



# Tech Info Library

## Apple II Hardware: The Apple II Keyboard

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Security: Everyone

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The keyboard on the Apple II has an upper-case-only encoder. It can produce ASCII characters 0 through 95, excluding `_`, `\`, `[`, `CTRL-_`, `CTRL-[`, and `CTRL-\`. The Apple III uses the very same encoder. However, the Apple III also has a second keyboard port; with this port, the Apple III can independently sense the shift, control, and alpha lock keys, as well as a number of other functions.

You can modify an existing Apple II to allow it to sense whether or not the shift keys are depressed. This modification is supported by system software such as Pascal 1.1 and Pilot, as well as some word processing software. The core of the modification is a wire running from the shift keys to button input 2 of the game I/O port which button input the paddles don't use. This modification is not recommended for in-warranty Apples and should be only performed by an authorized service technician.

Since the modified Apple can sense whether or not the shift key is being pressed, it can distinguish 51 new characters: `CTRL-SHIFT-A` thru `Z` excluding `M`, `N`, and `P`, `SHIFT-A` thru `Z` excluding `M`, `N`, and `P`, `SHIFT-0`, `SHIFT-RETURN`, `SHIFT-ESC`, `SHIFT-LEFT ARROW`, and `SHIFT-RIGHT ARROW`. This raises the total number of distinguishable characters to 141, which easily encompasses the 128 member ASCII character set.

To facilitate the most natural use of the keyboard, software sometimes rearranges the interpretation of these characters so that the keyboard resembles that of a typewriter. Apple has employed several types of keyboards on the Apple II since its introduction, so the modification has two appearances.

1. On the older style keyboard, a wire should be run between pin 2 of the 74LS00 and pin 4 of the keyboard connector on the keyboard.
2. On the newer style keyboard with the "piggy-back" electronic assembly, the wire should be run between pin 9 of the 74LS00 closest to the keyboard connector and pin 4 of the keyboard connector.

In either case, a second wire should connect the bottom of pin 4 at location

A7 to pin 7 at location J14 on the motherboard. Check carefully that the wire isn't connected to pin 7 of H14. The keyboard cable acts as a connection between these two wires.

Apple Tech Notes

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