

***MICOMBOX* type 3**
X.25 Asynchronous PAD

User's Manual
Addendum

PAD Cascading
Stock Number 801-1387-304

UNRELEASED

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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This addendum details a new function that is available on the MB3 asynchronous PAD (MB3-XAP). This function is known as cascading.

Following a brief introduction to the cascading function are sections on getting started and on making physical connections. Next is a theory section that describes how incoming and outgoing calls are handled. Finally, there is a section on required software configuration.

1. INTRODUCTION

It is possible to connect several MB3 asynchronous PADs (MB3-XAPs) together. This application is known as cascading. The benefits include:

- Support of up to 32 channels
- Single-link access to an X.25 network for multiple PADs at the same or distinct geographic locations

A typical configuration of cascaded asynchronous PADs is shown in Figure 1. Notice that the PAD closest to the X.25 network (PAD 1) has 10 user channels. This is the maximum number of channels that can be active on this PAD. PADs 2 and 3 in Figure 1 have a combined total of 22 user channels. This is the combined maximum number of channels that can be active on the remaining PADs in the cascade. This brings the total maximum number of active channels in the cascade to 32.

The following paragraphs describe configuration requirements and basic operation related to asynchronous PAD cascading.

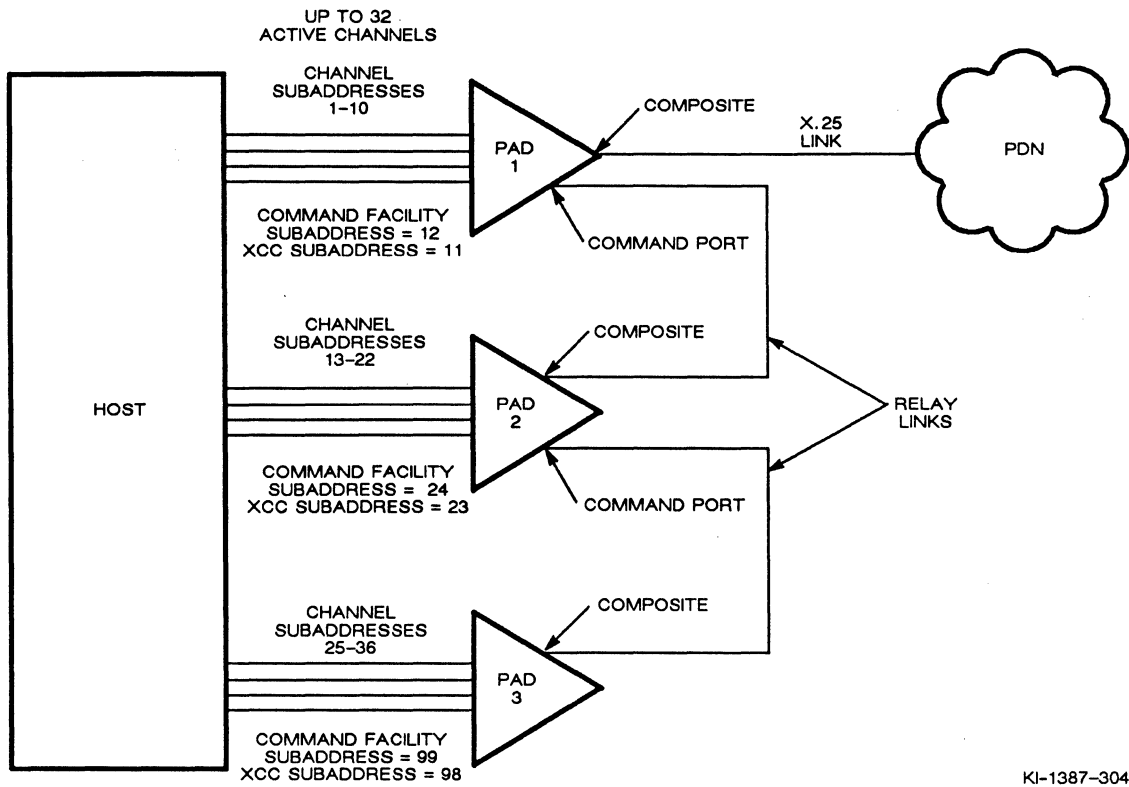
2. GETTING STARTED

Before connecting PADs together you need to configure unique Command Facility and XCC subaddresses to allow each PAD's Command Facility to be accessed from anywhere in the network. The subaddresses for three PADs with channel counts of 10, 10, and 12 are shown in Table 1:

Table 1. Command Facility and XCC Subaddresses for Cascaded Asynchronous PADs

PAD Location	Command Facility Subaddress	XCC Subaddress
PAD Closest to X.25 Network	12	11
Middle PAD	24	23
PAD Furthest from X.25 Network	99	98

Refer to paragraph 5.5.9 of the X.25 Asynchronous PAD User's Manual (stock number 800-1387) for instructions on how to configure the Command Facility and XCC subaddresses. As shown in Table 1, the PAD furthest from the X.25 network can retain its default values of 99 and 98.



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Figure 1. Example of Subaddressing for Cascaded PADs

3. MAKING THE PHYSICAL CONNECTIONS

Cascaded PADs are connected via MICOM's straight cable (part number 100-2200). As shown in Figure 1, connections are with the Relay Link from the Command Port connector of the PAD closest to the network to the Composite connector of the second PAD, from the Command Port connector of the second PAD to the Composite connector of the third PAD, and so on.

Connection to the X.25 network is from the Composite connector of the PAD closest to the network.

NOTE: When PADs are cascaded, their Command Facilities can be accessed remotely, or locally via an asynchronous terminal connected to a channel connector. That is, no access via a dedicated Command port is available (even on the PAD furthest from the network).

4. HOW INCOMING AND OUTGOING CALLS ARE HANDLED

For an incoming call (a call from the X.25 network), the PAD checks the subaddress to see if it is one of its own. If so, the PAD connects the call to that channel. If the subaddress is higher than one of its own, the PAD routes the call away from the X.25 network.

The PAD also checks the subaddress for an outgoing call (a call towards the X.25 network). If the subaddress is one of its own, the PAD connects the call to that channel. If the subaddress is higher than one of its own, the PAD routes the call away from the X.25 network. If the subaddress is lower than one of its own, the PAD routes the call towards the X.25 network.

If a call request contains no subaddress, the first PAD will connect the call to the first available channel. If no channel is available at that PAD, the call will go to the next PAD in line, and so on.

NOTE: The link to the X.25 network must be up for the links between PADs to be up. The PAD detects the state of the network link and, if that link is down, prevents the inter-PAD links from coming up.

5. REQUIRED CONFIGURATIONS

There are a few unique configuration requirements related to asynchronous PAD cascading. For the most part, the configuration is the same as for an individual PAD.

5.1 Addressing

All PADs in a cascade must be configured for the same DTE address. This is because the network looks at the PADs as a single PAD.

Subaddresses must be assigned in ascending order, with the lowest subaddresses on the PAD located closest to the X.25 network (PAD 1 in Figure 1). This includes both channel subaddresses and subaddresses for the Command Facility and XCC. See Figure 1 for an example of subaddress configuration.

NOTE: For each installed physical channel you must configure a logical subaddress. Otherwise the PAD will assign a default subaddress that may not fit into the required ascending subaddressing scheme.

For example, assume the PAD closest to the network has 10 channels and the second PAD has 16. Assume that you configure subaddresses for all 10 channels and the Command Facility and XCC in the first PAD. Also assume that you configure only the first 6 channels of the second PAD.

The logical subaddresses would be as follows:

First PAD:

01
02
03
•
•
•
10
11 (XCC)
12 (Command Facility)

Second PAD:

13
14
15
16
17
18
07
08
09
10
11
12
13
14
15
16

As shown, the second PAD would automatically assign subaddresses 07 through 16 to the unconfigured channels. These subaddresses would conflict with subaddresses 07 through 12 in the first PAD. Therefore, make sure you assign subaddresses (in ascending order) for every installed physical channel.

5.2 SVCs

Very little configuration is required for the SVC count. Configure the PAD closest to the X.25 network for the total number of SVCs subscribed to on the PDN. Do not configure the SVC count for the remaining PADs in the cascade (leave the `svcent` default value of 66).

5.3 Packet Window

Configure the packet window (W in Trunk configuration) to a value of 2 for all the PADs.

5.4 Soft Switches

Soft switch settings are as follows (see Figures 2-12 and 2-14 in the X.25 Asynchronous PAD User's Manual):

For the PAD closest to the X.25 network:

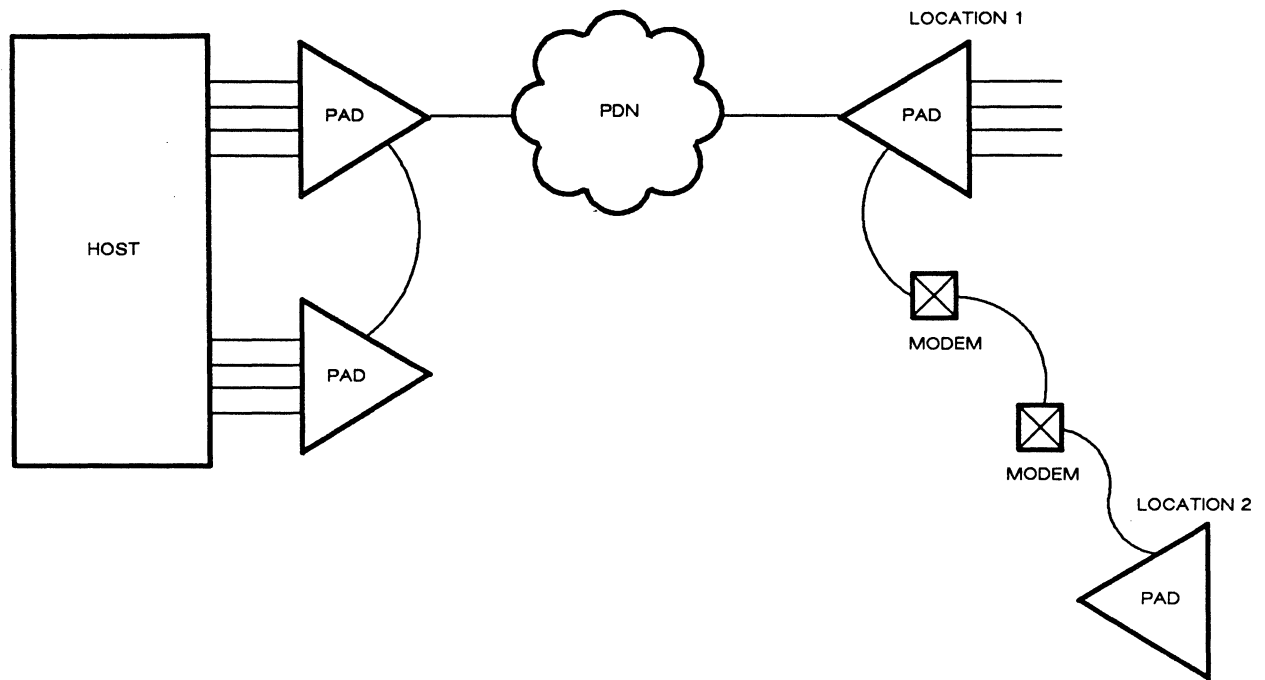
SYS3, 3 ON Dual FEATUREPAK (Relay Link) enabled
SYS3, 4 OFF Dual link disabled
SYS1, 2 ON External clock enabled (see the NOTE)

For the other PADs:

SYS3, 3 ON Dual FEATUREPAK (Relay Link) enabled
SYS3, 4 OFF Dual link disabled
SYS1, 2 ON External clock enabled (see the NOTE)
SYS1, 8 OFF DTE appearance

NOTE: With the above settings, the PAD closest to the X.25 network always provides clock to the other PADs in the cascade. The links between the PADs (relay links) run at 38.4 Kbps.

PADs at different geographic locations can be cascaded using leased-line modems or line drivers (see Figure 2). In this case, the PADs are configured as DTEs and for external clocking. When set for external clocking, the relay link can run at speeds up to 72 Kbps.



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Figure 2. Cascading PADs at Remote Locations