

Skydio X10 Lost Link Procedures

This statement describes the lost link procedures for the Skydio X10.

C2 Monitoring

The GCS plays an important role in the command and control system. Link health metrics are summarized and displayed through the GCS. The image to the right shows Flight Deck Connections Menu. The Remote Pilot can also view the Connections menu for additional information on connection health.

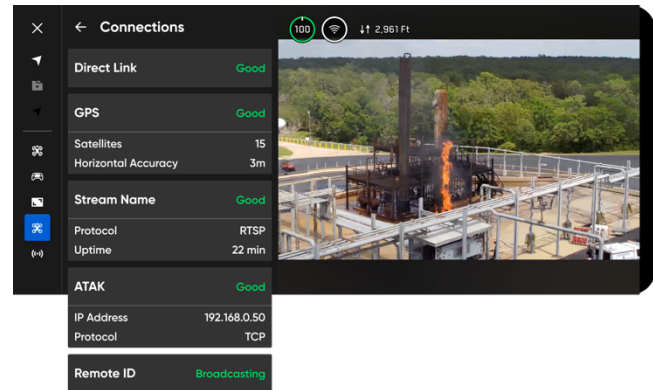


Figure 1 Connections Menu – Flight Deck

C2 Degradation

The Remote Pilot can detect a C2 degradation by a drop in real-time video quality or delayed control input.

At this point, a Remote Pilot should navigate the aircraft to an area of better signal (closer to the controller, in a known area of cellular coverage, away from objects that attenuate signal). The Remote Pilot can use a combination of real time video feed, the moving map display, and the telemetry feed to determine distance and altitude of the vehicle relative to the take-off location. The displayed location is computed using a fusion of computer vision and GPS, enabling location updates even when the vehicle is operating in a GPS-denied environment, such as underneath the deck of a bridge.

C2 Lost Connection

While the system has been optimized to maintain a link whenever possible, all wireless systems are subject to interference and/or attenuation. As such, it is important that the vehicle has a well-defined lost link procedure.

If the aircraft loses C2, the pilot will receive a visual alert on the GCS. Upon losing C2, the aircraft immediately begins to execute its Return Behavior maneuver as follows:

1. The aircraft will attempt to re-establish connection and begin the Link Timeout (configurable by the operator)
2. If the aircraft is executing a skill, it will continue the skill during the Link Timeout timer. If it is in Manual Mode, it will stop and hover in place during the Link Timeout timer.
3. When the Link Timeout timer expires, the aircraft will execute the Return Behavior as configured by the operator before flight.
4. The aircraft will execute an automated landing at the Return location

The autonomy engine plans a safe path using its knowledge of the surrounding environment, allowing it to traverse complex environments. Even if the vehicle is operating in a GPS-denied environment, it can return to a known safe location using visual state estimation capability.

Return Behavior

The operator can configure Return Behavior before flight as shown in the image to the right. Settings include:

- Return Settings
 - Type
 - Vision or GPS
 - Height Behavior
 - **Absolute** - the aircraft will climb to this height above takeoff location
 - **Relative** - the aircraft will climb to this height above current aircraft height
 - Drone Will Face
 - Away or Towards Return
 - Speed
 - Ask to Return on Low Battery
- Lost Connection Settings
 - Return or Hover
 - Wait Before Return
 - Land After Return
 - Wait Before Land

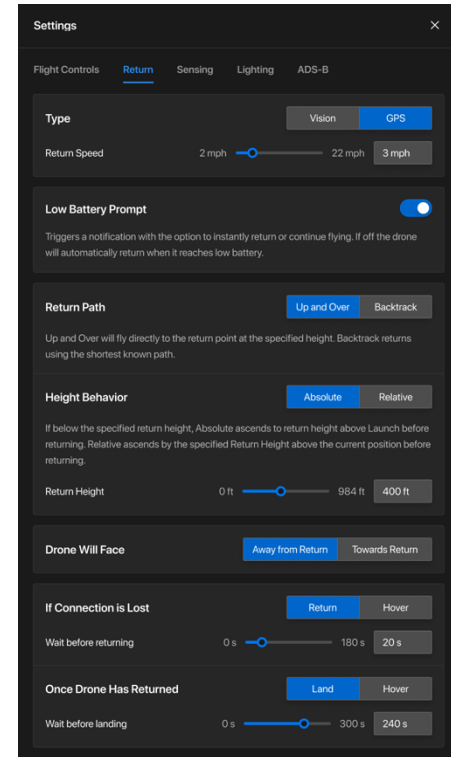


Figure 2 Return Behavior Settings

The aircraft will return in a direct path from current location to the landing location. The landing location is defined by the following parameters:

1. A pre-specified 'Home Point' (if one was set),
2. The last known location a subject was tracked since launch, or
3. If no subject was tracked during the flight, the take-off location.