

IBM Personal Computer Data Acquisition and Control Adapter Installation Instructions for the:

IBM Personal Computer AT

This option consists of:

- IBM Personal Computer Data Acquisition and Control Adapter
- *Guide to Operations* Update
- Wrap Plug
- Diagnostics Diskette

If any items are missing or damaged, notify your place of purchase.

6138193

August 15, 1984

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Warning: The equipment described herein has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to the computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception. If peripherals not offered by IBM are used with the equipment, it is suggested to use shielded grounded cables with in-line filters if necessary.

INSTRUCTIONS TO USER

This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the operating instructions, reference manuals, and the service manual, may cause interference to radio or television reception. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a residential installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- Ensure that card mounting screws, attachment connector screws, and ground wires are tightly secured.
- Ensure that card slot covers are in place when no card is installed.
- If peripherals not offered by IBM are used with this equipment, it is suggested that you use shielded, grounded cables with in-line filters, if necessary.

If necessary consult your dealer service representative for additional suggestions.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

CAUTION: The product described herein is equipped with a grounded plug for the user's safety. It is to be used in conjunction with a properly grounded receptacle to avoid electrical shock.

Notes:

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Notes:

Installation Requirements

- The IBM Personal Computer Data Acquisition and Control Adapter is designed to share its IRQ level with other adapters; however, the other adapters also must be designed to share an IRQ level.
- Each IBM Personal Computer Data Acquisition and Control Adapter installed in a system must have a different adapter number.
- When installing your IBM Personal Computer Data Acquisition and Control Adapter, use the recommended switch settings if you are not familiar with the concept of Interrupt-Request (IRQ) levels. If you cannot use the recommended switch settings, refer to the *Technical Reference* manual to determine if conflicts will occur with any adapters installed in your system.

Tool Requirements

- Medium-size, flat-blade screwdriver

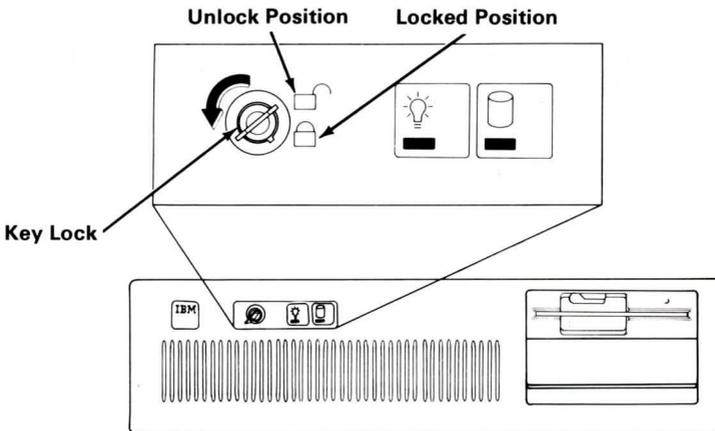
Optional:

- Medium screwstarter
- 3/16-inch nutdriver
- 1/4-inch nutdriver.

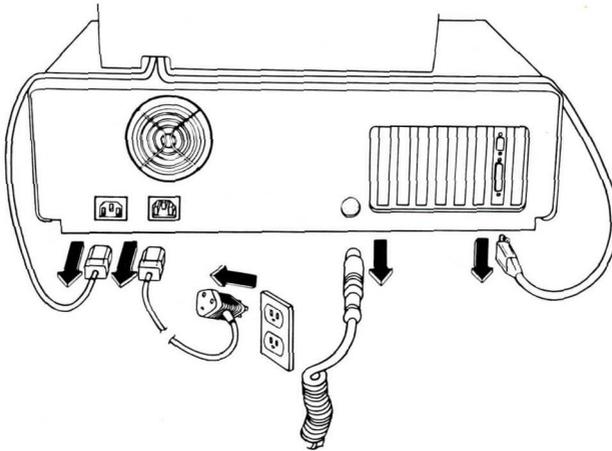
Notes:

Installation Instructions

- 1** Set your system unit's power Off.
- 2** Set the power of all attached devices (printer, display, etc.) to Off.
- 3** Be sure the key lock is unlocked (turn the key counterclockwise and remove it).

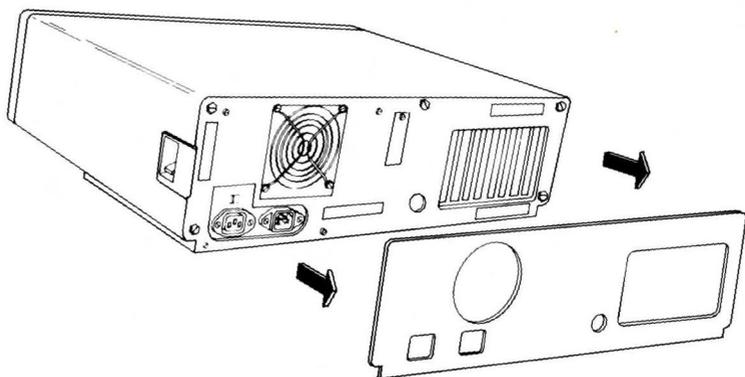


- 4** Unplug your system unit's power cord from the wall outlet.
- 5** Note the locations of all cables at the back of your system, then disconnect them.



- 6** Remove the back panel from the rear of your system unit.

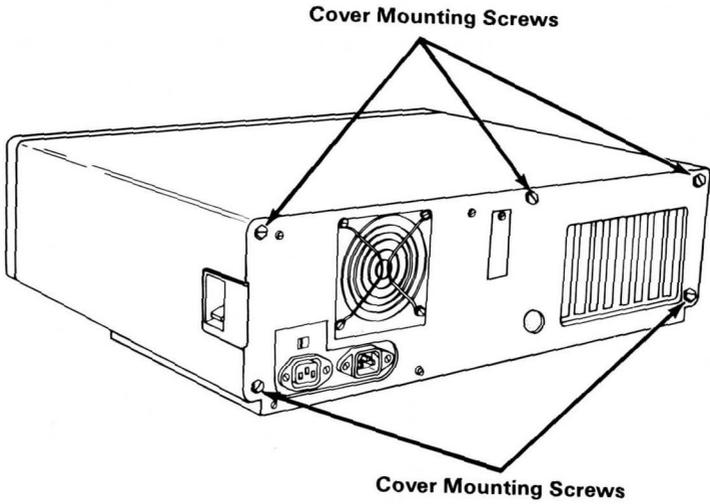
Note: The back panel is attached to the system unit with plastic fastener strips.



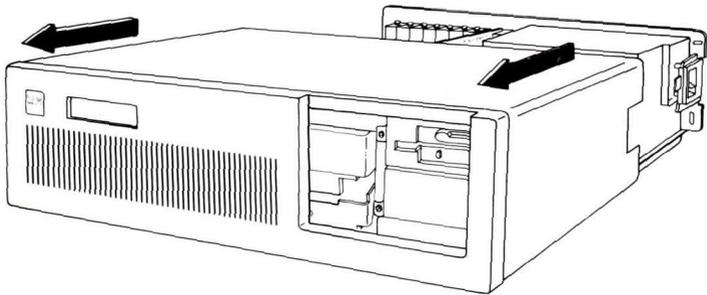
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Data Acquisition Adapter 7

- 7** Remove the five cover mounting screws.

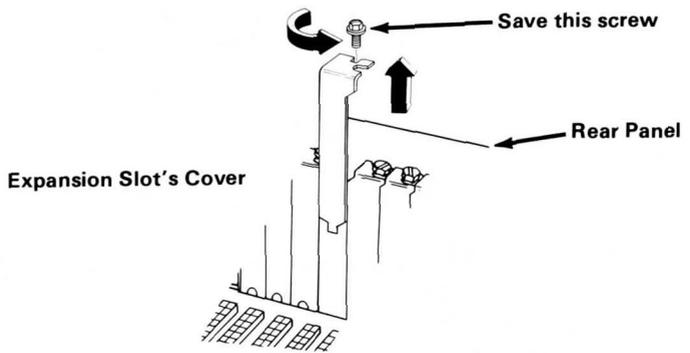


- 8** Remove the cover.



Note: The IBM Personal Computer Data Acquisition and Control Adapter can be installed in any unused expansion slot.

- 9** Use a flat-blade screwdriver or 3/16-inch nutdriver and remove the screw that holds the expansion slot's cover in place by turning the screw counterclockwise. Save the screw for the installation of the option. Remove the expansion slot's cover.



10 Your IBM Personal Computer Data Acquisition and Control Adapter has switches that allow you to change its configuration.

The IBM Personal Computer Data Acquisition and Control Adapter is preset as follows:

- Adapter number 0
- D/A channel 0 = -10 to +10 Volts
- D/A channel 1 = -10 to +10 Volts
- A/D = -10 to +10 Volts
- IRQ level 7 (recommended)

If this is the first IBM Personal Computer Data Acquisition and Control Adapter in your system, and you intend to use the preset switch settings, go to Step 12.

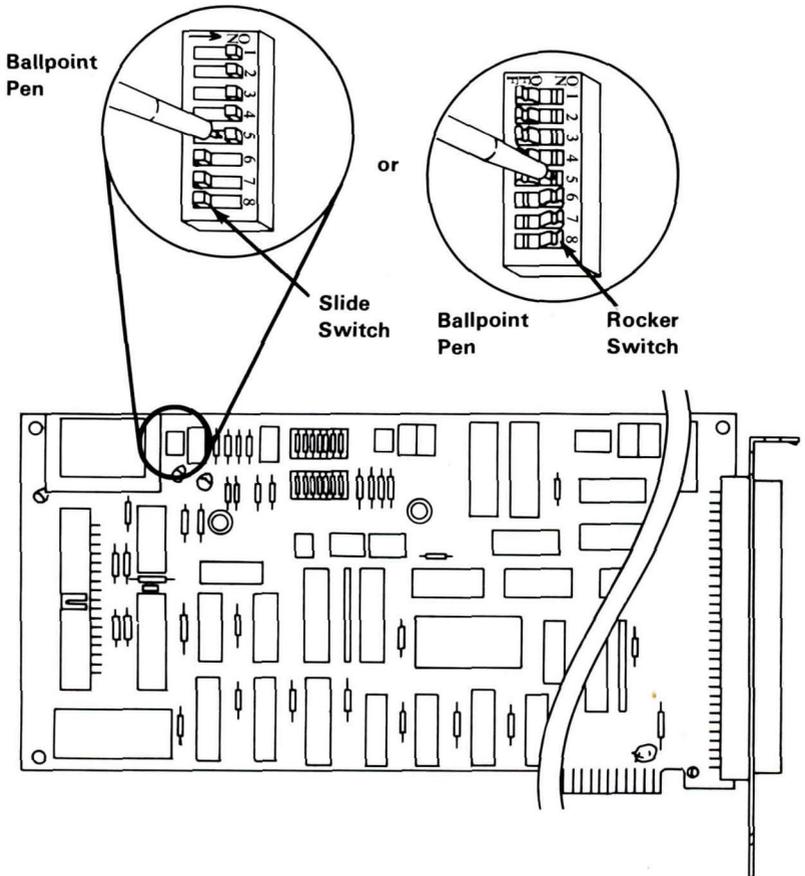
Each additional IBM Personal Computer Data Acquisition and Control Adapter must have a different adapter number.

If any switches must be changed, continue with the next step.

11 Place the Data Acquisition and Control Adapter on a flat surface with the components facing up.

To change the position of a switch, use the tip of a ball point pen and set the switch to the desired position, as shown below.

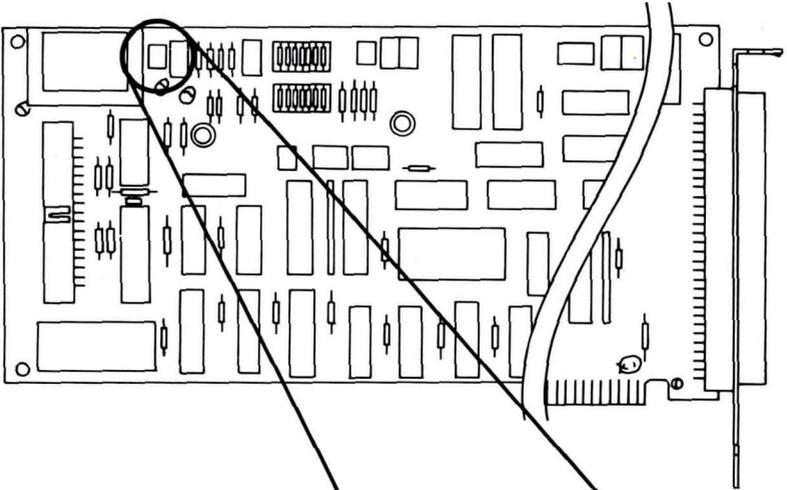
Use the information on the following pages to determine the switch positions for your selections.



Analog Output Range (D/A) Channel 0

The analog output range for channel 0 is selected with the switches shown below.

Switch Block S1



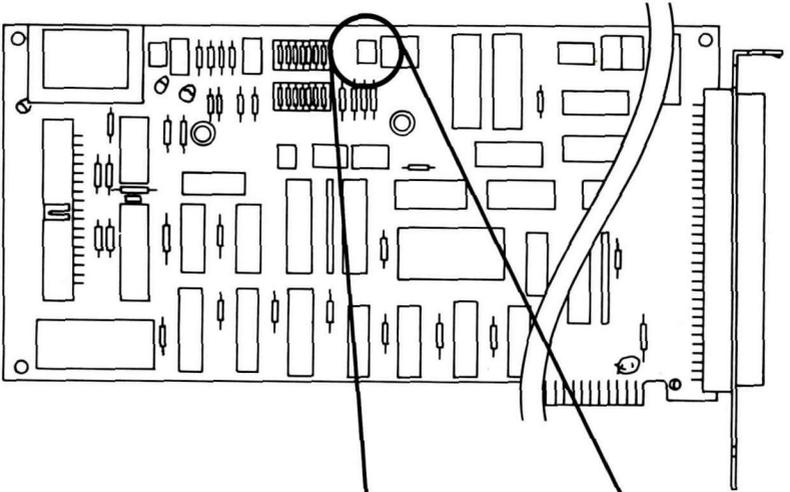
Output Range	Switch Settings
-5 to +5 Volts	
-10 to +10 Volts	
0 to +10 Volts	

Note: Only the settings shown may be used for this switch block.

Analog Output Range (D/A) Channel 1

The analog output range for channel 1 is selected with the switches shown below.

Switch Block S2



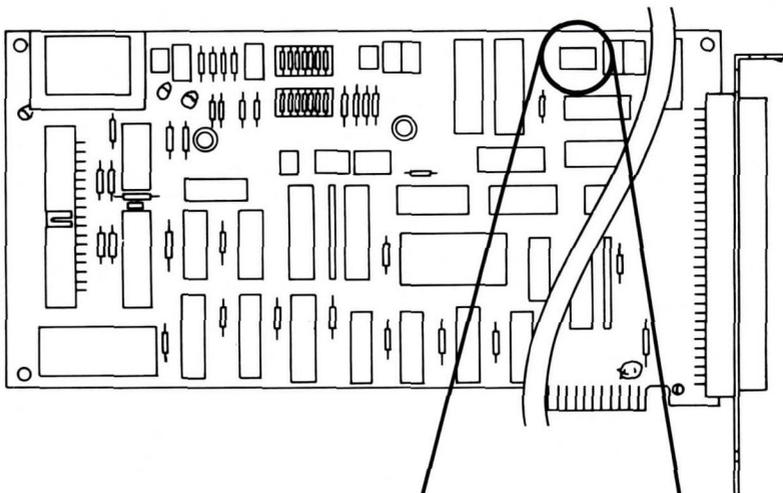
Output Range	Switch Settings
-5 to +5 Volts	
-10 to +10 Volts	
0 to +10 Volts	

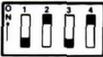
Note: Only the settings shown may be used for this switch block.

Analog Input Range (A/D)

The analog input range is selected with the switches shown below.

Switch Block S3



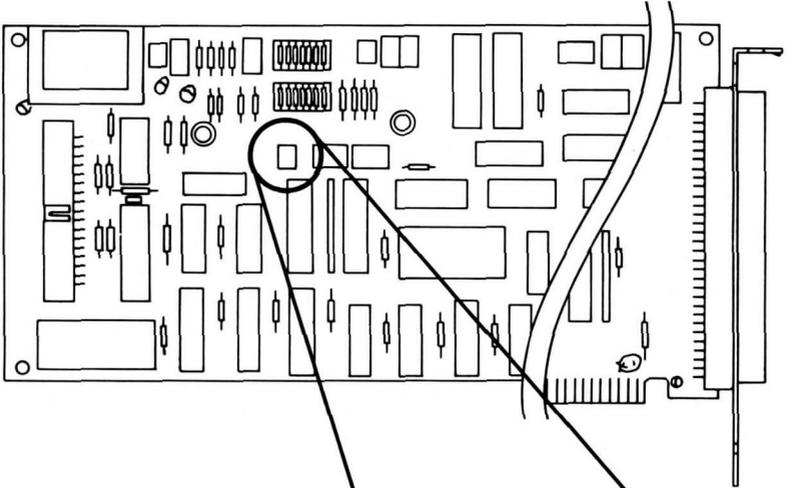
Input Range	Switch Settings
-5 to +5 Volts	
-10 to +10 Volts	
0 to +10 Volts	

Note: Only the settings shown may be used for this switch block.

Adapter Number

A maximum of four IBM Data Acquisition and Control Adapters can be installed in a system, if expansion slots are available. Each adapter must have a different adapter number. The adapter number (0 through 3) is selected with the switches shown below.

Switch Block S4

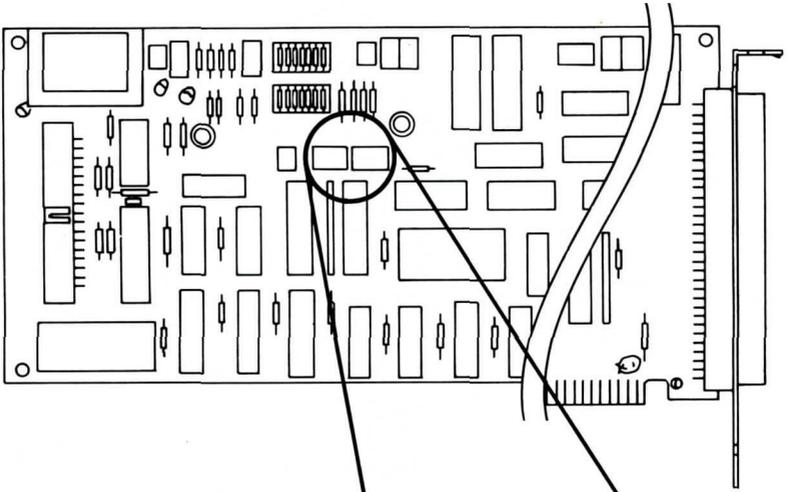


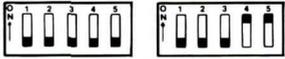
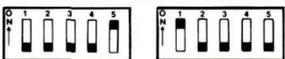
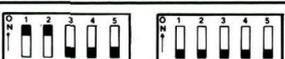
Adapter Number	Switch Positions
0	
1	
2	
3	

Interrupt-Request (IRQ) Level

The IRQ level used by the Data Acquisition and Control Adapter is selected with the switches shown below.

Switch Block S5



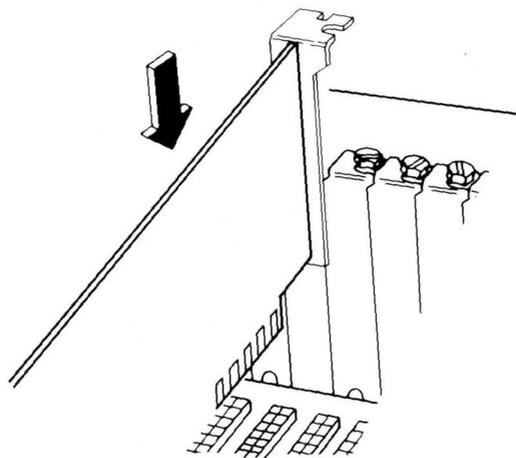
IRQ Level	Switch Settings
7 (Recommended)	
6	
5	
4	
3	

Note: Only the settings shown may be used for this switch block.

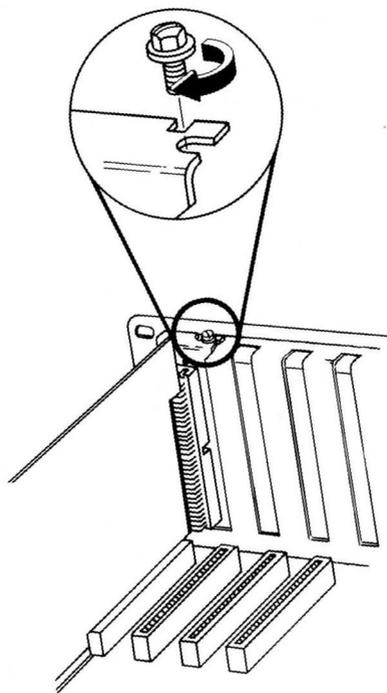
12 Go to page Test 3800-3 in Section 2, "Testing Your IBM Personal Computer AT", of your *Guide to Operations* manual. Record the IRQ level for this adapter's number in the space provided. Then return here and continue.

Note: Remember to update the information if you make changes to your installed Data Acquisition and Control Adapters.

- 13** Hold the adapter by the top and press it firmly into the expansion slot, as shown below.



14 Install the screw you removed in Step 9.



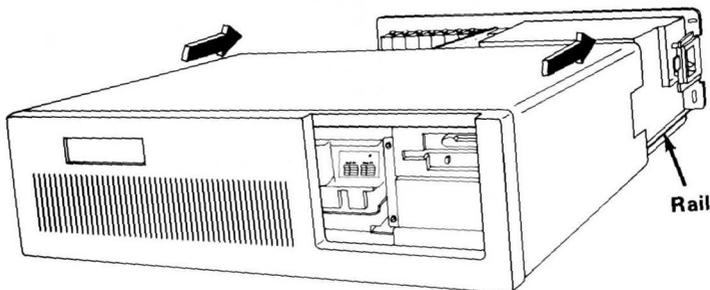
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Data Acquisition Adapter

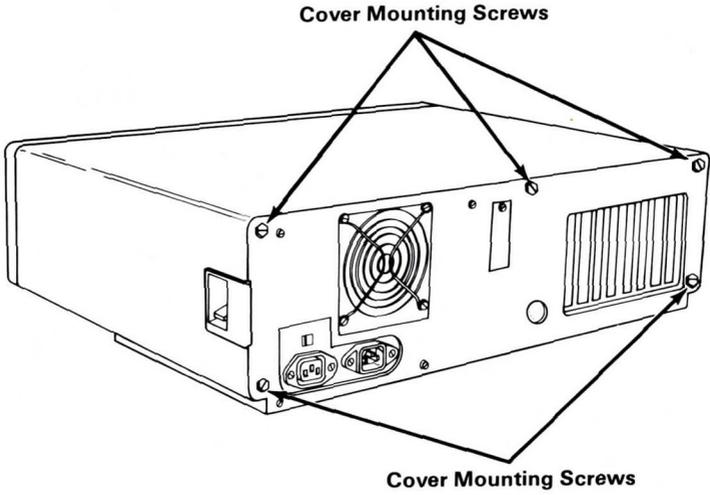
15 If you have any other internal adapters to install, install them now. If not, continue with the next step.

16 Install the system unit's cover:

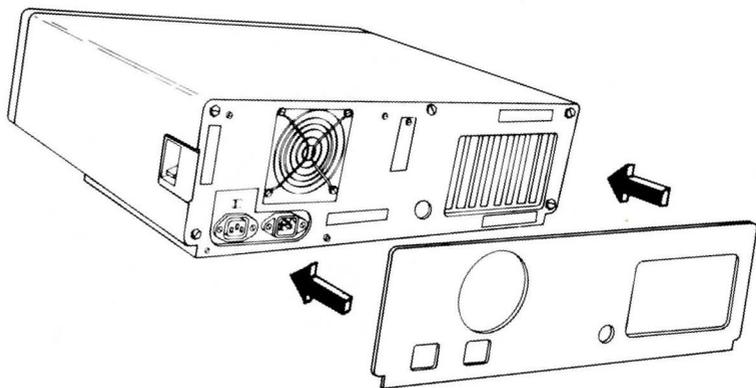
- Be sure the cover is under the rail on the frame.
- Lift the cover up against the rail and slide it onto your system unit.



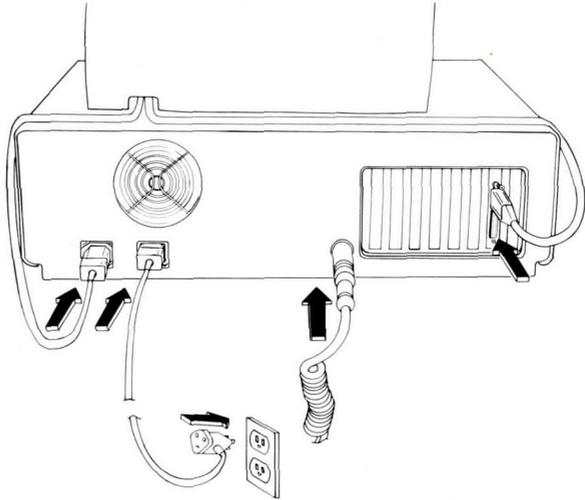
- 17** Insert the five screws and tighten them clockwise.



18 Install the back panel.



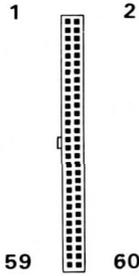
- 19** Connect the cables to your system unit.
- 20** Plug the power cable into the wall outlet.



This completes the installation of your IBM Personal Computer Data Acquisition and Control Adapter. If you have any problem after installation, one of the following is the most likely cause:

- Cabling is incorrect.
- Switches are set incorrectly.
- Other adapters or options may have been loosened.
- The Data Acquisition and Control Adapter is defective.

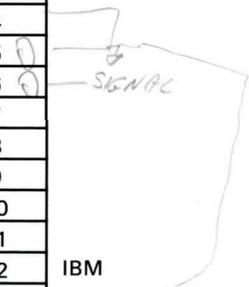
Connector Information



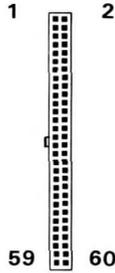
Signal Name	Pin
D/A 1	1
D/A 0	2
+10V REF	3
A GND	4
A/D 0-	5
A/D 0	6
A/D 1-	7
A/D 1	8
A/D 2-	9
A/D 2	10
A/D 3-	11
A/D 3	12
A GND	13
A/D CE	14
D GND	15
A/D CO	16
BI 8	17
BO 8	18
BI 9	19
BO 9	20
BI 10	21
BO 10	22
BI 11	23
BO 11	24
BI 12	25
BO 12	26
BI 13	27
BO 13	28
BI 14	29
BO 14	30

IBM
Distribution Panel
Connector

IBM
Data Acquisition
Adapter



Connector Information



	Signal Name	Pin	
	BI 15	31	
	BO 15	32	
	BI HOLD	33	
	BO GATE	34	
	BI 0	35	
	BO 0	36	
	BI 1	37	
	BO 1	38	
	BI 2	39	
	BO 2	40	
	BI 3	41	
	BO 3	42	
IBM Distribution Panel Connector	BI 4	43	IBM Data Acquisition Adapter
	BO 4	44	
	BI 5	45	
	BO 5	46	
	BI 6	47	
	BO 6	48	
	BI 7	49	
	BO 7	50	
	RATE OUT	51	
	DELAY OUT	52	
	BI STROBE	53	
	BO STROBE	54	
BO CTS	55		
BI CTS	56		
$\overline{\text{IRQ}}$	57		
COUNT OUT	58		
COUNT IN	59		
D GND	60		

Notes:

Notes: