# Electrical Systems


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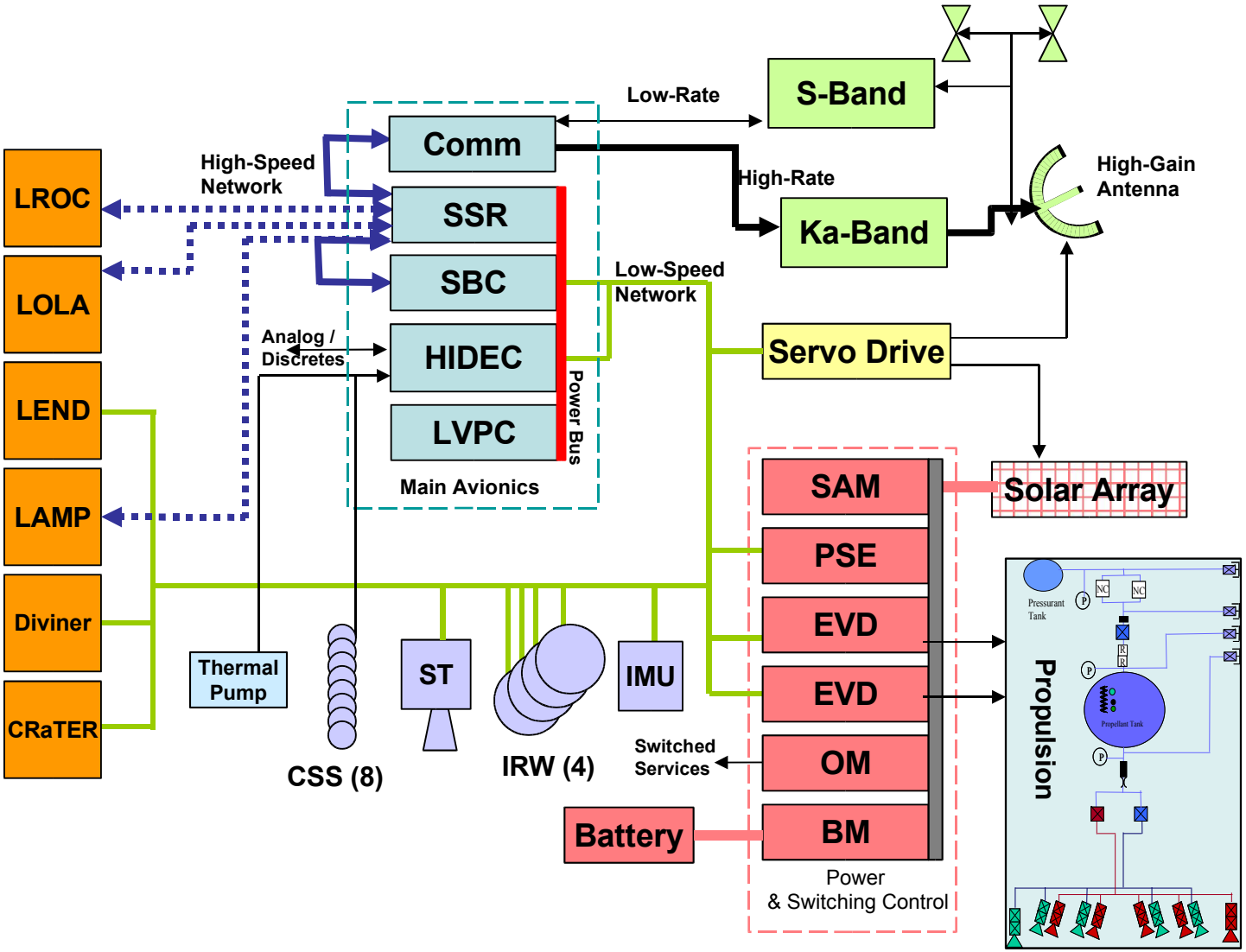
# Proposed Instrument Networks



# Electrical Systems

- General LRO Electrical Systems ICD is in review with Systems Team, sent to S/C team last week, main points of interest are:
  - Power Bus
    - +21 to +35 at LOLA harness connector, multiple wires, non-redundant bus
    - Tolerate 0 to 40 without damage
    - LOLA Instrument KO presentation shows +24 to + 32, is this a problem?
  - S/C PSE will use SSPC for switching, so there will be inrush specification
  - Fuses on S/C PSE only
  - Power bus ripple: < 1.0Vp-p (1 Hz – 10 MHz), < 0.5Vp-p (> 10 MHz)
  - Isolate primary return from chassis, single-point-ground in S/C PSE
  - Tie Secondary ground to chassis (< 0.5 milliohms)
  - Tie all chassis of instrument to spacecraft chassis (<2.5 milliohms)
  - Copper ground straps (5:1 length:width) where necessary
  - Blankets redundantly tied to spacecraft chassis
    - 2 ground tabs for 1 $m^2$, add'l tab for every add'l $m^2$

# LROC Accommodations

- Data
  - 3.5 Mbps, 300 Gbits/day
- Power Consumption
  - 26.4 watts average, 36 watts peak (with 20% reserves)
- Timekeeping
  - 1 pulse-per-second RS-422 pulse, active high for 30.5 +/- 1 microsecond
  - Time at Tone was message to accompany every pulse
- Discrete commands
  - None identified
- Additional Interfaces
  - Two thermistors will be provided by S/C to be mounted on outside of LROC instrument
    - Yellow Springs Instruments p/n 44907-07S7R6 or equivalent (S311-P-18-05A) and 5 kohm bias resistor for range of -30C to +70C

# LROC Network Interface

- SpaceWire
  - We believe that SpaceWire will have a positive mission-level impact on
  - Spacecraft ICDs, simulators,  and integration and test at the mission level
  - We have provided documentation to describe the core that would be provided and supported by Code 561
  - We would like to hear results of study of Spacewire as primary interface for LROC