Samantha Howard

Valves:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Voltage / Power** | **Cost** | **Lead Day** | **Additional Comments** |
| Gems Sensor Part #A2017 (-C203)  http://ecatalog.gemssensors.com/ecatalog/configurators/nextday-valves/A2017 | 12 V / 6 Watts | $40.40 | Next day/3-day shipping | Nitrile O-ring:  Material ability with withstand temperature range -40 to 108°C (ideal for aeronautical applications) |
| Gems Sensor D Series Sensors | 7 V |  |  | Brass body (withstands heat but less than above steel body) |
| ASCO General Service Solenoid Valve  https://www.ascovalvenet.com/ProductMasterResource/CatalogPages/8262\_8263\_HSeries\_GP\_R9.pdf | 6 Volts (can do DC) / 10.6 Watts (I believe if we do 6 Volts) |  |  | Can order brass or stainless steel;  Nominal ambient temperatures -25 C to 40 C; normally closed |
| Parker Pulse Valves - Miniature High Speed High Vacuum Dispense Valve  http://ph.parker.com/us/12051/en/pulse-valves-miniature-high-speed-high-vacuum-dispense-valve | 20 V (most likely way too high)  \*original Parker one we looked at\* |  | Camden can help us get this? | Temperatures up to 105 C; low leak rate/high flow; normally closed; stainless steel; leak rate 1 x 10-7 atm cc/sec Helium; |

\*\*\*Questions\*\*\*

* What is the ideal orifice size we are aiming to find a valve for?
* 24V AC circuit - possible? To my understanding it seemed Cooper said < 12V DC would be best/possible
* Based on above data and other (too) high voltage valves I have found, I agree with Joseph about the A2017 valve → also if noticed, it is the one site that provides (almost) all of the information necessary for questioning → most reliable?

GPS: (All agreed upon already)

* Adafruit Ultimate GPS Logger Shield - Includes GPS Module
  + <https://www.adafruit.com/products/1272>
  + $49.95
  + For Arduino Uno
  + Mass without GPS module: 24 g → .024 kg
  + 20 mA current draw
  + 69 mm X 53 mm X 6.7 mm
  + Required micro SD card (not included)
    - I MAY HAVE ONE. I think I have one at my house - and I will be home this weekend so I will certainly look! This way it would not be necessary to purchase one (unless group wants to because relatively cheap - $7.95)
  + Response to Joseph’s antenna question: I believe yes - website quotes:
    - “If your project is going to be inside an enclosure (WHICH OURS IS), you'll love this shield as it has external antenna support. Simply connect an [external active GPS antenna](http://adafruit.com/products/960) via a [uFL/SMA cable](http://adafruit.com/products/851) to the shield and the module will automatically switch over to use the antenna. You can then place the antenna wherever you wish (INSIDE PAYLOAD).”
    - GPS Antenna - External Active Antenna - 3-5V 28dB 5 Meter SMA
      * $12.95
      * 5 meter long cable
      * 50 ohm output impedance
      * 2.3 - 5.5 Volts → current dependent on voltage
      * Storage temperature → -40 C to +90 C
      * Operating temperature → -30 C to +85 C (stop working once too cold?)
      * <https://www.adafruit.com/products/960>
      * <http://www.adafruit.com/datasheets/GPS-01.pdf>

Pressure Sensor (All agreed upon already)

* Pressure Sensor: Altimeter Module MS5607
* <https://www.parallax.com/product/29124>
* $29.99
* Successful at 120,000 feet
* Pressure range - 10-1200 mbar
* -40 to 85 C operating temperature range
* About 3.3 V - 1.74 mA
* 0.216 mm X 0.203mm
* NEED 2 - one for interior and one for exterior

\*\*I have no knowledge of this stuff previously so I am learning from it. The research I find, as well as you all find, has been helpful in me learning this. If we learn the equations, I can manipulate them. I will type up a bill of materials or mass estimation table - once final decisions are made - if Cooper says it is necessary for our project.\*\*