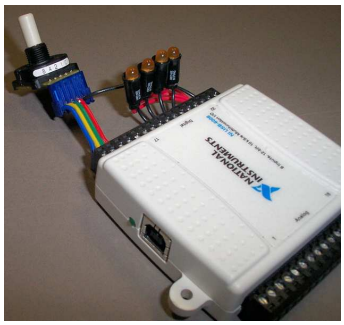
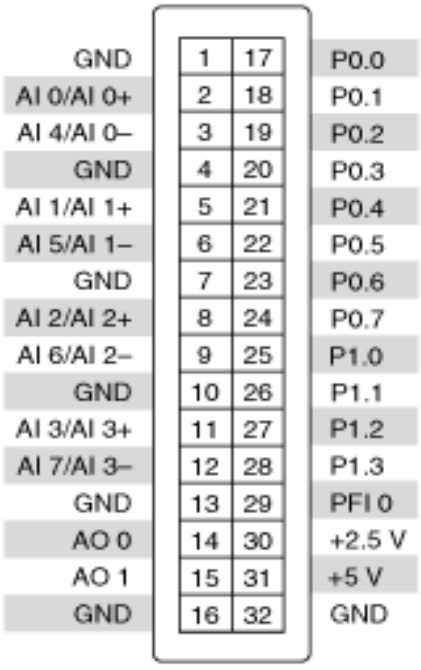
In-Class Exercise: Mapped Digital I/O

Recall the worked example *Mechanical Encoder Digital Input*. In it, a Grayhill mechanical encoder was connected to the first four lines of port 0 of an NI USB-6008 multifunction DAQ device, and interfaced to a LabVIEW virtual instrument displaying the four encoder bit states with LED's. Now, note that is possible by extension to connect four **real** LED's to the four lines of port 1 (which happens to be the entire port in this case), and extend the same LabVIEW interface with a second DAQ Assistant to "write" to the four real LED's at the same time. Thus, the entire process of digital input to digital output can be realized. **Complete the required steps to achieve this output control of the four real LED's.**



By the way, note that the real LED's are connected in such a way that the digital lines "sink" current from the +5v supply pin. As such, the digital lines block current when active (or "on"), making the LED's off, and vice-versa. Therefore we say that the configuration is "active low," since the connected output is active when the line is set low (or "off"). An alternative description refers to this scenario as "negative logic."



GND	1	17	P0.0
AI 0/AI 0+	2	18	P0.1
AI 4/AI 0–	3	19	P0.2
GND	4	20	P0.3
AI 1/AI 1+	5	21	P0.4
AI 5/AI 1–	6	22	P0.5
GND	7	23	P0.6
AI 2/AI 2+	8	24	P0.7
AI 6/AI 2–	9	25	P1.0
GND	10	26	P1.1
AI 3/AI 3+	11	27	P1.2
AI 7/AI 3–	12	28	P1.3
GND	13	29	PFI 0
AO 0	14	30	+2.5 V
AO 1	15	31	+5 V
GND	16	32	GND