Power Budget

Team Number:	103
Project Name:	**Private-Use Door Automation**
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Version:	**2**

A. List ALL major components (active devices, integrated circuits, etc.) except for power sources, voltage regulators, resistors, capacitors, or

All Major Components	Component Name	Part Number	Supply Voltage Range	#	aximumCurrent	alCurrent(mA)	Unit
	PIC18F57Q43 Microcontroller	PIC18F57Q43	1.8V - 5.5V	1	350	350	mA
	Flex Sensor Adafruit Long	FS-L-095-103-RH (95 mm, 10 kΩ)	0V - 5V	1	7	7	mA
	Op-Amp (MCP6004)	MCP6004	2.7V - 6.0V	1	30	30	mA
	LED Status Indicators	Generic Red	5V	1	20	20	mA
	5V Regulator	LM7805	7V - 35V	1	1500	1500	mA

B. Assign each major component above to ONE power rail below. Try to minimize the number of different power rails in the design.

+5V Power Rail	Component Name	Part Number	Supply Voltage Range	#	aximumCurrent	alCurrent(mA)	Unit
	PIC18F57Q43 Microcontroller	PIC18F57Q43	1.8V to 5.5V	1	350	350	mA
	Flex Sensor Adafruit Long	FS-L-095-103-RH (95 mm, 10 kΩ)	0V - 5V	1	7	7	mA
	MCP6004 Op-Amp	MCP6004	2.7V - 6.0V	1	30	30	mA
	LED	Generic Red	5V	1	20	20	mA
					Subtotal	407	mA
					Safety Margin	25%	
					Total Current Required on +5V Rail	508.75	mA
c2. Regulator or Source Ch	+5V Regulator	LM7805	7V - 35V	1	1500	1500	mA
					Total Remaining Current Available on +5V Rail	991.25	mA

C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that the Total

Rail	Component Name	Part Number	pplyVoltageRange	#	aximumCurrent	alCurrent(mA)	Unit
+5V Power Rail	+5V Regulator	LM7805	7V - 35V	1	1500	508.75	mA
					Subtotal	991.25	mA

D. Select a specific external power source (wall supply or battery) for your system, and confirm that it can supply all of the regulators for all of the

External Power Source 1	Component Name	Part Number	pplyVoltageRange	Outpu	aximumCurrent	alCurrent(mA)	Unit
Power Source 1 Selection	Plug-in Wall Supply	Amazon B09ZTKTLGW	110VAC	12V DC	5000	5000	mA
Power Rails Connected to External Power Source 1	+5V Regulator	LM7805	12V -> 5V	+5V	508.75	508.75	mA
					Total Remaining Current Available on External Power Source 1	4491.25	mA

Notes

External Supply Voltage should be determined by the dropout voltage for highest-voltage regulator (e.g., +14V for a +12V regulator).
If you have multiple units in your design (e.g., a base unit and remote unit) then you need a separate power budget for each unit