

## Launch and Recovery

The launch procedures for the swinglet CAM UAV are as follows:

1. Weather is checked to verify the conditions are favorable for a successful flight, on site and prior to launch.
2. Wind direction is noted for takeoff direction.
3. Check the existing terrain; select a take-off location that has no obstacles (buildings, rocks, power lines, trees, etc.) within a radius of 130 feet around the take-off position.
4. The PIC and the observer will verify that all of the batteries are fully charged in the ground station laptop, remote control unit, camera and the UAV's main battery. If the batteries are not fully charged then the battery will be connected to the appropriate charger until it is fully charged as per manufacturer specs.
5. Connection to the UAV is checked and verified to be established between both the ground station computer and the remote control prior to launch.
6. The airframe and ailerons will be inspected for any damage that will negatively affect the performance of the aircraft. Verify that the winglets are solidly attached to the airframe. Any damage shall be repaired to the aircraft's factory specification prior to any flight operation. As per the *"senseFly Swinglet CAM INSPECTION AND LOG PROCEDURES FOR THE OHIO DEPARTMENT OF TRANSPORTATION"*.
7. The propeller will be inspected for any damage and replaced if needed.
8. The two rubber bands connecting the propeller to the electric motor will be checked for any cracks and replaced.
9. Verify that the linkage between the servos and the control surfaces are not damaged and firmly attached at both ends.
10. Verify that the pitot probe is properly attached to the airframe and the two rubber tubes are well in place.
11. Lay the UAV horizontally on the ground in the vicinity of the take-off position, with the top face up. It is important that the UAV is not inclined more than 10 degrees in order to start up properly.
12. Connect the battery to the UAV. Make sure that the colors of the cables match and insert the connectors firmly to the end in order to avoid undesired disconnection when in flight. Take care to keep the propeller area clear.
13. After the power is connected the UAV will perform its own internal systems check to insure proper operation. The onboard computer is checked for any error codes at this time. Error codes are diagnosed and dealt with as needed to insure proper operation.
14. Verify the aileron motion and for the 'GO' indication on the autopilot LED display while the UAV performs self-checks and acquires GPS signal. This may last from a few seconds to several minutes in the case of poor GPS signal reception.
15. Verify the camera is properly connected. To verify this connection, you can shake the UAV three times up and down (in approx. 3 seconds) while holding it horizontally. The camera should then

turn on and the optics should extend below the UAV. Repeat the same movement to switch-off the camera.

16. Make sure that the optics is retracted (camera switched off) before putting down the UAV.
17. For remote control check;
  - a. Flip the lever of the remote from auto to manual.
  - b. Move the aileron stick on the remote control to verify proper reception by the UAV and correct servo direction.
  - c. Move the thrust lever is in the low position to prevent or stop the propeller from spinning.
  - d. Flip the lever from manual to auto.
18. Gently shake the UAV back and forth 3 times longitudinally (within approx. 3 seconds). This will switch the motor to full power. Note: Once this is done, do not hurry to launch it into the air. If case you want to return to idle mode, just repeat the back and forth three times movement and the motor will stop.
19. Orient the UAV against the wind, with approximately 30 degrees nose up and level wings. Make sure that the take-off direction is free of obstacles.
20. Release the UAV by gently accompanying it with the two hands symmetrically placed on either side in a purely forward motion into the prevailing wind.

The recovery of the swinglet CAM UAV.

1. The preferred method is autopilot recovery where the autopilot returns the aircraft to the launch location and lands in the launch direction. The other method is for the pilot to take over in the RC mode and manually land the aircraft like a standard RC aircraft.
2. The main battery is disconnected and removed.
3. The Camera is removed.
4. The Camera's memory card is removed.
5. The UAV and all components of the UAS are stored in its box as per manufacturer specifications.