, and specify alarm reporting for the internal-battery test function. Refer to Table 5-1 for a description of each parameter.

Table 5-1. General Configuration Parameters

Parameter	Definition
Site Identification	Enables you to compose two lines of text identifying the location of the Model 125. You also enter a dial-out message.
Operator-Menu-Access Options	Determines whether the Display System Status and Display System Activity Log options are available from the Operator Menu, and whether the VT100-compatibility prompt is enabled.
Time and Date	Enables you to set the time, time zone, and date.
Automatic Internal-Battery Test	Enables you to compose an alarm message indicating the internal battery has failed its voltage test, and specify whether the message is to be sent to the System Activity Log or to both the log and a dial-out receiver.
Operator-Menu Message	Enables you to compose and display a help or other type of message in the lower portion of the Operator Menu.

Displaying the Configure General Parameters Menu

Before selecting the general parameter you want to configure, you must access the Configure General Parameters Menu. First, at the Operator Menu access the System Menu. Then access the Configuration Menu and select the General-Parameters option.

The following procedure describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **1** to select General Parameters.

   The system displays the Configure General Parameters Menu.
6. Select the desired option. Configure each option as described in the sections that follow.

Identifying the Site

The site-identification function enables you to enter text identifying, or naming, the site being monitored by the Model 125. The purpose of this function is to make it possible for people to quickly identify and become familiar with a specific Model 125 installation.

Those who use the Model 125 through remote access or who receive alarm reports from a number of different installations will especially appreciate site-identification text that is descriptive and well planned.

In concert with the needs and goals of your organization, you can compose any text you like—from a plain-English description to a more security-sensitive code.

Use the site-identification function to enter

- Two lines of text identifying the Model 125 site
- A dial-out message

First, compose two lines of text identifying the site being monitored by the Model 125. Each site-text line can be a maximum of 30 characters. The text you compose is displayed in the upper-left corner of each screen in the system. The text is also sent at the start of a dial-out alarm report (directly after the opening message and before specific alarm items).

Second, compose a dial-out message using a maximum of 77 characters. Like site-identification text, the dial-out message is sent at the beginning of a dial-out alarm report in the format shown in Figure 5-2. As shown in the figure, the site-identification item in the report consists of three lines. The information on the first line begins with *Code 400* and is supplied by Gordon Kapes, Inc. The second line consists of the two text lines you compose and enter. The third line is your dial-out message. (Refer to Appendix B, Alarm Codes, for more information about the format and content of dial-out report items.)

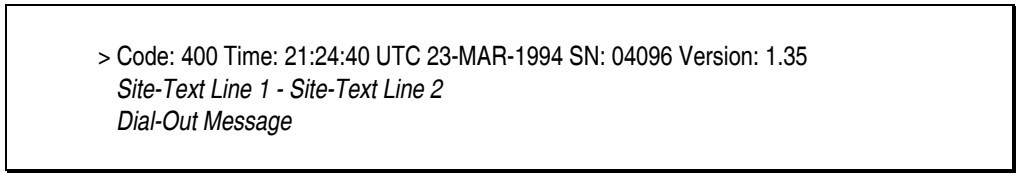

Figure 5-2. Format of Site-Text Lines & Dial-Out Message in Dial-Out Report

The following examples illustrate various ways in which you might compose and use site-identification text. After reading the examples, compose text lines and a dial-out message that meet your own needs.

Example 1

In the following example, site-text lines 1 and 2 are used to simply display the room number, company name, and building number of the site which the Model 125 is monitoring. The dial-out message gives further information about the location of the site.

Site-Text Line 1: Equipment Room 2403
Site-Text Line 2: Hi-Tek Manufacturing, Building 34

Dial-Out Message:
Northwest Highway and Milwaukee Road, Skokie

Example 2

In the second example, an outside vendor responsible for monitoring a PBX belonging to Online Research has chosen to include the customer name in the first line and the customer number in the second, as shown below:

Site-Text Line 1: Site Name: Online Research
Site-Text Line 2: Cust. ID: 4761

Dial-Out Message:
ATTENTION! Alarm report to follow. Four-hour service contract in force.

Notice the labels Site Name: and Cust. ID: have been included in the text lines to increase the readability of the text once it is displayed on screens or in an alarm report. Figure 5-3 shows how text lines 1 and 2 appear on the Operator Menu screen.

The dial-out message in this example capitalizes on the fact that it is sent at the beginning of the dial-out report. The message alerts service and dispatch personnel that an alarm report is to follow. It also reminds these personnel that service to Online Research must be rendered within four hours.

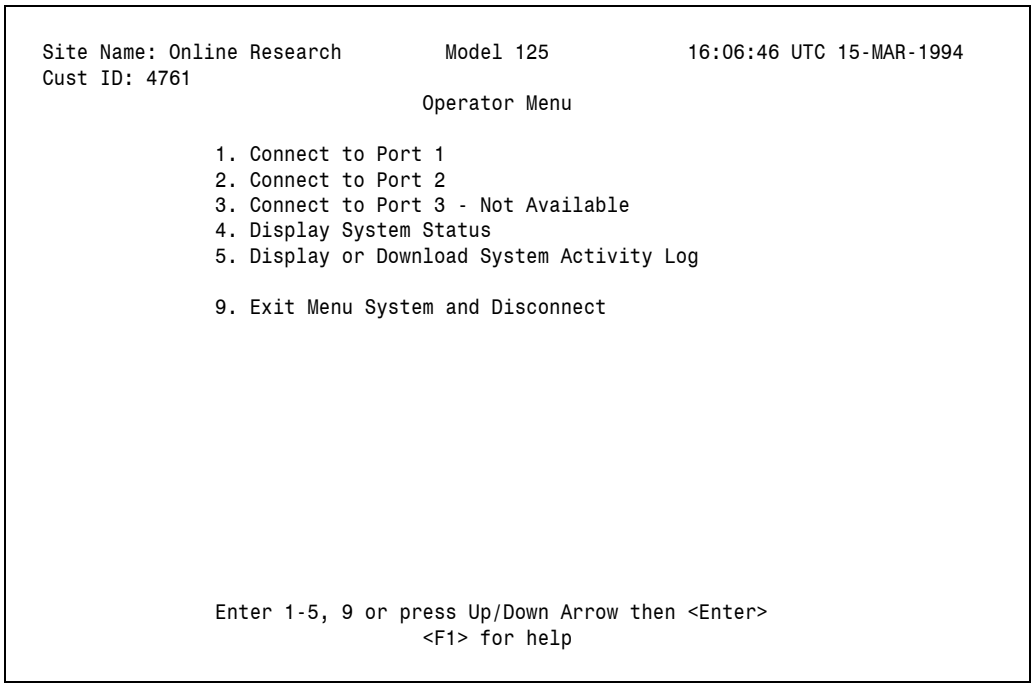

Figure 5-3. VT100 Operator Menu Displaying Site Identification Text

Example 3

The third example uses codes for identification purposes. These are less easy to interpret, but they work well when the security of the system must be increased.

Site-Text Line 1: Account Code: 3-1456-T
Site-Text Line 2: Service Level: R4

Dial-Out Message:
Note: Site technicians required to hold DOD Level-6 clearance.

Notice that the dial-out message in this example specifies qualifications required of technicians before they can be sent to a particular site.

Refer to Table 5-2 for a summary of site-identification parameters. Use the following procedure to enter text describing the site location.

Table 5-2. Site-Identification Parameters

Field	Description	Length
Site-Text Line 1 Site-Text Line 2	Identifies site being monitored by the Model 125. Text is displayed in upper-left corner of each screen and sent out at beginning of dial-out alarm report.	Maximum of 30 characters per line.
Dial-Out Message	Further information about site. Sent out at beginning of dial-out alarm report.	Maximum of 77 characters.

Begin with Your Worksheet

Compose two lines of site-identification text plus a dial-out message. Enter your text on a working copy of the General Parameters worksheet found in Appendix A. Refer to Table 5-2 for parameter descriptions.

Procedure

Take the following steps to enter text describing the site:

1. If you have not done so, display the Configure General Parameters Menu. Refer to “Displaying the Configure General Parameters Menu,” earlier in this chapter.
2. Press **1** to select Site Identification.

   The system displays the Site Identification screen, shown in Figure 5-4.

   The cursor is located in the **Site-Text Line 1** field.

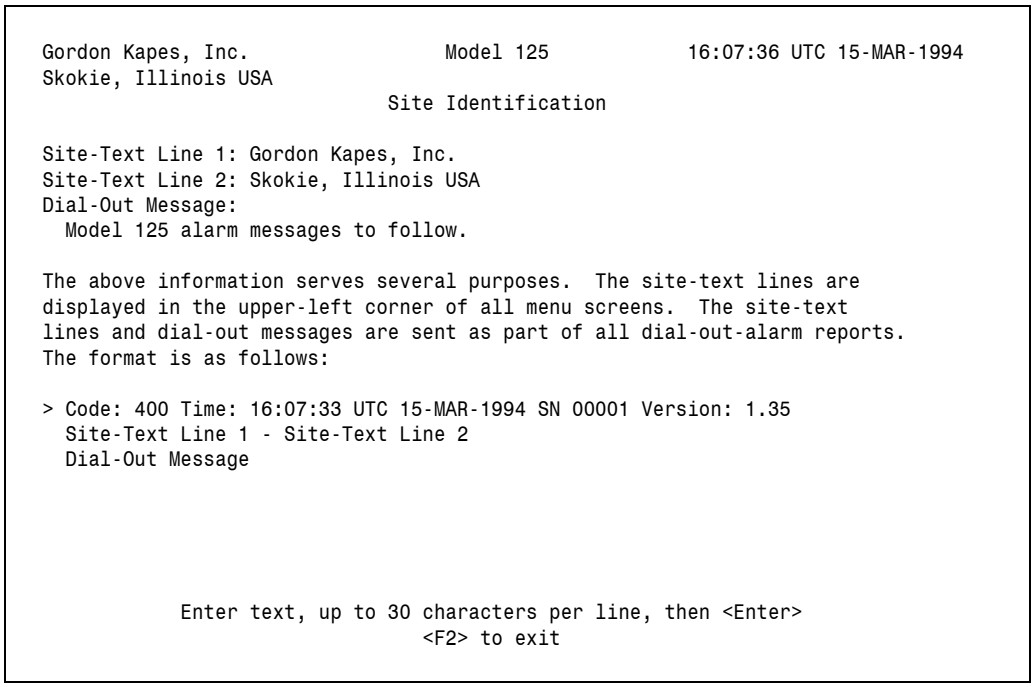

Figure 5-4. Site Identification Screen

3. To enter site-identification text and a dial-out message, do the following:

To:	Take this Action:
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure General Parameters Menu	Press **F2**.

   When you are finished, press **F2**.

   The system displays the Configure General Parameters Menu. Notice that the text you entered as site-text lines 1 and 2 is displayed in the upper-left corner of the screen.

4. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Customizing Operator Menu Options and Terminal Emulation

Use the general parameter *operator-menu-access options* to perform the following:

- Disable the Display System Status option on the Operator Menu
- Disable the System Activity Log option on the Operator Menu
- Display the VT100-compatibility prompt before the Operator Menu is initially displayed

Disabling Options

The Operator Menu enables you to access six options as shown in Figure 5-5, a typical Operator Menu.

To prevent access from the Operator Menu, you can disable options 4 and 5. After an option is disabled, the system no longer allows you to access it. The words *Not Available* are displayed next to each disabled option.

Figure 5-6 shows the Operator Menu with options 4 and 5 disabled.

```
Gordon Kapes, Inc.                Model 125          16:08:16 UTC 15-MAR-1994
Skokie, Illinois USA
                                 Operator Menu

               1. Connect to Port 1 - PBX 9000
               2. Connect to Port 2 - Phone Mail
               3. Connect to Port 3 - Not Available
               4. Display System Status
               5. Display or Download System Activity Log

               9. Exit Menu System and Disconnect









               Enter 1-5, 9 or press Up/Down Arrow then <Enter>
                                 <F1> for help
```

Figure 5-5. Typical VT100 Operator Menu

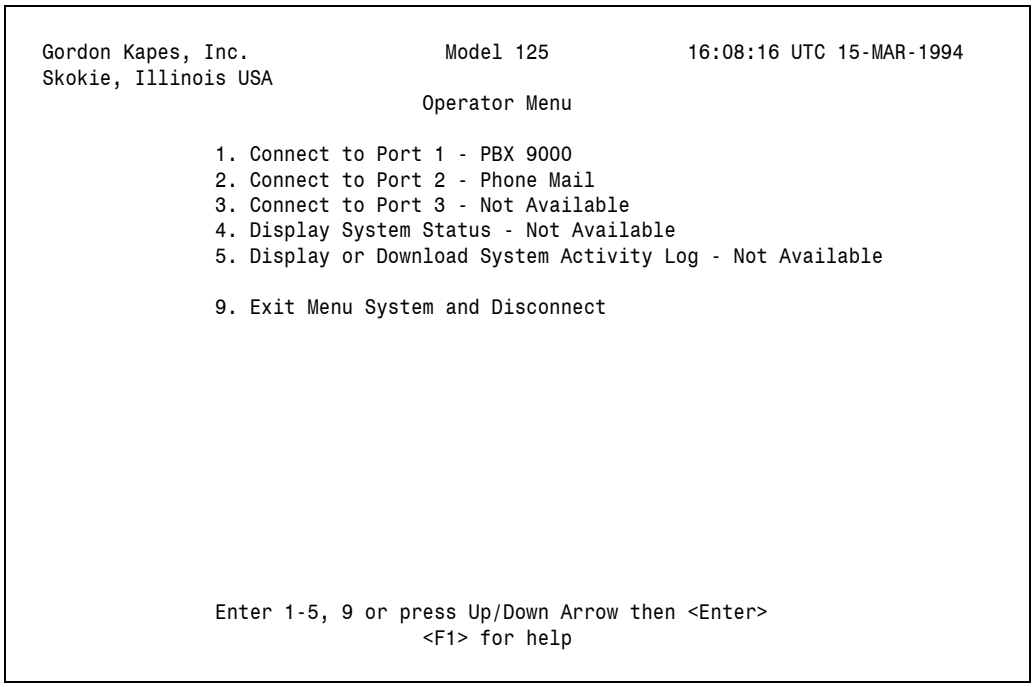

Figure 5-6. VT100 Operator Menu with Options 4 and 5 Disabled

Note: The system automatically disables option 3 when you configure Port 3 as a maintenance or modem-monitor port. Not Available is displayed next to this option as well, since Port 3 is now configured as an incoming port. You cannot access the port from a remote site. (Refer to “Serial Port 3,” in Chapter Six.)

You can disable options 4 and 5 on the Operator Menu by following the procedure in this section.

Option 4, Display System Status, enables you to view the current operational status and state, or condition, of the various environmental and internal entities being monitored. Option 5, Display System Activity Log, enables you to view an ongoing list of alarm conditions and other events reported by the Model 125.

Who Gets Access

The level of training, knowledge, and authorization can vary greatly among users of the Model 125. In addition, the operator menu must be considered “open” to anyone who is allowed access. Because of these facts it was decided that in certain cases you may want to deny access to the System-Status-screen, or the System-Activity-Log functions, or both. While access to these two functions can’t really “hurt” a site, in many cases it may be better to simply keep unauthorized personnel from viewing information they simply don’t understand or need!

—Gordon

You can access these options from the System Menu as well. Consequently, you may want to disable options 4 and 5 from the Operator Menu, particularly when people using this menu have no need to access these functions, or for security reasons.

Enabling the VT100-Compatibility Prompt

Use the third operator-menu-access option to enable the VT100-compatibility prompt. The VT100-compatibility prompt aids organizations that need to use both VT100- and TTY-compatible terminals with the Model 125.

If your organization makes a terminal with VT100 emulation available to everyone using the Model 125, you should probably leave the compatibility prompt disabled (which is the default). If your organization intends to use both VT100- and TTY-compatible terminals, read the following background about Model 125 terminal emulation. Then decide if you should enable the compatibility prompt.

Understanding Model 125 Terminal Compatibility

Although the Model 125 is intended for use with terminals or personal computers configured for VT100 compatibility, it does provide limited functions when used with terminals configured for TTY.

The capabilities provided by the Model 125 in TTY mode enable you to connect to each of the three serial ports and to exit from the Model 125. Consequently, TTY mode may be adequate for field engineers or others whose responsibilities are limited to these tasks, and for whom a VT100 terminal is not currently available.

Since VT100 mode enables you to make full use of the menu system, you must use a terminal set to VT100 mode when you configure the system, test it, or access the System Status screen or System Activity Log.

The TTY-compatible Operator Menu (shown in Figure 5-7), although similar in appearance to the VT100 Operator Menu, is actually a separate screen display. The TTY Operator Menu does not contain options for displaying System Status or the System Activity Log. This is because these options require VT100 compatibility.

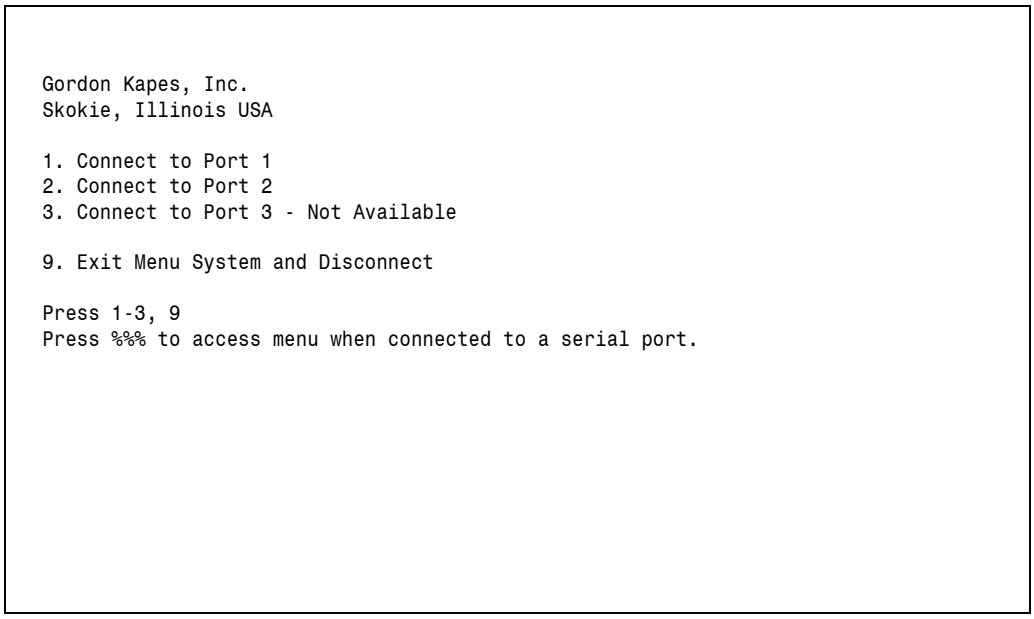

Figure 5-7. TTY Operator Menu

The TTY Operator Menu was designed using screen-formatting commands compatible with a TTY terminal. Consequently the system displays the TTY Operator Menu correctly when you are using a TTY terminal. You cannot select options on the TTY Operator Menu by highlighting and pressing ↵, however, since TTY is not compatible with these commands. Instead you must always press the number of the desired option.

Accessing TTY and VT100 Operator Menus

As illustrated in Figure 5-8, you can access the TTY Operator Menu by typing **%%%** whenever you are connected to one of the serial ports or whenever the VT100 Operator Menu is displayed. You can also type **%%%** to refresh the TTY Operator Menu.

In contrast, you can access the VT100 Operator Menu by typing **###** whenever you are connected to one of the serial ports or whenever the TTY Operator Menu is displayed. You can also type **###** to refresh the VT100 Operator Menu.

If you access the VT100 Operator Menu from a TTY terminal, the screen display is scrambled. Press **%%%** to display the TTY Operator Menu.

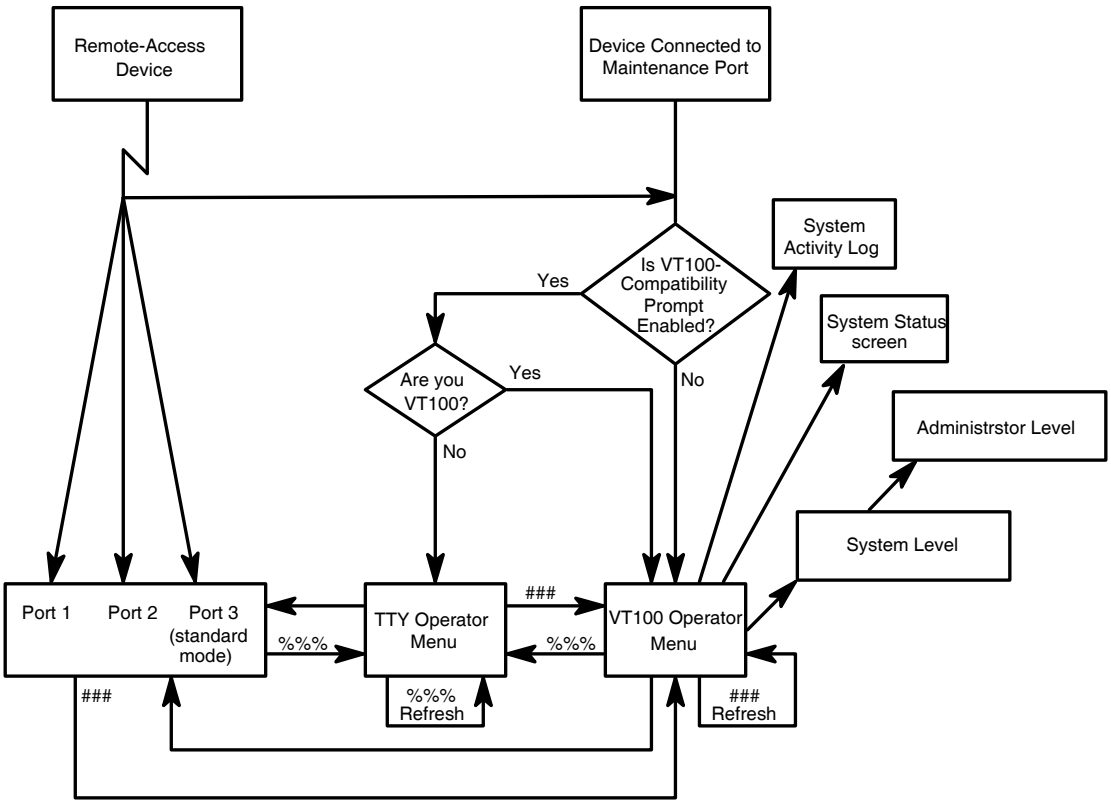

Figure 5-8. Model 125 Operator Menu Access

If you access the TTY Operator Menu from a VT100 terminal (by typing **%%%**) the TTY Operator Menu is correctly displayed. This is because VT100 is compatible with all TTY commands. But, as explained earlier, the TTY Operator Menu provides limited functionality, so it is best for you to display the VT100 menu by typing **###**.

Using the VT100-Compatibility Prompt

By default, the Model 125 is set for access using a VT100-compatible terminal. This means that whenever you access the Operator Menu using a TTY terminal, you must change to the TTY Operator Menu by typing **%%%**—unless you choose to enable the VT100-compatibility prompt.

Consider the following scenario: A technician accesses the Model 125 from a remote site using a TTY terminal with a modem. The initial connection for the Model 125 has previously been configured as the Operator Menu (refer to Chapter Thirteen for more information about initial connection). The Model 125 assumes that the required Operator Menu is the *VT100* Operator Menu since VT100 is the default. The Model 125 displays the Operator Menu but it appears as scrambled text on the technician's terminal screen.

The technician, being an alert and savvy sort of person, recognizes the problem and immediately types **%%%** to display the TTY Operator Menu. He or she then proceeds to access one or more of the serial ports on the Model 125.

Had the technician intended to access Port 1 alone, and had Port 1 been the configured initial connection for the Model 125, the TTY terminal would have provided the technician transparent access to the port. In this case, the technician must still remember to type **%%%** to access the correct Operator Menu and select another port or exit the system.

Organizations using both VT100 and TTY terminals with a Model 125 may need to train personnel to carefully discriminate between when to type **###** and when to type **%%%**. Nevertheless, enabling the VT100-compatibility prompt reduces part of the possible confusion.

The operator's response to the VT100-compatibility prompt directs the system to the desired Operator Menu. When enabled, this prompt is displayed on the terminal screen after the operator has entered a user name and password, if required, and before the system displays the Operator Menu. The prompt asks if the operator's terminal or personal computer is VT100 compatible. When the operator presses **Y**, which is the default, the system displays the VT100 Operator Menu. When **N** is pressed, the system displays the TTY Operator Menu.

To return to the correct Operator Menu after accessing one of the serial ports, the operator must still type **###** for the VT100 menu and **%%%** for the TTY menu.

Begin with Your Worksheet

Decide whether you want to disable options 4 or 5, or both, from the Operator Menu. Decide if you want to enable the VT100-compatibility prompt. Make a record of your decision on a working copy of the General Parameters worksheet found in Appendix A.

Procedure

Take the following steps to set operator-menu-access options:

1. If you have not done so, display the Configure General Parameters Menu. Refer to “Displaying the Configure General Parameters Menu,” earlier in this chapter.
2. Press **2** to select Operator-Menu-Access Options.

   The system displays the Operator-Menu-Access Options screen, shown in Figure 5-9.

   The screen displays two questions asking if the system status and the System Activity Log options should be accessible from the Operator Menu. The cursor is located in the field under the first question. A third question asks if the user should be prompted for VT100 compatibility.

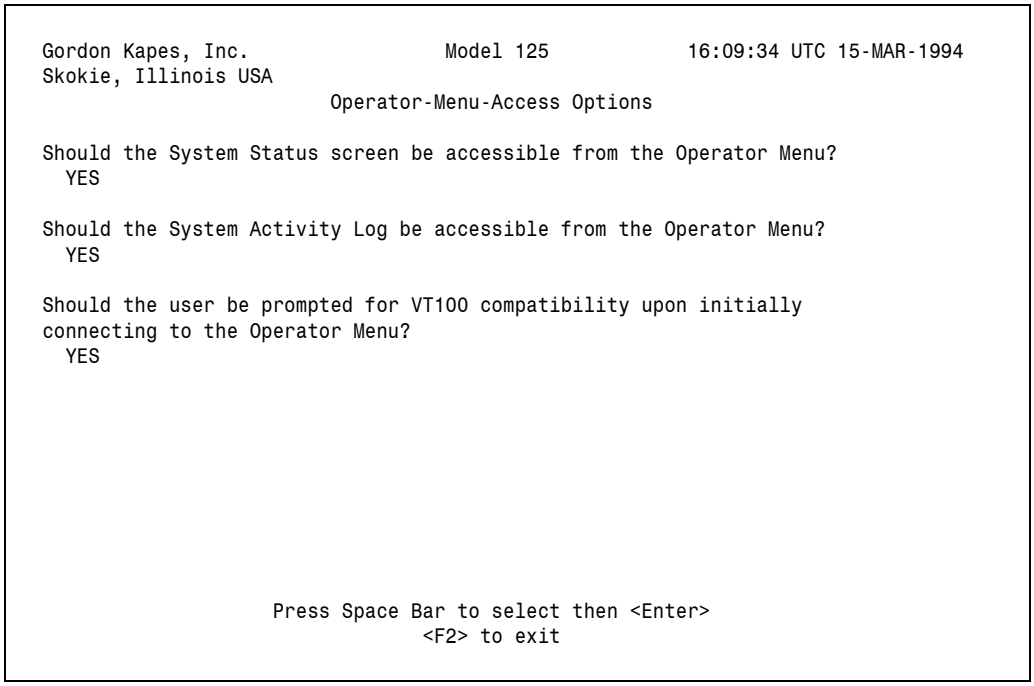

Figure 5-9. Operator-Menu-Access Options Screen

3. To answer each question, use the following table. Make sure you press ↵ to save each value you change.

To:	Take this Action:
Disable an option	Press the space bar to display NO in the field under the question. Press ↵ to save.
Enable an option	Press the space bar to display YES in the field under the question. Press ↵ to save.
Disable the VT100-compatibility prompt	Press the space bar to display NO in the field under the question. Press ↵ to save.
Enable the VT100-compatibility prompt	Press the space bar to display YES in the field under the question. Press ↵ to save.
Move from one question to another	Press ↑ or ↓, or press ↵.
Return to the Configure General Parameters Menu	Press **F2**.

   If you have made changes, the system displays the following message after you press F2:

   Implement Changes? N

   Press **Y** to save all entered values. Press **N** to discard all entered values.

4. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Setting the Time and Date

Select option 3 on the Configure General Parameters Menu to set the clock in the Model 125. Gordon recommends you set the clock to Coordinated Universal Time. (Refer to Gordon's sidebar later in this chapter.) Since the clock is accurate to within ±60 seconds a month and contains its own backup battery, you may never need to set the clock again.

The system enables you to select the time and date information as shown in Table 5-3.

The time of day, time zone, and date are displayed in the upper-right corner of each screen, in the System Activity Log, and in each dial-out alarm report. The system also uses the time of day and date to coordinate system functions, such as the automatic internal-battery, dial-out, and dial-tone tests, that follow a time schedule.

Table 5-3. Time-and-Date Parameters

Field	Description
Hour	Select a 2-digit number from 00 through 23. Use 24-hour time.
Minute	Select a 2-digit number from 00 through 59.
Second	Select a 2-digit number from 00 through 59.
Time Zone	Enter a 3-character abbreviation for the time zone. For example, enter EST for Eastern Standard Time if you are using civil time. If you are using Coordinated Universal Time, enter its abbreviation, UTC. The system accepts alphabetic entries only in this field.
Year	Select the last 2 digits of the year from 00 through 99. The system uses the digits 00 through 38 with the years 2000 through 2038.
Month	Select the standard 3-character abbreviation for a month of the year.
Day of Month	Select a 2-digit number from 01 through 31. The system does not allow you to enter a day not available in a month. For example, if you enter June, you cannot enter 31 since June has only 30 days. You must enter 28 as the last day of February unless you have entered a leap year. In that case you can enter 29.

Set Your Clock with Coordinated Universal Time

In all seriousness, I want to recommend you use an internationally recognized standard when you set the clock on the Model 125. This standard is called Coordinated Universal Time —it is the mean solar time of the Greenwich Meridian (0 degrees longitude). Its acronym is UTC (why they don't call it CUT is a mystery to me).

Used by astronomers and other scientists, Coordinated Universal Time considers the entire world to be in the same time zone. When it's one o'clock in Chicago, it's also one o'clock in Calcutta.

Using Coordinated Universal Time gives you two advantages:

- You don't have to convert among time zones
- You don't have to reset clocks for daylight savings time

Even though you may not install Model 125s internationally, you will probably find that setting UTC in Model 125s installed across time zones provides consistency and reduces confusion. That's why we set each Model 125 with Coordinated Universal Time at the factory. To convert to your local time zone, use a chart such as the one below.

Coordinated Universal Time used to be called Greenwich Mean Time, but the name was changed in 1928 (probably at the behest of the French). Greenwich Mean Time is the mean solar time of the Greenwich Meridian, which runs right through the site of the original Royal Greenwich Observatory. Although the working observatory, which was founded in 1675 by Charles II of England, has since been moved, the original site houses a fantastic time museum of not only early time pieces, but also the latest in atomic clocks.

I recently had an opportunity to visit the museum in Greenwich and can tell you it's definitely worth the trip! Next time you're in England, make sure you stop by—take your Model 125 with you and set the time by one of the atomic clocks!

—Gordon

Conversion of Universal Time to Civil Time

UTC	EDT[1]	EST[2]	CST[3]	MST[4]	PST[5]	UTC	EDT[1]	EST[2]	CST[3]	MST[4]	PST[5]
00	*8P	*7P	*6P	*5P	*4P	**12**	8A	7A	6A	5A	4A
01	*9P	*8P	*7P	*6P	*5P	**13**	9A	8A	7A	6A	5A
02	*10P	*9P	*8P	*7P	*6P	**14**	10A	9A	8A	7A	6A
03	*11P	*10P	*9P	*8P	*7P	**15**	11A	10A	9A	8A	7A
04	M	*11P	*10P	*9P	*8P	**16**	N	11A	10A	9A	8A
05	1A	M	*11P	*10P	*9P	**17**	1P	N	11A	10A	9A
06	2A	1A	M	*11P	*10P	**18**	2P	1P	N	11A	10A
07	3A	2A	1A	M	*11P	**19**	3P	2P	1P	N	11A
08	4A	3A	2A	1A	M	**20**	4P	3P	2P	1P	N
09	5A	4A	3A	2A	1A	**21**	5P	4P	3P	2P	1P
10	6A	5A	4A	3A	2A	**22**	6P	5P	4P	3P	2P
11	7A	6A	5A	4A	3A	**23**	7P	6P	5P	4P	3P

1. Eastern Daylight Time.
2. Eastern Standard Time, same as Central Daylight Time.
3. Central Standard Time, same as Mountain Daylight Time.
4. Mountain Standard Time, same as Pacific Daylight Time.
5. Pacific Standard Time.

Notes: *denotes previous day. N = noon. M = midnight.

Begin with Your Worksheet

Obtain the external timepiece of your choice from which to take time and date data. Gordon recommends you use the atomic clock in Greenwich, England. (Refer to Gordon's sidebar on the previous page.) Record your entries on a working copy of the General Parameters worksheet found in Appendix A.

Procedure

Take the following steps to enter time and date:

1. If you have not done so, display the Configure General Parameters Menu. Refer to "Displaying the Configure General Parameters Menu," earlier in this chapter.
2. Press **3** to select Time/Date.

   The system displays the Time/Date screen, shown in Figure 5-10.

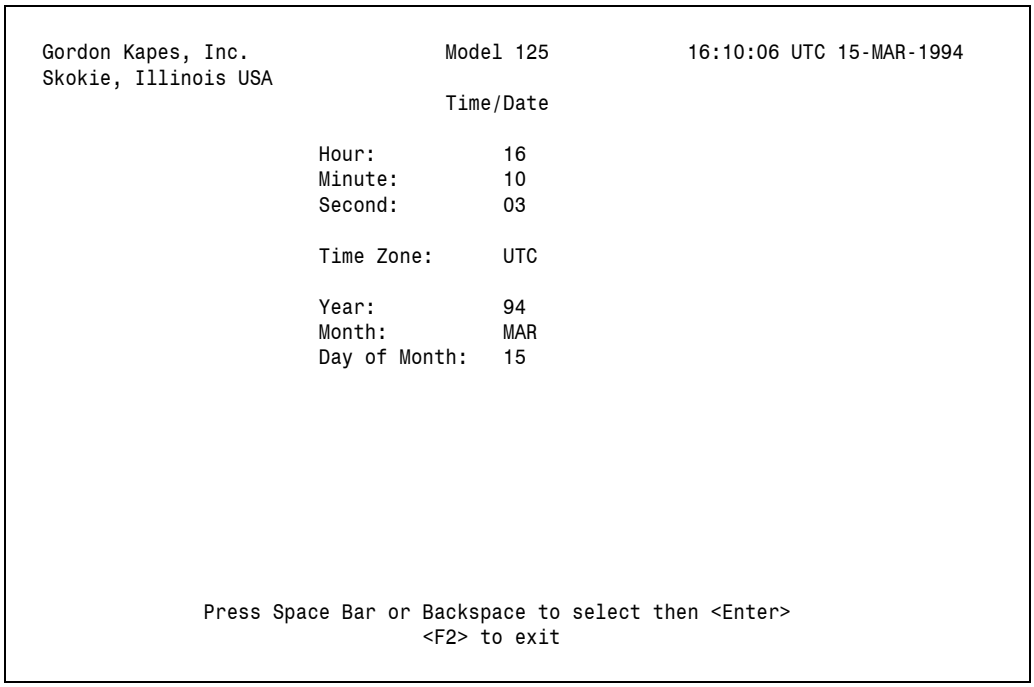

Figure 5-10. Time/Date Screen

The screen displays fields for time and date entries. The cursor is located in the **Hour** field. Enter text in the **Time Zone** field. For all other fields, select a value from the displayed choices. To make selections and entries, use the following table. Be sure to press ↵ to save each value you enter.

To:	Take this Action:
Select a value	Press **Backspace** for lesser number or earlier month. Press spacebar for greater number or later month. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure Serial Ports/Internal Modem Menu	Press **F2**.

If you make an incorrect entry such as June 31, the system displays an error message. Enter the correct value and press ↵**.**

If you have made changes, the system displays the following message after you press F2:

Implement Changes? N

Press **Y** to save all entered values. Press **N** to discard all entered values.

3. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Specifying the Internal-Battery Alarm Message

The Model 125 contains an internal 6-volt battery that provides power should the AC power line fail. The Model 125 automatically tests the internal battery once every 168 hours. (You can also test the battery manually. Refer to “Conducting the Manual Battery Test,” in Chapter Seventeen.)

If the battery fails the test, an alarm condition is reported by the system. Follow the instructions in this section to enter an alarm message that you compose. You also specify whether the message is to be sent to the System Activity Log or to both the log and a dial-out alarm report. (Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message.)

Begin with Your Worksheet

Use a working copy of the General Parameters worksheet found in Appendix A to decide whether you want the internal-battery alarm message sent to the System Activity Log alone or to both the log and a dial-out alarm report.

Compose an alarm message consisting of a maximum of 77 characters.

Procedure

Take the following steps to enter an alarm message and specify its destination:

1. If you have not done so, display the Configure General Parameters Menu. Refer to “Displaying the Configure General Parameters Menu,” earlier in this chapter.
2. Press **4** to select Automatic Internal-Battery Test.

   The system displays the Automatic Internal-Battery Test screen, shown in Figure 5-11.

   The screen displays the **Alarm Action** and **Alarm Message** fields. The cursor is initially located in the **Alarm Action** field.

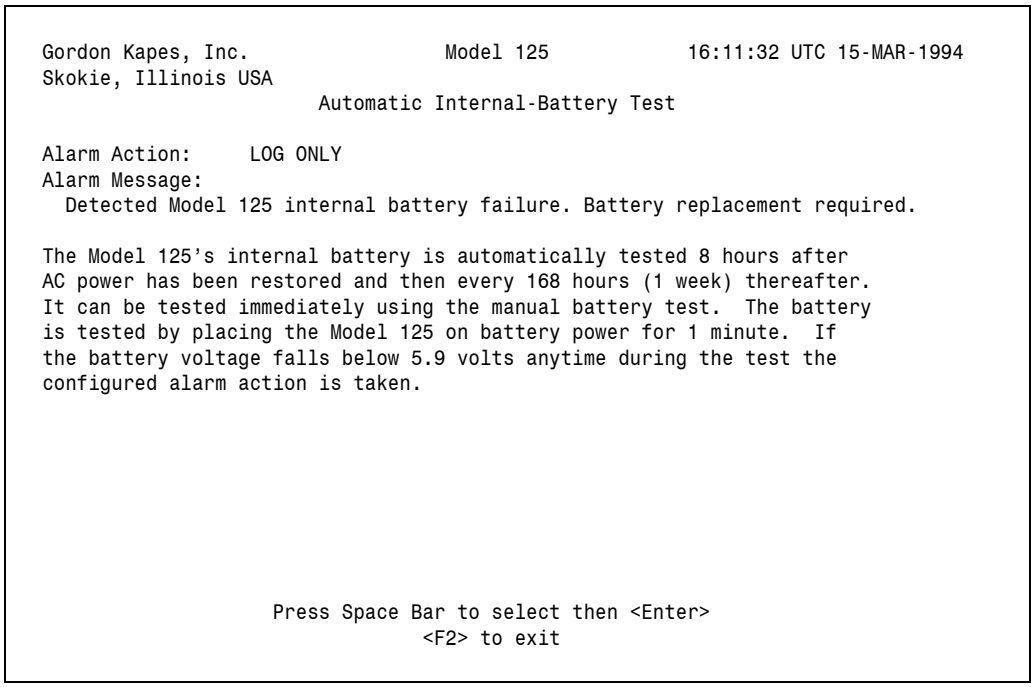

Figure 5-11. Automatic Internal-Battery Test Screen

3. Select the destination (log or dial-out report and log) for your alarm message. Then enter the text of the message. To make selections and entries, do the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press the space bar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure General Parameters Menu	Press **F2**.

4. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Configuring an Operator-Menu Message

This section describes how to enter a message that is displayed in the lower portion of the Operator Menu. Use this feature to post messages, notes, or useful hints for those using the Model 125. Once a message is no longer valid, you can simply delete it and enter another one. Enter a maximum of eight lines with 59 characters per line.

The following examples illustrate types of messages you might want to post.

Leave Me a Message

When I proposed the addition of the operator-menu message it was viewed by the software engineers as a bit of "fluff." It's turned out to be a very useful tool. The examples in this manual show general messages that may stay unchanged for weeks or months at a time. However, those of us involved in developing the Model 125 ended up using it in a different way. It seems we constantly use the function to leave messages for each other, changing them on a daily or even hourly basis. As a miniature message board it's been very helpful—maybe you'll use it this way too!

—Gordon

Example 1

The PBX system connected to the Model 125 has been loaded with Beta test software.

Tom Williams in the Atlanta office is coordinating this project. Should you have questions about this new software load, please call him at ext. 555.

Example 2

Do not extend the memory buffers on the voice-mail system to longer than 30 seconds until after July 1, 1992. The voice-mail system at this site is scheduled to be reconfigured on July 1, 1992, at which time more memory will be added.

Andy Smith is the maintenance technician for this site. Call him at 555-1212.

Example 3

To contact PBX maintenance personnel at this site,
please call Pam Smith, Telecommunications Manager,
at extension 412.

Direct environmental questions or problems to Roger Smith
at extension 321.

Begin with Your Worksheet

Use a working copy of the General Parameters worksheet found in Appendix A as an input form.

Procedure

Take the following steps to enter and display an Operator-Menu message:

1. If you have not done so, display the Configure General Parameters Menu. Refer to “Displaying the Configure General Parameters Menu,” earlier in this chapter.
2. Press **5** to select Operator-Menu Message.

   The system displays the Operator-Menu Message screen, shown in Figure 5-12.

   The screen displays the **Message Area** fields. The cursor is initially located in line 1.

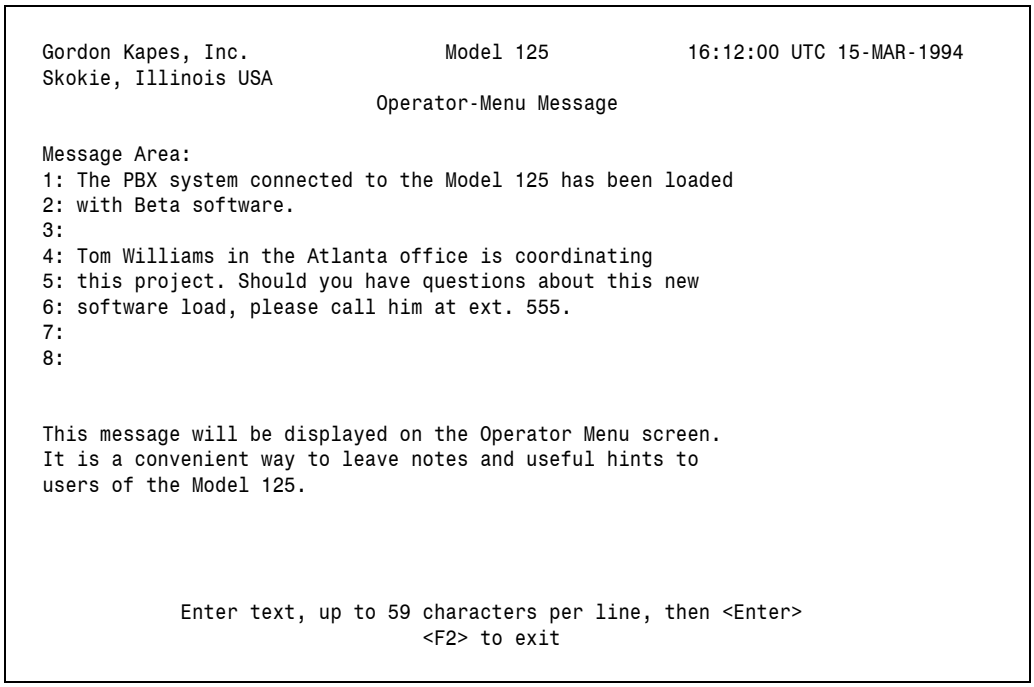

Figure 5-12. Operator-Menu Message Screen

3. To enter your message, refer to the following table:

To:	Take this Action:
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure General Parameters Menu	Press **F2**.

4. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Six
Configuring Serial Ports & Modem

Overview

This chapter explains how to configure communications settings for the three serial communications ports in the Model 125. It also describes how to make dial-in communications settings for the modem internal to the Model 125. (To configure dial-out communications settings for the modem, refer to "Configuring Dial-Out-Destination Functions" in Chapter Eleven.)

Configuring Serial Ports

The Model 125 provides three serial communications ports enabling you to connect with the serial ports on PBXs, voice-mail systems, or other types of data equipment. You must configure the communications settings for each serial port on the Model 125 to match the settings required by the serial port on each piece of connected equipment.

The serial port on a connected device, may, of course, be configurable as well. In this case, you must determine what settings are to be used and ensure both the equipment serial port and the corresponding Model 125 serial port are configured with matching settings.

The communications settings configured for the internal modem do not need to match any of those configured for the serial ports on the Model 125. (Refer to "Configuring the Internal Modem," later in this chapter.) The microcomputer in the Model 125 converts data rate and format between the modem and each serial port, contributing to the model's unique smart routing feature.

Independent Configurability Provides a Real Advantage

One of the unique and powerful features of the Model 125 is the *independent configurability* of its three serial ports and internal modem. In other words, you can configure serial ports each with a different data rate, data-format, and handshaking (communication-flow-control) setting. And you can configure the modem's data format and handshaking. This gives you the ability to call the Model 125's modem and automatically switch among three different devices, each possibly running at a different data rate, or requiring a different data format. This is really quite a nifty and useful feature—you don't need a switch box, you don't need to change settings. And you can do it from 2000 miles away.

—Gordon

Serial Ports 1 and 2

Serial Ports 1 and 2 always operate in *standard* mode, whose purpose is to provide you with access to connected equipment. When you configure these ports, you make communications settings (data rate, data format, and communications flow control); set a data-set-ready (DSR) state; and specify a data-terminal-ready (DTR) alarm status, message, and destination. These parameters are described in Table 6-1.

Serial Port 3

Serial Port 3 is a multi-purpose port. You can configure it as a *maintenance* port, a *modem-monitor* port, or a *standard* port. The configuration you choose determines Model 125 functionality, which varies considerably among the three modes.

Maintenance Port

Serial Port 3 was designed to be most commonly used as a dedicated maintenance port, replacing the serial port or ports on equipment that is now connected to the Model 125. Since most installations monitor only two devices, Port 3 is always free for maintenance, enabling you to conveniently access equipment connected to Ports 1 and 2 without having to connect or disconnect cables.

Configure Port 3 as a maintenance port when you want to interact with the Model 125 using an *on-site-access* device, such as a terminal or micro-computer. Maintenance mode enables you to connect to Ports 1 and 2 through Port 3.

When Port 3 is configured as a maintenance port, you cannot connect to it through a remote-access device, since Port 3 is configured as an incoming port. The system disables option 3 on the Operator Menu and displays Not Available next to it.

Modem-Monitor Port

Configure Port 3 as a modem-monitor port when you want to observe communications and activity between a remote-access user and the Model 125, as well as perform all functions provided by maintenance mode.

Use this configuration for training on-site personnel while a remote-access user demonstrates operations, or for enabling a third-party support person to observe and diagnose activity with the Model 125.

When you do not need to use modem-monitor functions, consider reconfiguring the port as maintenance to increase system security.

When Port 3 is configured as a modem-monitor port, you cannot connect to it through a remote-access device, since Port 3 is configured as an incoming port. The system disables option 3 on the Operator Menu and displays Not Available next to it.

Configuring Port 3 requires that settings be made for the same types of parameters used with Ports 1 and 2. These are shown in Table 6-1. When you configure the port as either maintenance or modem monitor, however, you can neither name the port nor determine the settings for DSR disconnect state, DTR-monitoring status, alarm action, or message. The system makes these settings for you as shown in Table 6-1.

Standard Port

Configure Port 3 as a standard port when you want to use it the same way you use Ports 1 and 2: to provide access to connected equipment.

Caution: Once you configure Port 3 as a standard port, you cannot access the Model 125 through it. To reconfigure Port 3 as either a maintenance or modem-monitor port, you must access the Model 125 via the Model 125's modem using a remote-access device, such as a terminal or microcomputer.

Setting DTR-Monitoring Status

When configuring Ports 1 and 2, or Port 3 in the standard mode, you can select one of four statuses for the DTR-monitoring function. Each status has been designed to ensure ease of use and maximum efficiency as you configure and use not only the DTR-monitoring function, but also other important monitoring functions, which are described in the following chapters of this guide.

The four statuses—not config, enabled, sleep, and disabled—are described in more detail in Table 6-1. Refer also to Gordon's sidebar in Chapter Seven for helpful suggestions about how to use each status and to Table 7-1 for a summary of monitoring-status attributes.

Begin with Your Worksheet

Use a working copy of the Serial Port & Modem Dial-In worksheet found in Appendix A to specify and record serial-port parameters. Refer to Table 6-1 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 6-1.

Table 6-1. Serial-Port Parameters

Field	Description
Operating Mode	This field applies only to Serial Port 3. If you are configuring Ports 1 or 2, proceed to the next field. If you are configuring Port 3, select the operating mode for the port. Choices are MAINTENANCE, MODEM MONITOR, STANDARD. ***Caution:*** Once you configure Port 3 as a standard port, you cannot access the Model 125 through it. To reconfigure Port 3 as either a maintenance or modem-monitor port, you must access the Model 125 through its internal modem using a remote-access device, such as a terminal or microcomputer with a modem. For more information about operating modes, refer to "Serial Port 3," earlier in this chapter.
Name	Enter a meaningful name for the port. Use a maximum of 39 characters. ***Note:*** When you configure Port 3 in either the maintenance or modem-monitor mode, the system renames the port *Maintenance* or *Modem Monitor* respectively. You cannot change the name. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the three serial ports *Port 1*, *Port 2*, and *Port 3*. However, when you have equipment connected to a port, it is usually helpful to devise a port name that refers to the specific equipment. **Example** You enter *PBX Model 100* as the name for Port 1 because that is the device connected to it. The new name for the port is *Port 1—PBX Model 100*. Notice the system adds the name you devise to the default name.

continued

Table 6-1. Serial-Port Parameters (cont.)

Field	Description
Name (cont.)	**Comments** The system uses the new name on the Operator Menu, the Configure Serial Ports/Internal Modem Menu, and entries in the System Activity Log and dial-out reports. ***Note:*** When you configure Port 3 in either the maintenance or modem-monitor mode, the system uses the new names except on the Operator Menu. Here the words *Not Available* are used.
Baud Rate	Select the data rate corresponding with the data rate required by the serial port of the connected equipment. Choices are 300, 1200, 2400, 4800, 9600. ***Note:*** You cannot use 300 baud with Port 3 due to hardware limitations.
Data-Parity-Stop Bits	Select the data format corresponding with the data format required by the serial port of the connected equipment. Choices are 8-NONE-1, 7-ODD-1, 7-EVEN-1. Format for each choice is *number of data bit-parity type-number of stop bits*.
Communication Flow Control	Select XON/XOFF if the serial port of the connected equipment supports it. Choices are XON/XOFF or NONE.
Upon Disconnect DSR Should	Select the state to which the data-set-ready (DSR) pin of the Model 125's serial port should go to when the Model 125 disconnects from the port. Choices are GO LOW, REMAIN HIGH, MOMENTARILY GO LOW. **Purpose** Makes it possible to signal the status of each Model 125 port to the connected equipment.

continued

Table 6-1. Serial-Port Parameters (cont.)

Field	Description
Upon Disconnect DSR Should (cont.)	**Comments** The DSR pin (pin 6) in each Model 125 serial port signals the “presence” or “absence” (connected or disconnected) of the port to the connected equipment, and in some cases may cause the connected equipment to take an action. For example, the high state may cause a device to disconnect its internal modem to “devote full attention” to the port with the high DSR pin. As another example, a device might interpret the low state as a disconnect and automatically log a user off its software when the Model 125 is electronically disconnected. With equipment that works in this fashion, setting the DSR parameters to low upon disconnect ensures you are logged off the device when you disconnect from it by returning to the Model 125 menu system or by hanging up. Consequently, another user would need to enter a valid password to gain access to the software resident in the equipment. The Model 125 enables you to set three DSR states upon disconnect: HIGH, LOW, and MOMENTARILY GO LOW. *Go low* sets the DSR pin to the low state when you electronically disconnect from a serial port. The DSR pin remains low until someone reconnects to the serial port via the modem or via Port 3 configured as a maintenance port. *Remain high* leaves the DSR pin in the high state when you disconnect. *Momentarily go low* sets the DSR pin to the low state then resets the pin to high. The three settings make it possible for you to accurately signal the status of each port to connected equipment. As illustrated in the preceding examples, this can help ensure security is maintained and that the connected equipment runs properly. Investigate the individual requirements of each piece of equipment you connect to the Model 125. Make sure you set DSR parameters that accommodate your equipment and needs.

continued

Table 6-1. Serial-Port Parameters (cont.)

Field	Description
Upon Disconnect DSR Should (cont.)	***Note:*** When you configure Port 3 in either the maintenance or modem-monitor mode, you cannot set this parameter. The system automatically sets it to HIGH.
DTR-Monitoring Status	Select the status of the DTR-monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** Activates an alarm when DTR pin on the Model 125 port (pin 20) remains low for 10 minutes. **Comments** The status of data-terminal-ready (DTR) indicates to the Model 125 whether connected equipment is present. High state indicates connected equipment is present. Low state indicates absence of connected equipment. Choices have the following meanings: *Not config* — DTR-alarm action and message have not been set. This status indicates DTR monitoring has not been used before. Verify the DTR-alarm action and message before enabling DTR-monitoring status. The system performs no actions with DTR monitoring when you set this status. DTR state is not shown on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — DTR-alarm action and message have been set. If the DTR pin remains low for 10 minutes, the DTR alarm is activated sending the message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts DTR monitoring in sleep mode for 6 hours. DTR state is displayed on the System Status screen.

continued

Table 6-1. Serial-Port Parameters (cont.)

Field	Description	
DTR-Monitoring Status (cont.)	*Disabled*	DTR-alarm action and message have been set. However, the system takes no action should an alarm condition occur. DTR status is displayed on the System Status screen.
	Sleep	Disables DTR-alarm monitoring for a specific period of time (6 hours), then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also manually set this parameter to disable monitoring for 6 hours. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance. DTR state is shown on the System Status screen.
	Note:	When you configure Port 3 in either the maintenance or modem-monitor mode, you cannot set this parameter. The system automatically sets it to not config. Since the status is not config, you cannot specify an alarm action or an alarm message.
	For more information about monitoring modes, refer to Gordon's sidebar in Chapter Seven.	

continued

Table 6-1. Serial-Port Parameters (cont.)

Field	Description
DTR-Alarm Action	Select the destination of the DTR-alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report. ***Note:*** This selection is not available to Port 3 when it is configured as maintenance or modem monitor.
DTR-Alarm Message	Enter an alarm message to accompany the DTR-monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code. **Example** You enter a message such as *PBX maintenance port disconnected—check cable*. ***Note:*** This selection is not available to Port 3 when it is configured as maintenance or modem monitor.

Procedure

To configure serial ports, you must access the Configure Serial Ports and Modem Dial-In Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Serial Ports and Modem Dial-In Menu. Select the port you want to configure.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **2** to select Serial Ports and Modem Dial-In Menu.

   The system displays the Configure Serial Ports and Modem Dial-In Menu.
6. Select the option for the port you want to configure.

   The system displays the Serial Port *n* screen (where *n* is the number of the serial port you have chosen to configure), shown in Figure 6-1.

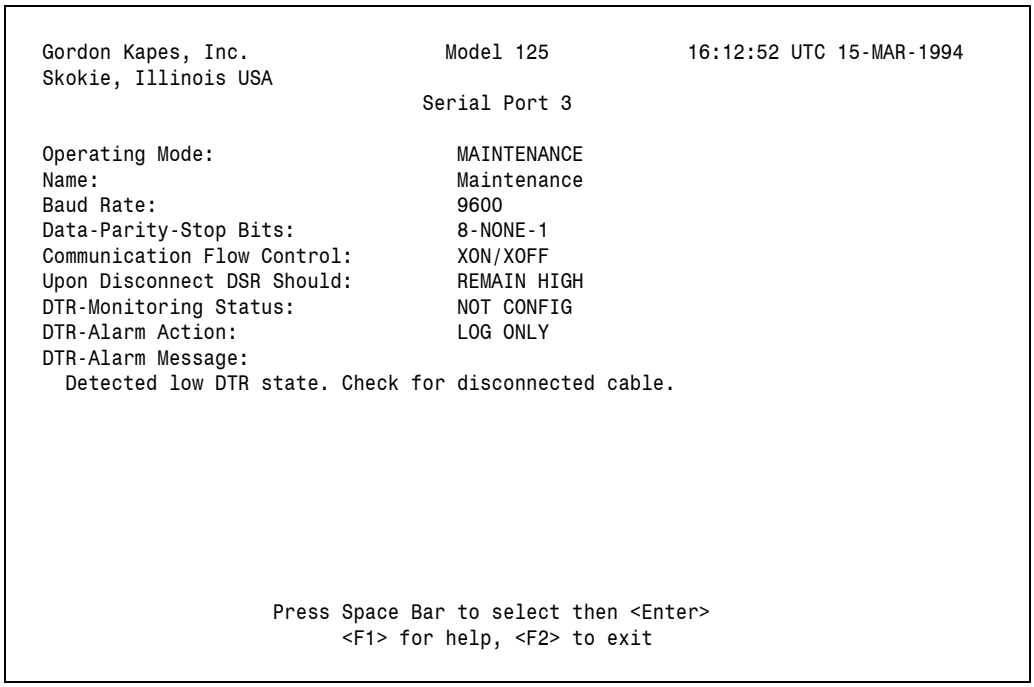

Figure 6-1. Serial Port 3 Screen Displays Operating Mode Field. Port 1 and Port 2 Screens Do Not.

The cursor is initially in the first field on the screen (if Port 1 or 2, the **Name** field; if Port 3, the **Operating Mode** field).

7. Enter text in the **Name** and **DTR-Alarm Message** fields. For all other fields, select a value from the displayed choices. To make selections and entries, use the following table. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Access Online Help	Press **F1**.
Return to the Configure Serial Ports and Modem Dial-In Menu	Press **F2**.

The system may display the following message after you press F2:

```
Warning:
You have just changed your communication parameters. Remember to change
them on the connected device.
Implement Changes? N
```

Press **Y,** then ↵ to save all entered values. Press **N**, then ↵ to discard all entered values.

This message is displayed when you change baud rate or data-format settings for the serial port. Since these settings must match those of the connected device for communication to take place, you may have to change settings on the device as well.

If you have changed baud rate or data-format settings for Port 3 configured in maintenance or modem-monitor mode, you will lose communication with the menu system. You will need to either reconfigure your on-site-access device to match the settings you have changed, or reset Port 3 communication settings using a remote-access device with a modem.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Configuring the Modem for Dial-In

This section explains how to make *dial-in* communication settings for the modem built in the Model 125. These are the settings that must match those for a remote-access modem. (To configure *dial-out* communications settings for the modem, refer to "Configuring Dial-Out-Destination Functions" in Chapter Eleven.)

Although the communication parameters you set for the internal modem do not need to match any of those configured for a serial port on the Model 125, the data-format settings *must* match those set for remote-access modems. Ensure these modems are configured with data-format settings identical to those of the Model 125 internal modem.

Dial-in parameters for the internal modem consist of data-format and communication-flow-control settings. You do not set data rate since the modem automatically tries to make a connection at 2400 bits-per-second. If the modem cannot make a connection at this rate, it falls back to 1200 bps, and then to 300 bps.

Begin with Your Worksheet

Use a working copy of the Serial Port & Modem Dial-In worksheet found in Appendix A to specify and record dial-in parameters. Refer to Table 6-2 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the following procedure.

Table 6-2. Modem Dial-In Parameters

Field	Description
Answer on Ring	Select the number of times you want the phone to ring before the Model 125 modem answers. Select a number from 1 through 5.
Data-Parity-Stop Bits	Select the data format corresponding with the data format required by the remote-access modems used with the Model 125. Choices are 8-NONE-1, 7-ODD-1, 7-EVEN-1. Format for each choice is *number of data bits-parity type-number of stop bits*.
Communication Flow Control	Select XON/XOFF if the remote-access modems support it. Choices are XON/XOFF or NONE.

Procedure

To configure the modem for dial-in, you must access the Configure Serial Ports and Modem Dial-In Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Serial Ports and Modem Dial-In Menu. Select option 4, Modem Dial-In.

The following describes these steps in detail:

Note: Security access for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.

5. Press **2** to select Serial Ports and Modem Dial-In.

   The system displays the Configure Serial Ports and Modem Dial-In Menu.

6. Press **4** to select Modem Dial-In.

   The system displays the Modem Dial-In screen, shown in Figure 6-2.

   The cursor is initially in the **Answer on Ring** field.

```
Gordon Kapes, Inc.                Model 125          16:13:20 UTC 15-MAR-1994
Skokie, Illinois USA
                                Modem Dial-In

Answer on Ring:                     2
Data-Parity-Stop Bits:              8-NONE-1
Communication Flow Control:         XON/XOFF

These parameters apply only to calls received by the internal modem.
Modem parameters are set separately for each dial-out destination.

The modem rate is 2400 bits-per-second.  If unable to connect at
2400 bits-per-second, the modem will automatically fall back to the
speed of the remote modem, which may be 1200 or 300 bits-per-second.
If connection still can't be made, the modem will hang up.









                    Press Space Bar to select then <Enter>
                                <F2> to exit
```

Figure 6-2. Modem Dial-In Screen

7. Select a value from the displayed choices in each field. To make selections, use the following table. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure Serial Ports and Modem Dial-In Menu.	Press **F2**.

The system may display the following message after you press F2:

Warning:
You have just changed your communication parameters. Remember to change them on the connected device.
Implement Changes? N

Press **Y** then ↵ to save all entered values. Press **N** then ↵ to discard all entered values.

This message is displayed when you change the data-format settings for the modem. Since these settings must match those of the remote-access modems for communication to take place, you may have to change settings on those devices as well.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Seven
Configuring Contact-Input Monitoring

Overview

Using the Model 125, you can monitor the state of as many as eight contacts. The Model 125 provides these general purpose inputs for you to use as desired. Connect them to a hardware point such as an equipment alarm contact, or to another type of contact device such as a water sensor.

Configuring Contact-Input Monitoring

This chapter explains how to configure the monitoring function for each contact input. Configuring each function consists of giving it a meaningful name, identifying the normal or “non-alarm” state of the contact input, and specifying debounce time, sleep time, and an alarm action and message.

Function Status

In addition, you select the current status for each contact-input-monitoring function. Each status has been designed to ensure ease of use and maximum efficiency as you configure and operate the Model 125 under different circumstances. The four statuses—not config, enabled, sleep, and disabled—are used with other monitoring functions within the system as well, but their meanings are the same regardless of function. Refer to Table 7-1 for a summary of monitoring-status attributes, and to Gordon’s sidebar, which follows, for helpful suggestions about how to use each function status.

Table 7-1. Monitoring-Function Status & Attributes

Status → Attribute ↓	Not Config	Enabled	Sleep	Disabled
Activates Alarm	No	Yes	No	No
Displays *status* on System Status screen	Yes	Yes	Yes	Yes
Displays *state* on System Status screen	No	Yes	Yes	Yes

Begin with Your Worksheet

Use a working copy of the Contact-Input Monitoring worksheet found in Appendix A to specify and record contact-input parameters for as many as eight contact inputs. Refer to Table 7-2 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 7-2.

Using Monitoring Function Status

For maximum performance and configuration flexibility, we created four operating statuses. These are not config, enabled, sleep, and disabled. Each Model 125 function uses some or all of the four statuses. During system setup, you set the status of each function to match your desired configuration. During system operation the statuses can be manually changed "on-the-fly" to meet immediate needs. In addition, the system automatically changes enabled and sleep statuses in response to operating conditions. I encourage you to study the four statuses and how they relate to the entire operation of the Model 125. They are an integral part of why the Model 125 can serve as your trusty friend in the field.

Here are my suggestions for using each status:

Not Config

As you may have guessed, the term *not config* is an abbreviation for not configured. It is used to indicate that you have not set valid parameters and that the monitoring function is not active. We set all monitoring functions to not config at the factory prior to shipment. Use this status whenever you want to identify that a function is not part of your selected system configuration.

Enabled

Enabled status indicates you have set parameters for a monitoring function, and that the system activates an alarm when an alarm state occurs. Enabled is the normal status for each monitoring function you choose to use.

Sleep

Sleep status turns off the alarm reporting capability of a monitoring function for a fixed time period. You can manually set a status from enabled to sleep if you want to temporarily disable a function while you do maintenance or repair. When an enabled monitoring function activates an alarm, the system automatically sets its status to sleep. This prevents the system from issuing multiple alarms caused by the same event. Not only might these clutter up the System Activity Log, but they could also swamp a dial-out receiver. After the sleep time has expired, the system automatically resets the status to enabled. (If you do not want to use sleep status, you can set sleep time to zero. Refer to "How Zero Sleep Time Affects Alarm Action," in Appendix C for more information about zero sleep time.)

Disabled

Use *disabled* status after you have configured a function, but currently do not want it active. This status is useful when you are configuring and testing a new system. It enables you to turn off specific functions while you test others. You can also set a function to disabled when you know an alarm condition takes longer to correct than the time provided by sleep status. Disabled status is different from sleep status in terms of the time the status stays in effect. Sleep status stays in effect for a predetermined time period. Disabled status stays in effect until you manually select a new status.

Refer to Table 7-1 for a summary of monitoring-status attributes.

—Gordon

Table 7-2. Contact-Input-Monitoring Parameters

Field	Description
Status	Select the status of the contact-input-monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the contact input varies from its normal state (open or closed) in excess of the debounce time. **Comments** Choices have the following meanings: *Not config* — Contact parameters have not been set. This status indicates monitoring for the contact input has not been used before. Verify name, normal state, debounce time, sleep time, and alarm action and message before enabling contact monitoring. The system does not monitor the contact input when you set this status. The status of the contact input is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — An alarm action and message have been set. If the contact input varies from its normal state in excess of the debounce time, the alarm is activated sending the message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts contact-input monitoring in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 7-2. Contact-Input-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables contact monitoring for the period of time entered in the **Sleep Time** field, then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance. If you do not want the system to automatically set sleep status, set sleep time to zero.
	Disabled	Contact-input-alarm action and message have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the contact input. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the eight contact inputs *Contact 1*, *Contact 2*, *Contact 3*, and so forth. However, when you have a specific device connected to a contact, it is usually helpful to devise a contact-input name that refers to the actual device. **Example** You enter *Major Alarm—PBX System* as the name for Contact 1 because that is the entity connected to it. The new name for the contact input is *Contact 1—Major Alarm—PBX System*. Notice the system adds the name you devise to the default name.	

continued

Table 7-2. Contact-Input-Monitoring Parameters (cont.)

Field	Description
Name (cont.)	**Comments** The system uses the name on the System Status screen, the Contact Input Menu, and entries in the System Activity Log and dial-out report.
Normal State	Select the state or condition in which the contact input normally resides. This parameter indicates the "non-alarm" state for the contact, which is reflective of properly functioning equipment. Choices are NORMALLY OPEN, NORMALLY CLOSED. **Comments** Chose the normal state consistent with the needs of your facility.
Debounce Time	Enter the length of time, in seconds, during which the contact input must *continuously maintain* an alarm condition before the alarm is activated (or must *continuously maintain* a non-alarm condition before an alarm returns to normal when sleep time is zero). Enter a number from 1 through 999. **Comments** Enter a debounce time designed to eliminate false alarms due to incidental or non-meaningful changes in state. For example, consider the changes in state that may occur when equipment is reset or when it performs a self test. You may want to enter a debounce time designed to avoid detecting such temporary changes.
Sleep Time	Enter the length of time, in hours, during which the contact-monitoring function for this contact input is temporarily disabled when set to sleep status. Enter a number from 0 through 99.
Alarm Action	Select the destination of the contact-input-alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.

continued

Table 7-2. Contact-Input-Monitoring Parameters (cont.)

Field	Description
Alarm Message	Enter an alarm message to accompany the contact-input-monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Attention! Check hardware status registers for error codes.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure a contact-input function, you must access the Configure Contact-Input Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Contact-Input Monitoring Menu. Select the option for the contact-input monitoring function you want to configure.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.

5. Press **3** to select Contact-Input Monitoring.

   The system displays the Configure Contact-Input Monitoring Menu.

6. Press the option number for the contact-input function you want to configure.

   The system displays the Contact Input *n* screen (where *n* is the number of the contact input whose function you have chosen to configure), shown in Figure 7-1.

```
Gordon Kapes, Inc.                Model 125           16:14:06 UTC 15-MAR-1994
Skokie, Illinois USA
                                Contact Input 1

Status:                                 ENABLED
Name:                                   Major Alarm - PBX System
Normal State:                           NORMALLY OPEN
Debounce Time:                          1   SECONDS
Sleep Time:                             6   HOURS
Alarm Action:                           LOG ONLY
Alarm Message:
  Attention! Check hardware status registers for error codes.









                    Press Space Bar to select then <Enter>
                                <F2> to exit
```

Figure 7-1. Contact Input 1 Screen

The cursor is initially in the **Status** field.

7. Enter text in the **Name**, **Debounce Time**, **Sleep Time**, and **Alarm Message** fields. For all other fields, select a value from the displayed choices. To make selections and entries, use the following table. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Access Online Help	Press **F1**.
Return to the Configure Contact Input Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Eight
Configuring Temperature Monitoring

Overview

You can monitor temperature using the internal-temperature sensor and an external sensor.

Internal Sensor

An internal sensor is built in the Model 125. This sensor is designed to monitor room-ambient temperature. *Room-ambient* temperature is the temperature of the room where the 125 is located. To accomplish this purpose, the internal sensor has been located away from heat-producing components and close to the vent at the bottom of the Model 125. Here, when the Model 125 is properly mounted, the sensor is exposed to the general atmosphere of the room through natural convection.

External Sensor

The external sensor, which is available as an optional kit from Gordon Kapes, Inc., enables you to monitor the temperature of a specific piece of equipment, or a specific location within the room, or at a nearby location.

Defining the Optimum Temperature Range

The temperature-monitoring functions of the Model 125 are designed to inform you when temperature drops below or rises above an optimum range, which you define. The Model 125 can also inform you (through the log and a dial-out report) when the temperature is restored to the optimum range.

You can measure temperature using either the Fahrenheit or Celsius scale. (The system automatically converts from one to the other at the press of a key.) The Model 125 enables you to define the lower and upper limits of your optimum range by choosing these limits from the available range of 41-113 degrees Fahrenheit or 5-45 degrees Celsius.

From the available range choose a lower limit and an upper limit based upon your equipment and environment. The lower limit is called the

low-temperature alarm threshold. The upper limit is called the *high-temperature alarm threshold.* Whenever the temperature drops below the low-temperature alarm threshold, an alarm is activated. Similarly, an alarm is activated when the temperature rises above the high-temperature threshold.

Depending upon your environment and equipment, it may seem reasonable to monitor either a low-temperature threshold or a high-temperature threshold, but not both. You must make both low and high threshold settings, however. If the high threshold is the critical point, go ahead and set it. Then set the low threshold low enough so it will not activate a useless alarm. Do the opposite if the low threshold is the critical point.

Minimum Threshold Time

Temperature must *continuously* remain outside your optimum range for a specific period of time before an alarm is activated. You specify this period of time, which is called the *minimum threshold time*, for both the low- and high-threshold temperatures.

When determining minimum threshold time, it may be important to consider temporary temperature changes that should not be reported as alarms by the Model 125.

For example, an equipment room housing the Model 125 also contains an air-conditioning unit. The air-conditioning unit is serviced once a month. As a result of servicing, the temperature in the equipment room rises ten degrees crossing the high-temperature alarm threshold. While the rise in temperature is undesirable, it is neither unanticipated nor harmful since it lasts about one hour. By setting the high-temperature minimum threshold time to 90 minutes in this case, you avoid activating an alarm caused by routine servicing. You also stipulate that a temperature increase due to an unknown cause must be maintained for more than 90 minutes before the Model 125 reports it.

As with other Model 125 monitoring functions, you also specify an alarm action and message for both low- and high-threshold alarms.

Minimum Restore Time

You can configure the Model 125 to inform you when the temperature has returned to the optimum range after crossing either the low threshold or the high threshold. When the temperature returns and remains within the optimum range for the specified period of time, the system issues a restore “alarm,” which includes the restore action and message you indicate. (A *restore alarm* is not a true alarm, of course, since it indicates the return to a normal condition. Gordon refers to it as a “good” alarm.) The period of time during which the temperature must remain within the optimum range is called the *minimum restore time*. You specify individual minimum restore times, actions, and messages for temperature restoration from low threshold and from high threshold.

How Alarms Are Activated

The temperature-monitoring function monitors four different conditions. These conditions are

- Decrease in temperature from normal to low (low-temperature alarm)
- Increase in temperature from normal to high (high-temperature alarm)
- Increase in temperature from low to normal (restore from low)
- Decrease in temperature from high to normal (restore from high)

When set to enabled status, the Model 125 checks for the first two conditions: decrease from normal to low and increase from normal to high. When either condition is met, the system activates the appropriate alarm, then sets status to sleep. Sleep status disables monitoring for all conditions except the restore condition associated with the condition activating the alarm. Should this restore condition be met during the sleep time, the restore alarm is activated. Should any other alarm condition be met, however, the alarm is not activated.

For example, while set to enabled status, the monitoring function detects a normal-to-high condition. This activates the high-temperature alarm. Sleep status is set for the sleep time you specify. Should temperature return from high to normal during sleep time, the restore-from-high alarm is activated. Should temperature then drop from normal to low before the sleep time expires, however, no alarm is activated. This is because monitoring for the normal-to-low condition is disabled during the sleep time.

When sleep time is set to zero, the system continues to monitor for all alarm conditions. Alarms are triggered using the procedure described in the technical-note section of this guide. (Refer to “How Zero Sleep Time Affects Alarm Action,” in Appendix C.)

(For more information about enabled and sleep status, refer to Gordon’s sidebar, “How to Use Monitoring Function Status” in Chapter Seven.)

Begin with Your Worksheet

Use a working copy of the Temperature Monitoring worksheet found in Appendix A to specify and record temperature-monitoring parameters for both an internal sensor and an external sensor. Refer to Table 8-1 for a description of each parameter. (Refer to Gordon’s sidebar, “How to Use Monitoring Function Status” in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 8-1.

Table 8-1. Temperature-Monitoring Parameters

Field	Description
Status	Select the status of the temperature-sensor monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the temperature equals or falls below the low-temperature alarm threshold for longer than the minimum threshold time; or when the temperature equals or rises above the high-temperature alarm threshold for longer than the minimum threshold time. When temperature is restored to the optimum range, the system activates a “good” alarm. **Comments** Choices have the following meanings: *Not config* — Temperature-sensor monitoring parameters have not been set. This status indicates monitoring for the temperature sensor has not been used before. Verify all parameter settings before enabling monitoring. The system does not monitor the temperature sensor when you set this status. The status of the sensor is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — Temperature-sensor parameters have been set. If the temperature goes below the low-temperature threshold or exceeds the high-temperature threshold for longer than the respective minimum threshold time, an alarm is activated. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts temperature-sensor monitoring in sleep mode for the period of time you indicate in the **Sleep Time** field.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables temperature-sensor monitoring for the period of time entered in the **Sleep Time** field, then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance. If you do not want the system to automatically set sleep status, set sleep time to zero.
	Disabled	Temperature-sensor parameters have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the room, area, or location being monitored. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the temperature sensors *Temperature 1* and *Temperature 2*. **Example** You enter *Equipment Room Ambient* as the name for temperature sensor 1. This name more clearly describes the temperature being measured. The new name for the temperature sensor is *Temperature 1—Equipment Room Ambient*. Notice the system adds the name you devise to the default name.	

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
Name (cont.)	**Comments** The system uses the name on the System Status screen, the Configure Temperature Sensors Menu, and entries in the System Activity Log and dial-out report.
Temperature Scale	Select the scale you want the sensor to use for measuring temperature. Choices are FAHRENHEIT, CELSIUS. **Comments** The system automatically converts all previously entered temperature data to the scale you select.
Sleep Time	Enter the length of time, in hours, during which the monitoring function for this temperature sensor is temporarily disabled when set to sleep status. Enter a number from 0 through 99.
Low-Temperature Parameters	
Alarm Threshold	Enter the number of degrees at or below which you want an alarm condition to exist. For a low-temperature alarm to be activated, the temperature must equal or drop below the alarm threshold for longer than the minimum threshold time. If the temperature scale is Fahrenheit, enter a number from 41 through 113. If the temperature scale is Celsius, enter a number from 5 through 45.
Minimum Threshold Time	Enter the length of time, in minutes, during which the temperature must *continuously* remain equal to or below the alarm threshold before the alarm is activated. Enter a number from 1 through 99. **Comments** Enter a time designed to eliminate false alarms due to incidental or non-meaningful changes in temperature. For example, consider the temporary changes in temperature that may be caused by the surroundings of your equipment room. You may want to enter a minimum threshold time designed to avoid detecting such temporary changes.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
Low-Temperature Parameters (cont.)	
Alarm Action	Select the destination of the low-temperature alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the low-temperature monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Temperature low in equipment room 4 East.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the temperature must *continuously* remain above the alarm threshold (after returning from a low-temperature alarm condition) before a restore “alarm” is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the temperature was restored to the non-alarm condition.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
Restore Action	Select the destination of the restore “alarm” message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Restore Message	Enter a message to accompany the low-temperature restore “alarm.” You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from low temperature or Low-temperature alarm reset—temperature OK now.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
High-Temperature Parameters (page 2 of screen)	
Alarm Threshold	Enter the number of degrees above which an alarm condition exists. For a high-temperature alarm to be activated, the temperature must equal or rise above the alarm threshold for longer than the minimum threshold time. If the temperature scale is Fahrenheit, enter a number from 41 through 113. If the temperature scale is Celsius, enter a number from 5 through 45.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
High-Temperature Parameters (cont.)	
Minimum Threshold Time	Enter the length of time, in minutes, during which the temperature must *continuously* remain equal to or above the alarm threshold before the alarm is activated. Enter a number from 1 through 99. **Comments** Enter a time designed to eliminate false alarms due to incidental or non-meaningful changes in temperature. For example, consider the temporary changes in temperature that may be caused by the surroundings of your equipment room. You may want to enter a minimum threshold time designed to avoid detecting such temporary changes.
Alarm Action	Select the destination of the high-temperature alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the high-temperature monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Temperature high in equipment room 4 East*.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
High-Temperature Parameters (cont.)	
Alarm Message (cont.)	**Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the temperature must *continuously* remain below the alarm threshold (after returning from a high-temperature alarm condition) before a restore "alarm" is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the temperature was restored to a non-alarm condition.
Restore Action	Select the destination of the restore "alarm" message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Restore Message	Enter a message to accompany the high-temperature restore "alarm." You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from high temperature* or *High-temperature alarm reset—temperature OK now*.

continued

Table 8-1. Temperature-Monitoring Parameters (cont.)

Field	Description
High-Temperature Parameters (cont.)	
Restore Message (cont.)	**Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure a temperature-sensor function, you must access the Configure Temperature Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Temperature Monitoring Menu. Select the option for the temperature-sensor function you want to configure.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **4** to select Temperature Monitoring.

   The system displays the Configure Temperature Monitoring Menu.
6. Press the option number for the temperature-sensor function you want to configure. Temperature 1 is used for the internal sensor. Temperature 2 is used for the external sensor.

The system displays the Temperature 1 screen or Temperature 2 screen as determined by the option you selected. You configure identical parameters on either screen. The Temperature 1 screen is shown in Figure 8-1.

The cursor is initially in the **Status** field.

```
Gordon Kapes, Inc.                Model 125           16:14:54 UTC 15-MAR-1994
Skokie, Illinois USA
               Temperature 1 (Internal to Model 125) - Page 1

Status:                                 ENABLED
Name:                                   Equipment Room Ambient
Temperature Scale:                      FAHRENHEIT
Sleep Time:                             6   HOURS

Low-Temperature Parameters
--------------------------
Alarm Threshold:                        50  F
Minimum Threshold Time:                 5   MINUTES
Alarm Action:                           LOG ONLY
Alarm Message:
  Temperature low in equipment room 4 East.

Minimum Restore Time:                   5   MINUTES
Restore Action:                         LOG ONLY
Restore Message:
  Restored from low temperature.

                   Press Space Bar to select then <Enter>
               Up/Down Arrow, <F2> to exit, <F4> for next page
```

Figure 8-1. Temperature 1 Screen

7. Select a value from the displayed choices in the **Status**, **Temperature Scale**, **Alarm Action**, and **Restore Action** fields. Enter text in all other fields. To make selections and entries, use the following table. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**
Return to the Configure Temperature Monitoring Menu	Press **F2**.

   The Temperature Monitoring screen is a two-page screen. Enter data in the first page, then press **F4** to display the second page.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Nine
Configuring DC-Voltage Monitoring

Overview

You can monitor direct current (DC) voltage levels for as many as two DC power sources such as a PBX backup battery system, the power source for a paging system, or perhaps the backup for a lighting system.

For ease of reading the System Status screen, the System Activity Log, dial-out reports, and other information displays, the Model 125 enables you to specify whether a plus sign (+) or minus sign (–) is displayed in front of all voltage values. Internally, the Model 125 measures voltages differentially and treats all voltage values as absolute numbers.

```
Gordon Kapes, Inc.                Model 125           16:16:02 UTC 15-MAR-1994
Skokie, Illinois USA
                              DC Volts 1 - Page 1

Status:                                ENABLED
Name:                                  Standby -48Vdc Battery System
Display Voltage as:                    NEGATIVE
Sleep Time:                            6   HOURS

Low-Voltage Parameters
----------------------
Alarm Threshold:                      -42  VOLTS
```

```
Gordon Kapes, Inc.                Model 125           16:16:36 UTC 15-MAR-1994
Skokie, Illinois USA
                              DC Volts 1 - Page 1

Status:                                ENABLED
Name:                                  Emergency Lighting 12V Power Supply
Display Voltage as:                    POSITIVE
Sleep Time:                            6   HOURS

Low-Voltage Parameters
----------------------
Alarm Threshold:                      +8   VOLTS
```

Figure 9-1. DC Volts Screens. You can display a minus or plus sign before a voltage value.

Defining the Optimum Voltage Range

The DC-voltage monitoring functions of the Model 125 employ a design similar to that used with temperature monitoring. These functions inform you when voltage varies from an optimum range, which you define. The Model 125 can also inform you (through the log and a dial-out report) when voltage is restored to the optimum range.

From the available range choose a lower limit and an upper limit. For example, voltage equal to or below the lower limit might indicate a severely discharged battery, while voltage equal to or above the upper limit might indicate a battery being overcharged. The lower limit is called the *low-voltage alarm threshold.* The upper limit is called the *high-voltage alarm threshold.* Whenever the voltage equals or drops below the low-voltage alarm threshold, an alarm is activated. Similarly, an alarm is activated when the voltage equals or rises above the high-voltage threshold.

Minimum Threshold Time

Voltage must *continuously* remain outside your optimum range for a specific period of time before an alarm is activated. You specify this period of time, which is called the *minimum threshold time*, for both the low- and high-threshold voltages.

As with other Model 125 monitoring functions, you also specify an alarm action and message for both low- and high-threshold alarms.

Minimum Restore Time

You can configure the Model 125 to inform you when the voltage has returned to the optimum range after crossing either the low threshold (indicating a recharged battery, for example) or the high threshold (indicating a battery no longer being overcharged). When the voltage returns and remains within the optimum range for the specific period of time you specify, the system issues a restore “alarm,” which includes the restore action and message you indicate. The period of time during which the voltage must remain within the optimum range is called the *minimum restore time*. You specify individual minimum restore times, actions, and messages for voltage restoration from low threshold and from high threshold.

How Alarms Are Activated

The DC-voltage-monitoring functions, like the functions for temperature, monitor four different conditions. These conditions are

- Decrease in voltage from normal to low (low-voltage alarm)
- Increase in voltage from normal to high (high-voltage alarm)
- Increase in voltage from low to normal (restore from low)
- Decrease in voltage from high to normal (restore from high)

When set to enabled status, the Model 125 checks for the first two conditions: decrease from normal to low and increase from normal to high. When either condition is met, the system activates the appropriate alarm, then sets status to sleep. Sleep status disables monitoring for all conditions except the restore condition associated with the condition activating the alarm. Should this restore condition be met during the sleep time, the restore alarm is activated. Should any other alarm condition be met, however, the alarm is not activated.

For example, while set to enabled status, the monitoring function detects a normal-to-high condition. This activates the high-voltage alarm. Sleep status is set for the sleep time you specify. Should voltage return from high to normal during sleep time, the restore-from-high alarm is activated. Should voltage then drop from normal to low before the sleep time expires, however, no alarm is activated. This is because monitoring for the normal-to-low condition is disabled during the sleep time.

When sleep time is set to zero, the system continues to monitor for all alarm conditions. Alarms are triggered using the procedure described in the technical-note section of this guide. (Refer to “How Zero Sleep Time Affects Alarm Action,” in Appendix C.)

(For more information about enabled and sleep status, refer to Gordon’s sidebar, “How to Use Monitoring Function Status” in Chapter Seven.)

Begin with Your Worksheet

Use a working copy of the DC-Voltage Monitoring worksheet found in Appendix A to specify and record monitoring parameters for two separate voltage sources. Refer to Table 9-1 for a description of each parameter. (Refer to Gordon’s sidebar, “How to Use Monitoring Function Status” in

Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 9-1.

Table 9-1. DC-Voltage-Monitoring Parameters

Field	Description
Status	Select the status of the DC-voltage-monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the voltage from a DC power source equals or drops below the low-voltage alarm threshold for longer than the minimum threshold time; or when the voltage equals or rises above the high-voltage alarm threshold for longer than the minimum threshold time. When the voltage is restored to the optimum range, the system activates a “good” alarm. **Comments** Choices have the following meanings: *Not config* — DC-voltage-monitoring parameters have not been set. This status indicates monitoring for the power source has not been used before. Verify all parameter settings before enabling monitoring. The system does not monitor the power source when you set this status. The status of the DC-monitoring function is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — DC-voltage-monitoring parameters have been set. If the voltage meets or goes below the low-voltage threshold or meets or exceeds the high-voltage threshold for longer than the respective minimum threshold time, an alarm is activated. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts DC-voltage monitoring in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables DC-voltage monitoring for the period of time entered in the **Sleep Time** field then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance. If you do not want the system to automatically set sleep status, set sleep time to zero.
	Disabled	DC-voltage-monitoring parameters have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the DC voltage source being monitored. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the voltage sources *DC Volts 1* and *DC Volts 2*. **Example** You enter *Standby –48Vdc Battery System* as the name for the voltage source connected to DC Volts 1. This name more clearly describes the power source. The new name for the voltage source is *DC Volts 1—Standby –48Vdc Battery System.* Notice the system adds the name you devise to the default name.	

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description
Name (cont.)	**Comments** The system uses the name on the System Status screen, the Configure DC-Voltage Monitoring Menu, and entries in the System Activity Log and dial-out report.
Display Voltage as	If you want voltage values shown as negative, select NEGATIVE. If you want voltage values shown as positive, select POSITIVE. Choices are NEGATIVE, POSITIVE. **Comments** For display purposes, the system automatically places a minus sign (–) or plus sign (+) in front of all voltage values displayed.
Sleep Time	Enter the length of time, in hours, during which the monitoring function for this voltage source is temporarily disabled when set to sleep status. Enter a number from 0 through 99.
Low-Voltage Parameters	
Alarm Threshold	Enter the number of volts at or below which you want an alarm condition to exist. For a low-voltage alarm to be activated, the voltage must remain equal to or below the alarm threshold for longer than the minimum threshold time. Enter a number from 1 through 59. **Comments** The system interprets entered values as absolute numbers. For example, the system interprets +3 as a higher value than +2; and –5 as a higher value than –3.
Minimum Threshold Time	Enter the length of time, in seconds, during which the voltage must *continuously* remain equal to or below the alarm threshold before the alarm is activated. Enter a number from 1 through 999.

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description
Low-Voltage Parameters (cont.)	
Alarm Action	Select the destination of the low-voltage alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the low-voltage monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You may enter a message such as *Warning—voltage low on PBX backup battery system.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the voltage must *continuously* remain above the alarm threshold (after returning from a low-voltage alarm condition) before a restore “alarm” is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the voltage was restored to a non-alarm condition.

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description
Low-Voltage Parameters (cont.)	
Restore Action	Select the destination of the restore "alarm" message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Restore Message	Enter a message to accompany the low-voltage restore "alarm." You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from low voltage or Low-voltage alarm reset—batteries recharged.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
High-Voltage Parameters (page 2 of screen)	
Alarm Threshold	Enter the number of volts at or above which an alarm condition exists. For a high-voltage alarm to be activated, the voltage must remain equal to or above the alarm threshold for longer than the minimum threshold time. Enter a number from 1 through 59.
Minimum Threshold Time	Enter the length of time, in seconds, during which the voltage must *continuously* remain equal to or above the alarm threshold before the alarm is activated. Enter a number from 1 through 999.

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description
High-Voltage Parameters (cont.)	
Alarm Action	Select the destination of the high-voltage alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the high-voltage monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the voltage must *continuously* remain below the alarm threshold (after returning from a high-voltage alarm condition) before a restore “alarm” is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the voltage was restored to a non-alarm condition.

continued

Table 9-1. DC-Voltage-Monitoring Parameters (cont.)

Field	Description
High-Voltage Parameters (cont.)	
Restore Action	Select the destination of the restore "alarm" message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Restore Message	Enter a message to accompany the high-voltage restore "alarm." You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from high voltage or High-voltage alarm reset—batteries no longer overcharging.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the DC-monitoring function for a voltage source, you must access the Configure DC-Voltage Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure DC-Voltage Monitoring Menu. Select the option for the DC-voltage-monitoring function you want to configure.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **5** to select DC-Voltage Monitoring.

   The system displays the Configure DC-Voltage Monitoring Menu.
6. Press the option number for the monitoring function you want to configure.

The system displays the DC Volts 1 screen or DC Volts 2 screen as determined by the option you selected. You configure identical parameters on either screen. The DC Volts 1 screen is shown in Figure 9-2.

The cursor is in the **Status** field.

7. Select a value from the displayed choices in the **Status**, **Display Voltage As**, **Alarm Action**, and **Restore Action** fields. Enter text in all other fields. To make selections and entries, use the following table. Make sure you press ↵ to save each entry.

```
Gordon Kapes, Inc.                Model 125           16:17:06 UTC 15-MAR-1994
Skokie, Illinois USA
                              DC Volts 1 - Page 1

Status:                                  ENABLED
Name:                                    Standby -48Vdc Battery System
Display Voltage as:                      NEGATIVE
Sleep Time:                              6   HOURS

Low-Voltage Parameters
----------------------
Alarm Threshold:                        -42  VOLTS
Minimum Threshold Time:                  10  SECONDS
Alarm Action:                            LOG ONLY
Alarm Message:
  Detected low DC voltage.

Minimum Restore Time:                    5   MINUTES
Restore Action:                          LOG ONLY
Restore Message:
  DC voltage restored from low to normal.

                   Press Space Bar to select then <Enter>
               Up/Down Arrow, <F2> to exit, <F4> for next page
```

Figure 9-2. DC Volts 1 Screen

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**
Return to the Configure DC-Voltage Monitoring Menu	Press **F2**.

The DC Volts screen is a 2-page screen. Enter data in the first page, then press **F4** to display the second page.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Chapter Ten
Configuring AC-Line Monitoring

Overview

This chapter explains how to configure the three alternating current (AC) line-monitoring functions built in the Model 125. These functions are

- Voltage monitoring
- Sag monitoring
- Impulse monitoring

Consistent with the Model 125's usefulness as a trend identifier and analyzer, these three functions spot and report specific types of voltage fluctuations potentially harmful to PBX and other types of telecommunications equipment.

AC-Voltage Monitoring

AC-voltage monitoring, which employs a software-configuration design similar to that used with DC-voltage monitoring, activates an alarm when AC-line voltage equals or falls below a low-voltage threshold. Similarly, it activates an alarm when voltage equals or rises above a high-voltage threshold. You specify both the low-voltage and the high-voltage thresholds. The voltage level must remain outside the range bounded by these thresholds for the period of time (measured in seconds) you specify before the system activates the alarm.

Voltage that falls below the low threshold can indicate a power-line failure or a commercial power problem, while voltage rising above the high threshold might indicate an electrical wiring error or malfunctioning transformer in the building or nearby area.

Voltage monitoring differs from sag monitoring and impulse monitoring because it measures fluctuations in *average* voltage that are maintained for a *long period of time* (seconds, rather than milli- or microseconds).

Sag and Impulse Monitoring

The AC-sag and impulse functions are designed to report the presence of sudden, short-duration decreases (sags) or increases (impulses or spikes) in voltage. These power disturbances can decrease system reliability and be very destructive to telecommunications equipment.

A voltage sag is detected by the Model 125 when AC-line voltage falls below 93 volts for longer than 2 sine-wave cycles. An impulse is detected when peak AC-line voltage rises above 260 volts for more than 100 microseconds.

Since both sags and impulses can occur in multiple, rapid-fire succession, the system activates the corresponding alarm upon encountering the *first occurrence* of each. (That is, the first sag occurrence activates the sag alarm; the first impulse occurrence activates the impulse alarm.) The system then sets sleep status for the affected monitoring function (either sag or impulse). This prevents both you and the system from being overwhelmed by sag or impulse alarms.

This method of operation emphasizes the importance of a single sag or impulse alarm, however. Since a single alarm may represent many sags or impulses occurring on the power line, you should be careful not to overlook it.

Don't be Impulsive

You might think it's strange that the Model 125 doesn't report the number of sags or impulses there are on the AC line. But, in fact, the number is not really significant at all. What *is* significant is that at least one occurred and was detected! It is not out of line to say that most electronic equipment is better off never seeing a sag or impulse (aka spike). While not always destructive, sags and spikes can cause seemingly "random" system problems. Any power line disturbances jeopardize system integrity and should be looked into. The Model 125 serves as your on-site "eyes and ears," letting you know that either now, or in the future, power problems could "bite" your system! In most cases, just knowing that a power line is acting up will get you started with finding a solution.

—Gordon

Although sag and impulse conditions can be caused by natural phenomena such as lightening, they can also indicate faulty transformers, malfunctioning machinery, incorrect wiring, or other power problems. Should the Model 125 report sag or impulse alarms, consult with a qualified electrician. You may need further diagnosis using more specific power-monitoring equipment; or it may be evident that the installation of power conditioning equipment (such as a voltage stabilizer or uninterruptible power system) is required.

Configuring Voltage Monitoring

This section provides specific instructions for configuring the first of the three AC-line monitoring functions, voltage monitoring. (Sag-monitoring and impulse-monitoring configurations are explained in “Configuring Sag Monitoring,” and “Configuring Impulse Monitoring” later in this chapter.

To configure AC-line voltage monitoring you must define an optimum voltage range, specify minimum threshold and restore times, specify sleep time and alarm actions, as well as name the function and compose alarm messages.

Defining the Optimum Voltage Range

The AC-voltage monitoring function informs you when voltage varies from an optimum range, which you define. The Model 125 can also inform you (through the log and a dial-out report) when voltage is restored to the optimum range.

From the available range choose a lower limit and an upper limit. The lower limit is called the *low-voltage alarm threshold.* The upper limit is called the *high-voltage alarm threshold.*

When the voltage equals or falls below the low-voltage alarm threshold, an alarm is activated. (Voltage falling below the low-voltage alarm threshold can indicate a power problem that warrants investigation. You can confirm whether the problem is a low-line condition (brownout) or a power failure by viewing the specific voltage reading on the System Status screen, in the log, or in a dial-out report.)

Similarly, an alarm is activated when the voltage equals or rises above the high-voltage threshold. (Refer to “How Alarms Are Activated,” later in this chapter for further details.)

Minimum Threshold Time

Voltage must *continuously* remain outside your optimum range for a specific period of time before an alarm is activated. You specify this period of time, which is called the *minimum threshold time*, for both the low- and high-threshold voltages.

As with other Model 125 monitoring functions, you also specify an alarm action and message for both low- and high-threshold alarms.

Minimum Restore Time

You can configure the Model 125 to inform you when the voltage has returned to the optimum range after crossing either the low threshold or the high threshold (indicating voltage has returned to normal). When the voltage returns and remains within the optimum range for the specific period of time you specify, the system issues a restore "alarm." A restore alarm includes the restore action and message you indicate. The period of time during which the voltage must remain within the optimum range is called the *minimum restore time*. You specify individual minimum restore times, actions, and messages for voltage restoration from low threshold and from high threshold.

How Alarms Are Activated

The AC-voltage-monitoring function, like the functions for DC voltage and temperature, monitors four different conditions. These conditions are

- Decrease in voltage from normal to low (low-voltage alarm)
- Increase in voltage from normal to high (high-voltage alarm)
- Increase in voltage from low to normal (restore from low)
- Decrease in voltage from high to normal (restore from high)

When set to enabled status, the Model 125 checks for the first two conditions: decrease from normal to low and increase from normal to high. When either condition is met, the system activates the appropriate alarm, then sets status to sleep. Sleep status disables monitoring for all conditions except the restore condition associated with the condition activating the alarm. Should this restore condition be met during the sleep time, the restore alarm is activated. Should any other alarm condition be met, however, the alarm is not activated.

For example, while set to enabled status, the monitoring function detects a normal-to-high condition. This activates the high-voltage alarm. Sleep status is set for the sleep time you specify. Should voltage return from high to normal during sleep time, the restore-from-high alarm is activated. Should voltage then drop from normal to low before the sleep time expires, however, no alarm is activated. This is because monitoring for the normal-to-low condition is disabled during the sleep time.

When sleep time is set to zero, the system continues to monitor for all alarm conditions. Alarms are triggered using the procedure described in the technical-note section of this guide. (Refer to “How Zero Sleep Time Affects Alarm Action,” in Appendix C.)

(For more information about enabled and sleep status, refer to Gordon’s sidebar, “Using Monitoring Function Status” in Chapter Seven.)

A restore-from-low condition activates an alarm only when it occurs within seven days of the corresponding low-voltage alarm. This prevents a restore-from-low alarm from being activated should the Model 125 be shut down (which activates a low-voltage alarm), stored for a time, and then reinstalled (which otherwise would activate the restore-from-low alarm).

Begin with Your Worksheet

Use a working copy of the AC-Line Monitoring worksheet found in Appendix A to specify and record AC-line-voltage monitoring parameters. Refer to Table 10-1 for a description of each parameter. (Refer to Gordon’s sidebar, “Using Monitoring Function Status” in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 10-1.

Table 10-1. AC-Voltage-Monitoring Parameters

Field	Description
Status	Select the status of the AC-voltage monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the voltage from the Model 125's AC power line equals or drops below the low-voltage alarm threshold for longer than the minimum threshold time; or when the voltage equals or rises above the high-voltage alarm threshold for longer than the minimum threshold time. When voltage is restored to the optimum range, the system activates a "good" alarm. **Comments** Choices have the following meanings: *Not config* — AC-voltage monitoring parameters have not been set. This status indicates AC-line monitoring has not been used before. Verify all parameter settings before enabling monitoring. The system does not monitor the power line when you set this status. The status of the AC-monitoring function is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — AC-voltage monitoring parameters have been set. If the voltage equals or goes below the low-voltage threshold or equals or exceeds the high-voltage threshold for longer than the respective minimum threshold time, an alarm is activated. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts AC-voltage monitoring in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables AC-voltage monitoring for the period of time entered in the **Sleep Time** field then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. If you do not want the system to automatically set sleep status, set sleep time to zero. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance.
	Disabled	AC-voltage monitoring parameters have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the AC-voltage-monitoring function. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the function *AC-Line Volts.* **Example** You enter *Phase 1 of PBX Power Source*, which is the name for the power line monitored by the function. This name more clearly describes the function. The new name for the function is *AC-Line Volts—Phase 1 of PBX Power Source.* Notice the system adds the name you devise to the default name.	

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description
Name (cont.)	**Comments** The system uses the name on the System Status screen, the Configure AC-Line Monitoring Menu, and entries in the System Activity Log and dial-out report.
Sleep Time	Enter the length of time, in hours, during which the voltage-monitoring function is temporarily disabled when set to sleep status. Enter a number from 0 through 99.
Low-Voltage Parameters	
Alarm Threshold	Enter the number of volts at or below which you want an alarm condition to exist. For a low-voltage alarm to be activated, the voltage must remain at or below the alarm threshold for longer than the minimum threshold time. Enter a number from 1 through 139.
Minimum Threshold Time	Enter the length of time, in seconds, during which the voltage must *continuously* remain at or below the alarm threshold before the alarm is activated. Enter a number from 1 through 999.
Alarm Action	Select the destination of the low-voltage alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description
Low-Voltage Parameters (cont.)	
Alarm Message (cont.)	Enter an alarm message to accompany the low-voltage monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *AC-line low voltage (brownout) or power failure.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the voltage must *continuously* remain above the alarm threshold (after returning from a low-voltage alarm condition) before a restore “alarm” is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the voltage was restored to a non-alarm condition.
Restore Action	Select the destination of the restore “alarm” message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description
Low-Voltage Parameters (cont.)	
Restore Message	Enter a message to accompany the low-voltage restore "alarm." You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from low voltage (brownout) or power failure or Low-voltage alarm reset—power line OK.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
High-Voltage Parameters (page 2 of screen)	
Alarm Threshold	Enter the number of volts at or above which an alarm condition exists. For a high-voltage alarm to be activated, the voltage must remain at or above the alarm threshold for longer than the minimum threshold time. Enter a number from 1 through 139.
Minimum Threshold Time	Enter the length of time, in seconds, during which the voltage must *continuously* remain at or above the alarm threshold before the alarm is activated. Enter a number from 1 through 999.

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description
High-Voltage Parameters (cont.)	
Alarm Action	Select the destination of the high-voltage alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the high-voltage monitoring alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *High AC-line voltage.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Minimum Restore Time	Enter the length of time, in minutes, during which the voltage must *continuously* remain below the alarm threshold (after returning from a high-voltage alarm condition) before a restore “alarm” is activated. Enter a number from 1 through 99. **Comments** Use this parameter to provide a history of when the voltage was restored to a non-alarm condition.

continued

Table 10-1. AC-Voltage-Monitoring Parameters (cont.)

Field	Description
High-Voltage Parameters (cont.)	
Restore Action	Select the destination of the restore "alarm" message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Restore Message	Enter a message to accompany the high-voltage restore "alarm." You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Restored from high voltage or High-voltage alarm reset—power line OK.* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the AC-voltage-monitoring function, you must access the Configure AC-Line Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure AC-Line Monitoring Menu. Select the AC-Line Volts option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **6** to select AC-Line Monitoring.

   The system displays the Configure AC-Line Monitoring Menu.
6. Press **1** to select AC-Line Volts.

   The system displays page 1 of the AC-Line Volts screen, shown in Figure 10-1.

```
Gordon Kapes, Inc.                Model 125          16:17:44 UTC 15-MAR-1994
Skokie, Illinois USA
                            AC-Line Volts - Page 1

Status:                                 ENABLED
Name:                                   Phase 1 of PBX Power Source
Sleep Time:                             6   HOURS

Low-Voltage Parameters
----------------------
Alarm Threshold:                        95  VOLTS
Minimum Threshold Time:                 10  SECONDS
Alarm Action:                           LOG ONLY
Alarm Message:
  AC-line low voltage (brownout) or power failure.

Minimum Restore Time:                   5   MINUTES
Restore Action:                         LOG ONLY
Restore Message:
  Restored from low voltage (brownout) or power failure.


                    Press Space Bar to select then <Enter>
                Up/Down Arrow, <F2> to exit, <F4> for next page
```

Figure 10-1. AC-Line Volts Screen

The cursor is initially in the **Status** field.

7. Select a value from the displayed choices in the **Status**, **Alarm Action**, and **Restore Action** fields. Enter text in all other fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**.
Return to the Configure AC-Line Monitoring Menu	Press **F2**.

The AC-Line Volts screen is a 2-page screen. Enter data in the first page, then press **F4** to display the second page.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Configuring Sag Monitoring

To configure AC-line-sag monitoring, you must specify sleep time and alarm action, as well as name the function and compose an alarm message.

Begin with Your Worksheet

Use a working copy of the AC-Line Monitoring worksheet found in Appendix A to specify and record sag monitoring parameters. Refer to Table 10-2 for a description of each parameter. (Refer to Gordon's sidebar, "Using Monitoring Function Status" in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 10-2.

Table 10-2. AC-Sag-Monitoring Parameters

Field	Description
Status	Select the status of the AC-sag-monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the voltage from the AC power line drops below 93 volts for longer than 2 sine-wave cycles at lease once in an approximately 10-second period. Multiple sags occurring within the 10-second period are not counted or recorded by the Model 125. **Comments** Choices have the following meanings: *Not config* — AC-line-sag-monitoring parameters have not been set. This status indicates sag monitoring has not been used before. Verify all parameter settings before enabling monitoring. The system does not monitor line sag when you set this status. The status of the AC-sag-monitoring function is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — AC-sag-monitoring parameters have been set. If the voltage goes below 93 volts for longer than 2 sine-wave cycles, an alarm is activated. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts sag monitoring in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 10-2. AC-Sag-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables sag monitoring for the period of time entered in the **Sleep Time** field then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance.
	Disabled	AC-sag-monitoring parameters have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the AC-sag-monitoring function. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the function *AC-Line Sag*. **Example** You enter *Phase 1 of PBX Power Source*, which is the name for the power line monitored by the function. This name more clearly describes the function. The new name for the power source is *AC-Line Sag—Phase 1 of PBX Power Source.* Notice the system adds the name you devise to the default name. **Comments** The system uses the name on the System Status screen, the Configure AC-Line Monitoring Menu, and entries in the System Activity Log and dial-out report.	

continued

Table 10-2. AC-Sag-Monitoring Parameters (cont.)

Field	Description
Sleep Time	Enter the length of time, in hours, during which the sag-monitoring function is temporarily disabled when set to sleep status. Enter a number from 1 through 99.
Alarm Action	Select the destination of the sag alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the sag alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *AC-line sag detected—investigate further.*

Procedure

To configure the AC-line-sag-monitoring function, you must access the Configure AC-Line Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure AC-Line Monitoring Menu. Select the AC-Line Sag option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **6** to select AC-Line Monitoring.

   The system displays the Configure AC-Line Monitoring Menu.
6. Press **2** to select AC-Line Sag.

   The system displays the AC-Line Sag screen, shown in Figure 10-2.

   The cursor is initially in the **Status** field.

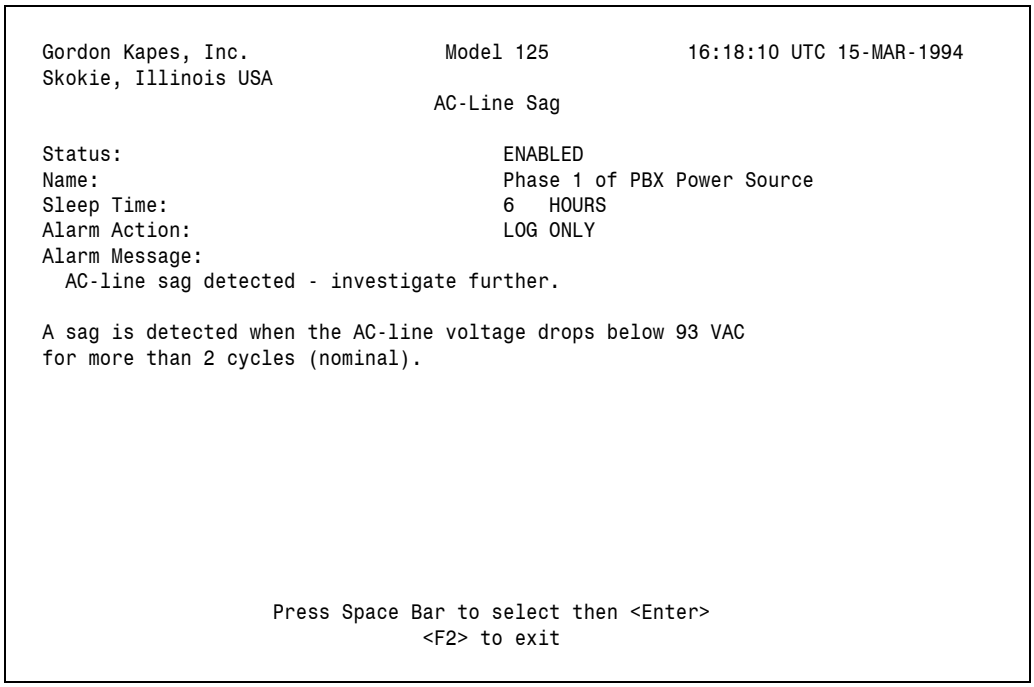

Figure 10-2. AC-Line Sag Screen

7. Select a value from the displayed choices in the **Status** and **Alarm Action** fields. Enter text in all other fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure AC-Line Monitoring Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Configuring Impulse Monitoring

To configure AC-line-impulse monitoring, you must specify sleep time and alarm action, as well as name the function and compose an alarm message.

Begin with Your Worksheet

Use a working copy of the AC-Line Monitoring worksheet found in Appendix A to specify and record impulse monitoring parameters. Refer to Table 10-3 for a description of each parameter. (Refer to Gordon's sidebar, "Using Monitoring Function Status" in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 10-3.

Table 10-3. AC-Impulse-Monitoring Parameters

Field	Description
Status	Select the status of the AC-impulse-monitoring function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The monitoring function activates an alarm when the voltage from the AC power line surges above 260 volts for longer than 100 microseconds at lease once in an approximately 10-second period. Multiple surges occurring within the 10-second period are not counted or recorded by the Model 125. **Comments** Choices have the following meanings: *Not config* — AC-impulse-monitoring parameters have not been set. This status indicates impulse monitoring for the power line has not been used before. Verify all parameter settings before enabling monitoring. The system does not check for line impulse when you set this status. The status of the AC-impulse-monitoring function is shown as NOT CONFIG on the System Status screen and no alarm messages are sent to the System Activity Log or to a dial-out report. *Enabled* — AC-impulse-monitoring parameters have been set. If the voltage from the AC power line surges above 260 volts for longer than 100 microseconds, an alarm is activated. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts impulse monitoring in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 10-3. AC-Impulse-Monitoring Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Disables impulse monitoring for the period of time entered in the **Sleep Time** field then resets status to enabled. The system sets monitoring to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance.
	Disabled	AC-impulse-monitoring parameters have been set. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the AC-impulse-monitoring function. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. By default the system calls the function *AC-Line Impulse.* **Example** You enter *Phase 1 of PBX Power Source*, which is the name for the power line monitored by the function. This name more clearly describes the function. The new name for the power source is *AC-Line Impulse—Phase 1 of PBX Power Source.* Notice the system adds the name you devise to the default name. **Comments** The system uses the new name on the System Status screen, the Configure AC-Line Monitoring Menu, and entries in the System Activity Log and dial-out report.	

continued

Table 10-3. AC-Impulse-Monitoring Parameters (cont.)

Field	Description
Sleep Time	Enter the length of time, in hours, during which the impulse-monitoring function is temporarily disabled when set to sleep status. Enter a number from 1 through 99.
Alarm Action	Select the destination of the impulse alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the impulse alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *AC-line impulse—investigate further*. **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the AC-line-impulse-monitoring function, you must access the Configure AC-Line Monitoring Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure AC-Line Monitoring Menu. Select the AC-Line Impulse option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **6** to select AC-Line Monitoring.

   The system displays the Configure AC-Line Monitoring Menu.
6. Press **3** to select AC-Line Impulse.

   The system displays the AC-Line Impulse screen, shown in Figure 10-3.

   The cursor is initially in the **Status** field.

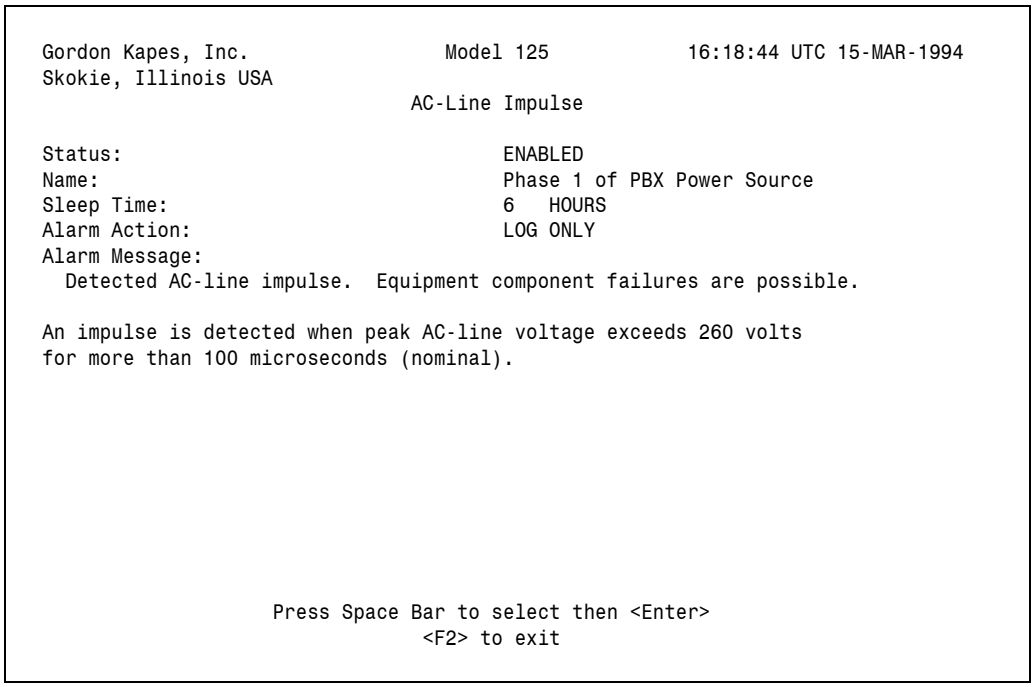

Figure 10-3. AC-Line Impulse Screen

7. Select a value from the displayed choices in the **Status** and **Alarm Action** fields. Enter text in all other fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Return to the Configure AC-Line Monitoring Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Eleven
Configuring Dial-Out Functions

Overview

Configuring dial-out functions consists of

- Setting parameters for three dial-out destinations
- Specifying the minimum time between transmission of reports
- Configuring automatic dial-out and dial-tone tests

This chapter describes how to accomplish these tasks.

Understanding Dial-Out-Destination Functions

A *dial-out destination* is the dial-out receiver whose specific location, or destination, you identify. In most cases a receiver will consist of a modem and a device for printing or storing and displaying text information. Detailed reports generated by the Model 125 are sent to these receivers.

Alternately, a dial-out destination can be a pager. In this case no dial-out report is sent, although limited information can be sent to display-type pagers.

The Model 125 provides dial-out functions for three destinations. These are the

- Primary destination
- Backup destination
- Secondary destination

Primary Destination

The *primary destination* is the location with the highest priority for receiving dial-out reports. This is usually the dispatch center, or other home-base site, for service personnel maintaining equipment connected to the Model 125. The Model 125 attempts to send dial-out reports to the primary destination before any other destination.

Backup Destination

The *backup destination* is the location you choose to receive a dial-out report should the Model 125 be unable to send it to the primary destination.

For example, the Model 125 calls the dial-out receiver located at the primary destination. Instead of making a connection, it receives a busy signal. The system continues to call but receives a busy signal until the maximum number of dial attempts (which you determine) is met. The system then calls the backup destination and attempts to deliver the report to that location.

Although the backup destination may rarely receive a dial-out report, its importance can be crucial when it is needed. It is strongly recommended that you configure a backup destination.

Secondary Destination

The *secondary destination* is an optional destination. Configure and enable the secondary-destination function when you want dial-out reports sent to an interested party whose need for them is not first priority. For example, the secondary destination could be a dial-out receiver in a staff member's home. This destination might be used for monitoring reports received outside normal business hours.

The Model 125 sends reports to the secondary destination after sending them to the primary destination (or the backup destination).

The secondary destination can also be configured for a special dialing status, *enabled for dial-out test only*. When placed in this status, only dial-outs initiated by the automatic dial-out test function, or manual dial-out tests will occur. This status allows a separate receiver to be set up

exclusively to receive automatic dial-out tests from multiple Model 125s. In this way dial-out alarm transmissions associated with the automatic dial-out test function won't "overload" the primary destination. (Refer to Gordon's sidebar "Select Your Receiver Sites Carefully," which follows.)

System administrators may find the illustration provided in Appendix I useful for understanding dial-out transmission flow in more detail.

Select Your Receiver Sites Carefully

Several issues relating to dial-out destinations are worth discussing. As usual, I have strong opinions concerning these points! The first is to use a primary-destination telephone number whose physical termination can be dynamically changed. This is not as odd as it first sounds. In most cases we think of a telephone number as being associated with a fixed location, such as our home or office. For a network of Model 125's this creates a major potential failure point. Should a disaster occur at the primary receiver site, making operation impossible, the integrity of the network is greatly reduced. By using an "800" or other specialized number, the carrier (AT&T, MCI, or Sprint, for example.) can be directed to electronically re-route the incoming calls to another physical location. While the Model 125 has a backup dial-out configuration, this destination is intended to handle temporary, "if all else fails" dial-outs. Long term problems with the primary receiver location should be addressed by sound network design, making the process of dialing the primary number and accessing a receiver almost "bullet-proof."

An additional benefit of using "800" service is that some carriers can make call destination be time or day of week sensitive. An example: During the business day calls can be directed to regional receiver sites, while at night calls would automatically be sent to a 24-hour center. The Model 125s would always call one number, not knowing that they could end up sending their data to a modem in the sunny west coast by day or snowy Minnesota by night!

A point that concerns me is selecting primary and backup receiver locations that are physically separate. Making the backup location in a geographically different locale is crucial! As an example, making both receiver sites in the bay area of Northern California would be a mistake. This would leave a network at risk if a major earthquake knocked out both locations. Placing the backup site in Sacramento would be a better choice. This location would provide several days of "breathing room" while a new primary location is established. Remember, a backup receiver can consist of as little as a dedicated telephone line, modem, and printer.

Still another point involves setting up a separate dial-out receiver exclusively for receiving automatic dial-out tests. This is very useful when multiple Model 125s are implemented in a service network application. In this way if each unit is configured to perform an automatic dial-out test over a short period of time they will call a receiver intended only for this function. The primary receiver won't get "swamped" on a daily or weekly basis. Dial outs caused by actual system problems can be quickly received at the primary destination. Configuring the Model 125 to call the secondary destination only with a dial-out alarm report caused by an automatic dial-out test is quite simple. First set the status of the secondary destination to *Enabled for Dial-Out Test Only*. Then configure the automatic dial-out test to call the secondary destination only. That's all it takes!

Finally, should you want the Model 125 to call a pager, configuring the secondary destination for this purpose is the recommended choice. In this way the primary destination still receives a "hard copy" detailing the site problem. The pager can alert a service tech either to call the Model 125, or to check in with the primary receiver for further info.

—Gordon

Configuring Dial-Out-Destination Functions

Configuring dial-out functions consists of setting the same set of parameters for *each* of the three destinations you intend to implement. These are

- Status
- Destination name and dialing command line
- Maximum number of and time between dial attempts
- Wait-for-connection time
- Data format and flow control
- Courtesy access function and time
- Dial-out format
- Opening and closing messages

Status

You set status for each dial-out function in the same way you set status for the monitoring functions described earlier in this guide. The possible settings are not config, enabled, or disabled. In addition, the secondary destination provides a fourth choice: enabled for dial-out test only. Refer to Table 11-2 and Gordon's sidebar in Chapter Seven for more information about status.

Destination Name and Dialing Command Line

Give each destination a meaningful name, and construct the dialing command line for each. The *dialing command line* is the telephone number for the modem at each destination plus any necessary dialing commands. Should your destination be a pager, the dialing command line can contain information to be sent to a display pager. Table 11-2 includes instructions for creating the dialing command line.

Maximum Number and Time Between Dial Attempts

Determine the number of times you want the Model 125 to redial a number if a busy signal is received or a dial-out is unable to be completed (maximum dial attempts), the time you want the Model 125 to wait between dial attempts, and the time you want the Model 125 to wait for the destination modem to answer and establish connection.

Data Format and Flow Control

Configure the data format and communication flow-control parameters required by the dial-out receiver modem at each destination. You do not set baud rate since the modem automatically tries to make a connection at 2400 bits-per-second. If the modem cannot make a connection at this rate, it falls back to 1200 bps, and then to 300 bps.

Courtesy Access Function and Time

Decide if you wish to use the courtesy-access function and, if so, determine the courtesy-access time. Courtesy access is discussed in detail later in this chapter.

Dial-Out Format

Select either *standard* or *custom* dial-out format. Refer to “Dial-out Format,” later in this chapter for more information.

Opening and Closing Messages

And finally, create the opening and closing messages you want to precede and follow the body of each dial-out report. You can create individual opening and closing messages for each of the three destinations. Opening and closing messages are discussed in detail later in this chapter.

Caution: Make sure you *test* the dial-out functions after you have configured them! Follow the directions for testing the system in Chapter Seventeen, “Testing the System Manually.” Although configuring dial-out functions is not a complicated process, a simple oversight can cause equipment to function improperly—a situation you obviously want to avoid.

Courtesy-Access Function

Courtesy-access is an optional function giving you an opportunity to "talk" with the Model 125 after it calls and delivers a dial-out report. Immediately after the Model 125 delivers a dial-out report, the courtesy-access function sends a message requesting you to type **###** if you want to access the Model 125. The courtesy access time (number of seconds) you specify during configuration is displayed and a countdown begins.

If you type **###** before the time expires, the Model 125 grants you access to the Model 125—just as if you had initiated the call. The screen the Model 125 displays depends upon how the model's access security is configured. Nevertheless, it is the same screen routinely displayed when you call the Model 125.

If you use the courtesy-access function at the primary destination, you must disconnect from the system before the Model 125 delivers the report to the secondary destination. This is also true at the backup destination.

You configure and enable or disable the courtesy-access function for each destination.

Note: You cannot use the courtesy-access function with a terminal set to TTY.

Dial-Out Format

Select either *standard* or *custom* dial-out format. Standard format is more useful when the dial-out receiver includes a device for printing text information or for displaying it on a screen. As shown in Table 11-1 the transmission sequence for standard dial-out format includes messages and other items of transmitted text terminated with carriage returns (<CR>) and line feeds (<LF>). The standard dial-out format also transmits all lines of code 400 and activated alarm codes.

Custom format, which may be most useful with an alphanumeric pager, eliminates carriage returns and line feeds and reduces the amount of transmitted text.

Table 11-1. Standard & Custom Dial-Out Format Transmission Sequences

Standard	Custom
1. Dial destination by executing dialing command line.	1. Dial destination by executing dialing command line.
2. Establish modem carrier.	2. Establish modem carrier.
3. Send: *opening message***<CR><LF>**	3. Send: *opening message*
4. Send alarm code 400: **> Code 400 Time: ...<CR><LF>** ***Site-Text Line 1 ...*<CR><LF>** ***Dial-Out Message*<CR><LF>**	
5. Send alarm that caused dial-out: **> Code: xxx Time: ...<CR><LF>** ***Name (second line)<CR><LF>*** *Alarm message (third line)***<CR><LF>** Repeat if more than one message.	4. Send alarm that caused dial-out: *Alarm message (third line)* Repeat if more than one message.
6. Send: *closing message* **<CR><LF>**	5. Send: *closing message*
7. If courtesy access function is enabled, send: <CR><LF> Type "###" to access Model 125.<CR><LF> Time remaining to access is *n* seconds.<CR><LF> Wait for user to enter ###.	6. If courtesy access function is enabled, send: <CR><LF> Type "###" to access Model 125.<CR><LF> Time remaining to access is *n* seconds.<CR><LF> Wait for user to enter ###.
8. If courtesy access function is disabled or user does not enter ###, hang up modem.	7. If courtesy access function is disabled or user does not enter ###, hang up modem.

Opening and Closing Messages

Each dial-out report the Model 125 compiles and sends consists of the following three parts:

- Opening message
- Report body
- Closing message

The system creates the report body. The body consists of a list of activated alarms preceded by site identification text. Each activated alarm, or item in the list, consists of an alarm-code line supplied by the system plus an alarm-function name and, if you configured it, an alarm message. You can customize the alarm-function name and create the alarm message when you configure the various Model 125 monitoring functions as described in this manual.

You can also create an opening and closing message for a dial-out report. Opening and closing messages are destination specific. This means you can create individual messages for each of the three destinations—primary, backup, and secondary. The report body, of course, is identical for each destination.

While the body of a dial-out report contains different alarms from one report to the next, the opening and closing messages remain the same for each destination.

You compose opening and closing messages, and determine exactly how they work with your system. These messages can contain machine-readable codes as well as human-readable text. Use these messages to provide text identifying the beginning and end of an incoming report for a person, or to provide automated equipment receiving the report with required passwords, access codes, or other entries that must be made in sequence. You can enter as many as 231 characters comprising any combination of text and command codes.

For each destination, determine what descriptive text should be included. This might be the names of people to whom each report must be routed, or perhaps the names of those who must be informed when specific alarm codes are contained in the report body.

Note: "Identifying the Site," in Chapter Five describes how to compose and enter site-identification information, which is always sent at the beginning of a dial-out report. You may wish to review this function to ensure the text of your opening message is coordinated with it.

If the report receiver is an automated piece of equipment such as a printer, you might include commands to produce a form feed or line feed plus ones to print the date and time of the report transmission. You can also use the bell command to cause the dial-out receiver to beep, alerting personnel that a report is on its way, or you can enter a series of passwords or other access codes, each followed a carriage return. Refer to Table 11-2 for a list of commonly used command codes.

Begin with Your Worksheet

Use a working copy of the Telephone & Dial-Out Parameters worksheet found in Appendix A to specify and record dial-out parameters for primary, backup and secondary destinations. Refer to Table 11-2 for a description of each parameter. (Refer to Gordon's sidebar, "Using Monitoring Function Status" in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 11-2.

Make sure you test your dial-out settings after you have configured them. Refer to Chapter Seventeen, "Testing the System Manually."

We Believe in Openness

In designing the Model 125 we strove to let you configure the system *your* way. To this end we made the dial-out message format flexible enough so that it could communicate with virtually any "receiver." We could have created a proprietary format and forced you to buy our receiver software, but I think you're better served with our "open" implementation. While we do have an excellent Windows-based receiver software package, maybe you prefer to use your own system. A corporation may have an existing E-Mail system that they want to serve as the alarm receiver, allowing alarm messages to be viewed, forwarded, stored, and so forth, by locations literally around the world. Another firm may wish to interface Model 125's with an exiting alarm receiver system.

It is important to understand that the opening and closing messages associated with the three dial-out destinations are in no way intended *just* to be used for text. Allowing both control characters and the Model 125's special characters to be transmitted makes creating customized "login scripts" simple. The Model 125 should, in theory, be able to make any connection a person can make using a computer and modem.

—Gordon

Note: If you are configuring a destination to call a pager, use the information in the following section as well as that in Table 11-2 to make the configuration.

Configuring a Destination to Call a Pager

As previously mentioned, a dial-out destination can be configured to call a pager. While quite simple to perform, the configuration procedure is somewhat different from when the receiver site employs a modem. When calling a pager, the dialing command line field is used to convey both the pager telephone number and any information to be displayed on the pager. This is required because the Model 125's modem must generate the touch tones used to communicate with the paging receiver.

Use a working copy of the Telephone & Dial-Out Parameters worksheet found in Appendix A to specify your parameters. The status and destination name fields are used in the same manner for calling a pager as when calling a modem. The dialing command line field must be constructed so as to first call the pager number, then pause to wait for an answer, and then send the touch-tone digits representing the message. Most paging receivers use the touch tone # digit to specify the end of the message and it should be included if appropriate.

The maximum-dial-attempts parameter should be set to ensure a page has actually taken place. Since the Model 125 cannot detect if a page has been correctly sent, it is best to set the attempts to 2 or 3. This is to ensure that a telephone line that is busy is retried. Should the line not be busy, the worst case would occur: the Model 125 calls the pager two or three times. Since they indicate an alarm condition, these multiple pages should not prove to be a problem.

The **Time between Dial Attempts** field should be set for 1 minute. The **Wait for Connection** field should be set for 30 seconds. When configuring a destination to call a pager the remainder of the fields are not used by the dial-out function. The **Data-Parity-Stop Bits**, **Communication Flow Control**, **Courtesy Access Function**, **Courtesy Access Time**, **Opening Message**, and **Closing Message** fields can be left in the default state.

Figure 11-1 shows the secondary destination configured to call a pager.

```
Gordon Kapes, Inc.                Model 125           16:19:46 UTC 15-MAR-1994
Skokie, Illinois USA
                              Secondary Destination
Status:                                 ENABLED
Destination Name:                       Pager - On-Call Service Technician
Dialing Command Line:                   ATDT18005552456,,,,18475554328#
Maximum Dial Attempts:                  2
Time between Dial Attempts:             1   MINUTES
Wait for Connection:                    60 SECONDS
Data-Parity-Stop Bits:                  8-NONE-1
Communication Flow Control:             XON/XOFF
Courtesy Access Function:               DISABLED
Courtesy Access Time:
Dial-Out Format:                        STANDARD
Opening Message:



Closing Message:



                     Press Space Bar to select then <Enter>
                           <F1> for help, <F2> to exit
```

Figure 11-1. Secondary Destination Configured to Call a Pager

Table 11-2. Dial-Out-Destination Parameters

Field	Description
Status	Select the status of the dial-out-destination function. Choices are NOT CONFIG, ENABLED, DISABLED. In addition, the secondary destination includes the choice ENABLED FOR AUTO DIAL-OUT TEST ONLY. **Purpose** The dial-out-destination function identifies the destination to which an alarm report is to be sent; and supplies the appropriate telephone number and other operating parameters required for dial-out. The Model 125 transmits dial-out reports to as many as two dial-out destinations (plus a backup destination) after one or more alarms have been activated. You configure a specific dial-out-destination function for a primary, backup, and secondary destination. **Comments** Choices have the following meanings: *Not config* — Dial-out-destination function parameters have not been set. This status indicates the dial-out function has not been used before. Verify all parameter settings before enabling the function. The system does not transmit a dial-out report to the destination identified by this function when you set this status. The status of the dial-out destination function is shown as NOT CONFIG on the System Status screen. Alarm messages continue to be sent to the System Activity Log. *Enabled* — Dial-out-destination function parameters have been set. The system transmits dial-out alarm reports to the destination identified by the specific dial-out function (primary, secondary, or backup) you are configuring in accordance with the transmission priority of that function. The dial-out function uses the operating parameters you configure.

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description
Status (cont.)	*Disabled* Dial-out-destination function parameters have been set. However, the system does not transmit dial-out alarm reports to the identified destination. *Enabled for Auto Dial-Out Test Only* The status is available only for the secondary destination. Dial-out-destination function parameters have been set. The system transmits only dial-out reports caused by the automatic dial-out test function or manual dial-out tests. The dial-out function uses the operating parameters you configure.
Destination Name	Enter a meaningful name for the dial-out destination. Use a maximum of 39 characters. **Purpose** Enables you to easily identify the primary, secondary, or backup destination. **Example** You enter *Hi-Tek Monitoring Center*. **Comments** The system uses the name in the System Activity Log and on the Test Dial-Out screens for primary, secondary, and backup destinations.
Dialing Command Line	Enter the dialing commands and telephone number for the dial-out receiver you want to call. Use a maximum of 39 characters including dialing commands. **Comments** A dialing command line must always begin with the commands ATD, which alert the modem to dial a number. The system supplies these commands for you and displays them as the first three characters on the command line. You cannot change them. Immediately follow ATD (leave no space) with T to cause touch-tone dialing, or P to cause pulse dialing.

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description
Dialing Command Line (cont.)	Make sure you include all the digits you would dial if you picked up the phone to call the destination manually. You can include some additional commands used by Hayes-compatible modems, such as the following: , (comma) causes a 2-second pause in dialing. You can create longer pauses by using more than one comma. For example, to pause for 6 seconds, use three commas in a row. W causes the modem to wait for a second dial tone before continuing to dial. You can include parentheses and hyphens to make it easier to read the number, but they are not required. **Example** You enter a number that looks like the following: ATDT1,(312)555-2222W33 where: ATD alerts the modem to dial a number (The system displays these commands on the screen. You cannot change them.) T causes the modem to use touch-tone dialing 1 is the long-distance access number , causes the modem to pause two seconds before dialing the area code 312 is the area code 555 is the exchange number 2222 is the line number W causes the modem to wait for a second dial tone before continuing to dial 33 is the extension number

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description
Maximum Dial Attempts	Select the maximum number of times the system dials the destination number if a busy signal is received or a dial-out is unable to be completed. Select a number from 1 through 9. **Comments** If the initial dial-out results in a busy signal, the system tries again after waiting the number of minutes you enter in the **Time between Dial Attempts** field. If the system receives a busy signal upon a redial, it continues to try again until it either makes a connection or meets the maximum-dial-attempts number. If the system reaches the maximum dial-attempts number, it abandons further attempts to redial the number. It then dials the next destination number if available. If the system does not connect with a carrier for any reason except a busy signal, it abandons any attempts to redial the number. It then dials the next destination number.
Time Between Dial Attempts	Enter the number of minutes the system delays before redialing a destination number when receiving a busy signal. Select a number from 1 through 9.
Wait for Connection	Select the number of seconds the system waits for the modem at the dial-out destination to answer and establish communications with the Model 125. Choices are 60, 90, 120. **Comments** When determining this value, take the following into consideration: the time it takes the telephone company to route the call, and the time it takes the modem to answer and provide a carrier. The greatest variable is the number of rings the modem is set to receive before it responds.

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description
Data-Parity-Stop Bits	Select the data format required by the dial-out receiver modem used at the destination. Choices are 8-NONE-1, 7-ODD-1, 7-EVEN-1. Format for each choice is *number of data bits-parity type-number of stop bits*.
Communication Flow Control	Select XON/XOFF if the dial-out receiver supports it. Choices are XON/XOFF or NONE.
Courtesy Access Function	Select the status of the courtesy-access function. Choices are ENABLED or DISABLED. **Purpose** The courtesy-access function enables personnel at the dial-out destination to access the Model 125 using the connection established by the Model 125 when sending a dial-out report. ***Note:*** You cannot use the courtesy-access function with a terminal set to TTY. **Comments** Choices have the following meanings: *Enabled* — Courtesy-access function has been configured and is active. At the end of the dial-out report the system sends the message *Type "###" to access Model 125. Time remaining is nn*, where nn is the number of seconds you select in the **Courtesy Access Time** field. The system counts down the time. When you enter ### before the time has expired, the system displays the menu-system entry point determined by your access-security configuration. This could be the Operator Menu or the **Enter Name** prompt.

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description	
Courtesy Access Function (cont.)	*Disabled*	Courtesy-access function has been configured but is not active. The Model 125 breaks the connection immediately after sending the closing message of a dial-out report. When you set the courtesy-access function to disabled, the system prevents you from entering a value in the **Courtesy Access Time** field, which is left blank.
Courtesy Access Time	Select the number of seconds the system waits for personnel at the dial-out destination to access the Model 125 after the system has delivered a dial-out report. Choices are 30, 60, 90. **Comments** You cannot select a value for this field if you have selected disabled status for the courtesy-access function.	
Dial-Out Format	Select the desired transmission sequence for the destination. Choices are STANDARD or CUSTOM. **Comments** Standard is more useful with a printer or screen display. Custom is more useful with pager. Refer to “Dial-Out Format,” earlier in this chapter for more details.	

continued

Table 11-2. Dial-Out-Destination Parameters (cont.)

Field	Description
Opening Message	Enter text or command codes, or both, to create an opening message for every report sent to the destination. Enter up to 231 characters. **Comments** You can use the following command codes: %D inserts the current date. %H causes the dial out to terminate and the Model 125's modem to hang up. (Typically only used when dialing an alpha-numeric pager.) %T inserts the current time. %Wn inserts a pause in n seconds, where n=1 through 9. ^? inserts a control character, where ?=A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
Closing Message	Enter text or command codes, or both, to create a closing message for every report sent to the destination. Enter up to 231 characters. **Comments** You can use the following command codes: %D inserts the current date. %T inserts the current time. %Wn inserts a pause in n seconds, where n=1 through 9. ^? inserts a control character, where ?=A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the dial-out-destination functions, you must access the Configure Telephone & Dial-Out Parameters Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Telephone & Dial-Out Parameters Menu. Select the option for the destination you want to configure. Select Primary Destination, Backup Destination, or Secondary Destination.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **7** to select Telephone & Dial-Out Parameters.

   The system displays the Configure Telephone & Dial-Out Parameters Menu.
6. Press the option number (1, 2, or 3) corresponding with the dial-out-destination function you want to configure.

The system displays the Primary, Backup, or Secondary Destination screen as determined by the option you selected. You configure identical parameters on each of the three screens. (Remember that there is a fourth status, Enabled for Auto Dial-Out Test Only, for the secondary destination.) The Primary Destination screen is shown in Figure 11-2.

The cursor is initially in the **Status** field.

7. Select a value from the displayed choices in the **Status**, **Maximum Dial Attempts**, **Time between Dial Attempts, Courtesy Access Function**, and **Courtesy Access Time** fields. Enter text in all other fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

```
Gordon Kapes, Inc.                Model 125          16:20:12 UTC 15-MAR-1994
Skokie, Illinois USA
                              Primary Destination
Status:                                ENABLED
Destination Name:                      Hi-Tek Monitoring Center
Dialing Command Line:                  ATDT1,(312)555-2222W33
Maximum Dial Attempts:                 4
Time between Dial Attempts:            2   MINUTES
Wait for Connection:                   60 SECONDS
Data-Parity-Stop Bits:                 8-NONE-1
Communication Flow Control:            XON/XOFF
Courtesy Access Function:              ENABLED
Courtesy Access Time:                  60 SECONDS
Dial-Out Format:                       CUSTOM
Opening Message:
  ^G^G^G%W5Attn: Model 125 alarm messages to follow.^M^J^M^J


Closing Message:
  ^M^JEnd of alarm messages.^M^L


                    Press Space Bar to select then <Enter>
                          <F1> for help, <F2> to exit
```

Figure 11-2. Primary Destination Screen

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display Online Help	Press **F1**.
Return to the Telephone and Dial-Out Parameters Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Setting Minimum Time Between Dial-Outs

Minimum time between dial-outs is the number of minutes that must elapse from the time one dial-out report is sent until a second dial-out report is sent. Use this function to cluster multiple alarms in a single report.

A single activated alarm is sufficient to generate a dial-out report as long as the minimum time between dial-outs has elapsed. If the time has not elapsed, all activated alarms are accumulated during the time period and sent in a single report.

At a site where alarms are activated infrequently, setting a short time may ensure the system promptly reports alarms while not overusing the dial-out receiver. However, setting a longer time for a site that generates frequent, low-priority alarms may help use resources more efficiently, and curtail the transmission of many small and less-manageable reports.

Setting the optimum time between dial-outs depends upon the frequency with which alarms are activated at a specific site and the urgency (or response priority) of those alarms. You may need to analyze the number and content of reports on a site-by-site basis before determining the optimum time setting.

You can set the time from 1 through 9 minutes.

One Case where Less is Better

I hope you find the parameter minimum time between dial-outs a useful one. My fear was that the Model 125 would end up deluging an alarm receiver with many calls over a short period of time, *all* related to the same problem. An example would be an AC power failure that causes multiple alarms to occur over a three or four minute period. By setting the minimum time between dial-outs toward the end of its range, say 8 minutes, the alarms generated by the power failure would be sent in just two groups. The first dial-out would alert you to the first alarm or alarms, while the second dial-out, 8 minutes later, would send all the rest. Minimizing the number of dial-outs helps service personnel better assimilate alarm data, while freeing the alarm receiver to handle alarm dial-outs from other Model 125s.

—Gordon

Begin with Your Worksheet

Use a working copy of the Telephone & Dial-Out Parameters worksheet found in Appendix A to record this time. Enter the time from the worksheet using the Model 125 software as described in the following procedure.

Procedure

To configure the minimum time between dial-outs, you must access the Configure Telephone & Dial-Out Parameters Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Telephone & Dial-Out Parameters Menu. Select Minimum Time Between Dial-Outs.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.

5. Press **7** to select Telephone & Dial-Out Parameters.

   The system displays the Configure Telephone & Dial-Out Parameters Menu.

6. Press **4** to select Minimum Time Between Dial-Outs.

   The system displays the Minimum Time Between Dial-Outs screen, shown in Figure 11-3.

   The cursor is initially in the **Minimum Time between Dial-Outs** field.

7. Select the time from 1 through 9 minutes.

To:	Take this Action:
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Return to the Configure Telephone and Dial-Out Parameters Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

```
Gordon Kapes, Inc.                Model 125           16:20:36 UTC 15-MAR-1994
Skokie, Illinois USA
                        Minimum Time Between Dial-Outs

Minimum Time between Dial-Outs:         1   MINUTES

This function minimizes the number of dial-outs a single
set of alarms may cause.









                    Press Space Bar to select then <Enter>
                                <F2> to exit
```

Figure 11-3. Minimum Time Between Dial-Outs Screen

Configuring the Automatic Dial-Out Test

The purpose of the automatic dial-out test is to send a dial-out message to one or more of the dial-out destinations on a regular basis. The dial-out test confirms that the Model 125's dial-out functions and hardware connections are working correctly. If the Model 125 is unable to dial out, it sends an error message to the System Activity Log, alerting you that genuine alarms may not reach their intended destinations.

The automatic dial-out test is not intended to be used for *initial* testing of the configurations you made for dial-out functions. Instead, use the manual tests described in Chapter Seventeen. These enable you to test configurations immediately and repeatedly.

The automatic dial-out test employs a *randomized* dial-out time. This is designed to curtail simultaneous transmissions of dial-out test messages from many Model 125s to a single dial-out receiver.

To configure the automatic dial-out test, select

- Starting day of the week
- Time of day
- Time range

The system routinely performs the test within the time range you select. (You can also select daily if you want the system to perform the test every day of the week.) Using the time of day you select as a starting point, the system randomly assigns a dial-out time within the time range. The system displays the dial-out time on the Automatic Dial-Out Test screen (Figure 11-4) and on the System Status screen.

For example, you determine the Model 125 should perform the automatic dial-out test between two and three o'clock every Tuesday morning. You select Tuesday as the start day and 02:00 as the start time. Since you want the test conducted between two and three, you must select the one-hour time range. Once you have made your selection, the system immediately assigns and displays a dial-out time somewhere between two and three o'clock.

The system uses the assigned dial-out time *every* Tuesday unless you repeat the steps described above. When you repeat the steps, the system assigns a new randomized dial-out time.

In addition to enabling the system to generate a dial-out time, you indicate the destinations the system is to test for dial-out and you enter a test message.

Begin with Your Worksheet

Use a working copy of the Telephone & Dial-Out Parameters worksheet found in Appendix A to specify and record dial-out test parameters. Refer to Table 11-3 for a description of each parameter. (Refer to Gordon's sidebar, "Using Monitoring Function Status" in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 11-3.

Table 11-3. Automatic Dial-Out Test Parameters

Field	Description
Status	Select the status of the test function. Choices are NOT CONFIG, ENABLED, DISABLED. **Purpose** The automatic dial-out test periodically sends the test message you enter to the destinations you specify. This not only tests the dial-out functions, but also provides confirmation that dial-outs are correctly transmitted. You specify how often the system conducts the dial-out test (weekly or daily) and upon what day of the week, while the system determines the exact time of the test within the time range you specify. **Comments** Choices have the following meanings: *Not config* — Automatic dial-out test parameters have not been set. This status indicates the dial-out function has not been used before. Verify all parameter settings before enabling the function (Refer to sleep status.). The system does not conduct the dial-out test when you set this status. The status of the dial-out test function is shown as NOT CONFIG on the System Status screen. *Enabled* — Dial-out test parameters have been set and the system conducts the dial-out test according to these parameters. Immediately after you enable the test function, the system sets sleep status until it is time to conduct the test. The System Status screen displays sleep status along with the time remaining before the next test is conducted. *Disabled* — Automatic dial-out test function parameters have been set. However, the system does not conduct the test.

continued

Table 11-3. Automatic Dial-Out Test Parameters (cont.)

Field	Description
Start Day	Select the day of the week from which you want the system to calculate the actual dial-out time. Choices are SUNDAY, MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, and DAILY. **Comments** Start day is usually the day you want the system to conduct the test. For example, if you select Tuesday with a start time of 01:00 and a time range of two hours, the system generates the dial-out time somewhere between one o'clock and three o'clock Tuesday morning. However, if you select Tuesday with a start time of 23:00 and a time range of five hours, the system generates the dial-out time somewhere between eleven o'clock Tuesday night and four o'clock Wednesday morning. If you choose daily, the system conducts the test every day of the week.
Start Time	Select the hour that begins the time range during which the system randomly generates the actual dial-out time. Choices are 00:00 through 23:00. **Comments** If you select 01:00 and a time range of two hours, the system generates the dial-out time somewhere between one o'clock in the morning and three o'clock in the morning.
Time Range	Select the number of hours during which the system generates the dial-out time. Select a number from 0 through 9. **Comments** If you select 0 the test conducts the test at the start time.

continued

Table 11-3. Automatic Dial-Out Test Parameters (cont.)

Field	Description
Call Primary Destination	Select YES if you want the system to test transmission to the primary destination. Otherwise, select NO.
Call Backup Destination	Select YES if you want the system to test transmission to the backup destination. Otherwise, select NO.
Call Secondary Destination	Select YES if you want the system to test transmission to the secondary destination. Otherwise, select NO.
Dial-Out Message	Enter a message to confirm the system has conducted the automatic dial-out test. Refer to Appendix B, Alarm Codes, to examine the format of the message. Use a maximum of 77 characters. **Example** You enter a message such as *Model 125 performing dial-out test. Hello, I'm fine thanks. And you?* **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the automatic dial-out test function, you must access the Configure Telephone & Dial-Out Parameters Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Telephone & Dial-Out Parameters Menu. Select Automatic Dial-Out Test.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **7** to select Telephone & Dial-Out Parameters.

   The system displays the Configure Telephone & Dial-Out Parameters Menu.
6. Press **5** to select Automatic Dial-Out Test.

   The system displays the Automatic Dial-Out Test screen, shown in Figure 11-4.

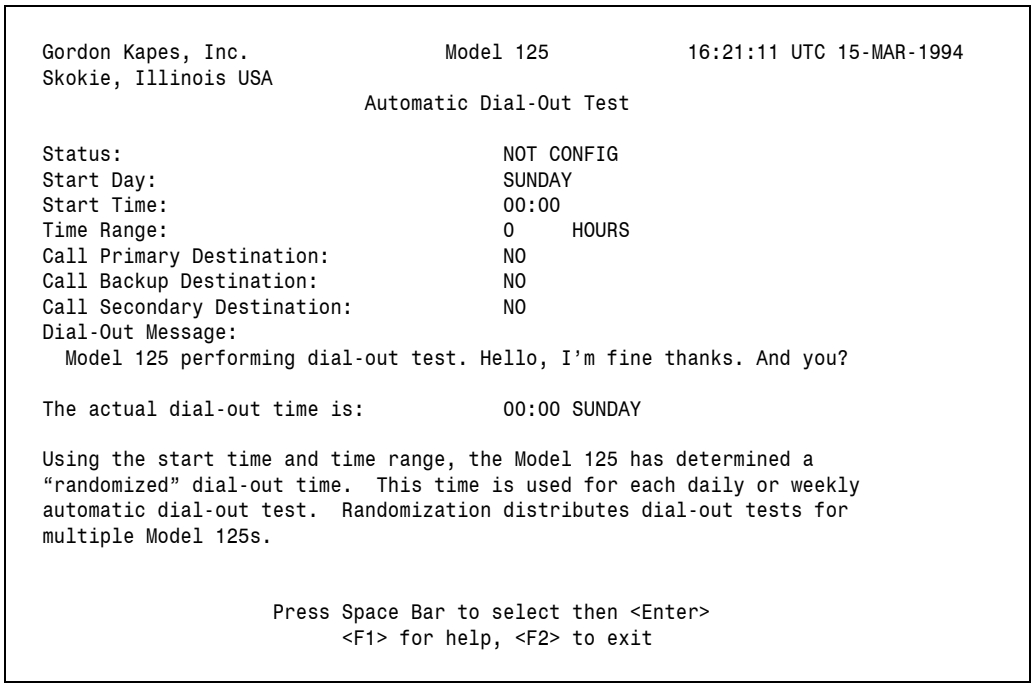

Figure 11-4. Automatic Dial-Out Test Screen

The cursor is initially in the **Status** field.

7. Select a value from the displayed choices in all fields except the **Dial-Out Message** field, where you enter text. To make selections and entries, refer to the following. Make sure you press ↵ to save each

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display Online Help	Press **F1**.
Return to the Configure Telephone and Dial-Out Parameters Menu	Press **F2**.

entry.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Setting Automatic-Dial-Tone Test Status

The purpose of the automatic dial-tone test is to make certain that a phone line is available for dial-out and dial-in access. If the system does not receive the dial tone or is unable to break the dial tone by sending a touch-tone or pulse digit when it conducts the test, it sends an alarm message to the System Activity Log. The system displays the results of the test on the System Status screen.

The test is conducted as follows: The modem first looks for the presence of a dial tone. If there is no dial tone, the line fails the test. If there is a dial tone, the modem sends one touch-tone digit. If the dial tone goes away, the test is passed for both touch-tone and pulse dialing. If the dial tone remains, the modem sends one pulse digit. If the tone goes away, the test is passed for pulse dialing. If the dial tone still remains, the line fails the test.

When enabled, the system performs the dial-tone test 1 hour after AC power has been restored and every 24 hours thereafter.

You can run this test manually as described in Chapter Seventeen.

Since parameters for this test are preconfigured as described in the preceding paragraphs, you need only enable or disable the test by setting status.

Begin with Your Worksheet

Use a working copy of the Telephone & Dial-Out Parameters worksheet found in Appendix A to specify dial-tone test status. Refer to Table 11-4 for a description of each status. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 11-4.

Table 11-4. Automatic Dial-Tone Test Status

Field	Description
Status	Select the status of the test function. Choices are ENABLED and DISABLED. **Comments** Choices have the following meanings: *Enabled* — The system conducts the dial-tone test 1 hour after AC power has been restored and every 24 hours thereafter. Immediately after you enable the test function, the system sets sleep status until it is time to conduct the test. The System Status screen displays sleep status along with the time remaining before the next test is conducted. *Disabled* — The system does not conduct the test when you set disabled status.

Procedure

To enable or disable the dial-tone test function, you must access the Configure Telephone & Dial-Out Parameters Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Telephone & Dial-Out Parameters Menu. Select Automatic Dial-Tone Test.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **7** to select Telephone & Dial-Out Parameters.

   The system displays the Configure Telephone & Dial-Out Parameters Menu.
6. Press **6** to select Automatic Dial-Tone Test.

   The system displays the Automatic Dial-Tone Test screen, shown in Figure 11-5.

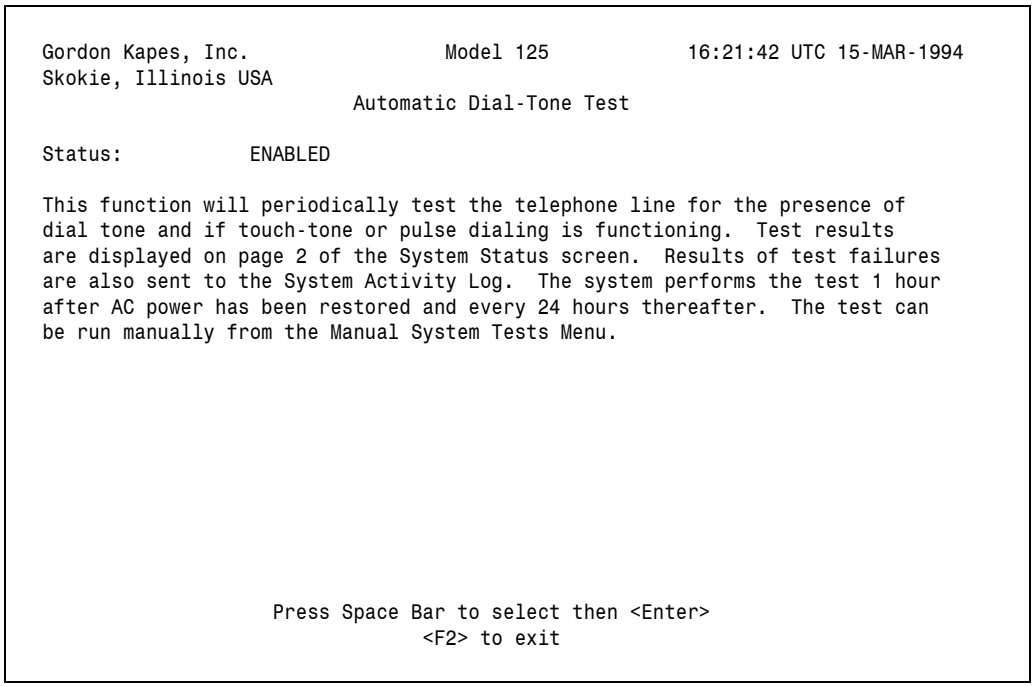

Figure 11-5. Automatic Dial-Tone Test Screen

The cursor is initially in the **Status** field.

7. Press the spacebar to select the desired status.
8. To return to the Operator Menu, press **F2** repeatedly.

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Chapter Twelve
Configuring Relay Functions

Overview

The Model 125 provides two relay functions enabling you to energize two built-in relays either automatically or manually. Since you can connect each relay to an external device such as a warning light or a cooling fan, you can use the relay function to operate such devices whenever certain conditions occur, or whenever you trigger the function manually.

You can associate single or multiple Model 125 alarms with either or both of the relay functions. This capability enables the Model 125 to flash a warning light when the low DC-voltage alarm is activated, for example. Or, if you choose to do so, you can implement the function to turn on a cooling fan when the high-temperature alarm is activated.

Exactly how you choose to use the relay functions is up to you—but do not limit your imagination to their automatic capabilities. For example, you can access the function through the modem to activate a relay from a remote location. You might want to reset equipment in this way. Refer to Gordon's sidebar for a more detailed description of this, as well as other application ideas.

This chapter describes how to configure the two relay functions. You can associate one or more of the input sources listed in Table 12-1 with each relay function. As you can see by reviewing the list in the table, configured alarm conditions, including ASCII data matching (described in Chapter Thirteen), are available as input sources. In addition, you can associate either relay function with the alarms for internal battery failure, access security, and failure to connect with primary, backup, and secondary destinations.

Use the Relay worksheet found in Appendix A to select input sources for a specific relay. You can associate each source with either or both relays.

When the Model 125 activates an alarm that has been specified as an input source, the system triggers the relay function. The relay function energizes the relay, which, of course, operates the connected device.

You can configure the function to keep the relay activated from 1 second through 999 hours, or to “follow” the alarm state of a monitoring function.

Steady and Pulsating Output Modes

You can also configure the function to provide steady or pulsating relay output. When you select steady, the relay remains energized for the entire output duration. This would cause a connected lamp, for example, to shine steadily. When you select pulsating, the relay is energized for 1 second, then released for 1 second throughout the output duration—causing the lamp to continuously flash on and off.

In either steady or pulsating output mode, each relay function is a non-retriggerable, one-shot function. This means that once an alarm triggers the function, the relay is energized (steady or pulsating) for the specified period of time (output duration). Should other alarms be activated during this time, they are ignored. These alarms do not extend the output duration; and there is no cumulative effect.

Alarm activation, rather than the duration of an alarm condition, is what triggers the relay function. For example, the high-temperature alarm is activated, which in turn triggers a relay function with an output duration configured for 1 hour. The high-temperature condition persists for 4 hours. The associated relay is energized for only 1 hour, however. Should the temperature monitoring function enter sleep status for 2 hours and then reactivate the high-temperature alarm because this condition still exists, the relay function is triggered once again. This is because the output duration for the first triggering of the relay has expired and because alarm *activation* has once again occurred.

Follow Output Mode

When you set output mode to follow, the relay “follows” the real-time state of the associated monitoring function. In other words, the relay is energized when the monitoring function is in an alarm condition and turned off when the function returns to normal. When the function returns to an alarm state, the relay is reenergized and so forth. You do not set output duration when using this mode.

You can use follow mode with the contact, temperature, DC-volts, and AC-volts monitoring functions only.

When more than one monitoring function is associated with a relay in follow mode, the relay is energized as soon as an alarm condition for any one of the monitoring functions is activated. The relay remains energized as long as at least one of the monitoring functions is in an alarm state. Consequently, it is possible for one function to trigger a relay and then return to normal while another function maintains the energized state of the relay by going from normal to alarm before the first function returned to normal.

Controlling a Relay Manually

You can manually turn off an energized relay at any time. Simply change the current relay operating state on the System Status screen, or in the **Current Relay State** field on the relay configuration screen (Figure 12-1).

Finally, you can set the status of each relay function to not config, enabled, and disabled. These options are similar to their counterparts for monitoring functions (refer to Table 12-1 for descriptions).

Some Suggestions on Neat Ways of Using the Relays

The relays are provided for you to use in a wide variety of applications. Only your imagination limits the uses. Here are several examples that come to mind:

1. *Application:* Reporting Model 125-related problems. It's important that the Model 125 works correctly at all times. Since it aids reliable system operation, the Model 125 must always be ready to function as required. Several Model 125 alarms detect possible problems that could affect its ability to function correctly. Alerting personnel when these alarms are activated is very important.

   Solution: I'd place a "beehive" type lamp on the wall above the entry door to the communications equipment room. I'd have a nice sign engraved, and mounted near the lamp. The sign states that if the light is lit immediately contact the party responsible for the telecommunications equipment. This could be a person inside the organization, or the outside firm responsible for maintaining the system. I'd wire the lamp power using one of the Model 125's relay contacts. (A number of nice power sources are available from Gordon Kapes, Inc.) I'd program the relay to pulsate for 99 hours, and select activation under these conditions: internal battery failure, dial-tone test failure, and primary destination failure. The alarms selected are all critical to the health of the Model 125 installation. If the battery fails the test, it indicates that correct operation under battery power won't be possible. Failure of the dial-tone test indicates that dial-outs won't happen, and remote access to the Model 125's modem isn't possible. Primary destination failure says that critical alarms won't be reported to the most important service location.

   Result: Critical Model 125 alarms cause the light to shine. Technical or non-technical personnel are alerted and report this occurrence. Service to the Model 125 can then be quickly performed.

2. *Application:* Reporting telecommunications equipment room environmental problems.

   Solution: Install another "beehive" lamp, this time in the office of the building manager or person responsible for the physical plant. I'd program the relay to activate when a high- or low-temperature condition is detected. I'd install a water sensor on the floor, and connect it to one of the contact inputs. It too would trigger the relay.

   Result: Several important problem conditions are addressed. The HVAC system can be monitored for problems. A flood can be dealt with.

3. *Application:* Allow remote reset of equipment. Sometimes equipment problems require a complete reset or "reboot" to get things going again. Usually this function can be performed only by on-site personnel. Performing a reset can be especially important when a system is experiencing problems of unknown origins, where a fresh start is the only way to get equipment going again.

   Solution: Connect one of the relays to the reset leads on a selected piece of equipment. This could include the main reset on a PBX system. Program the relay to operate steadily for 10 seconds. Do not program the relay to automatically respond to any alarm. Use the System Status screen to remotely activate the relay, which in turn causes the system to reset.

   Result: Remote troubleshooting can now include the "hardcore" but sometimes necessary reboot function. In most cases, you should implement this function only while a problem is being addressed. Once a system is again stable, disconnect this potentially destructive feature.

—Gordon

Begin with Your Worksheet

Use a working copy of the Relay worksheet found in Appendix A to specify and record relay configurations. Refer to Table 12-1 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 12-1.

Table 12-1. Relay Parameters

Field	Description
Status	Select the status of the relay function. Choices are NOT CONFIG, ENABLED, DISABLED. **Purpose** When triggered by an alarm (input source), each relay function energizes a relay contact. An energized relay contact can operate an connected device such as a warning light. **Comments** Choices have the following meanings: *Not config* — Relay-function parameters have not been set. This status indicates the relay function has not been used before. Verify all parameter settings before enabling the function. The system does not trigger the relay function when you set this status. The status of the relay function is shown as NOT CONFIG on the System Status screen. *Enabled* — Relay-function parameters have been set. The function energizes the relay for the output duration when the input-source alarms you specify occur, or when you manually activate the relay. *Disabled* — Relay-function parameters have been set. However, activated alarms do not trigger the relay function. Manual control is still available.
Name	Enter a meaningful name for the relay. Use a maximum of 39 characters. **Purpose** Provides a name more meaningful than that supplied by the system. For example, choose a name enabling you to easily identify the device connected to the relay. By default the system calls the two relays *Relay 1* and *Relay 2*.

continued

Table 12-1. Relay Parameters (cont.)

Field	Description
Name (cont.)	**Example** You enter *Equipment Room Warning Light* as the name for Relay 1. The new name for the relay is *Relay 1—Equipment Room Warning Light*. Notice the system adds the name you devise to the default name. **Comments** The system uses the name on the System Status screen and the Configure Relay Menu.
Current Relay State	Displays the current relay state. The function also allows the current relay state to be changed. Choices are ON and OFF.
Output Mode	Select whether the relay remains open (steady) or opens and closes periodically (pulsating) when triggered for the desired output duration. Or select follow if you want the relay to follow the real-time state of an associated monitoring function. Choices are STEADY, PULSATING, and FOLLOW. **Comments** For example, if the relay is connected to a warning light, select steady to make the light shine continuously when the relay is energized. Select pulsating to make the light flash on and off. Pulsating continuously opens the relay for 1 second, then closes it for 1 second for the output duration. If you want the warning light to shine when an alarm condition is present and turn off when the condition is absent, select FOLLOW.
Output Time Units	Select the unit of measurement associated with the number you specify for output duration. Choices are SECONDS, MINUTES, and HOURS.

continued

Table 12-1. Relay Parameters (cont.)

Field	Description
Output Time Units (cont.)	**Comments** For example, if you want the relay to remain energized for 9 minutes, select MINUTES in the field and enter 9 in the **Output Duration** field. You cannot select a unit of measurement if the output mode is follow.
Output Duration	Enter the number of seconds, minutes, or hours you want the relay to remain energized once the function is triggered. Enter a number from 1 through 999. **Comments** For example, you want a warning light to flash for 9 minutes after the relay function is triggered. You enter 9 in this field and select MINUTES in the **Output Time Units** field. You cannot enter a number if the output mode is follow.
Source	
	For each alarm source listed below, select YES in the **Trigger?** field if you want the alarm to trigger the relay function. Otherwise, select NO.
Contacts 1-8	For each contact, select YES to trigger the relay function when the system activates the contact alarm.
(page 2 of screen)	
Temperature 1	Select YES to trigger the relay function when the system activates either the low-temperature or high-temperature alarm produced by the internal temperature sensor.
Temperature 2	Select YES to trigger the relay function when the system activates either the low-temperature or high-temperature alarm produced by the external temperature sensor.

continued

Table 12-1. Relay Parameters (cont.)

Field	Description
Source (cont.)	
DC Volts 1	Select YES to trigger the relay function when the system activates either the low-voltage or high-voltage alarm for DC Volts 1.
DC Volts 2	Select YES to trigger the relay function when the system activates either the low-voltage or high-voltage alarm for DC Volts 2.
AC-Line Volts	Select YES to trigger the relay function when the system activates either the AC low-voltage or high-voltage alarm.
AC-Line Sag	Select YES to trigger the relay function when the system activates the AC-line sag alarm. **Comments** You cannot select YES for this source if the output mode is follow.
AC-Line Impulse	Select YES to trigger the relay function when the system activates the AC-line impulse alarm. **Comments** You cannot select YES for this source if the output mode is follow.
Battery Test	Select YES to trigger the relay function when the system activates the alarm for battery failure as determined by internal battery test. **Comments** You cannot select YES for this source if the output mode is follow.
Access Security	Select YES to trigger the relay function when the system activates the access-security alarm. **Comments** You cannot select YES for this source if the output mode is follow.

continued

Table 12-1. Relay Parameters (cont.)

Field	Description
Source (cont.)	
Dial-Tone Test	Select YES to trigger the relay function when the system fails either the automatic or manual dial-tone test. **Comments** You cannot select YES for this source if the output mode is follow.
Port 1 DTR	Select YES to trigger the relay function when the system activates the DTR alarm for Serial Port 1. **Comments** You cannot select YES for this source if the output mode is follow.
Port 2 DTR	Select YES to trigger the relay function when the system activates the DTR alarm for Serial Port 2. **Comments** You cannot select YES for this source if the output mode is follow.
Port 3 DTR	Select YES to trigger the relay function when the system activates the DTR alarm for Serial Port 3. **Comments** You cannot select YES for this source if the output mode is follow.
Primary Destination	Select YES to trigger the relay function when the system dials out but fails to make a connection with the primary destination. **Comments** You cannot select YES for this source if the output mode is follow.

continued

Table 12-1. Relay Parameters (cont.)

Field	Description
Source (cont.)	
Backup Destination	Select YES to trigger the relay function when the system dials out but fails to make a connection with the backup destination. **Comments** You cannot select YES for this source if the output mode is follow.
Secondary Destination	Select YES to trigger the relay function when the system dials out but fails to make a connection with the secondary destination. **Comments** You cannot select YES for this source if the output mode is follow.
Match Strings	Select YES to trigger the relay function when the system activates any ASCII-data-matching alarm. **Comments** You cannot select YES for this source if the output mode is follow.

Procedure

To configure the relay functions, you must access the Configure Relay Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then access the Configure Relay Menu. Select the option for the relay function you want to configure.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **8** to select Relays.

   The system displays the Configure Relay Menu.
6. Press the option for the relay function you want to configure.

The system displays page 1 of the Relay 1 or Relay 2 screen as determined by the option you selected. You configure identical parameters on either screen. The Relay 1 screen is shown in Figure 12-1.

The cursor is initially in the **Status** field.

7. Select a value from the displayed choices in the **Status**, **Output Mode**, **Output Time Unit**, and, where appropriate, each of the **Trigger Source** fields. Enter text in the **Name** and **Output Duration** fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

   The Relay screen is a 2-page screen. Enter data in the first page, then press **F4** to display the second page.

```
Gordon Kapes, Inc.                Model 125          16:22:18 UTC 15-MAR-1994
Skokie, Illinois USA
                                Relay 1 - Page 1

Status:                 ENABLED
Name:                   Equipment Room Warning Light
Current Relay State:    OFF
Output Mode:            STEADY
Output Time Unit:       SECONDS
Output Duration:        1

Trigger?    Source
--------    ------
NO          Contact 1
NO          Contact 2
NO          Contact 3
NO          Contact 4
NO          Contact 5
NO          Contact 6
NO          Contact 7
NO          Contact 8

                  Press Space Bar to select then <Enter>
       Up/Down Arrow, <F1> for help, <F2> to exit, <F4> for next page
```

Figure 12-1. Relay 1 Screen

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**.
Display Online Help	Press **F1**
Return to the Configure Relay Menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Chapter Thirteen
Configuring ASCII-Data Matching

Overview

Some communications and data equipment may be configured to automatically generate information (ASCII data) from their maintenance serial ports. This information can take the form of alarms activated by the equipment, messages reporting the results of automatic tests, or other types of data.

The Model 125 has the capability of monitoring Port 1 and Port 2 for specific messages emitted from a connected device. When the Model 125 detects a message, it activates an alarm. As with other activated alarms, the Model 125 sends the alarm to either the System Activity Log, or to both the log and a dial-out alarm report.

You determine which emitted messages the Model 125 detects by specifying a match word for each message. When the Model 125 detects a data string within a message that is identical to the configured match word, it activates the associated Model 125 alarm.

An ASCII-data-matching alarm can contain the name and alarm message you configure, as well as the actual message emitted by the connected device.

This chapter explains how to configure the ASCII-data-matching function.

Note: The ASCII-data-matching function is temporarily disabled for a specific port when an operator is connected to that port using a remote-access device or an on-site-access device. The Model 125 never monitors Port 3 regardless of use or configuration.

Setting ASCII-Data-Matching Parameters

Before beginning configuration, verify that the equipment under consideration generates ASCII data. If you are not sure about this, consult the documentation provided with the equipment. If the equipment cannot be configured to automatically generate ASCII data, you cannot use the ASCII-data-matching function.

Before configuring the ASCII-data-matching function, you must select the emitted messages or alarms you want the Model 125 to detect. You must also know the exact format of each selected message. Again, consult the documentation provided with the connected equipment and keep it handy as you read the instructions contained in this chapter.

If you have configured other Model 125 monitoring functions, you will recognize several ASCII-data-matching parameters: status, name, sleep time, alarm action, and alarm message. In general, use these parameters with the matching function as you would with other Model 125 monitoring functions. They are explained in detail in Table 13-1. Parameters unique to the data-matching function are discussed in the following paragraphs.

Creating a Match-Word Record

The Model 125 enables you to create a match-word record for up to 32 match words. (Although you are limited to specifying 32 match words, using one or more wild-card characters in a match word could enable the system to detect hundreds of messages.)

Enter a specific match word in each match-word record you create. Each match-word record acts like a distinct monitoring function, concerned only with monitoring for its own match word. You can turn monitoring on and off for each record using routine Model 125 status parameters. You can enter a name and alarm message for each record, giving you the same plain-English capability available with other Model 125 alarms. And of course, you can direct the Model 125 alarm generated by a detected message to either the System Activity Log or to both the log and a dial-out alarm report.

Associating a Match-Word Record with a Port

In addition, you must associate each match-word record with a specific port to be monitored. This is either Port 1 or Port 2 on the Model 125. If you want to monitor both ports for the same match word, you must enter two match-word records—one monitoring Port 1 and the other monitoring Port 2.

Creating a Match Word

You determine which emitted messages the Model 125 detects by specifying a match word for each message. A *match word* is a unique combination of characters that identifies a message. A match word consists of as many as ten characters including punctuation marks, control characters, spaces, numbers, and wild-card characters.

Figure 13-1 shows the format of a message emitted by a typical PBX. As an example, imagine you want the Model 125 to activate an alarm when the PBX emits the illustrated message (or data string). Asking the Model 125 to monitor for a match of the entire data string is not efficient. It makes better sense to monitor for a shorter string that uniquely identifies the entire message. In this example, the unique identifier is Alarm 007. *Alarm 007* is the match word.

Using the Wild-Card Character

You can also use the wild-card character *?* in the match word you create. The ? replaces one character in the match word and stands for any character (including a space) that the system may encounter in an emitted data string. By using the wild card character in a match word, you require the system to detect a set of messages rather than a single message. For example, using the match word *Alarm 00?* causes the system to detect all messages containing the data strings *Alarm 000* through *Alarm 009*.

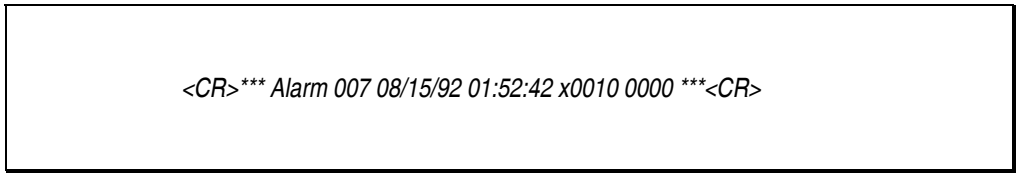

Figure 13-1. Sample Message Showing Format

Using the Scheduled-Monitoring Function

You can temporarily turn off the ASCII-data-matching function for each match record according to a specific schedule. By setting the desired disable start time, disable duration, and disable schedule and then enabling the scheduled-monitoring function, you can disable ASCII-data-matching according to the schedule you desire.

For example, if you set the disable start time to 08:00 hours, the duration to 9 hours and the disable schedule to Monday through Friday, you schedule the Model 125 to disable the ASCII-data-matching function during regular business hours each day of the business week. The ASCII-data-matching function is set to sleep mode during this time, and then is reset to enabled after 17:00 hours each business day. On Fridays the function is enabled after 17:00 hours and remains enabled throughout the entire weekend.

Using Message Ignore

Devices generating alarms and other messages from their maintenance serial ports commonly store a historical record of these messages in an internal database. This may be true of the equipment connected to your Model 125 serial port.

The message-ignore parameter enables the Model 125 to discriminate between a current or “live” alarm and one that is simply a historical record. The following scenario illustrates how possible confusion can be avoided: The Model 125 is connected to the *first* maintenance port on a device. You may decide to view or print the historical records using a local terminal or teleprinter connected directly to the *second* maintenance port on the device. As a result of this operation, the device emits database records through *both* of its maintenance ports, thus impacting the Model 125. The Model 125 examines the data, recognizes it as historical or “non-alarm” data, and does not activate an alarm.

If this scenario is a possibility in your environment, make sure you configure the message-ignore feature for each match-word record.

Consult the documentation accompanying the equipment connected to the Model 125. You must identify both the character used by the equipment to identify a stored ASCII-data string, and the position of the character as it occurs in the stored string relative to the start of the line.

Capturing a Message

Use the capture-mode parameters to capture the actual text of a detected message and send it to the log or to both the log and a dial-out report.

You can capture a message beginning with the first character in the match word as it appears in the message, or at the beginning of the message line (line start), which is defined as the first character following the carriage return (or carriage return/line feed) immediately preceding the line that contains the match word.

In either case, the system ends the captured message line with the first carriage return encountered after the match word or after 132 characters have been captured, whichever comes first.

Using the example shown in Figure 13-1, the system captures the following when you specify *capture from match*:

Alarm 007 08/15/92 01:52:41 x0010 0000 ***

Notice the system captures the message from the beginning character of the match word, which is the A in Alarm.

But when you specify *capture from line start*, the system captures the following:

*** Alarm 007 08/15/92 01:52:41 x0010 0000 ***

Here the system captures the message from the first character following the carriage return preceding the match word. This is the first asterisk (*) in the message.

In both examples, the system terminates the captured message at the same point. This is because it encounters a carriage return at this point.

The captured message is appended to and becomes a permanent part of the alarm-code record. Like all other Model 125 alarms, it is sent to the log or to both the log and a dial-out alarm report.

Begin with Your Worksheet

Make a working copy of the ASCII-Data Matching worksheet for each match-word record you want to create. The worksheet is found in Appendix A. Refer to Table 13-1 for a description of each parameter. (Refer to Gordon's sidebar, "Using Monitoring Function Status" in Chapter Seven for further information about monitoring status.) Enter data from the worksheet using the Model 125 software as described in the procedure following Table 13-1.

Table 13-1. ASCII-Data-Matching Parameters

Field	Description
Match Word Number *n* (where *n* is the record number)	The system displays the number of the match-word record you are completing.
Status	Select the status of the ASCII-data-matching function. Choices are NOT CONFIG, ENABLED, SLEEP, DISABLED. **Purpose** The matching function activates an alarm when the system detects a match word generated by the selected port. If configured, the system captures the message, or ASCII-data string, associated with the match word. **Comments** Choices have the following meanings: *Not config* — ASCII-data-matching parameters have not been set for this match-word record. Not-config status indicates data matching for this record has not been used before. Verify all parameter settings before enabling data matching. The system does not monitor for a match word when you set this status. The status of ASCII-data matching for this match-word record is shown as NOT CONFIG on the System Status screen and no alarm message is sent to the System Activity Log or to a dial-out report. *Enabled* — ASCII-data-matching parameters have been set. If a data string generated by the specified serial port matches the specified match word, the system activates an alarm. The system sends a message to the System Activity Log or to both the log and a dial-out report. After the alarm is activated, the system puts ASCII-data matching *for this match-word record* in sleep status for the period of time you indicate in the **Sleep Time** field.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description	
Status (cont.)	*Sleep*	Temporarily disables ASCII-data matching *for this match-word record.* Disables data matching for the period of time entered in the **Sleep Time** field. Then resets status to enabled. The system sets data matching to sleep status automatically after an alarm has been generated. You can also set sleep status manually. The purpose of sleep status is twofold: First, it prevents a single-fault condition from activating more than one alarm, giving you time to correct the problem before monitoring is reset to enabled. Second, it lets you manually disable monitoring for a preset time period while equipment is being repaired or undergoing maintenance.
	Disabled	ASCII-data-matching parameters have been set for this match-word number. However, the system takes no action should an alarm condition occur.
Name	Enter a meaningful name for the message represented by the match word. Use a maximum of 39 characters. **Purpose** Provides a meaningful name for the message emitted by the connected device. (If you are using one or more wild cards in the match word, you may need to devise a name representing a group of messages.) **Example** You enter *Too many data packets*, which is a plain-English name for Alarm 007. **Comments** The system uses the name on the System Status screen and entries in the System Activity Log and dial-out report.	

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Monitored Port	Select the serial port you want monitored for the match word. Choices are 1, 2.
Match Word	Enter the "word" for which the system must find a match before activating an alarm. Use from 1 through 10 characters. **Comments** You can include the following characters in your match word: • All alphanumeric characters • Special characters (punctuation marks) • Control characters ^A through ^Z • Spaces • The wild-card character *?* Although a control character is displayed on the screen as two characters (^K, for example), the system counts only one character. The ASCII-data-matching function is case sensitive. If you use upper-case letters in a match word, the system only finds a match when identical upper-case letters are generated from the port. Use the wild-card character ? to enable the system to match a set of messages rather than a single message. The ? replaces only one character in the match word. The ? stands for any character (including a space) that the system may encounter. Since it is a wild-card character, you cannot use ? as a punctuation mark in a match word. You can use as many as nine ?s in a match word. **Examples** *Alarm007*, *Alarm 007*, *Alarm,007*, *Alarm 007^K* are all valid, but different, match words. The system does not match *Alarm 007* with *alarm 007*. The system matches *Alarm 00?* with the words *Alarm 000*, through *Alarm 009*. The system matches *Alarm 0??* with the words *Alarm 000*, through *Alarm 099*.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Disable Status	Select the status of the scheduled-monitoring function. Choices are NOT CONFIG, ENABLED, DISABLED. **Purpose** The scheduled-monitoring function allows you to disable, or turn off, the ASCII-data-matching function according to a specific, reoccurring time schedule. To periodically disable ASCII-data matching you must enable this function. To configure the scheduled-monitoring function, set parameters in the following fields: **Disable Status**, **Disable Start Time**, **Disable Duration**, **Disable Schedule**. **Comments** Choices have the following meanings: *Not config* — Scheduled monitoring parameters have not been set. Not-config status indicates scheduled monitoring has not been used before. Verify all parameter settings before enabling scheduled monitoring. Enabled — Scheduled monitoring parameters have been set. The scheduled-monitoring function disables ASCII-data matching according to the configured schedule. Ensure the ASCII-data-matching function is also enabled. (Refer to the **Status** field earlier in this table.) *Disabled* — Scheduled monitoring parameters have been set. However, the system does not disable ASCII-data matching. The ASCII-data-matching function is continuously enabled.
Disable Start Time	Select the hour of the day you want scheduled monitoring to disable ASCII-data matching. Choices are 00:00 through 23:00. **Comments** You cannot select minutes. Choices are restricted to every hour on the hour.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Disable Duration	Enter the number of hours ASCII-data matching is to remain disabled after the disabled start time. Enter a number from 1 through 24.
Disable Schedule	Select the days of the week ASCII-data matching is to be disabled. Choices are DAILY, MON-FRI **Comments** Choices have the following meanings: *Daily* — The scheduled-monitoring function disables ASCII-data matching every day at the disabled start time. ASCII-data matching remains disabled for the disable duration. *Mon-Fri* — The scheduled-monitoring function disables ASCII-data matching on Mondays through Fridays only. During this period the function disables ASCII-data matching at the disable start time for the disable period. On Saturdays and Sundays the ASCII-data-matching function is not disabled. It continues to monitor for the match word.
Message-Ignore Status	Select the status of the message-ignore function. Choices are ENABLED, DISABLED. **Purpose** The message-ignore function enables the system to discriminate between current and previously stored alarms. The system uses the message-ignore character and the ignore position to make this discrimination. **Comments** Choices have the following meanings: *Enabled* — The system does not activate an alarm when it detects a message containing the message-ignore character in the ignore position.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Message-Ignore Status (cont.)	*Disabled* The system activates an alarm whenever it detects a match. It does not check for the message-ignore character in the ignore position. **Comments** Typically a device such as a PBX stores previously generated alarms and other messages in its own database or historical event log. The device associates a specific character in a specific character position with each stored alarm. This identifies the message as previously generated rather than currently activated. By enabling the message-ignore function you request the system to discriminate between current and previously stored alarms, ensuring that only current alarms are reported by the Model 125.
Message-Ignore Character	Enter the alphanumeric or control character (^A through ^Z) used by the connected device to identify an ASCII-data string *stored in the device's database* rather than currently generated as an alarm. **Comments** To identify this character, consult the documentation provided with the connected device. **Example** You enter % as the message-ignore character.
Ignore Position	Enter the position of the message-ignore character in the ASCII-data string. Enter a number from 1 through 99. **Comments** To identify this position, consult the documentation provided with the connected device. The position is the sequential number of the ignore character as counted from line start (from the first character following the carriage return, or carriage return/line feed, preceding the line containing the match word). **Example** You enter *1* as the ignore position.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Sleep Time	Enter the length of time, in hours, during which the ASCII-data-matching function is temporarily disabled when set to sleep status. Enter a number from 1 through 99.
Capture Mode	Select a choice to indicate whether you want the system to capture the ASCII-data string (message) associated with the match word, and if so, what character position represents the beginning of the captured string. Choices are CAPTURE OFF, CAPTURE FROM MATCH, CAPTURE FROM LINE START. **Comments** Choices have the following meanings: *Capture Off* The system does not capture the data string. *Capture From Match* The system captures the data string. It identifies the beginning of the string as the first character of the match word. The system begins with this character and captures all following characters until it either encounters a carriage return, or captures a total of 132 characters, whichever comes first. *Capture From Line Start* The system captures the data string. It identifies the beginning of the string as the first character following the carriage return (or carriage return/line feed) preceding the line containing the match word. The system begins with this character and captures all following characters until it either encounters a carriage return, or captures a total of 132 characters, whichever comes first.

continued

Table 13-1. ASCII-Data-Matching Parameters (cont.)

Field	Description
Alarm Action	Select the destination of the ASCII-data-matching alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the ASCII-data-matching alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Example** You enter a message such as *Use code 157 to reset CPU board*. **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

Procedure

To configure the ASCII-data-matching function, you must access the ASCII-Data Matching screen. First, with the Operator Menu displayed, access the System Menu. Second, access the Configuration Menu. Then select the ASCII-Data Matching option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **4** to select Configure System.

   The system displays the Configuration Menu.
5. Press **9** to select ASCII-Data Matching.

   The system displays page 1 of the ASCII-Data Matching screen, shown in Figure 13-1.

   The cursor is initially in the **Status** field.

```
Gordon Kapes, Inc.                Model 125          16:22:54 UTC 15-MAR-1994
Skokie, Illinois USA
                          ASCII-Data Matching - Page 1

Match Word Number 1
Status:                                  ENABLED
Name:                                    PBX 9000
Monitored Port:                          1
Match Word:                              ABCDEFGHIJ
Disable Status:                          ENABLED
Disable Start Time:                      01:00
Disable Duration:                        1  HOURS
Disable Schedule:                        DAILY
Message-Ignore Status:                   ENABLED
Message-Ignore Character:                %
Ignore Position:                         1
Sleep Time:                              6   HOURS
Capture Mode:                            CAPTURE FROM LINE START
Alarm Action:                            DIAL OUT & LOG
Alarm Message:
An ASCII-data match has occurred on Port 1.

                    Press Space Bar to select then <Enter>
    <F1> for help, <F2> to exit, <F3> for previous page, <F4> for next page
```

Figure 13-1. ASCII-Data Matching Screen

6. Select a value from the displayed choices in the **Status**, **Monitored Port**, **Message Ignore Mode**, **Capture Mode**, and **Alarm Action** fields. Enter text in all other fields. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**.
Display Online Help	Press **F1**.
Return to the Configuration Menu	Press **F2**.

The ASCII-Data Matching screen is a 32-page screen. Each page constitutes an individual match-word record.

7. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

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Chapter Fourteen
Configuring Access Security

Overview

One of the most important benefits offered by the Model 125 is its ability to provide robust protection against intrusion by unauthorized personnel. This is called access security; and the Model 125 provides it while maintaining ease of use and operating efficiency.

A would-be intruder can “hack” away seeking access to the Model 125 and even more frightening, gaining access to the maintenance port on a PBX system! The Model 125 protects both itself and connected equipment. Organizations using equipment with minimal security features on their serial ports, as is the case with many older PBX models, find this advantage alone worth the purchase of the Model 125.

The Model 125 enables you to configure access security using two different modes. These modes are intended to meet the security needs posed by different situations and circumstances. This chapter explains both security modes and provides guidance for choosing between them. Both modes are easy to configure, as explained in this chapter. Choose the one best suited to the needs of your organization.

Understanding and Choosing Security Modes

The two security modes are named *open-operator-menu* and *name-password*. Open-operator-menu provides basic security suitable for use with many devices containing good internal security, while name-password mode offers advanced features designed for maximum protection.

Operator, System, and Administrator Levels

The framework of each security mode is based upon how each interacts with the three major levels of the Model 125 menu system. These are the operator level, the system level, and the administrator level. Each level is represented in the software by an introductory menu bearing the level name. Each level represents functions grouped according to type of task to be performed and who is to perform the task.

Operator-level tasks consist of connecting to one of the three serial ports on the Model 125. System-level tasks consist of configuring the system and conducting manual system tests. Administrator-level tasks consist of configuring and implementing access security. All three levels enable you to view the System Activity Log and the System Status screen, although these are optional functions at the operator level.

Not only do the three levels organize Model 125 functions logically, but they also group tasks according to personnel job function and authority. Consequently both access-security modes provide security built around these three levels.

Levels Hierarchically Organized

From the viewpoint of access security, the three levels are hierarchically organized. Operator level is the basic level; *all* people authorized to use the Model 125 are authorized to use the operator level.

System level is a “step above” operator level. Those for whom system level is authorized must either use a system-level password or have system-level privilege to access the level.

Administrator level is two “steps above” operator level. When administrator level is authorized for an individual, he or she is automatically granted system-level access as well. Administrator level requires an *additional* password, or a privilege level that includes operator, system, and administrator.

Understanding the Open-Operator-Menu Mode

The open-operator-menu mode provides a basic form of security that is adequate for many organizations. This security mode is intended for situations where the devices connected to the Model 125 provide sufficient security through their own internal systems, and where large numbers of people need to operate the Model 125 as efficiently as possible.

Figure 14-1 conceptualizes the structure of the open-operator-menu mode[1]. As shown in the figure, this mode allows open access at the operator level.

People accessing the Model 125 through the maintenance port are always connected directly to the Operator Menu. They are not required to enter a password.

Those accessing the Model 125 through a remote-access device are directly connected to either the Operator Menu or one of the serial ports. You determine this connection, which is called the *initial connection*, when you configure the open-operator-menu mode. If you configure the initial connection as Operator Menu, the person dialing in through a modem is directly connected to the Operator Menu. From there, he or she can connect to one of the serial ports or view the System Activity Log or System Status screen (if you have permitted access to these options from

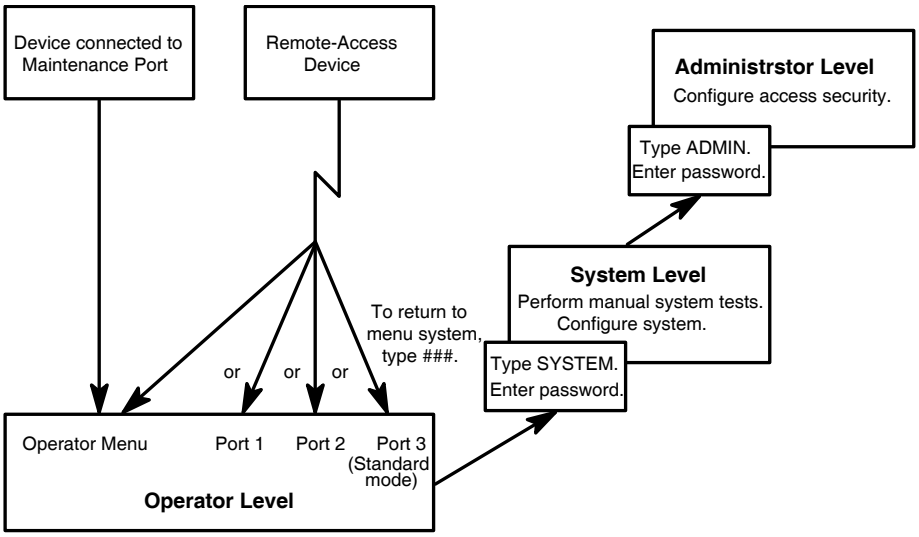

Figure 14-1. Open-Operator-Menu Mode

[1]Devices illustrated are VT100 compatible. VT100-compatibility prompt is disabled. Refer to "Customizing Operator-Menu Options and Terminal Emulation" in Chapter Five for more information.

the Operator menu. Refer to “Customizing Operator-Menu Options and Terminal Emulation,” in Chapter Five.)

If you configure the initial connection as one of the ports, those dialing in are connected directly to the device connected to the port, and the Model 125 becomes transparent. When the connected device provides sufficient security, this configuration offers a distinct advantage: those dialing in need access only one security system rather than two. If a person is aware of the Model 125 and types **###** when using a VT100 terminal (**%%%** if TTY), he or she can display the Operator Menu as well.

Provides System and Administrator Password Protection

As shown in Figure 14-1, the open-operator-menu mode provides password protection for both the system and administrator levels of the menu system. Authorized personnel must enter the appropriate password to gain access to either of these levels. You assign an individual password for each level, but not for each person. Each password must be from five through fifteen characters and can contain punctuation marks and numbers if you wish.

Access-Restriction Function

A person attempting access to either the system level or administrator level must enter the correct password within the number of tries you set. If the person does not, the system disallows further attempts for the time period you specify by enabling access restriction.

Access restriction, a function intended to discourage intruders, generally refers to the system’s response to further access attempts. This function works in two different ways. With the open-operator-menu mode, the access-restriction response is always *deny access* (no system or admin access), and applies to those seeking access through both the maintenance port and a remote-access device. *Deny access* means the system simply displays a message stating access is denied because of incorrect password, and that access restriction is in effect. This is a basic and straightforward response that remains in effect throughout the access-restriction time period.

With the name-password mode (explained later in this chapter), you can select one of three different responses designed to discourage intruders using a remote-access device.

Access-Restriction Alarm

Once the access-restriction time period (or duration) expires, the system disables access restriction and resumes normal operations. However, one or more repeated attempts to enter an incorrect password may once again cause the system to enable access restriction.

Should the system repeatedly enable access restriction, it could be a signal that a genuine intruder is at work. Consequently, the system generates an alarm after it enables access restriction one or more consecutive times—you specify the exact number from one through nine. As with other Model 125 alarms, you also specify an alarm destination and an alarm message.

Using the Open-Operator-Menu Mode

The Model 125 is shipped with the open-operator-menu mode enabled. Configured system-level and administrator-level passwords as shipped from the factory are **#####**.

Caution: It is strongly recommended you change the factory-supplied passwords immediately after installing the Model 125. Leaving these passwords intact, even if you do not intend to use the open-operator-menu mode on a routine basis, is taking a risk not worth the possible consequences of system intrusion.

You may want to use the open-operator-menu mode until you actually have the Model 125 up and running. This is an easy mode to configure and it requires less planning than the name-password mode.

Also keep in mind that the open-operator-menu mode may be appropriate for occasional situations or events within your organization. Training is an example. You might want to provide technical training by having students access equipment connected to the Model 125. The open-operator-menu mode provides password-free access, saving time and permitting students to devote full attention to the lesson.

Understanding the Name-Password Mode

The name-password mode is designed to provide maximum protection for both the Model 125 and the devices connected to it. If the devices connected to your Model 125 offer minimal protection, you should seriously consider using the name-password mode.

Illustrated in Figure 14-2, the name-password mode uses the user profile, or user privilege, concept of system security[2]. Here you, as the system administrator, design as many as fifteen individual user name-and-password combinations to which you assign one of three privilege levels.

Privilege Levels

Privilege levels are operator, system, and administrator. These privilege levels correspond with the operator, system, and administrator levels of the menu system. A person using a name and password assigned operator privilege, for example, can only access operator-level functions in the Model 125. Specifically, he or she can connect to one of the serial ports or view the System Activity Log or System Status screen, if these last two options are available on the Operator Menu.

A person using a name-and-password combination with system privilege can work at the system level as well as the operator level. And a person with administrator privilege can work at all three levels.

As shown in figure 14-2, all people using the Model 125 under the name-password mode must enter a valid name-and-password combination to access the Model 125. This is true whether one accesses the system from Maintenance Port 3 or from a remote-access device.

[2]Devices illustrated are VT100 compatible. VT100-compatibility prompt is disabled. Refer to "Customizing Operator-Menu Options and Terminal Emulation" in Chapter Five for more information.

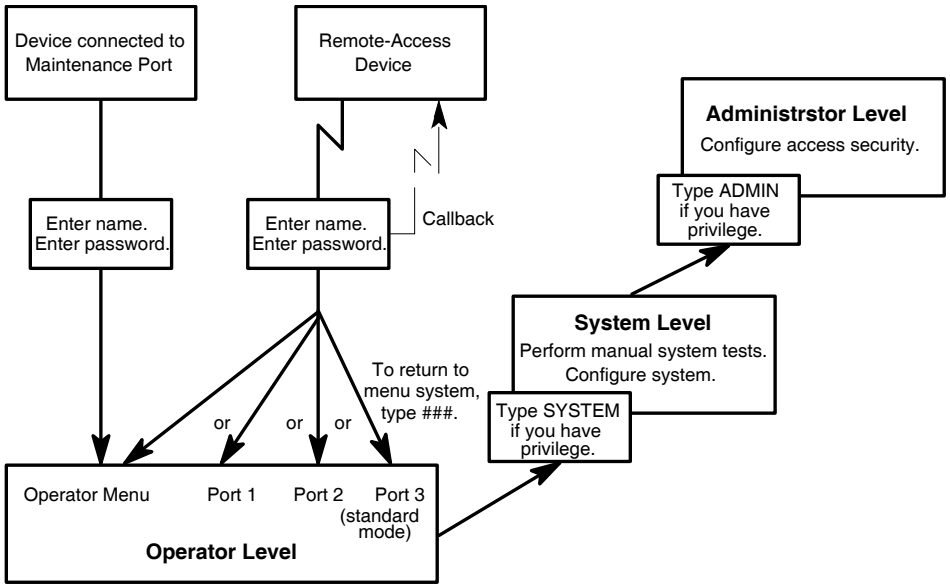

Figure 14-2. Name-Password Mode

Once access has been granted, however, a person can use any part of the system for which he or she has privilege. If you have system privilege, you can access the system level by simply typing **system**; if you have administrator level, you type **admin**.

Callback Feature of Name-Password

By including a callback dialing command line along with a name-and-password combination and privilege level, you request callback for that specific name and password. When callback is requested, the Model 125 calls the remote-access device back after the caller has entered a valid name and password. Consequently, a caller cannot gain access to the Model 125 until after it calls back.

This feature provides further protection from an intruder who might discover a valid user name and password. When callback is in effect a person cannot access the Model 125 from just any remote-access device. The intruder must be using the machine corresponding with the telephone number stored in the Model 125.

Additional Features of Name-Password

Configuring the name-password mode in general is similar to configuring the open-operator-menu mode. One major difference is that for name-password mode, you design as many as fifteen name-and-password combinations, each with a specific security privilege and optional callback dialing command line.

In addition, however, the name-password mode enables you to use two configuration parameters in a more elaborate and sophisticated way designed to help you maintain security while discouraging and confusing would-be system intruders.

Access-Restriction Modes

The first parameter is access restriction. Name-password security allows you to choose among three access-restriction modes for use with those accessing the Model 125 through a modem (remote-access device). During the access-restriction time period, these modes provide deceptive and frustrating responses such as having the Model 125 establish a carrier and then hang up each time a person calls. (Refer to Table 14-2 for a detailed description of each mode.) When you access the Model 125 through the maintenance port, you are simply denied access (the same response used with open-operator-menu security).

Customized User Name and Password Prompts

Second, you can customize the user name and password prompts. You can enter meaningful language for these prompts such as *Enter Name:* and *Enter Password:* (which are the defaults), or you can create a subterfuge such as ****System Down, Try Later****. Only authorized users know that they must enter their user name or password at a prompt such as this.

The factory-supplied user name under the name-password mode is **guest.** The password is also **guest**.

Caution: It is strongly recommended you change the factory-supplied user name and password immediately after installing the Model 125. Leaving these intact, even if you do not intend to use the name-password mode on a routine basis, is taking a risk not worth the possible consequences of system intrusion.

The Many Faces of Access Security

Of all the features contained in the Model 125, the one I'm most excited about is the access security system. Many hours were spent getting it ready for you to use. A number of different implementations were tried until we were satisfied. I sincerely believe that the Model 125 gives you the best set of security "tools" available anywhere. The open-operator-access mode is intended for those applications that don't require the Model 125 to protect the devices connected to the serial ports. In this mode the Model 125 can be configured to look invisible. Two passwords, system and administrator, are used to protect the Model 125's menu system.

The Model 125's real power comes into play with the name-password mode. With this mode almost all aspects of accessing the Model 125 and devices connected to its serial ports can be tailored to give the level of security that your site requires. Each access security parameter can be adjusted over a wide range. Parameters can be "friendly," helping a user gain access to the system. Or they can turn downright nasty, giving no help at all and allowing no margin of error.

One note about whether to use callback or not: Callback is a good means of controlling access and many firms insist on using it. However, it doesn't work well with field support technicians who require access from a variety of locations. To that end we've allowed you to configure names and passwords without specifying callback. To ensure good security, use the ability to make names and passwords up to 15 characters long. The longer and more unique a name and password combination is, the harder it is to "hack."

Interesting Notes Department: You might wonder why the Model 125 waits 15 seconds before performing a callback. This delay was put in to help ensure that the telephone line connected to the Model 125's modem has disconnected from the person who requested the callback. Some smart hackers have learned that by staying on the line after requesting a callback, they can fool the device into thinking that it is dialing out after receiving a "new" central office dial-tone! A callback device that simply goes on-hook for one or two seconds before attempting to dial out may never really be disconnected from the calling party. Instead of getting a new dial tone the device is still connected to the intruder's computer! The intruder supplies the progress tones and viola, callback never really takes place and the system is history.

By making the prompts configurable, you can be as open or cryptic as you need. You can even have no prompts! I once fooled the Model 125's software engineers by simply changing both prompts to read "Access Denied - System Busy."

By restricting access for up to 99 minutes, repeated attempts by an auto-dialing computer running a "security breaker" program is severely hampered. The Model 125's ability to generate "intruder" alarms allows personnel to be notified, and access security to be increased as soon as abnormal activity is detected.

continued

The Many Faces of Access Security (cont.)

Using the numerous configurable parameters, you can quickly develop access security implementations with a wide range of protection levels. There are some situations where the open-operator-menu mode is appropriate, such as when the Model 125 must look invisible to users accessing one of the serial ports. You might also use this mode when the devices connected to the serial ports already contain good access security. In most cases I feel that the name-password mode is the best bet. The following paragraphs describe three hypothetical systems that use this mode:

Gordon's Light-Duty Security System (aka Access Lite!)

For applications that need modest security, the name-password mode defaults are appropriate. You can leave the prompts that explain what the user is to enter. You can even increase the number of tries and the number of access restrictions required to generate an alarm. I'd configure alarms to be sent to the log only. Names and associated passwords can be names and words commonly used. Callback can be used where appropriate.

Gordon's Moderate-Duty Security System

Modifying the previous example, I'd first reduce the number of tries to 2, and extend the access restriction time to 10 minutes. I'd make an alarm cause a dial-out. I'd require that the names and passwords be upper and lower case. Callback should be used whenever possible.

Gordon's Hard-Core, Don't-Mess-With-Me Security System

Access security can be set to really "nail down" the system. The first thing to do is change the prompts. Make them obtuse, misleading, identical, or simply contain no characters. Set the number of tries to 1, and the access restriction time to 60 minutes. Set the number of restrictions for an alarm to 1, and ensure that dial-out upon alarm is configured. Delete all existing passwords and use random letter and number combinations along with punctuation marks for the newly authorized names and passwords. Use 8 or 10 characters minimum. Require callback with all user names. On a daily or weekly basis change the access-restriction mode so that the equipment appears to be changing (metamorphosing!) to a more advanced life form.

—Gordon

Factory Access & Inactivity Timer Parameters

Two security-related parameters are included in configuring access security. These are disabling factory access and setting the inactivity timer. The system enables you to configure these parameters under either security mode.

Factory Access

A sophisticated encryption-decryption scheme is built into the Model 125 software. This scheme enables Gordon Kapes, Inc. personnel to access any Model 125 by dialing the unit and then issuing special commands.

Gordon Kapes, Inc. provides factory access as a service to its customers. Should you lose your passwords, your Model 125 may be immobilized. The factory can provide authorized personnel with emergency access after written verification of the request has been received. For security reasons, however, you may want to turn factory access off. You can do so by using the factory-access parameter.

Caution: If you turn off factory access and then lose your passwords, there is no way for you to access the Model 125 and no way for Gordon Kapes, Inc. to provide emergency access. You must return the unit to the factory for unlocking.

Inactivity Timer

The Model 125 contains an inactivity timer that automatically disconnects you when you have not used the system for a certain period of time. This ensures that a user who forgets to exit and disconnect does not prevent someone else from using the unit. Enter the number of minutes of inactivity you want the Model 125 to monitor before automatically disconnecting. (Refer to Appendix C for more detailed information about the inactivity timer.)

Configuring the Open-Operator-Menu Mode

This section describes how to configure the open-operator-menu mode. Use the Security Access worksheet, then enter your configuration parameters using the Model 125 menu system.

Begin with Your Worksheet

Use a working copy of the Security Access worksheet found in Appendix A to specify and record security-access parameters for the open-operator-menu mode. Refer to Table 14-1 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 14-1.

Table 14-1. Open-Operator-Menu Parameters

Field	Description
Security Mode	To configure access security under the open-operator-menu mode, select OPEN-OPERATOR-MENU. Choices are OPEN-OPERATOR-MENU and NAME-PASSWORD. **Comments** This table describes parameters for configuring access security under the open-operator-menu mode. Refer to Table 14-2 for descriptions of parameters used with the name-password mode.
Initial Modem Connection	Select the Model 125 entity to which you are initially connected after accessing the system through a remote-access device. Choices are OPERATOR MENU, PORT 1, PORT 2, and PORT 3 (if Port 3 is configured as a standard port). **Example** If you select OPERATOR MENU, the system displays the Operator Menu immediately after you establish a connection with the Model 125. **Comments** This parameter applies only when you access the Model 125 through a remote-access device. When you access the Model 125 through Maintenance Port 3, the system *always* connects you to the Operator Menu.
Password Tries Allowed	Select the number of consecutive times a user can attempt to enter a valid password before the system enables access-restriction mode. Select a number from 1 through 9. **Example** You select 3 as the number of password tries allowed. A user enters an incorrect password three times in a row. The system denies access and enables access-restriction mode.

continued

Table 14-1. Open-Operator-Menu Parameters (cont.)

Field	Description
Password Tries Allowed (cont.)	**Comments** The value you select for this parameter is used for both system-level and administrator-level passwords. If you select 3, for example, the system allows a user three consecutive attempts at entering a system-level password *and* three consecutive attempts at entering an administrator-level password.
Access-Restriction Duration	Enter the length of time, in minutes, for which the system enables the access-restriction mode. Enter a number from 1 through 99. **Comments** The system automatically disables the access-restriction mode after the time period you enter has expired. The longer the period of time you select, the more protection from intruders is provided.
Modem Access-Restriction Mode	You cannot make an entry or selection in this field. **Comments** This parameter is permanently set to NO SYSTEM OR ADMIN ACCESS when you are configuring in the open-operator-menu mode. The system denies, or prevents, a user from making further attempts to enter a password for the period of time you select in the **Access-Restriction Duration** field. When you access the Model 125 through Port 3, the access-restriction mode is permanently set to NO SYSTEM OR ADMIN ACCESS as well.
Consecutive Restrictions for Alarm	Select the number of consecutive times the system must enable the access-restriction mode in order to activate an alarm. Select a number from 1 through 9. **Example** You set consecutive restrictions for alarm to 2. Password tries allowed is 2, and access-restriction duration is 1 minute.

continued

Table 14-1. Open-Operator-Menu Parameters (cont.)

Field	Description
Consecutive Restrictions for Alarm (cont.)	A user enters an incorrect system-level password two times in a row. The system enables access-restriction mode preventing the user from making further password entries for 1 minute. After 1 minute, the system disables access restriction allowing the user to enter additional passwords. The user again enters two incorrect passwords. The system enables access-restriction mode for the second time. Since this is the second consecutive restriction, the system activates an alarm.
Alarm Action	Select the destination of the alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message. **Comments** The alarm is activated after the system has enabled the access-restriction mode the number of consecutive times specified in the **Consecutive Restrictions for Alarm** field. **Example** You enter a message such as *WARNING: Detected potential intruder activity*. **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.

continued

Table 14-1. Open-Operator-Menu Parameters (cont.)

Field	Description
(page 2 of screen)	
System-Level Password	Enter the system-level password. Use from 5 through 15 characters. **Comments** The access security system is case sensitive—if you use upper-case letters here, the user must use corresponding upper-case letters when attempting to access the system. You can include special characters (punctuation marks) and numbers in the password if you wish. You *cannot* include spaces in the password or leave it blank. ***Caution***: Ensure you change the system-level password supplied at the factory immediately upon installing the Model 125.
Administrator-Level Password	Enter the administrator-level password. Use from 5 through 15 characters. **Comments** The access security system is case sensitive—if you use upper-case letters here, the user must use corresponding upper-case letters when attempting to access the system. You can include special characters (punctuation marks) and numbers in the password if you wish. You *cannot* include spaces in the password or leave it blank. ***Caution***: Ensure you change the administrator-level password supplied at the factory immediately upon installing the Model 125.

continued

Table 14-1. Open-Operator-Menu Parameters (cont.)

Field	Description
(page 3 of screen)	
Should the factory be able to gain access?	Select YES to enable factory access. Select NO to disable factory access.
Set inactivity timer to:	Enter the length of time, in minutes, that the system monitors inactivity before disconnecting. Enter a number from 5 through 999 minutes. **Comments** The best time period to enter depends upon the work requirements and personnel specific to your situation. Remember, the larger the number you enter, the longer personnel may be prevented from accessing the system. Avoid, however, a time period too short to accommodate normal inactivity during a routine work session.

Procedure

To configure access security in the open-operator-menu mode, you must access the Administrator Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Administrator Menu. Then select the Configure Access Security option.

The following describes these steps in detail.

Note: Access security is configured in the open-operator-menu mode when shipped from the factory. The system-level and administrator-level passwords shipped from the factory are **#####**. If you are configuring access security for the first time, type **#####** when asked for both the system-level and administrator-level password. Then change these passwords immediately to prevent unauthorized personnel from accessing the Model 125.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. At the System Menu, type

   admin

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **3** to select Configure Access Security.

   The system displays page 1 of the Access Security screen, shown in Figure 14-3.

   The cursor is initially in the **Security Mode** field.

```
Gordon Kapes, Inc.                Model 125           16:23:54 UTC 15-MAR-1994
Skokie, Illinois USA
                          Access Security - Page 1

Security Mode:                           OPEN-OPERATOR-MENU
Initial Modem Connection:                OPERATOR MENU
Password Tries Allowed:                  2
Access-Restriction Duration:             1   MINUTES
Modem Access-Restriction Mode:           NO SYSTEM OR ADMIN ACCESS
Consecutive Restrictions for Alarm:      2
Alarm Action:                            LOG ONLY
Alarm Message:
  WARNING: Detected potential intruder activity.









                  Press Space Bar to select then <Enter>
 Up/Down Arrow, <F1> for help, <F2> to exit, <F3> previous page, <F4> next page
```

Figure 14-3. Access Security Screen Showing Open-Operator-Menu Configuration

7. Select a value from the displayed choices in all fields except the **Access-Restriction Duration** and **Alarm Message** fields on page 1, and **Menu-Level Password** fields on page 2 where you enter text. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**.
Display Online Help	Press **F1**.
Return to the Administrator Menu	Press **F2**.

   The Access Security screen is a 2-page screen. Enter data in the first page, then press **F4** to display the second page.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Configuring Name-Password Mode

This section describes how to configure the name-password mode. Use the Security Access worksheet, then enter your configuration parameters using the Model 125 menu system.

Begin with Your Worksheet

Use a working copy of the Security Access worksheet found in Appendix A to specify and record security-access parameters for the name-password mode. Refer to Table 14-2 for a description of each parameter. Enter data from the worksheet using the Model 125 software as described in the procedure following Table 14-2.

Table 14-2. Name-Password Parameters

Field	Description
Security Mode	To configure access security under the name-password mode, select NAME-PASSWORD. Choices are OPEN-OPERATOR-MENU and NAME-PASSWORD. **Comments** This table describes parameters for configuring access security under the name-password mode. Refer to Table 14-1 for descriptions of parameters used with the open-operator-menu mode.
Initial Modem Connection	Select the Model 125 entity to which you are initially connected after accessing the system through a remote-access device *and* after entering a valid name and password. Choices are OPERATOR MENU, PORT 1, PORT 2, and PORT 3 (if Port 3 is configured as a standard port). **Example** If you select OPERATOR MENU, the system displays the Operator Menu immediately after it calls you back or immediately after you enter a valid name and password if callback is not requested. **Comments** This parameter applies only when you access the Model 125 through a remote-access device. When you access the Model 125 through Port 3, the system *always* connects you to the Operator Menu.
Password Tries Allowed	Select the number of consecutive times a user can attempt to enter a valid name-and-password combination before the system enables the access-restriction mode you select. Select a number from 1 through 9. **Example** You select 3 as the number of name-and-password tries allowed. A user enters either an incorrect name or an incorrect password, or both, three times in a row. The system denies access and enables access-restriction.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Access-Restriction Duration	Enter the length of time, in minutes, for which the system enables the selected modem access-restriction mode. Enter a number from 1 through 99. **Comments** The system automatically disables the access-restriction mode after the time period you enter has expired. The longer the period of time you select, the more protection from intruders is provided.
Modem Access-Restriction Mode	Select the mode under which you want the system to operate while access restriction is enabled. When enabled, access restriction remains in effect for the number of minutes you select in the **Access-Restriction Duration** field. Choices are RING, NO ANSWER ANSWER, ESTABLISH CARRIER AND HANG UP ANSWER W/CARRIER BUT NO ACTIVITY **Comments** The Model 125 provides three different access-restriction modes designed to frustrate and confuse system intruders who attempt to access the system through a remote-access device (modem). Access-restriction modes apply only to calls made through a modem. Those accessing the Model 125 through the maintenance port are simply denied access. Choices have the following meanings: *Ring, No Answer* While access restriction is enabled, the Model 125's modem does not answer when someone calls it. *Answer, Establish Carrier and Hang Up* While access restriction is enabled, the Model 125's modem answers, establishes a carrier, and then proceeds to hang up.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Modem Access-Restriction Mode (cont.)	*Answer w/Carrier But No Activity* While access restriction is enabled, the Model 125's modem answers, establishes a carrier, but does not respond to *any* input provided by the person calling it. Once the access-restriction duration time has expired, the system hangs up, if the person calling has not already disconnected.
Consecutive Restrictions for Alarm	Select the number of consecutive times the system must enable the access-restriction mode in order to activate an alarm. Select a number from 1 through 9. **Example** You set consecutive restrictions for alarm to 2. Password tries allowed is 2, and access-restriction duration is 1 minute. A user enters an incorrect name-and-password combination two times in a row. The system enables access-restriction mode preventing the user from making further entries for 1 minute. After 1 minute, the system disables access restriction allowing the user to enter additional name-and-password combinations. The user enters two incorrect name-and-password combinations a second time. The system enables access-restriction mode for the second time. Since this is the second consecutive restriction, the system activates an alarm.
Alarm Action	Select the destination of the alarm message. Choices are LOG ONLY, DIAL OUT & LOG. *Log only* sends a message to the System Activity Log. *Dial out & log* sends a message to both the System Activity Log and a dial-out alarm report.
Alarm Message	Enter an alarm message to accompany the alarm. You compose this message. Use a maximum of 77 characters. Refer to Appendix B, Alarm Codes, to examine the format of the alarm code and message.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Alarm Message (cont.)	**Comments** The alarm is activated after the system has enabled the access-restriction mode the number of consecutive times specified in the **Consecutive Restrictions for Alarm** field. **Example** You enter a message such as *WARNING: Detected potential intruder activity*. **Comments** You can include certain control characters. Enter ^? where ? = A-Z, [, \,], ^, or _. For example, ^G=Bell, ^L=Form Feed, ^M=Carriage Return, ^J=Line Feed. Enter control characters using upper-case characters only.
(page 2 of screen)	
User Name	Enter as many as fifteen user names. For each name, use from 5 through 15 characters. **Comments** The access security system is case sensitive—if you use upper-case letters here, the user must use corresponding upper-case letters when attempting to access the system. You can include special characters (punctuation marks) and numbers in the user name if you wish. You *cannot* include spaces in the user name or leave it blank. Do not enter duplicate user names. If you do, the system always uses the first occurrence of the name in the list. ***Caution:*** Ensure you change the user name supplied at the factory immediately upon installing the Model 125.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
User Password	Enter an individual password associated with each user name entered above. For each password, use as many as 15 characters. **Comments** The access security system is case sensitive—if you use upper-case letters here, the user must use corresponding upper-case letters when attempting to access the system. You can include special characters (punctuation marks) and numbers in the password if you wish. You *cannot* include spaces in a password. ***Note:*** For maximum flexibility in configuring access security, a password is not required. However, security may be compromised if you choose not to use a password.
Privilege	Select the privilege level you want assigned the corresponding name-and-password combination. Choices are OPERATOR, SYSTEM, and ADMINISTRATOR. **Comments** The access-security system provides three privilege levels, which have the following meanings: *Operator* — This level gives a user access to the Operator Menu and the serial ports accessible from the Operator Menu (plus the System Activity Log and System Status screen if these are available). *System* — This level gives a user operator-level privileges plus access to the System Menu. *Administrator* — This level gives a user operator- and system-level privileges plus access to the Administrator Menu.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Callback Dialing Command Line	Enter the dialing commands and telephone number for the remote-access device you want the Model 125 to call back. Use a maximum of 27 characters including dialing commands. If you do not want callback associated with a user name, do not enter any information in the command line. (The command line will always display ATD, even when callback is not desired.) **Comments** The callback dialing command line must always begin with the commands ATD, which alert the modem to dial a number. The system supplies these commands for you and displays them as the first three characters on the command line. You cannot change them. Immediately follow ATD (leave no space) with T to cause touch-tone dialing, or P to cause pulse dialing. Make sure you include all the digits you would dial if you picked up the phone to call the destination manually. You can include some additional commands used by Hayes-compatible modems, such as the following: , (comma) causes a 2-second pause in dialing. You can create longer pauses by using more than one comma. For example, to pause for 6 seconds, use three commas in a row. W causes the modem to wait for a second dial tone before continuing to dial. You can include parentheses and hyphens to make it easier to read the number, but they are not required. **Example** You enter a number that looks like the following: ATDT1,(312)555-2222W33 where: ATD alerts the modem to dial a number (The system displays these commands on the screen. You cannot change them.) T causes the modem to use touch-tone dialing

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Callback Dialing Command Line (cont.)	1 is the long-distance access number , causes the modem to pause two seconds before dialing the area code 312 is the area code 555 is the exchange number 2222 is the line number W causes the modem to wait for a second dial tone before continuing to dial 33 is the extension number
(page 3 of screen)	
User-Name Prompt	Enter the user-name prompt you want the system to display. You can enter as many as 39 characters. **Comments** You can include special characters (punctuation marks), numbers, and spaces. You can enter a meaningful prompt such as *Enter Name:*; or, to discourage system intruders, you can enter a misleading prompt such as ****System Down, Try Later****.
User-Password Prompt	Enter the user-password prompt you want the system to display. Enter as many as 39 characters. **Comments** You can include special characters (punctuation marks), numbers, and spaces. You can enter a meaningful prompt such as *Enter Password:*; or, to discourage system intruders, you can enter a misleading prompt such as ****System Still Down, Try Later****.
(page 4 of screen)	
Should the factory be able to gain access?	Select YES to enable factory access. Select NO to disable factory access.

continued

Table 14-2. Name-Password Parameters (cont.)

Field	Description
Set inactivity timer to:	Enter the length of time, in minutes, that the system monitors inactivity before disconnecting. Enter a number from 5 through 999 minutes. **Comments** The best time period to enter depends upon the work requirements and personnel specific to your situation. Remember, the larger the number you enter, the longer personnel may be prevented from accessing the system. Avoid, however, a time period too short to accommodate normal inactivity during a routine work session.

Procedure

To configure access security in the name-password mode, you must access the Administrator Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Administrator Menu. Then select the Configure Access Security option.

The following describes these steps in detail.

Note: Access security is configured in the *open-operator-menu* mode when shipped from the factory. The system-level and administrator-level passwords shipped from the factory are **#####**. If you are configuring access security for the first time, turn to the procedure describing open-operator-menu mode configuration, earlier in this chapter. Change the factory-supplied passwords immediately to prevent unauthorized personnel from accessing the Model 125.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. At the System Menu, type

   admin

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **3** to select Configure Access Security

   The system displays page 1 of the Access Security screen, shown in Figure 14-4.

   The cursor is initially in the **Security Mode** field.

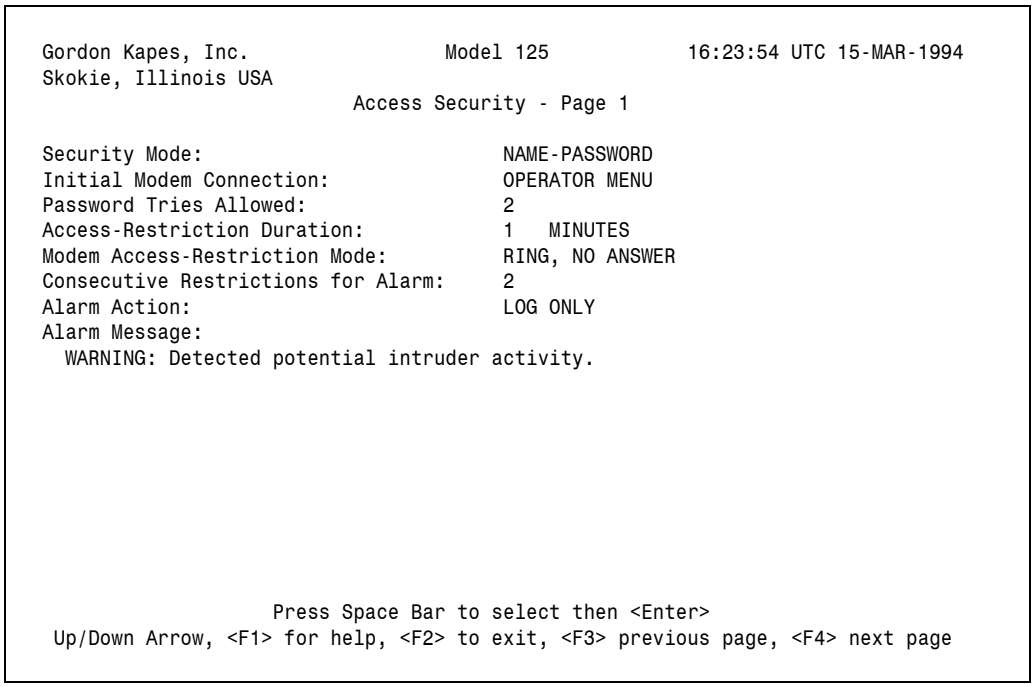

Figure 14-4. Access-Security Screen Showing Name-Password Configuration

7. Select a value from the displayed choices in all fields on page 1 of the screen except the **Access-Restriction Duration** and **Alarm Message** fields. Enter text in the **User Name**, **User Password**, **Privilege, Callback Dialing Command Line, User-Name Prompt,** and **User-Password Prompt** fields on pages 2 and 3 of the screen. To make selections and entries, refer to the following. Make sure you press ↵ to save each entry.

To:	Take this Action:
Select a value	Press spacebar to display. Press ↵ to save.
Enter text	Type text. Press ↵ to save.
Delete text	Press **Backspace**.
Move from field to field	Press ↑ or ↓, or press ↵ (also press **Tab** on page 2).
Display next page	Press **F4**.
Display previous page	Press **F3**.
Display Online Help	Press **F1**.
Return to the Administrator Menu	Press **F2**.

The Access Security screen is a 3-page screen. Enter data in the first page, then press **F4** to display the pages 2 and 3.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Chapter Fifteen
Connecting to a Serial Port

Overview

Operating the Model 125 is easy and straightforward. Before operating the 125 on a routine basis, ensure it has been correctly installed and its software properly configured. These tasks are described in the preceding chapters of this guide.

Operating tasks consist of connecting to one of the available serial ports, using the System Status screen to review or change system status, and using the System Activity Log to review system activity. To perform these tasks you can access the Model 125 either through a remote-access device (modem) or through an on-site-access device connected to Port 3 configured as maintenance.

Note: Your remote-access or on-site-access device must include VT100 terminal emulation if you intend to use the System Status screen or the System Activity Log. You can use a terminal set for TTY emulation as well, but only to connect with serial ports and exit the system.

This chapter explains how to connect to a serial port. Chapter Sixteen provides instructions for reviewing system status and activity.

Connecting to a Serial Port

Connect to a serial port when you want to access a connected device. Once you have connected to the port, you must access the software resident in the connected device. Consult the instructions accompanying the device for further information.

Notes: If Port 3 on the Model 125 is configured as either a maintenance port or a modem-monitor port, you cannot connect to it from a remote-access device since it is configured as an incoming port. When this is the case, the system displays Not Available next to option 3 on the Operator Menu.

To connect to a serial port on the Model 125, you must use either VT100 or TTY terminal emulation. (Refer to Appendix F for terminal emulator requirements.) Should the software resident in the connected device require a different emulation, you must implement the required emulation immediately after connecting with the port (immediately after step 2 in the following procedure). Then, after exiting the device software, reimplement the VT100 (or TTY) emulation (immediately after step 3).

Should you access the Model 125 menu system using inappropriate terminal emulation, the screen may appear filled with "garbage." If need be, access your terminal emulator and implement the correct terminal emulation. Then press **###** to refresh the screen if you are using VT100 emulation. (Press **%%%** to refresh the screen when using a TTY terminal.)

The port you want to connect to may be configured as the initial connection. If this is the case, follow the appropriate procedure in "Accessing the Menu System," in Chapter Four.

The ASCII-data-matching function is temporarily disabled for a specific port when you are connected to that port. The Model 125 never monitors Port 3 for ASCII data matching regardless of use or configuration.

To connect to a serial port, take the following steps:

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to "Accessing the Menu System" in Chapter Four.)
2. At the Operator Menu (Figure 15-1), press the number of the port you want to connect with.

   The system clears the menu and connects you with the port. Any further keystrokes you make are sent to the port. The screen displays any information coming from the port.
3. Enter logon or other access information required by the device connected to the port.

   Use the software resident in the connected device. To reconnect to the Model 125, exit the software using its standard logoff commands.

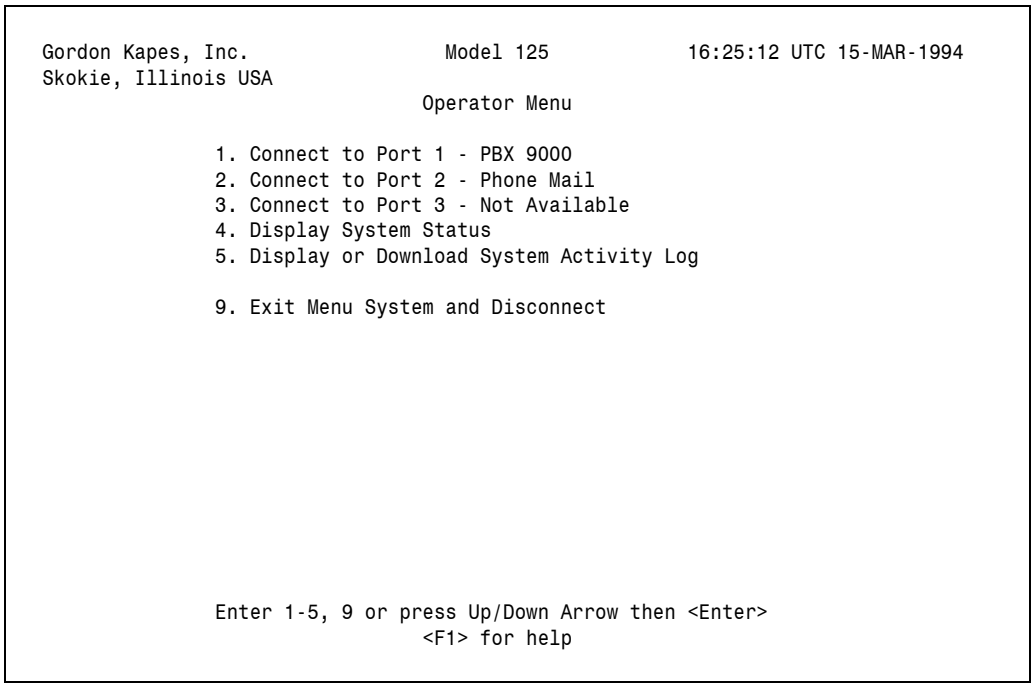

Figure 15-1. VT100 Operator Menu

4. Type **###** (no more than 2 seconds between each #) if you are using a VT100 terminal. (Type **%%%** if TTY.)

   The system disconnects from the port and displays the Operator Menu.

5. To exit the menu system and disconnect from the Model 125, press **9**.

   If you are accessing the Model 125 through a remote-access device, the system disconnects you from the Model 125 and returns you to your communications software. If you are accessing the Model 125 through Port 3, the system returns you to your communications software.

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Chapter Sixteen
Reviewing System Status & Activity

Overview

This chapter explains how to use the System Status screen to quickly gain an overview of Model 125 and site-specific functions. In addition, the System Status screen allows personnel to review, and in some cases change, the status of Model 125 functions. The chapter also explains how to display or download the System Activity Log for reviewing system activity.

The Model 125 enables you to review system conditions by viewing the System Status screen, a 6-page screen you can access from the Operator Menu (if configured), the System Menu, and the Administrator Menu. The System Status screen provides real-time information about the condition of Model 125 functions. By following the directions in this chapter, you can also use the System Status screen to change the status of various monitoring functions for the purpose of maintenance, diagnosis, and troubleshooting.

You review system activity by viewing the System Activity Log, a comprehensive activity record containing a list of *all* events and alarms reported by the Model 125. These include alarms that cause dial-out alarm reports, as well as those events not configured for dial-out. By reviewing the log you can view a sequential “picture” of Model 125 and site activity.

Note: To display the System Status screen or the System Activity Log, you must use a terminal set for VT100 emulation.

Reviewing and Changing System Status

The System Status screen enables you to review the current condition of Model 125 functions and site conditions. This screen also enables you to change the status of monitoring functions (page 1), and ASCII-data-matching functions (pages 5 and 6) based upon your security access level and need to perform rapid and real-time diagnosis (refer to Table 16-2). In addition, you can use the System Status screen to manually activate either of the built-in relays.

The System Status screen consists of six pages, each devoted to a specific type of information. These pages are organized as follows:

- Page 1—Displays status and state of monitoring functions
- Page 2—Displays power, internal-battery test, dial-tone, and automatic dial-out test status
- Page 3—Displays destination-specific dial-out status
- Page 4—Displays relay status and state
- Pages 5 and 6—Displays ASCII-data-match-word record status

Page 1—Monitoring Functions

Page 1 of the System Status screen, shown in Figure 16-1, displays information about the Model 125 monitoring functions. These functions are the following:

- Contact input monitoring for the eight contact inputs
- Temperature monitoring using the internal and external sensors
- DC-voltage monitoring for the two DC sources
- AC-line monitoring, including voltage, sag, and impulse
- DTR (data-terminal-ready) monitoring for the three serial ports

For a detailed discussion of these functions, both in terms of conceptual understanding and configuration possibilities, refer to Chapters Six through Ten in this guide.

Page 1 displays the status, state, name, and in certain cases, the current value associated with each monitoring function.

```
Gordon Kapes, Inc.                Model 125           16:26:06 UTC 15-MAR-1994
Skokie, Illinois USA
                            System Status - Page 1
Status        State        Function
ENABLED       NORMAL       Contact 1 - Major Alarm - PBX System
NOT CONFIG                 Contact 2
NOT CONFIG                 Contact 3
NOT CONFIG                 Contact 4
NOT CONFIG                 Contact 5
NOT CONFIG                 Contact 6
NOT CONFIG                 Contact 7
NOT CONFIG                 Contact 8
ENABLED       NORMAL   75F Temperature 1 - Equipment Room Ambient
NOT CONFIG                 Temperature 2
SLEEP 005:40  ALARM   <+1V DC Volts 1 - Emergency Lighting 12V Power Supply
NOT CONFIG                 DC Volts 2
ENABLED       NORMAL  117V AC-Line Volts - Phase 1 of PBX Power Source
ENABLED       NORMAL       AC-Line Sag - Phase 1 of PBX Power Source
ENABLED       NORMAL       AC-Line Impulse - Phase 1 of PBX Power Source
DISABLED      ALARM        Port 1 DTR - PBX 9000
DISABLED      ALARM        Port 2 DTR - Phone Mail
NOT CONFIG                 Port 3 DTR - Maintenance
                  Press Space Bar to select then <Enter>
 Up/Down Arrow, <F1> for help, <F2> to exit, <F3> previous page, <F4> next page
```

Figure 16-1. Page 1 of System Status Screen

Understanding Status on Page 1

One of five possible statuses for a monitoring function is shown in the **Status** column on page 1 of the System Status screen. These are not config, enabled, sleep, alarm active, and disabled. Table 16-1 summarizes the meaning of each status.

Table 16-1. Status Definitions

Status	Definition
Not config	Monitoring parameters have not been set. Monitoring function is not active. Configure the function before enabling.
Enabled	Monitoring function is active but an alarm state does not exist. (The screen displays enabled when an alarm state exists but the debounce or minimum threshold time has not expired.).
Sleep *hhh:mm*	Monitoring function is active. However, if an alarm condition exists during time period shown, does not send alarm to System Activity Log and, even if configured, does not cause dial-out alarm report. After time period has elapsed, status automatically returns to enabled.
Alarm active	Monitoring function is active and an alarm state exists when sleep time is set to zero. (With sleep time set to zero, the screen displays alarm active when a normal state exists but the debounce or minimum restore time has not expired.)
Disabled	Monitoring function is active. However, if an alarm condition exists, does not send alarm to System Activity Log and, even if configured, does not cause dial-out alarm report. Status remains disabled until you enable it.

Changing Status on Page 1

It is possible to change the status of all functions shown on page 1 of the System Status screen. Your authority to do so, however, is restricted by the menu from which you display the screen. If you display the screen from the Operator Menu, you can change status from enabled to sleep or from sleep to enabled.

If you display the screen from the System Menu, you can change status among enabled, sleep, and disabled. You cannot change a function in not config status to any other status.

If you display the screen from the Administrator Menu, you can change among all four statuses. From this menu you can enable a function currently in not config status. These authority levels are summarized in Table 16-2.

Table 16-2. Status Change Authority Levels from System Status Screen

Status→ If access screen from ↓	Not Config	Enabled	Sleep	Disabled
Operator Menu	Cannot change	Can change	Can change	Cannot change
System Menu	Cannot change	Can change	Can change	Can change
Administrator Menu	Can change	Can change	Can change	Can change

To change the status of a monitoring function, display the System Status screen by following the procedure described in “Displaying the System Status Screen” later in this chapter. Move the cursor to the status you want to change. Press the spacebar. You can only change the status of functions displayed on pages 1,5, and 6 of the System Status screen.

Understanding State on Page 1

For each monitoring function whose status is other than *not config*, the current, real-time state is displayed. State is either *normal* or *alarm* indicating whether the function currently detects an alarm condition. The system displays the *current* state in *real time*. This means that at the point in time you are viewing the display, the monitoring function is detecting either a normal or an alarm condition. If the state changes while you are viewing the screen, you immediately see the change.

The system does not take debounce time, minimum threshold time, or minimum restore time into account when displaying states. Consequently, the system may not report a displayed alarm state to the System Activity Log and, if configured, cause a dial-out alarm report. Or, the system may display a state as normal when the log does not show it having been restored from alarm to normal. This is because the system only reports alarms to the log after debounce time or minimum threshold time has elapsed; and it does not report “restore” alarms until after the minimum restore time has elapsed.

For example, the System Status screen may show Contact 1 in an alarm state. However, the system does not report this alarm condition to the log until after the configured debounce time for the alarm has elapsed. If the state returns to normal before the debounce time has elapsed, no alarm is reported to the log.

Similarly, the status screen may show DC Volts 1 in a normal state. However, if an alarm condition for this voltage has previously been reported to the log and the voltage has now returned to the normal range, a restore alarm is not reported to the log until after the configured minimum restore time has elapsed. If the voltage returns to an alarm state before the time elapses, no restore alarm is reported to the log.

States for functions in not config status are not available and not shown. This is always the case with Port 3 when configured as maintenance or modem-monitor, of course.

In addition to state, the screen displays current values for Temperatures 1 and 2, DC Volts 1 and 2, and AC-Line Volts. If a value is greater or less than the measurable range, the system displays the end value in the range with a greater-than (>) sign or the beginning value in the range with a less-than (<) sign.

Understanding Name on Page 1

In the **Function** column on page 1, the system displays the default name for the monitoring function and, if configured, the name your organization has selected and configured for the function. Some names may be too long to be completely displayed. These names are truncated and punctuated with an ellipsis (...) to show the name is not fully displayed.

Page 2—Power, Dial-Tone, Auto Dial-Out Test Status

Page 2 of the System Status screen, shown in Figure 16-2, displays information about Model 125 power and dial-out test status. The following items are displayed:

- Power status
- Internal-battery test status
- Dial-tone test status
- Automatic dial-out test status

Model 125 Power Status

The first item displayed on page 2 is Model 125 power status. Here the system indicates whether the Model 125 is currently powered by the AC-power line or by the internal battery.

The system also displays the real-time voltage across the internal battery. If the Model 125 is being powered by the AC line and the battery is charging, a reading of 6.0 to 6.7 volts is normal. (A fully charged battery consistently reads 6.8 or 6.9 volts.)

```
Gordon Kapes, Inc.                Model 125           16:26:30 UTC 15-MAR-1994
Skokie, Illinois USA
                            System Status - Page 2

Model 125 Power Status
Power Source:                     AC-LINE
Voltage Across Internal Battery:  6.8V

Internal-Battery Test
Next Automatic Test:              006:51 HOURS:MINS
Last Result (Auto or Manual):     PENDING

Dial-Tone Test
Status:                           ENABLED
Next Automatic Test:              023:48 HOURS:MINS
Last Result (Auto or Manual):     PENDING

Automatic Dial-Out Test
Status:                           ENABLED
Next Test Scheduled:              00:00 SUNDAY



    <F1> for help, <F2> to exit, <F3> for previous page, <F4> for next page
```

Figure 16-2. Page 2 of System Status Screen

If the Model 125 is being powered by the internal system battery, a reading of 5.6 to 6.2 volts is normal. (At 5.5 volts, the Model 125 automatically performs a shutdown of the operating software. At 5.0 volts, a hardware circuit disconnects the battery from all loads. The SRAM memory is powered by a separate lithium battery. Model 125 operation can only resume after AC power is restored.)

Internal-Battery Test

The second item displayed on page 2 is internal-battery test status. In the **Next Automatic Test** field, the display indicates how many hours and minutes must elapse before the system tests the internal battery. In the **Last Result (Auto or Manual)** field, the system displays the result of the last internal-battery test.

The system tests the internal battery automatically every 168 hours. If you test the battery manually, the system reschedules the next automatic test for 168 hours after the manual test has been conducted. When the system is actually conducting the test, it displays TEST IN PROGRESS in the **Next Automatic Test** field.

In the **Last Result (Auto or Manual)** field, the system displays PASS if the last test was passed (battery maintained 5.9 volts or greater during test) and FAIL if criteria for the test was not met (battery 5.9 volts or less anytime during test). If the Model 125 has just been powered up and the system has yet to conduct the test, it displays PENDING in the field.

Dial-Tone Test

As the third item on page 2, the system displays dial-tone test status and, if the test function is enabled, how long before the next test is to be conducted and the results of the last test.

The dial-tone test function status can only be enabled or disabled. To enable or disable the test function, refer to “Setting Automatic Dial-Tone Test Status,” in Chapter Eleven.

If the status is enabled, the display indicates how many hours and minutes must elapse before the system performs the next test (in the **Next Automatic Test** field). In the **Last Result (Auto or Manual)** field, the system displays the result of the last dial-tone test.

The system conducts the dial-tone test automatically 1 hour after power up and every 24 hours thereafter. If you conduct the dial-tone test manually, the system reschedules the next automatic test for 24 hours after the manual test has been conducted.

In the **Last Result (Auto or Manual)** field, the system displays PASS-TONE or PASS-PULSE if the last test was passed for touch-tone or pulse dialing respectively; and FAIL if criteria for the test was not met. If the Model 125 has just been powered up and the system has yet to conduct the test, it displays PENDING in the field.

Automatic Dial-Out Test

The final item on page 2 displays the status (not config, enabled, or disabled) of the automatic dial-out test. If the test function is enabled, the system also displays the hour and day of the week for which the next test is scheduled.

To change the status or other parameters for the automatic dial-out test function, refer to “Configuring the Automatic Dial-Out Test,” in Chapter Eleven.

Note: The system displays the most recent result of any dial-out—whether it be from the automatic dial-out test, a manual dial-out test, or an alarm dial-out report initiated by the Model 125—on page 3 of the System Status screen.

Page 3—Destination-Specific Dial-Out Status

Page 3 of the System Status screen, shown in Figure 16-3, displays information about the three Model 125 dial-out destination functions—primary, backup, and secondary. This includes the status for each function (not config, enabled, or disabled), and whether the last dial-out was successful or not successful. The last dial-out can be from the automatic dial-out test, a manual dial-out test, or an alarm dial-out report initiated by the Model 125.

If configured, the system also displays the name your organization has given each destination.

To change the status or other parameters for a dial-out destination function, refer to “Configuring Dial-Out Destination Functions,” in Chapter Eleven.

```
Gordon Kapes, Inc.                Model 125           16:26:50 UTC 15-MAR-1994
Skokie, Illinois USA
                            System Status - Page 3

Primary Destination - Hi-Tek Monitoring Center
Status:             ENABLED
Last Dial-Out:      SUCCESSFUL

Backup Destination
Status:             NOT CONFIG
Last Dial-Out:

Secondary Destination
Status:             NOT CONFIG
Last Dial-Out:









    <F1> for help, <F2> to exit, <F3> for previous page, <F4> for next page
```

Figure 16-3. Page 3 of System Status Screen

Page 4—Relay Status

Page 4 of the System Status screen, shown in Figure 16-4, displays information about the two Model 125 relay functions. The status for each function (not config, enabled, or disabled) is displayed as well as the output configuration and the current relay state.

The output configuration is the configured output duration and output mode. Output duration is the length of time during which a relay remains energized once the relay function is triggered. Output mode is either *steady*, *pulsating,* or *follow alarm inputs*. Output mode refers to whether the relay remains energized, energizes and de-energizes periodically once activated, or follows the real-time state of an associated monitoring function. There is no output duration when the relay is in follow mode.

The output configuration is the configured output duration and output mode. Output duration is the length of time during which a relay remains energized once the relay function is triggered. Output mode is either *steady* or *pulsating* and refers to whether the relay remains energized or energizes and de-energizes periodically once activated.

In the **Current Relay State** field, the system displays ON or OFF to indicate whether the relay is currently energized. (Use this field to activate a relay. Refer to “Changing the Current State of a Relay,” later in this chapter.)

If configured, the system also displays the name your organization has given each relay function.

To change the status or output configuration parameters for either relay function, refer to Chapter Twelve, “Configuring Relay Functions.”

```
Gordon Kapes, Inc.                Model 125          16:27:26 UTC 15-MAR-1994
Skokie, Illinois USA
                             System Status - Page 4

Relay 1
Status:                   NOT CONFIG
Output Configuration:
Current Relay State:

Relay 2
Status:                   NOT CONFIG
Output Configuration:
Current Relay State:









                     Press Space Bar to select then <Enter>
 Up/Down Arrow, <F1> for help, <F2> to exit, <F3> previous page, <F4> next page
```

Figure 16-4. Page 4 of System Status Screen

Changing the Current State of a Relay

To activate a relay, display the System Status screen by following the procedure described in “Displaying the System Status Screen” later in this chapter. Move the cursor to the **Current Relay State** field. Press the spacebar until ON is displayed in the field. This activates the relay for the output duration in the output mode.

To de-activate a relay, display the System Status screen by following the procedure described in “Displaying the System Status Screen” later in this chapter. Move the cursor to the **Current Relay State** field. Press the spacebar until OFF is displayed in the field. This terminates relay activity until the next manual or automatic activation.

Pages 5 & 6—ASCII-Data-Match-Word Records

Pages 5 and 6 of the System Status screen, shown in Figure 16-5, display information about ASCII-data-match-word records. Sixteen of the 32 possible match-word records are displayed on page 5, while the remaining 16 are displayed on page 6.

For a detailed discussion of ASCII-data matching and match-word records, refer to Chapter Thirteen in this guide.

Pages 5 and 6 display the record number, status, match word, monitored port, and name assigned each match-word record.

Understanding Match-Word Record Status

One of the four possible statuses for a match-word record is shown in the **Status** column on pages 5 and 6 of the System Status screen. These are not config, enabled, sleep, and disabled. Table 16-1 summarizes the meaning of each status. (Remember, each match-word record acts like a distinct monitoring function, concerned only with monitoring for its own match word.)

Changing Status

As with the monitoring functions shown on page 1, you can change the status of all match-word records shown on pages 5 and 6. Your authority to do so, however, is restricted by the menu from which you display the System Status screen. If you display the screen from the Operator Menu, you can change status from enabled to sleep or from sleep to enabled.

If you display the screen from the System Menu, you can change status among enabled, sleep, and disabled. You cannot change a function in not config status to any other status.

```
Gordon Kapes, Inc.                Model 125           16:27:48 UTC 15-MAR-1994
Skokie, Illinois USA
                              System Status - Page 5

No. Status        Port/Match Word        Name
 1  ENABLED       1/ABCDEFGHIJ           PBX 9000
 2  NOT CONFIG
 3  NOT CONFIG
 4  NOT CONFIG
 5  NOT CONFIG
 6  NOT CONFIG
 7  NOT CONFIG
 8  NOT CONFIG
 9  NOT CONFIG
10  NOT CONFIG
11  NOT CONFIG
12  NOT CONFIG
13  NOT CONFIG
14  NOT CONFIG
15  NOT CONFIG
16  NOT CONFIG

                    Press Space Bar to select then <Enter>
 Up/Down Arrow, <F1> for help, <F2> to exit, <F3> previous page, <F4> next page
```

Figure 16-5. Page 5 of System Status Screen

If you display the screen from the Administrator Menu, you can change among all four statuses. From this menu you can enable a function currently in not-config status. These authority levels are summarized in Table 16-2.

To change the status of a match-word record, display the System Status screen by following the procedure described in “Displaying the System Status Screen” later in this chapter. Move the cursor to the status you want to change. Press the spacebar.

Additional Fields Displayed on Pages 5 and 6

In addition to status, pages 5 and 6 display record number, match word, monitored port, and name assigned each match record.

The meaning of record number is obvious. You can configure as many as thirty-two records. Each is assigned a number.

In the **Match Word** column, the screen displays the specific match word the record detects at a serial port. Under **Port** the screen displays which port (either 1 or 2) the record is configured to monitor for the match word.

In the **Name** column, the system displays the name your organization has selected and configured for the match-word record. Some names may be too long to be completely displayed. These names are truncated and punctuated with an ellipsis (...) to show the name is not fully displayed.

Displaying the System Status Screen

You can display the System Status screen from the Operator Menu, the System Menu, or the Administrator Menu. Access the menu from which you want to display the System Status screen. Select the Display System Status option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter passwords as part of the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. Do one of the following:

If:	Take this Action:
You want to access the System Status screen from the Operator Menu	Press **4** to select Display System Status. The system displays the System Status screen. Proceed to step 7.
You want to access the System Status screen from the System Menu or the Administrator Menu.	Type **system**. Proceed to step 3.

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu. Proceed to step 4.
The system displays the System Menu	Proceed to step 4.

4. Do one of the following:

If:	Take this Action:
You want to access the System Status screen from the System Menu	Press **1** to select Display System Status. The system displays the System Status screen. Proceed to step 7.
You want to access the System Status screen from the Administrator Menu.	Type **admin**. Proceed to step 5.

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu. Proceed to step 6.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **1** to select Display System Status.

   The system displays the System Status screen.

7. You can move the cursor only on pages 1 and 4 of the screen. To turn pages, move the cursor, or perform other activities, refer to the following.

To:	Take this Action:
Change status on page 1	Display page 1. Move the cursor to the status you want to change. Press the spacebar.
To activate a relay	Display page 4. Move the cursor to the **Current Relay State** field. Press the spacebar to display ON in the field.
To de-activate a relay	Display page 4. Move the cursor to the **Current Relay State** field. Press the spacebar to display OFF in the field.
Move from field to field	Press ↑ or ↓, or press ↵.
Display next page	Press **F4**.
Display previous page	Press **F3**.
Display Online Help	Press **F1**
Return to the previous menu	Press **F2**.

8. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Reviewing System Activity

Review system activity by displaying the System Activity Log. You can display the System Activity Log from the Operator Menu, the System Menu, or the Administrator Menu.

The log is a screen showing a comprehensive list of alarms reported to the log and other transactions that have taken place within the Model 125. The most recent page of the log is displayed first with the most recent transaction displayed at the bottom of the list.

Note: When you display the System Activity Log, you are actually seeing a snap-shot of all current log entries. New entries made while you are viewing the log will not be displayed in real-time, but will be correctly stored.

Refer to Appendix B, “Alarm Codes,” for a complete list of codes and messages for alarms and other transactions reported to the log.

You can also download the contents of the System Activity Log to a personal computer or other remote-access or on-site-access device. This enables you to store the log on a disk or print it.

Those with administrator-level security access can clear the System Activity Log of all entries. Refer to “Clearing the System Activity Log,” later in this chapter.

Displaying the System Activity Log

You can display the System Activity Log (shown in Figure 16-6) from the Operator Menu, the System Menu, or the Administrator Menu. Access the menu from which you want to display the System Activity Log. Select the Display or Download System Activity Log option.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter passwords as part of the procedure. Should you encounter problems with access or passwords, check with your system administrator.

```
Gordon Kapes, Inc.                Model 125           16:28:56 UTC 15-MAR-1994
Skokie, Illinois USA
                          System Activity Log - Page 3

> Code: 151 Time: 15:17:24 UTC 15-MAR-1994 System Startup - Database Reset
> Code: 303 Time: 15:17:31 UTC 15-MAR-1994 Port 3 Accessed Model 125
> Code: 304 Time: 15:17:33 UTC 15-MAR-1994 Port 3 Exited Model 125
> Code: 303 Time: 15:17:38 UTC 15-MAR-1994 Port 3 Accessed Model 125
> Code: 312 Time: 15:47:38 UTC 15-MAR-1994 Inactivity Time Elapsed
> Code: 304 Time: 15:47:38 UTC 15-MAR-1994 Port 3 Exited Model 125
> Code: 303 Time: 16:00:30 UTC 15-MAR-1994 Port 3 Accessed Model 125
> Code: 310 Time: 16:01:07 UTC 15-MAR-1994 System Level Accessed
> Code: 311 Time: 16:01:17 UTC 15-MAR-1994 Administrator Level Accessed
> Code: 310 Time: 16:05:47 UTC 15-MAR-1994 System Level Accessed
> Code: 152 Time: 16:07:23 UTC 15-MAR-1994 System on Battery Power
> Code: 312 Time: 16:13:38 UTC 15-MAR-1994 Inactivity Time Elapsed
> Code: 310 Time: 16:23:39 UTC 15-MAR-1994 System Level Accessed
> Code: 116 Time: 16:23:45 UTC 15-MAR-1994 Port 3 Flow Control Changed
> Code: 310 Time: 16:25:53 UTC 15-MAR-1994 System Level Accessed
> Code: 220 Time: 16:25:57 UTC 15-MAR-1994 DC Volts 1 <+1V

               Press <F3> for previous page, <F4> for next page.
                                 <F2> to exit
```

Figure 16-6. System Activity Log

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. Do one of the following:

If:	Take this Action:
You want to access the System Activity Log from the Operator Menu	Press **5** to select Display or Download System Activity Log. The system displays the System Activity Log Menu. Proceed to step 7.
You want to access the System Activity Log from the System Menu or the Administrator Menu.	Type **system**. Proceed to step 3.

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu. Proceed to step 4.
The system displays the System Menu	Proceed to step 4.

4. Do one of the following:

If:	Take this Action:
You want to access the System Activity Log from the System Menu	Press **2** to select Display or Download System Activity Log. The system displays the System Activity Log Menu. Proceed to step 7.
You want to access the System Activity Log from the Administrator Menu.	Type **admin**. Proceed to step 5.

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu. Proceed to step 6.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **2** to select Display, Download, or Clear System Activity Log.

   The system displays the System Activity Log Menu.

7. Press **1** to select Display System Activity Log.

   The system displays the System Activity Log.

8. To perform activities with the System Activity Log, refer to the following.

To:	Take this Action:
Display previous page	Press **F3**.
Display next page	Press **F4**.
Return to the previous menu	Press **F2**.

9. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Downloading the System Activity Log

You can download the contents of the System Activity Log to the device you are using to access the Model 125. This can be a personal computer, or terminal to which a printer is connected. Downloading enables you to store the System Activity Log on disk or print it.

When you download, the information is sent in ASCII format with a carriage return and line-feed character separating each line.

Before executing the following procedure, choose the hardware and software you want to use for receiving the log. For example, you might wish to use a communications program such as PROCOMM PLUS with a personal computer. Using the documentation provided with that equipment or software, investigate the procedure for downloading a file.

You can download the System Activity Log from the Operator Menu, the System Menu, or the Administrator Menu. Access the menu from which you want to perform the download. From the Operator or System Menu, select the Display or Download System Activity Log option. From the Administrator Menu, select the Display, Download, or Clear System Activity Log option. At the System Activity Log Menu, select the Download System Activity Log option.

After ensuring the Download System Activity Log screen is displayed, ready your chosen hardware and software for download. Press **Y** then ↵ to start the download. When the download is finished, issue any

commands required by your equipment to end the download. Then press **F2** to return to the previous Model 125 menu.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter passwords as part of the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. Do one of the following:

If:	Take this Action:
You want to download the System Activity Log from the Operator Menu	Press **5** to select Display or Download System Activity Log. The system displays the System Activity Log Menu. Proceed to step 7.
You want to download the System Activity Log from the System Menu or the Administrator Menu.	Type **system**. Proceed to step 3.

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu. Proceed to step 4.
The system displays the System Menu	Proceed to step 4.

4. Do one of the following:

If:	Take this Action:
You want to download the System Activity Log from the System Menu	Press **2** to select Display or Download System Activity Log. The system displays the System Activity Log Menu. Proceed to step 7.
You want to download the System Activity Log from the Administrator Menu.	Type **admin**. Proceed to step 5.

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu. Proceed to step 6.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **2** to select Display, Download, or Clear System Activity Log.

   The system displays the System Activity Log Menu.

7. Press **2** to select Download System Activity Log.

   The system displays the Download System Activity Log screen, shown in Figure 16-7. The cursor is located in the **Start Download?** field.

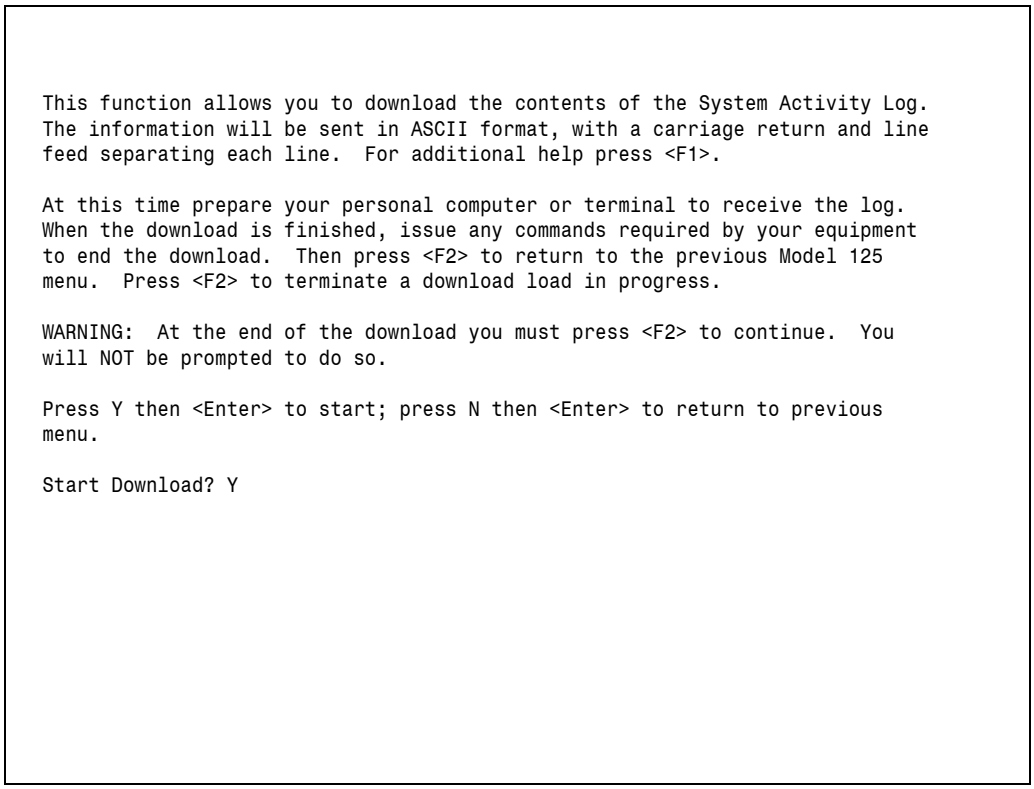

Figure 16-7. Download System Activity Log Screen

8. Before starting the download, take any steps necessary for receiving a downloaded file. These steps are described in the documentation accompanying the equipment or software you are using. (Look for a topic such as “Downloading a File.”)

   For example, if you were using PROCOMM PLUS, you would press **PageDown**, select ASCII as the download protocol, enter a filename under which to store the log, then press ↵ to return to the Download System Activity Log screen.

9. Do one of the following.

To:	Take this Action:
Start the download	Press **Y**, then ↵.
Return to the previous menu	Press **N**, then ↵.
Display additional help	Press **F1**.
Terminate download in progress or return to menu at end of download	Press **F2**.

10. The system always sends the final text *End of Model 125 System-Activity-Log Download* as a sign that transmission is complete. The Model 125 halts until you press F2. *Before* you press F2, you can signal that download is complete by taking the action appropriate for your equipment or software. For example, if you were using PROCOMM PLUS, you would press **ESC**.
11. Press **F2**.

    The system displays the previous menu.
12. To return to the Operator Menu, press **F2** repeatedly.

    The system backs out through each prior menu.

Clearing the System Activity Log

To clear the System Activity Log of all entries, display the Administrator Menu. Select the Display, Download, or Clear System Activity Log option from the Administrator Menu and the Clear System Activity Log option from the System Activity Log Menu.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter passwords as part of the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system
3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu. Proceed to step 4.
The system displays the System Menu	Proceed to step 4.

4. At the System Menu, type

   admin

5. Do one of the following:

If:	Take this Action:
The system displays the Administrator-Level Password screen	Type your administrator-level password. Press ↵. The system displays the Administrator Menu. Proceed to step 6.
The system displays the Administrator Menu	Proceed to step 6.

6. Press **2** to select Display, Download, or Clear System Activity Log.

   The system displays the System Activity Log Menu.

7. Press **3** to select Clear System Activity Log.

   The system displays the Clear System Activity Log screen, shown in Figure 16-8. The cursor is initially in the **Proceed?** field.

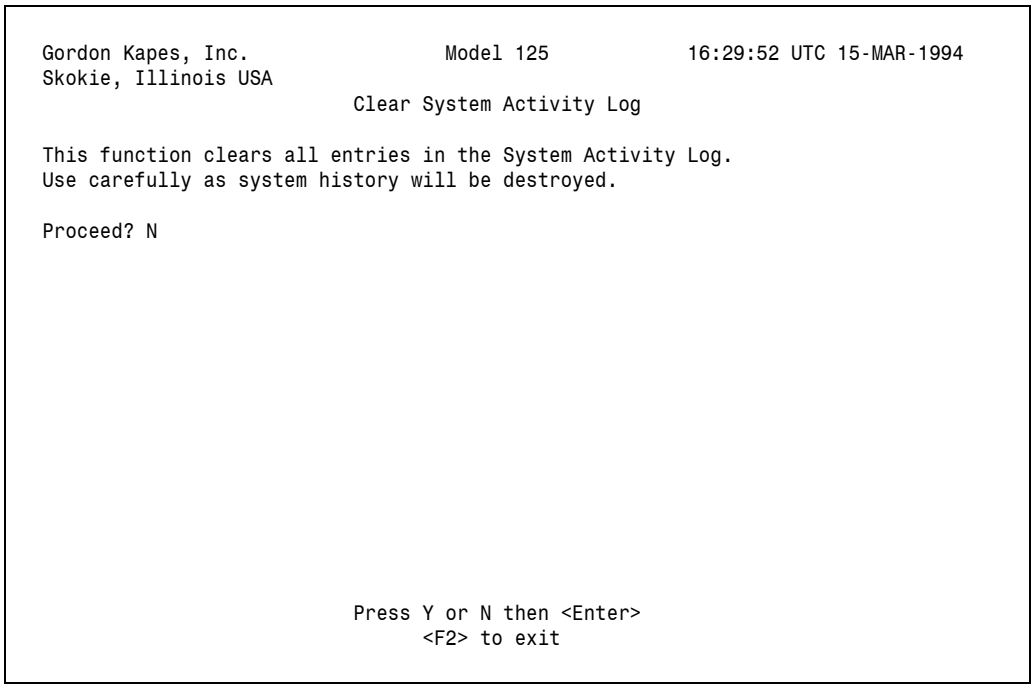

Figure 16-8. Clear System Activity Log Screen

8. To clear the log, press **Y**. Then press ↵**.**

   The system clears the log and displays the System Activity Log Menu. Viewing the System Activity Log will show a single entry noting that the log has been cleared.

9. To return to the Operator Menu, press **F2** repeatedly.

   The system backs out through each prior menu.

Chapter Seventeen
Testing the System Manually

Overview

The Model 125 enables you to manually conduct the following tests:

- Primary destination dial-out function
- Backup destination dial-out function
- Secondary destination dial-out function
- Phone-line dial tone
- Internal battery

The importance of these tests is obvious. The dial-out and dial-tone functions must remain in good working order to ensure the Model 125 can send dial-out reports as well as provide dial-in access. The internal battery, of course, provides a backup power source that must be relied upon should the AC power line fail.

This chapter explains how to conduct each test. Conduct one or more of the manual tests whenever you need immediate test execution and feedback. Use the manual dial-out tests immediately after configuring dial-out destination functions, and the dial-tone test to verify your phone line has a dial tone and can be dialed by either a pulse or tone signal.

After you have successfully installed and configured the Model 125, you can use these tests whenever you suspect a problem. You can conduct each test as often as you wish.

When you conduct the manual dial-tone test, the system displays PASS-TONE or PASS-PULSE on the System Status screen if the test has been passed, and also sends a message to the System Activity Log. If the phone line does not meet the criteria of the dial-tone test, the system displays FAIL on the System Status screen and sends an alarm message to the System Activity Log.

If the battery test completes successfully, the system displays PASS on the System Status screen. If the test criteria is not met, the system sends the configured alarm message to the System Activity Log. The system also displays FAIL on the System Status screen.

SUCCESSFUL is displayed on the System Status screen for each destination function that has passed the corresponding manual dial-out test. If the dial-out is unsuccessful, NOT SUCCESSFUL is displayed next to the destination name. The system also sends notification of test results to the System Activity Log for each destination tested.

Note: To perform all tests described in this chapter, you must use a terminal set to VT100 emulation.

Conducting Destination Dial-Out Tests

A destination dial-out test validates the system's ability to send a message to each of the three possible destinations—primary, backup, or secondary.

Before conducting the dial-out test, ensure you have configured and enabled the dial-out function for the destination to be tested. (Refer to Chapter Eleven, "Configuring Dial-Out Functions.")

After you initiate a dial-out test, the system first disconnects you and then conducts the test, which takes about 2 minutes. Do not call the Model 125 or access it through the maintenance port during this time, since doing so may interfere with the test procedure. After the test has been conducted, reestablish the connection by dialing the Model 125 or pressing ↵ (if you are accessing the Model 125 through the maintenance port).

Procedure

To perform a destination dial-out test, you must access the Manual System Tests Menu. First, with the Operator Menu displayed, access the System Menu. Then, access the Manual System Tests Menu. Select the option (1-3) for the destination whose dial-out you want to test.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to "Accessing the Menu System" in Chapter Four.)
2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **3** to select Perform Manual System Tests.

   The system displays the Manual System Tests Menu.

5. Press the option number (1, 2, or 3) for the destination whose dial-out function you want to test.

   The system displays the Manual Dial-Out Test screen for the destination. Figure 17-1 shows the Manual Dial-Out Test - Primary Destination screen.

```
Gordon Kapes, Inc.                Model 125           16:30:40 UTC 15-MAR-1994
Skokie, Illinois USA
                 Manual Dial-Out Test - Primary Destination

Status:                                  ENABLED
Destination Name:                        Hi-Tek Monitoring Center
Dialing Command Line:                    ATDT1,(312)555-2222W33
Wait for Connection:                     30   SECONDS

Proceeding with this test will cause the Model 125 to immediately
disconnect and then dial out.

Proceed with test? N









                          Press Y or N then <Enter>
                        <F1> for help, <F2> to exit
```

Figure 17-1. Manual Dial-Out Test - Primary Destination Screen

The system displays the status, destination name, dialing command line, and wait for connection time configured for the destination. To change any of these parameters, refer to Chapter Eleven, "Configuring Dial-Out Functions."

6. Do one of the following:

If:	Take this Action:
The system displays the message Destination not configured.	Return to the Operator Menu by pressing **F2** repeatedly. Use the instructions provided in Chapter Eleven to configure the dial-out function for the destination. Ensure the function is enabled.
The system displays the **Proceed with test?** field (The cursor is initially in this field.)	Proceed to step 7.

7. Do one of the following:

To:	Take this Action:
Proceed with the test	Press **Y**. Then press ↵. The system disconnects and conducts the test. The test takes about 2 minutes. Do not attempt to re-establish a connection during this time since doing so can interfere with the test procedure. Proceed to step 8.
Discontinue the test and exit the screen	Press **N**. Then press ↵. The system displays the Manual System Tests Menu. Press **F2** repeatedly to return to the Operator Menu.

8. Do one of the following:

If you are accessing the Model 125 through:	Take this Action:
A remote-access device	Dial the Model 125 and reestablish a connection.
Port 3	Press ↵ to reestablish a connection, then display the Operator menu.

9. Refer to Chapter Sixteen, “Reviewing System Status and Activity” to review test results on the System Status screen or in the System Activity Log.

Conducting the Manual Dial-Tone Test

The dial-tone test confirms the presence of a dial tone on the phone line, and validates that touch-tone or pulse dialing is available.

The test is conducted as follows: The modem first looks for the presence of a dial tone. If there is no dial tone, the line fails the test. If there is a dial tone, the modem sends one touch-tone digit. If the dial tone goes away, the test is passed for both touch-tone and pulse dialing. If the tone remains, the modem sends one pulse digit. If it goes away, the test is passed for pulse dialing. If the dial tone still remains, the line fails the test.

After you initiate the dial-tone test, the system first disconnects you and then conducts the test, which takes about 1 minute. Do not call the Model 125 or access it through the maintenance port during this time, since doing so may interfere with the test procedure. After the test has been conducted, re-establish the connection by dialing the Model 125 or pressing ↵ (if you are accessing the Model 125 through the maintenance port).

Procedure

To perform the manual dial-tone test, you must access the Manual System Tests Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Manual System Tests Menu. Select Manual Dial-Tone Test.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)

2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **3** to select Perform Manual System Tests.

   The system displays the Manual System Tests Menu.

5. Press **4** to select Manual Dial-Tone Test.

   The system displays the Manual Dial-Tone Test screen. Figure 17-2 shows the Manual Dial-Tone Test screen.

```
Gordon Kapes, Inc.                Model 125          16:31:04 UTC 15-MAR-1994
Skokie, Illinois USA
                              Manual Dial-Tone Test

This function will immediately test the telephone line for the presence
of dial tone and if touch-tone or pulse dialing is functioning.  The test
takes about 1 minute to perform.  Test results are displayed in the System
Activity Log and on page 2 of the System Status screen.

Proceeding with this test will cause the Model 125 to immediately
disconnect and then test the telephone line.


Proceed with test? N









                           Press Y or N then <Enter>
                                 <F2> to exit
```

Figure 17-2. Manual Dial-Tone Test Screen

6. Do one of the following:

To:	Take this Action:
Proceed with the test	Press **Y**. Then press ↵. The system disconnects and conducts the test. The test takes about 1 minute. Do not attempt to reestablish a connection during this time since doing so can interfere with the test procedure. Proceed to step 7.
Discontinue the test and exit the screen	Press **N**. Then press ↵. The system displays the Manual System Tests Menu. Press **F2** repeatedly to return to the Operator Menu.

7. Do one of the following:

If you are accessing the Model 125 through:	Take this Action:
A remote-access device	Dial the Model 125 and reestablish a connection.
Port 3	Press ↵ to reestablish a connection, then display the Operator menu.

8. Refer to Chapter Sixteen, “Reviewing System Status and Activity” to review test results on the System Status screen or in the System Activity Log.

Conducting the Manual Battery Test

The manual battery test validates that the internal battery maintains sufficient voltage when placed under a test load. The test places a load on the battery for 1 minute. If the voltage falls below 5.9 volts at any time during the test, the test criteria is not met and the system sends the configured alarm message to the System Activity Log.

Unlike the other manual tests, the system does not disconnect you after you initiate the test. While the test is being conducted, you can perform other tasks with the Model 125 or you can access page 2 of the System Status screen to view the battery voltage as it changes during the test. If the battery passes the test, PASS is displayed on the screen. Otherwise FAIL is displayed.

Procedure

To perform the manual battery test, you must access the Manual System Tests Menu. First, with the Operator Menu displayed, access the System Menu. Second, access the Manual System Tests Menu. Select Manual Battery Test.

The following describes these steps in detail:

Note: Access security for the Model 125 can be implemented using several different configurations. Consequently, you may not need to enter a password as part of step 3 in the procedure. Should you encounter problems with access or passwords, check with your system administrator.

1. Access the menu system and display the Operator Menu. (For more detailed instructions, refer to “Accessing the Menu System” in Chapter Four.)
2. At the Operator Menu, type

   system

3. Do one of the following:

If:	Take this Action:
The system displays the System-Level Password screen	Type your system-level password. Press ↵. The system displays the System Menu.
The system displays the System Menu	Proceed to step 4.

4. Press **3** to select Perform Manual System Tests.

   The system displays the Manual System Tests Menu.

5. Press **5** to select Manual Battery Test.

   The system displays the Manual Battery Test screen. Figure 17-3 shows the Manual Battery Test screen.

```
Gordon Kapes, Inc.                Model 125          16:31:26 UTC 15-MAR-1994
Skokie, Illinois USA
                              Manual Battery Test

The manual battery test immediately shuts off the Model 125 battery
charger and places the internal battery under load for 1 minute.

Test results are displayed on the System Status screen.  Only battery
failures are logged in the System Activity Log.

Proceed with test? N




                          Press Y or N then <Enter>
                               <F2> to exit
```

Figure 17-3. Manual Battery Test Screen

6. Do one of the following:

To:	Take this Action:
Proceed with the test	Press **Y**. Then press ↵. The system initiates the test (which lasts 1 minute) and displays the Manual System Tests Menu. The system does not disconnect, leaving you free to do other work or view test results on the System Status screen. Press **F2** repeatedly to return to the Operator Menu.
Discontinue the test and exit the screen	Press **N**. Then press ↵. The system displays the Manual System Tests Menu. Press **F2** repeatedly to return to the Operator Menu.

8. Refer to Chapter Sixteen, “Reviewing System Status and Activity” to review test results on the System Status screen or in the System Activity Log.

Chapter Eighteen
Maintaining the Model 125

Maintenance

The Model 125 requires no normal maintenance. The only item that requires replacement, the internal battery, is automatically tested on a regular interval.

Battery Replacement

To provide power when AC-line voltage is not available, the Model 125 contains a 6V sealed-lead-acid battery. A sophisticated battery charger circuit keeps the battery at ready, while ensuring maximum standby life. The battery replacement interval is a minimum of 8 years. As part of the Model 125's operating software, an automatic battery test routine is performed every 168 hours (one week). In addition, manual operation of the battery test can be performed through the menu system. Should the battery test routine detect a battery in need of replacement, an alarm is generated. The alarm is sent to the System Activity Log and, if configured, causes a dial-out alarm report to occur. When you receive the dial-out report or manually review the System Activity Log, the need to replace the battery is apparent.

In most cases a battery test failure does not indicate that the battery is unable to power the Model 125 during AC power loss. In all but the rarest of cases, the battery will simply provide less operating time than normal. After you receive a battery-test-failure alarm, perform a manual battery test to determine if the battery is "weak" or has failed completely. Immediately after starting the manual battery test, use the System Status screen to view the battery voltage while the test is in progress. If the battery voltage drops below 5V within the first 10 seconds after the test has begun, the battery will not support Model 125 operation for any significant time period. In this case, remove the Model 125 from service immediately. If the battery voltage slowly falls to the 5.9V failure point, it will support operation, but for less than the usual two-hour minimum.

Once you determine that battery replacement is necessary, the Model 125 must be returned to Gordon Kapes, Inc. for service. The required battery is a Panasonic LCR6V1.3P, and is not field replaceable. While the actual procedure for changing the battery is quite simple, removing the Model 125's cover with AC power connected will expose personnel to hazardous voltages.

Chapter Nineteen
Troubleshooting & Solving Problems

Troubleshooting

The number-one recommendation when troubleshooting a Model 125-related problem is to use the software resources that are included in the menu system. The System Status screen gives literally dozens of “clues” to make locating problems easier. The System Activity Log, when carefully reviewed, will often explain why a specific action took place. The manual test functions make performing remote diagnostics simple.

While quite lengthy, this Master Reference Guide should serve as your repair assistant. Information is provided on all phases of the Model 125. Correcting any problem should start by reviewing the appropriate sections covering installation and configuration.

Gordon Kapes, Inc. Technical Support

You are encouraged to contact Gordon Kapes, Inc. technical support personnel for assistance. We enjoy speaking with people who are out in the field. Let our experience be of service to you. If you are having problems, a call to us after an initial review of the situation can save you a considerable amount of time.

Contact Inputs

Should problems occur with the contact-monitoring functions, the first item to check is the physical wiring. Ensure that connections to plug P1 have been made according to the site requirements. Confirm that the configuration parameters for each contact input have been set correctly. Use the System Status screen to view the state of each contact in real-time. Changing the physical state of each contact-input source should be reflected in the status field for each contact on the System Status screen.

DC-Voltage Monitoring

Most problems related to DC-voltage monitoring are caused by incorrect connection of the DC source to plug P1. The DC-voltage monitoring circuitry measures voltage differentially, without regard to earth ground, power source ground, and so forth. The most positive lead of the power source must be connected to the + input, the most negative to the – input. Should a voltage source be connected in reverse, the System Status screen always displays <1 (or <–1).

Warning: Reversing the polarity of the DC inputs will cause the Model 125 to make erratic readings of all analog measurements, including the DC voltage, AC mains voltage, battery voltage, and temperature. Make sure you connect the most positive lead to the "+" terminal.

Repair and Replacement

Most equipment returned to Gordon Kapes, Inc. for repair actually has nothing wrong with it. A telephone call to Gordon Kapes, Inc. technical support can often help to get the equipment operating correctly. We don't mind spending time with our customers getting a site up and running.

If you determine that the Model 125 is defective, return for repair or replacement according to the Gordon Kapes, Inc. Warranty/Repair and Return policy.

In the event repairs are ever needed on your Model 125, they should only be performed by Gordon Kapes, Inc. or an authorized representative. For further information, contact Gordon Kapes, Inc.

Appendix A
Configuration Worksheets

Overview

This appendix contains a set of master worksheets designed to aid you with the configuration process.

The worksheets are as follows:

- General Parameters
- Serial Ports and Modem Dial-In
- Contact-Input Monitoring
- Temperature Monitoring
- DC-Voltage Monitoring
- AC-Line Monitoring
- Telephone & Dial-Out Parameters
- Relays
- ASCII-Data Matching
- Access Security

Please photocopy the master worksheets and use the copies as you plan and gather needed data for your system configuration.

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General Parameters Worksheet

Use this worksheet in conjunction with the instructions in Chapter Five.

Site Identification

Site-Text Line 1: _____
(Max. 30 characters. Factory-supplied sample: *Gordon Kapes, Inc.*)

Site-Text Line 2: _____
(Max. 30 characters. Factory-supplied sample: *Skokie, Illinois USA*)

Dial-Out Message: _____
(Max. 77 characters. Factory-supplied sample: *Model 125 alarm messages to follow.*)

Time/Date

Time Zone: _____
(Factory-supplied sample: *UTC*)

Automatic Internal-Battery Test

Alarm Action:
☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected Model 125 internal battery failure. Battery replacement required.*)

* Indicates default value.

Operator-Menu Message

Message Area:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

(Max. 59 characters per line)

Serial Ports and Modem Dial-In Worksheet

Use this worksheet in conjunction with the instructions in Chapter Six.

Serial Port 1

Name: _____

(Max. 39 characters)

Baud Rate:	☐ 300 ☐ 1200 ☐ 2400 ☐ 4800 ☐ 9600*
Data-Parity-Stop Bits:	☐ 8-NONE-1* ☐ 7-ODD-1 ☐ 7-EVEN-1
Communication Flow Control:	☐ XON/XOFF* ☐ NONE
Upon Disconnect DSR Should:	☐ MOMENTARILY GO LOW* ☐ GO LOW ☐ REMAIN HIGH
DTR-Monitoring Status:	☐ NOT CONFIG* ☐ DISABLED ☐ ENABLED
DTR-Alarm Action:	☐ LOG ONLY* ☐ DIAL OUT & LOG

DTR-Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *Detected low DTR state. Check for disconnected cable.*)

* Indicates default value.

Serial Port 2

Name: _____
(Max. 39 characters)

Baud Rate:	☐ 300 ☐ 1200 ☐ 2400 ☐ 4800 ☐ 9600*
Data-Parity-Stop Bits:	☐ 8-NONE-1* ☐ 7-ODD-1 ☐ 7-EVEN-1
Communication Flow Control:	☐ XON/XOFF* ☐ NONE
Upon Disconnect DSR Should:	☐ MOMENTARILY GO LOW* ☐ GO LOW ☐ REMAIN HIGH
DTR-Monitoring Status:	☐ NOT CONFIG* ☐ DISABLED ☐ ENABLED
DTR-Alarm Action:	☐ LOG ONLY* ☐ DIAL OUT & LOG

DTR-Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected low DTR state. Check for disconnected cable.*)

* Indicates default value.

Serial Port 3

Choose one Operating Mode for Port 3.

Operating Mode:
- ☐ MAINTENANCE
- ☐ MODEM MONITOR
- ☐ STANDARD

Name:
- ☐ MAINTENANCE
  (Must use if Operating Mode is Maintenance)
- ☐ MODEM MONITOR
  (Must use if Operating Mode is Modem Monitor)
- ☐ STANDARD

_____
(Supply name if Operating Mode is Standard. Max. 39 characters)

Baud Rate:
- ☐ 1200
- ☐ 2400
- ☐ 4800
- ☐ 9600*

Data-Parity-Stop Bits:
- ☐ 8-NONE-1*
- ☐ 7-ODD-1
- ☐ 7-EVEN-1

Communication Flow Control:
- ☐ XON/XOFF*
- ☐ NONE

	If Operating Mode is Maintenance	If Operating Mode is Modem Monitor	If Operating Mode is Standard
Upon Disconnect DSR Should:	■ REMAIN HIGH	■ REMAIN HIGH	☐ REMAIN HIGH* ☐ MOMENTARILY GO LOW ☐ GO LOW
DTR-Monitoring Status:	■ NOT CONFIG	■ NOT CONFIG	☐ NOT CONFIG* ☐ DISABLED ☐ ENABLED
DTR-Alarm Action:	■ LOG ONLY	■ LOG ONLY	☐ LOG ONLY* ☐ DIAL OUT & LOG

DTR-Alarm Message: _____
(Supply message if Operating Mode is Standard. Max. 77 characters. Factory-supplied sample: *Detected low DTR state. Check for disconnected cable.*)

* Indicates default value.

Modem Dial-In

Answer on Ring:	☐ 1* ☐ 2 ☐ 3 ☐ 4 ☐ 5
Data-Parity-Stop Bits:	☐ 8-NONE-1* ☐ 7-ODD-1 ☐ 7-EVEN-1
Communication Flow Control:	☐ XON/XOFF* ☐ NONE

* Indicates default value.

Contact-Input Monitoring Worksheet

Use this worksheet in conjunction with the instructions in Chapter Seven.

Contact Input 1

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

Contact Input 2

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

* Indicates default value.

Contact Input 3

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

Contact Input 4

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

* Indicates default value.

Contact Input 5

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

Contact Input 6

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

* Indicates default value.

Contact Input 7

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

Contact Input 8

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Normal State: ☐ NORMALLY OPEN*
☐ NORMALLY CLOSED

Debounce Time: _____ (1*) SECONDS
(1-999)

Sleep Time: _____ (6*) HOURS
(0-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected alarm state.*)

* Indicates default value.

Temperature Monitoring Worksheet

Use this worksheet in conjunction with the instructions in Chapter Eight.

Temperature 1 (Internal to Model 125)

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____

(Max. 39 characters. Factory-supplied sample: *Room Ambient*)

Temperature Scale: ☐ FAHRENHEIT*
☐ CELSIUS

Sleep Time: _____ (6*) HOURS
(0-99)

Low-Temperature Parameters

Alarm Threshold: _____ (50*) ☐ F
(41-113°)
_____ (10*) ☐ C
(5-45°)

Minimum Threshold Time: _____ (5*) MINUTES
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *Detected low temperature.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____

(Max. 77 characters. Factory-supplied sample: *Temperature restored from low to normal.*)

* Indicates default value.

High-Temperature Parameters (page 2 of screen)

Alarm Threshold: _____ (95*) ☐ F
(4-113°)
_____ (35*) ☐ C
(5-45°)

Minimum Threshold Time: _____ (5*) MINUTES
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected high temperature.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *Temperature restored from high to normal.*)

Temperature 2 (External to Model 125)

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Temperature Scale: ☐ FAHRENHEIT*
☐ CELSIUS

Sleep Time: _____ (6*) HOURS
(0-99)

* Indicates default value.

Low-Temperature Parameters

Alarm Threshold: _____ (50*) ☐ F
(41-113°)
_____ (10*) ☐ C
(5-45°)

Minimum Threshold Time: _____ (5*) MINUTES
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected low temperature.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *Temperature restored from low to normal.*)

High-Temperature Parameters (page 2 of screen)

Alarm Threshold: _____ (95*) ☐ F
(4-113°)
_____ (35*) ☐ C
(5-45°)

Minimum Threshold Time: _____ (5*) MINUTES
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected high temperature.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *Temperature restored from high to normal.*)

* Indicates default value.

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DC-Voltage Monitoring Worksheet

Use this worksheet in conjunction with the instructions in Chapter Nine.

DC Volts 1

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Display Voltage as: ☐ NEGATIVE*
☐ POSITIVE

Sleep Time: _____ (6*) HOURS
(0-99)

Low-Voltage Parameters

Alarm Threshold: _____ (1*) VOLTS
(1-59)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected low DC voltage.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *DC voltage restored from low to normal.*)

* Indicates default value.

High-Voltage Parameters (page 2 of screen)

Alarm Threshold: _____ (59*) VOLTS
(1-59)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected high DC voltage.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *DC voltage restored from high to normal.*)

DC Volts 2

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Display Voltage as: ☐ NEGATIVE*
☐ POSITIVE

Sleep Time: _____ (6*) HOURS
(0-99)

Low-Voltage Parameters

Alarm Threshold: _____ (1*) VOLTS
(1-59)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected low DC voltage.*)

* Indicates default value.

Minimum Restore Time: _____ (5*) MINUTES

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *DC voltage restored from low to normal.*)

High-Voltage Parameters (page 2 of screen)

Alarm Threshold: _____ (59*) VOLTS
(1-59)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected high DC voltage.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *DC voltage restored from high to normal.*)

* Indicates default value.

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AC-Line Monitoring Worksheet

Use this worksheet in conjunction with the instructions in Chapter Ten.

AC-Line Volts

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Sleep Time: _____ (6*) HOURS
(0-99)

Low-Voltage Parameters

Alarm Threshold: _____ (95*) VOLTS
(1-139)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____
(Max. 77 characters. Factory-supplied sample: *Detected low AC-line voltage.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____
(Max. 77 characters. Factory-supplied sample: *AC-line voltage restored from low to normal.*)

High-Voltage Parameters (page 2 of screen)

Alarm Threshold: _____ (130*) VOLTS
(1-139)

Minimum Threshold Time: _____ (1*) SECONDS
(1-999)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

* Indicates default value.

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *Detected high AC-line voltage.*)

Minimum Restore Time: _____ (5*) MINUTES
(1-99)

Restore Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Restore Message: _____

(Max. 77 characters. Factory-supplied sample: *AC-line voltage restored from high to normal.*)

AC-Line Sag

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____

(Max. 39 characters)

Sleep Time: _____ (6*) HOURS
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *Detected AC-line sag.*)

AC-Line Impulse

Status: ☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____

(Max. 39 characters)

Sleep Time: _____ (6*) HOURS
(1-99)

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *Detected AC-line impulse.*)

* Indicates default value.

Telephone & Dial-Out Parameters Worksheet

Use this worksheet in conjunction with the instructions in Chapter Eleven.

Primary Destination

Status:
☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Destination Name: _____
(Max. 39 characters)

Dialing Command Line: ATD_____
(Max. 36 characters)

Maximum Dial Attempts:

☐ 1	☐ 4*	☐ 7
☐ 2	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Time between Dial Attempts:

☐ 1 MINUTES	☐ 4	☐ 7
☐ 2*	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Wait for Connection:
☐ 60* SECONDS
☐ 90
☐ 120

Data-Parity-Stop Bits:
☐ 8-NONE-1*
☐ 7-ODD-1
☐ 7-EVEN-1

Communication Flow Control:
☐ XON/XOFF*
☐ NONE

Courtesy Access Function:
☐ DISABLED*
☐ ENABLED

Courtesy Access Time:
(Only when Courtesy Access Function is Enabled)
☐ 30 SECONDS
☐ 60*
☐ 90

Dial-Out Format:
☐ STANDARD*
☐ CUSTOM

Opening Message: _____
(Max. 231 characters)

Closing Message: _____
(Max. 231 characters)

* Indicates default value.

Backup Destination

Status:
☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Destination Name: _____
(Max. 39 characters)

Dialing Command Line: ATD_____
(Max. 36 characters)

Maximum Dial Attempts:

☐ 1	☐ 4*	☐ 7
☐ 2	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Time between Dial Attempts:

☐ 1 MINUTES	☐ 4	☐ 7
☐ 2*	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Wait for Connection:
☐ 60* SECONDS
☐ 90
☐ 120

Data-Parity-Stop Bits:
☐ 8-NONE-1*
☐ 7-ODD-1
☐ 7-EVEN-1

Communication Flow Control:
☐ XON/XOFF*
☐ NONE

Courtesy Access Function:
☐ DISABLED*
☐ ENABLED

Courtesy Access Time:
(Only when Courtesy Access Function is Enabled)
☐ 30 SECONDS
☐ 60*
☐ 90

Dial-Out Format:
☐ STANDARD*
☐ CUSTOM

Opening Message: _____
(Max. 231 characters)

Closing Message: _____
(Max. 231 characters)

* Indicates default value.

Secondary Destination

Status:
- ☐ NOT CONFIG*
- ☐ ENABLED
- ☐ ENABLED FOR DIAL-OUT TEST ONLY
- ☐ DISABLED

Destination Name: _____
(Max. 39 characters)

Dialing Command Line: ATD_____
(Max. 36 characters)

Maximum Dial Attempts:

☐ 1	☐ 4*	☐ 7
☐ 2	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Time between Dial Attempts:

☐ 1 MINUTES	☐ 4	☐ 7
☐ 2*	☐ 5	☐ 8
☐ 3	☐ 6	☐ 9

Wait for Connection:
- ☐ 60* SECONDS
- ☐ 90
- ☐ 120

Data-Parity-Stop Bits:
- ☐ 8-NONE-1*
- ☐ 7-ODD-1
- ☐ 7-EVEN-1

Communication Flow Control:
- ☐ XON/XOFF*
- ☐ NONE

Courtesy Access Function:
- ☐ DISABLED*
- ☐ ENABLED

Courtesy Access Time:
(Only when Courtesy Access Function is Enabled)
- ☐ 30 SECONDS
- ☐ 60*
- ☐ 90

Dial-Out Format:
- ☐ STANDARD*
- ☐ CUSTOM

Opening Message: _____
(Max. 231 characters)

Closing Message: _____
(Max. 231 characters)

* Indicates default value.

Minimum Time Between Dial-Outs

Minimum Time between Dial-Outs:

- ☐ 1* MINUTES
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9

Automatic Dial-Out Test

Status:

- ☐ NOT CONFIG*
- ☐ ENABLED
- ☐ DISABLED

Start Day:

- ☐ SUNDAY*
- ☐ MONDAY
- ☐ TUESDAY
- ☐ WEDNESDAY
- ☐ THURSDAY
- ☐ FRIDAY
- ☐ SATURDAY
- ☐ DAILY

Start Time:

- ☐ 00:00*
- ☐ 01:00
- ☐ 02:00
- ☐ 03:00
- ☐ 04:00
- ☐ 05:00
- ☐ 06:00
- ☐ 07:00
- ☐ 08:00
- ☐ 09:00
- ☐ 10:00
- ☐ 11:00
- ☐ 12:00
- ☐ 13:00
- ☐ 14:00
- ☐ 15:00
- ☐ 16:00
- ☐ 17:00
- ☐ 18:00
- ☐ 19:00
- ☐ 20:00
- ☐ 21:00
- ☐ 22:00
- ☐ 23:00

Time Range:

- ☐ 0* HOURS
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9

Call Primary Destination:

- ☐ NO*
- ☐ YES

Call Backup Destination:

- ☐ NO*
- ☐ YES

Call Secondary Destination:

- ☐ NO*
- ☐ YES

* Indicates default value.

Dial-Out Message: _____

(Max. 77 characters. Factory-supplied sample: *Model 125 performing dial-out test. Hello, I'm fine thanks. And you?*)

Automatic Dial-Tone Test

Status:

☐ ENABLED
☐ DISABLED*

* Indicates default value.

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Relays Worksheet

Use this worksheet in conjunction with the instructions in Chapter Twelve.

Relay 1

Status:
☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Output Mode:
☐ STEADY*
☐ PULSATING
☐ FOLLOW

Output Time Unit:
(Cannot use if Output Mode is Follow.)
☐ SECONDS*
☐ MINUTES
☐ HOURS

Output Duration:
(Cannot use if Output Mode is Follow.)
_____ (1*)
(1-999)

Trigger?	Source
☐ NO* ☐ YES	Contact 1
☐ NO* ☐ YES	Contact 2
☐ NO* ☐ YES	Contact 3
☐ NO* ☐ YES	Contact 4
☐ NO* ☐ YES	Contact 5
☐ NO* ☐ YES	Contact 6
☐ NO* ☐ YES	Contact 7
☐ NO* ☐ YES	Contact 8

* Indicates default value.

Page 2 of screen

Trigger?	Source
☐ NO* ☐ YES	Temperature 1
☐ NO* ☐ YES	Temperature 2
☐ NO* ☐ YES	DC Volts 1
☐ NO* ☐ YES	DC Volts 2
☐ NO* ☐ YES	AC-Line Volts
☐ NO* ☐ YES	AC-Line Sag (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	AC-Line Impulse (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Battery Test (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Access Security (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Dial-Tone Test (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 1 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 2 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 3 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Primary Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Backup Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Secondary Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Match Strings (Cannot use if Output Mode is Follow.)

* Indicates default value.

Relay 2

Status:
☐ NOT CONFIG*
☐ ENABLED
☐ DISABLED

Name: _____
(Max. 39 characters)

Output Mode:
☐ STEADY*
☐ PULSATING
☐ FOLLOW

Output Time Unit:
(Cannot use if Output Mode is Follow.)
☐ SECONDS*
☐ MINUTES
☐ HOURS

Output Duration:
(Cannot use if Output Mode is Follow.)
_____ (1*)
(1-999)

Trigger?	Source
☐ NO* ☐ YES	Contact 1
☐ NO* ☐ YES	Contact 2
☐ NO* ☐ YES	Contact 3
☐ NO* ☐ YES	Contact 4
☐ NO* ☐ YES	Contact 5
☐ NO* ☐ YES	Contact 6
☐ NO* ☐ YES	Contact 7
☐ NO* ☐ YES	Contact 8

* Indicates default value.

Page 2 of screen

Trigger?	Source
☐ NO* ☐ YES	Temperature 1
☐ NO* ☐ YES	Temperature 2
☐ NO* ☐ YES	DC Volts 1
☐ NO* ☐ YES	DC Volts 2
☐ NO* ☐ YES	AC-Line Volts
☐ NO* ☐ YES	AC-Line Sag (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	AC-Line Impulse (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Battery Test (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Access Security (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Dial-Tone Test (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 1 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 2 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Port 3 DTR (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Primary Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Backup Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Secondary Destination (Cannot use if Output Mode is Follow.)
☐ NO* ☐ YES	Match Strings (Cannot use if Output Mode is Follow.)

* Indicates default value.

ASCII-Data Matching Worksheet

Use this worksheet in conjunction with the instructions in Chapter Thirteen.

Match-Word Record

Use this worksheet in conjunction with the instructions in Chapter Thirteen.

Match Word Number: _____

Status:
- ☐ NOT CONFIG*
- ☐ ENABLED
- ☐ DISABLED

Name: _____
(Max. 39 characters)

Monitored Port:
- ☐ 1*
- ☐ 2

Match Word: _____
(Max: 10 characters)

Disable Status:
- ☐ NOT CONFIG*
- ☐ ENABLED
- ☐ DISABLED

Disable Start Time:

☐ 00:00*	☐ 12:00
☐ 01:00	☐ 13:00
☐ 02:00	☐ 14:00
☐ 03:00	☐ 15:00
☐ 04:00	☐ 16:00
☐ 05:00	☐ 17:00
☐ 06:00	☐ 18:00
☐ 07:00	☐ 19:00
☐ 08:00	☐ 20:00
☐ 09:00	☐ 21:00
☐ 10:00	☐ 22:00
☐ 11:00	☐ 23:00

Disable Duration: _____ (1*) HOURS
(1-24)

Disable Schedule:
- ☐ DAILY*
- ☐ MON-FRI

* Indicates default value.

Message-Ignore Status: ☐ ENABLED
☐ DISABLED*

Message-Ignore Character: _____ (%*)
(Max: 1 character)

Ignore Position: _____ (1*)
(1-99)

Sleep Time: _____ (6*) HOURS
(0-99)

Capture Mode: ☐ CAPTURE OFF*
☐ CAPTURE FROM MATCH
☐ CAPTURE FROM LINE START

Alarm Action: ☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *An ASCII-data match has occurred on the selected port.*)

* Indicates default value.

Access Security Worksheet

Configure Access Security

Use this worksheet in conjunction with the instructions in Chapter Fourteen.

Open-Operator-Menu Mode

Security Mode:
■ OPEN-OPERATOR-MENU*
☐ NAME-PASSWORD

Initial Modem Connection:
☐ OPERATOR MENU*
☐ PORT 1
☐ PORT 2
☐ PORT 3 (Available only if Operating Mode is Standard)

Password Tries Allowed:
☐ 1 ☐ 6
☐ 2* ☐ 7
☐ 3 ☐ 8
☐ 4 ☐ 9
☐ 5

Access-Restriction Duration:
_____ (1*) MINUTES
(1-99)

Modem Access-Restriction Mode:
■ NO SYSTEM OR ADMIN ACCESS

Consecutive Restrictions for Alarm:
☐ 1 ☐ 6
☐ 2* ☐ 7
☐ 3 ☐ 8
☐ 4 ☐ 9
☐ 5

Alarm Action:
☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *WARNING: Detected potential intruder activity.*)

Page 2 of screen

System-Level Password: _____

(Enter a password consisting of 5 to 15 characters.)

Administrator-Level Password: _____

(Enter a password consisting of 5 to 15 characters.)

* Indicates default value.

Open-Operator-Menu Mode(cont.)

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Should the factory be able to gain access?:
☐ YES*
☐ NO

Set inactivity timer to: _____ (30*) MINUTES
(5-999)

Page 4 of screen

Should the factory be able to gain access?:
☐ YES*
☐ NO

Set inactivity timer to: _____ (30*) MINUTES
(5-999)

Name-Password Mode

Security Mode:
☐ OPEN-OPERATOR-MENU*
■ NAME-PASSWORD

Initial Modem Connection:
☐ OPERATOR MENU*
☐ PORT 1
☐ PORT 2
☐ PORT 3 (Available only if Operating Mode is Standard)

Name/Password Tries Allowed:

☐ 1	☐ 6
☐ 2*	☐ 7
☐ 3	☐ 8
☐ 4	☐ 9
☐ 5	

Access-Restriction Duration: _____ (1*) MINUTES
(1-99)

Modem Access-Restriction Mode:
☐ RING, NO ANSWER*
☐ ANSWER, ESTABLISH CARRIER AND HANG UP
☐ ANSWER W/CARRIER BUT NO ACTIVITY

Consecutive Restrictions for Alarm:

☐ 1	☐ 6
☐ 2*	☐ 7
☐ 3	☐ 8
☐ 4	☐ 9
☐ 5	

Alarm Action:
☐ LOG ONLY*
☐ DIAL OUT & LOG

Alarm Message: _____

(Max. 77 characters. Factory-supplied sample: *WARNING: Detected potential intruder activity.*)

* Indicates default value.

Page 2 of screen

No.	User Name	User Password	Privilege	Callback Dialing Command Line
1.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
2.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
3.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
4.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
5.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
6.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
7.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
8.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
9.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
10.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
11.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)

No.	User Name	User Password	Privilege	Callback Dialing Command Line
12.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
13.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
14.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)
15.	_____ (5-15 characters)	_____ (Max. 15 characters)	☐ OPERATOR ☐ SYSTEM ☐ ADMIN	ATD_____ (Max. 27 characters)

Page 3 of screen

User-Name Prompt: _____

(Max. 39 characters. Factory-supplied sample: *Enter Name:*)

User-Password Prompt: _____

(Max. 39 characters. Factory-supplied sample: *Enter Password:*)

Page 4 of screen

Should the factory be able to gain access?: ☐ YES*
☐ NO

Set inactivity timer to: _____ (30*) MINUTES (5-999)

* Indicates default value.

Appendix B
Alarm Codes

Introduction

This appendix provides a detailed list of all alarm codes generated by the Model 125. Specific operating conditions result in these alarm codes being placed in the System Activity Log. They also may be part of a dial-out alarm report.

All alarm codes are in the form:

> Code: xxx Time: 11:25:08 UTC 30-MAR-1994 Message
optional second line
optional third line

Notes: Configuration-specific text is shown in italics.
Optional lines not used in alarm codes are omitted.

Configuration Change Alarm Codes

Code	Message
101	> Code: 101 Time: 11:25:08 UTC 30-MAR-1994 Operator Menu Option Modified
102	> Code: 102 Time: 11:25:08 UTC 30-MAR-1994 Time/Date Modified
103	> Code: 103 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Set to Standard
104	> Code: 104 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Set to Maintenance
105	> Code: 105 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Set to Modem Monitor
106	> Code: 106 Time: 11:25:08 UTC 30-MAR-1994 Modem # Rings to Answer Changed
107	> Code: 107 Time: 11:25:08 UTC 30-MAR-1994 Port 1 Data Rate Changed
108	> Code: 108 Time: 11:25:08 UTC 30-MAR-1994 Port 2 Data Rate Changed
109	> Code: 109 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Data Rate Changed
110	> Code: 110 Time: 11:25:08 UTC 30-MAR-1994 Port 1 Data Format Changed
111	> Code: 111 Time: 11:25:08 UTC 30-MAR-1994 Port 2 Data Format Changed
112	> Code: 112 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Data Format Changed
113	> Code: 113 Time: 11:25:08 UTC 30-MAR-1994 Modem Data Format Changed
114	> Code: 114 Time: 11:25:08 UTC 30-MAR-1994 Port 1 Flow Control Changed
115	> Code: 115 Time: 11:25:08 UTC 30-MAR-1994 Port 2 Flow Control Changed
116	> Code: 116 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Flow Control Changed
117	> Code: 117 Time: 11:25:08 UTC 30-MAR-1994 Modem Flow Control Changed
120	> Code: 120 Time: 11:25:08 UTC 30-MAR-1994 Security Mode - Open-System
121	> Code: 121 Time: 11:25:08 UTC 30-MAR-1994 Security Mode - Name-Password
130	> Code: 130 Time: 11:25:08 UTC 30-MAR-1994 System Activity Log Cleared System Activity Log Cleared by User *n - name*

Note: The notation n is the user number.

140	> Code: 140 Time: 11:25:08 UTC 30-MAR-1994 Menu System Access Enabled
141	> Code: 141 Time: 11:25:08 UTC 30-MAR-1994 Menu System Access Disabled

System Alarm Codes

Code	Message
150	> Code: 150 Time: 11:25:08 UTC 30-MAR-1994 System Startup - Database OK
151	> Code: 151 Time: 11:25:08 UTC 30-MAR-1994 System Startup - Database Reset
152	> Code: 152 Time: 11:25:08 UTC 30-MAR-1994 System on Battery Power
153	> Code: 153 Time: 11:25:08 UTC 30-MAR-1994 System on AC-Line Power
154	> Code: 154 Time: 11:25:08 UTC 30-MAR-1994 Startup from >1 Week Shutdown If configured, AC-line voltage restore alarm will not be generated.
Note:	This alarm is generated only if system is started after being in power-down state for more than one week.
155	> Code: 155 Time: 11:25:08 UTC 30-MAR-1994 System Shutdown - Battery <5.5V
Note:	This alarm is generated in response to an impending system shut down. Shut down sequence occurs when internal-battery voltage falls below 5.5 volts.
156	> Code: 156 Time: 11:25:08 UTC 30-MAR-1994 Battery Test Failure *n*V *Battery test message*
Note:	The notation n represents the voltage value at the time of the alarm. DC voltage values range from 0 to 5.9 volts.

Contact-Input Monitoring Alarm Codes

Code	Message
201	> Code: 201 Time: 11:25:08 UTC 30-MAR-1994 Contact 1 *Name that was entered for Contact 1* *Message that was entered for Contact 1*
202	> Code: 202 Time: 11:25:08 UTC 30-MAR-1994 Contact 2 *Name that was entered for Contact 2* *Message that was entered for Contact 2*
203	> Code: 203 Time: 11:25:08 UTC 30-MAR-1994 Contact 3 *Name that was entered for Contact 3* *Message that was entered for Contact 3*
204	> Code: 204 Time: 11:25:08 UTC 30-MAR-1994 Contact 4 *Name that was entered for Contact 4* *Message that was entered for Contact 4*
205	> Code: 205 Time: 11:25:08 UTC 30-MAR-1994 Contact 5 *Name that was entered for Contact 5* *Message that was entered for Contact 5*
206	> Code: 206 Time: 11:25:08 UTC 30-MAR-1994 Contact 6 *Name that was entered for Contact 6* *Message that was entered for Contact 6*
207	> Code: 207 Time: 11:25:08 UTC 30-MAR-1994 Contact 7 *Name that was entered for Contact 7* *Message that was entered for Contact 7*
208	> Code: 208 Time: 11:25:08 UTC 30-MAR-1994 Contact 8 *Name that was entered for Contact 8* *Message that was entered for Contact 8*

Temperature Monitoring Alarm Codes

Code	Message
210	> Code: 210 Time: 11:25:08 UTC 30-MAR-1994 Temperature 1 *n* {*F or C*} *Name entered for Temperature 1* *Alarm message that was entered for low temperature*
211	> Code: 211 Time: 11:25:08 UTC 30-MAR-1994 Temperature 1 *n* {*F or C*} *Name entered for Temperature 1* *Restore message that was entered for low temperature*
212	> Code: 212 Time: 11:25:08 UTC 30-MAR-1994 Temperature 1 *n* {*F or C*} *Name entered for Temperature 1* *Alarm message that was entered for high temperature*
213	> Code: 213 Time: 11:25:08 UTC 30-MAR-1994 Temperature 1 *n* {*F or C*} *Name entered for Temperature 1* *Restore message that was entered for high temperature*
214	> Code: 214 Time: 11:25:08 UTC 30-MAR-1994 Temperature 2 *n* {*F or C*} *Name entered for Temperature 2* *Alarm message that was entered for low temperature*
215	> Code: 215 Time: 11:25:08 UTC 30-MAR-1994 Temperature 2 *n* {*F or C*} *Name entered for Temperature 2* *Restore message that was entered for low temperature*
216	> Code: 216 Time: 11:25:08 UTC 30-MAR-1994 Temperature 2 *n* {*F or C*} *Name entered for Temperature 2* *Alarm message that was entered for high temperature*
217	> Code: 217 Time: 11:25:08 UTC 30-MAR-1994 Temperature 2 *n* {*F or C*} *Name entered for Temperature 2* *Restore message that was entered for high temperature*

Note: The notation n represents the temperature value at the time of the alarm. Celsius values range from 5 to 45 degrees. Temperatures below this range are shown as <5 C while those above this range are shown as >45 C. Fahrenheit values range from 41 to 113 degrees. Temperatures below this range are shown as <41 F while those above this range are shown as >113 F.

Example

> Code: 214 Time: 11:25:08 UTC 30-MAR-1994 Temperature 2 <41 F
Equipment Room 4160 North
Detected Low Temperature

DC-Voltage Monitoring Alarm Codes

Code Message

220 > Code: 220 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 1 *n*V
Name entered for DC Volts 1
Alarm message that was entered for low DC voltage

221 > Code: 221 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 1 *n*V
Name entered for DC Volts 1
Restore message that was entered for low DC voltage

222 > Code: 222 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 1 *n*V
Name entered for DC Volts 1
Alarm message that was entered for high DC voltage

223 > Code: 223 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 1 *n*V
Name entered for DC Volts 1
Restore message that was entered for high DC voltage

224 > Code: 224 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 2 *n*V
Name entered for DC Volts 2
Alarm message that was entered for low DC voltage

225 > Code: 225 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 2 *n*V
Name entered for DC Volts 2
Restore message that was entered for low DC voltage

226 > Code: 226 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 2 *n*V
Name entered for DC Volts 2
Alarm message that was entered for high DC voltage

227 > Code: 227 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 2 *n*V
Name entered for DC Volts 2
Restore message that was entered for high DC voltage

Note: The notation n represents the voltage value at the time of the alarm. DC voltage values range from 1 to 59 volts. Values below this range are shown as < while those above this range are shown as >. For negative voltages, a – sign is inserted before the value. (Example: –48V). For positive voltages, a + sign is inserted before the value. (Example: +24V).

Example

> Code: 222 Time: 11:25:08 UTC 30-MAR-1994 DC Volts 1 >-59V
DC Battery Plant
Overcharge Condition Detected.

AC-Line Monitoring Alarm Codes

Code	Message
230	> Code: 230 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Volts *n*V *Name entered for AC-Line Volts* *Alarm message that was entered for low AC-line voltage*
231	> Code: 231 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Volts *n*V *Name entered for AC-Line Volts* *Restore message that was entered for low AC-line voltage*
232	> Code: 232 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Volts *n*V *Name entered for AC-Line Volts* *Alarm message that was entered for high AC-line voltage*
234	> Code: 234 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Volts *n*V *Name entered for AC-Line Volts* *Restore message that was entered for high AC-line voltage*
240	> Code: 240 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Sag *Name entered for AC-Line Sag* *Alarm message that was entered for AC-line sag*
241	> Code: 241 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Impulse *Name entered for AC-Line Impulse* *Alarm message that was entered for AC-line impulse*

Note: The notation n represents the voltage value at the time of the alarm. AC voltage values range from 0 to 140 volts. Values outside this range are displayed as >140V.

Example

> Code 230 Time: 11:25:08 UTC 30-MAR-1994 AC-Line Volts 92V
AC Power Circuit D61 - Panel 12
Low AC Voltage Detected.

DTR-Monitoring Alarm Codes

Code	Message
250	> Code: 250 Time: 11:25:08 UTC 30-MAR-1994 Port 1 DTR Low for >10 Min. *Name entered for Port 1* *Message entered for Port 1 DTR monitoring*
251	> Code: 251 Time: 11:25:08 UTC 30-MAR-1994 Port 2 DTR Low for >10 Min. *Name entered for Port 2* *Message entered for Port 2 DTR monitoring*
252	> Code: 252 Time: 11:25:08 UTC 30-MAR-1994 Port 3 DTR Low for >10 Min. *Name entered for Port 3* *Message entered for Port 3 DTR monitoring*

System-Access Alarm Codes

Code	Message
301	> Code: 301 Time: 11:25:08 UTC 30-MAR-1994 Modem Answered
302	> Code: 302 Time: 11:25:08 UTC 30-MAR-1994 Modem Disconnected
303	> Code: 303 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Accessed Model 125
304	> Code: 304 Time: 11:25:08 UTC 30-MAR-1994 Port 3 Exited Model 125
305	> Code: 305 Time: 11:25:08 UTC 30-MAR-1994 Modem Courtesy Access Granted
306	> Code: 306 Time: 11:25:08 UTC 30-MAR-1994 Access Granted Access Granted to User *n - name*
Note:	The notation n is the user number.
307	> Code: 307 Time: 11:25:08 UTC 30-MAR-1994 Access Denied - Incorrect Password *Message that was entered for access security* Incorrect Password Entered by User *n - name*
Note:	The notation n is the user number.
308	> Code: 308 Time: 11:25:08 UTC 30-MAR-1994 Access Denied - Invalid User Name *Message that was entered for access security*
309	> Code: 309 Time: 11:25:08 UTC 30-MAR-1994 Callback Initiated Callback Initiated to User *n - name*
Note:	The notation n is the user number.
310	> Code: 310 Time: 11:25:08 UTC 30-MAR-1994 System Level Accessed
311	> Code: 311 Time: 11:25:08 UTC 30-MAR-1994 Administrator Level Accessed
312	> Code: 312 Time: 11:25:08 UTC 30-MAR-1994 Inactivity Time Elapsed
313	> Code: 313 Time: 11:25:08 UTC 30-MAR-1994 Monitor Program Startup
320	> Code: 320 Time: 11:25:08 UTC 30-MAR-1994 System Currently in Use
321	> Code: 321 Time: 11:25:08 UTC 30-MAR-1994 Security Access Time Expired
330	> Code: 330 Time: 11:25:08 UTC 30-MAR-1994 Access Restriction Initiated
331	> Code: 331 Time: 11:25:08 UTC 30-MAR-1994 Access Restriction Expired
335	> Code: 335 Time: 11:25:08 UTC 30-MAR-1994 Access Attempt - Answer and Hangup
336	> Code: 336 Time: 11:25:08 UTC 30-MAR-1994 Access Attempt - Answer w/No Activity

Dial-Out Related Alarm Codes

Code	Message
400	> Code: 400 Time: 11:25:08 UTC 30-MAR-1994 SN: 00001 Version: 1.00 Site-Text Line 1 - Site-Text Line 2 Dial-Out Message
401	> Code: 401 Time: 11:25:08 UTC 30-MAR-1994 Dial Tone Test - Fail Fail. Dial tone not detected. Touch tone and pulse dialing not tested.
402	> Code: 402 Time: 11:25:08 UTC 30-MAR-1994 Dial Tone Test - Fail Fail. Dial tone detected. No touch tone or pulse dialing available.
410	> Code: 410 Time: 11:25:08 UTC 30-MAR-1994 Manual Dial Out Requested
411	> Code: 411 Time: 11:25:08 UTC 30-MAR-1994 System Dial-Out Self Test Initiated
412	> Code: 412 Time: 11:25:08 UTC 30-MAR-1994 Manual Dial-Tone Test Requested
420	> Code: 420 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Connect 300 *Destination name - dialing command line*
421	> Code: 421 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Connect 1200 *Destination name - dialing command line*
422	> Code: 422 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Connect 2400 *Destination name - dialing command line*
425	> Code: 425 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Connect 300 *Destination name - dialing command line*
426	> Code: 426 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Connect 1200 *Destination name - dialing command line*
427	> Code: 427 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Connect 2400 *Destination name - dialing command line*
430	> Code: 430 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Connect 300 *Destination name - dialing command line*
431	> Code: 431 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Connect 1200 *Destination name - dialing command line*
432	> Code: 432 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Connect 2400 *Destination name - dialing command line*
440	> Code: 440 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - Connect 300

Code	Message
441	> Code: 441 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - Connect 1200
442	> Code: 442 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - Connect 2400
443	> Code: 443 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - Collision Collision with Incoming Call
444	> Code: 444 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - No Answer No Answer; No Carrier Detected
446	> Code: 446 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - No Dial Tone No Dial Tone Detected - Dial Out Aborted
447	> Code: 447 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out - Busy Line is Busy
448	> Code: 448 Time: 11:25:08 UTC 30-MAR-1994 Callback Dial Out Modem Error *n* Error Code Received from Modem
Note:	The notation n is the error code for the modem.
450	> Code: 450 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Collision *Destination name - dialing command line* Collision with Incoming Call
451	> Code: 451 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - No Answer *Destination name - dialing command line* No Answer; No Carrier Detected
452	> Code: 452 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Not Dialed *Destination name - dialing command line* Number Not Configured or Not Valid
453	> Code: 453 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - No Dial Tone *Destination name - dialing command line* No Dial Tone Detected - Dial Out Aborted
454	> Code: 454 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Busy *Destination name - dialing command line*
455	> Code: 455 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Modem Error *n* *Destination name - dialing command line* Error Code Received from Modem
Note:	The notation n is the error code for the modem.
460	> Code: 460 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Collision *Destination name - dialing command line* Collision with Incoming Call

Code **Message**

461 > Code: 461 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - No Answer
Destination name - dialing command line
No Answer; No Carrier Detected

462 > Code: 462 Time: 11:25:08 UTC 30-MAR-1994 Dial Out Not Dialed
Destination name - dialing command line
Number Not Configured or Not Valid

463 > Code: 463 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - No Dial Tone
Destination name - dialing command line
No Dial Tone Detected - Dial Out Aborted

464 > Code: 464 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Busy
Destination name - dialing command line

465 > Code: 465 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Modem Error *n*
Destination name - dialing command line
Error Code Received from Modem

Note: The notation n is the error code for the modem.

470 > Code: 470 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Collision
Destination name - dialing command line
Collision with Incoming Call

471 > Code: 471 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - No Answer
Destination name - dialing command line
No Answer; No Carrier Detected

472 > Code: 472 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Not Dialed
Destination name - dialing command line
Number Not Configured or Not Valid

473 > Code: 473 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - No Dial Tone
Destination name - dialing command line
No Dial Tone Detected - Dial Out Aborted

474 > Code: 474 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Busy
Destination name - dialing command line

475 > Code: 475 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Modem Error *n*
Destination name - dialing command line
Error Code Received from Modem

Note: The notation n is the error code for the modem.

Code	Message
480	> Code: 480 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Aborted Unable to Connect to Primary Destination
481	> Code: 481 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Backup - Aborted Unable to Connect to Backup Destination
482	> Code: 482 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Secondary - Aborted Unable to Connect to Secondary Destination
490	> Code: 490 Time: 11:25:08 UTC 30-MAR-1994 Data Transmission not Completed Connection Established but Complete Transmission not Possible

Examples

> Code: 422 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - Connect 2400
Central Dispatch - ATDT555-2222

> Code: 451 Time: 11:25:08 UTC 30-MAR-1994 Dial-Out Primary - No Answer
Central Dispatch - ATDT555-2222
No Answer or No Carrier Detected

Match-Word Alarm Codes

Code	Message
501	> Code: 501 Time: 11:25:08 UTC 30-MAR-1994 Match Word 1 on Port *n* *Name entered for Match Word 1* *Alarm message that was entered for Match Word 1* *Captured information associated with Match Word 1*
502	> Code: 502 Time: 11:25:08 UTC 30-MAR-1994 Match Word 2 on Port *n* *Name entered for Match Word 2* *Alarm message that was entered for Match Word 2* *Captured information associated with Match Word 2*
503	> Code: 503 Time: 11:25:08 UTC 30-MAR-1994 Match Word 3 on Port *n* *Name entered for Match Word 3* *Alarm message that was entered for Match Word 3* *Captured information associated with Match Word 3*
504	> Code: 504 Time: 11:25:08 UTC 30-MAR-1994 Match Word 4 on Port *n* *Name entered for Match Word 4* *Alarm message that was entered for Match Word 4* *Captured information associated with Match Word 4*
505	> Code: 505 Time: 11:25:08 UTC 30-MAR-1994 Match Word 5 on Port *n* *Name entered for Match Word 5* *Alarm message that was entered for Match Word 5* *Captured information associated with Match Word 5*
506	> Code: 506 Time: 11:25:08 UTC 30-MAR-1994 Match Word 6 on Port *n* *Name entered for Match Word 6* *Alarm message that was entered for Match Word 6* *Captured information associated with Match Word 6*
507	> Code: 507 Time: 11:25:08 UTC 30-MAR-1994 Match Word 7 on Port *n* *Name entered for Match Word 7* *Alarm message that was entered for Match Word 7* *Captured information associated with Match Word 7*
508	> Code: 508 Time: 11:25:08 UTC 30-MAR-1994 Match Word 8 on Port *n* *Name entered for Match Word 8* *Alarm message that was entered for Match Word 8* *Captured information associated with Match Word 8*
509	> Code: 509 Time: 11:25:08 UTC 30-MAR-1994 Match Word 9 on Port *n* *Name entered for Match Word 9* *Alarm message that was entered for Match Word 9* *Captured information associated with Match Word 9*

Note: The notation n represents the port number that the Match Word was detected on.

Code	Message
510	> Code: 510 Time: 11:25:08 UTC 30-MAR-1994 Match Word 10 on Port *n* *Name entered for Match Word 10* *Alarm message that was entered for Match Word 10* *Captured information associated with Match Word 10*
511	> Code: 511 Time: 11:25:08 UTC 30-MAR-1994 Match Word 11 on Port *n* *Name entered for Match Word 11* *Alarm message that was entered for Match Word 11* *Captured information associated with Match Word 11*
512	> Code: 512 Time: 11:25:08 UTC 30-MAR-1994 Match Word 12 on Port *n* *Name entered for Match Word 12* *Alarm message that was entered for Match Word 12* *Captured information associated with Match Word 12*
513	> Code: 513 Time: 11:25:08 UTC 30-MAR-1994 Match Word 13 on Port *n* *Name entered for Match Word 13* *Alarm message that was entered for Match Word 13* *Captured information associated with Match Word 13*
514	> Code: 514 Time: 11:25:08 UTC 30-MAR-1994 Match Word 14 on Port *n* *Name entered for Match Word 14* *Alarm message that was entered for Match Word 14* *Captured information associated with Match Word 14*
515	> Code: 515 Time: 11:25:08 UTC 30-MAR-1994 Match Word 15 on Port *n* *Name entered for Match Word 15* *Alarm message that was entered for Match Word 15* *Captured information associated with Match Word 15*
516	> Code: 516 Time: 11:25:08 UTC 30-MAR-1994 Match Word 16 on Port *n* *Name entered for Match Word 16* *Alarm message that was entered for Match Word 16* *Captured information associated with Match Word 16*
517	> Code: 517 Time: 11:25:08 UTC 30-MAR-1994 Match Word 17 on Port *n* *Name entered for Match Word 17* *Alarm message that was entered for Match Word 17* *Captured information associated with Match Word 17*
518	> Code: 518 Time: 11:25:08 UTC 30-MAR-1994 Match Word 18 on Port *n* *Name entered for Match Word 18* *Alarm message that was entered for Match Word 18* *Captured information associated with Match Word 18*

Note: The notation n represents the port number that the Match Word was detected on.

Code	Message
519	> Code: 519 Time: 11:25:08 UTC 30-MAR-1994 Match Word 19 on Port *n* *Name entered for Match Word 19* *Alarm message that was entered for Match Word 19* *Captured information associated with Match Word 19*
520	> Code: 520 Time: 11:25:08 UTC 30-MAR-1994 Match Word 20 on Port *n* *Name entered for Match Word 20* *Alarm message that was entered for Match Word 20* *Captured information associated with Match Word 20*
521	> Code: 521 Time: 11:25:08 UTC 30-MAR-1994 Match Word 21 on Port *n* *Name entered for Match Word 21* *Alarm message that was entered for Match Word 21* *Captured information associated with Match Word 21*
522	> Code: 522 Time: 11:25:08 UTC 30-MAR-1994 Match Word 22 on Port *n* *Name entered for Match Word 22* *Alarm message that was entered for Match Word 22* *Captured information associated with Match Word 22*
523	> Code: 523 Time: 11:25:08 UTC 30-MAR-1994 Match Word 23 on Port *n* *Name entered for Match Word 23* *Alarm message that was entered for Match Word 23* *Captured information associated with Match Word 23*
524	> Code: 524 Time: 11:25:08 UTC 30-MAR-1994 Match Word 24 on Port *n* *Name entered for Match Word 24* *Alarm message that was entered for Match Word 24* *Captured information associated with Match Word 24*
525	> Code: 525 Time: 11:25:08 UTC 30-MAR-1994 Match Word 25 on Port *n* *Name entered for Match Word 25* *Alarm message that was entered for Match Word 25* *Captured information associated with Match Word 25*
526	> Code: 526 Time: 11:25:08 UTC 30-MAR-1994 Match Word 26 on Port *n* *Name entered for Match Word 26* *Alarm message that was entered for Match Word 26* *Captured information associated with Match Word 26*
527	> Code: 527 Time: 11:25:08 UTC 30-MAR-1994 Match Word 27 on Port *n* *Name entered for Match Word 27* *Alarm message that was entered for Match Word 27* *Captured information associated with Match Word 27*

Note: The notation n represents the port number that the Match Word was detected on.

Code	Message
528	> Code: 528 Time: 11:25:08 UTC 30-MAR-1994 Match Word 28 on Port *n* *Name entered for Match Word 28* *Alarm message that was entered for Match Word 28* *Captured information associated with Match Word 28*
529	> Code: 529 Time: 11:25:08 UTC 30-MAR-1994 Match Word 29 on Port *n* *Name entered for Match Word 29* *Alarm message that was entered for Match Word 29* *Captured information associated with Match Word 29*
530	> Code: 530 Time: 11:25:08 UTC 30-MAR-1994 Match Word 30 on Port *n* *Name entered for Match Word 30* *Alarm message that was entered for Match Word 30* *Captured information associated with Match Word 30*
531	> Code: 531 Time: 11:25:08 UTC 30-MAR-1994 Match Word 31 on Port *n* *Name entered for Match Word 31* *Alarm message that was entered for Match Word 31* *Captured information associated with Match Word 31*
532	> Code: 532 Time: 11:25:08 UTC 30-MAR-1994 Match Word 32 on Port *n* *Name entered for Match Word 32* *Alarm message that was entered for Match Word 32* *Captured information associated with Match Word 32*

Note: The notation n represents the port number that the Match Word was detected on.

Diagnostic Alarm Code

600 > Code: 600 Time: 11:25:08 UTC 30-MAR-1994 Diagnostic *n*

Note: The notation n represents a number from 1 through 50.

Appendix C
Technical Notes

This appendix explains some Model 125 technical details that should be of interest to system administrators and other techno-junkies.

Inactivity Timer

Implemented deep inside the Model 125's operating software is an inactivity timer that prevents one user from accidentally tying up the unit. Each time one of a selected group of ASCII characters is received through the modem or Port 3 (when set to maintenance mode) a timer is reset. The characters include ↵ (carriage return) and all characters that start with *Esc* (function and arrow keys). These characters were selected so that only actual user activity will reset the timer. Random data from a noisy telephone line or a bad Port 3 connection won't appear as if a user is present. If the timer is not reset within its time interval a forced disconnect takes place. If access was made through the modem a short message is sent to the user, and then the modem automatically disconnects. If access was made through Port 3, the message is sent through Port 3, and then the Port 3 connection is terminated. Once disconnection has taken place, the Model 125 is again available for access. The time interval is configurable over a range of 5-999 minutes. Refer to Chapter Fourteen, "Configuring Access Security" for details on how to configure the time interval.

Accessing the Menu System

To access the menu system, you must use a terminal or personal computer that can emulate the keyboard commands for a VT100 terminal. (Refer to Appendix F for terminal emulator requirements.)

If you are using a terminal with a built-in emulator, set the emulator to VT100. If you are using a personal computer, you may need to acquire terminal emulator software capable of emulating VT100. The communications program PROCOMM PLUS by DATASTORM TECHNOLOGIES, INC. provides excellent VT100 emulation (they refer to it as VT100/102).

Note: You can also use a terminal set for TTY emulation. However, using a TTY-compatible terminal enables you to connect with serial ports and exit the system only.

If You Have Problems with Garbage on the Screen

Should you access the Operator Menu using inappropriate terminal emulation, the screen may appear filled with "garbage." If need be, access your terminal emulator and implement the correct terminal emulation. Then press **###** to refresh the screen if you are using VT100 emulation. (Press **%%%** to refresh the screen when using a TTY terminal.)

Notes: Since incorrect terminal emulation is only one reason why a screen might appear filled with "garbage," or work incorrectly in some other way, you may wish to verify that your terminal is set for VT100 emulation.

To verify VT100 emulation, take the following steps:

1. Type **%%%** to display the Operator Menu designed for use with a TTY-compatible terminal (shown in Figure 5-7).
2. Press **F1**.

   If your terminal is set for VT100 emulation, the screen displays the message:

   You have pressed the VT100-compatible F1 Function Key

   (The screen displays similar responses when you press F2-F4, ↑, ↓, ←, →, or Backspace.)

   If the terminal is not set for VT100, the screen does not respond when you press F1.

   For example, you set terminal emulation to TTY, then inadvertently access the VT100 Operator Menu by typing **###** and the System Status screen by pressing **4**. Since the System Status screen requires VT100 emulation, it appears as garbage. Furthermore, you cannot press **F2** to return to the Operator Menu because F2 requires VT100 emulation.

Copying the User Database

Many Model 125 functions are configurable using the extensive menu system. A system administrator can optimize Model 125 operation to meet the specific needs of an individual site or network. While the various parameters are easily entered using the menu screens, it may be desirable to “clone” a specific configuration onto other Model 125’s. This would speed network implementation and ensure accuracy. One Model 125 could be carefully optimized, and then its configuration loaded onto other units.

Special software has been created by Gordon Kapes, Inc. to retrieve a Model 125’s user database, check it for accuracy, and then automatically load it into as many Model 125s as desired. This procedure can be only done by Gordon Kapes, Inc. personnel and involves a nominal charge. Please contact Gordon Kapes, Inc. for details.

No Menu System Access

In the normal mode of operation, typing ### or %%% when connected to one of the Model 125’s serial ports accesses the Operator Menu. In most cases this is a desirable function, providing a rapid means of switching between serial ports, and, when using a VT100 terminal, accessing all the functions of the menu system. However, in some specific cases it may be undesirable to recognize ### and %%% as menu requests. An example would be when a file is being transferred to a connected device via the Model 125’s modem and one of the serial ports. Should the characters ### or %%% be part of the transmitted data, the Model 125 would think that a menu request was made, disconnecting from the serial port and bringing up the Operator Menu. This sequence of events would make transmitting this particular data file impossible.

A “hidden” function allows ### and %%% menu access to be disabled when using the modem. From the VT100 Operator Menu typing NOMENU brings up a screen describing the function, and asking the user to type Y to disable ### and %%% menu access. Once the function is disabled, choosing to connect to one of the serial ports from the Operator Menu is now a “dead end” choice. Only by terminating the modem connection and redialing the Model 125 can the Operator Menu again be accessed. There is no danger in the Model 125 staying “locked” in the NOMENU mode since ### and %%% access is again activated upon the modem disconnecting.

The NOMENU function is not available from Port 3 set for maintenance. It is recommended that large data transfers be made locally by direct connection, and not through the Model 125.

The NOMENU function is designed to be used only by sophisticated users with a clear reason to do so. It would be desirable not to mention the function to the average user as it could lead to “experimenting” with a somewhat “hard-core” feature.

Program and Monitor Software

The Model 125’s operating software resides in memory provided by four 128k x 8 static RAM devices. Upon initial power up, the Model 125 “boots” under an operating system contained in a 64k x 8 ROM memory device. This operating system is called the monitor mode. Commands in the monitor mode tests the RAM memory for the presence of a valid program load. If a valid program is detected, the unit will then reboot to operate under the RAM based program. Should a valid program not be found, the unit remains in the monitor mode.

Monitor Mode

Monitor mode is provided exclusively for use by Gordon Kapes, Inc. personnel. Access to the commands contained in the monitor mode are password restricted. The passwords are not published.

While monitor mode is intended for use by factory personnel only, it is interesting to get a view of what it contains. A number of diagnostic and data transfer functions are available. One function is used to load program and data files into the RAM memory. To quickly and accurately facilitate data transfer, the powerful ZModem protocol is implemented. ZModem, developed by Chuck Forsberg, is far superior to the older X-Modem and Y-Modem methods. Gordon Kapes, Inc. personnel load Model 125 operating software using the ZModem implementation provided in the PROCOMM PLUS communications software.

When the Model 125 is operating in the monitor mode several characteristics are fixed. Only Port 3 and the modem can be used to access the unit. Port 3’s configuration is fixed at 9600 baud, 8 data bits, no parity, and one stop bit. (9600,8-N-1). The modem is configured to automatically answer after one ring, and is also set for 8-N-1.

Entering Monitor Mode

There are several reasons why the Model 125 may boot and remain in the monitor mode; one reason is automatic, two are manually initiated. The unit automatically enters monitor mode if upon boot a valid program is not found in RAM memory. A valid program is determined to be present if a program-loaded data bit is set to the correct value and the mathematical checksum stored in memory matches that calculated by a monitor routine.

There are two manual methods for entering monitor mode: pressing the reset push button and using the MONITOR command accessible from the administrator level of the menu system.

Reset Push Button

Located adjacent to the modular jack on the Model 125's cabinet is a small black plastic button. This is the reset push button which, by design, should rarely, if ever, need to be used. As discussed previously, the Model 125 operates from program software stored in battery-protected RAM memory. In addition to the RAM-based software, a ROM memory device contains the specialized monitor program. The monitor exists to facilitate program loading, system diagnostics, and ensure modem access in the event of problems. In the unlikely event that access to the Model 125 cannot take place due to problems with the program software, the reset button will force the unit to restart (reboot) under the monitor program. To ensure that an accidental reboot won't take place, a lengthy hardware delay (debounce) is incorporated into the reset push-button circuit. The button must be pushed and held for a minimum of 10 seconds before a reboot will take place.

The reset button should only be used under the direction of Gordon Kapes, Inc. factory personnel. Access to the monitor program is password protected and the password is not published. Although once into the monitor program the commands are fairly well documented, the monitor program is not written to be user friendly.

Should it ever become necessary to use the reset push button, the factory-provided directions will be somewhat in this form: Push and hold the button while watching the power LED. After the button is held for 10-15 seconds, the power LED will begin flashing. Hold the button for another 5 seconds or so, then release it. Several of the LEDs will flash as the unit reboots under the ROM-based monitor program. Access is now available through Port 3 (9600, 8-N-1) or the modem (8-N-1). In most cases factory personnel will now access the unit via the modem. Remember—the monitor password is not published. Don't force the unit to the monitor mode unless directed to by the factory!

Menu System Monitor Command

A "hidden" command in the menu system allows a Model 125 operating in its normal (RAM-based) program mode to be forced into the monitor mode. This feature is provided primarily to allow factory personnel to reload new versions of the operating software. The command is accessible only by going into the administrator level menu and typing **monitor**. The system will bring up another screen which explains what will happen, and asks if you really want to go into the monitor mode. Responding with a **Y** will terminate RAM operation and reboot under monitor mode. Remember that the monitor mode is password protected with an unpublished password! Use this command only under factory direction.

System Power-Up after More than One Week

How to handle restore from low AC-voltage alarms caused much discussion among the Model 125's software designers. It was important for the software to "remember" that the Model 125 had experienced a system shut down due to an AC power failure (ultimately caused by a low-battery condition). With this information, the option of generating a low AC-voltage-restore alarm would be available. However, if the AC power failure was longer than what would be considered "normal," an alarm being sent to the System Activity Log and, if configured, causing a dial-out alarm report would simply confuse support personnel. An example of this would be the case where a Model 125 is being relocated to another communications-system site. The Model 125 is unplugged, stored for several weeks or months, and then installed at the new site. Service personnel would be scratching their heads if they received a low AC-voltage-restore alarm report from this particular unit.

In an effort to limit this erroneous alarm, “smarts” have been built into the software. Each time the Model 125 performs a system shut-down the date is stored in non-volatile memory. Upon system power-up the current date (maintained by the real-time clock module) is compared to the power-down date. If the current date is no more than 7 days from the power-down date, a low AC-voltage-restore alarm, if configured, is generated. If the dates differ by more than 7 days no alarm is generated. System alarm code 154 is generated to document the suppression of low AC-voltage-restore alarms.

XON/XOFF Communication Flow Control

You can configure the serial communications ports and the modem to operate with the industry standard XON/XOFF flow control protocol. Use XON/XOFF when the connected device also supports it.

In the Model 125, an automatic time-out feature is always active with software flow control. This feature protects the serial communications ports and associated internal data buffers. During normal operation, the Model 125 receives an XOFF command followed shortly thereafter by an XON command. The Model 125 allows a maximum of 30 seconds to elapse between the sending of an XOFF and an XON. Should more than 30 seconds elapse after an XOFF has been received, the Model 125 resumes sending data just as if it had received an XON. The Model 125 is then set to receive an XOFF.

Although a “precise” implementation of XON/XOFF allows an infinite wait after XOFF has been received, such a wait can potentially “lock up” the Model 125. A spurious XOFF received upon modem disconnect, for example, could lock up the unit. Consequently, the 30-second timer ensures the unit will always be ready to handle data as required.

Any condition where the time between an authentic XOFF and an authentic XON lasts longer than 30 seconds indicates an incorrectly engineered installation.

How Zero Sleep Time Affects Alarm Activation

You can set zero sleep time for the following functions: contact-input monitoring, temperature-monitoring, DC-voltage monitoring, and AC-voltage monitoring. (For AC-sag monitoring, AC-impulse monitoring, and ASCII-data-matching, minimum sleep time is one hour. For serial-port DTR monitoring, sleep time is permanently set to six hours.)

When sleep time is set to zero, the system uses a procedure for triggering an alarm that is slightly different from the one used when sleep time is set for one or more hours. The following explains the differences:

When an alarm is activated with sleep time set to zero, the system reports the alarm only once—without regard to the length of time the alarm condition remains in effect. An alarm message is sent to the System Activity Log or to both the log and a dial-out alarm report as configured. A second alarm is reported only after an alarm condition returns to normal and then resumes alarm status in excess of any configured debounce or minimum threshold time.

When an alarm is activated with sleep time set within the range 1-99 hours, the system reports the activated alarm once, then sets sleep status. This disables the monitoring function for the sleep-time period. Once the sleep time period has expired, the monitoring function is reenabled. If an alarm condition is in effect at this time, it is reported by the system even though it might be the original alarm which has remained in effect throughout the sleep time period.

Appendix D
Model 125 Specifications

This appendix contains technical specifications for the Model 125. These specifications are subject to change without notice.

Dimensions

12.4 inches high (31.5 cm)
11.7 inches wide (29.7 cm)
2.6 inches deep (6.6 cm)

Weight

8.5 lbs (3.9 kg)
Shipping Weight: 9.7 lbs (4.4 kg)

Mounting

Wall mounted only using four #8 screws

Power Requirement

120Vac, 0.25 Amps, 50/60Hz

Fusing

Power Fuse F1: 0.25A, 250V,
3AG fast-acting, not field replaceable

Battery Fuse F2: 3A, 250V,
3AG fast-acting, not field replaceable

Telephone Line Interface Fuse F3:
0.500A, 250V, 2AG slow blow,
not field replaceable

LED Indicators

Qty: 6

Indication: power, modem off-hook, data transmission activity on 3 serial ports and modem

Internal Battery

Type: 6V, 1.3Ah, sealed lead-acid type, Panasonic LCR6V1.3P, not field replaceable

Operating Time (under battery power): 2 hours, minimum, with fully charged battery

Charge Time: 3.5 hours, maximum, from fully depleted battery

Replacement Interval: 8 years, minimum, the Model 125 self tests once per week indicating when replacement is required

Program Memory Storage

Type: 512K bytes, super low power static RAM

Backup Power: 3V, 165mAh lithium battery, not field replaceable

Memory Retention with no AC power connected: 3 years cumulative, minimum

Program Software Loading

Program software can be updated locally through Port 3 or remotely through internal modem. Protocol utilized is industry standard ZModem type.

Real-Time Clock

Clock module maintains time and date information to better than ±1 minute per month. Clock backup battery maintains operation in excess of 10 years with no AC power connected.

Serial Ports

Qty: 3

Type: RS-232-C Data Communications Equipment (DCE)

Data Format: 7/Even/1, 7/Odd/1, or 8/None/1

Data Rate: 300, 1200, 2400, 4800, or 9600 baud (Port 3 does not support 300)

Flow Control: XON/XOFF or none

Connector Type: 25-pin D-type female, one per port

Internal Modem

Compatibility: CCITT V22.bis, V22, Bell 212A, 103

Data Format: 7/Even/1, 7/Odd/1, or 8/None/1

Data Rate: 2400, 1200 or 300 bits-per-second, auto-selected

Flow Control: XON/XOFF or none

Telephone Line Requirements: 2-wire, loop start, bridged ringing: 15-68Hz, 40 to 150Vac

Telephone Line Connector: mates with USOC RJ11C via standard modular cable

Audible Monitoring: none

Contact Inputs

Qty: 8

Signal Compatibility: normally open (not shorted) or normally closed (shorted)

Contact Input: signals connected to the contact inputs must be capable of handling 6mA at 18Vdc

State Change Recognition: contact must change and hold state for a minimum of 1 second to guarantee detection

Connector: 8 pairs on 25-pair telephone-type plug

DC-Voltage Monitor Inputs

Qty: 2

Input Type: differential, capable of measuring DC voltages positive, negative, or floating (isolated) with respect to earth ground

Monitor Voltage Range: 0-60Vdc

Accuracy: ±1V

Input Impedance: 2 megohms

Measuring Interval: voltage measured every 1 second, nominal

Connector: 2 pairs on 25-pair telephone type plug

Temperature Monitoring

Qty: 2, one internal to Model 125 cabinet, one external

Temperature Range: 45-113 degrees F, 4-45 degrees C

Accuracy: ±1 degree, F or C

Measurement Interval: temperature measured every 10 seconds, nominal

Input 2 Connector: 3.5mm 2-conductor jack

External Sensor Type: high precision thermistor assembly, available from Gordon Kapes, Inc.

Relay Contacts

Qty: 2 sets

Type: each set consists of a normally open (not shorted) and normally closed (shorted) contact

Rating: 0.5A maximum at 60Vdc or 60Vac (resistive)

Connector: 4 pairs on 25-pair telephone-type plug

AC-Line Sag Monitoring

Condition for Sag: line voltage of less than 93Vac lasting for greater than 35mSec, nominal (2 cycles of 60Hz)

AC-Line Impulse Monitoring

Condition for Impulse (Surge): greater than 260V peak for 100 microseconds, nominal

AC-Line Voltage Monitoring

Voltage Input: measure voltage from Model 125 AC power cord

Voltage Range: 0-140Vac

Accuracy: ±1V

Measuring Interval: voltage measured every 1 second, nominal

Reset Push-Button Switch

Located adjacent to telephone line modular jack. Terminates normal system operation; use only under factory direction. Button must be pressed and held for a minimum of 10 seconds for reset to take place.

ASCII-Data Matching

Number of Unique Match Words: 32, independently assignable to serial ports 1 or 2

Maximum Word Length: 10 alpha, numeric, or control characters

Ports Available: Port 1 or 2, simultaneous operation available

Model 125 Operating Parameter Configuration

Software selectable locally through Serial Port 3, or remotely through modem.

Safety Compliance

Underwriters Laboratories, Inc. Listed Telephone Equipment

FCC Registration

Registration Number: EPR5ZC-10447-MD-E

Ringer Equivalence: 0.9B

Reliability

MTBF: 15.8 years, per Method I of Bellcore TS-TSY-000332, Issue 3, July 1990

Radiated Noise Compliance

The Model 125 has been tested with a Class A computing device and has been found to comply with Part 15 of the FCC Rules.

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Appendix E
Model 125 Circuit Description

This appendix is intended to familiarize you with the Model 125 for engineering, applications, and recreational purposes.

Power System

A substantial part of the Model 125's circuitry involves the power system. The power system consists of a linear power supply, a switching power supply, a battery charger and 6V battery, a battery test circuit, and a low battery voltage disconnect circuit. 120Vac enters the Model 125 through a 3-conductor line cord. This voltage connects, through a fuse, to the primary of a step down transformer as well as to the input of the AC-line monitoring circuit. This monitoring circuit is not directly part of the power system and is discussed in a later paragraph. The secondary of the transformer is full wave rectified and then filtered to provide unregulated +12Vdc. The unregulated +12Vdc is fed to the input of a switching power supply and a battery charger.

The switching power supply is configured to convert an input voltage of +4 to +18Vdc into ±8Vdc. Under normal operation input power is supplied by the unregulated +12Vdc power supply. During periods of AC-line voltage failure the 6V battery supplies power. Diodes are used to route power into the switching power supply. With this method there is no time delay when going from AC line to battery operation; the Model 125 truly has an uninterruptible power supply on board.

A pulse-width-modulator integrated circuit runs the "switcher," with a flyback mode implemented. The operating frequency is approximately 35kHz. The output ±8Vdc is used by several Model 125 circuits that require bipolar voltage, including the RS-232-C serial interface integrated circuits. It is also used by several integrated circuits associated with the AC-line monitoring section. The +8Vdc provides power for four electro-mechanical relays, as well as feeding the input of a 3-terminal +5V integrated circuit regulator. The +5V is used by the Model 125's logic circuitry, including the microcomputer and digital portion of the modem. The –8Vdc is fed to the input of a 3-terminal –5Vdc integrated circuit regulator. The –5Vdc is used, along with specially filtered +5Vdc, by the analog portion of the modem.

An integrated circuit voltage regulator is used to implement a constant-voltage, current-limited battery charger. The only trim potentiometer contained on the Model 125 is factory adjusted to get a charge voltage of 6.85Vdc. This ensures the battery receives maximum charge without damage from overcharging. The charger current is limited to approximately 400mA. With this maximum charge current, charge time should never exceed 3.5 hours, even with a fully depleted battery. Since wiring errors can happen, the combination of a diode and a fuse is used to prevent damage to the charger should the battery be connected backwards. In the event that the battery is incorrectly connected, a large amount of current flows through the diode by way of the fuse. This large current flow will quickly “blow” the fuse, disconnecting the battery from the circuit.

Hardware is included to perform a thorough battery performance test. Under software control the battery charger is effectively turned off, a resistor load is applied to the battery, and the battery voltage is measured using one channel of an analog-to-digital (A/D) converter. Details on the A/D converter are provided in a later paragraph. During battery testing, the microcomputer, through an interface gate, reduces the charging voltage to approximately 5.5V. At the same time, a resistor is connected across the battery, applying an approximately 200mA load. This condition continues for one minute, with the battery voltage being measured approximately every 10 seconds. The test is halted should the battery voltage fall below the “bad battery” threshold anytime during the test.

A simple hardware circuit protects the battery from going into a deep discharge state. Deep discharge is a certain battery “killer.” The reason the Model 125’s battery is rated for 8+ years of service is that it is “pampered,” as compared to the harsh treatment received by the batteries in most other products. Our battery is carefully charged, frequently tested, and never allowed to reach deep discharge. One section of integrated circuit comparator is used to compare the battery voltage against a precision reference voltage. When the battery voltage falls below 5V, a relay is de-energized, disconnecting the battery from all circuits except the SRAM memory. Only when AC-line voltage is restored does the battery again connect to the power supply and charger.

Microcomputer

The “heart” of the Model 125 is an HD64180 microcomputer, an advanced version of the Z80 microprocessor. The HD64180 combines the industry standard Z80 instruction set with a high level of hardware integration. It combines clock, interrupt, memory and I/O port addressing, and two serial communication ports in a single package. This greatly reduces the Model 125’s parts count when compared to a usual Z80 implementation. For those who think the Z80 is outdated, it is estimated that as of the early 1990s the Z80 family is the volume leader in the 8-bit microprocessor market. It is projected that the Z80 will remain popular through the end of the century!

Memory

The Model 125 uses one 64K X 8 read-only memory (ROM) chip for start up and special operations functions. Four 128K X 8 static random-access memory (SRAM) chips are used to store system operating software and user-defined parameters, as well as to provide general purpose memory for the program. Under normal operation the Model 125 uses the SRAM for *all* storage functions. This is the literal truth, because in most cases the ROM is disconnected from the hardware through logic gates. SRAM was selected for several reasons, the main one being that it facilitates remote uploading of the system software. Another asset is its ability to be battery backed using simple support circuitry. The Model 125 uses specially selected super-low-power SRAM chips for low-power consumption.

Unlike most RAM implementations, the Model 125’s SRAM memory can be considered permanent, nonvolatile storage. Using hardware and software methods, the contents of the SRAM is carefully preserved. Data retention of more than three years is possible without the presence of AC-line voltage. Should the contents of memory be lost due to a prolonged AC power loss or a battery failure, remote uploading of the program software can be achieved easily. Using the internal modem, along with the imbedded ZModem transfer protocol, a coast-to-coast reload would take about 25 minutes. Obviously, this ability to reload allows a much more important function: the ability to easily load new versions of the operating software. The Model 125 was designed to eliminate the need to physically “swap” ROM chips, diskettes, or other items.

Memory Power Control/Watchdog/Reset Circuitry

A specialized integrated circuit, along with additional logic circuitry, performs Model 125 memory, and clock-power-backup and system-integrity functions. The integrated circuit monitors the +5V used by the SRAM memory and clock. If this voltage falls below 4.65V, a 3V lithium battery, rather than the now failing +5V from the switching power supply, is connected to the memory chips. This same integrated circuit implements a hardware watchdog function, preventing the microcomputer from “locking up” due to a power or software “glitch.” The microcomputer, under the direction of a multitasking routine, sends regular “heartbeat” logic pulses to the watchdog input. If the pulses stop, a signal resets the microcomputer. A manual reset push button allows the Model 125 to be “forced” into the ROM operating mode allowing program uploading, diagnostics, and other activities. As an aid to system integrity, the Model 125’s implements an extremely long “debounce” period. This prevents accidental push button resets, requiring that the button be held for approximately 10 seconds before the system responds.

Memory Power Source

The Model 125 uses a 3V lithium battery to maintain the contents of memory during the time when power is not provided, i.e., during a power failure or physical relocation of the unit. The battery was selected to provide memory backup for 10 years, with a 30% operating duty cycle. This means that the SRAM will be backed up for a cumulative time of three years over a 10-year period. This is an extremely generous amount. You could disconnect AC power for months at a time and not have an SRAM data problem. Once this cumulative 3-year time period has been exceeded, the battery should be replaced at the factory. Most manufacturers give some silly, meaningless figure about battery life. Without listing the maximum length of battery shelf life (in our case at least 10 years) and rated duty cycle, you really have no clue what the listed battery backup figure means.

A lithium battery starts with a finite amount of energy in it; it does not recharge. Once it’s gone, that’s all folks! The Model 125 does not have an automatic means of identifying a lithium battery that needs to be replaced. Any cost-effective circuit that measures battery strength will drain the battery too fast; the test itself is worse than not testing it at all!

Clock/NOVRAM

A sophisticated module provides two important Model 125 functions: time keeping and storage of special configuration parameters. Since the module includes an integral lithium battery, the clock keeps going and the parameters are saved when Model 125 power fails, even for as long as 10 years! The module stores and increments time and date, and even accounts for leap years! Laser trimmed, it provides accuracy of better than ±60 seconds per month. The module has 50 bytes of memory which are used to store critical parameters. These parameters include program load status, port configurations, and software “crash” tracking.

Serial Communication Ports and Driver/Receivers

The Model 125 contains three serial communication ports. They are configured under EIA standard RS-232-C as Data Communications Equipment (DCE). (We originally designed the ports under EIA-232-D, the successor to RS-232-C, but nobody knew what we were talking about—so much for being progressive!) Two of the ports are part of the microcomputer’s resources, the third is implemented using a universal asynchronous receiver-transmitter (UART) integrated circuit. The data rates of the two microprocessor-based serial ports, named Port 1 and 2, are software configurable for 300, 1200, 2400, 4800, or 9600 baud. The UART chip, which implements Port 3, is software controlled to operate at 1200, 2400, 4800, or 9600 baud.

In addition to a transmit and receive line, each port implements two hardware handshake lines, data set ready (DSR) and data terminal ready (DTR). For ease in interfacing the Model 125 to other equipment, two pins of each port, clear to send (CTS) and data carrier detect (DCD), are “pulled” to the high state using resistors.

All transmit, receive, and handshake lines are isolated from the nasty outside world using integrated circuits that meet the EIA specifications. The logic level transmit data is converted to ±8Vdc; receive data, which comes in as a bipolar signal, is converted to logic level.

Modem

A CCITT standard V22.bis modem is implemented using a VLSI integrated circuit, analog support circuitry, and a data-access arrangement (DAA). The modem provides 2400, 1200, and 300 bit-per-second operation. The DAA is used to safely and reliably link the modem "chip" with the telephone line. A sealed, bifurcated contact relay controls the connection of the telephone line to a "wet" coupling transformer. A fuse, in series with the ring lead, prevents dangerously high currents from flowing through the interface. Protection components prevent excessive signal levels from reaching the circuitry. An optical coupler-based ring voltage detection circuit provides the telephone line ringing logic signal. The rugged implementation selected for the Model 125's modem should make its reliability figures meet or exceed that of any commercial modem.

Contact Inputs

Eight identical circuits interface external contacts to the Model 125's data bus. Many arguments occurred in engineering before the final circuit was selected! The circuit is required to perform the following functions: source significant current, protect the Model 125's logic circuit from severe ESD discharges, allow an accidental connection of –48Vdc loop battery or 90Vac ringing voltage without damage, and—of course—detect a contact closure or contact open. The reason the contact input must source current is to help keep the switch or relay contact functioning correctly, that is, giving enough current to keep the contact surfaces "clean." A current of 4mA was selected; more would have been better but operating life under battery power negated that. ESD discharge protection is important so that static discharges into the contact inputs won't "blow" the circuitry. The contact inputs can handle a 2kV, low impedance discharge with no damage. It's not unusual for simple mistakes to happen when installing telephone equipment. A technician connecting a source of –48Vdc ringing voltage, or a telephone trunk to one of the contact inputs must be considered as a "normal" abnormal condition. But don't sweat it, the contact inputs are ready to accept these harsh temporary fault conditions.

Analog to Digital (A/D) Converter

An integrated-circuit A/D converter, along with a precision-voltage reference, allows the Model 125 to accurately measure analog signals. The converter has eight analog inputs, of which seven are used by the Model 125. The microcomputer sends channel select and timing signals to the A/D converter; the converter returns 8-bit data. The analog signals

measured are: AC-line voltage, DC-volts Input 1, DC-volts Input 2, internal temperature, remote temperature input, internal 6V battery voltage, and unregulated +12Vdc. Preparing the seven signals to interface with the A/D converter is discussed in later paragraphs.

Note that the Model 125's A/D circuitry is not intended to take rapid analog measurements. It is intended to measure stable, or slowly changing signals. The Model 125's real time operating system is configured to read each analog input every 10 seconds, nominal. This is more than fast enough for the designated task.

Temperature Monitoring

The Model 125 contains circuitry to monitor temperature at two locations. The first location was selected to be the room or area where the Model 125 is installed, this is called room ambient. The second location is selected as required by a site. A 50-foot cable connects the external location to be monitored with the Model 125's input. Both temperature measurements are made using precision thermistors. Room ambient is determined by measuring the temperature of the air inside the Model 125's cabinet. While it appears that the air vents in the Model 125's chassis and cover allow cooling of the circuitry, they are there only to allow room ambient air to pass through the unit. This air passes by the internal thermistor, which is located near the bottom air vents. The Model 125's circuitry generates negligible heat, so as long as air can flow unimpeded, the measurement will accurately reflect room ambient. Two identical circuits are used to interface the thermistors to the A/D converter. Each circuit uses one section of operational amplifier integrated circuit to convert the thermistor's temperature versus resistance curve into a linear 0-to-2.5Vdc signal.

DC-Voltage Monitoring

Two identical circuits are used to measure external DC signals. Due to the telecommunications equipment environment that the Model 125 is intended to serve, measuring voltages that are positive or negative with respect to ground was required. To achieve this result, while getting the best performance from the A/D converter, a differential input scheme was selected. Each input utilizes one section of operational amplifier configured as a differential, attenuating buffer amplifier. The 0-to-60Vdc input is scaled to 0 to 2.5Vdc and then fed into one input of the A/D converter. The input impedance is 2 megohms to minimize input current

and provide over voltage and surge protection. The Model 125's software is configured to display the measured DC voltage as positive or negative. In this way service personnel will view the measured voltage as it really exists.

AC-Line Monitoring

A unique set of Model 125 features relates to monitoring the incoming AC line. The features are all based upon measuring the differential voltage between the line (hot) and neutral connections. The line and neutral connections from the Model 125's line cord connect to an operational amplifier configured as a less-than unity gain (attenuating), differential-buffer amplifier. This reduces the AC-line voltage to a lower, safer value. (You could call it a kinder, gentler value!) The now attenuated AC voltage is converted to DC via a full wave synchronous rectifier circuit. Two sections of operational amplifier, along with discrete components, implement the rectifier. The incoming AC-line voltage is now represented by a 0–5Vdc signal. This signal is fed to three monitoring circuits. The first circuit is a simple low-pass filter which averages the DC voltage, and sends it to one input of the A/D converter. The converter sends the microcomputer the data representing the average value of the AC line.

The second monitoring circuit detects voltage sags. Sags are short-duration power outages or under-voltage conditions that last roughly two or more AC cycles. The DC voltage from the rectifier is fed to one section of voltage comparator whose reference is the precision 2.5Vdc signal used by the A/D converter. Connected to the output of the comparator is a resistor-capacitor timing circuit. The capacitor will relatively slowly discharge whenever the DC voltage representing the line-to-neutral voltage drops below the reference voltage threshold. If the low voltage condition lasts long enough (approximately 50 milliseconds) the microcomputer is alerted, via a flip-flop, of the sag condition.

The third monitoring circuit detects high-voltage impulses ("spikes"). The DC voltage is resistor-scaled and fed to the input of one section of integrated-circuit comparator. Our friend, the 2.5V precision reference voltage, also feeds this comparator. If the line-to-neutral voltage exceeds the "trip" point, the microcomputer, again through a flip-flop, is alerted of this impulse condition. To "catch" fast impulses, no capacitors are used in this comparator circuit.

Note that the sag and impulse circuits are not designed to catch multiple sags or impulses that occur during short time intervals. Detection of a sag or impulse sets and holds the logic state of its respective flip-flop until explicitly reset by the microcomputer. As the state of the flip-flop's output is "polled" by a function running under the real time operating system, up to ten seconds can elapse between polls. This means that multiple sags or impulses will not be detected during this ten second "window." This is not a design fault. The Model 125 is intended to supply trend data, and not act as a real-time power monitor. By identifying a potential problem, the Model 125 gives you the impetus to get the "big bucks" equipment out to the site in question.

Relays

Two sealed, bifurcated contact relays are used to implement the relay functions. Logic signals from the microcomputer, through sections of relay driver integrated circuit, control the state of the relays.

LED Indicators

Six light-emitting diodes (LEDs) act as operating-status indicators. The power LED is connected to the microcomputer reset circuitry. During normal operation it lights steadily. If the hardware watchdog circuit requests a system reset, it flashes approximately once per second. The four data LEDs are controlled by the microcomputer. They are lit for a short period of time whenever data is transmitted or received over their respective communication paths. These LEDs give a simplified representation of the data flow over the serial ports and the modem. Unlike the transmit and receive LEDs on a standard modem, they do not indicate the direction of the data. The modem OH LED indicates the status of the telephone line off-hook relay.

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Appendix F
Terminal Emulator Requirements

Overview

The Model 125's menu system is designed to communicate with terminals and personal computers that can emulate the keyboard and screen position commands of a DEC VT100 terminal.

Note: You can also use a terminal set for TTY emulation. However, using a TTY-compatible terminal enables you to connect with serial ports and exit the system only.

Keyboard Commands

For full operation, the Model 125 requires the use of several VT100 cursor-position and function keys. The selected terminal or terminal-emulator software must support the following keys and respective key sequences:

Key Name	Characters Sent	Hex Values
Tab	Ctrl-I	09
Backspace	Ctrl-H	08
Up Arrow	Esc [A	1B 5B 41
Down Arrow	Esc [B	1B 5B 42
Left Arrow	Esc [D	1B 5B 44
Right Arrow	Esc [C	1B 5B 43
F1	Esc O P	1B 4F 50
F2	Esc O Q	1B 4F 51
F3	Esc O R	1B 4F 52
F4	Esc O S	1B 4F 53

Please note that many of the terminal emulator software packages do a very poor job of emulation. We were shocked to find they didn't even support the function keys F1–F4. So before you try to connect with the Model 125, do a careful review of your terminal emulator character set.

We are very fond of DATASTORM TECHNOLOGIES' PROCOMM PLUS software package. Its VT100 terminal emulator implementation is excellent—we highly recommend it. (They refer to it as VT100/102 emulation.) Whatever software you choose, be certain to confirm that the required keys are implemented.

Screen Position Commands

For correct operation the Model 125 requires the use of several VT100 screen-position commands. The selected terminal or terminal emulator software must support the following sequences:

Function	**Characters Sent**	**Hex Values**
Normal Video	Esc [0 m	1B 5B 30 6D
Bold Video	Esc [1 m	1B 5B 31 6D
Reverse Video	Esc [7 m	1B 5B 37 6D
Clear Screen	Esc [2 J	1B 5B 32 49
Clear from Cursor to End of Line	Esc [0 K	1B 5B 30 4A
Position Cursor at Row *rr*, Column *cc* where *rr* = 1-24 *cc* = 1-80	Esc [*rr* ; *cc*f	1B 5B *rr* 3B *cc* 66

Note that dial-out alarm reports do not use VT100 screen-position commands. An ASCII terminal or printer is sufficient to receive dial-out alarm reports.

Appendix G
Serial Port Connections

This appendix is provided as a reference when you are preparing interconnecting cables for use between Model 125 serial ports and serial ports on connected devices. The Model 125 contains three serial communications ports, aptly named Port 1, Port 2, and Port 3. Table G-1 provides detailed connection information for the three ports. Subsequent paragraphs describe how the ports function. At the end of this section examples are provided detailing actual cable implementations.

Table G-1. Serial Port Connection Chart

Pin	Direction	Description
2	To Model 125	Transmitted Data (TD)
3	From Model 125	Received Data (RD)
5	From Model 125	Clear to Send (CTS)
6	From Model 125	Data Set Ready (DSR)
7	To/From Model 125	Signal Ground (SG)
8	From Model 125	Received Line Signal Detect (RLSD)
20	To Model 125	Data Terminal Ready (DTR)

Notes:

1. All ports use individual 25-pin D-Subminiature female connectors.
2. All ports configured as RS-232-C Data Communications Equipment (DCE).
3. Pin 1, shield, is not connected on DCE equipment. Cable shield wire will pick up shield at DTE equipment.
4. Pin 5, CTS, is held high (+8Vdc) and does not change state.
5. Pin 6, DSR, is used to send connection-status information to the connected equipment. It is software configured to provide one of three conditions: continually held high, high when port is active, or momentarily low after port disconnection takes place.
6. Pin 8, RLSD, is held high (+8Vdc) and does not change state.
7. Pin 20, DTR, is used by Model 125 to detect presence of connected equipment.

Understanding the Serial Ports

Correct Model 125 serial port operation depends on the careful preparation of cables linking the Model 125 serial ports to the related equipment. Before preparing cables, it is important to understand how the Model 125's ports are implemented. Each serial port consists of four parts: data transmission to and from the connected equipment, signaling from the Model 125 to the related equipment, signaling from the related equipment to the Model 125, and general purpose pull-up signals.

Data transmission takes place using two pins: one pin for data sent by the Model 125, and one pin for data received by the Model 125. In some applications, these pins, along with signal ground, may be the only connections required to fully interface the Model 125 with another device.

The Data-Set-Ready (DSR) pin can be used to signal the Model 125's serial port connection status to related equipment. DSR can be software configured to go to the high state when the port is active, to momentarily go low when port disconnection takes place, or to remain high at all times. The DSR pin should be used if the related equipment needs a positive indication that a communications path is desired. It may also be important to implement this pin to force a positive disconnect from the related port. On some communications systems, a low state indicates that disconnect has taken place, forcing a log-off command. This can be desirable as it ensures that the next user will be required to enter a password to gain access to the related equipment.

The Data Terminal Equipment (DTR) pin is used by the Model 125 to detect whether a device is connected to the port or not. A high state sent by the related device to the Model 125 indicates that a valid connection is present. Using DTR, along with configuring the DTR-monitoring function (using the menu system), allows an entry in the System Activity Log and an alarm dial-out to take place if the connection is disrupted.

The Model 125 holds the Clear to Send (CTS) and Received Line Signal Detect (RSLD) pins in the high state. These are provided for general purpose use, allowing one or more pins on the related equipment to be pulled to the high state.

Hardware Handshaking

The Model 125's serial ports do not implement hardware data-flow control. The superior XON/XOFF software data-flow control is implemented on all three serial ports and the modem. The DSR and DTR pins do provide some specialized signaling to and from the Model 125, but not true flow control.

Preparing the Serial Cables

Preparing serial cables requires a clear understanding of three topics: Model 125 serial ports, the serial ports on the related equipment, and the goals of the installation. The previous paragraphs provided an overview of how the Model 125's serial ports are implemented.

Determine what hardware connections the serial ports on the related equipment need to function correctly. Some pins may need to be pulled to the high state to allow data flow. One or more pins may need to be controlled by the Model 125's DSR pin. Connecting DSR to the related equipment could be required to ensure a clean log off, assisting with access security.

Finally, you must decide if DTR monitoring is required. In most cases it would be desirable, as DTR-Monitoring can alert personnel when a serial port is accidentally disconnected.

Nuts and Bolts

Shielded cable and connector housings should be used to minimize interference to and from the Model 125. Be certain to use connectors that contain locking screws. These allow the connectors to be secured to the threaded fasteners contained on the Model 125's serial port connectors.

Sample Cable Implementations

The following pages detail cable implementations for a number of common devices. These are provided for reference only and may not have been thoroughly tested. Please contact us with details of your successful cable designs. We'll include them in future issues of this guide and send you a Gordon Kapes, Inc. coffee mug to boot!

ROLM CBX 8000 Teleprinter Port

Interconnection between Model 125 Serial Port and ROLM CBX 8000 Teleprinter Port.

Model 125 Serial Port		ROLM CBX 8000 Teleprinter Port
3 (TD)	→	2
2 (RD)	←	3
6 (DSR)	→	20
7 (SG)	↔	7
20 (DTR)	←	5

Notes:

1. Required connectors:
   Model 125 end: 25-pin D-Subminiature male.
   ROLM CBX end: 25-pin D-Subminiature male.
2. Use shielded cable and connector housings.
3. Model 125 port-configuration parameters: 7-EVEN-1, XON/XOFF.

ROLM PhoneMail Maintenance Port

Interconnection between Model 125 Serial Port and ROLM PhoneMail Maintenance Port.

Model 125 Serial Port		ROLM PhoneMail Maintenance Port
3 (TD)	→	2
2 (RD)	←	3
6 (DSR)	→	20
7 (SG)	↔	7
20 (DTR)	←	5

Notes:

1. Required connectors:
   Model 125 end: 25-pin D-Subminiature male
   ROLM PhoneMail end: 25-pin D-Subminiature male.
2. Use shielded cable and connector housings.
3. Model 125 port-configuration parameters: 8-NONE-1, XON/XOFF.

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Appendix H
Plug P1 Connection Chart

Pin Number	Wire Color	Description	
26	WHT-BLU	+	Contact Input 1
1	BLU-WHT	GND	
27	WHT-ORN	+	Contact Input 2
2	ORN-WHT	GND	
28	WHT-GRN	+	Contact Input 3
3	GRN-WHT	GND	
29	WHT-BRN	+	Contact Input 4
4	BRN-WHT	GND	
30	WHT-SLT	+	Contact Input 5
5	SLT-WHT	GND	
31	RED-BLU	+	Contact Input 6
6	BLU-RED	GND	
32	RED-ORN	+	Contact Input 7
7	ORN-RED	GND	
33	RED-GRN	+	Contact Input 8
8	GRN-RED	GND	
34	RED-BRN		
9	BRN-RED		
35	RED-SLT		
10	SLT-RED		
36	BLK-BLU	+	DC-Voltage
11	BLU-BLK	–	Monitor Input 1
37	BLK-ORN	+	DC-Voltage
12	ORN-BLK	–	Monitor Input 2
38	BLK-GRN		
13	GRN-BLK		
39	BLK-BRN		
14	BRN-BLK		
40	BLK-SLT		
15	SLT-BLK		
41	YEL-BLU		
16	BLU-YEL		
42	YEL-ORN		
17	ORN-YEL		
43	YEL-GRN		
18	GRN-YEL		
44	YEL-BRN		
19	BRN-YEL		
45	YEL-SLT		
20	SLT-YEL		
46	VIO-BLU		
21	BLU-VIO		
47	VIO-ORN	NO1	Relay 1
22	ORN-VIO	NO1	
48	VIO-GRN	NC1	
23	GRN-VIO	NC1	
49	VIO-BRN	NO2	Relay 2
24	BRN-VIO	NO2	
50	VIO-SLT	NC2	
25	SLT-VIO	NC2	

Note 1: The GND connection associated with the contact inputs is at earth ground potential.

Note 2: DC voltage is measured differentially. Connect most positive lead to + input, most negative lead to – input. Example: –48Vdc power supply with positive ground would connect its –48Vdc lead to Model 125 – input, earth ground to Model 125 + input.

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Appendix I
Dial-Out Alarm Report Transmission Flow

Overview

The chart (Figure I-1) contained in this appendix provides a detailed description of the steps taken by the Model 125 to perform dial-out alarm report transmissions. This information should prove valuable during system configuration and troubleshooting.

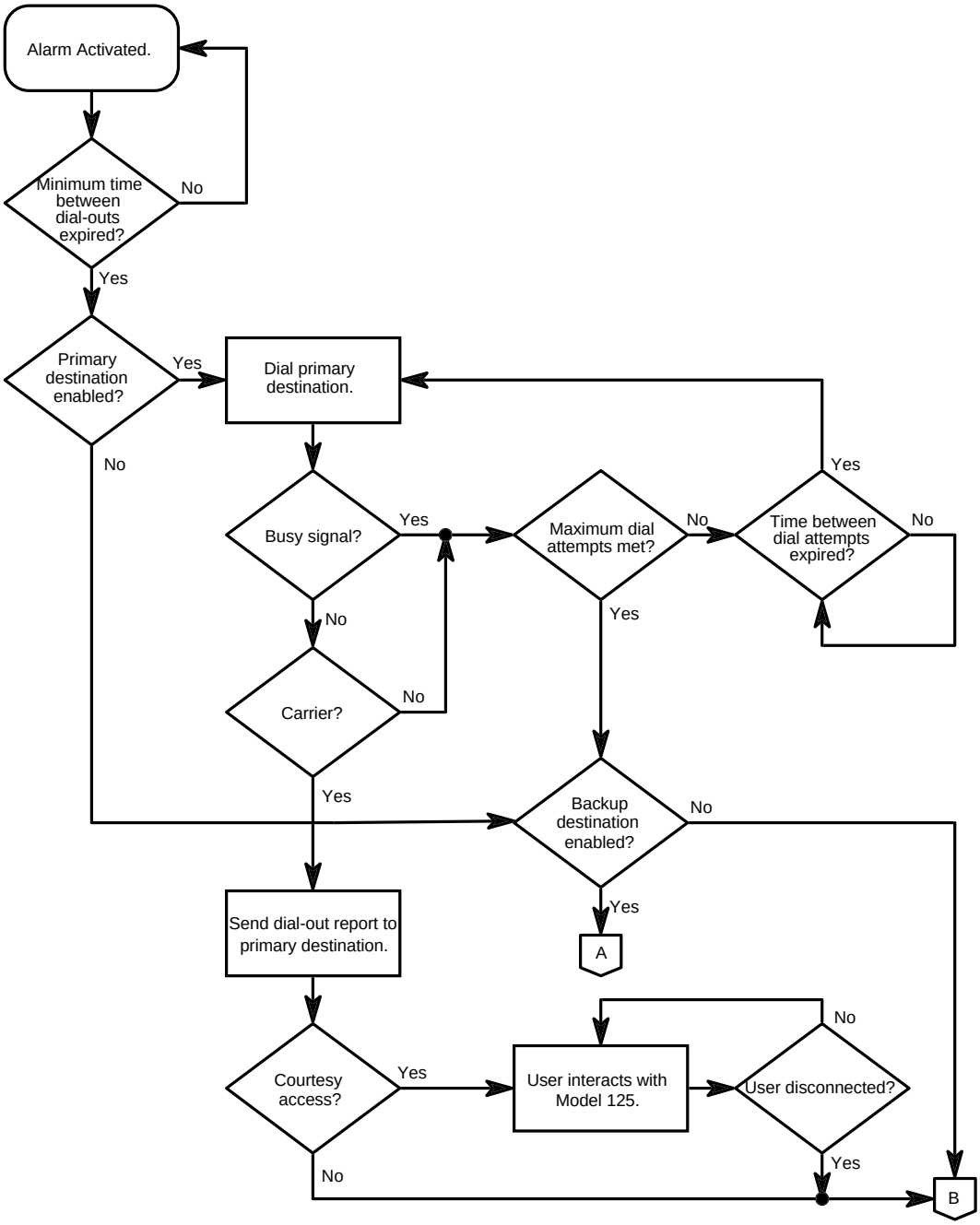

Figure I-1. Dial-Out Alarm Report Transmission Flow. Model 125 dials primary destination first.

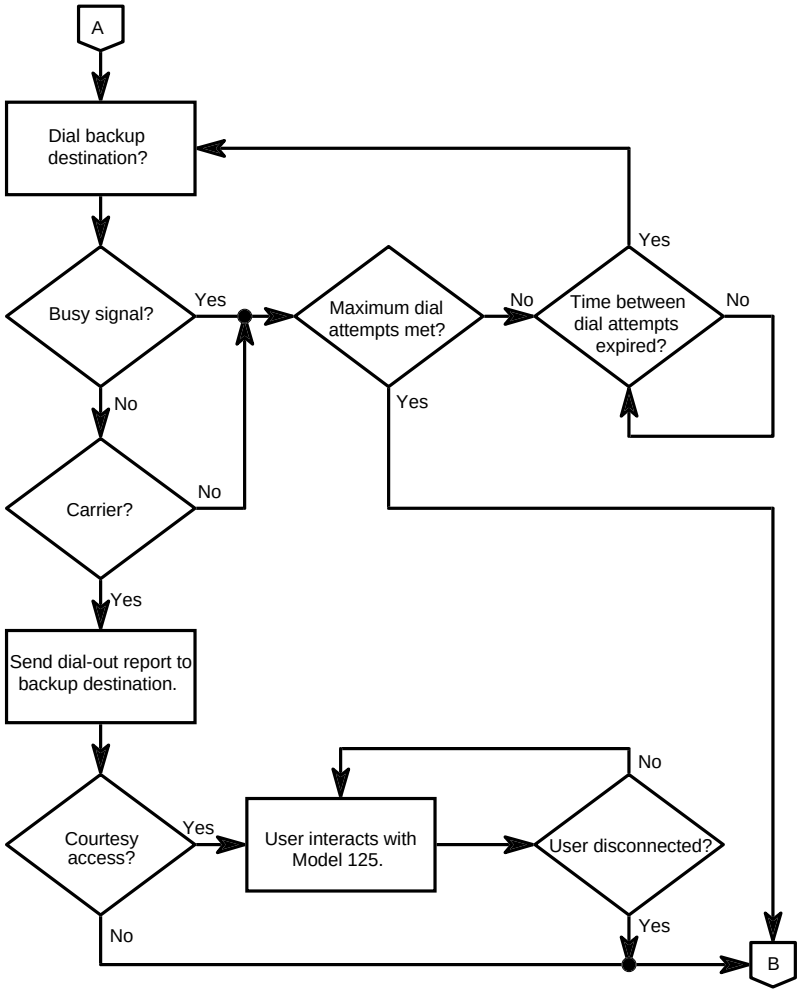

Figure I-1. Dial-Out Alarm Report Transmission Flow (cont.)
Model 125 sends reports to backup destination when primary destination is not available.

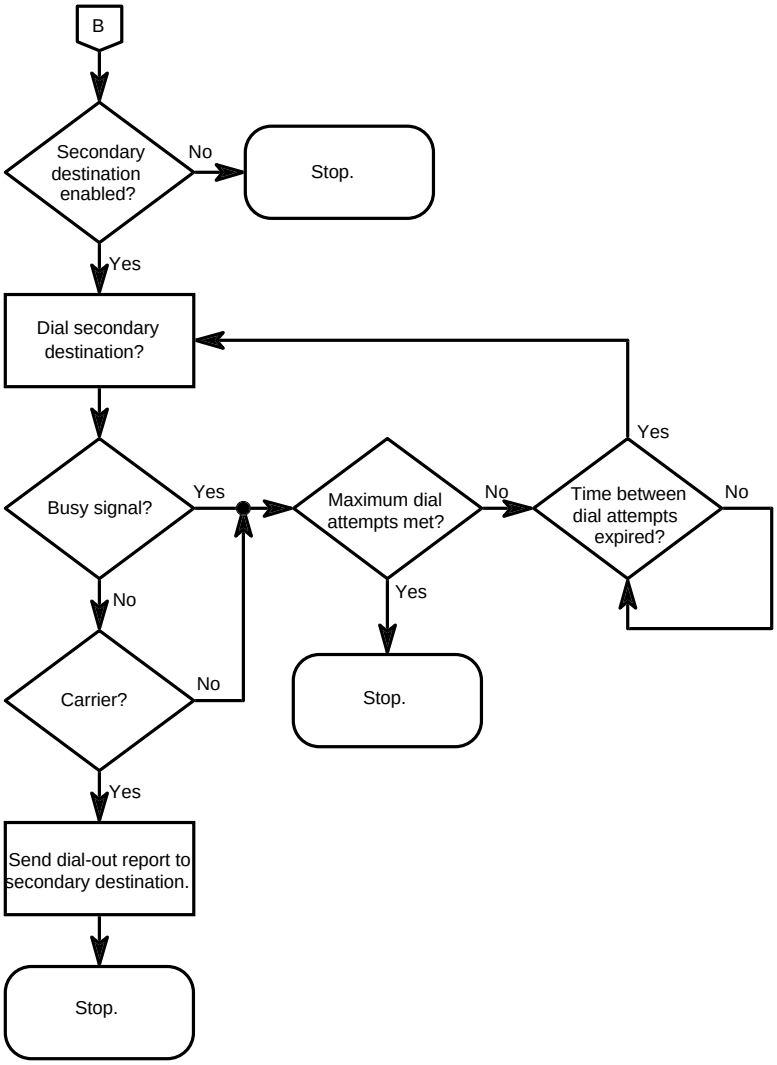

Figure I-1. Dial-Out Alarm Report Transmission Flow (cont.)
Model 125 transmits to secondary destination after primary (or backup).

Appendix J
FCC Requirements

FCC Requirements

Your Model 125 is designed to be used on standard-device telephone lines. The Model 125 connects to the telephone line by means of a standard jack called the USOC RJ-11C. Connection to telephone company-provided coin service (central office implemented systems) is prohibited. Connection to party line service is subject to state tariffs. We are certain you'll want to connect the Model 125 to a party line, but check it out with your state first. Party, party, party!

The goal of the telephone company is to provide you with the best service it can, within the constraints of receiving a good return on shareholder equity. In order to do this, it may occasionally be necessary for them to make changes in their equipment, operations, or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice, in writing, possibly in advance, to allow you to make any changes necessary to maintain uninterrupted service.

If you have any questions about your telephone line, such as how many pieces of equipment you can connect to it, the telephone company will provide this information upon request.

In certain circumstances, it may be necessary for the telephone company to request information from you concerning the equipment which you have connected to your telephone line. Upon request of the telephone company, provide the FCC registration number and the ringer equivalence number (REN) of the equipment which is connected to your line; both of these items are listed on the equipment label. The sum of all of the RENs on your telephone line should be less than five in order to assure proper service from the telephone company. In some cases, a sum of five may not be usable on a given line.

If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line, as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of this disconnection. If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given an opportunity to correct the problem and be informed of your right to file a complaint with the FCC. You have the right to remain silent, if you waive your right to remain silent...

Glossary

Access-security mode. The access-security configuration you choose to implement with the Model 125 Site Monitor. The Model 125 offers the open-operator-menu mode and the name-password mode.

Access security (system). Software included in the Model 125 Site Monitor providing robust protection against intrusion by unauthorized personnel. Access security protects both the Model 125 and the equipment connected to it.

Administrator level. That part of the menu system enabling you to configure access security, view the System Status screen, and view and clear the System Activity Log. The administrator level has its own main and sub menus.

Backup destination. The location you choose to receive a dial-out alarm report should the Model 125 Site Monitor be unable to send it to the primary destination.

Callback feature. A feature available in the name-password mode for access security. When callback is implemented, the Model 125 Site Monitor calls the remote-access device back after the caller has entered valid access information.

Coordinated Universal Time (UTC). The mean solar time of the Greenwich Meridian (0 degrees longitude), previously known as Greenwich Mean Time. Coordinated Universal Time considers the entire world to be in the same time zone.

Courtesy-access. A function giving you an opportunity to immediately access the Model 125 Site Monitor after it calls and delivers a dial-out alarm report.

Data string. A sequence of characters handled as a unit by a computer. Alarms and other messages generated from the serial ports of devices connected to the Model 125 are types of data strings.

Debounce time. The length of time during which a monitoring function must continuously remain in an alarm condition before the alarm is activated.

Dial-out (alarm) receiver. A device you set up for receiving dial-out alarm reports from the Model 125 Site Monitor. A dial-out receiver usually consists of a modem and a device for printing or storing and displaying text information. This type of device might be a printer or a personal computer.

Dial-out destination. The dial-out (alarm) receiver or pager whose specific location, or destination, you have configured in the database for the Model 125 Site Monitor. Reports generated by the Model 125 are sent to a dial-out destination.

Dial-out alarm report. A list of the one or more alarms the Model 125 Site Monitor transmits, via the internal modem, to a database, personal computer, or printer set up as a dial-out alarm receiver.

Disabled status. A monitoring-function status used to turn off a configured function that you do not want currently active. Disabled status is different from sleep status since sleep status stays in effect for a predetermined time period. Disabled status stays in effect until you manually select a new status.

Enabled status. A monitoring-function status indicating the function is configured and operating. The system activates an alarm when an alarm state occurs. Enabled is the normal status for each monitoring function you choose to use.

High-temperature alarm threshold. The number of degrees at or above which a high-temperature alarm condition exists.

High-voltage alarm threshold. The number of volts at or above which a high-voltage alarm condition exists.

Impulse. A short-duration, high-amplitude increase in AC-line voltage. Also called a spike.

Initial connection. The component to which those accessing the Model 125 Site Monitor through a remote-access device are directly connected. This is configured as either the Operator Menu or one of the serial ports.

Internal modem. The modem built in the Model 125 Site Monitor.

Low-temperature alarm threshold. The number of degrees at or below which a low-temperature alarm condition exists.

Low-voltage alarm threshold. The number of volts at or below which a low-voltage alarm condition exists.

Maintenance mode. An operating mode enabling you to use Port 3 to connect to Port 1 or Port 2 on the Model 125 Site Monitor.

Match word. A unique combination of characters the Model 125 uses to detect a specific message generated by a connected device. The Model 125 does this by comparing the match-word data string with data generated (or emitted) by the device.

Menu system. Software internal to the Model 125 Site Monitor enabling you to configure, test, and operate the Model 125.

Minimum restore time. The period of time for which temperature, DC voltage, or AC-line voltage must return to and continuously remain within the optimum range before the system activates a restore alarm.

Minimum threshold time. The period of time for which temperature, DC voltage, or AC-line voltage must continuously remain outside the optimum range (at or higher than the high-alarm threshold or at or below the low-alarm threshold) before the system activates an alarm.

Minimum time between dial-outs. The number of minutes that must elapse from the time one dial-out alarm report is sent until a second dial-out report is sent.

Model 125 Site Monitor. A compact, multi-functional device designed to help support personnel by enabling them to rapidly access maintenance software in telecommunications and data systems equipment, to provide access security for that equipment, and to implement automatic monitoring and reporting of various physical and electrical conditions in a telecommunications equipment room.

Modem-monitor mode. An operating mode enabling you to use Port 3 for observing communications and activity between a remote-access user and the Model 125 Site Monitor, as well as perform all functions provided by maintenance mode.

Name-password mode. The access-security mode designed for maximum protection. You can implement the name-password mode either *with* the callback feature or *without* it.

Not-config status. A monitoring-function status used to indicate that you have not set valid parameters and that the monitoring function is not

active. All monitoring functions are set to not config at the factory prior to shipment.

On-site-access device. A terminal or personal computer connected directly to Port 3 configured as a maintenance port or modem monitor.

Open-operator-menu mode. An access-security mode providing basic security suitable for use with connected equipment containing good internal security.

Operator level. That part of the menu system enabling you to directly access the three serial communications ports, view the System Status screen and System Activity Log, and exit the Model 125 Site Monitor. You access all operator-level functions from the Operator Menu.

Optimum range. A temperature, DC-voltage, or AC-line-voltage value range in which the Model 125 Site Monitor does not issue an alarm. You determine the optimum range by configuring a high-alarm threshold and a low-alarm threshold.

Port 1. The first serial port on the Model 125 Site Monitor. This port is permanently set to standard mode.

Port 2. The second serial port on the Model 125 Site Monitor. This port is permanently set to standard mode.

Port 3. The third serial port on the Model 125 Site Monitor. You can configure this port in standard, maintenance, or modem-monitor mode.

Primary destination. The location with the highest priority for receiving a dial-out alarm report. The Model 125 Site Monitor attempts to send a dial-out alarm report to the primary destination before any other destination.

Remote-access device. A terminal or personal computer, along with a modem and telephone line, allowing access to the Model 125 Site Monitor.

Remote-access modem. The modem used by a remote-access device for communicating with the modem in the Model 125 Site Monitor.

Restore alarm. A “good” alarm indicating temperature, DC voltage, or AC-line voltage has returned to and remained within the optimum range for the minimum restore time.

Room-ambient temperature. The temperature of the room where the Model 125 Site Monitor is located.

Sag. A sudden, short-duration decrease in AC-line voltage.

Secondary destination. A location you choose to receive a dial-out alarm report in addition to the primary destination. The Model 125 Site Monitor sends a report to the secondary destination after sending it to the primary destination (or the backup destination).

Site-identification function. A configuration function enabling you to enter text identifying the site being monitored by the Model 125 Site Monitor.

Sleep status. A monitoring-function status used to turn off the alarm reporting capability of the function for a fixed time period.

Spike. See Impulse.

Standard mode. An operating mode enabling you to use a Model 125 Site Monitor serial port for gaining access to connected equipment. Port 1 and Port 2 are permanently set to standard mode. You can configure Port 3 in standard mode if desired.

System Activity Log. A menu-system screen consisting of one or more pages, accessible at the operator level, system level, and administrator level. All alarm conditions you configure, as well as many other events, are reported to the System Activity Log. This makes the log a useful audit trail of both alarms and operating events.

System level. That part of the menu system enabling you to configure system-operating parameters, perform system tests, and view the System Status screen and System Activity Log. The system level has its own main and sub menus.

System Status screen. A multi-page menu-system screen displaying the current status of monitoring functions, power, dial-out tests, dial-out destinations, and relays. The System Status screen enables you to review current conditions, and perform system troubleshooting and diagnosis. You can also use the screen to manually activate either of the two relays.

UTC. See Coordinated Universal Time.

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