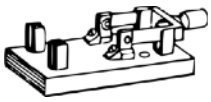
Binary Keyboard
Bill of Materials



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Part	Value	Remarks	Qty	Reference	Provided
Standoffs	M3	nylon stands 8 mm	**4**		
	M3	nylon stands 12 mm	**2**		
	M3	nylon nuts	**4**		
Pin header	1 x 2 pin	male horizontal *(backside)*	**1**	J1	
	2 x 5 pin	male horizontal *(backside)*	**1**	J2	
Resistor	270 Ω	1/4 W - red, violet, black, black, brown *(backside)*	**1**	R1	
Switch	DPDT	Small slide Switch ON-ON	**1**	SW9	
	SPDT	Big slide switch ON-ON	**8**	SW1-SW8	
LED	yellow	3 mm, round	**1**	D1	
		Parts	**23**		
		Types	**9**		

Assembly instructions:

1) Mount the **standoffs** first. The *long* ones (12 mm) screw in the *short* (8 mm) at the top edge of the main (bottom) board. Use two of the four **nuts** to mount the *short* standoffs at the bottom edge of the board.

2) If a finished 8-bit Workbench is available, insert the unsoldered **pin headers** (J1, J2) into the female busses of the Workbench to have them perfectly aligned before soldering them.

3) Solder the **small slide switch** (SW9) and the **resistor** (R1, insert at the bottom side, solder at the top).

4) Remove all nuts and rings from the **eight switches**, leave one nut on and turn it all the way down. Then, put the switches in and make sure they all are oriented the same way (i.e. the notch in the threading points to the bottom edge of the board). Do not solder them in yet.

5) Put on the **front panel** and tighten the remaining two black nuts securely on the *long* standoffs.

6) Use a small flat screwdriver (like a watchmaker screwdriver) to **tighten the nut of the switches**. They move upwards so they touch the front panel at the bottom side. Make sure the front panel stays horizontal, do not tighten them too much.

7) Screw on **another nut** (one per switch, without rings) at the top side and tighten firmly by hand.

8) When everything is solid and without slack, solder the eight big switches in. A bigger solder head is recommended for better solder flow.

9) Finish with soldering the **LED** (D1). Keep the legs long, they go through the front panel and the main board at the bottom. Start soldering them on the bottom board. The long leg is the anode (+) and the short leg the cathode (-). The short leg goes through the square pad.

Before applying power, check J1 and J2 for shorts between all side-to-side pins using a multimeter in continuity mode. Happy toggling!