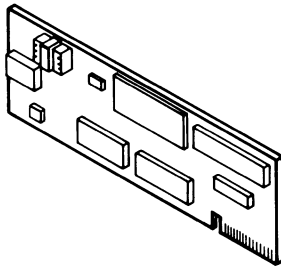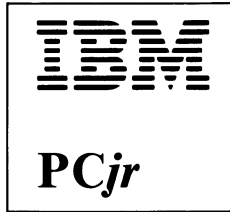# IBM PC*jr* Internal Modem Installation and Operating Instructions

If your IBM PC*jr* has not been set up at this time, do so before installing this option.

If you have a diskette drive option to install, do so before installing this option.

This carton contains the following:

- IBM PC*jr* Internal Modem

- Modem Cable

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

General

Contents

General

Installation Requirements

Your IBM PC*jr* must be set up before you can install this option.

Tools Required

- Medium-size, flat-blade screwdriver

Installation Instructions

1 Your IBM PC*jr* Internal Modem is registered with the Federal Communications Commission. The FCC states:

- It is against the law to connect your modem to a party line or pay telephone.

- If your IBM Modem needs repairs, the repairs must be made by an IBM authorized dealer.

2 Before you install your modem you must contact your local telephone company. You will need to tell the telephone company:

- The telephone number that the modem is connected to.

- The FCC registration number, which is AU492X-11149-DM-E.

- The ringer equivalence, which is 0.8B

- The Phone Line Interface, which is

  - Direct-Connect Modular plug mates with standard telephone jacks (USOC-RJ11C, and RJ11W).

General

3 Turn your IBM PC*jr* power off.

4 Turn all external option power to off (printer, TV, cassette, etc.).

5 Unplug the power cords for the IBM PC*jr* and all options from the wall outlets.

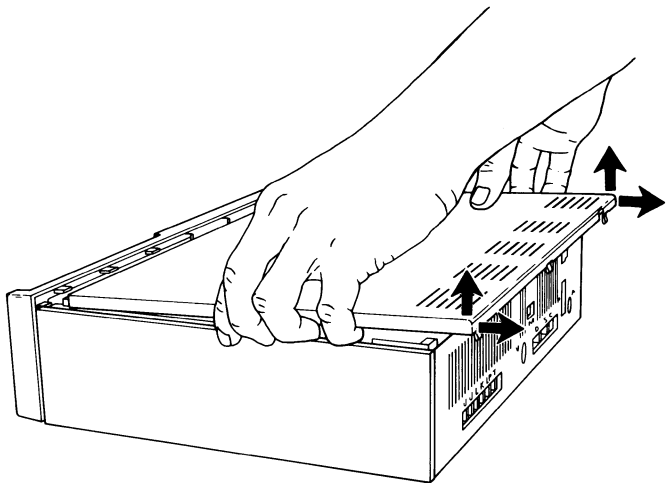**6** Turn your IBM PC*jr* so the rear is toward you.

CAUTION
Serious shock hazards exist within the covers of the IBM PC*jr*. Do not open these covers unless you have unplugged your IBM PC*jr* power cord from the wall outlet.

Off Position
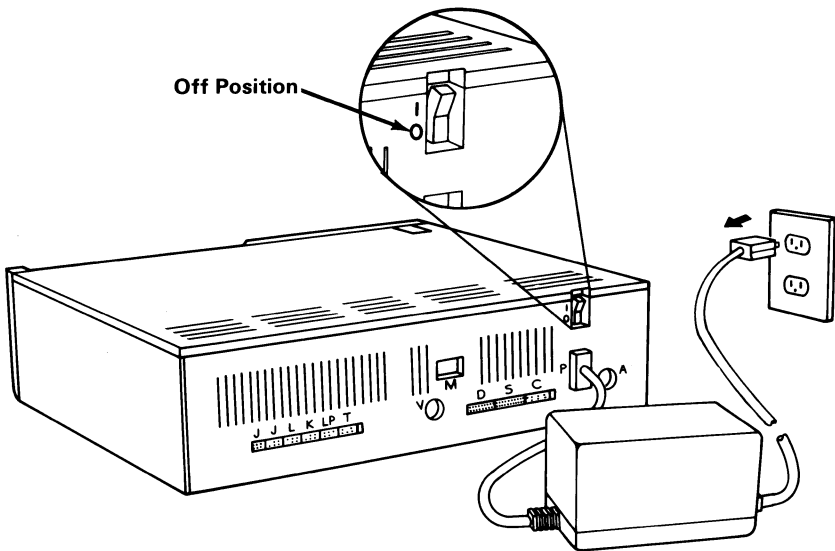
Warning: After turning your IBM PC*jr* power to off, allow 5 minutes for cooling to take place before removing the cover.

7 Place a flat-blade screwdriver into the slots and twist.

8 Remove the top cover by lifting it up and away from the front of the IBM PC*jr*.

Slots
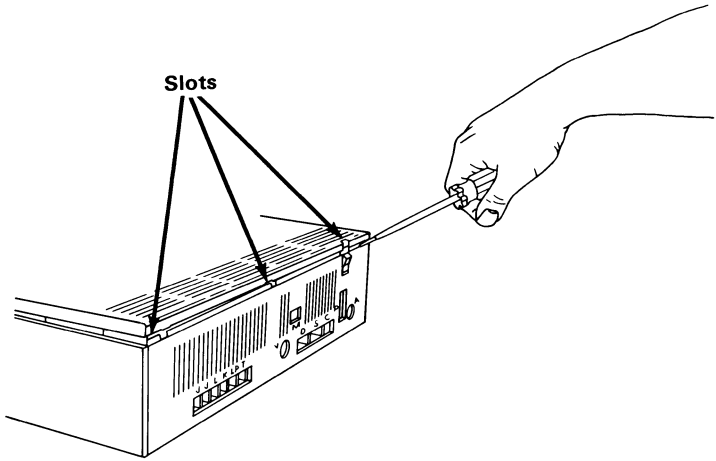
9 Turn your IBM PC*jr* so the front is toward you.

10 Position the IBM PC*jr* Internal Modem so that its system connector and the two pin connector are directly above its system slot and two pin plug. Press it firmly in place, be sure that the rear of the card goes into the rear guide.
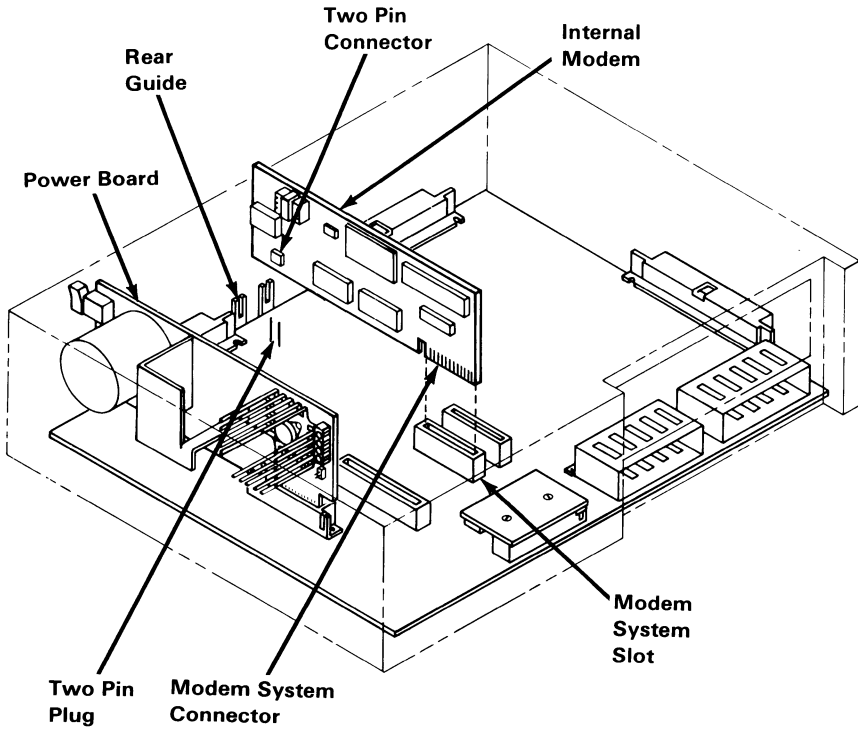
11 Replace the top covery by placing it on the IBM PC*jr*. Slide it forward until the top cover and front of the IBM PC*jr* fit together. Press down on the rear of the top cover until it snaps into place.
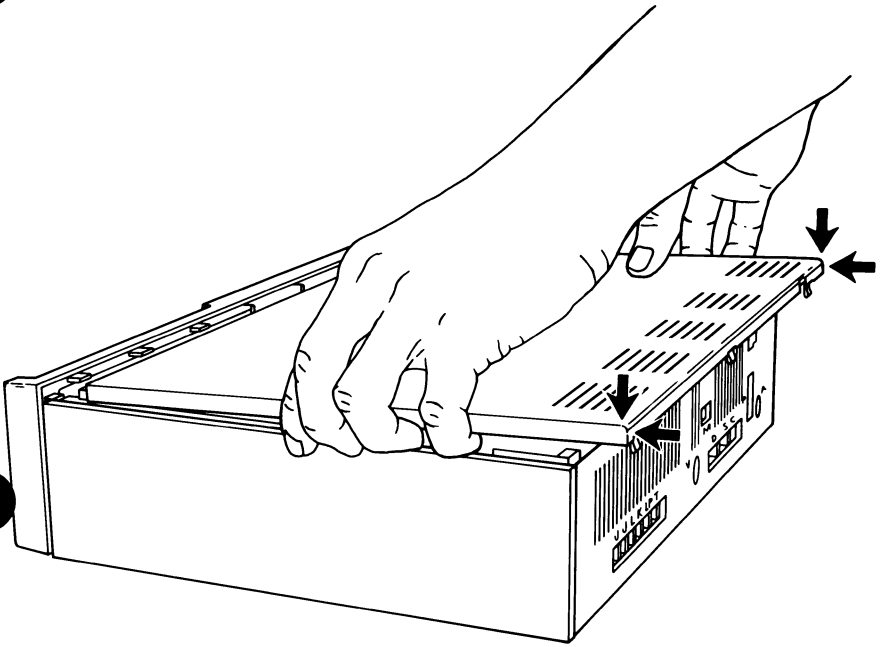
12 Plug one end of the IBM PC*jr* Internal Modem cable into the connector marked with a "M". The other end of this cable attaches to a standard telephone outlet.

Modem Cable
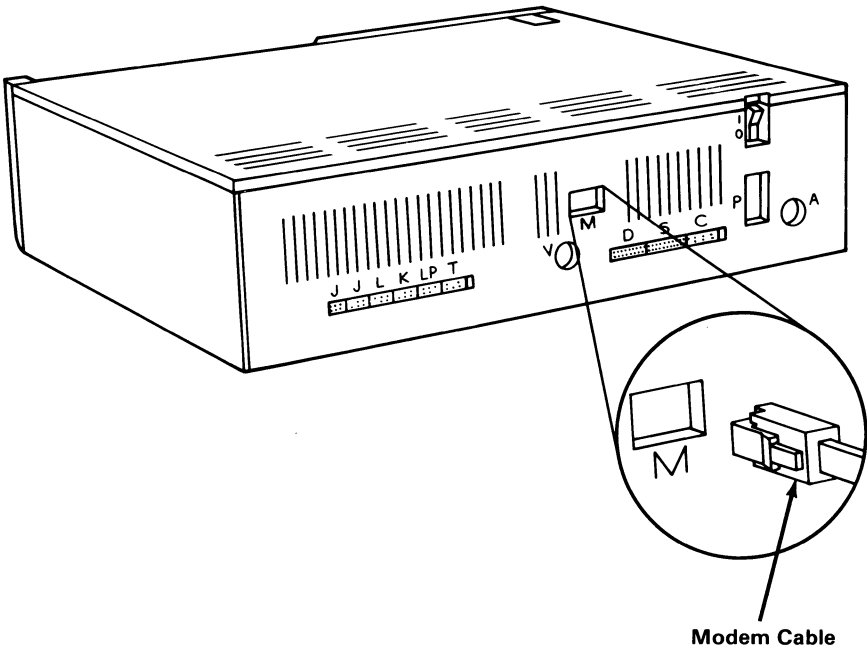
13 Plug the IBM PC*jr* and all option power cords into wall outlets.

Important:

Insert these option instructions into Section 5 of the *Guide to Operations* manual.

14 If you have any other options to install, install them at this time.

If you do not have any other options to install, continue normal operation.

Modem Commands for the IBM PC*jr* Internal Modem are described on the following pages.

General

Modem Commands

Note: Knowledge of BASIC programming and computer communications over telephone lines is necessary to understand and use the modem commands. For more information on the modem commands see the IBM PC*jr* Technical Reference Manual.

Command Format

All commands sent to the modem must be in the following format.

[Ctrl-N] command [space] argument [Enter]

Ctrl-N is the control key plus the command character "N".

command is the actual modem command. Any of the commands listed later may be used.

space is required between the command and the argument.

argument is a variable that modifies a command. It can be any of the valid characters defined in item 3.

Pressing *Enter* causes the modem to perform the command.

Commands

In the command descriptions that follow, these conventions are observed:

1. The commands are expressed in capital letters; however, the modem recognizes only the first letter of the command.

2. All command lines must begin with a command character. The default command character is "N".

3. You must supply any arguments that are shown in lowercase letters. Except as noted in specific commands, valid characters for arguments are defined as:

   a. m: ASCII decimal digits 0-9, *, #, I, P, and W.

   b. n: ASCII hexadecimal digits 0 through F.

   c. o: ASCII decimal digits 0 through 9.

   d. p: Any ASCII character.

   All arguments are examined for validity. If extra characters appear in an argument, the extra characters will be ignored. If the argument, is invalid a question mark is returned.

4. An ellipse (...) indicates an item may be repeated.

5. The following notes should be considered when preparing commands:

   a. A modem command can occur anywhere in the data stream as long as it is formatted correctly.

b. ENTER indicates the end of the command string
and the command should be sent.

c. The command string, including ENTER, is not
sent over the telephone line.

d. Multiple commands can be given on the same
line as long as they are separated by commas.

Command Format

The modem commands used with the IBM PC*jr* are as
follows:

Format   ANSWER or A

Purpose   Forces modem to go off-hook and into the
Answer mode.

Format   BREAK n or B n

Purpose   To send a space or break character for a
multiple of n times 100 milliseconds.

Format   COUNT n or C n

Purpose   Modem will answer an incoming call after
n rings. When dialing, the modem will end
the call after n plus 3 ringback tones.

Format   DIAL m...m or D m...m

Can be a string up to 33 digits and
characters.

P   10 second delay to search for the dial
tone. (default for first character in
string.)

W   5 second wait before continuing to dial. (required to dial an access code for an outside line.)

I   After a P or W causes the next digits to be rotary-dialed (use of pulses) otherwise the digits are tone dialed (use of tones).

Purpose   Causes the modem to dial.

Format   FORMAT n or F n

where "N" is one of the following:

N	Parity	Data Length (Bits)	Stop Bit
0	Mark	7	1
1	Space	7	1
2	Odd	7	1
3	Even	7	1
4	None	8	1
5-7	Reserved		

Default is Even

Note: If programming in BASIC this command must be used in addition to specifying the same parity and data length in the OPEN statement.

Purpose   Changes parity and data length.

Format   HANGUP or H

Purpose   Forces modem on-hook (deactivated).

Format   INITIALIZE or I

General

Purpose	Places the modem in the power-up default state. This command takes 10 seconds to execute and is the same as a cold start (power-up). An OK is not returned after execution, and the integrity-test code of the QUERY command is set.
Format	LONG RESPONSE o or L o

where O is one of the following:

O	Response
0	Verbose or long
1	Terse or short (hexadecimal:

Default is 0

Purpose	Modifies message feedback. Information is posted in the status area.
Format	MODEM or M
Purpose	Forces the modem into the data state where the carrier is placed on the line.
Format	NEW p or N p
Purpose	Changes the command character to p.
Format	ORIGINATE or O
Purpose	Forces the modem to off-hook and to the Originate mode.
Format	PICKUP or P
Purpose	Forces the modem off-hook and in voice state.

Format   QUERY or Q

Purpose   Request status information from the
modem.

Possible characters returned are:

Characters	Description
H0 or H1	Hook status: H0 is on-hook, H1 is off-hook
S0 to SF	Current setting of COUNT command (in hexadecimal).
B	Line busy
D	Line dead: no dial tone found, or no-ring or no-busy timeout after dialing.
L	Successful dial and connection.
N	Dial not recorded: dial tone present after dialing
T0	Integrity test passed
T1	Integrity test failed
	The first group of characters is always returned for a QUERY command. The second group is returned only after a dialing sequence has started or a change has

General

occurred in the dialing
status. The third group of
characters are returned
when an INITIALIZE
command has occurred.

Format   RETRY or R

Purpose   When placed after a DIAL command,
causes the modem to redial up to 10 times
at a rate of one every 40 seconds, if busy is
detected.

Format   SPEED o or S o

where SPEED is one of the following:

"0"	Speed in bps
0	110
1	300
2	Other (Reserved)

Default is 1

Note: If programming in BASIC, this
command must be used in addition to
specifying the same BPS rate in the
OPEN statement.

Purpose   To set the bps (bits per second) rate.

Format   TRANSPARENT n...n or T n...n

Purpose   Places the modem in the transparent mode.
The modem does not look for command
sequences, but instead sends every
character it receives.

Format   VOICE or V

Purpose	Forces the modem to the voice state. No tones or carriers are placed or looked for on the telephone line.
Format	WAIT or W
Purpose	Puts the modem in the WAIT state. No actions, including automatic answering, are taken by the modem until the next command is received from the host.
Format	XMIT m...m or X m...m
Purpose	Instructs the modem to send the Dual Tone Modulated Frequency (DTMF) tone pairs found in the argument string. This is valid only in the voice state.

General

Format ZTEST o .or Z o

where "o" is one of the following:

"o"	Test
0	Hardware Integrity Test
1	Analog Loopback Test

Purpose Places the modem in the test mode
specified by the argument.

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