

Launchsonde Firmware v0.2 Flow Diagram

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PROJECT PHOTON

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Theory of Operation:

This firmware is designed to transmit altimeter and IMU data from the launchsonde to the groundstation using the LoRa RFM95 radio module. It begins by initializing the radio and establishing communication with the groundstation through a SIGN/COUNTERSIGN handshake protocol. Once communication is established, the launchsonde then calibrates the IMU with user interaction (see "Guide to Calibrating BNO055 9DOF IMU"). The launchsonde then listens for an initialization command sent from the ground station to zero the altimeter and begin checks for launch. When launched, the launchsonde logs real-time date/time, IMU data, and altimeter data simultaneously while transmitting. This data is in a comma-delimited packet that can be received and processed by the ground station. Transmission continues until the unit is recovered and powered down.



