MICOM BOX type 3
X.25 Asynchronous PAD

User's Manual

R2 149 Link

Addendum

Stock Number 801-1387-302

This addendum is for use with the MICOM BOX Type 3 X.25 Asynchronous PAD User's Manual, Stock Number 800-1387-3a

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June 1988

IMPORTANT CLARIFICATIONS TO THE USER'S MANUAL (Stock Number 800-1387)

1. Paragraph 2.3.4.3

   Change the name and stock number of MICOM BOX Type 3 Dual FEATUREPAK MB3 User's Manual to: Dual FEATUREPAK MB3 Quick Reference Guide, Stock Number 800-1594.

2. Paragraph 3.2.2.3

   Asymmetric channels are always configured in pairs. The first channel of the pair is an odd-numbered channel.

3. Paragraph 3.11

   Use ONLY the information presented in the first paragraph. The information in the rest of paragraph 3.11 is not applicable.

4. Paragraph 3.12

   PVC operation is supported only on the primary trunk.

5. Table 4-5

   Add the following clear diagnostic code:

   clr dte 49

   This indicates that a call has been cleared by the local PAD, because three minutes passed without a Call Accept or Call Clear packet being received from the remote device.

6. Paragraph 4.8

   * The following additional profile parameters are NOT copied from the source to the target device after you enter the XFERnn command: 20, 21, and 118.

   * When you enter XFERnn command, and Parameter 116 (inactivity) is set to 0 on both the source and target devices, the setting on the target device channel is automatically changed to a value of 3. (If the original setting is other than 0, the setting remains unchanged.) This ensures that calls get cleared on the basis of inactivity.

7. Table 5-2

   Frame-level flow control shows the number of RNR frames received or transmitted and the number of frame-level window blocks experienced.

CONTENTS

FIGURES

1.0 INTRODUCTION

This addendum provides detailed information related to Dual FEATUREPAK operation, new handling of Autocall for host computer ports. This information is provided in paragraphs 2.0 through 3.0.

2.0 DUAL FEATUREPAK OPERATION

As described in paragraph 2.3.4.3 of the X.25 Asynchronous PAD User's Manual (800-1387), the MB3-XAP can be combined with either a 3270 BSC PAD or a 3270 SNA PAD for Dual FEATUREPAK MB3 operation.

Unless otherwise specified, this addendum uses the terms synchronous PAD to mean either a BSC PAD or an SNA PAD.

NOTE: The asynchronous PAD can also be combined with an MB3-PSW (packet switch) in a Dual FEATUREPAK MB3. In this configuration the PAD can be connected directly to a link of the MB3-PSW.

A typical application of a Dual FEATUREPAK MB3 with an asynchronous and synchronous PAD is shown in figure 1. As shown, the two devices are connected with the Relay Link.

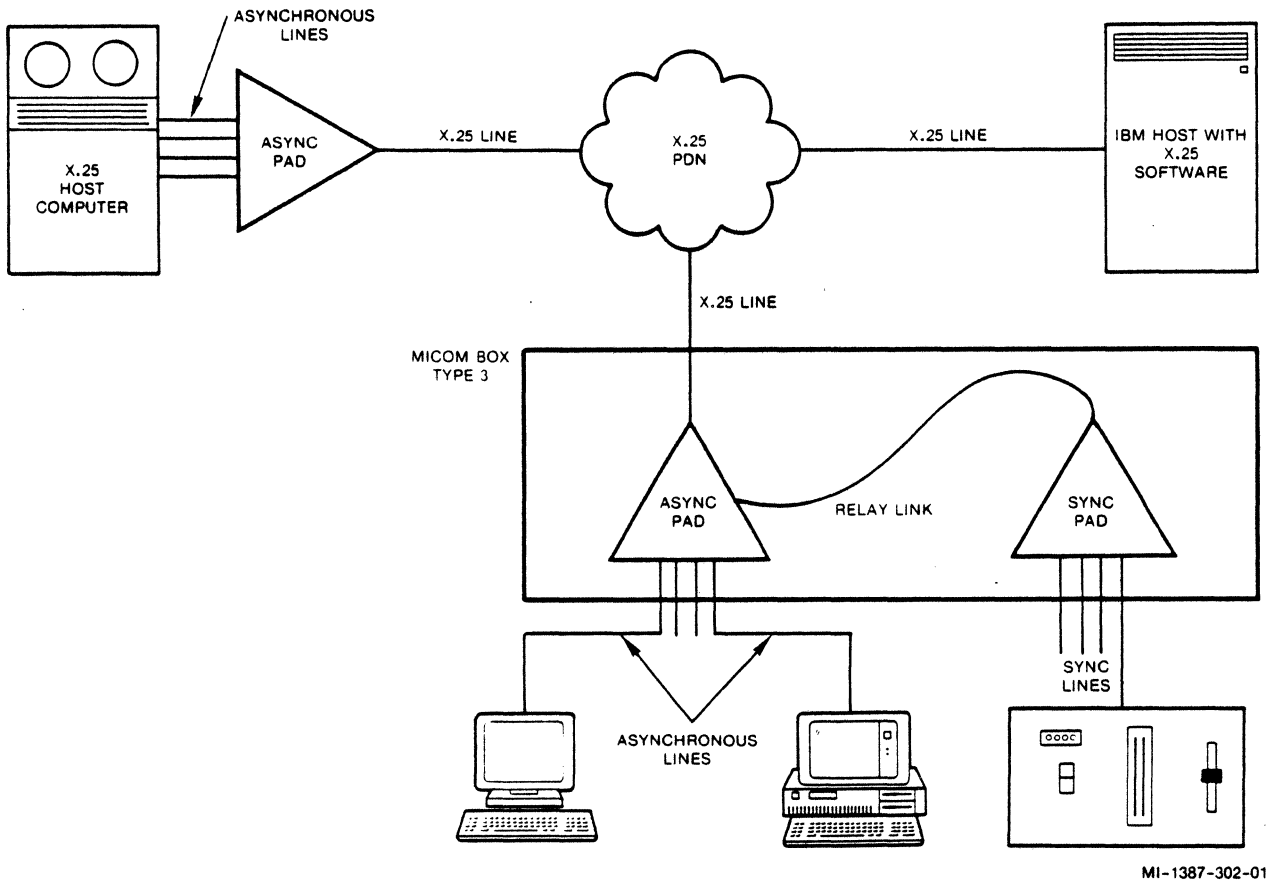

Figure 1. Example of an Asynchronous PAD and Synchronous PAD Function in an MB3

As shown in the block diagram in figure 2, the asynchronous PAD is always installed in the middle module slot, and the synchronous PAD is installed in the bottom module slot. The top module slot is reserved for an optional asynchronous PAD expansion module.

Also shown in figure 2 is the number of asynchronous and synchronous devices available with this MB3 combination. The asynchronous PAD can support up to four devices, or, if you install the optional asynchronous PAD expansion module, it can support up to 10 devices. The synchronous PAD has four synchronous channels that can support up to 16 cluster controllers, 64 devices, and a Command Port.

The asynchronous and synchronous PADs are connected by the Relay Link. Refer to paragraph 2.1.3 for information on the installation of the Relay Link. The connection is made using the Command Port of the asynchronous PAD base module and the Composite of the synchronous PAD base module.

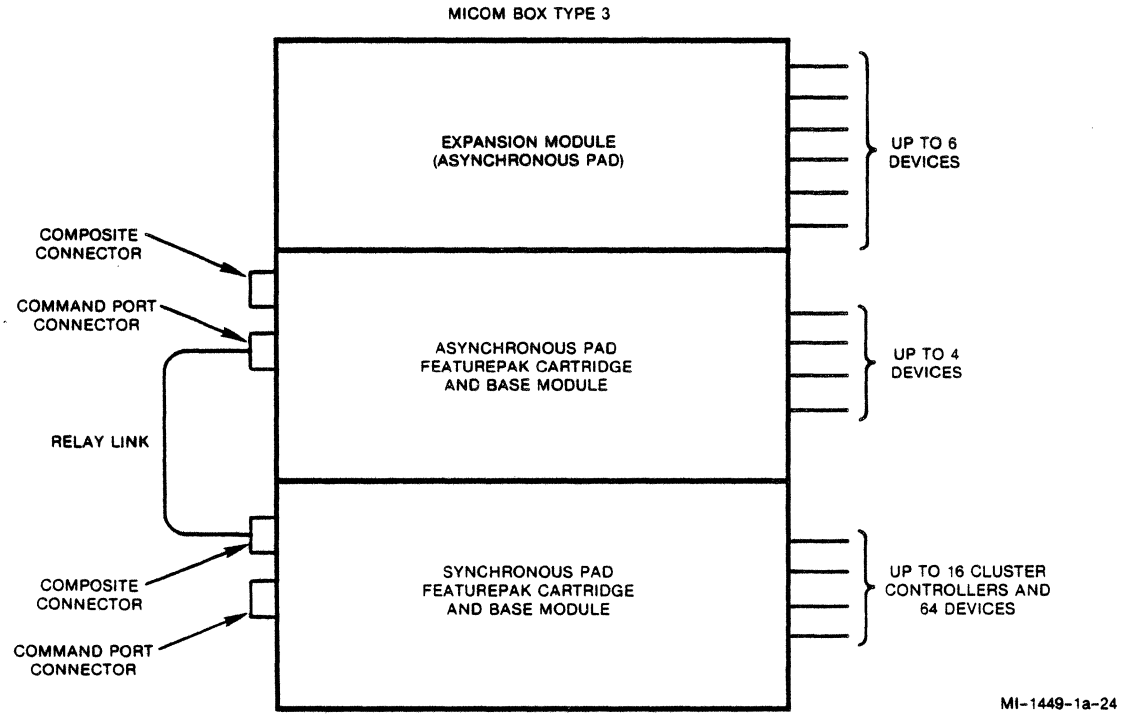

Figure 2. Block Diagram of the Asynchronous PAD and Synchronous PAD Dual FEATUREPAK MB3

Figure 3 shows the unit with the indicator strips applied. As shown, the asynchronous PAD is in the middle position, with an asynchronous PAD expansion module above it.

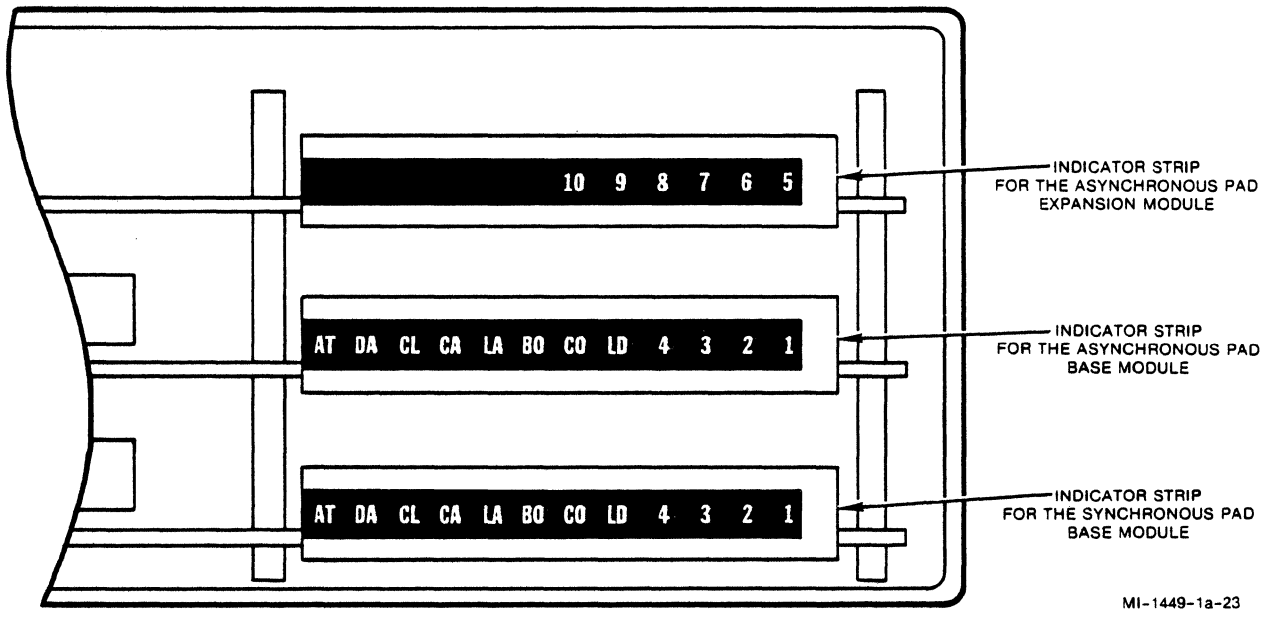

Figure 3. Location of the Indicator Strips for the Asynchronous and Synchronous PADs

2.1 CABLING

2.1.1 Connectors

Figure 4 shows the connectors used on the back panel of an enclosure.

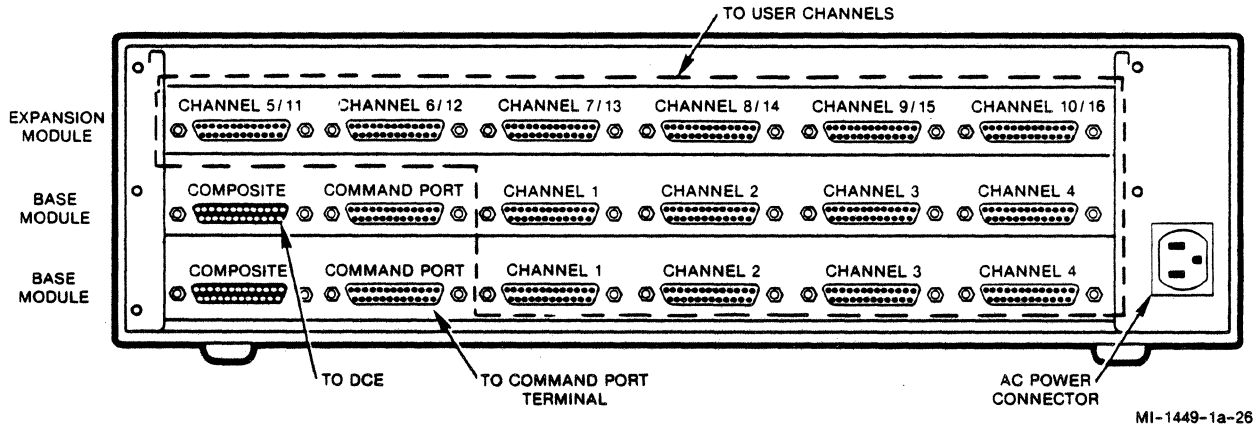

Figure 4. Connectors on the Back Panel of the Enclosure

2.1.2 System Cabling

Figure 5 shows an example of cabling for Asynchronous and Synchronous PADs in the Dual FEATUREPAK MB3.

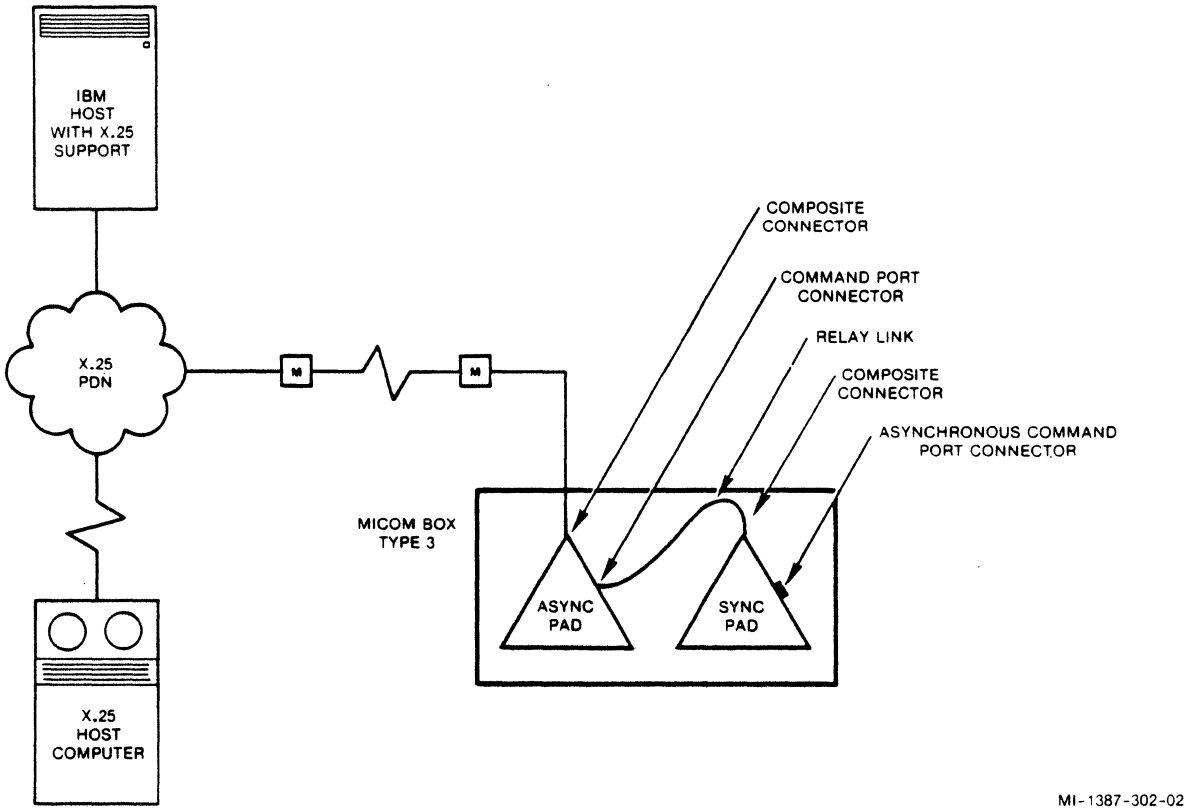

Figure 5. Example of System Cabling for Asynchronous and Synchronous PADs in Dual FEATUREPAK MB3

2.1.3 Relay Link Connection

The Relay Link cable is a short (1-foot) straight cable, MICOM part number 100-2200-01.

The asynchronous PAD module provides the support for the Relay Link that enables the MB3 to operate with two PADs.

Connect one end of the Relay Link cable to the middle base module (asynchronous) connector on the back of the unit labeled COMMAND PORT, and the other end of the cable to the bottom base module (synchronous) connector on the back labeled COMPOSITE (see figure 6).

2.1.4 Composite Interface Connection

Connect an external DCE to the middle base module (asynchronous) connector on the back panel labeled COMPOSITE (see figure 6). Use MICOM's shielded straight cable, part number 100-2200-xx.

The bottom base module (synchronous) connector on the back panel labeled COMPOSITE (see figure 6) provides one of the connections for the Relay Link, and therefore, this connection is not available for an external DCE.

2.1.5 Command Port Connection

On the back panel, the middle base module connector labeled COMMAND PORT is already occupied by the Relay Link.

Connect a terminal cable to the connector on the bottom base module labeled COMMAND PORT (see figure 6). Once the connection is made, this terminal is dedicated for use with the bottom (synchronous) base module's Command Facility.

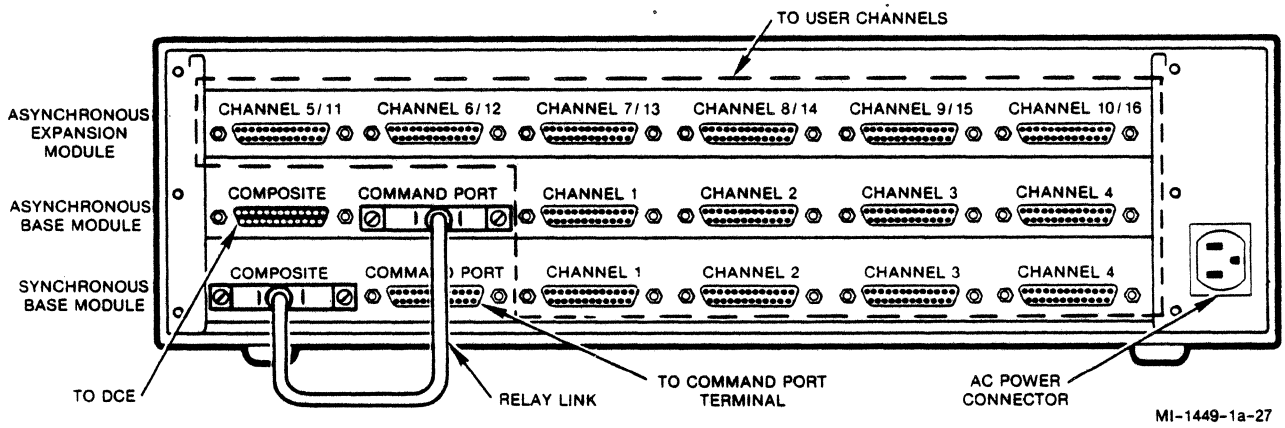

Figure 6. Relay Link Connection on the Back of the Unit for Asynchronous PAD and Synchronous PAD Dual FEATUREPAK MB3

2.2 COMBINED ASYNCHRONOUS AND SYNCHRONOUS PAD OPERATION

2.2.1 The X.25 Connection

The X.25 link parameters of the asynchronous PAD can be configured as described in the Asynchronous PAD User's Manual.

The synchronous PAD's X.25 link parameters, which apply to the Relay Link, are fixed for the Dual FEATUREPAK MB3 and cannot be altered.

NOTE: The X.25 link must be up for the synchronous PAD to be able to place calls. The asynchronous PAD detects the state of the X.25 link, and if the X.25 link is down, the asynchronous PAD prevents the Relay Link from coming up, and thus prevents the synchronous PAD from placing calls.

2.2.2 Accessing the Command Facility

The Command Facility of the asynchronous PAD is accessible by the following methods:

- By way of a terminal connected to a channel on the asynchronous PAD (local switching)
- By way of an asynchronous terminal on any asynchronous PAD in the network
- From the X.25 Control Center (XCC) by way of the network

The Command Facility of the synchronous PAD is accessible by the following methods:

- By way of an asynchronous terminal attached to the Command Port of the synchronous PAD
- From an asynchronous terminal attached to the asynchronous PAD housed in the same unit, provided that the X.25 link is up (refer to the preceding NOTE)
- From an asynchronous terminal attached to any PAD in the network

2.2.3 The PAD Address

The PAD address is the network address assigned by the public Packet Data Network (PDN).

When configuring the X.25 trunk of each PAD, be sure to enter the same address for both the asynchronous PAD and the synchronous PAD, since both PADs share a common address. The PAD address can be obtained from the network administrator.

2.3 TRUNK PARAMETERS

The trunk parameters are configured at the asynchronous PAD's Command Facility. The synchronous PAD's trunk parameters are preset, and the user is not required to modify them.

The asynchronous PAD will provide the clocking to the Relay Link at a fixed speed of 9600 bps using Direct Memory Access (DMA) support in order to minimize delay through the unit.

2.4 SUBADDRESSING

The settings for the subaddresses are configured in each PAD's Command Facility. The subaddresses for the Command Facility and XCC for each PAD must be unique so that incoming calls to the unit will be routed to the appropriate destination.

NOTE: If the subaddresses for the Command Facility or XCC of one PAD are identical to those of the other PAD, incoming calls from the network will only be received by the asynchronous PAD and will never be routed over the Relay Link to the synchronous PAD.

An incoming call to the Command Facility will only be accepted if its subaddress is identical to the Command Facility's subaddress. The default subaddresses are as follows:

	Class 1 (Command Facility)	Class 2 (XCC)
Asynchronous PAD	97	96
Synchronous PAD	99	98

2.5 VIRTUAL CIRCUITS

All virtual circuits, whether asynchronous or synchronous, have equal priority for use of the X.25 link, which they share.

The X.25 link supports a maximum of 78 virtual circuits (66 for the Relay Link, plus up to 10 asynchronous channels; the asynchronous Command Facility; and the asynchronous XCC).

The asynchronous PAD configuration definition for specifying Switched Virtual Circuits (SVCs) must include the SVCs required by the synchronous PAD, in addition to its own requirements. This total number will be used as a common pool of Logical Channel Numbers (LCNs) for both the asynchronous and synchronous PADs.

The number of virtual circuits configured at the factory is 78. If you should need to change the number of SVCs or PVCs (Permanent Virtual Circuits) for your application, you can do so by accessing the Configure function in the asynchronous PAD's Command Facility.

NOTE: Virtual circuits are configured differently for the Dual FEATUREPAK MB3 than for the asynchronous PAD. For the Dual FEATUREPAK MB3, the LGN and LCN prompts are displayed only once and are the start count for the SVC. The remaining LGNs and LCNs are assigned automatically.

PVCs are supported only by the asynchronous PAD.

2.6 INCOMING/OUTGOING CALLS

A call is defined as incoming or outgoing depending on where the call is generated. If it is generated at the X.25 network, the Dual FEATUREPAK MB3 will perceive the call as incoming. If the call is generated in the Dual FEATUREPAK MB3 and is destined to travel out to the X.25 network, the call is perceived as outgoing.

2.6.1 Incoming Calls

An incoming call received on the X.25 link is routed to its destination as follows:

- The protocol ID of the incoming call-request packet is examined. If it is a synchronous PAD protocol ID, the call is routed to the synchronous PAD.
- If the protocol ID of the incoming call-request packet is not a synchronous PAD protocol ID, the call is routed to the asynchronous PAD.
  - If the subaddress in the call-request packet matches a subaddress defined for the asynchronous PAD, the call is accepted.
  - If the subaddress in the call-request packet does not match a subaddress defined for the asynchronous PAD, the call is passed over to the synchronous PAD. The synchronous PAD tries to find a match for the subaddress (the possibilities being the synchronous PAD's Command Facility and XCC, which are accessible only from an asynchronous device). If a match is found, the call is accepted; otherwise, the synchronous PAD clears the call.

Figure 7 shows an example of incoming calls to the Dual FEATUREPAK MB3, and the path each call takes to its destination. The four data flow paths are described below, and each item number corresponds to the item number in the figure's legend:

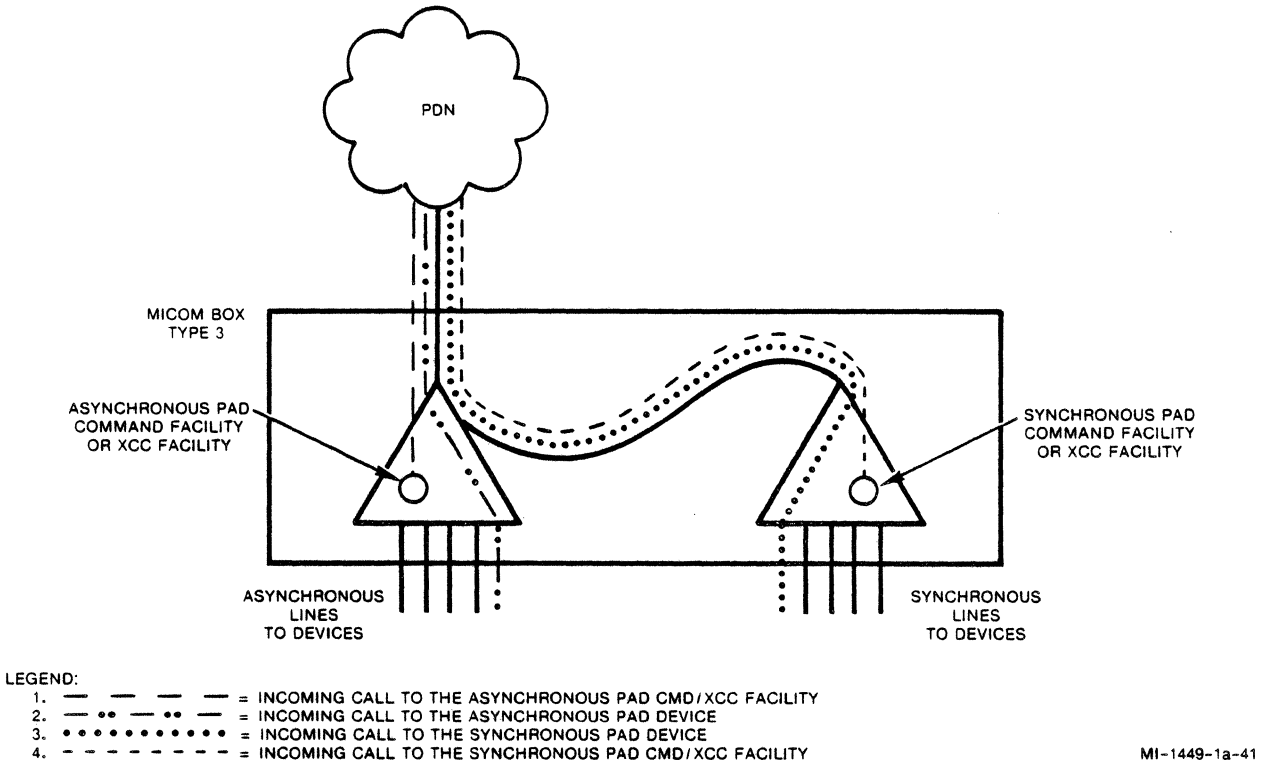

Figure 7. An Example of Incoming Calls to the Dual FEATUREPAK MB3

1. The flow line for item 1 shows an incoming call, which has a subaddress matching the asynchronous PAD's Command or XCC facility, being connected to the asynchronous PAD Command or XCC Facility.

2. The flow line for item 2 shows an incoming call, which has a subaddress matching the asynchronous PAD subaddress, being routed to an asynchronous device.

3. The flow line for item 3 shows an incoming call, which has a protocol ID matching the synchronous PAD protocol ID, being routed over the Relay Link and then connecting to a synchronous device.

4. The flow line for item 4 shows an incoming call, which has a subaddress matching the synchronous PAD Command or XCC facility, being routed from the asynchronous PAD, over the Relay Link, to the synchronous PAD Command or XCC facility.

2.6.2 Outgoing Calls

All outgoing calls from the MB3 will be assigned an LCN on the X.25 link in the normal manner. Asynchronous and synchronous calls share the common pool of LCNs.

Outgoing calls to the network can originate from either the asynchronous PAD or the synchronous PAD.

An outgoing call from the asynchronous PAD is routed to its destination as follows:

- The called address in the call-request packet is compared to the address of the asynchronous PAD.
  - If the called address is different from the asynchronous PAD address, the call is routed to the X.25 network.
  - If the called address matches the asynchronous PAD address, the asynchronous PAD attempts locally to find a match for the subaddress.
    - If a match is found for the subaddress, the asynchronous PAD routes the call internally (local switching).
    - If a match is not found for the subaddress, the call is passed to the synchronous PAD via the Relay Link.

An outgoing call from the synchronous PAD is routed to its destination as follows:

- The protocol ID of the call-request packet is checked for a match.
  - If the protocol ID identifies a synchronous call, the call is passed to the X.25 network.
  - If the protocol ID identifies an asynchronous call, the called address is checked.
    - If the called address is different from the asynchronous PAD address, the call is passed to the X.25 network.
    - If the called address matches the asynchronous PAD address, the call is cleared.

2.7 CALL ACCOUNTING

The asynchronous PAD will generate accounting records for calls originating from the asynchronous PAD, but it will not generate call accounting records for calls originating from the synchronous PAD.

The synchronous PAD generates its own call-accounting records, and it will maintain statistics on the performance of the Relay Link.

2.8 MANDATORY SOFT SWITCH SETTINGS

The configuration sheet that follows shows specific mandatory soft switch values. Refer to this sheet when initially configuring your MB3.

Mandatory Settings for Dual FEATUREPAK MB3 With Asynchronous Pad and 3270 BSC or SNA PADs

Value Key	Soft Switch Setting	Selection
	SYS1	
1		
2		
3	OFF	Reserved
4		
5	OFF	Packet Sequencing: Standard
6	OFF	KDD: Disabled
7	OFF	Frame Sequencing: Standard
8		
	SYS2	
1		
2		
3		
4		
5		
6		
7	OFF	Reserved
8		
	SYS3	
1		
2		
3	ON	Dual FEATUREPAK MB3 Operation
4	OFF	Dual Link
5		
6		
7	OFF	EIA Bias for Asynchronous PAD Channels 11-16
8	OFF	EIA Bias for Asynchronous PAD Channels 17-22

3.0 NEW HANDLING OF HOST PORT AUTOCALL

Prior to this enhancement, when a host computer raised DTR to the PAD, the PAD would place a call to a remote device (such as a printer) and then raise DSR back to the host. The host would start sending data immediately. If the remote device was busy or not ready, there was a chance that data would be discarded.

To ensure this no longer occurs, there is a new way of handling host port autocalls which in effect imposes a delay before data is sent. The DSR signal is now raised only after the call to the remote device has been established, which prevents the sending of data if the device is not ready.

In order for this to work, the asynchronous channel must be configured as autocall on device ready (CALL OPTION 1 prompt must be 4 by itself or in combination with other values). The channel must also be configured as host port (CHANNEL OPTION prompt must be 8 by itself or in combination with other values). Refer to the X.25 Asynchronous PAD User's Manual (Stock Number 800-1387).

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