



Using the Mini-Exchange  
MS™ -DOS  
Version 2.11  
Operating System

digital

AA-DY84A-XV

*Rainbow*<sup>TM</sup>

Using the Mini-Exchange  
MS<sup>TM</sup> - DOS  
Version 2.11  
Operating System

digital equipment corporation

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# Preface

This guide explains how to install and use the Mini-Exchange with your Rainbow computer and the MS-DOS Version 2.11 operating system.

## Intended Reader

Experienced Rainbow computer users can learn how to install and use the Mini-Exchange by reading this guide.

Before you read this guide you must:

1. Have installed and tested your Rainbow computer according to the instructions in your *Rainbow Installation Guide*.
2. Read the *Rainbow MS-DOS Version 2.11 Getting Started*, which describes:
  - How to use the MS-DOS operating system.
  - How to make a copy of your operating system diskette.
3. Read *Digital's Personal Computers Installation/Owner's Manual Mini-Exchange System*.

## Guide Organization

Chapter 1	Describes the Mini-Exchange.
Chapter 2	Tells you how to connect Rainbow computers to the Mini-Exchange.
Chapter 3	Explains how to get started with the Mini-Exchange and gives you three sample tasks.
Chapter 4	Explains the Mini-Exchange commands.
Chapter 5	Lists the messages you can see when you use the Mini-Exchange.
Appendix A	Lists the DIGITAL Customer Help Line phone numbers in case you need help.

## Conventions Used

Follow the conventions listed below while using this guide.

- In examples of dialog between you and the computer, what the computer displays on the screen is shown in black. The characters you type from the keyboard are shown in color.
- You can type these characters in either lowercase or uppercase characters. Use the Shift or Lock key to enable uppercase characters.
- When this guide uses the word “port,” it is referring to the Mini-Exchange connectors. When this guide uses the word “connector,” it is referring to the Rainbow computer connectors.
- The Rainbow computer EXT COMM B connector is referred to in this guide as the XCOMM connector.

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## Introducing the Mini-Exchange

The Mini-Exchange allows your Rainbow computer and other Rainbow computers to share devices such as printers, plotters, and modems. You can connect a total of eight devices, including other Rainbow computers, to the Mini-Exchange.

Using a modem can expand your Mini-Exchange system to include a remote Rainbow computer, a remote host computer, or even another Mini-Exchange system.

To use the devices, use the Mini-Exchange commands that are stored on the MS-DOS Version 2.11 operating system diskette. This diskette is contained in this kit.

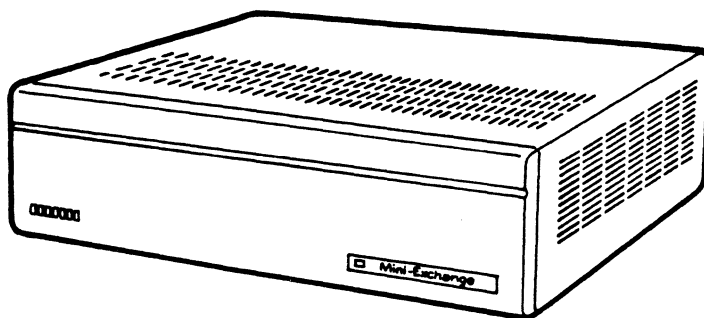


Figure 1-1. The Mini-Exchange





# 2

## Connecting Devices to the Mini-Exchange

This chapter explains how to connect Rainbow computers, printers, and modems to your Mini-Exchange. There is also a list of the cables to use.

The back of the Mini-Exchange unit has eight ports where you plug in the cables from the devices.

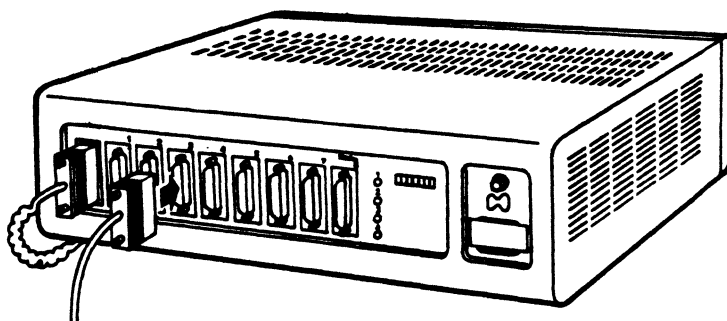


Figure 2-1. Mini-Exchange ports 1 through 8.

## Connecting Rainbow Computers to the Mini-Exchange

You can connect a Rainbow computer to the Mini-Exchange through a cable from the Rainbow computer's communications connector. This is labeled COMM on the back of the Rainbow computer system unit. If you have the Extended Communications option installed in your Rainbow computer, then you have a second communications connector available to use. This is labeled EXT COMM B on the back of the Rainbow system unit and is referred to as XCOMM in this guide.

Connect the COMM and XCOMM connectors in the same way. Use a standard communications cable (BCC04) from the Rainbow computer to any Mini-Exchange port.

Do not connect the Mini-Exchange to the Rainbow computer's PRINTER connector. If you want to use a printer through the Mini-Exchange, *you must* connect the Mini-Exchange to the COMM and/or the XCOMM connectors. There are two situations where you will need to connect your printer directly to the PRINTER connector:

1. When the program you are using for printing does not have output which can be redirected.
2. When a program you are using for communications also needs to print at the same time.

## Connecting Printers to the Mini-Exchange

You can connect printers and other devices which act as “Data Terminal Equipment” (DTE) to any port on the Mini-Exchange. Follow these instructions:

1. To connect DIGITAL printers (such as the LA50, LA100, and LQP02) to the Mini-Exchange, use a standard communications cable (BCC04).
2. To connect other devices, you may need to use an adapter cable (BC22H) with the communications cable (BCC04). Check the device’s cable to determine if it needs the adapter cable.

## Connecting a Modem to the Mini-Exchange

You can connect a modem or any other “Data Communications Equipment” (DCE) to any port on the Mini-Exchange. Follow these instructions:

1. If you are using a DIGITAL DF03 (or DF02) modem, *you must* connect it to Mini-Exchange port 8. Port 8 is the only port that supports the auto-answer and speed-select modem features. Use a standard communications cable (BCC04) from the DF03 (or DF02) modem to the adapter cable (BC17R-0F) that DIGITAL supplies with the Mini-Exchange, then connect the other end of the adapter cable to port 8.
2. If you have another type of modem, or if port 8 is already in use for a modem, you can connect the modem to any Mini-Exchange port using a null-modem cable. See the section entitled “What Cables to Use” for a list of null-modem cable numbers. Use an adapter (BC22H), a null-modem cable (BC22D), and another adapter. If you already have a male-male null-modem cable, you can use it instead. Do not use the cable DIGITAL provides (BC17R-0F) in this case.

### **NOTE**

DIGITAL supplies adapter cable number BC17R-0F with the Mini-Exchange. This cable is different than adapter cable number BC22H.

## What Cables to Use

Wherever a standard communications cable (BCC04) or null-modem cable (BC22D) is specified, you can use any electrically-equivalent cable. These include:

1. Communications: BCC04, BCC14, BC26R, BC22B, BC22E, BC22F.
2. Null-modem: BC22A, BC22D, BC03M, BC26S (but not BCC05).

# 3

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## Getting Started with the Mini-Exchange

This chapter tells you:

- What to do before using the Mini-Exchange.
- How to print a file through the Rainbow computer's COMM connector.
- How to communicate through the Rainbow computer's COMM connector.
- How to use the Rainbow computer's EXT COMM B connector (referred to as XCOMM in this guide) with the Mini-Exchange.

### Before Using the Mini-Exchange

Before you use the Mini-Exchange, you must:

1. Start the MS-DOS operating system. Make sure you are using a working copy diskette, not the master diskette.
2. Set the date and time.
3. Make sure the speed of your Rainbow computer and the speed of your printer and/or modem are the same. To do this, use the SETPORT program as described in *Rainbow MS-DOS Version 2.11 Getting Started*.

## Printing Through the Rainbow COMM Connector

When your Rainbow computer is connected to the Mini-Exchange through a cable from the Rainbow COMM connector, follow these instructions to print a file:

1. Tell the Rainbow computer to use its COMM connector, instead of its PRINTER connector. Type:

```
A>XMODE PRN=COMM 
```

The computer displays:

```
PRN is assigned to COMM.
```

2. Tell the Rainbow computer which port on the Mini-Exchange is connected to your printer. For example, if your printer is attached to port 6, type:

```
A>XATTACH 6P 
```

- If port 6 is available, you see this message:

```
Attached to port 6.
```

You can now use the printer. Go to step 3 to continue with this procedure.

- If port 6 is busy, your Rainbow computer displays:

```
The port is busy, do you wish to wait? (Y/N)
```

This means that another computer connected to the Mini-Exchange is using the same printer you want to use.

- If you do not want to wait, answer no. Type:

N

The Rainbow computer displays this message:

Returning to MS-DOS.

- If you do wish to wait, answer yes. Type:

Y

The Rainbow computer displays this message:

(Ctrl/C to abort and return to MS-DOS) waiting...

You can type Ctrl/C to discontinue waiting and to return to MS-DOS.

- In order to use the printer, the *other* Rainbow computer user must type:

A>XDETACH

Your Rainbow computer can now use the printer. The following message displays:

Attached to port 6.



3. Make sure the speed of your printer and the speed of your Rainbow computer are the same. To do this use the SETPORT program described in the *Rainbow MS-DOS Version 2.11 Getting Started*. If you have an LA50, LA100, or LQP02 printer, you can also set the printer characteristics now by using the SETPORT program. If you have another type of printer, check its installation guide for instructions.
4. You are now ready to print your file. You can use any command or program to send data to the printer. This includes editors, such as WordStar and SELECT and system commands, such as COPY and PRINT. For example type:

```
A>PRINT [filename.typ] 
```

### NOTE

If your printer does not print, the program you are using may be the cause. If this is the case, you may have to connect the printer directly to the Rainbow computer PRINTER connector and then print your file.

5. When you are finished printing through the Mini-Exchange, tell your Rainbow computer to disconnect (or detach) from the Mini-Exchange. Type:

```
A>XDETACH 
```

The computer displays:

```
Detached from Mini-Exchange.
```

You can detach from the Mini-Exchange after you print each job, or you can keep the connection until you turn off the Rainbow computer or unplug the Mini-Exchange. Make sure you use the XDETACH command before you reset the Rainbow computer. While you are attached to the printer on the Mini-Exchange, no other computer can attach to the printer you are using.

## Communicating Through the Rainbow COMM Connector

If the Mini-Exchange is connected to your Rainbow computer's COMM connector, you can communicate through the Mini-Exchange to a modem, or another computer on the same Mini-Exchange. However, you cannot print through the Mini-Exchange at the same time. Follow these instructions to communicate through the Rainbow COMM connector.

1. Tell the Rainbow computer to use its COMM connector for communication. Type:

```
A>XMODE AUX=COMM 
```

The computer displays:

```
AUX is assigned to COMM
```

2. Tell the Rainbow computer which port on the Mini-Exchange the modem is connected. If you are using the DIGITAL modem, model DF03 (or DF02) with the cable DIGITAL provides (cable number BC17R-0F), then you must connect this modem to port 8. Type:

```
A>XATTACH R 
```

- If the port is available, you see this message:

```
Attached to port R
```

Use R instead of 8 for Mini-Exchange port 8 only when you use cable number BC17R-0F. If your modem does not use this cable, just type the port number. You do not have to type R.

## Getting Started with the Mini-Exchange

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If you are using a DIGITAL DF03 modem you can change the speed of the modem for outgoing calls. To do this, use an H for high speed and an L for low speed in the XATTACH R command.

- To set the modem speed to a 1200 baud rate type:

```
A>XATTACH HR 
```

- To set the modem speed to a 300 baud rate type:

```
A>XATTACH LR 
```

You can now use the modem. Go to step 3 to continue with this procedure.

- If port R (port 8 with the modem connected) is busy, the Rainbow computer displays this message:

```
The port is busy, do you wish to wait? (Y/N)
```

This means that one of the other Rainbow computers connected to the Mini-Exchange is using the same modem you want to use.

- If you do not want to wait, answer no. Type:

```
N 
```

The Rainbow computer displays this message:

```
Returning to MS-DOS.
```

- If you do wish to wait, answer yes. Type:

```
Y 
```

The Rainbow computer displays this message:

```
(Ctrl/C to abort and return to MS-DOS) waiting...
```

You can type Ctrl/C to discontinue waiting and return to MS-DOS.

- In order to use the modem, the *other* Rainbow computer user must type:

```
A>XDETACH 
```

Your Rainbow computer can now use the modem. Your Rainbow computer displays:

```
Attached to port R.
```

3. Make sure the speed of the modem and the speed of your Rainbow computer are the same. To do this use the SETPORT program described in the *Rainbow MS-DOS Version 2.11 Getting Started*. Also set any other conditions, such as parity, that are required for your communication session. You are now ready for your communications session. You can use any Rainbow communication software.

If you are using a DIGITAL DF03 or DF02 modem, you can also wait for the modem to answer an incoming call.

4. When you have finished with your communication session, tell the Rainbow computer to detach from the Mini-Exchange. Type:

```
A>XDETACH 
```

You see the message:

```
Detached from Mini-Exchange.
```

## Using the Rainbow EXT COMM B Connector

If you have an Extended Communications option installed in your Rainbow computer, you can use the EXT COMM B connector in the same way that you use the COMM connector. In fact, you can use both connectors at the same time. Follow these instructions to communicate through the Rainbow computer EXT COMM B connector.

1. Tell the Rainbow computer to use its EXT COMM B (referred to here as XCOMM) connector for printing, type:

```
A>XMODE AUX=XCOMM PRN=XCOMM Return
```

You see this message:

```
AUX is assigned to XCOMM  
PRN is assigned to XCOMM
```

Then follow the steps, skipping step one, as outlined in the section entitled "Printing Through the Rainbow COMM Connector" (page 3-2).

If your printer does not print, the program you are using may be the cause. If this is the case, you will have to connect your printer directly to the PRINTER connector of your Rainbow computer.

2. To use the EXT COMM B connector for communications, type:

```
A>XMODE AUX=XCOMM Return
```

The Rainbow computer displays:

```
AUX is assigned to XCOMM
```

Then follow the steps, skipping step one, as outlined in the section entitled "Communicating through the Rainbow COMM Connector" (page 3-5).

# 4

---

## Mini-Exchange Commands

This chapter explains the three commands you use with the Mini-Exchange:

1. XATTACH
2. XDETACH
3. XMODE

These Mini-Exchange commands are MS-DOS Version 2.11 commands. The command format is the same as for other MS-DOS commands. Refer to your *Rainbow MS-DOS Version 2.11 Getting Started* for more information on commands.

## XATTACH

### Purpose

The XATTACH command tells the Rainbow computer that you want to send data to and/or receive data from a device connected to the Mini-Exchange.

### Form

XATTACH [[Mini-Exchange port number[P],R,LR,HR] [/D]] **Return**

### Instructions

If you want help on the XATTACH command type:

A>XATTACH **Return**

The computer displays Screen 4-1.

```
A:\xattach
```

```
XATTACH - Mini-Exchange Attach Utility  
Version V1.00 Copyright © 1984 by Digital Equipment Corp.
```

```
PURPOSE: To connect the Rainbow to a Mini-Exchange port.  
Example: XATTACH 1 - To connect to port 1.
```

```
Command Port# Connection
```

---

```
XATTACH n      For a port from 1 to 8  
XATTACH nP     For a printer at any port  
XATTACH R      For a modem at port 8  
XATTACH LR     Used to set a split speed modem to low speed  
XATTACH HR     Used to set a split speed modem to high speed  
XATTACH/D     Disconnects the Rainbow from the Mini-Exchange
```

---

```
Note: n = A numeric character from 1 to 8
```

```
A:\
```

#### Screen 4-1. XATTACH Screen

To attach to a device connected to the Mini-Exchange, type the XATTACH command followed by the Mini-Exchange port number to which the device is connected. If the device is a printer then type P after the port number. When you have a modem connected to port eight of the Mini-Exchange unit with the BC17R-0F cable, use R instead of 8 in the command. If you want to set the modem to a low speed type LR. If you want to set the modem to a high speed type HR. Use the /D switch when you want the Rainbow computer to detach from the Mini-Exchange. The XATTACH /D command is the same as typing the XDETACH command.

Refer to Chapter 3, "Getting Started with the Mini-Exchange", if you want to see examples.



## XDETACH

### Purpose

The XDETACH command tells the Rainbow computer to close the line of communication to the device on the Mini-Exchange to which it was attached. The XDETACH command works exactly like the XATTACH /D command. They are interchangeable.

### Form

XDETACH [Mini-Exchange port number or R]

### Instructions

Type the command. You do not need to type the port number or R.

## XMODE

### Purpose

Use the XMODE command to tell the MS-DOS operating system to assign all input and output for an MS-DOS logical device name (AUX, PRN, or AUX2) to a particular Rainbow computer physical device name (COMM, PRINTER, or XCOMM). This guide refers to the Rainbow computer EXT COMM B connector as XCOMM.

For example, applications that send their output to the Rainbow computer PRINTER connector can instead send their output to the COMM connector.

The MS-DOS logical device names for the Rainbow computer are:

- AUX = Normal communications input and output
- PRN = Printer output
- AUX2 = Extended communications input and output

The Rainbow computer physical device names are:

- COMM = Rainbow computer COMM connector
- PRINTER = Rainbow computer PRINTER connector
- XCOMM = Rainbow computer XCOMM connector

### Form

XMODE

XMODE [device1=device2]

XMODE [device1=device2 device1=device2 ...]

## Instructions

To see what the current assignments for the devices are, type:

A> XMODE

The computer displays Screen 4-2.

```
A>xmode
Rainbow Communication Connectors Mode Assignment Utility Version 1.00
Use XMODE to assign one MS-DOS device name to a physical connector.
Syntax:      XMODE logical_device = physical_connector
The MS-DOS logical device names are: AUX, PRN, and AUX2.
The Rainbow physical connectors are: COMM, PRINTER, and XCOMM.
Here are the current assignments:
  AUX = COMM
  PRN = PRINTER
  AUX2 = XCOMM
A>|
```

Screen 4-2. XMODE Screen

The MS-DOS device name on the left of the equals sign (device 1) is where the application sends output. The Rainbow computer connector name on the right of the equals sign (device 2) is where the output is physically assigned.

To change the assignments, type XMODE, then the name of the MS-DOS device name equals the name of the desired Rainbow computer physical device name. For example:

```
A>XMODE device1=device2 Return
```

If your application program sends output to the MS-DOS device PRN and you want it to go to the Rainbow computer COMM connector, you must reassign the PRN device. Use XMODE to assign output going to the PRN device to go to the COMM connector. Type:

```
A>XMODE PRN=COMM Return
```

If you want to see more examples of the XMODE command, refer to Chapter 3, "Getting Started with the Mini-Exchange."



# 5

---

## Messages

The Rainbow computer can display the following messages when you use the Mini-Exchange.

**Attached to port n.**

You have successfully attached to the Mini-Exchange port that you specified.

**Communication error, make sure the transmit and receive baud rates match and are between 300 and 19200.**

You either set an invalid baud rate or you did not set the transmit and receive baud rates to be the same. Use the SETPORT program to set the baud rates. Make sure the transmit baud rate is equal to the receive baud rate.

**Communication error, port number did not echo.**

You typed the command correctly, but the Mini-Exchange did not receive it. Type XATTACH and the Mini-Exchange port number again.

**Configuration error. Please be sure that your configuration conforms to the following rules.**

The message also lists these two instructions:

1. If you wish to connect a modem to port eight on the Mini-Exchange use the BC17R-0F modem adapter cable supplied with your Mini-Exchange system and the XATTACH R command.
2. If you wish to connect another type of device, such as a printer or another personal computer, use a BCC04 cable and either the XATTACH 8 or XATTACH 8P command. Use XATTACH 8P for a printer.

If you have a modem attached to port 8, you may be using the wrong cable or you may have typed the XATTACH command incorrectly. Check to see that the cable is correct and retype the XATTACH command. If you are using a device other than a modem on port 8, also check that you have the correct cable and that you type the XATTACH command correctly.

**Detached from the Mini-Exchange.**

You successfully detached from the Mini-Exchange.

**Device not ready. Check to see if the requested device is turned on, or for a possible malfunction.**

Make sure the device that you specify with the XATTACH command is plugged in, turned on and is functioning correctly. Then, try the XATTACH command again.

**Error, attempted to connect to your own port.**

You typed XATTACH and the Mini-Exchange port number you are connected to.

**Mini-Exchange does not respond, please check the cable connections and be sure that the Mini-Exchange is plugged in.**

To use the Mini-Exchange it must be plugged in and the cables must be firmly connected.

**Port n is busy, do you wish to wait? (Y/N)**

You are trying to attach to a Mini-Exchange port that is currently in use. If you want to wait, type Y for yes. If you do not want to wait, type N for no.

**(Ctrl/C to abort and return to MS-DOS) waiting...**

You typed Y to wait for a port that is currently in use. You can type Ctrl/C if you choose not to wait any longer.

**Returning to MS-DOS.**

You typed N to not wait for a port that is in use.

**SYNTAX ERROR, please use the command format described here.**

This message also displays the XATTACH Screen (see Screen 4-1 in Chapter 4). You did not use the correct XATTACH command format. Try again.

**Unable to detach from the Mini-Exchange, please try again.**

Make sure the cables are firmly connected. You can use either the XDETACH or XATTACH /D command to detach from the Mini-Exchange.



**XATTACH will not work with AUX assigned as PRINTER. To correct the problem, type XMODE AUX=COMM and try again.**

The message also displays the following paragraph.

If you wish to redirect your printer port's output to the Mini-Exchange, please type XMODE AUX=COMM and then XMODE PRN=COMM. Remember AUX must always be assigned as COMM for XATTACH and XDETACH to work.

You cannot use the Mini-Exchange through the Rainbow computer PRINTER connector. Before you use the XATTACH command, you must use the XMODE command to reassign the MS-DOS device name, PRN, to equal the Rainbow computer COMM connector. You must also make sure that the MS-DOS device name, AUX, is equal to the Rainbow computer COMM connector. Make sure you type the following before you use the XATTACH command:

```
A>XMODE AUX=COMM PRN=COMM 
```

---

# Appendix



# A

---

## Getting Help

### Help Line Phone Numbers

---

Country	Phone Number
U.S.A.	(800) DEC-8000
Canada	(800) 267-5251
United Kingdom	(0256) 59 200
Belgium	(02)-24 26 790
West Germany	(089) 95 91 66 44
Italy	(02)-617 53 81 or 617 53 82
Japan	(0424) 64-3302
Denmark	(04)-30 10 05
Spain	(1)-73 34 307
Finland	(90)-42 33 32
Holland	(1820)-31 100
Switzerland	(01)-810 51 21
Sweden	(08)-98 88 35
Norway	(02)-25 64 22
France	(1)-687 31 52
Austria	(222)-67 76 41 extension 444
Australia	
Sydney	(02) 412-5555
All other areas	(008) 226377

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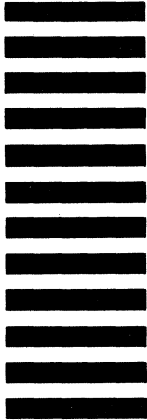
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