AT&T

MERLIN® II
COMMUNICATIONS SYSTEM

Feature Module 2
Data Communications Guide

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Contents

What's in This Guide

The information in this guide is divided into five sections, as described below.

SECTION 1: INTRODUCTION

This section tells what's in the guide and how to use it. It also gives an overview of data communications with the MERLIN® II Communications System. In addition, it defines basic terms.

SECTION 2: PLANNING DATA OPTIONS

This section helps system administrators make basic decisions about how to use the data options that the MERLIN II system provides. It includes forms for recording those decisions.

SECTION 3: CONNECTING HARDWARE AND SETTING OPTIONS

This section explains how to connect data hardware to the control unit and to other equipment in the MERLIN II system. It also provides information on setting option switches for data stands, data modules, and modems.

SECTION 4: ADMINISTERING DATA OPTIONS

This section shows administrators how to use the information on the planning forms to customize the system to meet specific data communications needs,

SECTION 5: USING DATA EQUIPMENT FOR CALLS

This section explains how to handle internal and outside data calls and how to place voice calls from a computer or data terminal. It contains separate instructions for people with digitaI and analog 'voice terminals.

How to Use This Guide

This guide to data options is intended as a supplement to the *MERLIN II System Manual* that you received with your system. How you should use the guide at any particular time depends on what you want to do.

SETTING UP DATA OPTIONS FOR THE FIRST TIME?

Use the information in Section 2, “Planning Data Options” to decide which options you want for your system and complete the appropriate forms. If your data equipment hasn’t been installed, follow the instructions in Section 3, “Connecting Data Hardware and Setting Options.” (If you aren’t experienced in hardware installation, have someone else perform this step.) After the equipment is installed, perform the procedures in Section 4, “Administering Data Options” that apply to your system.

MAKING CHANGES TO A SYSTEM WITH DIGITAL DATA CAPABILITY?

Update your planning forms to reflect the changes you want to make. Then perform the appropriate procedure(s) in Section 4, “Administering Data Options.” If the change requires changing hardware or hardware option settings, see Section 3, “Connecting Hardware and Setting Options.”

MAKING A DATA CALL FOR THE FIRST TIME?

See the relevant entries in Section 5, “Using Data Equipment for Calls."

Data Communications with the MERLIN II System

The MERLIN II system provides for simultaneous voice and data communications using internal or outside telephone lines. A person with a data terminal or personal computer can make a data call to a host computer, for example, then place or receive voice calls without affecting the data connection.

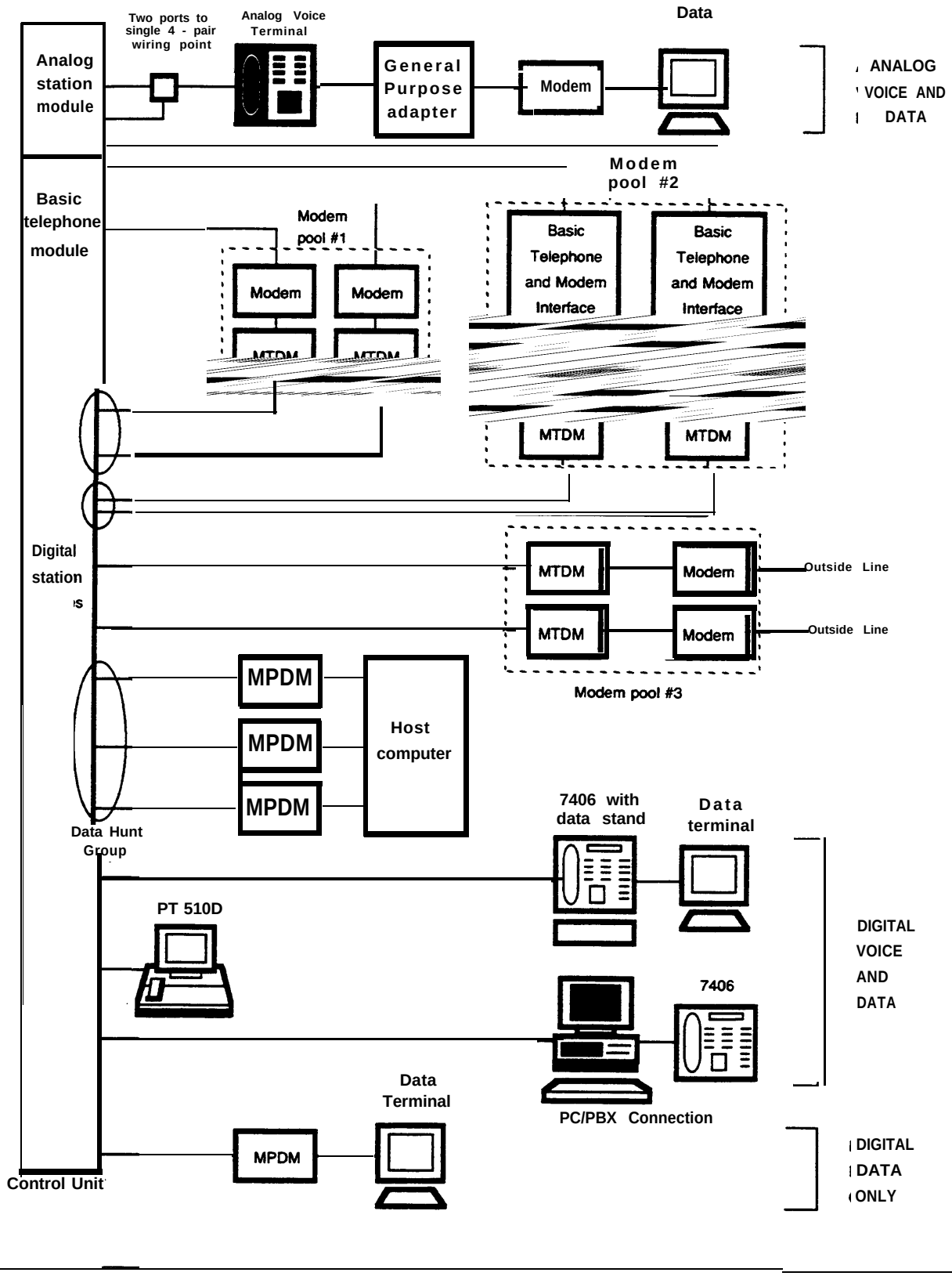
SYSTEM COMPONENTS

Figure 1-1 shows how data and voice equipment is connected in the MERLIN II system. As this illustration shows, the system can accommodate several different types of voice and data workstations. Two special features of the MERLIN II system, data hunt groups for local host computer access and modem pools, allow users to share the data communications equipment needed for internal and outside data calls.

> **NOTE:** Compatibility with the PC / PBX Connection and other data products will be discussed in the documentation for those products.

Definitions of the terms used in Figure 1-1 and elsewhere in this guide are found in "Definitions of Basic Terms." Section 2 provides a detailed description of the basic components of the MERLIN II system.

FIGURE 1-1 Connectivity diagram for system components.



DEFINITIONS OF BASIC TERMS

Analog	Designed to transmit *signals* as continuous electrical waves. Analog voice terminals such as the 10-button and 34-button deluxe models can be directly connected only to analog jacks at the control unit.
Basic Telephone and Modem Interface (BTMI)	Connects basic telephones and data communications devices, such as modems, to analog station jacks at the MERLIN II control unit.
Call Progress Messages	Messages sent to a computer or data terminal from the control unit, data module, modem, or data stand. These messages tell the user how calls are proceeding. If a call can't go through, an explanatory message such as **Incompatible Far End** appears.
Control Unit	The master component in the MERLIN II system. It manages all call traffic for the system and controls all system responses.
Data Communications Equipment (DCE)	A device used to transmit binary data to and/or from a communication channel.
Data Hunt Group	A group of digital station jacks that are assigned a common access number. When a call is placed to a data hunt group, the system checks the jacks in round-robin fashion and connects the call to the first one available.
Data Metering	A feature of a data stand that allows it to communicate with another DCE or DTE (see Data Terminal Equipment below) device at a rate lower than the rate set for the terminal to which the data stand is connected.
Data Module	A general term used in this guide to refer to the Modular Processor Data Module (MPDM) and the Modular Trunk Data Module (MTDM).
Data Rate or Speed	The rate at which digital data signals are sent between data communications equipment and/or data terminal equipment. For example, the data rate of a modem that transmits at 1200 bits per second (bps) is 1200.
Data Stand	A device that provides a DCE interface when connected to a 7406 voice terminal for a data terminal or personal computer.
Data Terminal Equipment (DTE)	A device used to convert character information to and/or from binary data.
Digital	Designed to transmit signals as a sequence of separate electrical pulses. Digital voice terminals such as the 7406 model and digital personal terminals such as the PT51OO can be directly connected only to digital jacks at the control unit.

Digital Data Endpoint	Data communications equipment that receives and transmits digital data signals to the control unit. The 7406 data stand, the Personal Terminal [PT) 51OD, the MPDM, and the MTDM are digital data endpoints.
Line Jack	A jack that connects an outside line to the control unit.
Local Host Computer Access	A method of connecting digital station jacks to an on-site computer for data only calls by MPDMs. Some or all of these digital station jacks may be put in a data hunt group.
Modem Configuration	The equipment that comprises a member of a modem pool. A modem configuration is made up of a MTDM, a modem, and all required cables and cords. If it is connected to an analog station jack, it also includes a BTMI.
Modem Pool	A group of modems and associated equipment used to convert digital data to analog data or vice versa. Pooling makes it possible for users to share a limited number of modems. Calls come into incoming modem pools at the analog end of the modem configuration; calls come into outgoing modem pools at the digital end of the modem configuration.
Modular Processor Data Module (MPDM)	A DCE device that converts digital data signals from the control unit switching facilities to EIA RS-232-C data *signals* for a computer or data terminal and vice versa. MPDMs are used with data terminals or computers for data only at digital stations and for local host computer access.
Modular Trunk Data Module (MTDM)	A DTE device that serves as the interface between the control unit and a modem. Together with a modem, it changes digital data signals from the switching facilities to analog signals that can be transmitted over standard telephone lines or vice versa. MTDMs are used in modem pools.
Outside Line	The telephone lines that come from your local telephone company central office (CO) to your building. These lines may be connected to your MERLIN II control unit or to a modem for use in modem pools on dedicated outside lines.
Station	Any location in the MERLIN 11 system where wires from the control unit end at a voice terminal and/or data device.
Station Jack	A jack that connects the wires from a voice terminal and/or a data device to the control unit.

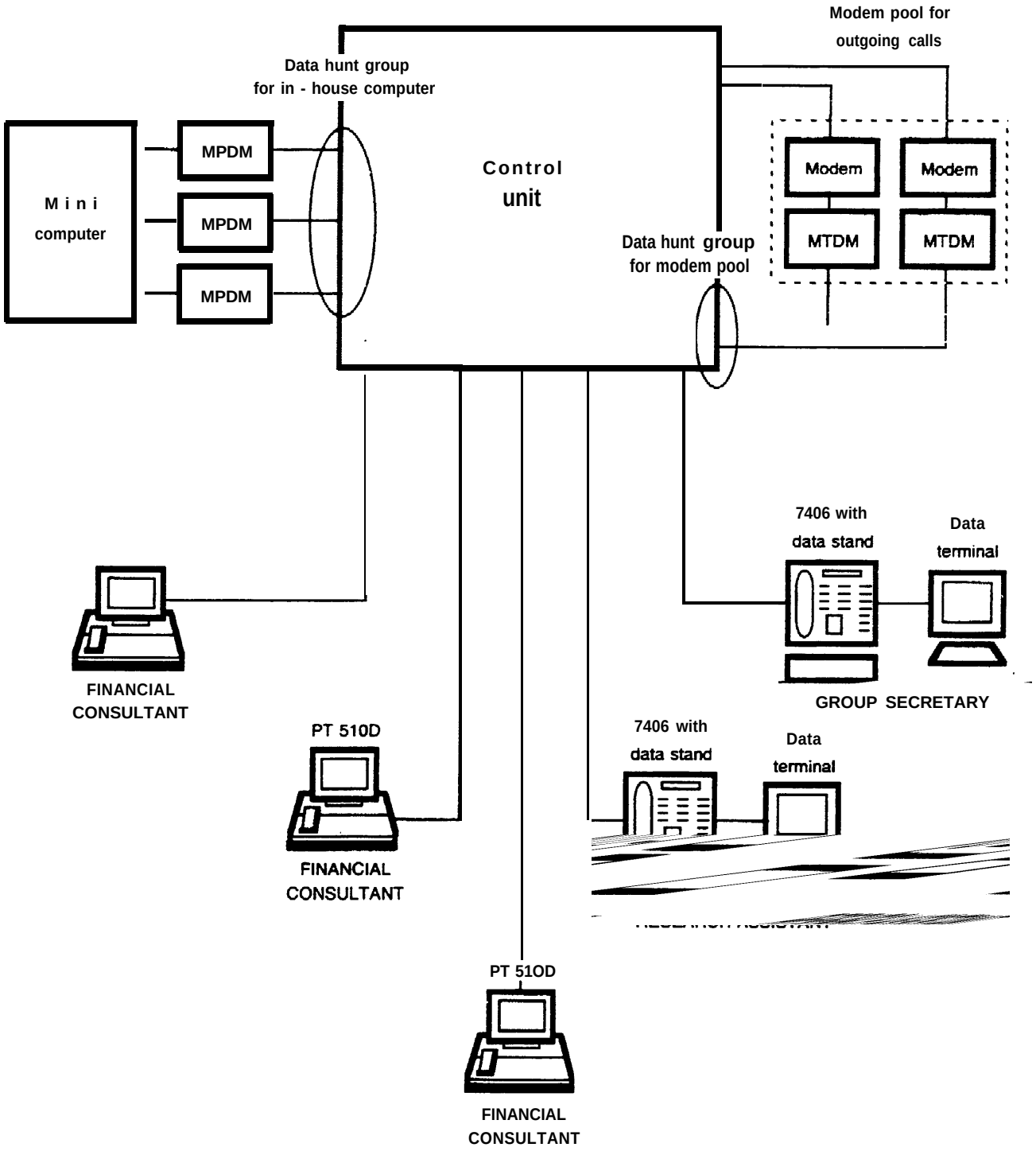
DATA CONNECTIVITY FOR A TYPICAL BUSINESS

Figure 1-2 shows how one department of a typical business makes use of the data capabilities the MERLIN II system provides. At the brokerage firm of Bye, Loew, and Zelli, the staff of the commodities group use two types of digital workstations connected to the MERLIN II system. This arrangement allows them to:

- Communicate with others in the firm via electronic mail.
- Work with files from the firm's minicomputer at their own terminals.
- Access the minicomputer or their own terminals from outside the office.

The consultants, research assistant and group secretary use a data hunt group to access the firm's minicomputer. The consultants and the research assistant use an outgoing modem pool to place calls to the Porknbeans Line and other subscription information services for commodities traders.

FIGURE 1-2 Data connectivity for the commodities group at Bye, Loew, and Zelli.



Planning Overview

You can set up your MERLIN II system to provide:

- Simultaneous voice and data, voice only, or data only communications at digital and analog workstations
- Local host computer access
- Modem pools for incoming and outgoing data calls
- Data hunt groups for local host computer access and outgoing modem pools

The planning required to integrate data communications into your system includes:

- Making sure you have (or have ordered) the components needed for the data options you want
- Reserving the appropriate station lacks on analog, digital, or basic telephone modules to connect the components to the MERLIN II system control unit
- Reserving the appropriate outside lines for modem pools on dedicated lines
- Making sure you have enough AC power outlets (one for each modem or data module if you use stand-alone mountings, fewer if you use multiple mountings)

The Planning Forms

As you plan data options, you record your decisions on the Master Planning Form and the appropriate forms for the particular data options you select. The Master Planning Form is provided in both. the *MERLIN 11 System Planning Guide* and the *MERLIN 11 System Manual.* You may record information about data options on:

- The Data Hunt Group Form and Incoming Modem Pool Form provided with this guide
- Various forms provided with your *MERLIN System Manual* such as the Call Restriction and AIlowed Lists Forms and the System Speed Dial Form

You use the Master Planning Form to reserve the jacks needed to connect both voice and data components to your control unit. To insure that you'll have a fully integrated voice and data communications system, this section of the guide shows how to fill out the Master Planning Form for *all* the stations in your system, not just those with data capability.

How to Use this Section of the Guide

This section provides:

- General information to help you decide how your system should operate
- Boxed instructions for recording your decisions on planning forms

How you use this section depends on whether you're planning data options for a new MERLIN II system or for a system that has already been administered.

IF YOU'RE FILLING OUT FORMS FOR A NEW SYSTEM

If you're planning data options for a system that hasn't been administered yet, you need photocopies of the MERLIN II system planning forms. Make copies of the Data Hunt Group Form and the Incoming Modem Pool Form provided at the end of this section.

If you don't have copies of the forms provided in either the *MERLIN II System Planning Guide* or Section 2 of the *MERLIN II System Installation and Administration Manual,* remove the originals and copy them. Make sure to copy both sides of all two-sided forms and return the originals to their proper place. You won't need all these forms for recording data options, but you'll probably use them when you plan voice features for your system.

Read the explanations in this section of the guide, then follow the boxed instructions to record information on data options on your Master Planning Form and other forms. When you've finished, you can go to your *MERLIN II System Planning Guide* or *MERLIN II System Manual* to finish planning your MERLIN II system.

IF YOU'RE UPDATING THE FORMS FOR A RUNNING SYSTEM

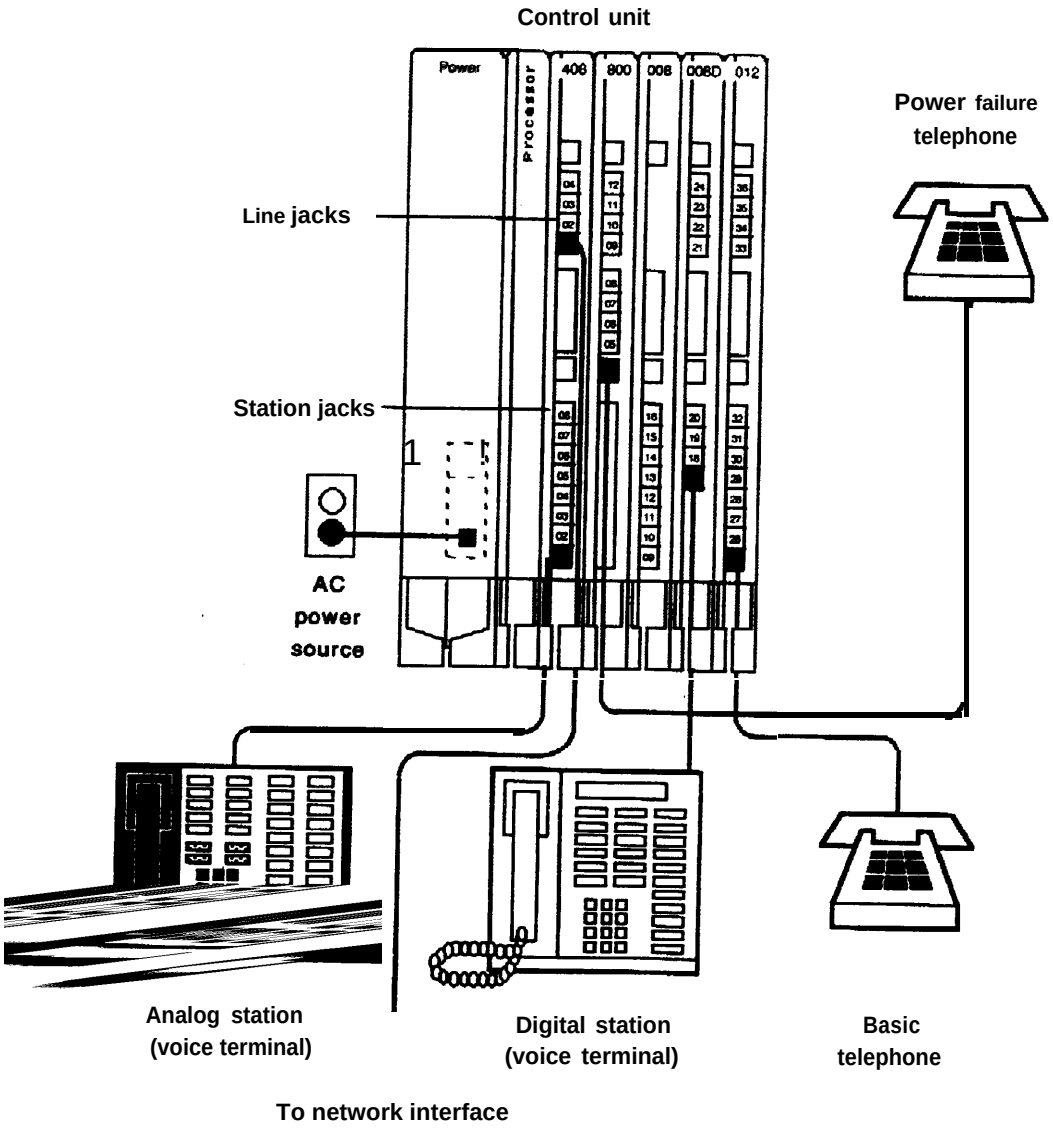
If you're adding data capability to a MERLIN II system that has already been administered, get the existing forms for your system. Make copies of the Data Hunt Group Form and the Incoming Modem Pool Form provided at the end of this section.

Follow the boxed instructions under "Identifying Line and Station Modules" to identify the modules being added to your system. To select data options, follow the boxed instructions in:

- "Reserving Station Jacks for Voice and Data Workstations"
- "Reserving Jacks for Computer Access and Modem Pools"
- "Planning Data Hunt Groups"

When you've finished planning data options, go on to Section 3 of this guide, "Connecting Hardware and Setting Options."

FIGURE 2-1 Basic MERLIN II System Components.



If you aren't familiar with the MERLIN II system, study Figure 2-1. Then read the definitions of basic terms that follow,

- *Control Unit:* When the system is installed, modules containing a power source; a processor; and jack connection for outside lines, MERLIN II system telephones, and other devices are mounted on a carrier. The resulting assembly is called the control unit.
- *Line Jacks: The* line jacks on the control unit modules connect outside lines or optional paging or music equipment to the system. The system can accommodate up to 56 outside lines.
- *Voice Terminal:* A voice terminal is a programmable MERLIN II system telephone.

- *Station:* A station is the endpoint of any connection within the MERLIN II system. It can be a voice terminal, a basic telephone, a General Purpose Adapter (GPA), a modem, a data terminal, or a personal computer.
  - *Analog Station:* An analog station is one with an analog voice terminal, data device, and/or accessory. Analog voice terminals such as the 10-button, 22-button, and 34-button models can be directly connected only to analog station jacks on the control unit.
  - *Digital Station:* A digital station is one with a digital voice terminal or data device, Digital stations such as the 7406 voice terminal and the Personal Terminal (PT) 510D can be directly connected only to digital station jacks on the control unit.
  - *Basic Telephone:* A basic telephone is a standard Touch-Tone or rotary telephone. Basic telephones in regular use are connected to basic telephone jacks on the control unit. Basic telephones used exclusively as Power Failure Telephones are connected to power failure jacks on line modules on the control unit.
- *Station Jacks:* The station jacks are those jacks on the modules in the control unit that connect stations to the system. The system can accommodate up to 72 responding stations.

Identifying Line and Station Modules

During this first phase of planning you'll be deciding how you want voice and data components connected to jacks on the MERLIN II system control unit and recording your decisions on the. Master Planning Form.

The jacks on the control unit modules provide points of connection for the system's outside lines and stations.

- The system's outside telephone lines connect to line jacks, as do loudspeaker paging equipment and the music source for Music-on-Hold, if your system has these options.
- Data devices, voice terminals, and basic telephones connect to station jacks.

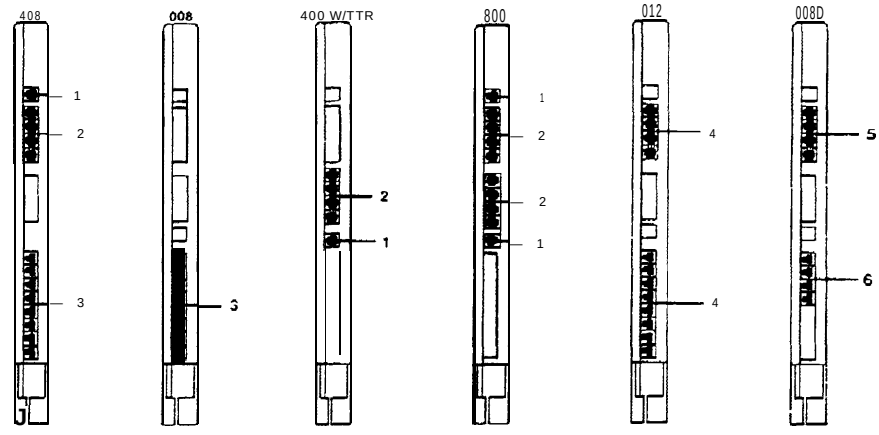
TYPES OF MODULES

The first step in planning your system is to decide what line and station modules will appear in each slot in your control unit. The various types of modules are described below and shown in Figure 2-2. An explanation of how the MERLIN II system assigns numbers to lines and station jacks on modules is found under "Automatic Numbering of Jacks on Line and Station Modules. "

- The 4-Line / 8-Analog Voice Terminal (408) Module has four line jacks near the top of the module and eight station jacks on the bottom portion of the module.
- The 8-Analog Voice Terminal (008) Module has eight station jacks at the bottom.
- The 4-Line with Touch-Tone Receivers (400 w / HTR) and &Line (800) modules have line jacks on their top portions.
- The 12-Basic Telephone (012) Module has 12 station jacks— four at the top and eight at the bottom.
- The digital Station (O08D) Module has four station jacks at the top and four near the bottom.

There is a power failure jack for every four outside line jacks on a module.

FIGURE 2-2 The MERLIN II system modules and their jack positions.



LINE AND STATION JACK FUNCTIONS

The numbers in Figure 2-2 correspond to the following list of jack functions:

1 *Power failure jacks:* These jacks are used with basic telephones only. In case of a power outage, basic telephones plugged into these jacks become operational. Do *not* use MERLIN II system voice terminals as power failure telephones.

2 *Outside line jacks:* These jacks are for the outside lines provided by the telephone company. YOU can also connect an optional-loudspeaker paging system and/or a music source to a line jack.

3 *Analog station jacks:* These jacks are for MERLIN II system analog voice terminals, analog data devices, or accessories only.

4 *Basic telephone jacks:* These jacks are for basic telephones only.

5 *Digital Station jacks:* These jacks are for digital voice terminals or data devices only.

Line and station modules must be installed in slots on the control unit sequentially, from left to right, with no empty slots left between modules. (Slots to the right of the last module can be left empty.) Figure 2-1 shows a typical module installation.

On the drawing labeled "Module Location" on the Master Planning Form, identify the type of module in each slot on your control unit by writing in the module type (such as 008D) above the slot number. Keep in mind that the module in slot 1 of the basic unit must be a 4-Line/8-Analog Voice Terminal (408) Module or an 8-Analog Voice Terminal (008) Module.

AUTOMATIC NUMBERING OF JACKSON LINE AND STATION MODULES

When you turn the power on at the power supply module, the system scans the modules from left to right and from bottom to top. As it does so, it identifies the type of module installed in each slot in the control unit. Beginning with line 01 and station 01, the system numbers the line jacks and station jacks from the bottom to the top of each module, and from left to right

Labels for the control unit jacks are provided with the system. The station jack labels are numbered 01 through 88. The line jack labels are numbered 01 through 56. Once the control unit is assembled and these labels affixed to the modules, you can teIl at a glance which jacks are for outside lines and which

> **NOTE:** The administrator can assign different numbers to lines and stations. See "Flexible Numbering" in the *MERLIN* II *5ystem*

If you later replace a module with one of a different type, the system continues to operate as though the original module were still in place. You must perform a speciaI administration procedure to change your system's line and/or station numbers and relabel the jacks accordingly. Refer to Section 3

Reserving Line Jacks

You use the Master Planning Form to reserve line jacks for:

- Outside lines
- Music-on-Hold, if you use this feature
- Loudspeaker Page, if you use this feature

The "Line Jacks" section of the Master Planning Form has six columns. The first and fourth columns, headed "Line Jack, " list all the possible line jack numbers (01 through 56). In the columns headed "Telephone No. or Equipment, " you identify the outside telephone line or piece of equipment connected to each line jack on your control unit.

OUTSIDE LINE CONNECTIONS

To simplify system administration, you should plan to connect your outside telephone lines to an unbroken sequence of line jacks, beginning with line jack 01. You should also plan to group your lines together according to type. Reserve the line jacks at the beginning of the sequence for your local lines, and reserve jacks later in the sequence for special-purpose lines such as WATS and foreign exchange (FX) lines.

If you know the telephone numbers for your system's outside lines, do the following:

1 Match each outside line with a line jack on the control unit.

2 Under "Telephone No. or Equipment," enter the telephone number for each outside line next to the number for its line jack.

If you don't yet know the telephone numbers for your system's outside lines, do the following:

1 Enter the type of line (local, WATS, etc.) you plan to connect to each line jack next to the number for that line jack.

2 When you find out the telephone numbers for your outside lines, enter them next to the appropriate line jack numbers.

EQUIPMENT CONNECTIONS

Now that you've reserved enough line jacks on the control unit for your outside telephone lines, you can reserve a line jack for any optional equipment that requires one. If you use the Music-on-Hold feature, you need to reserve a line jack for a music source such as a radio, tape player, or stereo system. If your business has a loudspeaker paging system, you need to reserve a line jack for the paging equipment.

To make it easy to add outside lines in the future, use the last line jack(s) on your control unit for the Music-on-Hold and/or Loudspeaker Page connection.

If your system has Music-on-Hold, write "music source" on the line next to the number of the line jack used to connect the music source to the system.

If your system has loudspeaker paging, write "paging system" next to the number of the line jack used to connect paging equipment to the system.

Reserving Statio n Jacks for Voice and Data Workstations

You must reserve station jacks on the Master Planning Form for:

- Analog voice terminals
- Basic telephones
- Digital workstations used for voice and data or for data communications only

> **NOTE:** You also reserve station jacks for any devices such as data modules, modems, and BTMIs that are used for local host computer access and outgoing and incoming modem pools. “Reserving Jacks for Computer Access and Modem Pools, ” which follows, explains how to plan for these data options.

The"Station Jacks" section of the Master Planning Form lists the numbers (01 through 88] for all possible station jacks on the control unit. You record the jack type for each station jack on the modules in your control unit: "A" for analog, "D" for digital, or "B” for basic telephone. Next you identify by person, location (such as "mail room"), or function (such as "incoming modem pool") the station connected to each station jack on your control unit.

STATION JACK TYPE

The first step in filling out the "Station Jacks" section of the Master Planning Form is to identify the type of jack that each station number represents. The Module Location drawing shows the order in which modules containing analog, digital, and/or basic telephone station jacks are installed in your control unit. Keep in mind that station jacks on these modules are numbered from the bottom to the top of each module and from left to right across the control unit.

You’ll note that the first eight jacks are already identified with an "A" on the form. This is because the module in slot 1 must be a 4-Line/8-Analog Voice Terminal (408) module or an 8-Analog Voice Terminal (008) Module.

In the "Jack Type" column, record the jack type for each station jack o your control unit: "A" for analog, "D" for digital, or "B" for basic telephone.

Analog Stations

Filling out the "Station Jacks" section of the Master Planning Form for analog stations basically consists of assigning intercom numbers to stations by matching station jack numbers with people, locations, or functions. But the following analog stations require special consideration:

- Attendant stations
- Stations with the Simultaneous Voice and Data feature
- Stations with the Voice Announcement to Busy Voice Terminal feature

ATTENDANT STATIONS

Attendant stations are voice terminals that are specially administered for call handling and other duties of telephone attendants such as receptionists. Only analog voice terminals can be attendant stations.

Station 10

In every system, the station connected to station jack number 01 is the primary attendant position and the central administration point. The voice terminal connected to station jack 01 is called the administrator/attendant console and is assigned intercom number 10.

On the row for station jack 01 on the Master Planning Form, identify the primary attendant station as follows:

1 In the "Station Jack" column, write "Att" next to the preprinted “01” to identify this as an attendant station.

2 In the "Person, Location, or Function" column, write in the name or location of the primary attendant.

Other Attendant Stations

Certain stations in addition to station 01 can serve as attendant positions. They are the stations connected to every fourth analog station jack after number 01 on the control unit. For example, if the first 16 station jacks on your control unit are on analog station modules, the possible attendant stations (in addition to station 01) are those connected to jacks 5, 9, and 13. Your system can have as many as eight attendant stations, depending on the number of analog station modules you have.

Identify other possible attendant stations in your system as follows:

1 In the "Station Jack" column, write "Att" next to the number for every fourth analog station jack after station jack number 01.

2 Fill in the "Person, Location, or Function" column for the stations you know will be attendant stations when your system is up and running.

3 Remove the "Att" designation from those station jacks that you won’t use as attendant stations.

STATION JACK PAIRS

Among the many optional features you can choose for one or more stations in your system are the following:

- Voice Announcement to Busy Voice Terminal

  A person whose voice terminal has this feature can hear an announcement through the speaker even though he or she is on a call. To provide this feature, you assign the voice terminal two station jacks, called a *voice/voice pair, as* explained below. (Digital 7406 voice terminals can't use this feature, since they don't receive voice announcements over their speakers.)

- Simultaneous Voice and Data

  A person whose station is administered for this feature can conduct voice and data calls at the same time. To provide this feature, you assign an analog voice terminal two station jacks, called a *voice/data pair,* as explained below. (Digital stations don't need a second jack to provide simultaneous voice and data capability,)

An analog station with one of these options requires two consecutive analog station jacks on the control unit. The jacks are an odd-numbered analog station jack and the next higher (even-numbered) analog station jack. This requires special wiring. (See Section 3 of this guide, " Connecting Hardware and Setting Options.")

> **NOTE:** You can assign either of these options to any of the analog stations in your system, but you *cannot* assign both options to the same station.

Voice/Voice Pairs

The first (odd-numbered) station jack in the pair provides the analog station's intercom number. Calls can't be placed to the intercom number associated with the even-numbered jack.

To reserve pairs of jacks for analog stations that will have the Voice Announcement to Busy Voice Terminal feature, do the following:

1 In the "Station Jack" column, draw a box around the pair of jack numbers that you plan to assign to each analog station with this feature.

> **NOTE:** You can assign this feature to an attendant position.

2 In the "Person, Location, or Function" column, next to the first (odd) number of each boxed pair, identify the station by person or location.

3 In the "Person, Location, or Function" column, next to the second (even) number of each boxed pair, write "VVP" (for voice/voice pair).

Voice/Data Pairs

The first (odd-numbered) station jack of the pair assigned to an analog station equipped for Simultaneous Voice and Data provides the intercom number for that station. Calls can't be placed to the intercom number associated with the even-numbered jack.

Assign pairs of jacks to analog stations that will have the Simultaneous Voice and Data feature as follows:

1 In the "Station Jack" column, draw a box around each pair of numbers representing analog station jacks that you plan to assign to these stations.

NOTE: You can assign this option to an attendant station.

2 In the "Person, Location, or Function" column, next to the first (odd) number in each boxed pair, identify the station by person or location.

3 In the "Person, Location, or Function" column, next to the second (even) number in each boxed pair, write "VDP" for (voice/data pair).

REMAINING ANALOG STATIONS

Now that you've reserved station jacks on the control unit for stations that need special consideration, you can reserve station jacks on 4-Line/8-Analog Voice Terminal (408) Modules or on 8-Analog Voice Terminal (008) Modules for any other analog stations in your system.

To reserve station jacks for the remaining analog stations, do the following:

1 In the "Person, Location, or Function" column, identify each station in your system by person or location.

Note: You might not have an analog station for each analog jack on your control unit. If so, just leave the spaces blank next to those station numbers on the Master Planning form. You can't use the station number associated with an analog staion jack for a digital station or basic telephone.

Basic Telephones

If you have any basic telephones, reserve jacks for them on a 12-Basic Telephone (012) Module.

To reserve station jacks for basic telephones, do the following:

1. Locate station numbers with "B" in the "Jack Type" column.
2. In the "Person, Location, or Function" column, identify each basic telephone in your system by person or location.

Digital Workstations

You reserve jacks on 8-Digital Station (008D) Modules for digital workstations such as the:

- 7406 voice terminal with data stand for voice and data communications
- PT 510D for voice and data communications
- Modular Processor Data Module (MPDM) connected to a data terminal or personal computer for data communications only

NOTE: The 7406 voice terminal with data stand requires a local power supply. See Section 3 of this guide, "Connecting Hardware and Setting Options," for details.

To reserve station jacks for digital workstations, do the following:

1. Locate station numbers with "D" in the "Jack Type" column.
2. In the "Person, Location, or Function" column, identify each digital station in your system by person, location, or function. Add the notation "DO" (data only) for any digital stations used for data communications only.

NOTE: The *MERLIN II System Installation and Administration Manual* describes how to plan Flexible Numbering of lines and stations and how to assign alphanumeric labels. If you are considering using these features, see Section 2, "Planning the System, " for instructions on completing the Master Planning Form and completing the Flexible Numbering form.

Reserving Jacks for Computer Access and Modem Pools

If you want your system to have local host computer access or incoming or outgoing modem pools, you need to reserve station jacks for these data options.

Local Host Computer Access

Local host computer access is a method of connecting digital station jacks on the MERLIN II system control unit to the EIA RS-232-C ports of an on-site computer. This connection is made through Modular Processor Data Modules (MPDMs). MPDMs convert the digital data signals sent through the control unit to EIA RS-232-C data signals that the computer can receive, and vice versa.

Users access the computer by placing a data call to a station jack that you've designated for local host computer access. If you have as many computer access station jacks as users or if people need to be sure of having access to the computer at any time, you can give each person a different station number to call. However, if many people share a computer, you may prefer to assign some or all of the station jacks to a data hunt group with a single access number (see "Planning Data Hunt Groups").

To reserve jacks on digital station modules at the control unit for local host computer access, follow these steps:

1 Determine the total number of station jacks you're going to use for access to a bcal host computer. Keep in mind that you need an MPDM for each jack.

2 On the "Station Jacks" section of the Master Planning Form, locate that nurnber of available digital station jacks.

3 In the "Person, Location, or Function" column for each jack number, write "LHCA - MPDM" (for local host computer access using a Modular Processor Data Module).

2-14 Reserving Jacks for Computer Access and Modem Pools

Modem Pools

Modem pools are groups of modems and associated equipment used to convert digital data signals to analog data signals or vice versa. Signals must be converted in this way for:

- Outside calls to and from digital stations
- Internal calls between digital and analog endpoints

Putting modems in pools makes it easier for users to share a limited number of modems. Each modem pool is used exclusively for either incoming or outgoing calls.

Each modem configuration in a modem pool consists of:

A Modular Trunk Data Module (MTDM) with an RS-232-C Interface.

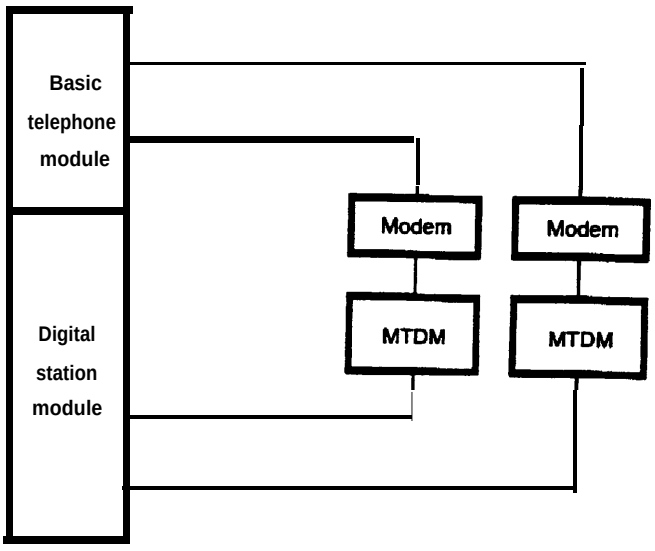
A 2212C or other compatible modem.

Where required, a Basic Telephone and Modem Interface (BTMI). BTMIs are required if the modem connects to a jack on an analog module rather than to a jack on a basic telephone module or to a dedicated outside line.

Modem Pools Using MERLIN II System Lines

Typically, modem pools handle calls that are placed and received through the MERLIN II system control unit. The lines used for these calls maybe assigned only to members of a modem pool or they may be shared with other stations in the MERLIN II system. As Figure 2-3 shows, these configuration require one station jack on a digital station module and one station jack on either an analog station module or a basic telephone module.

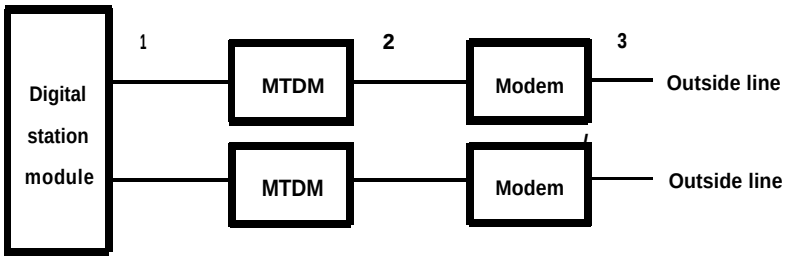
FIGURE 2-3 Modem pool for calls through the MERLIN II system control unit.



Modem Pools on Dedicated Outside Lines

You can bypass the MERLIN II system control unit and connect an outside line directly to a modem for use with that modem only. Because the line isn't connected to the MERLIN II system control unit, calls aren't recorded by the Call Report (SMDR) feature. As Figure 2-4 shows, this type of modem configuration requires only one station jack, a jack on a digital station module.

FIGURE 2-4 Modem pools for calls on dedicated outside lines.



Instructions for planning different types of modem pools follow. Carry out the instructions that apply to your system.

> **NOTE:** The people in your business need to know what modem pools to use for particular data calls and how to access those pools. When you've finished planning your modem pools, it's a good idea to prepare a user information sheet on them. The sheet should list modem pool access numbers and describe any special considerations for using the modem pools you've set up.

OUTGOING MODEM POOLS ON MERLIN II SYSTEM LINES

You need to pair digital station jacks with analog or basic telephone jacks to create modem configurations for outgoing calls on MERLIN II system lines. You can group into modem pools any modem configurations for outgoing calls that have the same station jack type, modem type, and speed.

To reserve jacks for outgoing modem pool pairs, perform these steps:

1. In the "Person, Location, or Function" column on the Master Planning Form, write "OMP #1 - MTDM" (for outgoing modem pool number 1, using an MTDM) next to an available station jack number marked "D" (digital).
2. Locate a jack marked "A" (analog) or "B" (basic telephone) to pair with the digital station jack. Write "OMP #1" in the "Person, Location, or Function" column if the jack is a basic telephone jack or write "OMP #1 - BTMI" in the "Person, Location, or Function" column if the jack is for an analog telephone jack and a BTMI is required.
3. Repeat steps 1 and 2 for each modem configuration that has the same modern type, station jack type, and speed.
4. Repeat steps 1 through 3 for each group of modem pool pairs.
5. Record the station number of each analog or basic telephone jack in an outgoing modern configuration on a separate Station Configuration Form. The Station Configuration Forms are found in the *MERLIN II System Installation and Administration Manual.* Cross out the words "Voice Terminal" and write "Station" above the crossed-out words. On the spaces provided for identifying button assignments, record the lines or line pools to be assigned to the outgoing modem configurations. Section 4, "Administering Data Options," explains how to assign lines to these station jacks.

INCOMING MODEM POOLS ON MERLIN II SYSTEM LINES

You need to pair digital station jacks with analog or basic telephone jacks to create modem configurations for incoming calls on MERLIN II system lines. You can group into modem pools any modem configurations for incoming calls that have the same station jack type, modem type, and speed and record this information on the Incoming Modem Pool Form and Master Planning Form.

> **NOTE:** See "Modem Pools on Dedicated Outside Lines" for information on filling out the Incoming Modem Pool Form for modem pools that don't use MERLIN II system lines.

Line Assignments

You need to assign lines or line pools to the analog or basic telephone jacks for modem pool members so that data calls can come into these jacks.

Keep these points in mind as you assign lines:

- It's best not to assign the same lines or line pools to voice terminals and to incoming modern pools because the moderns will answer voice calls as data calls.

- Lines and line pools assigned to modem pools can also be assigned to other stations in the system. However, the line or line pool should be set to ring only at the jack for the modern pool member.
- If you want to permit simultaneous incoming data calls to a single telephone number, you can have your local telephone company supply a telephone line hunt group. With this arrangement, one number applies to several lines that you can assign to the members of the incoming modem pool.

Group Call Distribution

For efficient call handling, you may want to assign the same lines or line pools to all members of a modem pool, then assign the Group Call Distribution feature to the modem pool members. Whenever a call comes in on one of the lines assigned to a modem pool with Group Call Distribution, the system scans the analog or basic telephone jacks for the members of the modem pool and connects the call to the first available station jack.

To reserve jacks for incoming modem pool pairs, perform these steps:

1 If you'll have more than two incoming modem pools,. make the required number of copies of the Incoming Modem Pool Form.

2 In the "Person, Location, or Function" column on the Master Planning Form, write "IMP #1 - MTDM" (for incoming modem pool number 1, using an MTDM) next to an available station jack number marked "D" (digital).

3 Locate a jack marked "A" (analog) or "B" (basic telephone) to pair with the digital station jack. Write "IMP # l" in the "Person, Location, or Function" column for a basic jack number or write "IMP # 1 - BTMI" in the "Person, Location, or Function" column for an analog telephone jack number to indicate that a BTMI is required.

4 Repeat steps 2 and 3 for each modem configuration that has the same modem type, station jack type, and speed.

5 Repeat steps 2 through 4 for each group of modem pool pairs.

6 Enter the number of the first modem pool (Modem Pool) on the form. Check the appropriate box or fill in the blank to record modem type, jack type and speed to indicate whether the modem pool uses the Group Distribution feature.

7 On the Master Planning Form, locate the pairs of station jacks that you plan to assign to Modem Pool 1. On the Incoming Modem Pool Form record each pair of station numbers on a separate line in the column headed "Station Jack Numbers."

8 In the column headed "Lines/Line Pools," record the numbers of the outside lines or line pools that should be assigned to the analog or basic telephone jack in each pair of station jacks.

9 Repeat steps 6 through 8 for each incoming modem pool. Number your additional pools in turn with 2, 3, etc.

MODEM POOLS ON DEDICATED OUTSIDE LINES

You may want to set up incoming or outgoing modem pools on dedicated outside lines if:

You have a large volume of data communications and want to keep the outside lines for your MERLIN II system available for voice calls.

You use specialized outside lines for data communications.

You don't have sufficient analog or basic telephone jacks for all the modem pools you want to set up.

Identifying Station Jacks on the Master Planning Form

The first step in planning for modem pools on dedicated outside lines is to enter the appropriate information on the Master Planning Form.

Follow these steps to reserve digital station jacks for modem pools on dedicated outside lines:

1 In the "Person, Location, or Function" column on the Master Planning Form, locate an available jack marked "D" (digital). Next to the jack number, write "IMPP-DL-M" (for incoming modem pool pair on a dedicated line, using an MTDM) or "OMPP-DL-MTDM" (for outgoing modem pool pair on a dedicated line, using an MTDM).

2 Repeat step 1 for each modem configuration on a dedicated outside line.

Completing the Incoming Modem Pool Form

If you have incoming modem pools on dedicated lines, you need to enter information about those pools on the Incoming Modem Pool Form.

Follow these steps to complete the Incoming Modem Pool Form:

1 Determine the total number of incoming modem pools on dedicated outside lines that you have. Keep in mind that only modems of the same type and speed can make up a modem pool.

2 Record the number of the modem pool, the modem type, and the speed in the appropriate places. Don't check a jack type and check "No" to show that the modem pool doesn't have the Group Call Distribution feature.

3 Referring to the Master Planning Form, record the station numbers of all digital jacks marked "IMPP-DL-MTDM" that have modem configuartions with the modem type and speed marked. Write the jack numbers on the consecutive lines.

4 On the crresponding line under "Lines/Line Pools," write the number of the outside line connected to the modem.

5 Repeat step 2 through 4 for each incoming modem pool on a dedicated line in your system.

Planning Data Hunt Groups

Data hunt groups are groups of digital station jacks with a single access number. These jacks provide access, through a data module, to:

- A local host computer
- An outgoing modem pool

When someone dials the number for the data hunt group, the MERLIN II system checks the jacks in round-robin order and directs the call to the first available jack in the group. It generates a busy message if all the jacks in the group are in use.

CONSIDERATIONS FOR SETTING UP DATA HUNT GROUPS

Keep these points in mind as vou plan data hunt groups:

- The modem configurations in outgoing modem pools have to be interchangeable. They must have the same modem type and speed setting, since callers won't know which station jack they are accessing when they dial the data hunt group number for the outgoing modem pool.
- You can set up data hunt groups for outgoing modem pools on dedicated outside lines. But you *can't* place outgoing modem configurations that use dedicated outside lines in the same data hunt group as modem configurations that use standard MERLIN II system lines.

TO reserve jacks on digital station modules at the control unit for data hunt groups, follow these steps:

1 On the Master Planning Form, identify each station jack that you're assigning to a data hunt group. Write "DHG" (for data hunt group) in the "Person, Location, or Function" column to the right of the existing entry. (The completed entry for a station jack in a data hunt group for local host computer access, for example, would be "LHCA-MPDM-DHG.")

2 The default code numbers for datta hunt groups are listed on the Data Hunt Group Form as *870 through *875. Those are the numbers users dial to reach the local host computer or modem pool, unless different numbers are assigned through Flexible Numbering. Follow these steps to identify the station jacks in each data hunt group, beginning with the first group:

a Complete the top of the column by checking the appropriate boxes for a local host curnputer or outgoing modem pool. If the data hunt group is for an outgoing modem pool, select the modem type and jack type. Record the data speed.

b Refer to the Master Planning Form and write in the number of each station jack that you want to assign to the data hunt group (maximum of 16). Record each jack number on a separate line.

NOTE: If you're assigning the station jacks for modem pools on dedicated outside lines to a data hunt group, record the telephone number of the line next to the station jack number.

Line Jacks

Line Jack	Default Line No.	Telephone No. or Equipment	Line Jack	Default Line No.	Telephone No. or Equipment
01	801		29	829	
02	802		30	830	
03	803		31	831	
04	804		32	832	
05	805		33	833	
06	806		34	834	
07	807		35	835	
08	808		36	836	
09	809		37	837	
10	810		38	838	
11	811		39	839	
12	812		40	840	
13	813		41	841	
14	814		42	842	
15	815		43	843	
16	816		44	844	
17	817		45	845	
18	818		46	846	
19	819		47	847	
20	820		48	848	
21	821		49	849	
22	822		50	850	
23	823		51	851	
24	824		52	852	
25	825		53	853	
26	826		54	854	
27	827		55	855	
28	828		56	856	

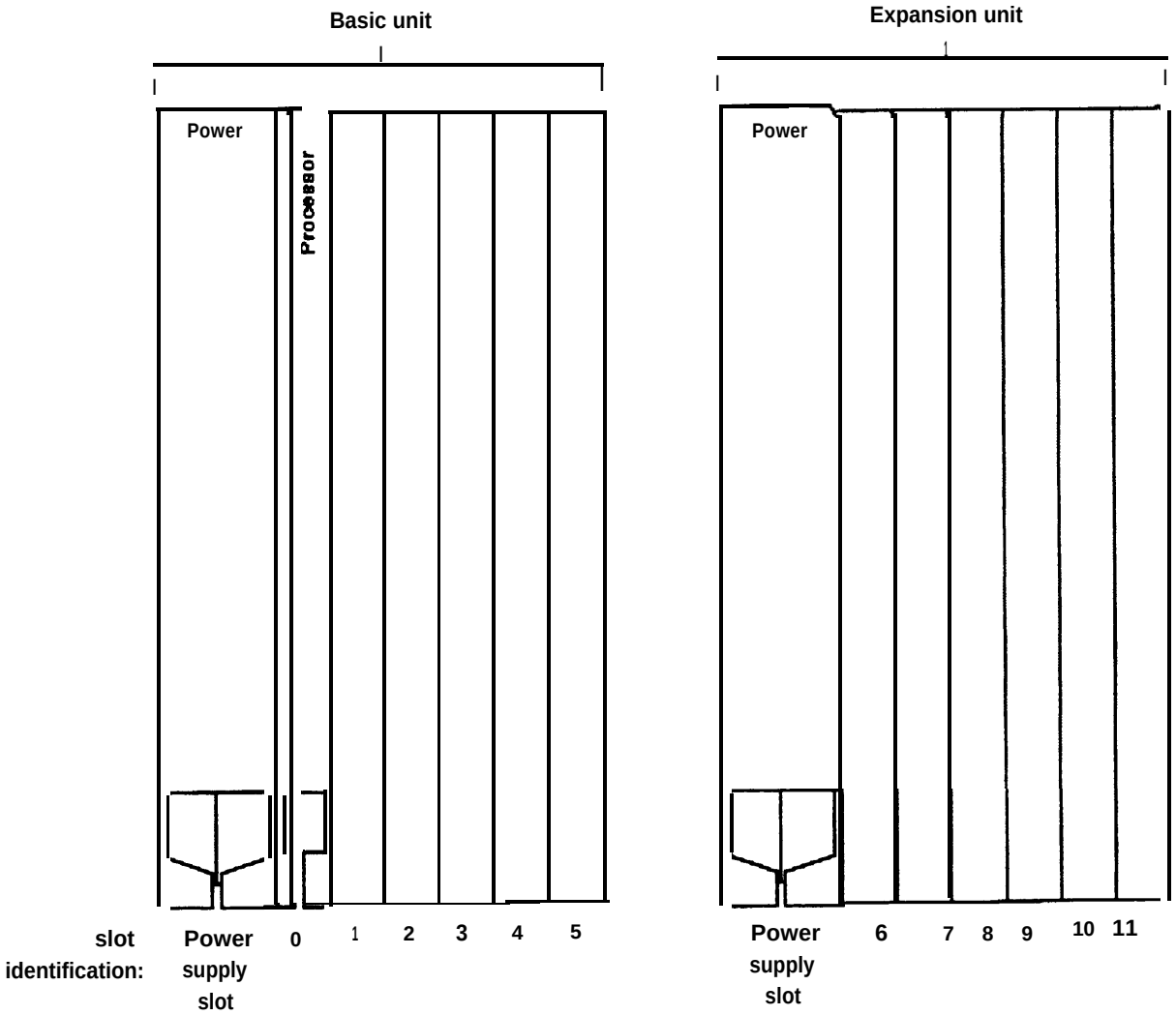
***Flexible numbering applies:**

❑ **Yes**

❑ **No**

Master Planning Form

Module Location



Master Planning Form

Station Jacks

Station Jack	Jack Type (A,D,B)	Default com No.	Label	Face	Person, Location, or Function	Station Jack	Jack Type (A,D,B)	Default Icom No.	Label	Face	Person, Location, or Function
01	A	10				31		40			
02	A	11				32		41			
03	A	12				33		42			
04	A	13				34		43			
05	A	14				35		44			
06	A	15				36		45			
07	A	16				37		46			
08	A	17				38		47			
09		18				39		48			
10		19				40		49			
11		20				41		50			
12		21				42		51			
13		22				43		52			
14		23				44		53			
15		24				45		54			
16		25				46		55			
17		26				47		56			
18		27				48		57			
19		28				49		58			
20		29				50		59			
21		30				51		60			
22		31				52		61			
23		32				53		62			
24		33				54		63			
25		34				55		64			
26		35				56		65			
27		36				57		66			
28		37				58		67			
29		38				59		68			
30		39				60		69			

•**Flexible numbering applies:**

❑ **Y E S**

❑ **N O**

Station Jacks (Continued)

Station Jack	Jack Type (A,D,B)	Default Icom No.	Label	Face	Person, Location, or Function	Station Jack	Jack Type (A,D,B)	Default Icom No.	Label	Face	Person, Location, or Function
61		700				75		714			
62		701				76		715			
63		702				77		716			
64		703				78		717			
65		704				79		718			
66		705				80		719			
67		706				81		720			
68		707				82		721			
69		708				83		722			
70		709				84		723			
71		710				85		724			
72		711				86		725			
73		712				87		726			
74		713				88		727			

Incoming Modem Pool Form

Modem Pool _____

❑ 2212C Modem ❑ Other (Model _____) Speed _____
❑ Analog Jack ❑ Basic Telephone Jack
Pool members in Call Distribution group? ❑ Yes ❑ No

	Station Jack Numbers	Lines / Line Pools
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Modem Pool _____

❑ 2212C Modem ❑ Other (Model _____) Speed _____
❑ Analog Jack ❑ Basic Telephone Jack
Pool members in Call Distribution group? ❑ Yes ❑ No

	Station Jack Numbers	Lines/Line Pools
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Data Hunt Group Form

*870		*871		*872	
❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____		❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____		❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____	
1		1		1	
2		2		2	
3		3		3	
4		4		4	
5		5		5	
6		6		6	
7		7		7	
8		8		8	
9		9		9	
10		10		10	
11		11		11	
12		12		12	
13		13		13	
14		14		14	
15		15		15	
16		16		16	

*873		*874		'875	
❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____		❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____		❑ Local Host Computer ❑ Outgoing Modem Pool ❑ 2212C ❑ Other (Model _____) ❑ Analog Jack ❑ Basic Tel. Jack Speed _____	
1		1		1	
2		2		2	
3		3		3	
4		4		4	
5		5		5	
6		6		6	
7		7		7	
8		8		8	
9		9		9	
10		10		10	
11		11		11	
12		12		12	
13		13		13	
14		14		14	
15		15		15	
16		16		16	

Installation Overview

DIGITAL STATION CONNECTIVITY

The diagrams and descriptions below are typical hardware configurations for a MERLIN II system with voice and data capability. They include:

- A digital station equipped for simultaneous voice and data communications
  - A 7406 voice terminal with a data stand (Z703A), connected to a data terminal
  - A Personal Terminal (PT) 510D
- A digital station equipped for data communications only
- An analog station equipped for simultaneous voice and data communications
- Local host computer access
- Modem pools for:
  - Data calls from a digital data endpoint
  - Data calls to a digital data endpoint
  - Data calls on dedicated outside lines

This section gives general instructions for connecting Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) to the MERLIN II control unit. It also discusses setting data options to ensure that equipment throughout the system is compatible.

> **NOTE:** Compatibility with the PC/PBX Connection and other data products will be provided with the documentation for that equipment.

HOW TO USE THIS SECTION

This. section of the guide provides guidelines for connecting data equipment to a MERLIN II system. It is intended to supplement, not replace, the documentation provided with the hardware. For detailed installation information, consult the appropriate hardware manual.

BEFORE YOU BEGIN

The Master Planning Form shows the station jacks on the control unit that should be used for each data hardware configuration in your system. Keep the completed form handy for reference as you connect cords to jacks on station modules.

This section of the guide assumes that all the required station modules have been installed in your control unit. It also assumes that you have the components and cables required to assemble and connect the data hardware planned for your system. If you don't have the equipment you need, contact your equipment supplier or technical consultant.

ABOUT THE NUMBERED DIAGRAMS

Many of the figures in this section illustrate data connectivity for the MERLIN II system. These diagrams, along with the Master Planning Form, the Data Hunt Group Form, and the Incoming Modem Pool Form, provide a guide for connecting data communications hardware to other equipment and to the control unit. The numbers in each connectivity diagram correspond to those of the explanatory notes beneath the figure.

Simultaneous Voice and Data at Digital Stations

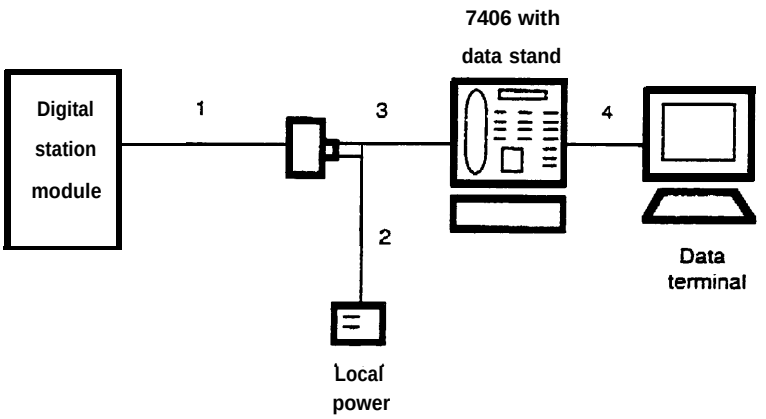
Digital voice and data workstations are connected to jacks on the 8-Digital Station (008D) Modules in the control unit. These digital stations require only one control unit jack connection for simultaneous voice and data communications. Descriptions of typical digital configurations follow. For information on the PC/PBX Connection, see the documentation for that system.

The 7406 Voice Terminal with Data Stand

You can add data capability to a station with a digital voice terminal such as the 7406 model by adding a data stand, local power, and a data terminal. The connectivity diagram seen in Figure 3-1 shows a typical configuration.

NOTE: Be sure to set the switches as shown, under "Option Switches on the Data Stand" before you connect the data stand to the MERLIN II system.

FIGURE 3-1 A digital voice terminal equipped for simultaneous voice and data.



1 The 4-pair modular cord running from the jack on the 8-Digital Station (008D) Module in the control unit terminates at a standard telephone wall jack at the voice terminal location. The maximum cable length is 1000 feet.

2 An ac power outlet provides required local power for the data stand. The power cord runs from the ac outlet equipped with a power supply to the standard telephone wall jack equipped with a power adapter.

NOTE: If you are using a KS-22911 L1 power supply, use a 400 B2 adapter.

3 The 4-pair modular cord runs from the local power adapter to the data stand.

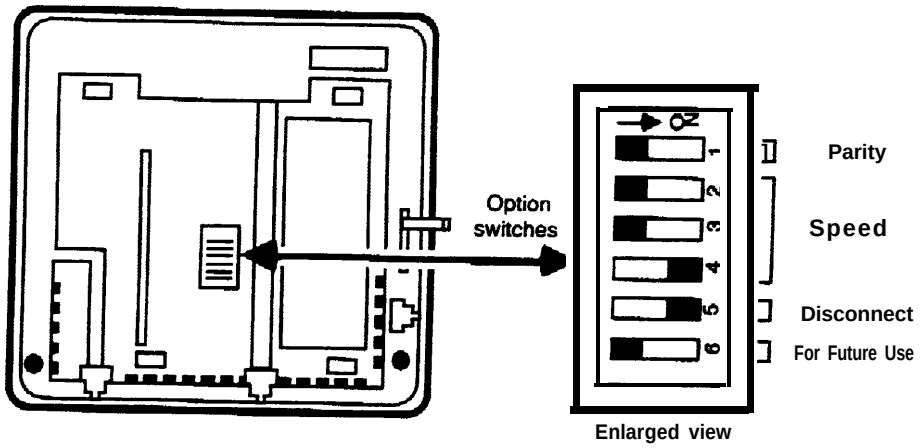
4 Standard RS-232-C connectors and cable connect the data stand to the data terminal. The maximum cable length is 50 feet.

For more information on installing the data stand, see the instructions provided with it.

OPTION SWITCHES ON THE DATA STAND

Before connecting the data stand to the MERLIN 11 system, you need to set the switches on the bottom of the data stand to match those of the associated data terminal. See Figure 3-2 for an example. The shaded portion of the switch shows the switch setting.

FIGURE 3-2 Option switch settings on the 7406 data stand.



Follow these steps to set data option switches:

1 Set the parity switch (switch 1) for even or odd parity to match the data terminal. (See the table below.) If the data terminal has no parity, the position of the switch doesn't matter.

Terminal parity	Set switch 1 to:
Even	On
Odd	Off
None	On or Off

2 Set the speed switches (switches 2, 3, and 4) as shown in the table below. The speed should match the speed of the data terminal.

Terminal speed (bps)	Switch settings		
	2	3	4
19200	Off	Off	Off
9600	Off	Off	On
4800	Off	On	Off
2400	Off	On	On
1200	On	Off	Off
300	On	Off	On

3 Set the disconnect sequence switch (switch 5) for escape or break.

Disconnect sequence	Set switch 5 to
Escape, Escape	On
Break, Break, Break	Off

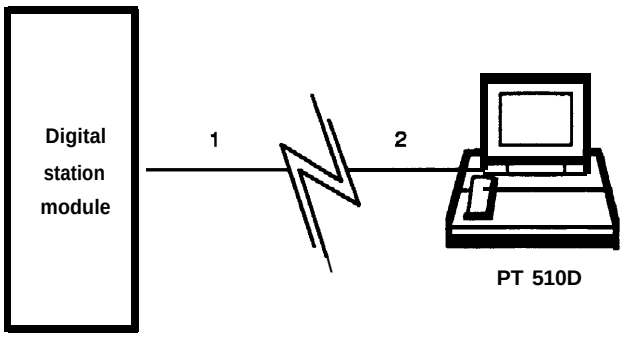
4 Set option switch **6 to off. (This** switch reserved for future use).

The Personal Terminal (PT) 510D

The PT 510D is a smart data terminal with a built-in programmable telephone.

The connectivity diagram in Figure 3-3 shows a typical configuration for a PT 510D used in the MERLIN II system.

FIGURE 3-3 Connectivity for a PT 510D.



1 The 4-pair modular cord running from the jack on the 8-Digital Station (008D) Module in the control unit terminates at a standard telephone wall jack at the PT 510D location. The maximum cable length is 1000 feet.

2 The terminal line cord supplied with the M 510D connects the telephone line jack on the terminal to the wall jack.

3 The ac power cord supplied with the PT 510D connects the ac power outlet to the terminal.

For more installation information, see "Installation"in the User's Guide: *AT&'T Personal Terminal Model 510D.*

TERMINAL OPTIONS

The data communications options of the PT 510D can be set by Terminal Setup A or B screens. You can also use options stored with the Directory entry or sent by a host computer. Initially, Terminal Setup A and B have factory-set values selected for the broadest applicability. Change these values, where necessary, to match the data devices the users will call. Possible speeds range from 300 to 19200 bits per second (bps).

You must standardize the basic settings for sending and receiving data for all PT 510D in the system. Other options, however, such as cursor and key-click settings, are a matter of individual user preference.

The PT 510D user's guide lists data communications options. Default settings are marked. You can change any of these options as soon as the terminal is powered up,

CALL HANDLING FEATURES

Cover buttons (*40 and *50) cannot be programmed to any of the seven buttons located on the touch sensitive screen below the dial pad on the PT 510D. See the *User's Guide: 7406D and 7406B* for specific call handling features.

Digital Stations for Data Communications Only

Your Master Planning Form identifies any stations where personal computers or data terrninals are connected to digital station jacks on the control unit through Modular Processor Data Modules (MPDMs) for data communications only. (The “Person, Location, or Function” column contains the phrase “DO-MPDM.") An MPDM is a device that converts digital data signals sent through the control unit to EI.A RS-232-C data signals that the computer can receive and converts the computer’s sending signals back to digital data.

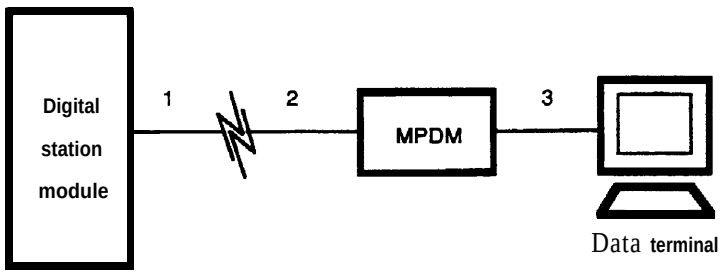
The following equipment is required for a digital station equipped for data communications only:

- Modular Processor Data Module (MPDM) equipped with an RS-232-C Interface
- Data terminal or computer
- Cables and connectors for connecting the components

> **NOTE:** Before you activate these stations, set the switches on the MPDM faceplate and the RS-232-C Interface (see "MPDM Option Switches" under "Local Host Computer Access").

Figure 3-4 is a connectivity diagram that shows a typical configuration for data communications only at a digital station.

FIGURE 3-4 A digital station equipped for data communications only.



1 The 4-pair modular cord runs from a jack on the 8-Digital Station (008D) Module at the control unit to a standard telephone wall jack at the data terminal location. The maximum cord length for this connection is 1000 feet.

2 A 4-pair modular cord connects the MPDM to the wall jack.

3 Standard RS-232-C connectors and cable connect the MPDM to the data terminal. The maximum cable length is 17 feet.

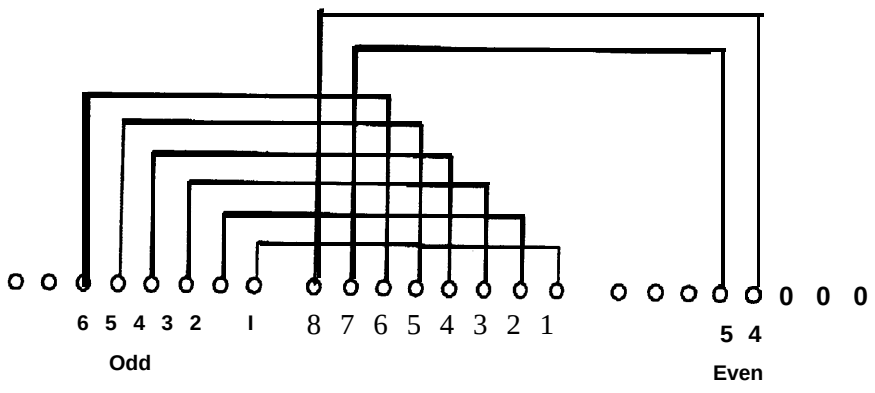
> NOTE: If a number of MPDMs are to be connected at a common location, you can put as many as eight in one multiple mounting rather than installing each in a stand-alone mounting. A multiple mounting reduces the number of ac power sockets needed to power the MPDMs. See the documentation that came with your MPDM for information on the multiple mounting connections.

The Master Planning Form shows which analog stations should have simultaneous voice and data capability. The numbers of the station jacks to which each of these stations should be connected are boxed on the form.

Note that the jack pairs are consecutively numbered jacks on the same 4-Line/8-Analog Voice Terminal (408) Module or 8-Analog Voice Terminal (008) Module. Each pair includes an odd-numbered jack and the jack with the next higher even number, such as jacks 15 and 16.

The fundamental wiring scheme that joins the required pairs *from* each jack into one 4-pair cord is indicated in the wiring diagram of Figure 3-5.

FIGURE 3-5 Wiring diagram: 4-pair connection from odd/even adjacent ports.



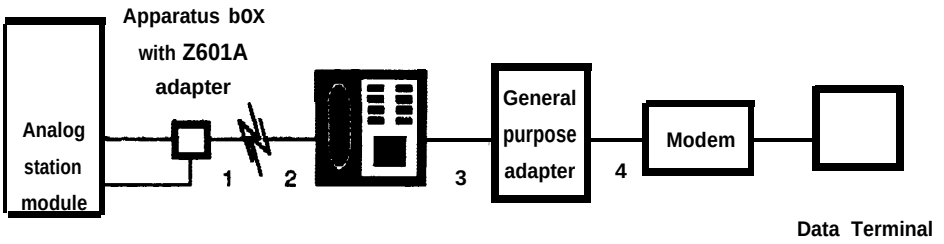
At some point between the voice terminal and the odd/even jack pair, the voice pair (5 and 4) from the even jack is joined with the other three pairs (4 to 8, 5 to 7) to make a complete 4-pair connection to the voice terminal.

To equip an analog station for simultaneous voice and data communication, you need the following:

- Analog voice terminal
- General Purpose Adapter (GPA)
- AT&T DATAPHONE® II 2212C modem or other compatible modem with modular connection capability
- Data terminal or computer
- Cables and connectors for connecting the components

The connectivity diagram in Figure 3-6 shows a typical configuration for an anaIog station with simulta.neous voice and data capability.

FIGURE 3-6 An analog station equipped for voice and data, using a jack field.



1 If you have a jack field, the 4-pair modular cords running from the two analog station jacks at the control unit terminate at Z601A adapters in an apparatus box of the jack field. A wire pair is attached to the Z601A adapter for the odd-numbered jack from the next higher (even-numbered) jack to provide a data path in a single 4-pair cable. The 4-pair cable runs from the apparatus box in the jack field to a standard wall-jack at the voice terminal location. The maximum cord length for the connection is 1000 feet.

If you don't have a jack field, the 4-pair modular cords running from the two analog station jacks in the control unit terminate at a standard wall jack at the voice terminal location. The maximum cord length from each analog station jack is 1000 feet.

See the *MERLIN II System Installation and Administration Manual* for more information on wiring methods that connect a second voice/data path to one station.

2 The 4-pair modular cord that comes with the voice terminal connects the voice terminal to the wall jack.

3 The connection from the voice terminal to the GPA is another 4-pair cord that comes with the GPA.

4 A standard 2-pair modular connector cord runs between the GPA and the modem.

5 Standard RS-232-C connectors and cable connect the modem to the data terminal or computer. The maximum cable length is 50 feet.

EQUIPMENT OPTIONS

Set up the equipment for simultaneous voice and data communications at an analog station as follows:

1 Administer the paired analog station jacks for the Simultaneous Voice and Data feature.

2 Put the GPA in the Auto mode.

3 Consult the lists of option settings provided in the documentation for the. modem and the data terminal or computer. Set the options to be compatible with the settings on the data device with which the user will be communicating.

Your Master Planning Form identifies the station jacks that should be connected through MPDMs to a local host computer. (The "Person, Location, or Function" column contains the phrase " LHCA-MPDM.") Some or all of the digital station jacks for the local host computer may be administered as a data hunt group to provide a common access number.

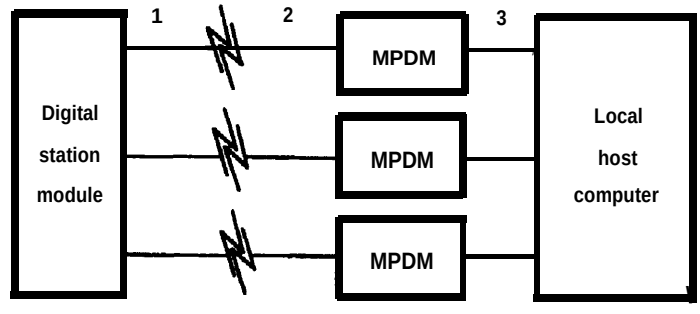
Setting up local host computer access requires the following:

- Local host computer
- MPDMs equipped with RS-232-C Interfaces
- Cables and connectors for connecting the components

> **NOTE:** Be sure to set the switches on the MPDM faceplates and the RS-232-C Interfaces as described in "MPDM Option Switches" before activating local host computer access. Some computers act as DCE devices and may require an MTDM or special wiring. If an MTDM can be used, the switch settings are the same as MPDM but you don't need to set auto answer.

Figure 3-7 shows the connectivity diagram for a typical local host computer access configuration.

FIGURE 3-7 Connectivity for local host computer access.



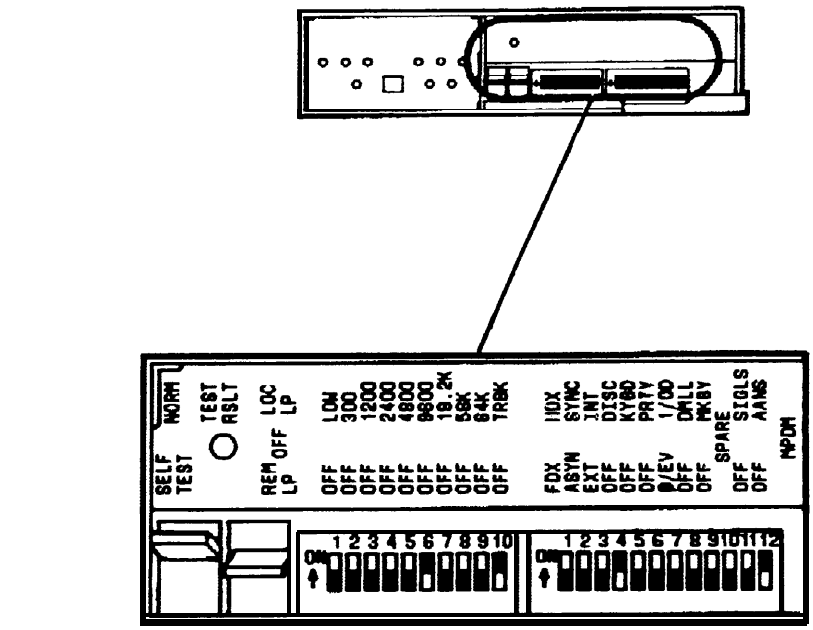
1 The 4-pair modular cord running from the jack on the 8-Digital Station (008D) Module at the control unit terminates at a standard telephone wall jack at the MPDM location. The maximum cable length is 1000 feet.

2 A 4-pair modular cord connects the MPDM to the wall jack.

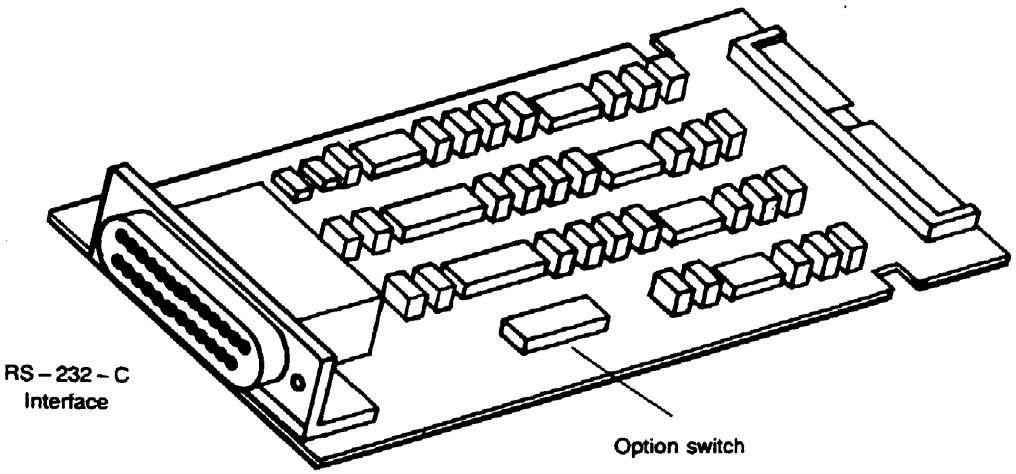
3 Standard RS-232-C cables and connectors connect the MPDM to the local host computer. The maximum cable length is 17 feet.

> **NOTE:** If a number of MPDMs are to be connected at a common location, you can put as many as eight in one multiple mounting rather than having each in a stand-alone mounting. A multiple mounting reduces the number of ac power sockets needed to power the MPDMs. See the documentation that came with your MPDM for information on the multiple mounting connections.

FIGURE 3-8 MPDM and **RS-232-C** interface option switch settings.



MPDW Facaplate



The MPDM faceplate has two Dual In-line Package (DIP) option switches, one with 10 positions and the other with 12 position-as seen in Figure 3-8. In addition, the RS-232-C Data Interface Circuit Pack has an 8-position DIP option switch.

The documentation that came with your MPDMs discusses the function of each switch setting. Follow the suggestions below to set switches unless the computer or data terminal to which the data modules connect has different requirements.

> **NOTE:** All option switches on the RS-232-C Data Interface Circuit Pack should be off unless the data device to be connected requires a specific lead.

The following table lists the option settings for the MPDM faceplate.

Option	Comment
Data Rate 300 to 19200 bps	Select one speed, from 300 to 19200 bps, for data calls. If the caller will use a modem pool, you must select the same speed the modem uses.
TRBK	If ON, TRBK allows for three or more "breaks" to disconnect a data call. If you choose this option, you must also select ASYN, with the DISC and KYBD options set to ON.
FDX	*OFF* selects full-duplex operation.
ASYN	*OFF* selects asynchronous operation and allows the TRBK and DISC options to function.
Ext	Can be set to either ON or ***OFF.***
DISC	If ON, DISC allows two seconds of a continuous spacing signal (long break) to disconnect a keyboard-dialed call. The KYBD option must also be ON.
KYBD	For data devices connected to the MPDM: KYBD must be OFF if data devices are not to receive call progress messages. KYBD must be ON if data devices are to originate calls, receive call progress messages, or disconnect calls using the TRBK or DISC options.
OFF-PRTY O/EV-l/OD	These option switches work together to determine the parity for call progress messages: **PRTY E/O Parity set to** ON 1/OD Odd ON O/EV Even OFF l/OD One OFF O/EV Zero The KYBD option must also be ON.
DMLL	Must be OFF.
MKBY	Must be OFF.
SIGLS	Must be OFF.
AANs	Must be ON, to enable the MPDM's automatic answer feature.

Modem Pools

Modem pools allow many digital endpoints to share a limited number of modems for incoming and outgoing data calls. Your Master Planning Form, Data Hunt Group Form, and Incoming Modem Poo1 Form list the control unit jacks that should be assigned to each modem configuration that is a member of a modem pool. The forms also provide other information about the modem pools, such as whether a' modem pool is incoming or outgoing and what type of modem is used.

Each modem configuration in a modem pool includes the following:

- 2212C or other compatible modem
- Modular Trunk Data Module (MTDM) with RS-232-C Interface

An MTDM is a DTE device that seines as an interface between the control unit and a modem. With the modem, it changes digital data signals from the switching facilities to analog signals that can be transmitted over standard telephone lines, and vice versa.

> **NOTE:** If the modem is connected to an analog station jack rather than to a basic telephone jack or a dedicated outside line, it requires a Basic Telephone and Modem Interface (BTMI).

The diagrams that follow show typical configurations for modem pool members connected to:

- Basic telephone jacks at the control unit
- Analog station jacks at the control unit
- Dedicated outside lines (lines that aren't connected to the MERLIN II system control unit)

MODEM COMPATIBILITY

See "General Requirements for Modems in a MERLIN II System" for information on using modems other than the 2212C modem in the MERLIN II system.

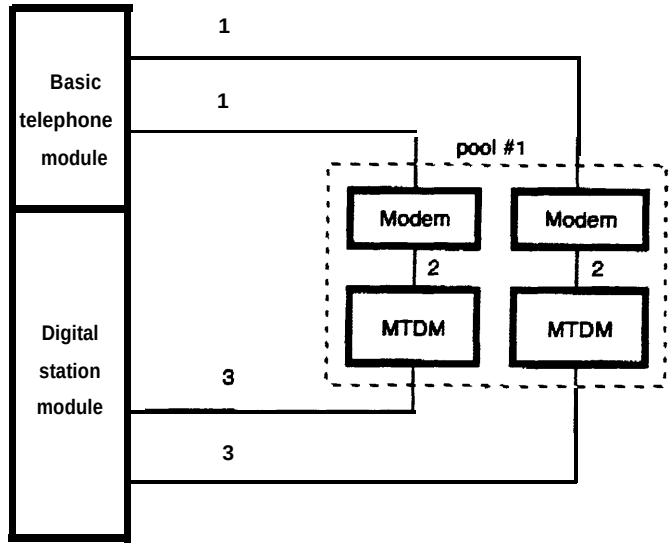
MTDM **AND MODEM OPTION SETTINGS**

Be sure to set the option switches on your equipment as described in "MTDM Option Switches" and "2212C Modem Options" before activating modem pools.

Modem Configuration Connected to a Basic Telephone Jack

The connectivity diagram in Figure 3-9 shows modem pool members connected to jacks on a 12-Basic Telephone (012) Module at the control unit. This configuration doesn't require a BTMI.

FIGURE 3-9 Modem pool members connected to basic telephone jack.



1 A 2-pair modular cord connects the modem to a jack on a 12-Basic Telephone (012) Module at the control unit. The maximum cable length is 1000 feet.

2 Standard RS-232-C connectors and cable connect the MTDM to the modem. The maximum cable length is 17 feet.

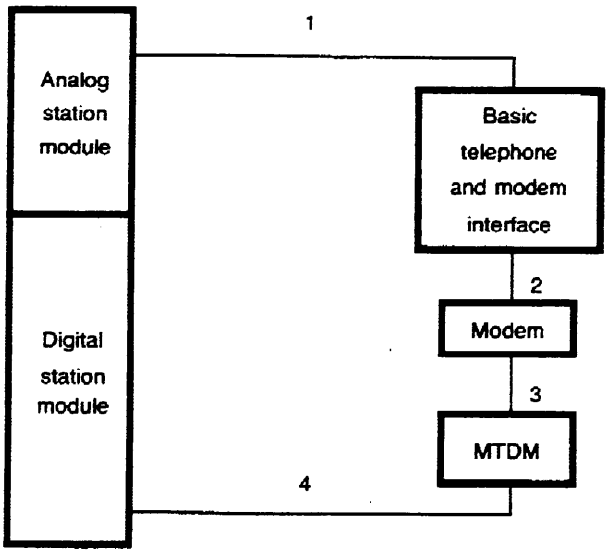
3 A 4-pair modular cord connects the MTDM to a jack on an 8-Digital Station (008D) Module at the control unit. The maximum cable length is 1000 feet.

> **NOTE:** If a number of MTDMs are to be connected at a common location, you can put as many as eight in one multiple mounting rather than installing each in a stand-alone mounting. A multiple mounting reduces the number of ac power sockets needed to power the MTDMs. See the documentation that came with your MTDM for information on the multiple mounting connections.

Modem Configuration Connected to an Analog Station Jack

Figure 3-10 is a connectivity diagram that shows a modem pool member connected to an analog station jack. This configuration requires a BTMI.

FIGURE 3-10 A modem pool member with a BTMI connected to an analog station jack.



1 A 4-pair modular cord connects the BTMI to a station jack on a 4-Line/8-Analog Voice Terminal (408) Module or an 8-Analog Voice Terminal (008) Module at the control unit. The maximum cable length is 1000 feet.

2 A 2-pair modular cord connects the BTMI and the modem. The maximum cable length is 50 feet.

3 Standard RS-232-C connectors and cable connect the MTDM to the modem. The maximum cable length is 17 feet.

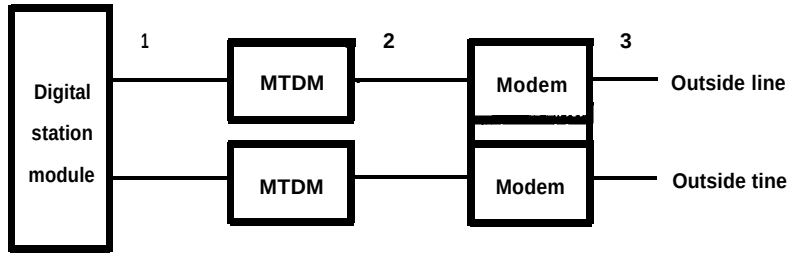
4 A 4-pair modular cord connects the MTDM to an 8-DigitaI Station (008D) Module jack at the control unit. The maximum cable length is 1000 feet.

> **NOTE** If a number of MTDMs are to be connected at a common location, you can put as many as eight in one multiple mounting rather than installing each in a stand-alone mounting. A multiple mounting reduces the number of ac power sockets needed to power the MTDMs. See the documentation that came with your MTDM for information on the multiple mounting connections.

Modem Configuration Connected to a Dedicated Outside Line

The connectivity diagram seen in Figure 3-11 shows modem pool members connected to dedicated outside lines. This configuration doesn't require a BTMI.

FIGURE 3-11 Modem pool members connected to dedicated outside lines.



1 A 4-pair modular cord connects the MTDM to a jack on an 8-Digital Station (008D) Module at the control unit. The maximum cable length is 1000 feet.

2 Standard RS-232-C connectors and cable connect the MTDM to the modem. The maximum cable length is 17 feet.

3 A 2-pair modular cord connects the modern to the wall jack at which the telephone company line terminates. (Dedicated lines aren't connected to the MERLIN 11 system control unit.)

NOTE: If a number of MTDMs are to be connected at a common location, you can put as many as eight in one multiple mounting rather than installing each in a stand-alone mounting. A multiple mounting reduces the number of ac power sockets needed to power the MTDMs. See the documentation that came with your MTDM for information on the multiple mounting connections.

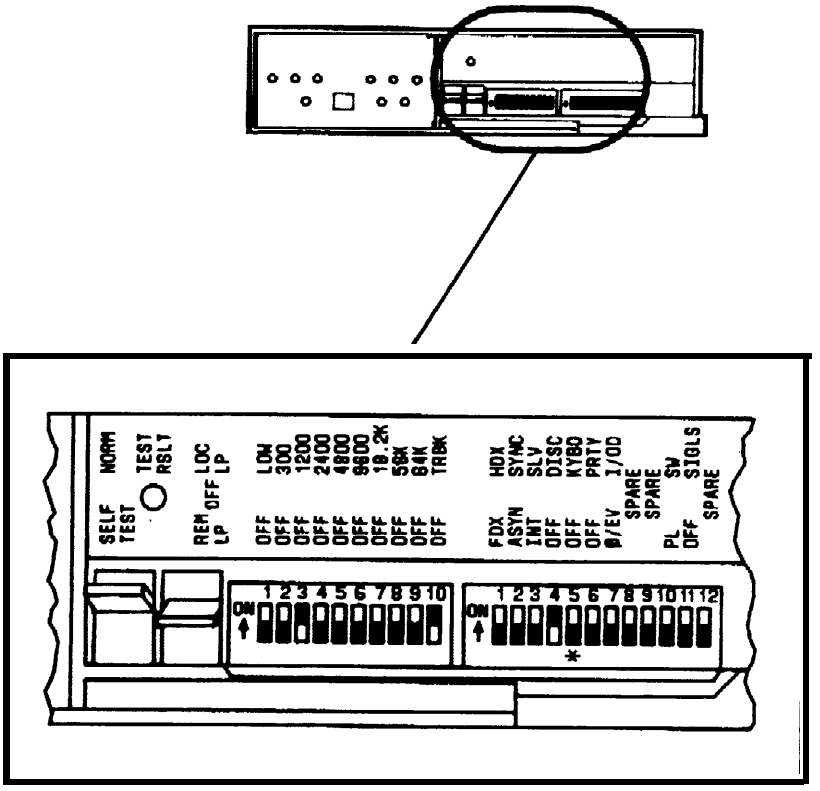
MTDM Option Switches

The MTDM faceplate comes with two DIP option switches, one with 10 positions and the other with 12 positions. In addition, the RS-232-C Data Interface Circuit Pack has an 8-position DIP option switch. You need to be sure these switches are set correctly for operation with incoming and outgoing modem pools in your MERLIN 11 system.

SWITCH SETTINGS FOR A TYPICAL MODEM POOL

The example in Figure 3-12 shows switch settings for the MTDMS in a 1200 baud outgoing modem pool. A note indicates how the settings would change if this were an incoming modem pool. Review Figure 3-12, then refer to the MTDM manual to set option switches for your equipment.

FIGURE 3-12 MTDM settings in a 1200 baud outgoing modem pool.



' For an incoming modem pool, this switch would set for KYBD (keypad).

The settings are as follows:

- In the set of 10 switches on the MTDM, all the switches are set to the *OFF* position except switches 3 and 10.
- In the set of 12 switches on the MTDM, all the switches are set to the *OFF* position except switch 4.
- All 8 switches on the RS-232-C interface circuit pack are set to the *OFF* position (unless the data device to be connected requires a specific lead).

The following settings may have to change n order to meet requirements for different outgoing modem pools:

- The speed switch

. The switch marked "OFF" or " PRTY"

- The switch marked "O/EV" or "I/O"

NOTE: The KYBD option would change in addition to the options above if the MTDM was used in an incoming modem pool.

2212C Modem Options

You can set both hardware and software options for the 2212C modem. The default settings for these options are listed in the manual provided with your 2212C modem. Most of these default settings are correct for use in the MERLIN II system.

Leave the hardware options in the default positions. This provides the proper lead sequence used by the MERLIN II system.

YOU need to change two of the default software options for the 2212C modem to use it in a MERLIN II system, as follows:

- Set the "far end sends first (I)" option to "n."
- Set the “received-space disc (4)” option to "n."

All other default settings for the 2212C modem are correct for use in the MERLIN II system. See the manual provided with the modem for detailed information on installing and using the 2212C modem.

General Requirements for Modems in the MERLIN II System

Modems other than the 2212C modem may work with the MERLIN II system. To be used with the MERLIN II system, a modem must meet:

- A set of basic requirements.
- Specific requirements for the type of modem pool in which it is to be used.

Guidelines for modem compatibility appear below.

> **Note:** Modems can meet these requirements through fixed features or through options that can be set. An option setting may make a modem appropriate for one pool in the MERLIN II system, but not for another.

BASIC REQUIREMENTS

In order for a modem to work properly in the MERLIN II system, it must have the following capabilities:

- FuI1-duplex operation-for switched telecommunications networks
- A single speed between 300 bps and 19200 bps
- Characters sent in asynchronous, binary, serial format
- EIA-RS-232-C Interface
- Peak signal level compatible with the MERLIN II system
- Modular jack connection-for telephone network
- Loss of carrier disconnect-so that the modem drops received carrier detection EIA lead RLS (carrier on)
- Disconnect if EIA lead DTR (data terminal ready) goes off
- Passing of break character and long space signal
- Saving of options on power outage

REQUIREMENTS FOR OUTGOING MODEM POOLS

In addition to meeting the systemwide requirements, a modem used for outgoing calls must have the following characteristics:

- Touch-Tone dialer that can pause and can dial digits 0 through 9, #, and *.
- Detection of dial tone
- Ability to take terminal dialing instructions
- EIA lead DSR and RLS on before a call is placed (follows DTR)

REQUIREMENTS FOR INCOMING MODEM POOLS

In addition to meeting the systemwide requirements, a modem used for incoming calls must have the following characteristics:

- Auto-answer feature
- Compatible parity and character length with MTDM

Administration Overview

You need to perform certain administration procedures that aren't described

MERLIN II System Manual to use digital data communications equipment with your MERLIN II system. You use the administrator/attendant console (the voice terminal at intercom number 10) to perform the administration procedures described in this section of the guide.

HOW TO USE THIS SECTION OF THE GUIDE

This section shows how to administer data options for systems that contain digital data equipment. It describes these administration procedures:

- Administering analog station jacks used for BTMIs in modem pools or for the Simultaneous Voice and Data features
- Assigning lines and features to incoming and outgoing modem pools
- Setting up data hunt groups for access to local host computers and outgoing modem pools
- Adding or removing the local host interface from station jacks
- Programming Data Status buttons for digital voice teerminals
- Assigning the Simultaneous Voice and Data features to analog voice terminals

Separate administration procedures are provided for the MERLIN II Display Console and the BIS-34D Console.

Whether you use this section of the guide by itself or as a supplement to the MERLIN II system manuals depends on the type of system you're administering.

If You're Administering a New System

If you're administering a newly installed MERLIN II system, you *must* set basic operating conditions for the system before you can administer data options. Complete instructions for basic administration are provided in the MERLIN II *System Installation and Administration Manual.*

If you haven't already clone so, get your MERLIN II *System Installation and Administration Manual* and turn to Section 4, "Administering the System." Read the "Overview," then complete steps 1 through 3 of the administration procedure. When you've finished this basic administration, you'll be ready to administer data options.

If You're Adding Data Options to an Existing System

For your convenience, this section of the guide includes the procedures for setting analog voice terminal types and assigning the Simultaneous Voice and Data feature to analog voice terminals. Therefore, you maybe able to add data capability to a running MERLIN II system using just this guide. If you need more information, refer to Section 4, "Administering the System" in the MERLIN II *System Installation and Administration Manual.*

> **NOTE:** If you make any changes to system settings or features, such as Call Restriction, while you're administering data options, be sure to record those changes on the appropriate planning forms.

INFORMATION FOR USERS

Once you've administered the data options for your system, be sure to give the people in your business the information they need to select modem pools, access a local host computer.

FORMS FOR DATA OPTIONS

Which forms you use to administer your system depends on the particular data options you've selected. Get out the forms you completed for Section 2 of this guide, "Planning Data Options," and review the data options you chose. Then perform the appropriate administration procedures for your system.

Basic Administration for Analog Station Jacks

When you administer a MERLIN II system, you assign operating conditions, lines, and features to the station jacks to which voice terminals are connected. In a system with digital data capability, you also administer station jacks for data equipment, such as modem pools.

Keep these points in mind as you administer data options:

- There are special requirements for administering analog station jacks to which Basic Telephone and Modem Interface (B'TMI) devices are connected. If you have modem pool members that use BTMIs, follow the guidelines in "Administer Basic Telephones" in Section 4 of the MERLIN II *System Installation and Administration Manual.*
- If you use the Simultaneous Voice and Data feature for analog voice terminals or have modem pools, be sure to set the voice terminal type for the analog station jacks.
  - For voice terminals with Simultaneous Voice and Data, set the higher-numbered (data) station jack to the same voice terminal type as the lower-numbered (voice) jack. You must perform this procedure for both jacks in the voice / data pair.
  - For modem pools with BTMIs, identify the station jack to which the BTMI is connected as one ready to receive a voice terminal with flat membrane buttons (non-BIS / HFAI).

Modem Pools

You administer the analog or basic telephone station jacks for modem pools in the same way you administer station jacks for analog voice terminals or basic telephones. This includes assigning lines and optional features to station jacks, as shown in the administration procedures that follow.

Perform the first three procedures, which are required, then carry out any of the optional procedures that apply to your system.

- Assign lines or line pools to each of the analog or basic telephone jacks for the modems in the pool.
- Assign the jacks for an incoming modem pool to a Call Distribution Group for better management of incoming calls.
- Specify Ringing Options for lines assigned to incoming modem pools.
- Assign Call Restrictions to the analog or basic telephone jacks for the modems in outgoing modem pools.
- Assign System Speed Dial codes to the telephone numbers of remote computers.
- Administer an Automatic Route Selection table to place outgoing data calls on the most appropriate line pool.

Each of these actions is described below. For detailed administration procedures, see the appropriate sections of the *MERLIN II System Manual.*

> **NOTE:** If you haven't already done so, follow the steps in "Procedure for Setting the Voice Terminal Type, " later in this section, to identify station jacks for BTMIs as ready to receive voice terminals with flat membrane buttons (non-BIS / HFAI).

ASSIGNING LINES

Calls can come into and go out of a modem pool only on the lines that are assigned to the analog or basic telephone jack for that modem pool. Check your Station Jack Configuration Forms and Incoming Modem Pool Form to see which lines or line polls should be assigned to each modem pool. Then follow the instructions in the appropriate Line Assignments entry for your type of system in Section 2 of the *MERLIN II System Manual* to make the assignments.

SETTING UP CALL DISTRIBUTION GROUPS

To use the Group Call Distribution feature, you assign the analog or basic telephone jack for each modem in an incoming modem pool to a Call Distribution group. Then you assign to the group the lines or line pools on which calls are received by the incoming modem pool.

once you've administered this feature, the MERLIN II system directs each incoming call on these lines to the next available modem in the modem pool, in round-robin order. See "Group Call Distribution" in Section 2 of the *MERLIN II System Manual* to set up Call Distribution groups.

SPECIFYING RINGING OPTIONS FOR INCOMING MODEM POOLS

Unless you assign different lines to each modem in a pool or use the Group Call Distribution feature, you need to specify where the call should ring first. Otherwise calls will ring at all the modems in the modern pool simultaneously.

- Set lines for immediate ring at only one of the modems in the modem pool.

. Set lines for delayed ring at the other modem(s) in the modern pool.

See "Ringing Options" in Section 2 of the *MERLIN II System Manual* to assign Ringing Options to lines connected to modems in modem pools.

ASSIGNING CALL RESTRICTIONS

Once a person making an outgoing data call is connected to a modem, the administration of the analog or basic telephone jack for that modem determines what types of outside and toll calls are permitted and what line or line pool is used for the call. For example, someone with an outward restricted voice terminal can place a data call to any endpoint if the modem through which the call is placed isn't restricted.

You can restrict the types of data calls that can be placed through your outgoing modem pools. For example, you may want a modem pool to be used only for local calls to a host computer in the same city. If so, you can administer the analog jacks of the modem pool members to be toll restricted. If you want people to be able to place long distance data calls to specific area codes or exchanges, you can assign one or more allowed lists to the analog or basic telephone jacks.

> **NOTE:** Modem pools on dedicated outside lines can't be restricted by the MERLIN II system.

To administer calling restrictions, follow the instructions in "Call Restriction" and "Allowed Lists" in Section 2 of the *MERLIN II System Manual.*

ASSIGNING SYSTEM SPEED DIAL CODES

For security reasons, you may not want to give the telephone number of a remote computer to the people who use outgoing modem pools. If so, assign a System Speed Dial code to the telephone number. People dial the 3-digit code to place data calls to the remote computer. If you mark the code when you administer it, the code rather than the telephone number appears on your reports, if you use the Call Report feature.

To assign codes to telephone numbers of remote computers, see "System Speed Dial" in Section 2 of the *MERLIN II System Manual.*

USING AUTOMATIC ROUTE SELECTION FOR OUTGOING DATA CALLS

If you use the Automatic Route Selection feature, you may want to specify the line pool(s) that the system uses for outgoing data calls to particular area codes or exchanges. If so, see "Automatic Route Selection" in Section 2 of the *MERLIN II System Manual.*

Data Hunt Groups

In Section *2,* "Planning Data Options," you may have grouped digital station jacks together into data hunt groups for more efficient data communications. To administer a data hunt group, you assign the appropriate digital station jacks to the group or remove them from the group.

. For a data hunt group for local host computer access, you administer the station jacks for the Modular Processor Data Modules (MPDM) connected to the computer.

. For a data hunt group for an outgoing modem pool, you administer the station jacks for the Modular Trunk Data Modules (MTDM) connected to the modems in the modem pool.

PROCEDURE FOR ADMINISTERING DATA HUNT GROUPS

Get your Data Hunt Group Form and follow the appropriate procedure below to set up or change data hunt group(s) for your system. If you're making a change, be sure to record the new information on the form.

NOTE: Your console beeps once (the MERLIN II system error tone) if you try to assign a station jack to a data hunt group when:

- The jack is on an analog station module.
- The jack has already been assigned to a different data hunt group.
- The data hunt group already contains 16 jacks.

To administer data hunt groups, enter administration mode and follow the appropriate procedure below.

With a MERLIN II System Display Console

1 From the administration menu, touch these buttons: [Data], [HuntGrp].

2 Dial the group number (default *870 through *875).

3 Touch [Enter].

4 Green lights appear next to the buttons for any jacks that are assigned to this data hunt group. Touch the Auto Intercom button for each jack whose status you want to change until the green light shows the apprpriate code:

Green light on = station jack assigned to data hunt group
Green light off = station jack not assigned to data hunt group

5 Touch [HuntGrp], **,then repeat steps 2 through 4 for each data hunt group you want to administer.**

6 Touch the appropriate button to administer another data option, or touch Conference to return to the administration menu, or leave 'administration mode.

With a 34-Button Console

1 Touch Message.

2 Dial #.

3 Dial the code (*870 through *875) for the data hunt group you want to administer.

4 Green lights appear next to the buttons for any jacks that are assigned to this data hunt group. Touch the Auto Intercom button for each jack whose status you want to change until the green light shows the appropriate code:

Green light on = station jack assigned to data hunt group
Green light off = station jack not assigned to data hunt group

5 Repeat steps 2 through 4 for each data hunt group you want to administer.

6 If you have other data options to administer, go to step 2 of the procedure for the option you are administering. If not, leave administration mode by sliding the T/P switch to the center position.

When you assign a digital station jack to a data hunt group, the system automatically assigns the local host interface feature to the jack. This limits the number of call progress messages that are exchanged between digital data endpoints when a data call is placed.

If you remove a jack from a data hunt group, you must also remove the local host interface. Then, if you use that jack for a voice terminal with data capabilities or for a personal terminal or computer, the user sees all the standard call progress messages on the screen.

PROCEDURE FOR ADDING AND REMOVING THE LOCAL HOST INTERFACE

To remove the local host interface feature, enter administration mode and follow the appropriate procedure below.

With a MERLIN II System Display Console

1 From the administration menu, touch these buttons: **More**, **More**, **Data**, **LocHost**.

2 Touch the Auto Intercom button for each jack whose status you want to change until the green light shows the appropriate code:

Green light on = station jack has local host interface
Green light off = station jack doesn't have local host interface

3 Touch the appropriate button if there are other data options that you want to administer, or touch Conference to return to the administration menu.

With a 34-Button Console

1 Touch Message.

2 Dial the 4-character code #321.

3 Green lights appear next to the buttons for any jacks that have the local host interface feature. Touch the Auto Intercom button for each jack whose status you want to change until the green light shows the appropriate code:

Green light on = station jack doesn't have local host interface
Green light off = station jack doesn't have local host interface

4 If you have other data options to administer, go to step 2 of the procedure for the option you are administering. If not, leave administration mode by sliding the T/P switch to the center position.

Data Status Buttons for Digital Voice Terminals

If a digital voice terminal has a Data Status button, the green light next to the button goes on whenever a data call is in progress. The light is off whenever the digital data endpoint is idle.

Users can program Data Status buttons on their own voice terminals by following the instructions given in Section 5, "Using Data Equipment for Calls." If you prefer to assign this feature yourself, perform the procedure below.

PROCEDURE FOR PROGRAMMING DATA BUTTONS

Use the Centralized Programming procedure dexrived in Section 2 of the *MERLIN II System Manual or* follow the steps below to assign this feature to buttons on digital voice terminals.

1 Label an available button **Data.**

2 Dial #33 to enter programming mode.
In programming mode, the voice terminal rings every 5 seconds to remind you that you can't place or receive calls.

3 Touch the button you want to program.

4 Dial *93.

5 Dial the intercom number of the voice terminal.

6 Dial # 00 to return the voice terminal to call-handling mode.

Simultaneous Voice and Data at Analog Voice Terminals

You may have assigned a second control unit station jack to one or more analog voice terminals in your system. The second station jack provides a path for data calls, so the person at that voice terminal can make voice and data calls at the same time.

Check your Master Planning Form. The boxed pairs of intercom numbers with "VDP" (voice/data pair) written next to the odd number in the pair identify voice terminals that should have the Simultaneous Voice and Data feature. To administer the feature, you:

- Identify the station jacks for that voice terminal as a voice/data pair.
- Identify the type of analog voice terminal (BIS/HFAI or membrane button) in the voice/data pair.
- Program an Auto Answer-All button on the voice terminal.

PROCEDURE FOR ADMINISTERING THE SIMULTANEOUS VOICE AND DATA FEATURE

Enter administration mode and follow the appropriate steps below to designate analog station jacks as voice/data pairs.

NOTE: Your console beeps once (the MERLIN II system error tone) if the station jacks you specify can't be administered for the Simultaneous Voice and Data feature. You can't assign this feature if:

- One or both jacks aren't on an analog station module
- The jacks have already been assigned as a voice/voice pair

With a MERLIN II Display Console

1 From the administration menu, touch these buttons: [More], [More], [Data], [Vce/Data].

2 Green lights appear next to the buttons for any jacks that are assigned to voice/data pairs. Touch either Auto Intercom button for the voice/data pair until the green lights next to both buttons show the appropriate code:

Greem lights on = station jacks assigned to voice/data pair
Green lights off = station jacks not assigned to voice/data pair

3 If you haven't already identified the voice terminal as having raised plastic buttons (a BIS/HFAI model) or flat membrane buttons (models without the BIS or HFAI features) go to step 1 of "Procedure for Setting the Voice Terminal Type," below.

4 Touch the appropriate button to administer another data option, or touch Conference to return to the administration menu.

With a 34-Button Console

1 Touch **Message.**
The *green light next to* **Message** *becomes steady. The other lights go off.*

2 **Dial the 4-character** code #211.
If the system can be administered, the green light next to **Message** *remains steady and you hear two beeps.*

NOTE: If the light next to Message flashes, you can't perform this procedure right now. Take one of these actions:

– Wait for the light to become steady, then continue with step 4.

- Leave administration mode by sliding the T/P switch to the center position and try this procedure again later.

3 Green lights appear next to the buttons for any jacks that are assigned to voice/data pairs. Touch either Auto Intercom button for the voice/data pair until the green lights next to both buttons show the appropriate code:

Green lights on = station jacks assigned to voice/data pair
Green lights off = station jacks not assigned to voice/data pair

4 If you haven't already identified the voice terminal as having raised plastic buttons (a BIS/HFAI model) or flat membrane buttons (models without the BIS or HFAI features) go to step 2 of "Procedure for Setting the Voice Terminal Type," below.

5 If you have other data options to administer, go to step 2 of the procedure for the option you are administering. If not, leave administration mode.

PROCEDURE FOR SETTING THE VOICE TERMINAL TYPE

As part of the basic administration of the MERLIN II system, you must identify each analog voice terminal in your system as either:

- A membrane-button voice terminal (5-button, 10-button, 34-Button, or 34-button deluxe) model.
- A BIS/HFAI voice terminal (A BIS-10, BIS-22, BIS-34, BIS-34D, or 10-button Hands-Free Answer on Intercom) model.

For voice terminals with the Simultaneous Voice and Data feature, you need to perform the following procedure for both station jacks. Enter administration mode, and follow the appropriate procedure below.

With a MERLIN II System Display Console

1 From the administration menu, touch the following buttons: Stations, More, BIS/HFAI.

2 Check your Station Configuration Forms to see which voice terminals are *not* BIS/HFAI models. Touch both Auto Intercom buttons for each voice terminal that has the Simultaneous Voice and Data feature until the green lights show the appropriate code:

Green light on = BIS or HFAI voice Terminal
Green light off = flat membrane button voice terminal

3 Touch Conference to return to the administration menu, or leave administration mode.

With a 34-Button Console

1 Touch **Message.**

2 Dial the 4-character code #320.

If this is a new system, green lights come on next to all the buttons for analog stations, except the button for intercom number 10. If *you're changing this setting on an administered system, lights come on next to the Auto Intercom buttons@ stations previously identified as BIS/HFAI.*

3 Check your Station Configuration Forms to see which voice terminals are *not* BIS/HFAI models. Touch both Auto Intercom buttons for each voice terminal that has the Simultaneous Voice and Data feature until the green lights show the appropriate code:

Green light on = BIS or HFAI voice terminal
Green light off = membrane-button voice terminal

4 If you have other data options to administer, go to step 2 of the procedure for the option you are administering. If not, leave administration mode.

PROCEDURE FOR PROGRAMMING AN AUTO ANSWER-ALL BUTTON

Analog voice terminals with the Simultaneous Voice and Data feature must have an Auto Answer-All button so that incoming calls can be answered automatically by the modem. Use the Centralized Programming procedure described in Section 2 of the *MERLIN II System Manual* or follow the steps below to program buttons.

1 Label the button Auto Answer-All.

2 Slide the T/P switch to P.
In programming mode, the voice terminal rings every ***5 seconds*** *to remind you that you can 't place or receive calls.*

3 Touch the button you want to program.

4 Dial *75.

5 Slide the T/P switch to the center position.

Overview

Your voice and data communications equipment is setup to allow simultaneous voice and data calls through the MERLIN II system. For example, you can make a data call to a host computer, then place or receive voice calls without interrupting your data call.

You can place:

- Internal data calls to a computer or data terminal connected to your MERLIN II system

  For example, the personnel files for Bye, Loew, and Zelli are stored in the brokerage firm's minicomputer. To update the files, the office manager places a call from her terminal to the data hunt group for the minicomputer. When the system connects her to an available port on the minicomputer, she logs in, then opens the appropriate file.

- Outside data calls to a host computer in another location

  For example, financial consultants at Bye, Loew, and Zelli often call TapeNet, a stock market information service. They place these calls through a modem pool for outgoing calls. When the data connection is made, they log into TapeNet's system and request information on particular companies.

- Data calls into your MERLIN II system from another location

  For example, Bye, Lowe, and Zelli's president makes frequent trips to the firm's branch office in Newport Beach. He places a data call to the home office each day to read and respond to his electronic mail.

HOW TO USE THIS SECTION OF THE GUIDE

The methods you use for data communications depend to some extent on the type of voice and data equipment you have. This section of the guide discusses placing, disconnecting and receiving data calls at both digital and analog workstations. As you follow the procedures that apply to your equipment, keep in mind that the messages and prompts that appear on your screen during data calls may be different from those used as examples.

Basic Information on Data Calls

Consult the table below to see where to find information about data communications with the type of workstation you use.

If you have:	See:
• A 7406 digital voice terminal with data stand connected to a computer or data terminal • An AT&T Personal Terminal (PT) 510D • An MPDM connected to a computer or data terminal for data calls only	The appropriate entry in "Data Calls with Digital Voice and Data Equipment"
An analog voice terminal such as the 10-button, or M-button model connected to a computer or data terminal through a modem	"Data Calls with an Analog Voice Terminal"
A need to place a data call to a digital station, such as a computer or data terminal with a modem, from outside the MERLIN II system	"Data Cails to Digital Stations from Other Locations"

NOTE. If you have a PC / PBX Connection, consult the documentation that came with it form instructions on data calls.

Special Information on Data Calls

"Special Information for Placing Data Calls" appears after the basic instructions for placing, disconnecting, and receiving data calls. It provides additional information on selecting lines, using MERLIN II features, and interpreting call progress messages.

- "Line Selection" discusses the prefixes you can dial to specify the line on which an outgoing data call from a digital station will be placed. This information is of particular interest to administrators who must help users select the appropriate lines for data calls.
- "Privacy" explains how to activate the Privacy feature for an outgoing data call.
- "System Speed Dial" discusses using a code in place of a telephone number when placing an outgoing data call.
- "Call Progress Messages" provides a complete list of the messages that may appear on the terminal screen during data calls.

Information on Placing Voice Calls with Data Equipment

"Voice Calls Dialed from a Computer or Data Terminal" shows how to use a personal computer or data terminal to place voice calls within and outside the MERLIN II system.

Data Calls with Digital Voice and Data Equipment

How you place a data call from within the MERLIN II system depends on the type of data endpoint you're calling and where it's located.

- You place internal calls to other digitaI data endpoints directly by dialing their intercom or data hunt group numbers.
- You place outside calls and calls to analog stations in your system through outgoing modem pools.

To call a remote host computer, for example, you dial number of the appropriate outgoing modem pool or the station number of a specific outgoing modem pool member. Once you're connected to a modem, you have the modem dial the telephone number of the host computer.

Internal Data Calls

The way you place calls to other digital data endpoints in your system depends on the type of voice and data equipment you have. To place internal digital data calls, such as calls to your company's host computer or another digital station, follow the set of procedures below that applies to your equipment.

WITH A 7406 DIGITAL VOICE TERMINAL AND DATA STAND

The procedures that follow show how to:

- Place an internal data call
- Disconnect a data call
- Program a Data Status button on your voice terminal

Placing a Data Call

Follow the steps below to place a data call. Keep in mind that you maybe able to store numbers for data calls if your computer has a telephone directory or if your data terminal has programmable feature buttons.

1 If your computer or data terminal is off, turn it on.

2 Press the Break key.

The **DIAL:** *prompt appears on your screen. If you* have *a Data Status button prvgrummed on your mice terminal, the green light next to the button goes on.*

NOTE: For the call to go through, the Data Terminal Ready (DTR) from the computer or data terminal must be on.

3 Type an asterisk, then the intercom number or data hunt group number for the digital data endpoint you want to reach. For example:

To call:	Type:
Data hunt group *871 for local host computer access	"871
The data endpoint connected to the digital voice terminal at intercom number 25	"25
The data-only digital station at intercom number 35	"35

4 Press the Return key.

Call progress messages such as **RINGING** *appear on your screen.*

If you typed an invalid number, you see this message when you press the Return key:

DENIED
DISCONNECTED

If that happens, repeat steps 2 through 4 with a valid code.

5 A message on your screen tells you whether or not you've set up a data connection:

— If there is no answer, the **RINGING** message stays on your screen. Follow the instructions under "Disconnecting a Data Call" below to break the connection.

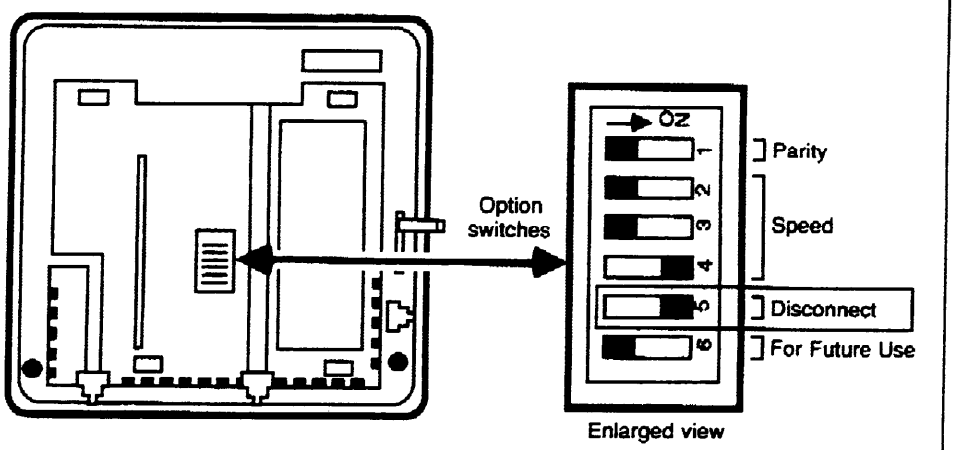
– If your call has gone through, you see **ANSWERED**, then a prompt, such as LOGIN: Follow the instructions on your screen.

— If your call can't be completed, you see an explanatory phrase, such as BUSY or unavailable, then the message DISCONNECTED . Repeat steps 2 through 4 or try your call again later.

Disconnecting a Data Call

You can disconnect a data call by using the Break or the Escape key on your keyboard. Which key you use depends on how the disconnect sequence switch (switch 5 on the bottom of-the data stand) is set. See Figure 5-1.

FIGURE 5-1 A data stand disconnect sequence switch.



Follow this procedure to disconnect a data call:

1 Perform the appropriate step, depending on how your data stand DIP switches are set:

   – If switch 5 is set to the right (the on position), press the Escape key twice within a 2-second period. Pause slightly between presses.

   – If switch 5 is set to the left (the off position), press the Break key three times within a 4-second period. Pause slightly between presses.

   The message ***DISCONNECTED*** *appears.*

2 If the call doesn't disconnect, repeat step 1.

You may also be able to disconnect a data call by:

- Pressing the Disconnect button if your computer or data terminal has one.
- Using a long continuous break (more than 3 seconds).
- Turning off your computer or data terminal.
- Pressing the Self-Test button on the back of the data stand.
- Turning off DTR from your computer or data terminal.

Programming a Data Status Button

If you have a Data Status button on your voice terminal, the green light next to the button goes on whenever a data call is in progress. You can program this feature on an available button if you want to be reminded that you have an active data call.

Follow these steps to program a Data Status button:

1 Type or print "Data" on the label of an available button with lights.

2 Dial #33 to enter programming mode.
In programming mode, the voice terminal rings every 5 seconds to remind you that you can 't place or receive voice calls.

3 Touch the button you want to program.

4 Dial *93.

5 Dial the intercom number of your voice terminal.

6 Dial #00 to return to call-handling mode.

Receiving Data Calls

The data stand automatically answers any incoming data calls, such as electronic mail messages, when:

- Your computer or data terminal is on.

  and

- The Data Terminal Ready lead is on.

If you use the Do Not Disturb feature to keep voice calls from ringing at your voice terminal, the data stand can still answer incoming data calls.

You see a message like this on your screen when you receive a data call:

INCOMING CALL - ANSWERED

If the caller disconnects, you see this message:

DISCONNECTED

WITH A PERSONAL TERMINAL (PT) 510D

With the PT 510D, you can type the number or use the Directory feature to place a data call. For information on setting up Directory entries, see the *PT 510D User's Guide.*

Follow the appropriate procedure below to place an internal data call.

Placing a Data Call Using the Keyboard

1 From the PHONE or DATA screen press the DATA ON/OFF block; or from the DATA screen press the Break key on the keyboard.

2 When the DIAL: prompt appears, type an asterisk, then the intercom number or data hunt group number.

For example, if data hunt group 871 connects you to your in-house host computer, type:

*871

3 Press the Return key.
Call progress messages such as RINGING *appear on your screen.*

4 Check your screen to see whether you've made a data connection.

– If your call went through, you see the message ANSWERED and a "D" appears between the third and fourth action blocks. Follow the standard login or access procedure for the computer to which you're connected.

– If your call didn't go through, you see an explanatory message, such

try your call again later.

Placing a Data Call Using the Directory

1 If you have a Directory entry for the number you want to call, take the appropriate action from the Directory screen:

– If you aren't in Show Mode, press the target next to the entry for the data endpoint you want to call.

– If you are in Show Mode, press the target next to the entry, then press the CALL action block target at the bottom of the screen.

Call progress messages appear on your screen.

2 Check your screen to see whether you've made a data connection.

– If your call went through; you see the message ANSWERED . You also see a "D" between the third and fourth action blocks on the Data screen. Follow the standard login or access procedure for the computer to which you're connected.

– If your call didn't go through, you see an explanatory message, such as BUSY, then the message DISCONNECTED . If this happens, repeat step 1 or try your call again later.

Disconnecting a Data Call

To disconnect a data call, press the DATA ON/OFF block.

Receiving Data Calls

If you're at your desk, you hear a tone and see a "D" between the third and fourth action blocks on the screen. The "D" remains on the screen throughout the data call. You can view stored messages by accessing the Data screen.

The screen shows in-progress data calls only. If you were away from your terminal when a data call came in, you won't know that a message has been stored in the buffer. Be sure to check the Data screen for stored messages before you place a data call yourself. Otherwise you'll erase any stored messages.

WITH A COMPUTER OR DATA TERMINAL SET UP FOR DATA ONLY

If you have a personal computer or data terminal that's connected to an MPDM for data communications only, follow the instructions for placing data calls given in the *Modular Processor Data Module User's Guide.*

Outgoing Outside Data Calls

You use outgoing modem pools to place data calls from digital stations to:

- Computers or data terminals outside your MERLIN II system. These calls go out over standard telephone lines.
- Computers or data terminals connected to analog voice terminals in your system.

To make these calls, you place an internal data call to an outgoing modem pool using either the station number for a specific modem pool member or a 3-digit data hunt group number. Then you have the modem dial the number you want to reach.

> **NOTE:** If you have more than one outgoing modem pool, consult your data information sheet or talk with your administrator. He or she can help you select the modem pool with the appropriate speed and line assignments for your data call.

The procedure below shows how to p!ace a data call from a 7406 digital voice terminal or a PT510D using the 2212C modem. If you have a different type of modem, follow the instructions provided with the modem.

> **NOTE:** This procedure applies to placing outside data calls manually using just the keyboard. If you have a PT 510D, you may want to set up Directory entries for automatic dialing of outside calls through modem pools. If so, see your User's Guide for that equipment.

PLACING A DATA CALL

FoIlow these steps to place an outgoing outside data call or a data call to an analog station:

1 Following the standard procedures for placing internal data calls, call the outgoing modem pool that's most appropriate for your outside call. If you're not sure what number to dial, ask your system administrator.

2 Take the appropriate action:

- If the connection is made and you see the message **ANSWERED** , press the Return or Enter key.
- If the message **RINGING** stays on the screen, disconnect the call and try again later.

3 When you have a prompt, take the appropriate action:

- *For outside lines:* Type a line or line pool access code, if required, followed by a comma. If you're using a modem connected to a basic telephone jack, you must type one of these access codes:

  – If your system is pooled, type: 9,

  – If your system is square, type: 88,

- *For analog stations:* If you're calling an analog station with data, type the intercom number and skip to step 5.

Do *not* press the Return or Enter key.

NOTE: You also use access codes to select particular lines or line pools for your calls. Check your data information sheet, if you have one, or ask

your system administrator what access codes, if any, you should use when placing data calls. See the table in "Special Information for Placing Data Calls. "

4 On the same line, type the telephone number for the outside computer or data terminal.

The telephone number can contain the digits O through 9, asterisk (*), and any MERLIN II System Speed Dial code (#60 through #99). If you have a 2212C modem, you can use any of the special characters listed below or see the 2212C user's manual for aIl the special characters. If you have a different modem, check the documentation that came with it to determine which special characters you can use.

If you want to:	Type:
Dial the Touch-Tone character #	# #
Pause for 2 seconds	
Wait up to 30 seconds for a dial tone before continuing to dial	+

For your own convenience you can include hyphens, parentheses, and blank spaces to make the telephone number easier to read. T'he system ignores these characters when it places the call. The characters are counted, though, when the modem checks to be sure you've typed no more than the maximum number of characters 36 for the 2212C modem).

5 Press the Return or Enter key.
Call status messages appear on the screen, such as **Dialing** *and* **Ringing**.....

If you typed an invalid number, you get this message when you press the Return or Enter key:

Invalid Number

If this happens, repeat steps 3 through 5.

6 A message on your screen tells you whether or not you've set up a data connection:

- If your call has gone through, you get the message that the call has been answered (**Answered** or **Connected**) and a prompt, such as **Login:** Follow the instructions on your screen.

– If your call can't be completed, the system gives you an explanatory message, such as Busy or No answer and disconnects the outside call. Repeat steps 3 through 5 or disconnect your internal call and try again.

DISCONNECTING A DATA CALL

To end a data call, follow these steps:

1 Log off from your keyboard.

2 Perform the same procedure you use to disconnect internal data calls.

Data Calls with an Analog Voice Terminal

If your system administrator has assigned the Simultaneous Voice and Data feature to your analog voice terminal, you can place and receive both voice and data calls through the MERLIN II system. You use your voice terminal to place data calls.

> **NOTE:** Be sure that you have set the appropriate options on the modem.

PLACING A DATA CALL

You can place data calls to any of the following:

- A host computer outside your MERLIN II system
- An analog data endpoint in your system, such as a co-worker's data terminal
- A digital data endpoint in your system, such as a local host computer, using an incoming modem pool

Follow these steps to place a data call:

1. If your computer or data terminal isn't on, turn it on.
2. On your voice terminal, a red light shows next to the line on which the system will place your data call. If you want to use a different line for the call, such as an intercom line, touch the button for that line.
3. Touch **Speaker.**
   The green light comes on next to the line button, and you hear the dial tone.
4. Take the appropriate action:
   - If you're calling outside your system or to an analog station within your system, dial the telephone number or intercom number of the computer or data terminal.
   - If you're calling a digital data endpoint in your system, dial the intercom number or Group Call Distribution code of the appropriate incoming modem pool. If you have more than one such pool, consult your system administrator to select the most appropriate modem pool for your call.
5. When you hear a steady tone, indicating that a data connection has been made, put your modem into data mode.
   Your speaker goes off. The green light next to the button for the line or line pool on which you placed the call stays on throughout the dirts call.
6. If you're placing an internal call to a digital endpoint through a modem pool, press the Break key on your keyboard. When you see the DIAL: prompt type an asterisk, then the intercom number or data hunt group code for the computer or data terminal and press the Return key.
7. When a prompt appears on your computer or data terminal screen, follow the login or access procedure for the computer or data terminal to which you placed the call.

DISCONNECTING A DATA CALL

To end a data call, follow these steps:

1. Log off from your keyboard.
2. Turn off your modem.
   The *green light next to the line or line pool button goes off.*

RECEIVING A DATA CALL

You can receive data calls if your modem and your computer or data terminal are on. Your modem automatically answers incoming data calls if your General Purpose Adapter is set for automatic answer and you've activated the Auto Answer-All feature at your voice terminal. For example, your computer or data terminal may receive and store electronic mail messages that you can read at your convenience.

On your voice terminal, the green light flashes next to the line button for an incoming data call until the modem answers the call.

Data Calls to Digital Stations from Other Locations

You use incoming modem pools to place data calls to digital stations from outside your MERLIN II system. For example, you may call the host computer connected to your company's MERLIN 11 system from your home.

PLACING A DATA CALL

Follow these steps to place a data call to an incoming modem pool:

1. Select the most appropriate incoming modem pool, if you have more than one. Consult your data information sheet or ask your system administrator which is the best modem pool for the call.
2. Dial the telephone number of the incoming modem pool.
   Your modem generates call progress messages or tones.
3. When you're connected to the incoming modem pool, follow the same steps you use to place' an internal data call.

DISCONNECTING A DATA CALL

To end a data call into your MERLIN II system, follow these steps:

1. Log off from your keyboard.
2. Perform the procedure you use to disconnect internal data calls.
3. Hang up your telephone or disconnect your computer from the telephone line.

Special Information for Placing Data Calls

If your system has several lines or line pools available for data calls, callers may need to specify a line or line pool when they place a data call. Callers may also want to use the Privacy and System Speed Dial features for data calls.

Information on selecting lines and using special features for data calls is provided below, along with a list of the call progress messages that callers may receive.

LINE SELECTION

To place an outgoing data call from a digital station, you first place an internal call to a modem. You then direct the modem to place a call on a particular line or line pool by entering the appropriate line selection prefix, as shown in the table below. Next, you enter a pause and the telephone number.

What code you use to specify a line or line pool depends on the type of line representation your system has and whether the modem is connected to either of the following:

- An analog station jack at the control unit through a BTMI
- Directly to a basic telephone jack at the control unit

If your system's line representation is:	And the modem is connected to a basic telephone module, the line selection prefix is:	And the modem is connected to a BTMI, the line selection prefixes are:
Square	88	882 through 889
Behind-Switch	(none)	882 through 889
Pooled with Button Access:		
For the main pool (default Pool 9)	9	9
For other line pools or individual lines	88	884 through 889
Pooled with Dial Access:		
For line pools to which station has Dial Access	9 + pool access code (9 or 890 through 899)	9 + pool access code (9 or 890 through 899)
For other lines or line pools	88	884 through 889
Pooled with Automatic Route Selection:	9	9
For line pools to which station has Dial Access		
For other lines or line pools	88	884 through 889

For more detailed information on line selection prefixes, see "Basic Telephones" in Section 2 of the *MERLIN II System Manual.*

PRIVACY

You can use the 3-digit code #31 to activate the Privacy feature when dialing an outgoing data call. To instruct the modem to make the data call private, take the appropriate action:

- If the modem is connected to a Basic Telephone Module, enter #31 *before* the line selection prefix.
- If the modem is connected to a BTMI, enter #31 *afier* the line selection prefix.

SYSTEM SPEED DIAL

To place a data call to a number that has been assigned a System Speed Dial code (#60 through #99), take one of these actions:

- If the modem is connected to a Basic Telephone Module, enter the code in place of the line selection prefix and telephone number. (If your system is square, it places the call on the first available line in the sequence of lines assigned to the station jack; if your system is pooled, it uses the main pool for the call.)
- If the modem is connected to a BTMI, enter the code in place of the telephone number.

CALL PROGRESS MESSAGES

If the Data Terminal Ready (DTR) lead is on, users may see the following messages when they place or receive data calls:

ABANDONED	Appears after the notice of an incoming call if the caller disconnects before the data endpoint answers. This message may be seen when the MPDM isn't set for automatic answering.
ANSWERED	Generated when the data endpoint being called answers.
BUSY	For an outside call, indicates that the line or line pool the caller selected or the data endpoint being called isn't available. For an internal call, indicates that the destination data endpoint is already on a call.
DENIED	Appears if the caller enters an invalid dialing sequence.
DIAL:	Generated when the caller goes offhook.
RINGING	For an outside call, appears when ringing begins. For an internal call, appears when the data endpoint being called begins alerting.
TRY AGAIN	Appears if a resource needed for the call, such as a particular modem configuration, isn't available for use.
UNAVAILABLE	Generated during an internal call if the destination data endpoint is not a working data endpoint or if the caller enters the code for an empty data hunt group.

Voice Calls Dialed from a Computer or Data Terminal

YOU can dial internal or outside voice calls at the keyboard of your computer or data terminal. When you place a call, you can specify a particular line or line pool or let the MERLIN II system select the first available line from among those assigned to your station. If your computer or data terminal is programmed with a telephone directory, you can use that feature to place voice calls quickly.

PROCEDURE FOR PLACING VOICE CALLS

Follow the steps below to place a voice call from your keyboard. Be sure to type all numbers and characters on the same line. If you make a mistake, just backspace to erase the incorrect characters and retype the entry. The character "@" may be used to delete the entire line. Don't press the Return or Enter key until you've entered all the information the system needs to place the call.

1 Follow the standard procedure to get the **DIAL:** prompt.

2 Type **v** or **V** to identify this as a voice call.

3 If you're placing an intercom call, type **> 7** then go to step 5.

4 For outside calls, the system, automatically selects a line or line pool from among those assigned to your *voice* terminal or PT 510D, as it does when you use the dial pad to place a call. If you want to specify a particular line or line pool, perform the appropriate step below. If not, go on to step 5.

- To place the call on a specific line assigned to your voice terminal, type > and the line code (801 through 856). For example, you type **> 801** to select line 01 for the call.
- If you have a pooled system, outgoing calls are placed on the main pool (default Pool 9) unless you specify a different line pool (or a line) for the call. To place the call on a line pool other than the main pool, type > and the line pool code if assigned to your voice terminal. For example, you type **> 891** to select Pool 891 for the call.

5 Type the number you want to call or the System Speed Dial code for the number.

6 Press the Return or Enter key.
The system terminates the data call and switches the call to the voice terminal.

7 If your voice terminal has a speaker or a microphone, it goes on automatically and you hear the call being placed. If not, lift your handset to be connected to the call.

EXAMPLES

You may find the following examples of voice calls dialed from the keyboard helpful.

To place an outside voice call to 555-1276 on line pool 891, the caller types **v > 891,555-1276** and then presses the Enter or Return key.

To place a voice call to a co-worker whose intercom number is 33, the caller types **v > 7 33** and then presses the Enter or Return key.

CONSIDERATIONS

Keep these points in mind when you place voice calls from your computer or data terminal:

- To generate the Touch-Tone character #, type the pound sign twice (# #). Otherwise the system will read the characters that follow the pound sign as a System Speed Dial code or personal Speed Dial code.
- You can't include the "wait for dial tone" character (+) in the dialing sequence for a voice call.
- Any calling restrictions assigned to the voice terminal apply to voice calls dialed at the keyboard.
- If more than 24 characters are entered in the dial string, the call is denied.
- The characters "-", "(" , ")", and "space" are ignored but counted when determining the maximum dial string length.
- A comma (,) causes the system to pause for 1.5 seconds when dialing out digits .
- A percent sign (%) causes the system to change to Touch Tones if dialing on an outside line set to rotary.

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