

## Auk IMU Information Sheet

This document contains basic information about the IMU included with this Auk system. The IMU is built into the Auk and it is self-calibrating, so no configuration by the user is required. When the Auk powers up fully, indicated by a green LED, the IMU is fully operational.

To verify the IMU is functioning properly, observe the changing values of Track, Roll, and Pitch in the Auk web browser interface status screen. IMU values are recorded in images via image metadata. These IMU values in the image metadata are recorded specifically in a \$MAV comment string.

Because the Auk IMU is self-calibrating, no manual calibration is necessary. Once the Auk IMU is in a manned or unmanned aerial vehicle, it calibrates itself within a short period of time; if a user is interested in calibrating the IMU on the ground, carefully moving and rotating the Auk around in a figure eight motion for about 5 to 10 seconds should be sufficient for the calibration to occur.

IMU data is encoded as a variant of GPS strings beginning with the lead in identifier \$MAV. The comma separated fields in the \$MAV messages are interpreted by position according to the list below. Values that are not supported by the installed hardware are set to 0. The items in the list are expressed as decimal integers and floats.

*/\* integer values \*/*

\$MAV, boot timestamp, gps latitude gps longitude, gps altitude, gps relative altitude, gps X speed (lat) gps Y speed (lon), gps X speed (alt) gps heading, gps attitude timestamp,

*/\* floating point values \*/.*

imu roll, imu pitch, imu yaw, imu rollspeed, imu pitchspeed, imu yawspeed

When Auk JPGs are converted to Auk RAWs using PixelWrench2, the image metadata in the Auk RAWs displays the \$MAV comment string and automatically defines the values based on the above list.