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Apple II and II Plus: Shift-Key Modification

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Probably all Apple II owners have heard of a mysterious "Shift-Key Mod". To
many it has remained nothing more than a rumor, possibly because most
modifications are thought to be costly additions. Not so the "Shift-Key Mod",
the most simple and least expensive addition anyone could do for their Apple
II. Of software recognizing this modification, there is a wide variety:
Apple Writer, most other word processing software packages, and the firmware
of most 80-column cards.

Software must recognize this alphabetic modification; the Apple alone does not
do it automatically. After modification, the shift key allows you to enter
uppercase characters as you do on a typewriter, without the need to precede
them with a press of the Escape key or some other control character. You can
still use the shift key to type the regular "shift" non-alphabetic characters,
such as !,@,#,$,%,^,&,*,(,), and so on.

With the "Shift-Key Mod", you use the shift key to signal the software from an
unused part of the Apple II Game port. The Port can address four separate
hand controls and three hand-control pushbuttons of which only two of each are
used by the standard game paddles and joysticks. This leaves unused two hand
control inputs and a hand-control pushbutton input. The "Shift-Key Mod"
exploits the address of this remaining pushbutton input. In practice,
software supporting the modification first reads the character value at the
address of the keyboard. Then, since joysticks use pushbuttons #0 and #1, the
software reads the state of the address of pushbutton #2 (PB2). If the PB2
address is operated then the software simply makes the keyboard value
represent uppercase.

To keep things in perspective, please note that this does not modify the Apple
II to display lowercase nor enter lowercase characters into your programs when
the II is in its native 40-column mode. To read the shift key's new address,
the Apple II must have special software; without it, the II stays in 40-column
mode. Most 80-column cards have firmware to read the address and display
lowercase when in 80-column mode. When coding, you can easily enter lowercase

characters into your own program's output strings with 80-column cards supporting the modification. However, when the program runs in 40-column mode, lowercase characters will appear as "garbage" characters. Adding the reasonably-priced "Lowercase Character Generator" on the motherboard allows proper display of lowercase characters in 40-column mode. Apple Writer also supports lowercase character generators.

Now to make the modification. Connect two micro test clips together with 8 inches of 28 AWG wire and solder the connections. Use micro test clips to match the size of Radio Shack #270-370 clips. 28 AWG wire-wrap will do. Clip size is most important; wire size and brands are less important. Once the jumper cools, install it this way:

1. Clip one end to pin 1 of the IC located at motherboard location H14, a
    74LS251.

2. Clip the other end to pin 24 of the molex connector that connects the
    keyboard electronics to the keyboard. Pin 25 of this connecter is at the
    end away from the Apple's power supply. Pin 24 is to the left of pin 25.

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