

6.111 Final Project Design

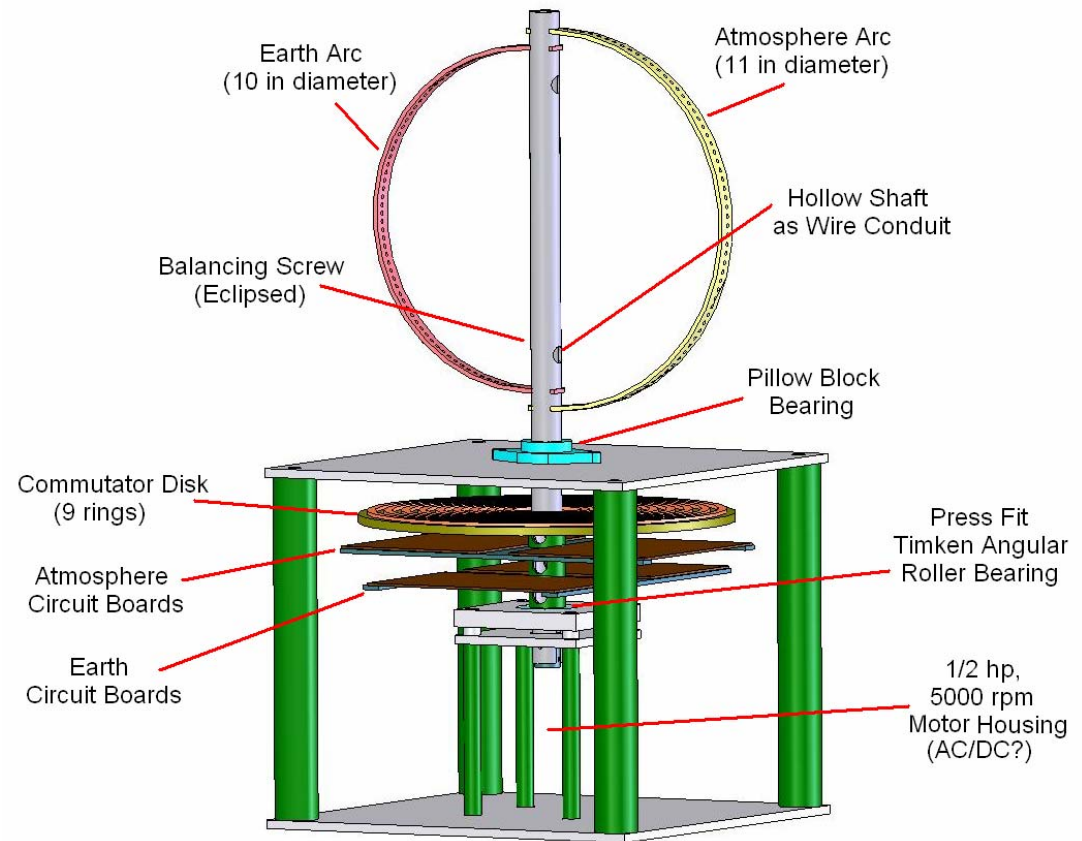
World Domination

Bo Shi

David Wang

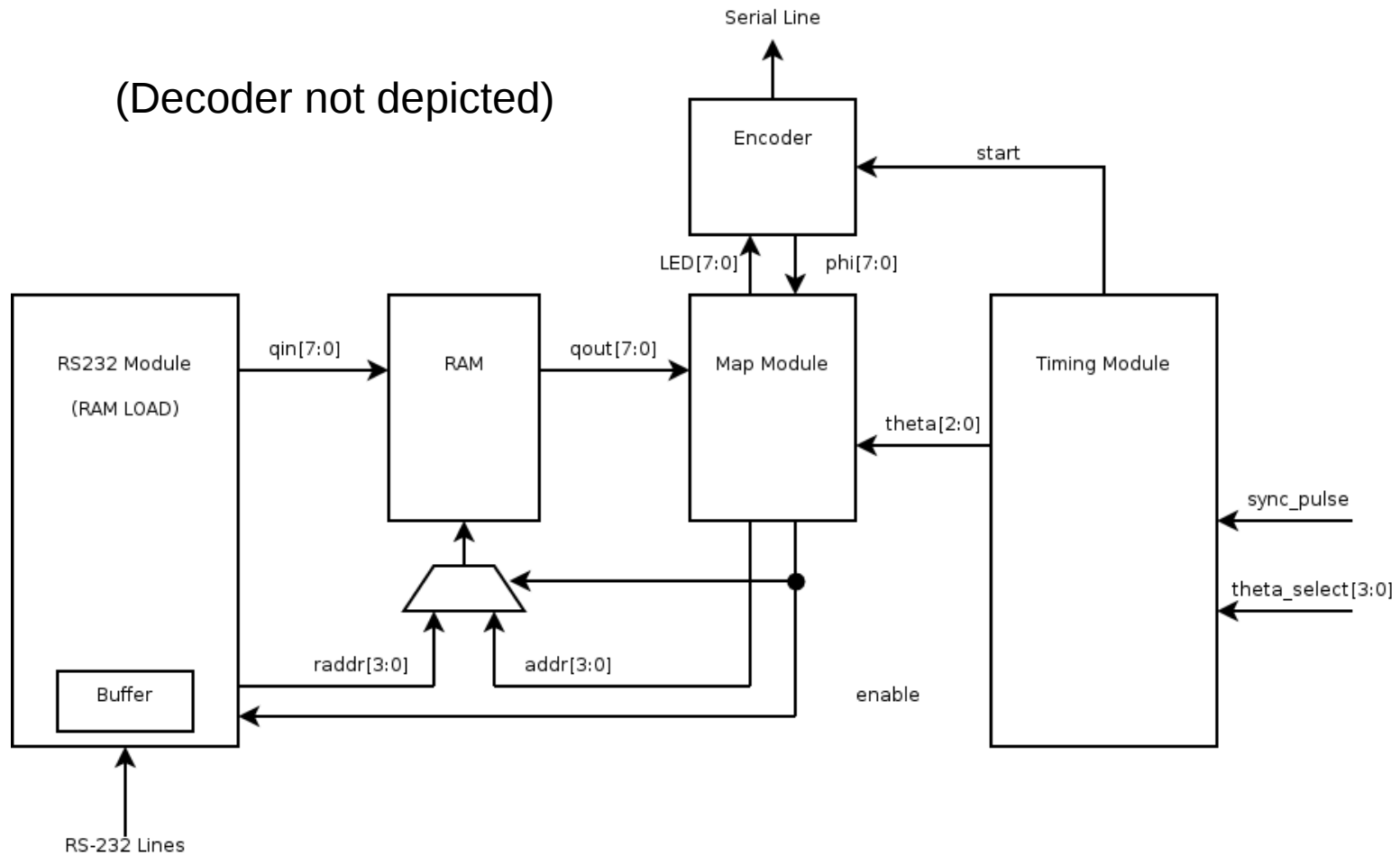
Introduction: Mechanical Structure

- 64 LEDs per Arc
- Atmosphere Arc updated with live weather data
- Operating Range between 1200-3600 rpm.
- Plexiglass shell (not depicted)

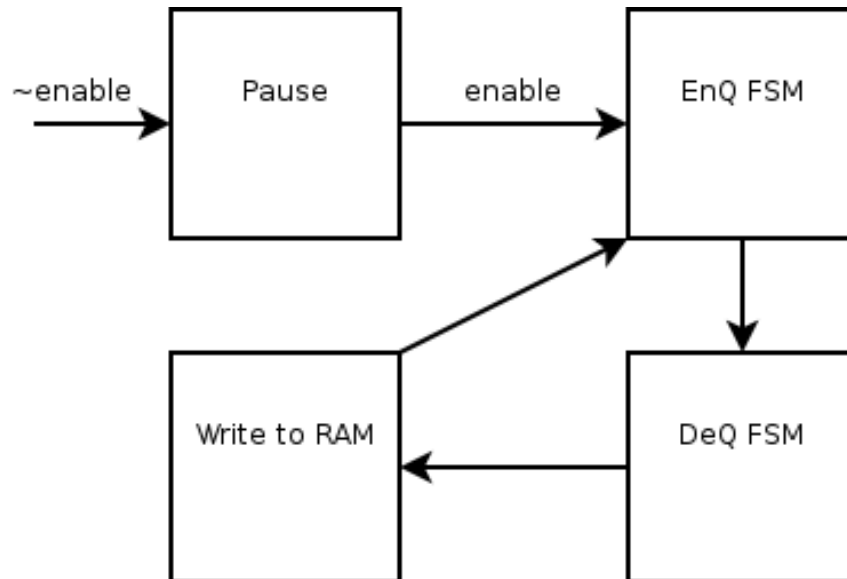


Top Level Design

(Decoder not depicted)



Module: RS232



- Actively writes to RAM when Map Module is inactive
- RS232 Data stored in internal buffer until it can be processed.
- Active for Cloud Arc
- Inactive for World Arc

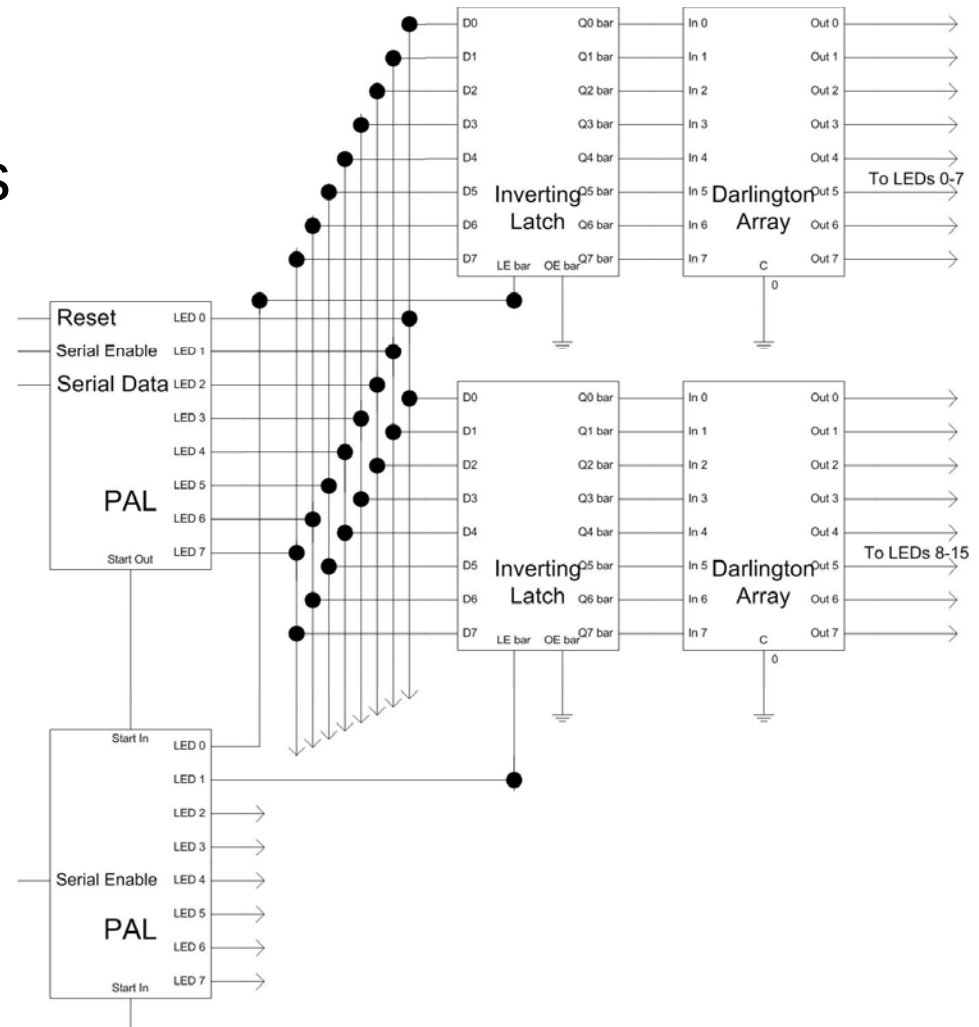
Module: Encoder/Decoder

- Links the mechanical assembly with the lab kit(s)
- 60 Hz, 128 LEDs → ~1 Mbps data transfer rate
- Asynchronous serial protocol
- Recieves start signal from Timing Module
- Encodes LED control signal from Map Module

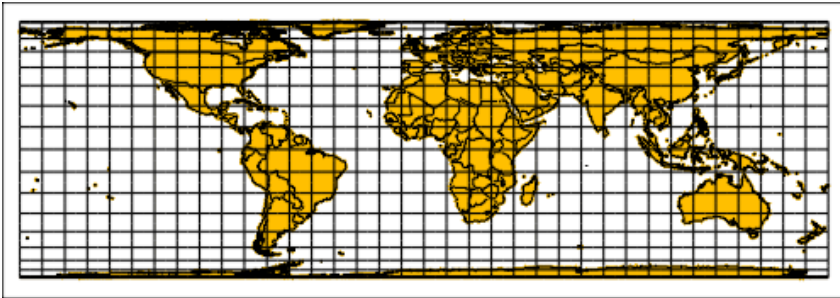


Module: LED “Controller”

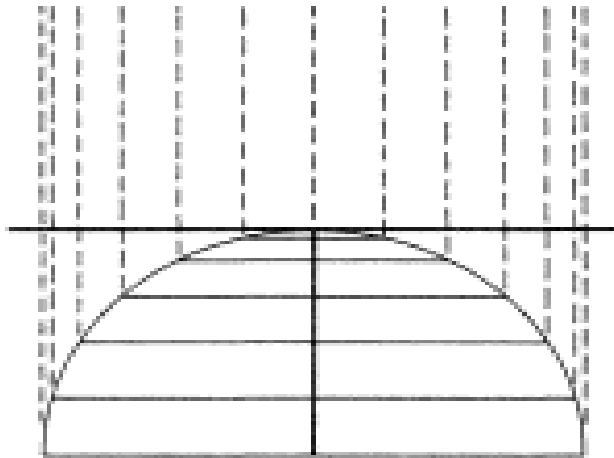
- 8 Darlington arrays
- 8 Inverting latch arrays
- 2 PALs
- 3 Input pins per Arc



Module: Memory Controller/Mapping



INFINITE PERSPECTIVE



- Orthographic projection
- Memory usage ~ 8Kb
- Receives theta & phi, outputs LED signals (off/on)

Module: Timing FSM

