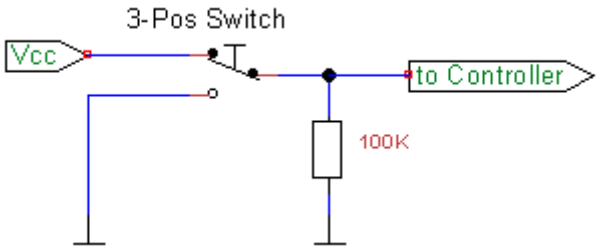
3-position switch using only one I/O port



The goal is to query a 3-position switch using an I/O port of a microcontroller. The I/O port has only 2 states (High and Low), but the switch has 3.
The solution: It is possible to enable or disable a built-in pull-up resistor (approximately 22k) internally within the microcontroller. In the circuit diagram, you can see that the 3-position switch connects the corresponding I/O port to +VCC (High), - (Low), or open (in the middle position). If the switch is in the High or Low position, the I/O port detects the state accordingly, regardless of whether the internal pull-up is active or not. When the switch is in the middle position (open), the external (100k) pull-down resistor pulls the I/O port to Low. At this point, the internal (low-impedance) pull-up is activated, pulling the I/O port to High. In the program code, I activate the internal pull-up, read the I/O port, deactivate it, and read again. Depending on whether the I/O port remains High or Low or changes state, I can detect the 3 switch positions. All this happens within microseconds