1.0 Summary

1.1 Version 2.0.1 is Teal Drones' first formal firmware release for the Black Widow aircraft, introducing obstacle avoidance, enhanced video clarity, and improved mission reliability. The update expands flight control options, refines camera performance, and strengthens both system stability and operator control.

2.0 Improved Features

2.1 Visual Obstacle Avoidance (VOA)

2.1.1 This release adds the ability to enable or disable obstacle avoidance and collision prevention through the GCS parameter settings. The autonomous VOA feature operates at a capped speed of 3 m/s to ensure reliable object detection.

2.1.2 A new POSCTL_VOA flight mode is introduced for collision prevention. In this mode, operators can manually control the aircraft while maintaining active collision protection. If a potential collision is detected, the system automatically transitions to HOLD (loiter) mode; once manual input resumes, control returns to POSCTL_VOA.

2.2 Camera and Video Improvements

2.2.1 Version 2.0.1 enhances the video pipeline and camera tuning to deliver sharper image quality and improved reliability. Drone GPS coordinates can now be displayed in both live video streams and recorded media, available in MGRS and decimal degrees formats with one-meter accuracy. Infrared AI overlays have been updated for improved readability, featuring increased text size and a correction for a rare issue that could cause text inversion.

2.3 Flight Control Enhancements

2.3.1 This release introduces operator-controlled yaw adjustment during autonomous missions. Through the MAVLink parameter settings, the MIS_EN_YAW_CTL parameter can now be set to 1, enabling heading changes while the aircraft continues along its programmed mission path. When manual stick input is detected, the system automatically transitions to manual flight mode to ensure a smooth and predictable control handover.

3.0 Fixes and Reliability

3.1 Improved response to MAVLink messages:

3.1.1 PARAM_EXT_REQUEST_READ

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3.1.2 MAV_CMD_RESET_CAMERA_SETTINGS

3.1.3 MAV_CMD_REQUEST_CAMERA_IMAGE_CAPTURE

3.1.4 CAMERA_FOV_STATUS

3.2 Resolved issues with gimbal setup and calibration.

3.3 Corrected occasional errors in camera reset defaults and media handling.

3.4 Fixed factory reset behavior for more consistent recovery.

3.5 Eliminated duplicate system messages that could previously impact target tracking performance.

4.0 Revision History

Rev	Section	Paragraph	Owner	Technical Review	Summary of Change
-	All sections – Initial Release	-	Jim Cory, Senior Director, Product Line Management	Christina Raetz, Technical Writer	Initial issue

Teal Drones, Inc. | info@tealdrones.com | www.tealdrones.com
2800 S West Temple - Suite 2, South Salt Lake, UT 84115