

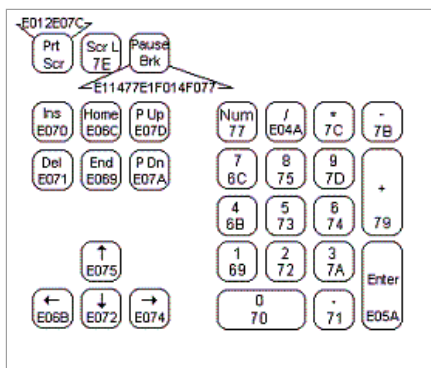


PS/2 Keyboard Interface

Post

This section will take a look at the data that will actually be output from the PS/2 keyboard so that we know what to expect. You would think a keyboard is a simple device, one key press = one data output, but there's actually a lot more to these things.

ESC 76	F1 05	F2 06	F3 04	F4 0C	F5 03	F6 0B	F7 83	F8 0A	F9 01	F10 09	F11 78	F12 07	
~ 0E	1! 1B	2@ 1E	3# 2B	4\$ 25	5% 2E	6^ 3B	7& 3D	8* 3E	9(4B	0) 45	-= 4E	\ 5D	← 6B
TAB 0D	Q 15	W 1D	E 24	R 2D	T 2C	Y 35	U 3C	I 43	O 44	P 4D	[54] 5B	
Caps 58	A 1C	S 1B	D 23	F 2B	G 34	H 33	J 3B	K 42	L 4B	; 4C	" 52	↵ 5A	
Shift 12	Z 1A	X 22	C 21	V 2A	B 32	N 31	M 3A	<, 41	>. 49	?/ 4A	Shift 59		
Ctrl 14	Alt 11	SPACE 29								Alt E0 11		Ctrl E0 14	



Since computers have no clue what A, B or C are we have to encode each key into a binary number. These encoded numbers are called scan codes, and if you take a look at the two pictures above you can see that all keys on a keyboard have a scan code, and some special keys even have a dual or longer scan code. However, the main letters and numbers are all 8 bit codes.

The diagram illustrates the sequence of keypress events for the 'J' key. It consists of three parts:

- Key Icon:** A key icon with 'J' and '3B'.
- 'J' Key - Scan Code 0x3B**
- Keypress Down** **Keyboard Outputs: 0x3B**
- Keypress Up** **Keyboard Outputs: 0xF0 0x3B**

For a simple example of how the keyboard communicates. If the keyboard is powered through the PS/2 port, anytime a keypress is detected it will output the scancode of that key. When the key is released, it sends an 0xF0 and then the key's scan code. Even further, if the key is held down a separate set of data is sent, but for now we won't worry

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about that.

Sending Data To The Keyboard

Another function of the PS/2 protocol is that you can send data back to the keyboard to tell it to do things like turn on the capslock led, or to reset. This process uses virtually the same method to send data as we saw above for receiving data, but for simplicity sake, we will focus exclusively on receiving data from a keyboard and reserve sending data to the keyboard for a future article.

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