Firmware Outline:

# Inputs to Arduino:

|  |  |  |
| --- | --- | --- |
| Function | Interface | Datatype |
| IMU input | IC2 (SDA SCL) | TO-DO |
| Rotary Encoder | 4 Digital In | Grey Code |
| Current Sensor A | Analog 5 | Long |
| Current Sensor B | Analog 0 | Long |
| Target Tilt | Serial or Http | Int |
| Target Heading | Serial or Http | Int |

# Outputs from Arduino:

|  |  |  |
| --- | --- | --- |
| Function | Interface | Datatype |
| Linear Actuator | PWM out (analogWrite())  Pin 9 |  |
| Azimuth Motor | PWM out(analogWrite())  Pin 10 |  |
| Current Sensor A value | Serial or Http |  |
| Current Sensor B value | Serial or Http |  |
| Current Tilt value | Serial or Http |  |
| Current Azimuth value | Serial or Http |  |

# Functional Interfaces:

* Update Tilt value
  + Read Orientation value from Sensor
  + Convert Orientation to tilt
* Update Azimuthal Value
  + Read Magnetic value from Sensor
  + Read Rotary Encoder
  + Update Local Azimuth value (ie how far we are from initial)
  + Update Global Azimuth value (ie what heading do we think we’re pointing)
* Update Current Sensor A
  + Read Current Sensor