Lucent Technologies
Bell Labs Innovations

MERLIN LEGEND®
Communications System
Basic Rate Interface
Vistium™ 1200/1300
Personal Video
Application Note

555-601-113
October 1994

555-601-113
October 1994

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

Security of Your System: Preventing Toll Fraud
As a customer of a new telephone system, you should be aware that there exists an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it.

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

Trademarks
MERLIN, MERLIN LEGEND, MLX-10, MLX-10D, MLX-20L, and MLX-28D are registered trademarks of Lucent Technologies in the U.S. and other countries.
Vistium is a trademark of AT&T.
Windows is a trademark of Microsoft Corporation.

Ordering Information
Call: Lucent Technologies Publications Center
Voice 1-800-457-1235 Intl Voice 317-322-6791
Fax 1-800-457-1764 Intl Fax 317-322-6699
Write: Lucent Technologies Publications Center
P.O. Box 19901
Indianapolis, IN 46219
Order: Document No. 555-601-113

Support Telephone Number
In the continental U.S., Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at **1-800-628-2888** if you need assistance when installing or using your system

Outside the continental U.S., contact your local Lucent Technologies representative.

Warranty
Lucent Technologies provides a limited warranty on this product.

Intellectual property related to this product (including trademarks) and registered to AT&T Corporation has been transferred to Lucent Technologies Incorporated.

Any references within this text to American Telephone and Telegraph Corporation or AT&T should be interpreted as references to Lucent Technologies Incorporated. The exception is cross references to books published prior to December 31, 1996, which retain their original AT&T titles.

Lucent Technologies – formed as a result of AT&T's planned restructuring – designs, builds, and delivers a wide range of public and private networks, communication systems and software, consumer and business telephone systems, and microelectronic components. The world-renowned Bell Laboratories is the research and development arm for the company.

AT&T Vistium™ Personal Video 1200/1300 System

Contents

AT&T Vistium 1200/1300 Personal Video System

The following Application Note discusses the basics of the AT&T Vistium™ 1200/1300 Personal Video system and the specific operation of the Vistium system with the MERLIN LEGEND® Communications System. For information on installing and using the Vistium system, refer to the documentation that is shipped with your unit. A list of available documentation follows:

Document Number	Title
ST-2129-72	*Vistium Personal Video System 1200 Installation Guide*
ST-2129-73	*Vistium Personal Video System 1200 User's Guide*
ST-2130-88	*Vistium Personal Video System 1300 Installation Guide*
ST-2130-89	*Vistium Personal Video System 1300 User's Guide*

Introduction

The AT&T Vistium 1200/1300 Personal Video system (Vistium system) provides full-motion video on a telephone call with advanced data transfer features and remote file sharing (see Figure 1).

The Vistium system works with both Primary Rate Interface (PRI) and Basic Rate Interface (BRI) protocols on the Integrated Services Digital Network. The MERLIN LEGEND system must be connected to either a 4ESS (for PRI only) or a 5ESS (for PRI and BRI) central office switch. The MERLIN LEGEND system also must contain the proper interface module for the protocols: the 100D module for PRI service and the 800 CO-BRI module for BRI service, and the 2.B Feature module for BRI service.

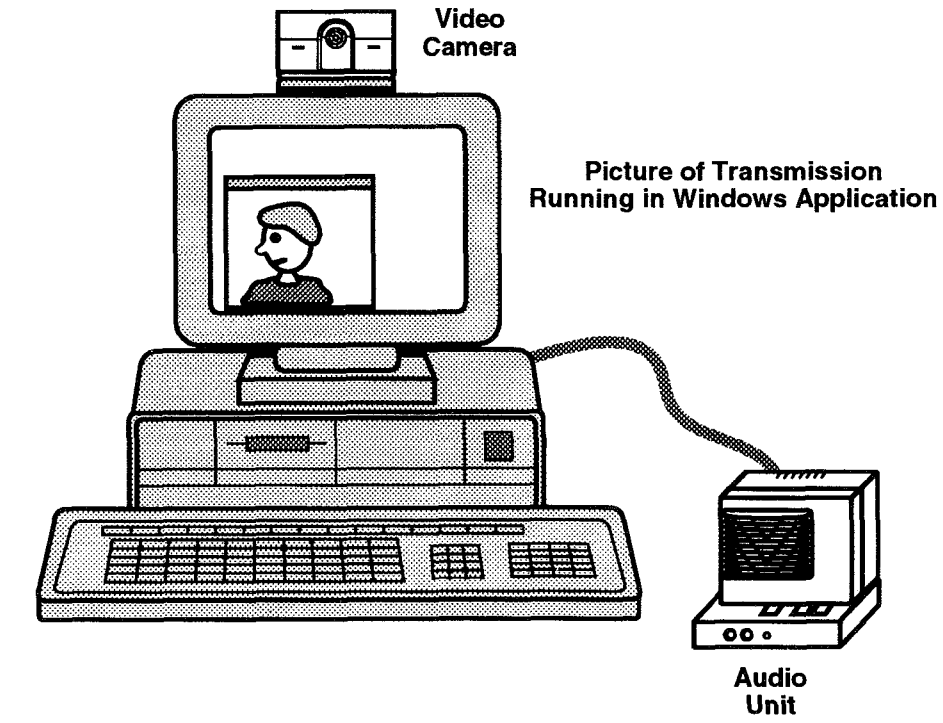


Figure 1. Vistium Personal Video System

A Vistium system consists of:

- Personal video-Basic Rate Interface (PV-BRI) card(s)
- Video camera (A video camera can be ordered as part of the Vistium Personal Video package or can be ordered separately.)
- Audio unit

The Visitum 1300 Personal Video system comes with two full-size PV-BRI cards and one half-size circuit board for the personal video; this half-size board contains RJ-45 jacks. In contrast, the Vistium 1200 system comes with one full-size PV-BRI card and the half-size circuit board.

The PV-BRI card(s) and half-size circuit board are installed in a personal computer (PC). The video camera and audio unit are connected to the cards in the PC.

The Vistium system is plugged into a port on an MLX module in the same way a telephone is plugged in. However, the port must be programmed for "2B Data" capability prior to plugging in the Vistium system.

The term "2B Data" means that the Vistium system combines the 64-kbps data from each of two B-channels of the MLX module port into one 128-kbps call. It is this 128-kbps capability that allows the transmission of full-motion video.

When a video call comes in, the user is informed of the call by a pop-up menu on the PC screen. If the user chooses to answer, the caller appears in a window on the PC screen.

NOTE:
The Vistium system cannot be plugged into the first or fifth port of the MLX module because these ports are reserved for operator positions and cannot be programmed for 2B Data capability.

Installation

Installing a Vistium 1200/1300 Personal Video system is a two-part procedure: installing the interface card(s) and connecting the rest of the video system components. Refer to the documentation included with the Vistium system for the complete installation procedure.

Follow these steps to connect cables (see Figure 2):

1. Connect the monitor interface cable to the 15-pin VGA connector on the back of the Vistium connection board.

2. Connect the VGA terminator provided to the 15-pin VGA output connector on the back of the computer.

3. Connect one end of an 8-pin cable to one of the RJ-45 jacks on the half-size circuit board. Connect the other end of the cable to the port on the 008 MLX or 408 MLX module.

4. If an MLX telephone is to be used along with the PC, connect one end of an 8-pin cable to the remaining RJ-45 jack on the half-size circuit board. Connect the other end of the cable to the "Line" jack of the MLX telephone.

5. Connect one end of the 26-pin A/V/P cable to the A/V/P connector on the back of the Vistium connection board. Connect the other end to the A/V/P connector on the back of the Vistium audio unit.

6. Connect one end of the 5-pin camera cable to the back of the Vistium audio unit. Connect the other end to the back of the camera.

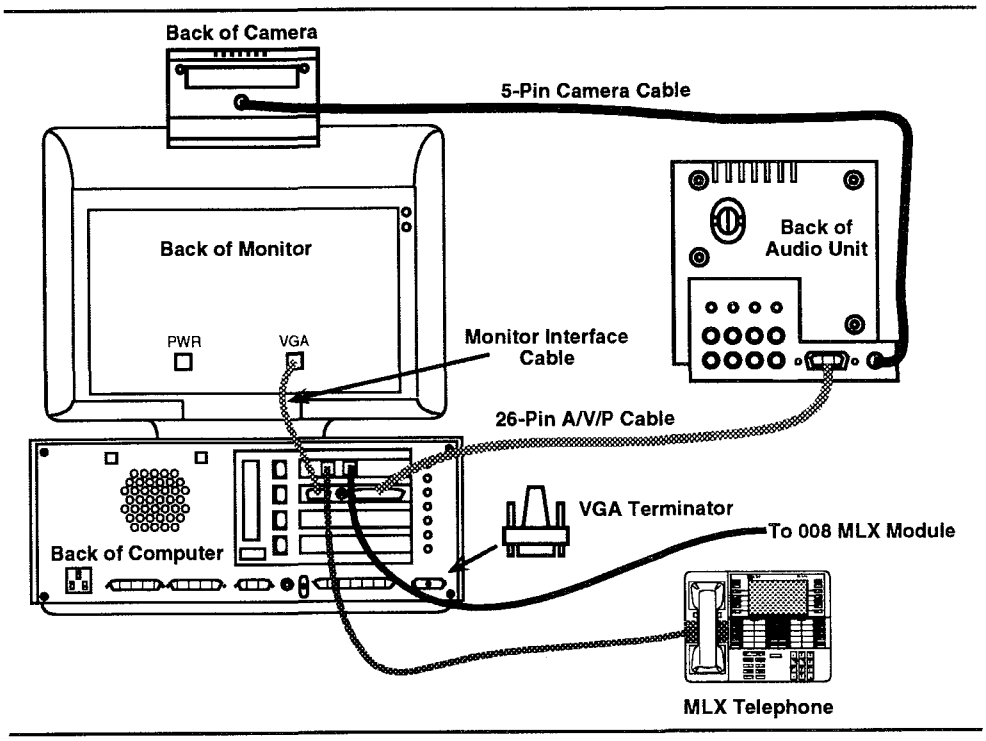


Figure 2. Vistium Connection With Audio Unit

Other configurations are possible. See the installation chapters of the documentation included with the Vistium system.

Installation Considerations

Consider the following when installing a Vistium system:

- The PV-BRI cards have jumpers so users can select the I/O address and interrupt value. Make sure these cards are set so they do not conflict with any other device installed in the PC.

- Carefully follow the instructions for installing the cables between the circuit cards and the PC's video controller card. The connection and orientation of the cables depend on the specific PC video controller.

- When installing the Vistium system software, the user is asked to select the Network Switch to which the PV-BRI card is attached. Select "AT&T [Pre NI-1]."

- Assign the Directory Number (DN) as the extension number.

Standalone and Passive Bus Configurations

The AT&T Vistium 1200/1300 Personal Video system can be used in two configurations: standalone or passive bus. The standalone configuration has only the Vistium system connected to the 008 MLX or 408 MLX module. In the passive bus configuration, an MLX telephone is connected to the back of the PC and can answer voice calls.

In the passive bus configuration voice calls directed to the MLX telephone are answered by the MLX telephone. Data calls (video is classified as data) to the Vistium system are answered by the Vistium system.

Passive Bus Considerations

Full-motion video on the Vistium system requires the use of two B-channels. A voice call uses one B-channel. Because two B-channels can be used by the Vistium system at one time, the possibility of the MLX telephone and the Vistium system contending for the same B-channel exists. Because of this contention, consider the following when using the passive bus configuration:

- When a two B-channel (2B) video call is active, the MLX telephone cannot be used to place or receive calls or dial any feature codes. Calls still alert at the MLX telephone, but any attempt to answer the voice call is blocked. Activate the Do Not Disturb feature at the MLX telephone while the Vistium system is active on a video call. This way voice calls can proceed immediately to any coverage paths.

- If the MLX telephone is active on a voice call, the Vistium system can only originate or receive a one B-channel (1B) video call, although a 2B call may be attempted.

- If the MLX telephone has a call on Hold and the user answers a 2B video call, the call on Hold cannot be retrieved until the video call is terminated or a conference or transfer is completed.

- When the MLX telephone is active on a B-channel and the Vistium system originates a two B-channel call, the Vistium system bridges the B-channels with the passive bus MLX telephone. The result is noise and degradation of the video.

- If the red LED is lit by an alerting call on the MLX telephone, a B-channel is used and only one B-channel is available for a video call.

- If the MLX telephone is active on a call and another call is announced via the Voice Announce to Busy feature, both B-channels are being used and no video call can be received or originated by the Vistium system.

- Do not program BRI lines onto the MLX telephone that also terminate on the adjunct. The MLX telephone will try to answer a ringing line (because of its lower logical ID) instead of establishing the second B-channel for the video. Any effort to establish a video call on the second B-channel is aborted.

Call Handling

Calls made or received on a Vistium system without the Auto-Answer feature are handled through menus accessed from the tool bar on the PC When a video call comes in to the Vistium system, a screen pops up to alert the user. If the user chooses "Answer" to accept the call, the Visitum software presents the call in a window on the PC. The user can also choose not to answer the call by clicking on the Ignore Call box. All further call activity, such as muting or disconnecting the call, is handled through the menus on the PC screen.

Placing a video call is also done through the Windows™-based user interface through a series of pull-down menus from the tool bar. To dial a number, do one of the following:

- Select a previously entered name from the Directory or from the Search dialog box.
- Select "Direct Dial" from the Calling Window and enter the number to be dialed.

Video calls can be established by using one B-channel (1B video) or two B-channels (2B video). The picture quality of full-motion video is better if two B-channels are used. To place a 2B video call, the user must dial two separate calls on two different lines.

Video calls can occur between different endpoints:

- Internal calls—MLX port to/from MLX port
- External calls
  - MLX port to/from an outside destination via BRI
  - MLX port to/from an outside destination via PRI
  - MLX port to/from an outside destination, 1B via PRI, 1B via BRI

Modes of Operation

Internal calls are placed by dialing the extension number. External calls are placed differently depending on the mode of operation.

Key Mode

In Key mode a Vistium system can be set up for internal video only, external video only, or internal and external video.

Internal Video Only

For internal video-only connection in the Key mode, all outside lines should be removed via programming from the adjunct extension port. To dial, the user types the extension number of the destination once for each B-channel desired and clicks on the Call icon or presses ENTER.

Internal and External and External-Only Video

Lines used by the Vistium system (BRI and/or PRI lines) should be assigned to the adjunct extension. All other lines should be removed.

Lines may be bridged to other stations However, make sure enough idle lines are available to place and receive video calls to and from the Vistium system. In a passive bus configuration, a line should not appear on both the Vistium system and its associated MLX telephone.

If lines are shared by the passive bus MLX telephone, external 2B video calls cannot be terminated at the Vistium sytem. If lines need to be shared, the Personal Lines on the MLX telephone should be set for No Ring or Delay Ring.

To dial an internal video call, the user enters the extension number of the destination once for each B-channel desired. To dial an external call, the user has two options:

- Enter a line number (for example, 808) assigned to the adjunct, followed by the outside destination number. Repeat this step for the second B-channel.

- Enter the Idle Line Access code (default is 9) followed by the outside destination number.

To disconnect from a call, click on the End icon and then select OK from the dialog box.

Hybrid/PBX Mode

As in Key mode, a Vistium system in Hybrid/PBX mode can be set up for internal video only, external video only, or internal and external video.

Internal Video Only

To dial, the user enters the extension number of the destination once for each B-channel desired.

Internal and External and External-Only Video

Lines or pools used by the Vistium system (in other words, BRI and/or PRI lines) should be assigned to the adjunct extension. All other lines should be removed

Lines may be bridged to other stations. However, make sure enough idle lines are available to place and receive video calls to and from the Vistium system In a passive bus configuration, a line should not appear on both the Vistium system and its associated MLX telephone.

Automatic Route Selection (ARS) paths to be used by the Vistium system should have pools assigned that have only ISDN facilities in the pool. Any use of ARS should have assignments which use these pools for video calls.

NOTE:
This may not be possible because of voice and video calls that go to the same office or area code.

To dial an internal video call, the user enters the extension number of the destination once for each B-channel desired. To dial an external call, the user has four options:

- Enter a line number (for example, 808) followed by the outside destination number.
- Enter the ARS access code (default is 9) followed by the outside destination number.
- Enter a pool access code (for example, 890) followed by the outside destination number.
- Use PRI dial plan routing.

Hybrid/PBX Mode Considerations

Consider the following when using a Vistium system in Hybrid/PBX mode:

- Video calls cannot be transferred to a Vistium system by an attendant.
- Direct Inward Dialing (DID) lines do not support video calls.
- Digital Group Calling (DGC) groups can be used for 1B incoming video calls.
- When ARS is not used, Personal Lines or pool buttons are needed for external calling. However, a pool button can be used only for 1B video calls. Users can use Dial Access to Pools via System Access buttons or can divide their line among two pools to place a B-channel call from each pool button.
- To disconnect from a call, click on the End icon and then select OK from the dialog box.

Call Handling Considerations

Consider the following when using the Vistium system:

- Do not use MERLIN LEGEND features that redirect the destination of a call, such as Coverage, Forwarding, and Night Service.
- Features such as Park and Pickup cannot be used to answer a call ringing at another Vistium system.
- If the first call of a 2B call is misdialed, the call will not go through. If the second call is misdialed, the call may be presented as a 1B video call.
- If a call comes in to the Vistium system at the same time an outgoing call is being placed, whether the incoming or outgoing call or neither is completed depends upon the Vistium system. Selecting "Ignore" for the incoming call does not clear the facility; the outgoing call still may not go through.
- Voice stations that share Personal Line appearances with a Vistium system may receive a momentary alert when a video call is delivered to the Vistium system and may use a B-channel until the call is answered or abandoned.

- The Vistium system may be more sensitive to BRI/PRI line errors than the MERLIN LEGEND system alone. Consequently, the Vistium system may disconnect some calls that the MERLIN LEGEND system itself would not.

Because of these considerations and the contention issues (see "Passive Bus Considerations"), establish a 1B video call first and then add the second B-channel. To do so, enter both numbers and click on the Auto-Answer box to remove the "X" and deactivate this feature.

NOTE:
Only the originator of the first B-channel call can add the second B-channel.

Adjuncts

The AT&T Vistium 1200/1300 Personal Video system functions fully with all MERLIN LEGEND adjuncts except for those noted below.

- Vistium system cannot handle fax calls.
- The Direct Station Selector (DSS) cannot be used to place calls to Vistium systems.
- If a Multi-Function Module (MFM) is plugged into a programmed 2B Data port, it cannot place or receive calls.
- A Vistium system cannot be connected to an MFM.
- Do not connect an MFM to the MLX telephone connected via the passive bus to the Vistium system.
- Do not plug a Vistium system into a 7500B Data Module.
- The following adjuncts cannot use the 2B Data capabilities:
  - MLX headsets
  - MLX In-Range Out-of-Building (IROB) interfaces
  - Universal Paging Access Module (UPAM)

Feature Interactions

Consider the following feature interactions when using a Vistium system with the MERLIN LEGEND Communications System.

Unsupported Features

Some features either do not operate with the Vistium system or reflect a limitation of the MERLIN LEGEND system in combination with data (video) calls. The following features do not function with the Vistium system:

- Barge-In
- Bridging
- Call Waiting—The call appears to queue but never "de-queues" when the station becomes available.
- Camp-On
- Conferencing
- Distinctive Ring
- End-to-End Signaling
- Hold—Although video calls cannot be placed on hold, users can use the Vistium system audio and video mute features to simulate a hold.
- Messaging
- Notify
- Operator features
- Paging
- Park
- Pickup

- Reminder Service
- Remote Access (DISA) and Remote Call Forwarding (RCF)
- Saved Number Dial
- Virtual buttons

Dial Codes and Feature Codes

The Vistium system cannot dial any existing MERLIN LEGEND dial codes, feature codes, or any number string that begins with an asterisk (*) or a pound sign (#). Therefore, the following features cannot be used:

- Account Code Entry (ACE)
- Account Code Entry—Forced (FACE)
- Auto Dial
- Directory—Extension, Personal, and System
- Do Not Disturb
- Feature Codes
- Forward/Follow Me
- Last Number Dial
- Speed Dial, Personal and System

Miscellaneous System Features

The following features have their own specific interactions with the Vistium system:

- Allowed Lists—Since 2B video calls require two calls to be placed, make sure the Allowed Lists contain all the numbers to be called
- Automatic Route Selection (ARS)—Video calls must be routed through pools that contain only PRI and/or BRI lines.
- Callback
  - The Vistium system can be programmed for Callback. As a line becomes available in the pool or the busy Vistium system becomes idle, the queued call is placed one B-channel at a time.
  - Only use off-hook queuing with Callback; in other words, do not select the End icon after the call is queued.
- Coverage—It is recommended that you do not use the Coverage feature with 2B video calls. A Vistium system can be a Coverage sender or receiver, but only for 1B video calls.
- Direct Group Calling (DGC)
  - Do not mix lines intended for video calls with lines intended for voice-only calls in the same calling group.
  - A Vistium system can be a calling group member and can call DGC groups. However, a Vistium system can establish only 1B video calls through a calling group.
  - A Vistium system can be a member of only one DGC group.
  - If a DGC group contains a Vistium system, program the group for Auto Login since Visitum PVs cannot log themselves into service.

- Manual Signaling
  - Analog multiline and MLX stations cannot manual signal Vistium systems.
  - A passive bus MLX telephone can be manually signaled when both B-channels are in use.
- Personal Lines
  - Personal Lines can be shared between an MLX telephone, analog multiline telephone, or single-line telephone passive bus station and a Vistium system. Voice calls alert only at the MLX station, and video calls alert only at the Vistium system.
  - Do not share a Personal Line with a 7500B Data Module. If a 7500B Data Module is programmed for auto-answer, it answers the Personal Line before the Visitum PV gets a chance.
  - Do not assign a Personal Line to a Vistium system that is going to call that Personal Line. This results in a 1B video call.
- Pools
  - Do not program a Vistium system to receive video calls on pool buttons since only one pool button on a telephone can be programmed to each endpoint. This would result in a 1B video call. A 2B video call can be established, but this requires that two separate pool buttons be programmed onto a Vistium system.
- Privacy—This feature is always invoked for video calls.
- Reorder Tone Timeout—Timeout of reorder tone drops a Vistium system call.
- Ringing Options—Vistium systems override ring options. Video calls alert at the Vistium system regardless of the ringing option chosen. Use the default setting of Immediate Ring.
- Station Message Detail Recording (SMDR)—Each external 2B video call generates two SMDR records, one for each B-channel. The records have a "D" in the first column.

- Shared System Access Button

  - Vistium systems can have Shared System Access buttons for MLX stations. Program two Shared System Access buttons (one for each B-channel call) on each Vistium system.

  - Calls cannot be originated on a Vistium system by using a Shared System Access button.

  - A Vistium system can have Shared System Access buttons for other Vistium systems. Calls to the System Access buttons can be answered on either the Vistium system with the System Access buttons or the Vistium system with the Shared System Access buttons.

Data Features Interaction

The following are the data features interactions unique to the Vistium system:

- Asynchronous digital calls are rejected by the Vistium system.

- Vistium systems can be placed into data hunt groups, but only 1B calls result.

System Programming

Before the 8-pin cable can be plugged into a 008 MLX or 408 MLX module port, the port must be programmed for 2B Data capability. Follow the screens and instructions below to program the port for 2B Data.

System Programming Considerations

Consider the following when programming ports for 2B Data capability:

- The extension number of the port cannot be the first or fifth port on a 008 MLX or 408 MLX module. These ports are reserved for operator positions.
- The extension number must correspond to the adjunct extension number of an MLX port. By default these extensions begin with "7."
- Do not plug non-2B Data devices into ports programmed for 2B Data; the device probably will not operate properly.
- If a Vistium system is active on a video call, the passive bus MLX telephone can only enter Program Mode via the display, not by dialing "#00."

Entering Programming

Console: Press **Menu** → `Sys Program` → `Exit`
PC/SPM: Type **SPM** → Press any key → **F1** → **F5**

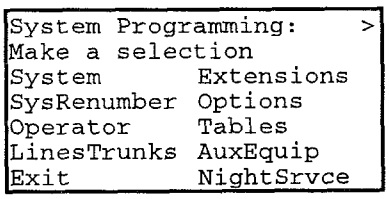
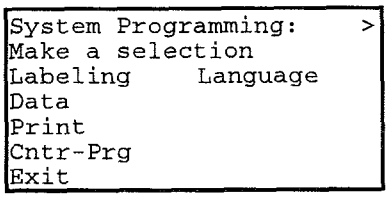
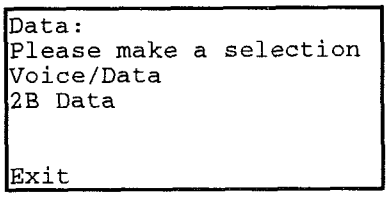
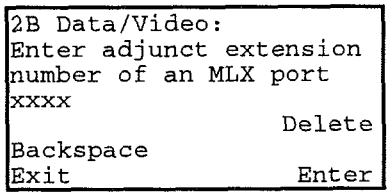
Exiting Without Changes

To exit from any screen without making changes, select `Exit` on the console or press **F5** on the PC before saving your entry or menu selection.

Summary: 2B Data

Programmable by	System technician; system manager
Mode	Key, Hybrid/PBX
Idle Condition	Required
Planning Form	Data Form 2b, *Digital Data Station*
Factory Setting	None
Valid Entries	Adjunct extension number up to four digits
Inspect	Yes
Copy Option	No
Console Procedure	**More** → `Data` → `2B Data` → Dial adjunct ext. no. → `Enter` → `Exit` → `Exit`
PC Procedure	**PgUp** → **F2** → **F2** → Type adjunct ext. no. → **F10** → **F5** → **F5**

Procedure: 2B Data

Step	Display/Instructions	On the console	On the PC
1			
	Move to second page of System Programming menu.	Press **More**.	Press **PgUp**.
2			
	Select Data.	Select `Data`.	Press **F2**.
3			
	Select 2B Data.	Select `2B Data`.	Press **F2**.
4			
	Enter adjunct extension number of port on the 008 MLX or 408 MLX module.	Dial adjunct extension number.	Type adjunct extension number.

Step	Display/Instructions	On the console	On the PC
5	Save your entry.	Select `Enter`.	Press **F10**.
6	To return to System Programming menu	Select `Exit` two times.	Press **F5** two times.

NOTE:
If a programmed 2B Data port is changed to an analog multiline telephone or single-line telephone port because of board renumbering, the 2B Data programming is cleared. This guarantees that an analog multiline telephone or single-line telephone port will not be mistakenly programmed as a 2B Data port.

System Programming Reports

A 2B Data port entry has been added to the Extension Directory Report and the Extension Information Report.

Maintenance and Troubleshooting

The maintenance for a Vistium system is similar to a standard MERLIN LEGEND system. Slot and port information follow the same screens as those of other slots and ports.

Maintenance Considerations

Consider the following when performing maintenance procedures:

- An MLX telephone in the passive bus configuration can be used for system programming and maintenance. While in system programming or maintenance mode, the MLX telephone is not using one of the B-channels.
- Do not busy-out or reset a 008 MLX or 408 MLX module during a Vistium system call. Doing so requires both Vistium systems (the sender and the receiver) to be rebooted.
- If a 100D module or 800 CO-BRI module is reset or busied-out while a Vistium system is active on a call, the call is torn down but neither Vistium system needs to be rebooted.
- Unplugging a Vistium system drops the active call. Unplugging and replugging the passive bus MLX telephone several times while a video call is active causes slowing in the video update.

Troubleshooting

The following scenarios illustrate common problems and solutions involving Vistium system installation.

- On LYNK 486DX/33 and ACER 486DX2/33 PCs, the interrupt selection jumpers must be changed from IRQ = 11 to IRQ = 5. Also, the I/O Address must be changed from a default of 0x300 to 0x340. This involves physically changing the jumper as well as specifying the base address during software installation.

  Other types of PCs may require similar procedures.

- When using an ACER PC, change the MARCH video driver to a VGA driver.

- The PV-BRI card can get hung up in an "insane" state. Repower the PC.

- Noisy BRI lines can cause a number of problems, including losing a channel on a call, getting a far-end disconnect, or seeing line errors.

- If the ISDN lines only have "speech-bearer" capability, video calls cannot be completed.

- If the video window on the PC shows black or strange colors, check that the video controller card in the PC is compatible with the PV-BRI card. A list of compatible video controller cards is located in the Release Notes of the Vistium system's documentation or in the DOS file "RELNOTES.WRI," which can be accessed by using the "Release Notes" icon.

  Check the ribbon cables connecting the circuit cards.

  - The widest cable connects the PV-BRI card to the half-size circuit card. The red stripe on this cable should face the front of the PC.

  - Select the correct narrow cable for the PC's video controller card. Consult the documentation that came with the Vistium system.

  - When connecting the narrow cable from the video controller card to the half-size circuit board, make sure the end of the cable that connects to the half-size circuit board has the red stripe facing the back of the PC.

  - Depending on the video controller card, the end of the narrow cable that connects to the video controller card may face front or back.