Section 9. Adapters

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About This Section

This section contains detail information about adapters used in the IBM 6151 System Unit. Use the contents list on the preceding pages to find the information about your specific adapter.

Pages in this section contain a 3-digit product code in the page number to make future updating easier.

IBM AT 512 KB Memory Expansion Option

The IBM AT 512 KB Memory Expansion Option plugs into a system board adapter slot and uses the I/O channel to communicate with the Personal Computer AT Coprocessor Option or the 32-bit processor.

Specifications

Slot positions 2 - 4 Maximum number 1

Removal and Replacement Procedures

Use the Adapter Removal Procedure in Section 4 to remove the option. If the problem is isolated to a single failing module, pry up on the ends of the module to remove it. Alternate between the ends of the module to prevent bending the pins.

If you removed a single module, align the notched end of the module with the notched end of the socket; then press into position. Be sure all of the pins are in the socket and no pin is bent.

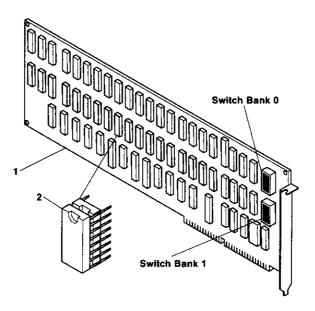
Use the Adapter Replacement Procedure in Section 4 to install the option.

Switch Settings

Use the drawing on the next page to locate the switch banks; then use the chart below to set the switches.

IBM AT 512 KB Memory Expansion Option Switch Settings

	Bank 0 Off On	Bank 1 Off On
Switch 1	X	X
Switch 2	X	X
Switch 3	X	X
Switch 4	X	X
Switch 5	X	X
Switch 6	X	X
Switch 7	X	X
Switch 8	X	X



Index Number	Part Number	Description
1 2	8286115 8286139	IBM AT 512 KB Memory Expansion Option Module, 128K bits (1 each)

RT PC AT Coprocessor Option

The RT PC AT Coprocessor Option runs programs designed for the IBM Personal Computer. The coprocessor uses the I/O channel to communicate with the 32-bit processor, system memory, adapters, or the IBM AT 512 KB Memory Expansion Option.

The IBM AT Math Co-Processor attaches to the RT PC AT Coprocessor Option to improve the numerical capability of the coprocessor.

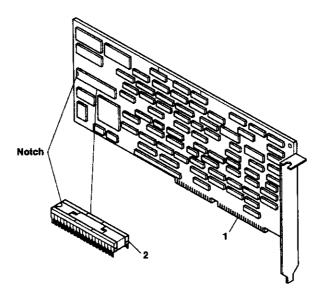
Specifications

Slot position 5 Interrupt level 15 (shared) Maximum number 1

Removal and Replacement Procedures

Use the Adapter Removal procedure in Section 4. to remove the coprocessor. If the IBM AT Math Co-Processor is present, pry up on the ends of the module to remove it.

Use the Adapter Replacement procedure in Section 4. to install the coprocessor. If the IBM AT Math Co-Processor is present, align the notched end of the module with notched end of the socket and push down.



Index Number	Part Number	Description	
1 2	6299226 8286127	RT PC AT Coprocessor Option IBM AT Math Co-Processor module	

IBM AT Fixed-Disk and Diskette Drive Adapter

The IBM AT Fixed-Disk and Diskette Drive Adapter contains adapters for two diskette drives and two fixed-disk drives.

Specifications

Slot position

I/O addresses

Diskette, 03F0 - 03F7 Fixed-disk, 01F0 - 01F7

DMA channel Interrupt levels Diskette drive, 2 Diskette drive, 6

Fixed-disk drive, 14

Maximum number

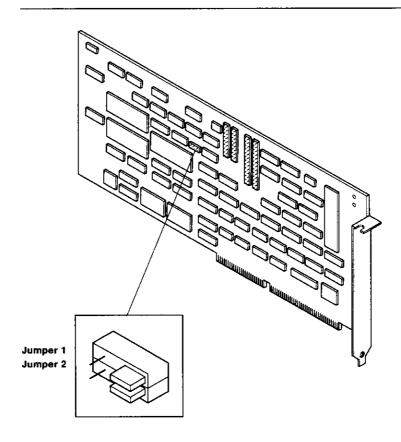
1

Removal and Replacement Procedures

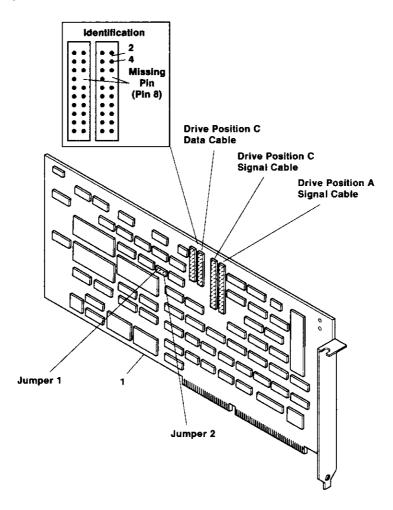
Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

Use the diagram below to set the jumpers for the adapter.



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Index Number	Part Number	Description
1	79X3431 61X6800	IBM AT Fixed-Disk and Diskette Drive Adapter Cable, fixed-disk and diskette drive

RT PC ESDI Magnetic Media Adapter

The RT PC ESDI Magnetic Media Adapter contains adapters for two diskette drives and two fixed-disk drives.

Specifications

Slot position

I/O addresses Diskette drive, 03F0 - 03F7

Fixed-disk drive, 01F0 - 01F7

DMA channel Interrupt levels Diskette drive, 2 Diskette drive, 6 Fixed-disk drive, 14

Maximum number

1

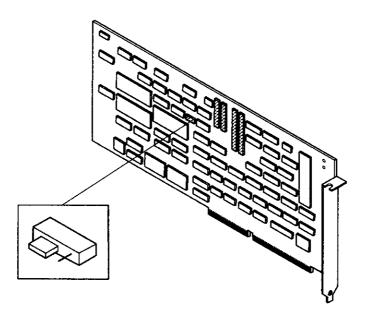
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

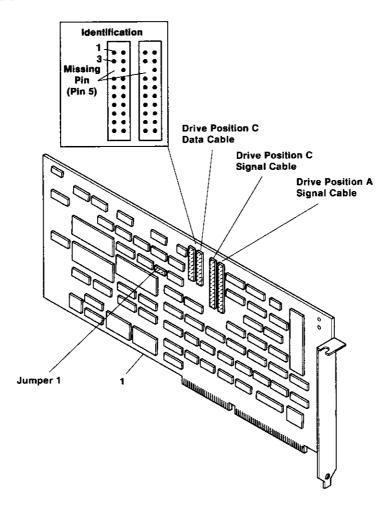
Jumper Settings

Use the diagram below to set the jumper for the adapter.

The jumper sets the I/O addresses of the adapter.



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Index Number	Part Number	Description
Number 1	00F2160 61X6800	RT PC ESDI Magnetic Media Adapter Cable, fixed-disk and diskette drive

RT PC Extended ESDI Magnetic Media Adapter

The RT PC Extended ESDI Magnetic Media Adapter contains adapters for two diskette drives and three fixed-disk drives.

Specifications

Slot position

6

I/O addresses

Diskette drive, 03F0 - 03F7

Fixed-disk drive, 01F0 - 01F7

and 05F0 - 05F7

DMA channels

Diskette drive, 2

Fixed-disk drive, 0, 1 (set by program) Diskette drive, 6

Interrupt level

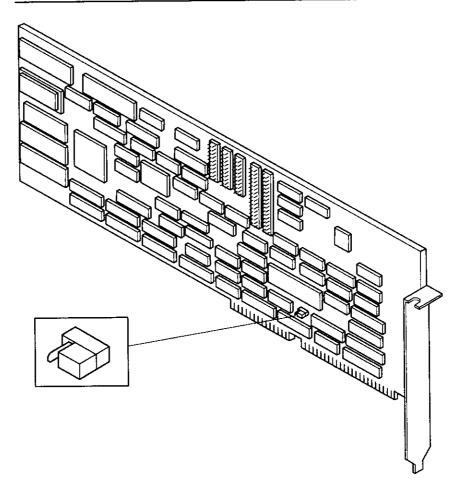
Fixed-disk drive, 12, 14 (set by program)

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

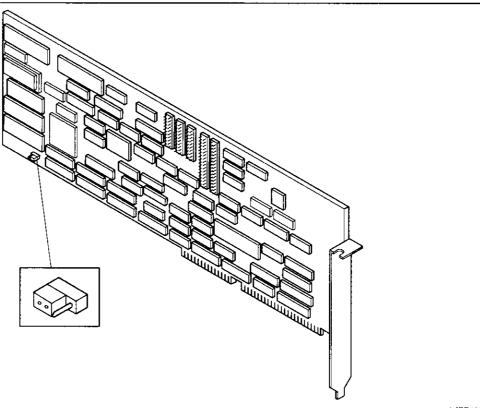
Jumper Settings (Early Version)

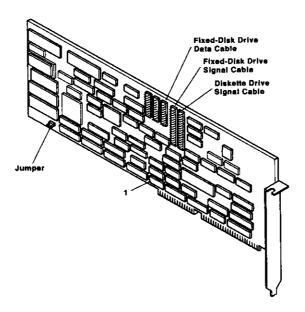
Use the diagram below to set the jumper on the early version as shown.



Jumper Settings (Later Version)

Use the diagram below to set the jumper on the later version as shown.





Index Number	Part Number	Description
1	08F3766	RT PC Extended ESDI Magnetic Media Adapter (replace either version with this later version) Fixed-disk and diskette drive cable
	61X6800	Fixed-disk and diskette drive cable
<u>}</u>		

RT PC Portable Disk Drive Adapter

The RT PC Portable Disk Drive Adapter contains adapters for three externally attached Portable Disk Drive Modules.

Specifications

Slot position

2 - 5

I/O addresses Fixed-disk drive, 0170 - 0177

and 0570 - 0577

DMA channels Interrupt level Maximum number Fixed-disk drive, 1, 3 (set by program) Fixed-disk drive, 12, 14 (set by program)

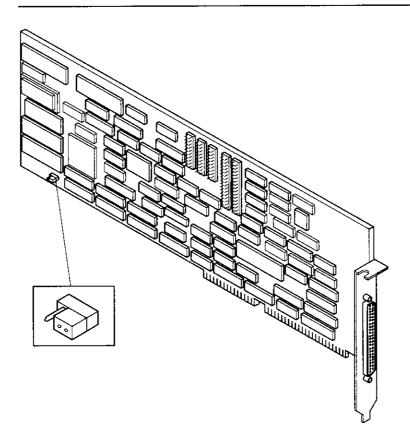
r 1

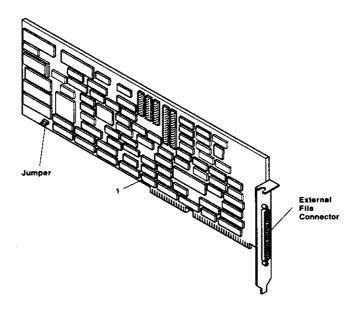
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

Use the diagram below to set the jumper as shown.





Index Number	Part Number	Description
1	08F3612	Portable Disk Drive Adapter

IBM Monochrome Display and Printer Adapter

The IBM Monochrome Display and Printer Adapter is the same adapter that is used in the IBM Personal Computer system units to attach the IBM 5151 Personal Computer Display.

Specifications

Slot position

I/O addresses

Display adapter, 03B0 - 03BA

Printer adapter, 03BB - 03BF

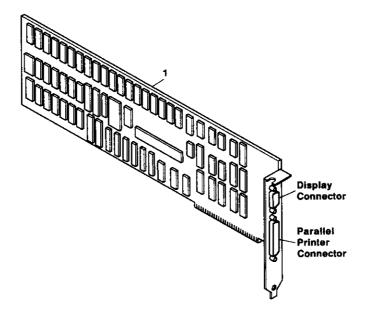
Memory addresses Interrupt level Display, 0B0000 - 0B7FFF Printer adapter, 7

Maximum number

imici adapt

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.



Index Number	Part Number	Description
1	8529148 8529214	IBM Monochrome Display and Printer Adapter IBM PC Parallel Printer Cable

IBM PC Enhanced Graphics Adapter

The IBM PC Enhanced Graphics Adapter attaches the IBM 5154 Enhanced Color Display to the system unit. The IBM PC Enhanced Graphics Adapter contains 64K bytes of display memory. The display memory size can be expanded to 256K bytes by adding the IBM PC Graphics Memory Expansion Card (64K bytes) and IBM PC Graphics Memory Expansion Kit (128K bytes) to the adapter.

Specifications

Slot positions	1
I/O addresses	03C0 - 03DF
Memory addresses	0A0000 - 0BFFFF
BIOS addresses	0C0000 - 0C3FFF
Interrupt level	9
Maximum number	1

Removal and Replacement Procedures

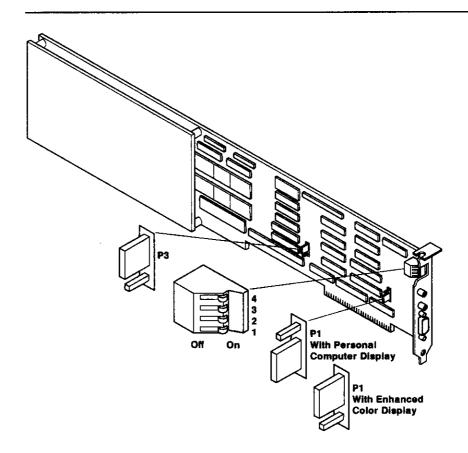
Use the Adapter Removal procedures in Section 4. for removal. If the IBM PC Graphics Memory Expansion Card is present, remove the card from the adapter. If your failure is isolated to a failing module on the IBM PC Graphics Memory Expansion card, remove the failing module.

If you removed a failing module, align the failing module with the socket (be sure the notch is in the same direction as the other modules); then press it into position.

If you removed the IBM PC Graphics Memory Expansion Card, install it on the adapter. Then, use the Adapter Replacement procedure in Section 4. to install the adapter.

Jumper Settings

Use the diagram below to set the jumpers. Use the chart on the following page to set the mode switch.



Switch Settings

Use this table to set the mode switches for the type of display attached to the IBM PC Enhanced Graphics Adapter when **one** of the following conditions is present:

- The RT PC AT Coprocessor Option is not installed.
- The display attached to the IBM PC Enhanced Graphics Adapter is not assigned to the RT PC AT Coprocessor Option.
- The display attached to the IBM PC Enhanced Graphics Adapter is assigned to the RT PC AT Coprocessor Option in **shared** mode.

Type of Display Attached to the IBM PC Enhanced Graphics Adapter	Sw1	Sw2	Sw3	Sw4
IBM 5154 Enhanced Color Display	Off	On	On	Off
IBM 5151 Personal Computer Display	Off	Off	On	Off

Use this table to set the mode switches when the following conditions are present:

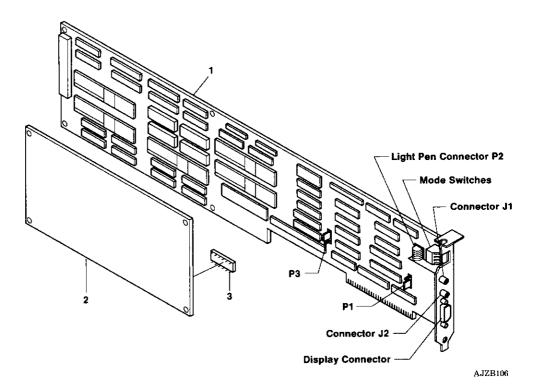
- The IBM 5151 Personal Computer Display is attached to the IBM PC Enhanced Graphics Adapter.
- The IBM 5151 is assigned to the RT PC AT Coprocessor Option in *dedicated* mode.
- Another display may also be installed and assigned to the RT PC AT Coprocessor Option as a second display.

IBM 5151 Assignment	Second Display Mode of Operation	Sw1	Sw2	Sw3	Sw4
Primary	80 X 25 Color	Off	Off	On	Off
Primary	40 X 25 Color	On	Off	On	Off
Secondary	80 X 25 Color	Off	On	Off	On
Secondary	40 X 25 Color	On	On	Off	On

Use this table to set the mode switches when the following conditions are present:

- The IBM 5154 Enhanced Color Display is attached to the IBM PC Enhanced Graphics Adapter.
- The IBM 5154 is assigned to the RT PC AT Coprocessor Option in *dedicated* mode.
- Another display may also be installed and assigned to the RT PC AT Coprocessor Option as a second display.

IBM 5154 Operating Mode of Emulation Mode		Sw1	Sw2	Sw3	Sw4
Primary	80 X 25 High Resolution	Off	On	On	Off
Primary	80 X 25 Enhanced Color	On	On	On	Off
Secondary	80 X 25 High Resolution	Off	Off	On	On
Secondary	80 X 25 Enhanced Color	On	Off	On	On



Index Number	Part Number	Description
1 2 3	8654215 6323468 8654219	IBM PC Enhanced Graphics Adapter IBM PC Graphics Memory Expansion Card Module (1 each)

RT PC Advanced Monochrome Graphics Display Adapter

The RT PC Advanced Monochrome Graphics Display Adapter attaches the IBM 6153 Advanced Monochrome Graphics Display to the system unit.

Specifications

Slot positions 2 - 5

I/O addresses 0160 - 016F

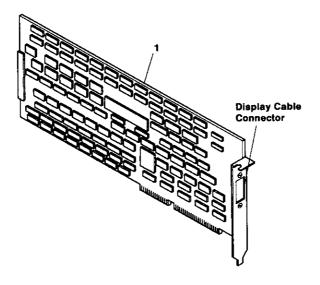
Memory addresses D00000 - D1FFFF

Interrupt level 11 Maximum number 1

Removal and Replacement Procedures

Use the Adapter Removal Procedure in Section 4 for removal.

Use the Adapter Replacement Procedure in Section 4 for replacement.



Index Number	Part Number	Description
1	00F2357	RT PC Advanced Monochrome Graphics Display Adapter

RT PC Advanced Color Graphics Display Adapter

The RT PC Advanced Color Graphics Display Adapter attaches the IBM 6154 Advanced Color Graphics Display to the system unit.

Specifications

Slot positions 2 - 5

I/O addresses 0150 - 015F

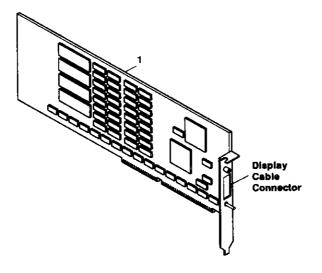
Memory addresses D20000 - D3FFFF

Interrupt level 11 Maximum number 1

Removal and Replacement Procedures

Use the Adapter Removal Procedure in Section 4 for removal.

Use the Adapter Replacement Procedure in Section 4 for replacement.



Index Number	Part Number	Description
1	00F2350	RT PC Advanced Color Graphics Display Adapter

RT PC Extended Monochrome Graphics Display Adapter

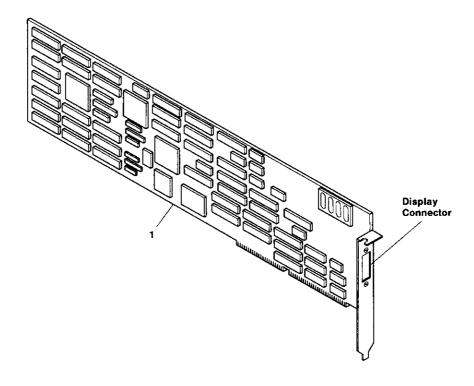
The RT PC Extended Monochrome Graphics Display Adapter attaches the IBM 6155 Extended Monochrome Graphics Display to the system unit.

Specifications

Slot positions 2 - 4
I/O addresses 0D10 - 0D2F
Memory addresses D80000 - DFFFFF
DMA channel 7
Interrupt level 11
Maximum number 1

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.



Index Number	Part Number	Description
1	6299351	RT PC Extended Monochrome Graphics Display Adapter

IBM Megapel Display Adapter

The IBM Megapel Display Adapter attaches the IBM 5081 Display to the system unit. The IBM Megapel Display Adapter consists of two boards, the display controller board and the display processor board. They are physically attached and plug into two adjacent double slots.

The display controller board produces the red, green, and blue (RGB) video signals for the IBM 5081 Display.

The display processor board provides the processing function for the display controller board. It also contains a parallel printer adapter.

Note: The parallel printer adapter on the IBM Megapel Display Adapter must be *disabled* (see switch settings) if the IBM Monochrome Display and Printer Adapter is installed in the system unit.

Specifications

Slot positions 2 and 3 I/O addresses 0930 - 094F

Memory addresses 0B8000 - 0BBFFF, PC color graphics

adapter emulation mode

C00000 - C3FFFF, Adapter data space D60000 - D7FFFF, Adapter program space

DMA channel

Interrupt level 11 (shared) Horizontal frequency 63.36 KHz

Vertical frequency 60 Hz, non-interlaced

Display connector 3-Pin video Printer connector 25-Pin D-shell

Maximum number 1

Removal Procedure

Note: The IBM Megapel Display Adapter consists of two boards fastened together. Use care when removing or disconnecting them.

- 1. Use the Adapter Removal Procedure in Section 4. to remove the adapter.
- 2. Record the switch settings (on the processor and printer adapter board).
- 3. Remove the four screws that attach the display processor board (the one with the 25-pin connector) to the display controller board.
- 4. Disconnect the display processor board.
- 5. Exchange either board; then use the following procedure to assemble.

Replacement Procedure

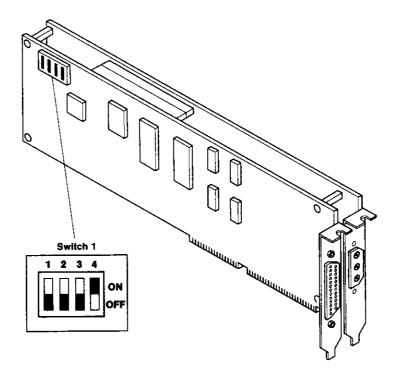
Note: The IBM Megapel Display Adapter consists of two boards fastened together. Use care when connecting or installing them.

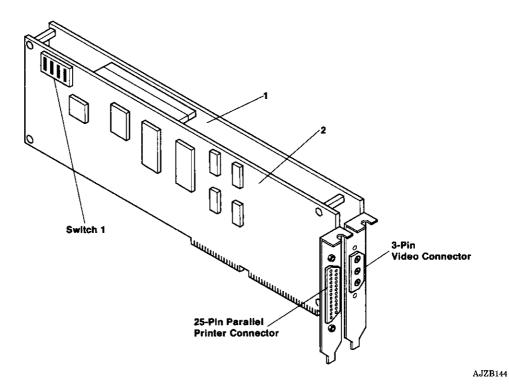
- 1. Align the display processor board connector with the connector on the display controller board and press into position.
- 2. Install the four screws to fasten the boards together.
- 3. Use the switch settings you recorded, set the switches.
- 4. Use the Adapter Replacement Procedure in Section 4. to install the adapter.

Switch Settings

Use the following table to set the switch positions on the display processor board.

Switch Position	On	Off (Open)
1	Not used	Set to Off
2	Enable the printer adapter	Disable the printer adapter
3	Enable the PC Color Graphics Adapter emulation	Set to Off for any display that cannot use the PC Color Graphics Adapter
4	Set to On	Not used





Index Number	Part Number	Description	
1 1 2	6247666 6247529 6247662 6247661	Display controller board Display controller board (labeled 16M) Display processor board Cable, IBM 5081 attachment	

RT PC 4-Port Asynchronous RS-232C Adapter (Buffered)

The RT PC 4-Port Asynchronous RS-232C Adapter (Buffered) contains four asynchronous adapters. The RT PC 4-Port Asynchronous RS-232C Adapter uses the I/O channel to communicate with the 32-bit processor or coprocessor.

Notes:

- 1. If the RT PC 4-Port Asynchronous RS-232C Adapter (Buffered) is installed in the IBM RT PC 6192 Expansion Unit, only interrupt level 9 can be used.
- 2. Interrupt levels *cannot* be shared between the system unit and the RT PC 6192.
- 3. All interrupt levels are shared, but interrupt level 11 cannot be shared with the SCSI Adapter. Also, interrupt level 9 cannot be shared with any of the 8-port asynchronous adapters.

Specifications

Slot positions I/O addresses	2 - 5 Address range 1, 1230 - 124F Address range 2, 2230 - 224F Address range 3, 3230 - 324F Address range 4, 4230 - 424F
Interrupt levels	9, 10, 11 (see the notes above)
Bit rates	50 - 19200 (set by program)
Bits per character	5, 6, 7, 8 (set by program)
Maximum number	4

Removal Procedure

Use the Adapter Removal Procedure in Section 4.

Replacement Procedure

Use the Adapter Replacement Procedure in Section 4.

Switch Settings

Refer to the drawing on the next page to locate the switch banks; then use the charts below to set the switches on your adapter.

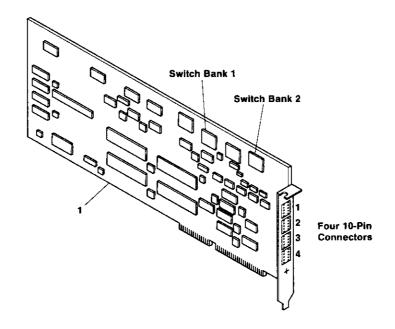
Note: Only one asynchronous adapter can use an address range. Each asynchronous adapter can be set to any of the four address ranges.

Switch Bank 1 - Interrupt Level Selection

	9	10	11
	Off On	Off On	Off On
Switch 1	X	X	X
Switch 2	X	X X	X
Switch 3	X		X

Switch Bank 2 - Address Range Selection

	1 Off On	Off On	3 Off On	4 Off On
Switch 1	X	X	X	X
Switch 2	X	X	X	X
Switch 3	X	X	X	X
Switch 4	X	X	X	X
Switch 5	X	X	X	X
Switch 6	X	X	X	X
Switch 7	X	X	X	X
Switch 8	X	X	X	X



Index Number	Part Number	Description
1	61X6339 6298240 6298525 6298526 79X3914	4-Port Asynchronous RS-232C Adapter (Buffered) RT PC Modem Cable - RS-232C (10 Pin) RT PC Serial Printer Cable (10 Pin) RT PC ASCII Terminal Cable - RS-232C (10 Pin) RT PC ASCII Terminal Cable RS-232C (10/25M-Pin)

RT PC 4-Port Asynchronous RS-422A Adapter (Buffered)

The RT PC 4-Port Asynchronous RS-422A Adapter (Buffered) contains four asynchronous adapters. The RT PC 4-Port Asynchronous RS-422A Adapter uses the I/O channel to communicate with the 32-bit processor or coprocessor.

Notes:

- 1. If the RT PC 4-Port Asynchronous RS-422A Adapter (Buffered) is installed in the IBM RT PC 6192 Expansion Unit, only interrupt level 9 can be used.
- 2. Interrupt levels *cannot* be shared between the system unit and the RT PC 6192.
- 3. All interrupt levels are shared, but interrupt level 11 cannot be shared with the SCSI Adapter. Also, interrupt level 9 cannot be shared with any of the 8-port asynchronous adapters.

Specifications

Slot positions	2 - 5
I/O addresses	Address range 1, 1230 - 124F
•	Address range 2, 2230 - 224F
	Address range 3, 3230 - 324F
	Address range 4, 4230 - 424F
Interrupt levels	9, 10, 11 (see the notes above)
Bit rates	50 - 19200 (set by program)
Bits per character	5, 6, 7, 8 (set by program)
Maximum number	4

Removal Procedure

Use the Adapter Removal Procedure in Section 4.

Replacement Procedure

Use the Adapter Replacement Procedure in Section 4.

Switch Settings

Refer to the drawing on the next page to locate the switch banks; then use the charts below to set the switches on your adapter.

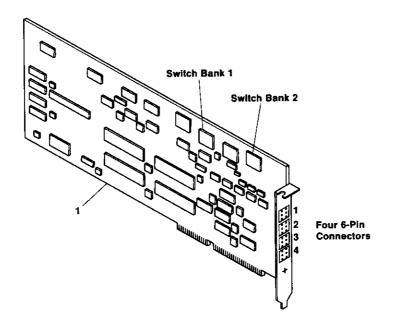
Note: Only one asynchronous adapter can use an address range. Each asynchronous adapter can be set to any of the four address ranges.

Switch Bank 1 - Interrupt Level Selection

	9 Off On	10 Off On	11 Off On
Switch 1	X	X	X
Switch 2	X	X	X
Switch 3	X	X	X

Switch Bank 2 - Address Range Selection

	1 Off On	2 Off On	3 Off On	4 Off On
Switch 1	_ X	X	X	X
Switch 2	X	X	X	X
Switch 3	X	X] X	X
Switch 4	X	X	X	X
Switch 5	X	X	X	X
Switch 6	X	X	X	X
Switch 7	X	X	X	X
Switch 8	X	X	X	X



Index Number	Part Number	Description
1	79X3782 6298246 6487640	4-Port Asynchronous RS-422A Adapter (Buffered) ASCII Terminal Cable - RS-422A (6 pin), 20 m ASCII Terminal Cable - RS-422A (6 pin), 3 m

IBM AT Serial/Parallel Adapter

The IBM AT Serial/Parallel Adapter provides adapters for a serial port and a parallel printer. This adapter uses the I/O channel to communicate with the 32-bit processor and coprocessor.

Specifications

Slot positions 1 - 5

Serial addresses Primary adapter, 03F8-03FF

Alternate adapter, 02F8-02FF

Parallel addresses Primary adapter, 0378-037F Alternate adapter, 0278-027F

Interrupt levels Primary serial, 4

Primary parallel, 7 Alternate serial, 3 Alternate parallel, 5

Bit rates 50 - 19200

Bits per character 5, 6, 7, 8

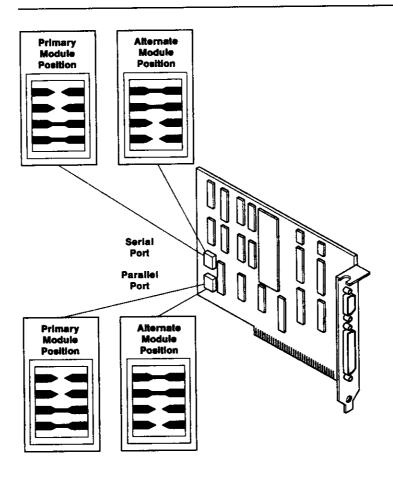
Maximum number 2

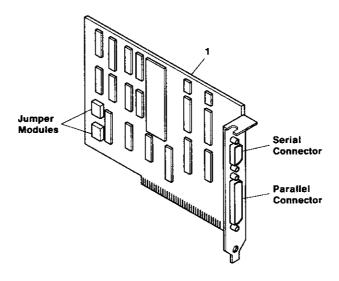
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Module Settings

Use the diagram below to set the jumper modules on your adapter.





Index Number	Part Number	Description
1	8286147 8286194 6298963 8286170 8529214 6848247	IBM AT Serial/Parallel Adapter IBM AT Serial Adapter Connector (10 inch) RT PC Serial Printer Cable (9 Pin) IBM AT Modem Cable - RS232C/9 Pin IBM PC Parallel Printer Cable RT PC ASCII Terminal Cable - RS232 (9-pin)

IBM PC Network Adapter

The IBM PC Network Adapter attaches the IBM 6151 System Unit to the IBM PC Network. The IBM PC Network Adapter uses the I/O channel to communicate with the 32-bit processor and coprocessor.

Specifications

Slot positions
I/O addresses
I/O addresses
Primary, 0360 - 0367
Alternate, 0368 - 036F
OCC000 - 0CDFFF

DMA channel
Interrupt levels
Maximum number

1 - 5
Primary, 0360 - 0367
Alternate, 0368 - 036F
0CC000 - 0CDFFF

3, 9

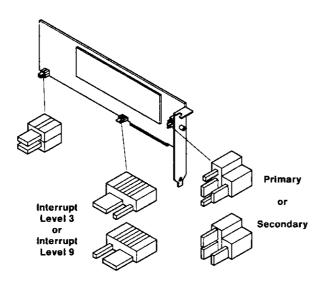
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

Set the jumpers to select Primary or Alternate addresses.

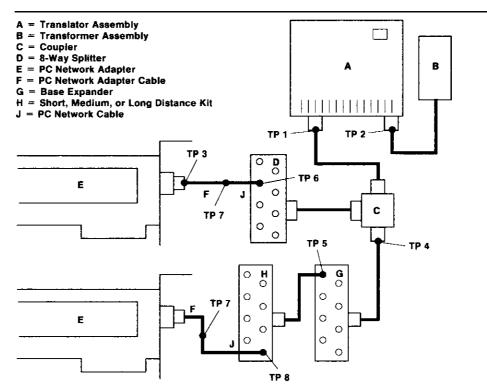
Set the jumper to select Interrupt Level 3 or Interrupt Level 9.



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IBM PC Network Cabling Example

The IBM PC Network Cabling Example below is for diagnostic understanding only. Your IBM PC Network cabling may contain more or less components than those shown below.

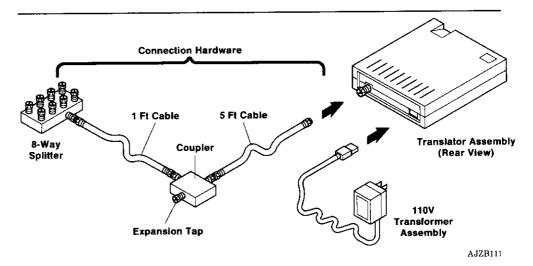


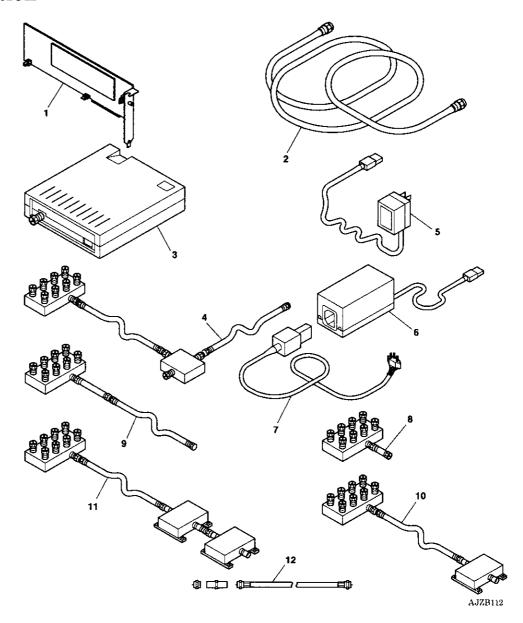
Highlighted units make up the Portable Translation Unit.

IBM PC Network Portable Translator Unit

Three field-replaceable units (FRUs) are assembled into a diagnostic tool known as the IBM PC Network Portable Translator Unit (PTU). Instructions for the use of the PTU are on the diagnostic diskette. You are instructed when to use the PTU while running the IBM PC Network Checkout routines. The PTU consists of the following FRUs:

- The Translator Assembly, part number 8286173.
- The Transformer Assembly, part number 8286176.
- The Connection Hardware Assembly, part number 8286174. The Connection Hardware Assembly includes:
 - A coupler
 - An 8-way splitter
 - A 1.5 m (5 foot) cable
 - A 0.3 m (1 foot) cable.





Index	Part	
Number	Number	Description
1	8286171	PC Network Adapter
$\bar{2}$	8286172	PC Network Adapter Cable
$\frac{2}{3}$	8286173	Translator Assembly
4	8286174	Connection Hardware Assembly
ŀ	8286175	Spare parts kit
		-Kit consists of: a 7/16 and 9/16 inch wrench,
_		30dB attenuator, labels - A, label kit assembly
5	8286176	Transformer Assembly, 120 V ac
6	8286177	Transformer Assembly, 230 V ac
7 8	8286178	Power cable, see Section 5 Base Expander
9	8286179	Short Distance Kit
10	8286180	Medium Distance Kit
11	8286181	Long Distance Kit
12	8286182	Cable, 7.62m (25 feet)
12	8286183	Cable, 15.24m (50 feet)
12	8286184	Cable, 30.48m (100 feet)
12	8286185	Cable, 60.96m (200 feet)
1		
1		
	ł	
1	1	i

RT PC Multiprotocol Adapter

The RT PC Multiprotocol Adapter provides hardware to attach various communications devices to the system unit. The RT PC Multiprotocol Adapter uses the I/O bus to communicate with the 32-bit processor and coprocessor.

Specifications

Slot position

2 - 5

I/O addresses

Primary, 0510 - 052F Alternate, 0910 - 092F

DMA channel

Primary, 1 Alternate, 5

Interrupt levels

10, 11 (shared)

Maximum number

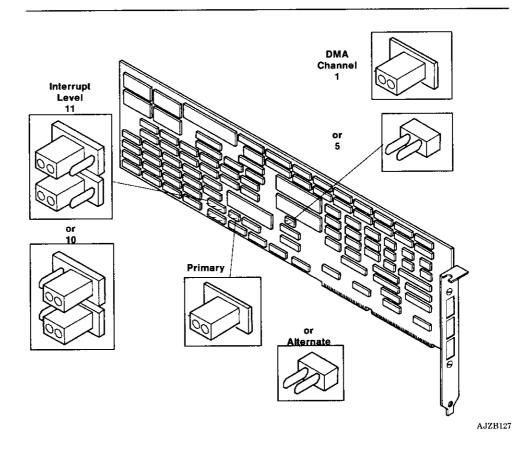
2

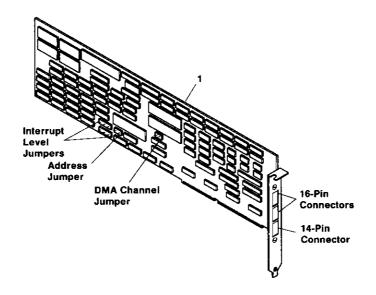
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

Use the diagram below to set the jumpers on the adapter.





Index Number	Part Number	Description
1	08F3193 6294813 6294815 6294817 79X3820	RT PC Multiprotocol Adapter RT PC Modem Cable - RS-232C (16 Pin) RT PC Automatic Calling Unit Cable - RS-366 RT PC Modem Cable - X.21 RT PC Modem Cable (metric)

RT PC Baseband Adapter

The RT PC Baseband Adapter provides the hardware to attach the system unit to an Ethernet Network. The RT PC Baseband Adapter uses the I/O channel to communicate with the 32-bit processor and coprocessor.

Specifications

Slot positions

Memory addresses 080000 - 0F8000

1 - 4

(any 32K-byte block)

Interrupt levels 3, 4, 5, 7, 9

Maximum number

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

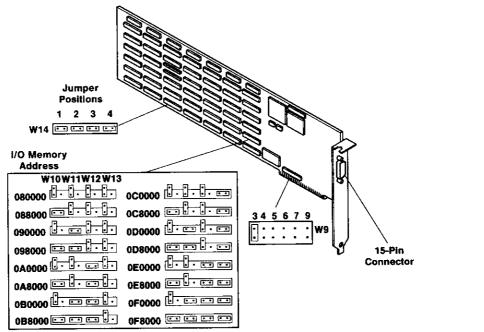
Set the jumpers as follows:

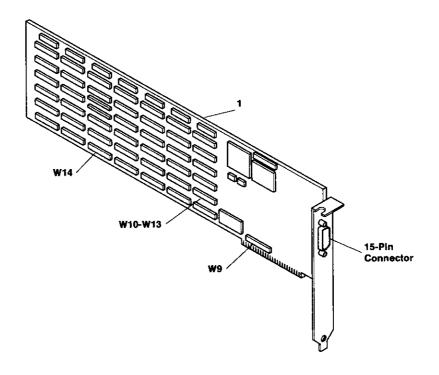
W9 Set to the interrupt level desired.

W10 - W13 Set for the 32K-byte block of memory desired.

W14 Sets the interrupt request rate:

Position 1 Interrupts every 9.1 ms Position 2 Interrupts every 18.3 ms Position 3 Interrupts every 36.6 ms Position 4 Interrupts every 73.2 ms.





Index Number	Part Number	Description
1	61X6809	RT PC Baseband Adapter

IBM PC 3278/79 Emulation Adapter

The IBM PC 3278/79 Emulation Adapter provides the hardware to make the system unit respond to a host system like an IBM 3278 or IBM 3279 Display Terminal.

There are two styles of IBM PC 3278/79 Emulation Adapters in use. The long adapter is the earlier design and has no jumper or switch settings. The short adapter has switch settings. When ordering a replacement adapter, order the short adapter.

Note: The long and short adapters *cannot* be in the same system unit.

Specifications

Slot positions 1 - 5

I/O addresses Address range 1, 02D0 - 02DA

Address range 2, 06D0 - 06DA Address range 3, 0AD0 - 0ADA Address range 4, 0ED0 - 0EDA

Memory addresses 0CE000 - 0CFFFF

Interrupt level 9
Maximum number 4

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

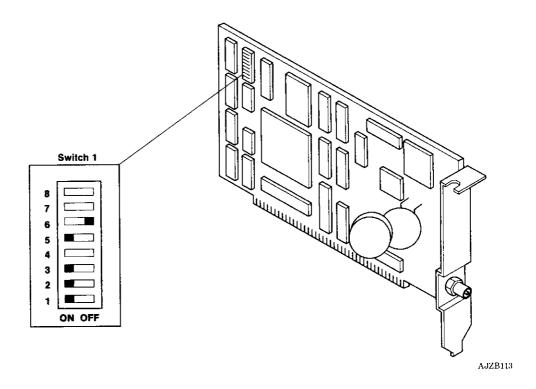
Switch Settings

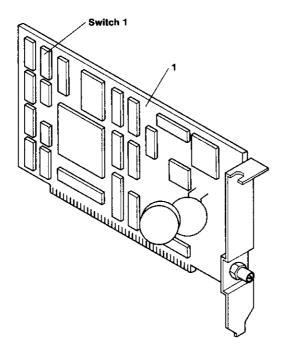
Notes:

- 1. Only one adapter can use an address range.
- 2. You may have to remove a cover over the switches.

See the drawing on the next page for switch locations.

Position 1 and 2	Description Address range 1, 1 On, 2 On Address range 2, 1 Off, 2 On Address range 3, 1 On, 2 Off Address range 4, 1 Off, 2 Off
3	Off, disable interrupts On, enable interrupts
4	Reserved
5	On, for address range 1 Off, for address ranges 2 - 4
6	Off, slots 1 - 7 on PCXT and all RT PC slots On, slot 8 on PCXT
7 and 8	Reserved





Index Number	Part Number	Description
1	8665792	IBM PC 3278/79 Emulation Adapter (short adapter). Use this adapter to replace the long adapter also.

IBM Token-Ring Network RT PC Adapter

The IBM Token-Ring Network Adapter provides the hardware to attach the system unit to the IBM Token-Ring Network. This adapter uses the I/O channel to communicate with the 32-bit processor. Two types of the IBM Token-Ring Network RT PC Adapter are in use. The early version allows the selection of two address ranges, while the later version allows for four address ranges. Use the switch settings for your version.

Specifications

Slot positions 2, 3, 4, (also slot 5 with address ranges 1, 2,

4)

I/O addresses Address range 1, 01C0 · 01CF (early version,

Primary)

Address range 2, 0140 - 014F (early version,

Alternate)

Address range 3, 11C0 - 11CF Address range 4, 11D0 - 11DF

DMA channel Address range 1, channel 5 (early version,

Primary)

Address range 2, channel 6 (early version,

Alternate)

Address range 3, channel 7 Address range 4, channel 3

Interrupt level 11, 12 (both shared)

(early version uses level 12 shared)

Maximum number 4 (early version, 2)

Removal Procedure

Use the Adapter Removal procedure in Section 4.

Replacement Procedure

Use the Adapter Replacement procedure in Section 4.

Jumper Settings (Early Version)

Set the jumpers as follows:

J1 and J2 Set after looking at the EPROM sockets.

J3 Set for Primary or Alternate adapter.

J4 Internal — the adapter address is provided by the

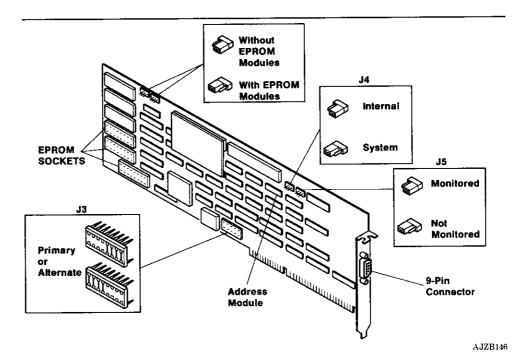
Address Module.

System — the adapter address is provided by the system.

J5 Monitored — the Processor Activity Timer is active.

Not Monitored - the Processor Activity Timer is not

active.



Jumper Settings (Later Version)

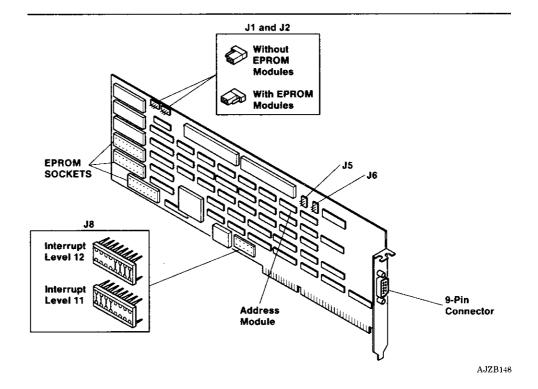
Set the jumpers as follows:

J1 and J2 Set after looking at the EPROM sockets.

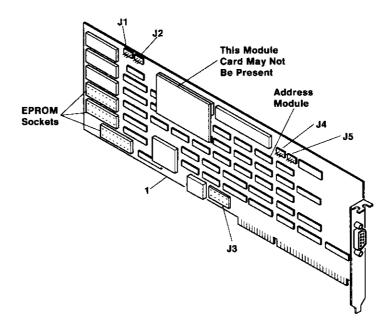
J5 and J6 Address range 1, J5 Up, J6 Up Address range 2, J5 Up, J6 Down

Address range 2, 35 Cp, 36 Down Address range 3, J5 Down, J6 Up Address range 4, J5 Down, J6 Down

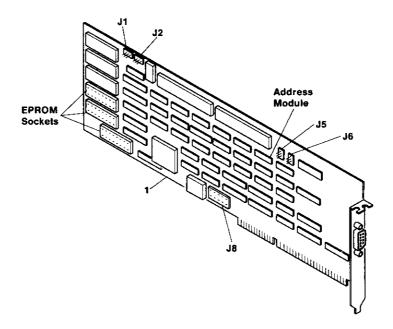
J8 Set for interrupt level 11 or 12



Parts Information (Early Version)



Parts Information (Later Version)



Index Number	Part Number	Description
1	69X8142	IBM Token-Ring Network RT PC Adapter (order to replace both early and later adapters)
	6339088	IBM Token-Ring Network RT PC Adapter Cable

RT PC Small Computer Systems Interface Adapter

Notes:

- 1. The RT PC Small Computer Systems Interface Adapter is abbreviated as RT PC SCSI Adapter in this publication.
- 2. The RT PC SCSI Adapter should not share interrupt level 11 with either of the 4-port asynchronous adapters.

The RT PC SCSI Adapter provides for the attachment of devices that use the Small Computer System Interface (SCSI) bus to the IBM RT PC System Units. The RT PC SCSI Adapter uses the I/O channel to communicate with the 32-bit processor and coprocessor.

Specifications

Slot positions 2, 3, 4 (also slot 5 except with DMA

channel 7)

I/O addresses Primary, 0D50 - 0D5F

Secondary, 0950 - 095F

DMA Channels 0,1,3,5,6,7 (program controlled)

Interrupt level 11, 12 (both shared, see notes above)

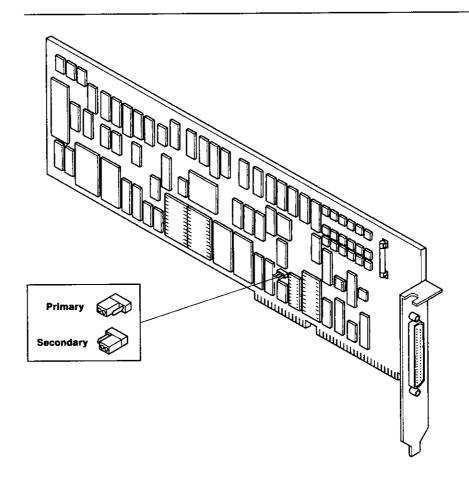
Maximum number

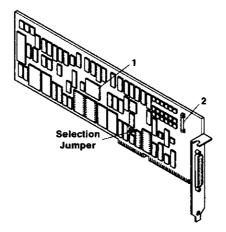
Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Jumper Settings

Set the jumper for Primary or Secondary as shown below.





Index Number	Part Number	Description
1 2	61X7001 0855253 79X3467 79X3469 79X3795	RT PC SCSI Adapter Fuse, 1.0A 250V RT PC SCSI Adapter Cable RT PC SCSI Device-to-Device Cable Terminator

IBM RT PC 8-Port Asynchronous RS-232C Adapter

The IBM RT PC 8-Port Asynchronous RS-232C Adapter contains eight asynchronous adapters. When attached to the 8-Port Asynchronous RS-232C Adapter, the 8-Port Cable Assembly - RS-232C/MIL-STD 188 provides eight 10-pin connector ports. The 8-Port Asynchronous RS-232C Adapter uses the I/O channel to communicate with the 32-bit processor.

Notes:

- 1. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.
- 2. Interrupt levels *cannot* be shared between the system unit and the RT PC 6192.
- 3. All interrupt levels are shared, but they cannot be shared with any other type of adapter.

Specifications

Slot positions I/O addresses	1 - 5 Address range 1, 7160 - 7D6F Address range 2, 8160 - 8D6F Address range 3, 9160 - 9D6F Address range 4, A160 - AD6F Address range 5, B160 - BD6F Address range 6, C160 - CD6F Address range 7, D160 - DD6F
Interment levels	Address range 8, E160 - ED6F 3, 4, 9 (see notes above)
Interrupt levels	50 - 19200 (set by program)
Bit rates	
Bits per character	5, 6, 7, 8 (set by program)
Maximum number	8

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Switch Settings

Refer to the drawing on the parts page to locate the switch banks, then use the following charts to set the switches on your adapter.

Switch Bank 2 - Interrupt Level Selection

Level	3	4	9
	Off On	Off On	Off On
Switch 1 Switch 2 Switch 3	X X	X X X	X X X

Switch Bank 1 - Address Range Selection

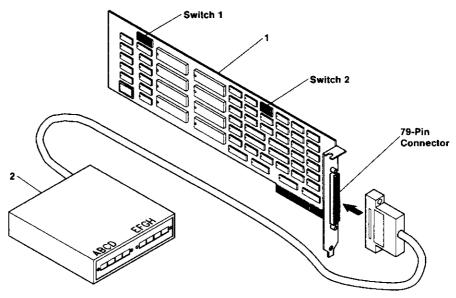
Notes:

1. Only one asynchronous adapter can use an address range.

2. Each asynchronous adapter can be set to any of the eight address ranges.

3. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.

Range	1 Off On	Off On	3 Off On	off On
Switch 1 Switch 2 Switch 3 Switch 4 Switch 5 Switch 6 Switch 7 Switch 8	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
Range	5	6	7	8
	Off On	Off On	Off On	Off On
Switch 1 Switch 2 Switch 3 Switch 4	X X X X	X X X X	X X X X	X X X X X



Index Number	Part Number	Description
1 2	08F3166 08F3168 08F3099 6298240 6298525 6298526 79X3914	8-Port Asynchronous RS-232C Adapter 8-Port Cable Assembly - RS-232C/MIL-STD 188 Velcro strip RT PC Modem Cable - RS-232C (10 Pin) RT PC Serial Printer Cable (10 Pin) RT PC ASCII Terminal Cable - RS-232C (10 Pin) RT PC ASCII Terminal Cable RS-232C (10/25M-Pin)

IBM RT PC 8-Port Asynchronous RS-422A Adapter

The IBM RT PC 8-Port Asynchronous RS-422A Adapter contains eight asynchronous adapters. When attached to the 8-Port Asynchronous RS-422A Adapter, the 8-Port Cable Assembly - RS-422A provides eight 6-pin connector ports. The 8-Port Asynchronous RS-422A Adapter uses the I/O channel to communicate with the 32-bit processor.

Notes:

- 1. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.
- 2. Interrupt levels *cannot* be shared between the system unit and the RT PC 6192.
- 3. All interrupt levels are shared, but they cannot be shared with any other type of adapter.

Specifications

Slot positions I/O addresses	1 - 5 Address range 1, 7160 - 7D6F Address range 2, 8160 - 8D6F Address range 3, 9160 - 9D6F Address range 4, A160 - AD6F Address range 5, B160 - BD6F Address range 6, C160 - CD6F Address range 7, D160 - DD6F Address range 8, E160 - ED6F
Interrupt levels	3, 4, 9 (see notes above)
Bit rates	50 - 19200 (set by program)
Bits per character	5, 6, 7, 8 (set by program)
Stop bits	1, 1 1/2, 2 (set by program)
Maximum number	8

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Switch Settings

Refer to the drawing on the parts page to locate the switch banks, then use the following charts to set the switches on your adapter.

Switch Bank 2 - Interrupt Level Selection

Level	3 Off On	4 Off On	9 Off On
Switch 1	X	X	X
Switch 2	X	X	X
Switch 3	X	X	X

Switch Bank 1 - Address Range Selection

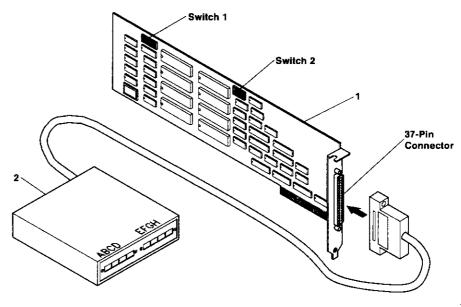
Notes:

1. Only one asynchronous adapter can use an address range.

2. Each asynchronous adapter can be set to any of the eight address ranges.

3. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.

Range	1 Off On	2 Off On	3 Off On	off On
Switch 1 Switch 2 Switch 3 Switch 4 Switch 5 Switch 6 Switch 7 Switch 8	X X X X X X X X	X X X X X X X	X X X X X X X X	X X X X X X X
Range	5 Off On	6 Off On	7 Off On	8 Off On
Switch 1 Switch 2 Switch 3 Switch 4 Switch 5 Switch 6 Switch 7 Switch 8	X X X X X X X	X X X X X X	X X X X X X X	X X X X X X X



Index Number	Part Number	Description
1 2	08F3172 08F3174 08F3099 6298246 6487640	8-Port Asynchronous RS-422A Adapter 8-Port Cable Assembly - RS-422A Velcro strip ASCII Terminal Cable - RS-422A (6 pin), 20 m ASCII Terminal Cable - RS-422A (6 pin), 3 m

IBM RT PC 8-Port Asynchronous MIL-STD 188 Adapter

The IBM RT PC 8-Port Asynchronous MIL-STD 188 Adapter contains eight asynchronous adapters. When attached to the 8-Port Asynchronous MIL-STD 188 Adapter, the 8-Port Cable Assembly - RS-232C/MIL-STD 188 provides eight 10-pin connector ports. The polarity of the mark bits on each port can be set using switch 1. The 8-Port Asynchronous MIL-STD 188 Adapter uses the I/O channel to communicate with the 32-bit processor.

Notes:

- 1. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.
- 2. Interrupt levels *cannot* be shared between the system unit and the RT PC 6192.
- 3. All interrupt levels are shared, but they cannot be shared with any other type of adapter.

Specifications

Slot positions I/O addresses	1 - 5 Address range 1, 7160 - 7D6F Address range 2, 8160 - 8D6F Address range 3, 9160 - 9D6F Address range 4, A160 - AD6F Address range 5, B160 - BD6F Address range 6, C160 - CD6F Address range 7, D160 - DD6F
Interrupt levels	Address range 8, E160 - ED6F 3, 4, 9 (see notes above)
Bit rates	50 - 19200 (set by program)
Bits per character	5, 6, 7, 8 (set by program)
Maximum number	8

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.

Switch Settings

Refer to the drawing on the parts page to locate the switch banks, then use the following charts to set the switches on your adapter.

Switch Bank 2 - Interrupt Level Selection

Level	3 Off On	4 Off On	9 Off On
Switch 1 Switch 2	X	X	X
Switch 3	X	X	X

Switch Bank 3 - Port Polarity Selection

The polarity of the mark bits can be set on each port individually. Set on or off as follows:

On Normal sense (- on mark)
Off Inverted sense (+ on mark)

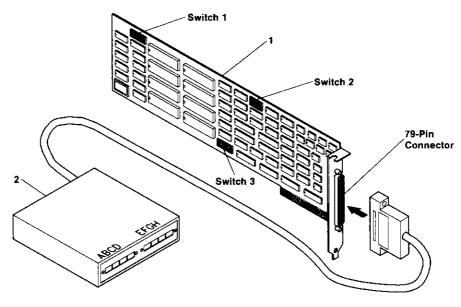
Switch Position	Port Number	Switch Position	Port Number
1	A	5	Е
2	В	6	F
3	C	7	G
4	D	8	H

Switch Bank 1 - Address Range Selection

Notes:

- 1. Only one asynchronous adapter can use an address range.
- 2. Each asynchronous adapter can be set to any of the eight address ranges.
- 3. All 8-port adapters installed in the system unit and expansion unit must use consecutive address ranges starting with address range 1.

Range	0ff On	2 Off On	3 Off On	4 Off On
Switch 1 Switch 2 Switch 3 Switch 4 Switch 5 Switch 6 Switch 7 Switch 8	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
	X	X	X	X
Range	5	6	7	8
	Off On	Off On	Off On	Off On
Switch 1 Switch 2	X	X	Х	X



Index Number	Part Number	Description
1	08F3170 08F3168 08F3099 6298240 6298525 6298526 79X3914	8-Port Asynchronous MIL-STD 188 Adapter 8-Port Cable Assembly - RS-232C/MIL-STD 188 Velcro strip RT PC Modem Cable - RS-232C (10 Pin) RT PC Serial Printer Cable (10 Pin) RT PC ASCII Terminal Cable - RS-232C (10 Pin) RT PC ASCII Terminal Cable RS-232C (10/25M-Pin)

RT PC Streaming Tape Drive Adapter

The RT PC Streaming Tape Drive Adapter attaches the IBM 6157 Streaming Tape Drive to the system unit. The Streaming Tape Drive Adapter uses the I/O channel to communicate with the 32-bit processor and coprocessor.

Specifications

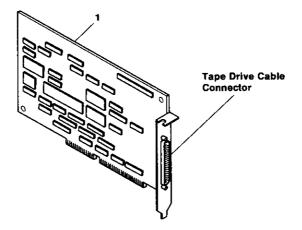
Slot positions 2 - 5 I/O addresses 01E8 - 01EF Interrupt level 12 (shared) Maximum number 1

Removal Procedure

Use the Adapter Removal Procedure in Section 4.

Replacement Procedure

Use the Adapter Replacement Procedure in Section 4.



Index Number	Part Number	Description
1	6299222	RT PC Streaming Tape Drive Adapter

IBM RT PC Expansion Unit Adapter

The RT PC Expansion Unit Adapter attaches the IBM RT PC 6192 Expansion Unit to the RT PC System Unit. The RT PC Expansion Unit Adapter uses the I/O channel to communicate with the 32-bit processor.

Specifications

Slot positions

1 - 5

Note: This adapter does not decode the upper 6 address bits, so it will answer other

addresses also.

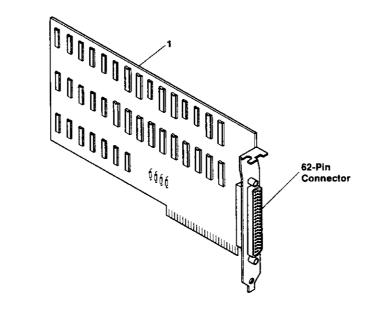
I/O addresses Memory addresses Interrupt level Maximum number 0210 - 0217

Passed on from installed adapters Passed on from installed adapters

1

Removal and Replacement Procedures

Use the Adapter Removal and Replacement procedures in Section 4.



Index Number	Part Number	Description
1	08F3727 22F9207	RT PC Expansion Unit Adapter RT PC Expansion Unit Cable, 2M

RT PC 5080 Peripheral Adapter

The RT PC 5080 Peripheral Adapter provides the hardware to connect the IBM 5085 Dials Feature and the IBM 5085 Lighted Program Function Keyboard Feature to the system unit. The RT PC 5080 Peripheral Adapter uses the I/O channel to communicate with the 32-bit processor or coprocessor.

Specifications

Slot positions 2 - 5 I/O addresses 4230 - 424F Interrupt levels 11 (shared) Maximum number 1

Removal Procedure

Use the Adapter Removal Procedure in Section 4.

Replacement Procedure

Use the Adapter Replacement Procedure in Section 4.

Switch Settings

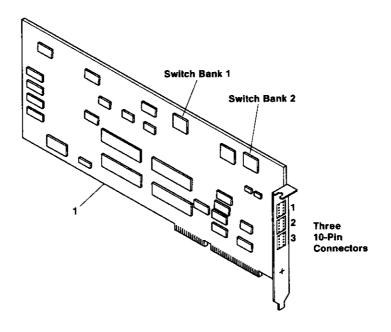
Use the drawing on the next page to locate the switch banks; then set the interrupt level and the address switches as shown.

Switch Bank 1 - Interrupt Level Selection

	11 Off On
Switch 1	X
Switch 2	X
Switch 3	X

Switch Bank 2 - Address Range Selection

	4 Off On
Switch 1 Switch 2	X X
Switch 3	X
Switch 4 Switch 5	X X
Switch 6 Switch 7	XX
Switch 8	X



Index Number	Part Number	Description
1	6487562 6487563	RT PC 5080 Peripheral Adapter RT PC 5080 Peripheral Adapter Cable

RT PC S/370 Host Interface Adapter

The RT PC S/370 Host Interface Adapter is used to connect the IBM RT PC System Unit to the IBM 5088 Graphics Controller.

The RT PC S/370 Attachment Adapter provides the hardware to allow the IBM RT PC System to transfer information to and from the IBM 5088 and then to the host system.

Specifications

Slot positions

I/O addresses Memory addresses

DMA channel Interrupt level

Bit rate

2 - 5

0E20 - 0E2F

EA0000 - EBFFFF

5 10

1M or 2M bits per second

(set by program)

Maximum number

1

Removal Procedure

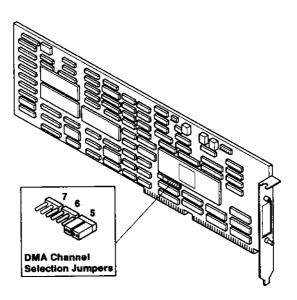
- 1. Be sure all communications on this link is stopped before proceeding. If needed, get assistance.
- 2. Use the Adapter Removal Procedure in Section 4 to remove the adapter.

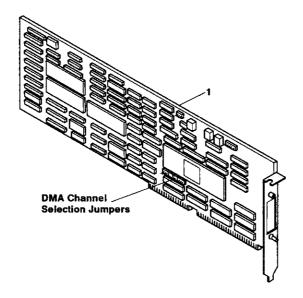
Replacement Procedure

Use the Adapter Replacement Procedure in Section 4 to install the adapter.

Jumper Settings

Set the jumpers as shown below.





Index Number	Part Number	Description
1	6247891 6247861	RT PC S/370 Host Interface Adapter RT PC 5080 Attachment Adapter Cable Kit (kit includes; two cables, a terminator, diskettes, and documentation)
	6246330	Terminator, serial interface