Balloon project

Sensors

Low pressure sensor

Honeywell ASDX D0 Series

Rational: This pressure sensor will be used to determine altitude. The data gathered will be used to depressurize balloon (if depressurizing system is equipped) and recorded alongside radiation, gas concentrations and GPS coordinates. This sensor is rated for pressures as low as 0 psi, below the expected minimum pressure at altitude.

Transmitter

Digi International XTP9B-DPS-001

Rational: Using a set of two Digi XTend transceivers the probe will be able to relay its current altitude and location to a base station for recovery. Depending on signal strength additional telemetry may be sent. The Digi Xtend series is rated for over 40km range with line of sight.

Antenna

L-com 900MHz 5dbi mag mount omni RP SMA plug connector

Rational: An omnidirectional antenna simplifies the design of the probe by removing any hardware needed for tracking and orienting a directional antenna. This particular antenna comes recommended from a Sparkfun blog entry where it was used in the same manner.

RockBLOCK satellite modem

Rational: Using a satellite modem guarantees coverage anywhere on earth with a view of the sky. The module has a high upfront cost and a no-contract monthly fee for use of the Iridium satellite network.

Issues: may not be legal for use on HAB

Magnetometer

HMC5883L

Rational: A magnetometer is a digital compass, equipping the probe with this sensor will allow the on-board computer to record the direction a photo was taken. Using this in combination with GPS coordinates will allow features present in the images to be identified.

GPS

Ebay 5v U-BLOX NEO-6M

Rational: Equipping a GPS (Global Positioning System) receiver to the drone will allow real time tracking from a base station. The data will also be recorded along with all measurement taken.