

ME430 Project Shopping List Hints

Remember that you are not allowed to purchase anything from the EE storeroom!

You CAN purchase extras of items in your kit from your instructor. Go to the top of the courseware page to see the items and their prices.

Inputs and Outputs: A single PIC can handle at most 33 total inputs and outputs. There are 40 pins total, but programming the PIC uses pins 40 and 39, in addition to the 5 pins you already know are used for power (11 and 32), ground (12 and 31), and MCLR (1).

Power Supplies -- check current (amp) capabilities! ("Switching" power supplies may be better.)

- 5V
- 12V
- 24V

Motors -- check current (amp) requirements, speed and **torque** capabilities!

DC

- 5V
- 12V
- 24V

Stepper

- 5V
- 12V
- 24V

Servo

- 5V
- 12V
- 24V

Linear Actuator -- what voltage?

Solenoid -- what voltage?

Motor control chips -- check current (amp) capabilities! – remember they may not be able to run rated amps w/o cooling

Unidirectional

- BJTs
- MOSFETs
- Darlington

Bi-directional

- H-bridge. For low amperages, fine w/o a heat sink. Need heat sink for higher amps.
- Special motor driver for higher amp circuits. (\$20 from Rose. Be sure to buy ahead.)

Snubber diodes for circuits with motors -- you don't need to buy these. You won't need many so we can just get them from the supplies in the workroom. The ceramic capacitors are more expensive so you'll have to pay for those.

Output Displays

- LCD -- order catalog #LCD-3077 "40 character x 2 line LCD w/LED backlight" from All Electronics. These use 7 pins on the PIC: RD0 through RD6. This should work the same way the LCD on the green PICDEM boards work.
- 7-segment displays. These can be common anode or common cathode. Order 7-segment display driver chips that match (anode/cathode) the displays you chose: these are likely to be called "BCD to 7 Segment Decoder/Driver" chips, and would have a number like 7447 or 7446. It takes 4 output lines from the PIC to run one driver chip. These need 1 resistor for each segment (7 resistors per display).
- LEDs -- don't forget resistors and Darlington's to drive the LEDs. There are things called "Resistor networks" or "Resistor Nets" that are resistors in DIP packages, which you may want to consider if you have a lot of LEDs. (DIP packages "Dual-inline-Pin" packages—little black chips similar to our Darlington's.)

Breadboards -- you can't just use the ones from your kit because we need them for lab until week 9

Voltage regulator chips. You can buy these from us.

Sensors

- CdS cells?
- IR?
- Thermal?
- Ultrasonic rangefinder?

Miscellaneous electronics

- Laser pointers
- Switches
- Piezo buzzers
- Wire
- Solder (If you only need a small amount, you can get it from Ron. If you need to do a lot of soldering you will need to buy your own solder.)

Miscellaneous Hardware

- Wood
- Plexiglas
- Screws
- Springs
- Nails
- Gears
- Boxes

Also check the physical size of the items you are ordering—in the past a few teams ended up with very small chips and very small breadboards! Don't buy things that say SMD (Surface Mount Device).