IBM

IBM ARTIC186
8-Port Adapter
Guide to Operations

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Guide to Operations

┌─── **Important** ──┐

Before using this information and the product it supports, be sure to read the information under Appendix B, "Notices."

See "Safety Information" on page B-2 before installing or removing an adapter.

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Third Edition (July 1999)

This edition replaces and makes obsolete the previous edition, 87H3858.

Contents

About This Book

This book contains the following:

- A description of the adapter and optional cables
- Installation requirements and instructions
- Switch and jumper settings
- Connector information
- Problem determination procedures and a list of replacement parts
- A configuration table

This book is written for an experienced computer operator or a person who sets up, uses, or programs the 8-port adapter with IBM computer products.

Related Information

- Operating and installation documentation provided with your personal computer system.

- Reference, service, and diagnostic documentation available for your computer system.

- Operating-system specific information; for example, DOS, or OS/2.

Chapter 1. Product Description

The IBM ARTIC186 8-Port Adapter (*8-port adapter*) provides up to eight serial communications links through optional cables. It can be installed in any computer with an ISA bus.

The 8-port adapter has its own microprocessor and memory, allowing it to perform communications functions independent of the system operation.

Highlights

The 8-port adapter provides:

- An 80C186 microprocessor

- 1 MB of dynamic random-access memory (RAM)

- 16 KB of read-only memory, providing power-on self-test and diagnostic functions

- Installation of more than one 8-port adapter

- Eight communications ports using RS-232 and RS-485 interfaces through optional cables. The 8-port adapter supports a single port operating at a maximum of 38 400 bps duplexed or eight ports, each operating at up to 9600 bps duplexed.

  Note: Applications programmed for an RS-422 interface can use the RS-485 interface.

Specifications

Physical

Length: 340.4 millimeters (13.4 inches)
Width: 17.5 millimeters (0.7 inches)
Height: 106.7 millimeters (4.2 inches)
Weight: 230 grams (8.0 ounces)

Environment

Air temperature:

Operating: 0 to 60°C (32 to 140°F)
Non-Operating: 0 to 60°C (32 to 140°F).

Humidity:

Operating: 5% through 90%.

Electrical

Optimum Voltages:	Maximum Current:
+4.8 V dc to +5.25 V dc	1.50 A
–5.5 V dc to –4.525 V dc	0 mA
+11.3 V dc to +12.7 V dc	175 mA
–10.8 V dc to –13.2 V dc	150 mA

Optional Adapter Cables

The following adapter cables are available as options:

- 8-Port Direct Modem Attachment Cable

  The cable is 1.8 meters (6 feet) long. It has a 78-pin female connector at one end and eight cables with 25-pin male connectors at the other end.

- Multiport 8-Port Interface Cable

  The cable is 3.0 meters (9.8 feet) long. It has a 78-pin female connector at one end and eight 25-pin male connectors in a breakout box at the other end.

Note: These cables are the same as those used with the IBM ARTIC Multiport adapter.

Manuals and Software Support

Manuals and software support (operating-system and diagnostic programs) are available for downloading at:

http://www.radisys.com/support/artic/ibm

Chapter 2. Installation and Requirements

This chapter lists the hardware and software/microcode requirements and provides information for configuring and installing the 8-port adapter.

Installation Requirements

The 8-port adapter requires the following hardware, software, and microcode.

Hardware

- A full-length ISA slot

  Note: The FCC classification for this adapter might be different than the one of your system. After installing the adapter, use the FCC classification of the adapter as your system classification.

- One of the following interface cables or an equivalent (see Chapter 4, "Cables and Connectors" for a description of the cables):

  – 8-Port Direct Modem Attach Cable
  – Multiport Interface Cable

Hardware Tools

- Medium-size flat-blade screwdriver
- Optional:
  – Medium screwstarter
  – 3/16-inch nutdriver
  – 1/4-inch nutdriver

Software/Microcode

| See the Web site http://radisys.com/support/artic/ibm for a list of supported operating systems and support programs.

| The control program for the 8-port adapter is loaded into RAM on the adapter. The control program is part
| of the realtime control microcode that can be downloaded from the Web. For downloading instructions,
| see "Downloading the Diagnostics and Operating-System Support Programs" on page 2-13.

Handling Static-Sensitive Devices

Components for your 8-port adapter can be damaged by static discharges. To prevent this damage, your 8-port adapter is wrapped in an anti-static bag. Observe the following precautions when handling the adapter:

- Keep the adapter in its anti-static bag until you are ready to install the adapter into your personal computer system.

- Make the fewest possible movements with your body to minimize the electrostatic charges created by motion against clothing, fibers, carpets, and furniture.

- Whenever possible, keep one hand on the computer chassis as you are installing or removing an adapter. Always turn off the power before performing either task.

- Do not touch the printed circuit. Where possible, hold the adapter by its plastic end pieces or by its edges, but do *not* touch the metal edge connectors.

- Do not place the adapter on the machine cover or on a metal table. Machine covers and metal tables increase the risk of damage because they make a discharge path from your body through the adapter.

- Keep the adapter out of the way to prevent others from touching the adapter.

Configuration Record

Record the switch and jumper settings for your adapter in the following table. Later, you can refer to this information whenever you run the diagnostics or replace the adapter.

Identifying Adapter Levels

There are two levels of the 8-port adapter. The two levels are functionally the same; however, the port numbering of the port-selection jumpers and the arrangement of the communication-clock jumpers are different.

You can identify the level of the adapter by the location of the option switches (see Figure 2-1 on page 2-4). On the later level adapter, the option switches are located closer to the connector.

Table 2-1. Configuration Records			
Description	**Setting**		
Bus Width On = 8 bit	BW ___			
Edge Connector On = Double	ED ___			
I/O Base Address (On or Off)	C8 ___	C4 ___	C2 ___	C1 ___
Interrupt Level (On or Off)	L4 ___	L2 ___	L1 ___	
Clock Jumpers	Port 0 Clock		Port 1 Clock	
Receive Transmit RX OUT 16 IN 32	Rec ___	Tran ___	Rec ___	Tran ___
Port Interface 485 232	Port 0 ___	Port 1 ___	Port 2 ___	Port 3 ___
	Port 4 ___	Port 5 ___	Port 6 ___	Port 7 ___

Switch and Jumper Locations

The component locations differ depending on the level of the adapter. However, the function and settings of the jumpers and switches are the same.
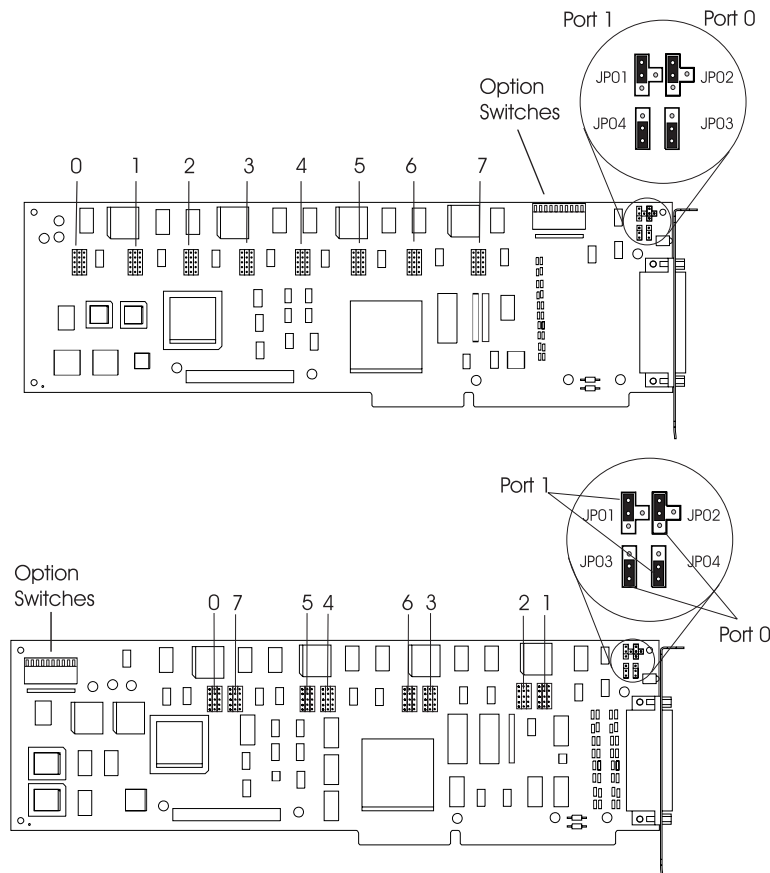
Figure 2-1. Switch and Jumper Locations

Installation Procedure

To install the 8-port adapter, perform the following steps.

- Review the precautions on handling static-sensitive devices (page 2-2).
- Set the option switches and jumpers (starting on page 2-4).
- Install the adapter (page 2-12).
- Download the operating system support and diagnostic programs (page 2-13).
- Run diagnostics to verify the installation (page 2-13).
- Connect the optional cable (page 2-13).
- Set up the configuration files (page 2-13).

Configuring the IBM ARTIC186 8-Port Adapter

Before installing the 8-port adapter in the computer, set the switches and jumpers on the adapter as required for your installation. As you configure the adapter, record these settings in Table 2-1 on page 2-3.

The 8-port adapter has a 10-position switch block that selects configuration options for the adapter. The option switches are preset during manufacture to the following values.

10 (BW)	9 (ED)	8 (C8)	7 (C4)	6 (C2)	5 (C1)	4	3 (L4)	2 (L2)	1 (L1)
On	On	On	On	On	On	Off	Off	On	On

| Switch Number	Factory Setting
10	8-bit data bus
9	Double-edge connector (16-bit ISA)
8+7+6+5	Base address: 02A0h
4	Not used
3+2+1	IRQ 10

If your installation requires settings different than the preset values, perform each of the following.

- "Setting the Bus Width"
- "Setting the ISA Connector Type" on page 2-6
- "Setting the Base I/O Address" on page 2-6
- "Setting the Interrupt Level" on page 2-8

Setting the Bus Width: Switch 10 (BW) sets the width of the data bus. If the adapter is in an 8-bit ISA slot (single-edge connector), the switch must be set to an 8-bit data bus. If the adapter is in a 16-bit slot, the switch can be set to an 8-bit or 16-bit data bus.

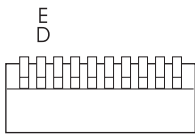**Note:**   All IBM ARTIC adapters in a system must be set to the same width.
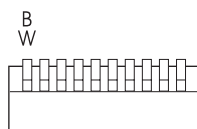
Switch 10 (BW)	Data Bus Width
On	8-bit
Off	16-bit

Figure   2-2. Bus-Width Switch

Setting the ISA Connector Type: Switch 9 (ED) specifies the type of system connector used with the adapter: the double connector (16-bit ISA connector) or the single connector (8-bit ISA connector).

E
D

Switch 9 (ED)	Edge-Connector
On	Adapter is in a double-connector slot
Off	Adapter is in a single-connector slot

Figure   2-3. ISA Connector Type Switch

Setting the Base I/O Address: Switches 5 through 8 (C1, C2, C4, and C8) select the base I/O address.

If you install more than one IBM ARTIC adapter in ISA slots, set each adapter to a unique base I/O address to prevent resource conflicts.

Note: Adapters installed in PCI slots are configured automatically and do not affect the settings for adapters installed in ISA slots.

Record the instance number of the adapter (the first adapter is instance 0) and the base address in the configuration information for your system. Use the lowest base address first.

```
CCCC
8 4 2 1
```
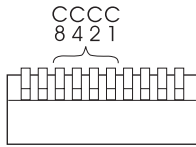
Switches				Base I/O Address	Physical Card Designation
8 (C8)	7 (C4)	6 (C2)	5 (C1)		
On	On	On	On	02A0	0
On	On	On	Off	06A0	1
On	On	Off	On	0AA0	2
On	On	Off	Off	0EA0	3
On	Off	On	On	12A0	4
On	Off	On	Off	16A0	5
On	Off	Off	On	1AA0	6
On	Off	Off	Off	1EA0	7
Off	On	On	On	22A0	8
Off	On	On	Off	26A0	9
Off	On	Off	On	2AA0	10
Off	On	Off	Off	2EA0	11
Off	Off	On	On	32A0	12
Off	Off	On	Off	36A0	13
Off	Off	Off	On	3AA0	14
Off	Off	Off	Off	3EA0	15

Figure   2-4. Base I/O Address Switches

Setting the Interrupt Level: Switches 1 through 3 (L1, L2, and L4) select the interrupt level used by the adapter when it is installed in an ISA expansion slot. For information on selecting the interrupt level, see "Selecting an Interrupt Level" on page A-4.

If you install more than one IBM ARTIC adapter in ISA slots, set them to the same interrupt level (the IBM ARTIC adapters are designed to share the interrupt level with other IBM ARTIC adapters).
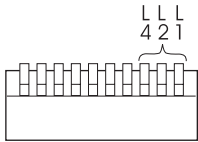
Switches			Interrupt Level
3 (L4)	2 (L2)	1 (L1)	
On	On	On	3
On	On	Off	4
On	Off	On	7
On	Off	Off	9 (or 2)
Off	On	On	10 (default)
Off	On	Off	11
Off	Off	On	12
Off	Off	Off	15

Figure   2-5. Interrupt Level Switches

Setting Communication Clock Jumpers: Set the communication-clock jumpers for ports 0 and 1 as shown. The jumper settings are described on the following pages.

The location of the receive- and transmit-clock jumpers for ports 0 and 1 are different for the two levels of the adapter. The following shows the jumper locations for both adapters and the valid settings for each port.
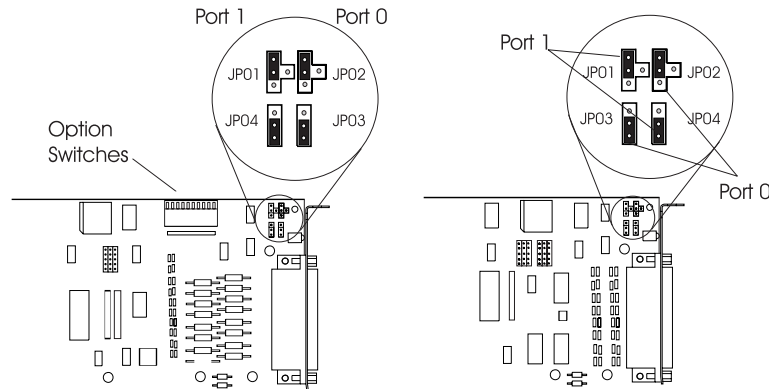
Port 0 or 1		
Receive Clock	**Transmit Clock**	**Configuration**
		Remote clock
		Transmit clock divided by 16
		Transmit clock divided by 32

Figure   2-6. Communication Jumper Settings

Transmit Clock Jumpers: The transmit-clock jumpers determine whether the transmit clocks for ports 0 and 1 are an output (the data-terminal equipment provides the clock) or an input (the data-communications equipment provides the clock).

The following shows the settings for transmit clock jumpers.

Port 0 or 1	Description
	Output clock to external device
	Input clock from external device

Receive Clock Jumpers: The receive-clock jumpers determine whether the external receive clock for ports 0 and 1 is driven by:

- A remote clock
- The transmit clock divided by 16
- The transmit clock divided by 32

Note: If the transmit clock for port 0 or 1 is set as the input clock, the corresponding receive-clock jumper must be set to the remote-clock position.

If the transmit clock for port 0 or 1 is set as an output clock, the corresponding receive-clock jumper must be set to the divided-by-16 or divided-by-32 position.

The following shows the settings for the receive-clock jumpers.

Port 0 or 1	Description
	Remote clock
	Transmit clock divided by 16
	Transmit clock divided by 32

Setting the Port Interface: The 8-port adapter has a set of jumpers used to select the serial interface used by each port. The interface is selected on a port-by-port basis for each of the eight ports. The jumper selects either an RS-232 or RS-485 interface for a given port; the default position is RS-232.

The following shows the location and port numbering of the interface-selection jumpers for the two adapters. The adapters can be identified by the location of the option switches.
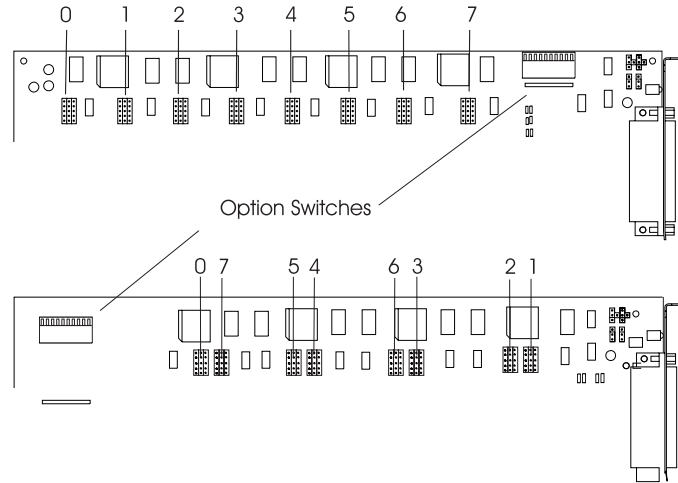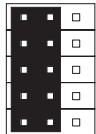

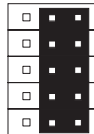*Figure   2-7. Port Numbering of Interface Selection Jumpers*

Note: RS-422 is a subset of RS-485.

Position the jumper (a 2x5-position jumper) to select the interface: RS-485 or RS-232. Each port can be configured independent of the setting of the other ports.

Installing the IBM ARTIC186 8-Port Adapter

Use the following steps as a general guide to installing your adapter. For instructions specific to your computer, consult the documentation that came with your computer.

1. Turn off the computer and all attached devices.

2. Unplug the power cords from the wall outlets.

3. Record the location of all cables connected to your computer; then disconnect them.

4. Remove the cover from the system unit.

5. Locate an available expansion slot in your system unit.

6. Remove the expansion-slot cover from the system unit.

7. With the 8-port adapter in one hand (and still wrapped in the anti-static bag), touch a metal part of the computer with the other hand. This places your body, the adapter, and the computer at the same ground potential, preventing an accidental static discharge.

8. Carefully remove the adapter from the anti-static bag. Be sure to grasp the circuit boards by the edges only; do not touch components, pins, or solder joints.

9. Install the adapter by holding it by the top and pressing it firmly into the expansion slot.
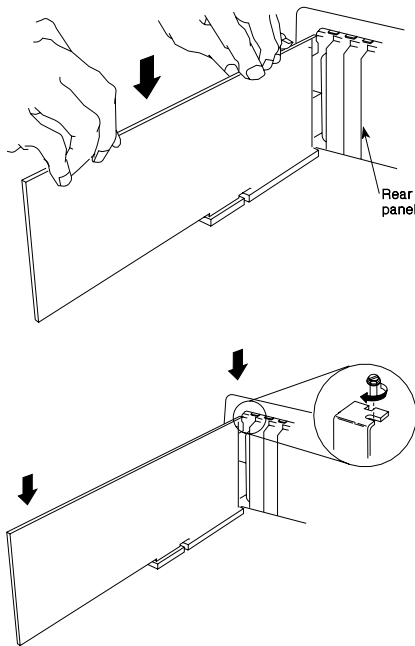
10. Align the card-retaining bracket with the hole in the rear panel of the system unit and install the retaining screw.

11. Replace the system-unit cover.

12. Reconnect all cables to the system unit.

13. Plug all power cords into electrical outlets.

Downloading the Diagnostics and Operating-System Support Programs

Download the adapter diagnostic and operating-system support programs from:

http://radisys.com/support/artic/ibm

For telephone assistance, call: **1-800-237-5511**.

For e-mail assistance, send to: **artic@radisys.com**

Running Diagnostics to Verify Installation

| Before continuing with "Connecting the Optional Adapter Cable," run the diagnostic tests on the adapter.
| See Chapter 5, "Problem Determination Procedures" for testing an IBM-compatible system.

Connecting the Optional Adapter Cable

Use the following steps to connect your adapter cable.

Note: The optional adapter cables are described on page 1-2.

DANGER

> **Lightning protection. Do not connect or handle the cable during a lightning storm.**

1. Align the connector of the adapter cable with the adapter connector at the rear of the system unit; it can fit properly only one way.
2. Firmly press the adapter cable onto the adapter connector.
3. Insert and tighten the screw at each side of the connector on the cable.
4. Connect your device to the other end of the adapter cable.

The 8-port adapter hardware installation is complete.

Installing the Microcode and Support Programs

For instructions on installing the required software, as listed under "Software/Microcode" on page 2-1, see the documentation supplied with the applicable software.

Setting Up the Configuration Files

See Appendix A, "Special Configuration Information for DOS and OS/2" for important setup information on creating an ICAPARM.PRM file and changing the CONFIG.SYS file. The changes are necessary for the correct operation of your 8-port adapter.

Chapter 3. Replacing the IBM ARTIC186 8-Port Adapter

Use these procedures to remove a failing adapter and install the replacement.

Removing the Adapter

Note: For instructions specific to your computer, refer to the hardware and service information that came with your computer.

1. Turn off the computer.

2. Disconnect the power cords from the electrical outlets.

3. Disconnect all cables from the rear of the system unit.

4. Remove the system unit cover.

5. Open the card retainer by loosening the screw.

6. Remove the adapter retaining screw.

Rear panel
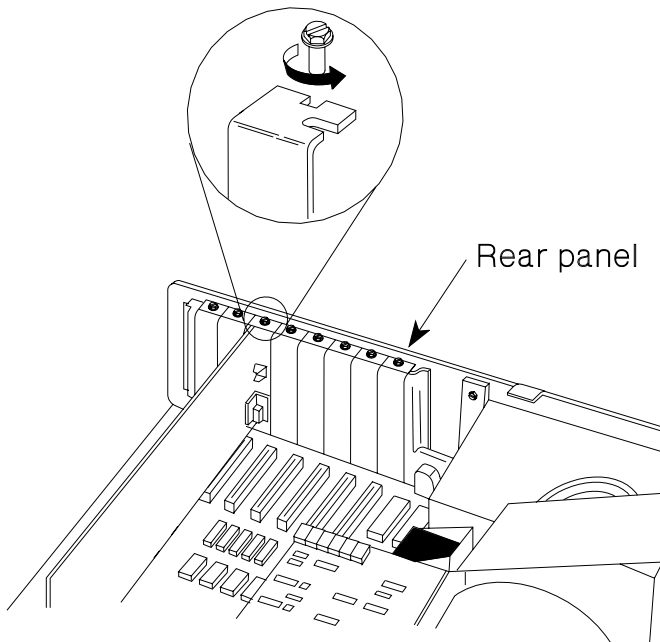
7. Grasp the adapter by the top corners and lift straight up.

Rear panel
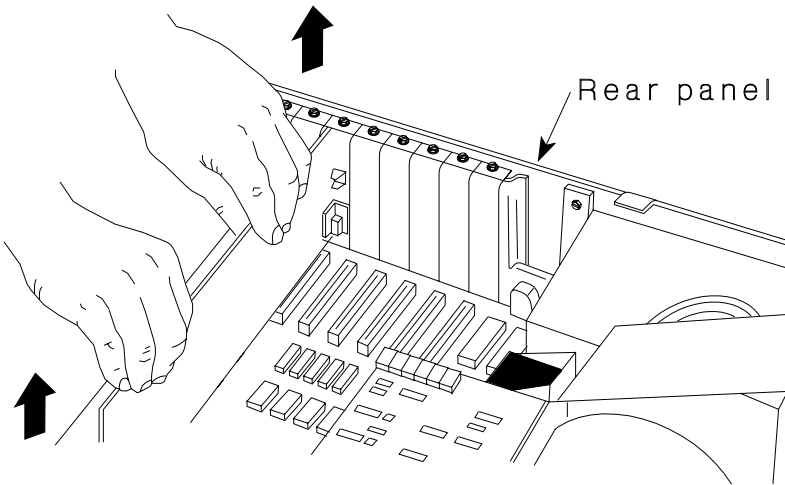
Installing the New Adapter

Before You Begin

There are two levels of the 8-port adapter. The levels are interchangeable; however, the relative location of the specific jumpers varies between them. When replacing one level with another level, make sure the specific port settings are set correctly. (See pages 2-3 and 2-4.)

1. Set the switches on the new adapter to match the switch settings on the adapter you are replacing.

2. Set the jumpers on the new adapter to match the settings on the adapter you are replacing. If the replacement adapter is a different level (the option switches will be in a different location), use the following figure when setting the jumpers. *The ports are numbered differently and the JP3 and JP4 jumpers are reversed.*
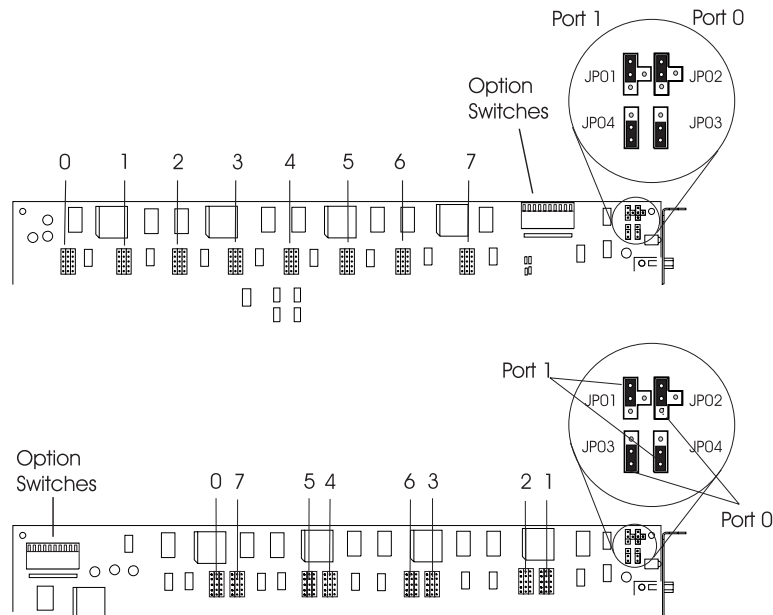
3. Insert the adapter in the same expansion slot.

4. Press down firmly on the adapter to seat the connector.
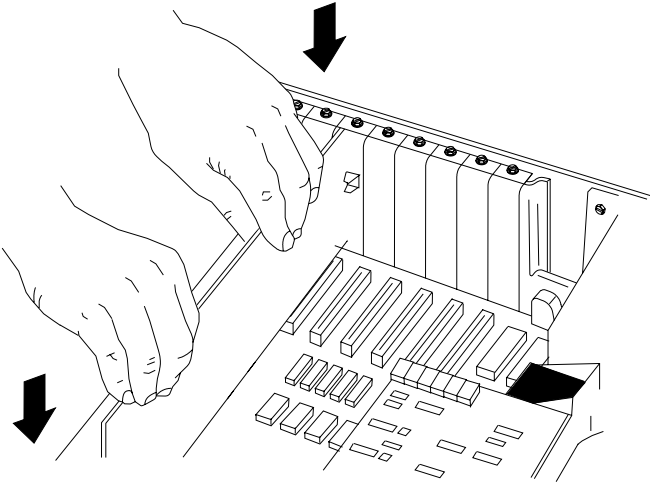
5. Install the adapter retaining screw.

6. Reinstall the system unit cover.

Chapter 4. Cables and Connectors

This chapter contains cable and connector information.

Cable Information

The following cables are available as options from your IBM representative.

- 8-Port Direct Modem Attachment Cable

  The cable is 1.8 meters (6 feet) long. It has a 78-pin connector that splits into eight individual cables with 25-pin connectors.

- Multiport Interface Cable

  The cable is 3.0 meters (9.8 feet) long. It has a 78-pin connector and a breakout box with eight 25-pin male connectors for attaching cables.

Cable and Cable Wrap Plug Part Numbers

The following are the part numbers for replacement cables and for the cable wrap plugs associated with each interface. The wrap plugs do not come with the cable features and must be ordered separately.
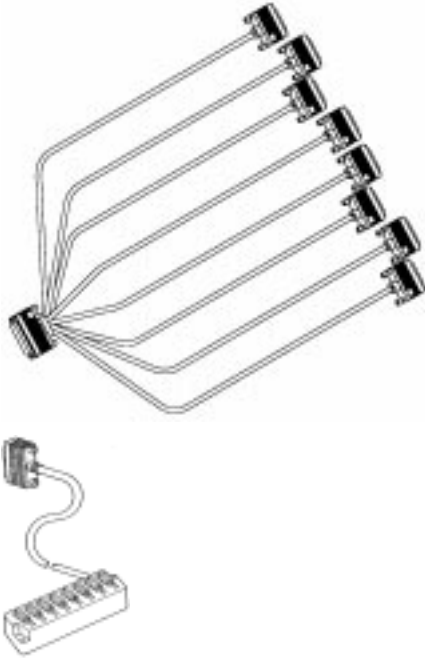
Part Number	Description
71G3494	8-Port Direct Modem Attach cable
00F5531	Multiport 8-Port Interface cable
6425494	25-pin wrap plug RS-485 (ports 0 through 7)
6425494	25-pin wrap plug RS-232 (ports 0 and 1)
09F1799	25-pin wrap plug RS-232 (ports 2 through 7)

Connector Descriptions

The following shows the 78-pin and 25-pin, D-shell, male connectors on the optional 8-Port Direct Modem Attach cable and the Multiport Interface cable.
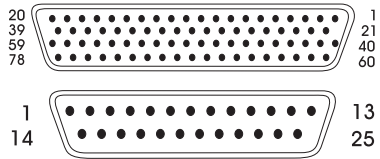
Table 4-1 and Table 4-2 show the pin assignments for the 78-pin connector on the 8-port adapter and the corresponding pin assignments for the 25-pin connectors on the cable or breakout box.

Table 4-1. RS-232 D-Shell Connector Pin Assignment									
Signal Name	**78-Pin Connector**								**25-Pin Connector**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
TXD	40	04	66	69	73	55	76	58	2
RXD	02	64	28	31	54	75	57	78	3
RTS	01	63	27	30	34	16	37	19	4
CTS	61	25	48	51	15	36	18	39	5
DSR	42	06	68	71	72	33	53	14	6
GND	07	08	11	43	67	70	67	70	7
CD	22	45	09	12	74	56	77	59	8
DTR	60	24	47	50	35	17	38	20	20
RI	30	65	29	32	49	52	10	13	22
TX CLK IN	23	46							15
TX CLK OUT	41	05							24
RX CLK IN	62	26							17
HRS	21	44							23

Table 4-2. RS-485 D-Shell Connector Pin Assignment									
Signal Name	**78-Pin Connector**								**25-Pin Connector**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
TXDA	01	63	27	30	34	16	37	19	4
TXDB	40	04	66	69	73	55	76	58	2
RXDA	61	25	48	51	15	36	18	39	5
RXDB	02	64	28	31	54	75	57	78	3
GND	07	08	11	43	67	70	67	70	7

Chapter 5. Problem Determination Procedures

| This chapter can help you determine if your 8-port adapter is operating properly.

| • To test the 8-port adapter, refer to the documents on the Web.

• To view the individual parts of the 8-port adapter and obtain part numbers, see "Service Parts" on page 5-2.

If you suspect you have a problem, do the following.

1. Check all electrical connections (such as, cable connections between devices, cable connections between devices and wall outlets, and wall outlet condition).

2. Perform the diagnostic tests.

Two groups of tests can be performed when there is a problem with a system unit containing the 8-port adapter.

| • System Unit Diagnostics. These tests are run from diagnostics provided with the system unit; they examine the system unit and the installed options. To run these tests, refer to the documentation that came with your computer.

> **Note:** If you are unsure of a problem area, perform the system unit diagnostics first, before proceeding with the 8-port adapter diagnostics.

• IBM Realtime Interface Co-processor Diagnostics These tests are run from the IBM ARTIC Diagnostic diskette you created. For more information on this program diskette, refer to the readme file, which can be downloaded from the Web site along with the diagnostic and support programs.

Problem Determination

For system testing information, refer to the documentation supplied with your computer.

If you performed the diagnostic tests because of a suspected communications problem and the diagnostic program completed the testing without indicating an error, check the following:

• The computer or device at the other end (make sure that it is operating properly)

• The base adapter

• Any intermediate communication device, such as a modem

• The communication cable

Note: If you are unsure of a problem area, perform the system-unit diagnostics first before proceeding with the 8-port adapter diagnostics.

Diagnostic Wrap Plugs

Diagnostic wrap tests are performed at the connector on the adapter and at a specific port connector on the cable. The diagnostic program prompts you when to install the wrap plug.

See "Cable and Cable Wrap Plug Part Numbers" on page 4-2 for the part numbers for the cable wrap plugs. See "Service Parts" for the part number for the adapter wrap plug. The wrap plugs do not come with the adapter and must be ordered separately.

Service Parts
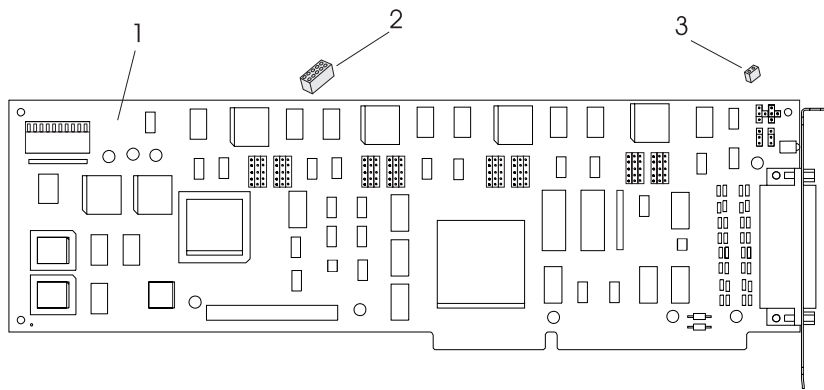
Figure 5-1. IBM ARTIC186 8-Port Adapter Part Numbers

Index	Part Number	Description
1	87H3330	IBM ARTIC186 8-Port Adapter
2	87H3496	Jumper, 2X5-position
3	93F0067	Jumper, 2-position
Not shown	16F2478	78-pin wrap plug

Appendix A. Special Configuration Information for DOS and OS/2

| This appendix is specific to the DOS and OS/2 operating systems. It contains information about the
| following:

| • Creating an ICAPARM.PRM file
| • Changing your CONFIG.SYS file
| • Ctrl+Alt+Del reset considerations
| • Selecting an interrupt level
| • Shared-memory considerations

Note: This information applies only if you are using the IBM-supplied software.

Creating an ICAPARM.PRM File

After installing the software, you can create a special parameter file (ICAPARM.PRM) to change the
defaults used to initialize the adapter.

Note: This file is the same one used by the Realtime Interface Co-Processor Multiport and Multiport,
Model 2 adapters.

ICAPARM.PRM is a small file that can be created with an ASCII text editor. It contains the parameters for
each adapter installed. The following two examples show the makeup of the parameter file—one for an
installation with one adapter and the other for an installation with multiple adapters. All values are
specified in hexadecimal (h).

Adding an ICAPARM.PRM File Entry

You need to add an entry to the ICAPARM.PRM file only if you want to change the following default
values or the logical card numbering. All other fields are ignored for the adapter.

• MAXTASK (Maximum Task Number) = 10h
• MAXPRI (Maximum Task Priority) = 10h
• MAXQUEUE (Maximum Task Queue Number) = 50h
• MAXTIME (Maximum Task Timer Number) = 32h.

Base I/O Address Considerations

The base I/O address for PCI adapters can present a problem for ICAPARM.PRM entries; the values
assigned are entirely up to the PCI BIOS. Because the lowest I/O address assigned to ISA versions of
the adapter is 02A0h, the values 0000 through 00FFh are used to identify PCI adapters. The lowest byte
is divided into two 4-bit fields. The upper four bits define which PCI adapter (0 is for ARTIC PCI); the
lower four bits define the particular instance of the adapter. Therefore, the values 0000, 0001,... 000n
represent physical PCI adapters 0 through n, where n corresponds to the index value for the adapter in
the PCI BIOS `Find Device` call.

The logical card-numbering of an ISA adapter can be changed by changing the position of its entry in the
ICAPARM.PRM file in relationship to the other ISA adapters (ISA adapters must have a logical number
greater that any PCI adapter). See "Example 2: Multiple IBM ARTIC Adapters" on page A-3.

Example 1: One IBM ARTIC Adapter

The following example shows an ICAPARM.PRM file that can be used if you have only one IBM ARTIC adapter installed in your computer.

```
Field Number  1   2    3   4   5   6   7   8   9   10    11

              #  0000  00  00  10  10  10  10  0F  E010  $
```

Field
Number   **Description**

1   Beginning-Record Delimiter. If a # is not present, the line will be treated as a comment.

2   Base I/O address (ISA) or physical instance (PCI). For PCI adapters, the range is 0000–00FFh.

3   Shared Memory Address, Meg Value. Range 00–0Fh for all IBM ARTIC adapters. (See Field 4).

4   Shared Memory Address, Page Value. Range 60–6Fh for all IBM ARTIC adapters. Used with Meg Value (Field 3) to define the window, in shared memory, used by the adapter to communicate with the system unit. The Page Value is the memory offset in 8 KB increments. A meg value of 00h and a page value of 60h results in a window address of C0000h.

5   Maximum Task Number on the adapter. Range 00–F8h; set to 10h.

6   Maximum Task Priority. Range 01–FFh; set to 10h.

7   Maximum Task Queue Number. Range 00–FEh; set to 10h.

8   Maximum Task Timer Number. Range 00–FEh; set to 10h.

9 and 10 The system address used to call an adapter reset. Use the values shown: 0Fh, E010h. (Not supported on this adapter.)

11   End-Record Delimiter. Value ';' or '$'. If this is the last adapter in the ICAPARM file, set to '$'; otherwise, set to ';'.

Example 2: Multiple IBM ARTIC Adapters

The sequence of entries in the ICAPARM.PRM file determines the logical card numbering of the adapters (the first parameter line is for logical card 0).

The logical card numbering for PCI adapters must match the physical card numbering. The logical card numbering for ISA adapters can be changed, but the entries for all PCI adapters must appear in the list before any entries for ISA adapters.

The following example shows an ICAPARM.PRM file for two ISA and two PCI adapters in an ISA/PCI system. (For an explanation of the fields, see the field descriptions under "Example 1: One IBM ARTIC Adapter" on page A-2.)

```
Field Number  1    2    3    4    5    6    7    8    9    10    11

              #  0000  00  00  10  10  50  32  0F  E010  ;
              #  0001  00  00  10  10  10  32  0F  E010  ;
              #  06A0  00  6F  20  20  20  20  0C  E010  ;
              #  02A0  00  6E  10  10  50  32  0C  E010  $
```

In this example, the two PCI adapters (physical card 0000 and 0001) are assigned to logical card 0 and 1, respectively. The ISA adapter at address 06A0 is assigned to logical card 2, and the ISA adapter at address 02A0 is assigned to logical card 3.

Changing Your CONFIG.SYS File

If OS/2 and Communications Manager/2 (CM/2) are being used, then one line of the CONFIG.SYS file must be modified (using a text editor) to specify the location of the ICAPARM.PRM file. Change CONFIG.SYS as follows, but substitute your specific drive paths:

```
Change:
  DEVICE=C:\CMLIB\ICARICIO.SYS

To:
  DEVICE=C:\CMLIB\ICARICIO.SYS C:\CMLIB\ICAPARM.PRM
```

Note: Make this change after CM/2 is configured. Later, if CM/2 is configured again, do not have it replace the CONFIG.SYS file. However, if you must let CM/2 change CONFIG.SYS to add new devices, just edit CONFIG.SYS again to replace the ICAPARM.PRM parameter.

If only OS/2 is being used, the following applies:

```
Change:
  DEVICE=C:\YOUR_ARTIC_DIR\ICARICIO.SYS

To:
  DEVICE=C:\YOUR_ARTIC_DIR\ICARICIO.SYS C:\YOUR_ARTIC_DIR\ICAPARM.PRM
```

Ctrl+Alt+Del Reset Considerations

If pressing the Ctrl+Alt+Del keys does not reset the 8-port adapter, change the entries in the ICAPARM.PRM file as follows.

```
An existing entry where Ctrl+Alt+Del will not reset the card:
   #02A0  00 60 10 10 10 70 0F E010;

A new entry where Ctrl+Alt+Del will reset the card:
   #02A0  00 61 10 10 10 70 00 0000;
```

Selecting an Interrupt Level

When installed in an ISA slot, the 8-port adapter can be configured to operate on several hardware interrupt levels.

- For optimal performance, each IBM ARTIC adapter installed in an ISA slot should have its own unique interrupt level.
- The next best configuration is to place these adapters on a single interrupt level.
- If neither of the preceding configurations is available, choose an interrupt level that can be shared with a non-ARTIC adapter.

Appendix B. Notices

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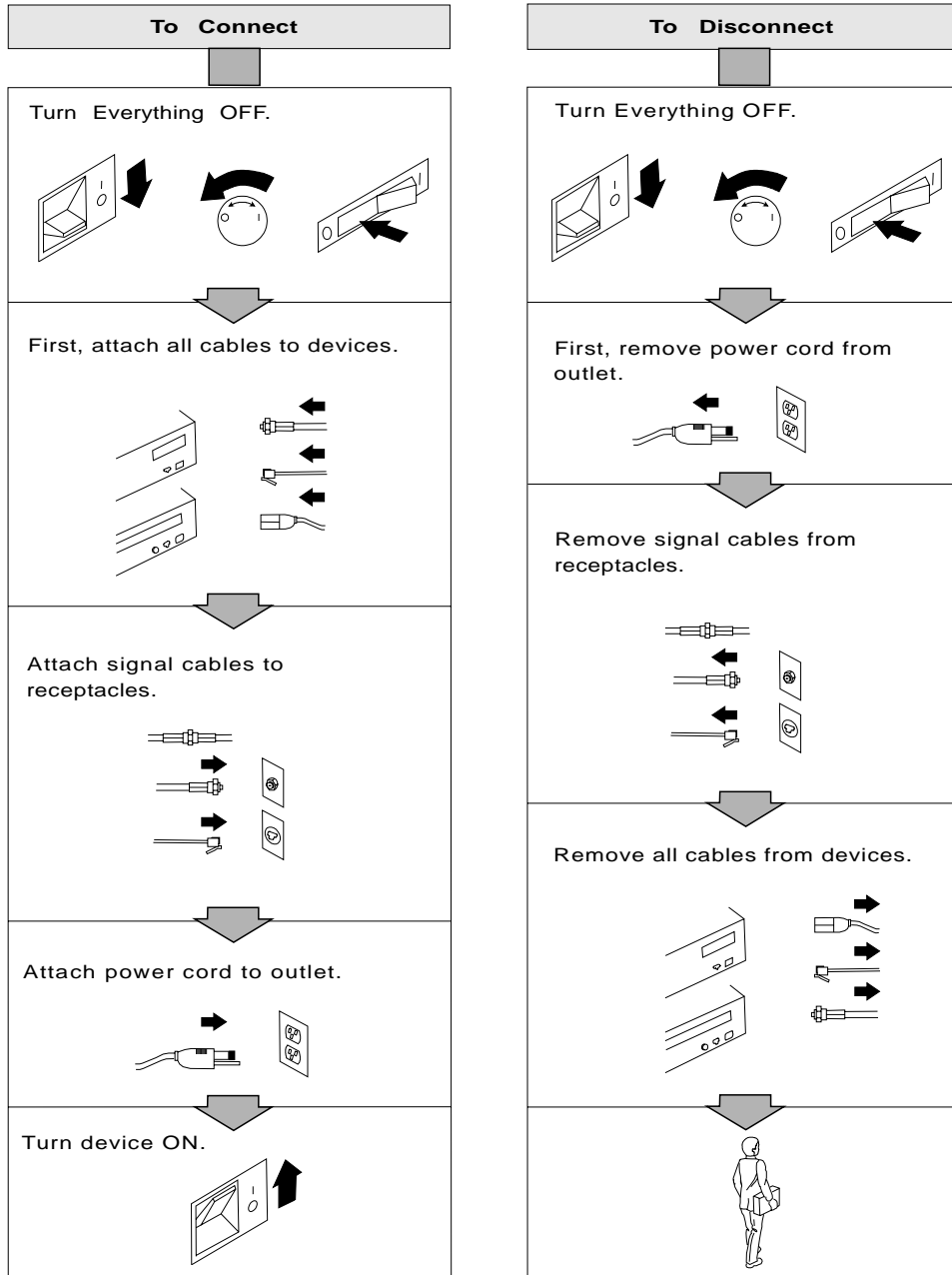
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To Connect
Turn Everything OFF.
First, attach all cables to devices.
Attach signal cables to receptacles.
Attach power cord to outlet.
Turn device ON.

To Disconnect
Turn Everything OFF.
First, remove power cord from outlet.
Remove signal cables from receptacles.
Remove all cables from devices.

Note: In the UK, by law, the telephone cable must be connected after the power cord.

Note: In the UK, by law, the power cord must be disconnected after the telephone line cable.

Required Electronic Emission and Connectivity Notices

Class A Federal Communications Commission Statement

Federal Communications Commission (FCC) Statement

Note: 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.

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This Class A digital apparatus complies with the Canadian ICES-003.

Cet appareil numérique de la classe A conform à la norme NMB-003 du Canada.

United Kingdom

Notice to United Kingdom Users

This apparatus is approved under General Approval number NS/G/1234/J/100003 for indirect connection to public telecommunications systems in the United Kingdom.

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Germany

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Dieses Gerät ist berechtigt, in Übereinstimmung mit dem deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Der Aussteller der Konformitätserklärung ist die:

RadiSys Corporation
5445 NE Dawson Creek Drive
Hillsboro, OR 97124 U.S.A.

Informationen in Hinsicht EMVG Paragraph 3, Abs. 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

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Um die Einhaltung des EMVG sicherzustellen, sind die Geräte wie in den Handbüchern angegeben zu installieren und zu betreiben.

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