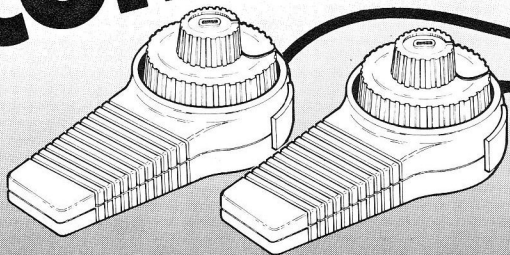




hand controllers

FOR APPLE II®



OPERATIONS AND
REFERENCE MANUAL

MODEL NO. K680-0003

THE APPLE HAND CONTROLLERS

Here are your new Apple II* Hand Controllers! Be sure to read the instructions on **INSTALLING THE HAND CONTROLLERS**. After installation you will be able to immediately play many available games; however, it is not difficult to write commands which instruct the Hand Controllers for particular applications. If you want to create programs involving the Hand Controllers, be sure to read the instructions on **PROGRAMMING THE HAND CONTROLLERS**.

ABOUT YOUR HAND CONTROLLERS

The Hand Controllers are precision input devices which allow you to send continuous information to the Apple II.

Each Hand Controller contains a potentiometer. An analog-to-digital converter reads the voltage on the potentiometers and gives the Apple numerical values representing the readings. The output is scaled so that numerical readings will range between 0 and 255.

Also mounted in each Hand Controller is a push button switch. In normal game operation, the software will interpret this switch to command some function in the game.

*APPLE II is the registered trademark of APPLE COMPUTER INC.

PROGRAMMING THE HAND CONTROLLER

For the programmer, a sample test APPLESOFT BASIC program is listed below.

```
10 HOME
20 VTAB 6: PRINT "PDL(0)": VTAB 6: HTAB 10
30 PRINT "PDL(1)"
40 VTAB 8: PRINT "    "
50 IF PEEK ( - 16287) > 127 THEN INVERSE
60 VTAB 8: PRINT PDL (0)
70 NORMAL
80 VTAB 8: HTAB 10: PRINT "    "
90 IF PEEK ( - 16286) > 127 THEN INVERSE
100 VTAB 8: HTAB 10: PRINT PDL (1)
110 NORMAL
120 GOTO 40
```

PDL (0) and PDL (1) will read and display a number corresponding to the current position of the potentiometer of Hand Controller 0 and 1. PEEK (-16287) and PEEK (-16286) will read a random number greater than 127 if the push button switch is pressed on Hand Controller 0 and 1 respectively. If this occurs, the displayed potentiometer reading for the respective Hand Controller will be inverted.

RADIO AND TELEVISION INTERFERENCE

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference to radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J or Part 15 of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation.

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer. If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interference stops.
- Move the computer to one side or the other of the TV or radio.
- Move the computer farther away from the TV or radio.
- Plug the computer into an outlet that is on a different circuit from the TV or radio. (That is, make certain the computer and the TV or radio are on circuits controlled by different circuit breakers or fuses.)

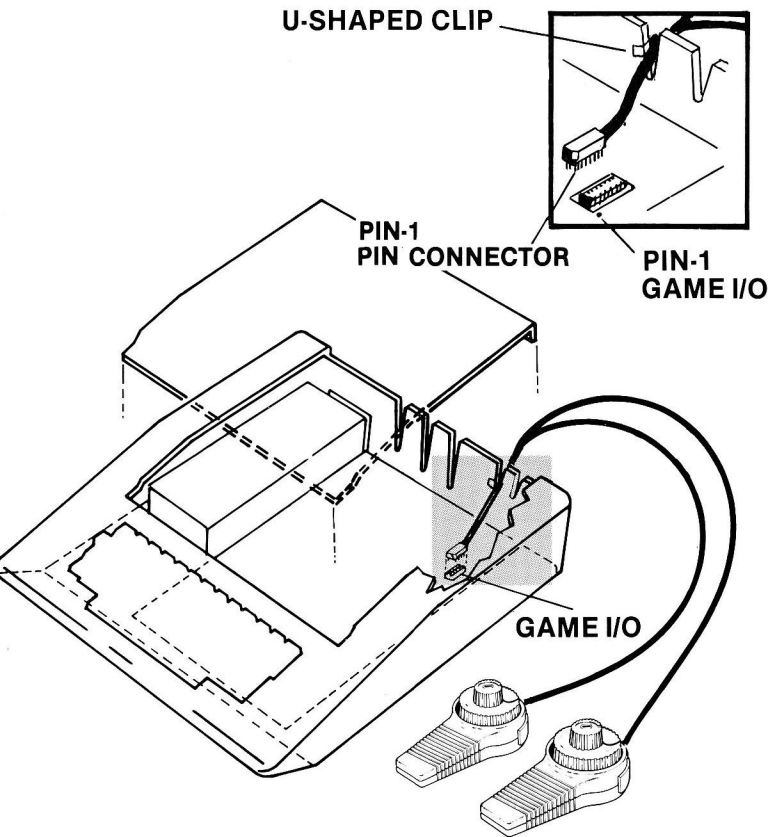
If necessary, you should consult you dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet prepared by the Federal Communications Commission helpful:

“How to Identify and Resolve Radio-TV Interference Problems”

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock number 004-000-00345-4.

INSTALLING THE HAND CONTROLLERS (SEE ILLUSTRATION)

1. Remove the styrofoam protector from the PIN CONNECTOR at the end of the cables.
2. Look into the top of the Apple and locate the socket marked GAME I/O.
3. Thread the cable through the second notch from the right (as you face the computer front).
4. Slide the little u-shaped clamp on the cable down the edge of the notch to secure the cable to the Apple case.
5. Plug the PIN CONNECTOR into the socket inside the Apple. Be very careful that the pins line up (you can damage the controllers and possibly the computer if they don't) and be sure the PIN CONNECTOR is installed correctly. The notched corner of the PIN CONNECTOR is PIN 1 and must match up to PIN 1 on the GAME I/O socket. PIN 1 is marked on the logic board by a small white dot. Also the cable should extend straight out from the socket and exit the rear of the Apple case.



NINETY-DAY WARRANTY

The Keyboard Company (hereinafter referred to as "TKC") warrants the products it manufactures against defects in material and workmanship for a period of ninety days from the date of purchase. Products manufactured by TKC can be identified by the "TKC" trademarks, trade name, or logo affixed to them.

During the warranty period, TKC will repair (or at its option replace) at no-charge, components that prove to be defective, provided the TKC product is returned, shipping prepaid, to The Keyboard Company.

You may request information on how to obtain service by contacting the TKC dealer from whom the product was purchased, or by contacting the factory directly at the address printed below. Your sales receipt is your warranty validation. Dated proof of purchase (such as bill of sale or cancelled check) must be provided when requesting work to be performed.

This warranty does not apply if, in the opinion of TKC, the product has been damaged by accident, misuse, misapplication, or as a result of service or modification by other than The Keyboard Co.

"NO OTHER WARRANTIES ARE EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. TKC IS NOT RESPONSIBLE FOR CONSEQUENTIAL DAMAGES."

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.



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